Towards a social bioarchaeology of the Mycenaean period:

A multi-disciplinary analysis of funerary remains from the Late Helladic chamber tomb cemetery of Voudeni, Achaea, Greece

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Ioanna Moutafi

University of Sheffield

Department of Archaeology

ABSTRACT

This research seeks to develop a holistic bioarchaeological approach to the social dimensions of Mycenaean mortuary practice, with special reference to the treatment of the dead body, through the multi-dimensional analysis of human skeletal remains and contextual mortuary data from Voudeni, an important Late Mycenaean (1400-1050 BC) chamber tomb cemetery in Achaea, Greece.

This approach aspires to transcend unproductive cross-disciplinary divisions, advocating the integration of theory and multi-faceted bio-cultural evidence, specifically addressing theoretical and methodological issues in the analysis of commingled skeletal remains. It proposes that the most effective route to explore social aspects in mortuary data is through an emic understanding of historically situated actions and experiences, both of the living actors, the mourners, and of the dead themselves. Human skeletal remains are the primary strand of evidence, both as the *object* of the acts of the living and the *subject* of their own lived experiences.

The research is presented in successive stages: a) building a solid theoretical and methodological framework, b) presenting the sample and detailed osteological results, c) exploring the relationships of intersecting variables in bio-cultural mortuary data across socio-temporal parameters (with special emphasis on the distinction between the palatial LHIIIA-B and the transitional post-palatial LHIIIC period), and d) final synthesis, aiming to shed new light on questions pertaining to changing social conditions in Achaea and general issues in current Mycenaean mortuary research. These include: tomb re-use; form, diversity, sequence and frequency of mortuary activities; mortality profiles; differential inclusion/visibility and funerary treatment of social groups or different identities; changes in treatment of the dead body reflecting shifts in notions of the self and of social relationships. It was shown that the complex interaction between changing social conditions and mortuary practice was reflected in subtle emphasis shifts in the post-mortem treatment of bodies and bones rather than in blatant radical changes.

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CHAPTER 1

INTRODUCTION

1.1 Thesis outline

This study concerns the formation of a holistic bioarchaeological approach to the social dimensions of Mycenaean funerary practices, advocating an equal understanding of cultural and biological evidence within an explicit theoretical framework. Under this framework, drawing on theories of practice, agency, and existential phenomenology, past human action and experience can only be approached if historically situated. This is why a single cemetery, Voudeni in Achaea, with a specific life-span covering the entire LHIII period (c. 1400-1050 BC) was selected as the case-study for this research. The Mycenaean cemetery of Voudeni, excavated systematically in the 1990s by Lazaros Kolonas, provides a uniquely large and well-documented body of archaeological and skeletal material. The cemetery comprised exclusively chamber tombs, the typical monumental Mycenaean tombs for collective burials; continuous use was attested in most and the selected sample included a variety of primary and secondary funerary contexts.

Voudeni, an important site in Mycenaean Achaea, thus offers the opportunity to look closely at the mortuary practices of a community living in one of the most interesting areas of the Mycenaean world, both during the palatial LHIIIA-B and the transitional post-palatial LHIIIC period. Through the analysis of this very specific case, an attempt is made to explore the relationship between changing social conditions and Mycenaean mortuary practice at many different levels. The aim is both to shed light on several questions pertaining to the changing social conditions in Achaea during this time (and especially the transitional LHIIIC period following the collapse of the Mycenaean palaces) and to shed new light on various general issues in current Mycenaean mortuary research. These briefly include: specifics of tomb re-use; form and diversity of funerary practices; sequence and frequency of mortuary events; demographic composition and mortality profiles; organising principles in the diversity of mortuary activities; differential inclusion and visibility between social groups;

differential funerary treatment based on different identities (e.g., sex/age); changes in notions of personhood and social relationships.

Through the reconciliation between abstract theory and a multi-disciplinary study of empirical bio-cultural data, especially addressing methodological issues pertaining to the analysis of commingled remains, this study aspires to overcome cross-disciplinary divides and unproductive dualities, advocating a holistic bioarchaeological approach as the most insightful path to a better understanding of the archaeological mortuary record.

Chapter 1 presents introductory summaries on: terminology and chronology (1.2); socio-political conditions of the Mycenaean period, with the emphasis on mortuary customs (1.3); specifics of LHIII Achaea (1.4); and general background information on the Voudeni cemetery (1.5).

Chapter 2 provides a theoretical review of past (2.1) and current (2.2) approaches to the social dimensions of mortuary practices, and directions in bioarchaeology (2.3). The outline of this chapter follows the paradigmatic shifts in archaeological theory. This necessarily linear presentation was opted as the easiest way to illustrate the ongoing theoretical debates in our field, with no necessary implications for a strict linearity in disciplinary progress.

Chapter 3 presents the current state of play in Mycenaean mortuary research, providing: a) a brief review of the history of research so far (3.2), and b) the background on the main questions of current Mycenaean mortuary studies, focusing on those that are of special interest to the bioarchaeological study of the Voudeni cemetery (3.3-3.4). These include: a) an overview of Mycenaean mortuary architecture, with special emphasis on its relationship with human action (3.3.1); b) the ritual and other activities, with emphasis on mode of burial, placement of the body, location of burial within the tomb (3.3.2.1); secondary treatment of the dead and activities related to Mycenaean collective burials (3.3.3.2); issues of vertical status funerary differentiations (3.4.1); collective identity (3.4.2); and defining aspects of personhood and lived identities, such as gender and age (3.4.3). Finally a review of bioarchaeological research in prehistoric Aegean is given in section 3.5.

Chapter 4 draws on the theoretical background outlined in previous chapters and presents the research scope and aims of my study. The basic theoretical premises and research aims considered as the most pertinent to a holistic approach to collective mortuary practices are given in 4.1. In section 4.2, I propose an integrative bioarchaeological approach for the investigation of social dimensions in mortuary practice, operating on a dual scope that treats human remains both as the object of the practices of the living and the subject of their own lived experiences. The focus of the present study is on the first aspect of this dual holistic approach (i.e. mortuary practices) and is presented in section 4.3, together with basic methodological premises. Finally, specific questions addressed in this study are summarised in 4.4.

Chapter 5 presents the material and methods of this study. Material is presented in 5.1, including details on sample selection and related problems. The principles of osteological data collection, including recording standards and explicit procedure, are presented in 5.2. This section also includes basic methodology for recording aspects not examined in this study *per se* (i.e. pathology, stature, entheseal changes) but used in order to assist the refitting analysis of commingled remains and individuation process. Methods and selected terminology on sex and age estimations are presented in 5.3. The methodological package I compiled for the reconstruction of funerary practices is presented analytically in 5.4, including: segregation and individuation of commingled remains (5.4.1); estimation of Minimum Number of Individuals (5.4.2); evaluation of preservation patterns (5.4.3); anatomical articulation and position of skeletal remains (5.4.4); terminology, criteria and classification of types of funerary disposal (5.4.5) and specific secondary activities (5.4.6); the procedure for inferring a reliable chronological frame of funerary contexts and cases (5.4.7). The methodology for and background to palaeodemographic analysis are given in 5.5, while the statistical methods used for the synthetic examination of intersecting variables are presented in 5.6.

Chapter 6 presents the results of this study by tomb. Each tomb is presented in a different section, with the first sub-section (e.g., 6.1.1) summarising the archaeological data and initial evaluations as presented by the excavator (Kolonas 1998, forthcoming), the second (e.g., 6.1.2) presenting the osteological results, and the third (e.g., 6.1.3) the bioarchaeological reconstruction of the funerary activities as assessed in this study.

Chapter 7 includes presentation and synthetic analysis of aggregated results. The qualitative and quantitative examination of intersecting variables are set out as follows: *Tomb characteristics and groupings* (spatial variables and chronology) in 7.1; *Demographic parameters and mortality profiles* in 7.2, including presentation of basic distributions (7.2.1), age-specific mortality profiles (7.2.2), further investigation of mortality profiles by sex and age (7.2.3), frequency of tomb use (7.2.4), sex and age distributions in different tomb groups (7.2.5); *Types of funerary disposal and preservation patterns* in 7.3 (classification of tomb contexts: 7.3.1, preservation patterns: 7.3.2, ambiguous contexts: 7.3.3, age and sex distributions in different contexts by type, location, date: 7.3.4); *Funerary practices* in 7.4 (specific secondary activities: 7.4.1, attributes of primary burials: 7.4.2).

Chapter 8 brings together the final discussion on all the above. Section 8.1 summarises *the bioarchaeological reconstruction of funerary practices in Voudeni*, assessing the formation of the various assemblages (8.1.1), diversity of funerary practice (8.1.2), frequency and sequence of funerary events (8.1.3), and discussing their cross-sections across time (8.1.4) and tomb characteristics (8.1.5). Section 8.2 discusses *the demographic aspects of funerary diversity*, including the interpretation of mortality profiles (8.2.1), temporal demographic differences (8.2.2), and differential funerary treatment across sex and age (8.2.3). The *meaning* of all these is explored in section 8.3, which discusses the motivation for interference with past remains (8.3.1), bodily fragmentation and enchainment practices (8.3.2), associations between tomb attributes and vertical status differentiation (8.3.3), and the place of children in mortuary practices at Voudeni (8.3.4). Finally, *mortuary practice in its historical context* is addressed in section 8.4, where the relationship between shifts in mortuary practice at Voudeni and social developments in LHIIIC Achaea are investigated.

Finally, a concluding summary is given in **Chapter 9**.

1.2 Chronology and terminology

The conventional Aegean Bronze Age chronology follows the old tripartite temporal division (Early, Middle, Late), with different cultural labels for the three main geographical areas (mainland: ‘Helladic’, Crete: ‘Minoan’, Cycladic islands: ‘Cycladic’); each period is further divided in I, II, III. This relative chronology derives from correlations between stratigraphic sequence and typological ordering of material culture. The accumulating archaeological evidence progressively led to increasingly refined sub-divisions for each period (e.g., LHIIIA2 early). Notwithstanding a plethora of inherent methodological problems of this system, well-established associations between the chronologies of different regions, inside and outside the Aegean, have been developed and a widely accepted approximate framework is now in use (Warren and Hankey 1989: 71, table 2.6; Wiener 2003; for particular associations of the LHIIIC chronological systems see Deger-Jalkotzy 2006:153, figure 9.1).

To determine, however, the correlation between relative and absolute chronologies (science-based, mostly derived from radiocarbon dating) is far more complicated, especially for certain periods. The major controversy surrounds the date of eruption of the volcano of Thera (Santorini), with a long debate still ongoing over the discrepancy between the radiocarbon-based chronology (High) and that of conventional archaeological evidence (Low); for brief overviews see Dickinson (1994: 9-22) and Manning (2010), and for extensive recent discussion with earlier references, see Wiener (2010) *contra* Manning (2014). The discrepancy between the High and Low chronologies mostly affects the early LBA phases, so there is no major impact in the current study.

In cultural terms, the transitional MH/LH and LHI-II phases comprise the Early Mycenaean period, the LHIIB/LHIIIA-B the Mycenaean Palatial, and LHIIIC and Sub-Mycenaean the Post-palatial. The timeframe covered in this study spans the LHIIB to the LHIIIC/Sub-Mycenaean phases. A summary of unreconciled high and low chronologies for Late Helladic periods is given in Table 1.1. The conventional low chronology is followed as the basis for calculating lengths of tomb use in this study, but the principal factor in definition of the two main chronological groups (LHIIIA-B and

LHIIIC) is the relative ceramic chronology. Radiocarbon dates were not available in the case of Voudeni.

Table 1.1. Unreconciled high and low Late Helladic chronologies (High date range after Manning 2010:23; Low after Warren and Hankey 1989 and Bennet 2007:178).

<table>
<tr><th>CULTURAL LABEL</th><th>POTTERY PHASE</th><th>HIGH
DATE RANGE (BC)</th><th>LOW
DATE RANGE (BC)</th></tr>
<tr><td rowspan="2">EARLY MYCENAEAN</td><td>LHI</td><td>1700 - 1635/00</td><td>1600 - 1500</td></tr>
<tr><td>LHIIA</td><td>1635/00 - 1480/70</td><td>1500 - 1440/30</td></tr>
<tr><td rowspan="4">MYCENAEAN PALATIAL</td><td>LHIIB</td><td>1480/70 - 1420/10</td><td>1440/30 - 1390</td></tr>
<tr><td>LHIIIA1</td><td>1420/10 - 1390/70</td><td>1390 - 1370</td></tr>
<tr><td>LHIIIA2</td><td>1390/70 - 1330/15</td><td>1370 - 1300</td></tr>
<tr><td>LHIIIB</td><td>1330/15 - 1200/1190</td><td>1300 - 1190</td></tr>
<tr><td rowspan="2">MYCENAEAN POST-PALATIAL</td><td>LHIIIC
Early
Middle
Late</td><td>1200/1190 - 1075/50
-
-
-</td><td>1190 – 1070
1185/80 – 1150/40
1150/40 – 1100/1090
1100/1090 - 1070</td></tr>
<tr><td>Sub-Mycenaean</td><td>-</td><td>1070 - 1015</td></tr>
</table>

The typological study of Voudeni artefacts was fully published and further revised in Kolonas (1998, forthcoming). In this study, the inferred date of the skeletal assemblages derives from associations with the archaeological material, refined when possible by osteological observations (for detailed methodological approach: 5.4.7). A contextual analysis of skeletal assemblages and associated grave goods is beyond the scope of the current study (cf. Chapter 4); nonetheless, a full list of artefacts per tomb is presented in Chapter 6 as the principal dating evidence. For facilitating association with Kolonas' greek text, the list includes Furumark shape and motif numbers (*FS-FM*, Furumark 1941) for each vessel as assigned by Kolonas, while the translated shape names are given in accordance with translation guidelines and modern terms of Mountjoy (1986: 7-8, 221).

1.3 The socio-political conditions of the Mycenaean period: a brief review

The Aegean Late Bronze Age comes to be dominated by the Mycenaean culture and society; a civilisation rooted on the Greek mainland but with far-reaching connections both to Crete and Cyprus, as well as to the west (Italy, Sicily) and the east (Ugarit, Levantine coast, Egypt). The basic divisions of Mycenaean relative chronology parallel the development, peak, and collapse of the Mycenaean political system; this system is defined by its dominant feature, the 'palace'[1] (Table 1.1). Archaeological evidence from settlements and cemeteries, as well as textual evidence from the administrative documents in the Linear B script provide a complex array of information used to reconstruct the socio-political and economic conditions in Mycenaean times (for synthetic overviews, see Dickinson 1994; Burns 2010). In this and following sections, the basic socio-political characteristics of the Mycenaean period are summarised, in order to outline the broader historical context behind the mortuary dimensions and the specific questions of this study, presented in detail in Chapters 3-4. The focus is placed on the time span of Voudeni's life cycle, the LHIII period, with special emphasis on processes of continuity and change as identified in the funerary record.

The Middle-Late Helladic transition and the Early Mycenaean period (LHI-II) lies beyond the main scope of this study since it predates the use of the Voudeni cemetery. Nonetheless, it is significant as the period that set the basis of the Mycenaean culture and saw the development of all main characteristics of Mycenaean funerary customs (cf. Chapter 3). Even though cultural continuity from the MH period is apparent, Early Mycenaean was a period of great changes. Competition between independent centres of the Greek mainland (especially in the Peloponnese and Central Greece) is attested in increased levels of wealth acquisition, growing contacts with Minoan Crete and the Eastern Mediterranean, as well as in increased complexity of the funerary practices and conspicuous consumption in the mortuary sphere (Dickinson 1977 with further references; Wright 2008a). Despite pronounced regional variability, settlement characteristics demonstrate increased consolidation and larger uniform

[1] An architectural term, carrying numerous and diverse connotations, often loosely applied as a social term to different structures or functions (see Shelmerdine and Bennet 2008: 290).

trends, in contrast to the increased differentiation seen in the mortuary record both between and within cemeteries (Cavanagh and Mee 1998: 41-60). Burials of unprecedented wealth (e.g., the Shaft-Graves of Mycenae) and new monumental architectural tomb forms (tholoi and chamber-tombs) appear together with the development of funerary customs that stress descent and lineage, but also reflect changing notions of personhood and differentiation (Voutsaki 2010a). Even though the significance of the mortuary changes in the process of shaping a collective, common ('Mycenaean'?) identity is uncontested, the extent to which the funerary changes were primarily driven by elites to assist their socio-political agenda is debatable (Boyd in press a *contra* Voutsaki 1998, 2010a; see further in Chapter 3).

Radical political change is evident in the LHIIIA-B or 'palatial' period (14th-13th c. BC), with the most successful independent centres developing into 'palace-centred' states, dominant over wider regional areas. The process that led to the final development and its exact form appears to have been different in different regions (the most well understood case is Pylos: e.g., Bennet 1995), but the final outcome shared many common characteristics, even though regional differences persisted. The palatial centres[2] operated through a complex hierarchy with the *wanax* (king or lord) as the top office-holder. Palatial complexes housed administrative, production-storage, redistributive, and also ceremonial activities. Despite considerable cultural uniformity, current consensus rejects the notion of an overarching political unity in the form of the contemporary Great Kingdoms of the Near East (but see Kelder 2010 for a recent opposing view), or the idea that one centre (Mycenae) ruled in the sense of a monarchy.[3] Nonetheless, this period saw great prosperity, stabilisation, and the expansion of population and settlements over the Greek mainland and the Aegean (Dickinson 1994), as well as immense growth in international trade (Cline 1994).

The typical Mycenaean mortuary practices became widespread and standardised during this period. Chamber tomb burials became the major form of funerary disposal, apparently including a large part of the population, and certainly

[2] Conventional defining criteria: the presence of a central megaron building as the core of the town, frescoes, Linear B, tholos tombs, and large scale construction works in the wider landscape.

[3] Even the extent of control of each centre over large territories or the absolute character of control in production and ownership of resources has been questioned (Sherratt 2001 and Halstead 2001, respectively).

most of its elite members. Even though rich and varied funerary offerings are occasionally seen, competitive display in the mortuary sphere appears to have decreased in the palatial, as opposed to the formative, phase of Mycenaean culture, status differences became less pronounced, and age categories far less segregated (e.g., Voutsaki 1993, 1998, 2004). This uniformity might be due to restrictions imposed by the dominant elites, since exceptionally rich burials and the rare use of tholos tombs now appear to be the prerogative of the palatial elite (Cavanagh and Mee 1998: 61-88, with further references). A detailed background on this topic is given in Chapter 3.

A series of destructions at the palatial centres occurred during the second half of the 13th century, albeit immediately followed by major rebuilds in most situations. Around 1200 BC, however, major destructions took place in all palatial centres without any substantial recovery (but see exceptional evidence for some form of survival for built structures and palatial symbols into the 12th century, especially at Tiryns, Maran 2006). This marked the start of LHIIIC or the 'post-palatial' period (12th-11th c. BC), defined by the most significant change: the demise of the palatial administrative system. A major disruption is evident: the palatial centres and several other settlements with their associated cemeteries were fully or partially abandoned, and monumental stone architecture as well as fresco wall decoration were given up; the use of Linear B administration ceased completely, international exchange got limited (if not completely stopped), and wealth levels appear significantly lower than before. A dramatic drop in population has also been suggested (e.g., Snodgrass 1971; Desborough 1972), a view, however, rejected by those who favour the interpretation of extensive population dispersal into the countryside or stress diversity in decline rates from region to region (e.g., Papadopoulos 1996). In either case, a secure estimation of population size is problematic, especially if the focus is on the LHIIIC alone and not the entire period up to the Early Iron Age (cf. Dickinson 2006: 67, 93-97). Extensive migration towards peripheral or outside areas (West Peloponnese and the Ionian islands, Arcadia, Dodecanese, Cilicia, Cyprus) has also been suggested, but the validity, causes, and extent of this are debated (e.g., Sherratt 1992; Dickinson 2006: 62-67, with further references; especially for Achaea, see 1.4). Different theories have been put forward to account for the demise of the palaces but the answer remains unclear (e.g., foreign attacks and invasions, internal troubles, economic system collapse, and natural disasters, such as plagues or extreme climatic conditions; for synthetic overviews and extensive references: Shelmerdine 1997: 580-584; Dickinson 2006: 41-56; Middleton 2010; Cline 2014). A cumulative effect of several interconnected factors is probably the most likely explanation (Cline 2014).

The extent of cultural and social continuity in the LHIIIC period has been debated. In the past, it was thought that the changes were so radical that no ideological (or even cultural) links existed between the palatial and post-palatial times (e.g., Desborough 1964). However, archaeological evidence in favour of some level of continuity is growing, certainly for the entire length of the LHIIIC period, but even beyond (e.g., Lantzas 2012). Whether this is actual continuity of the same social groups or an attempt at legitimation by new elites through reference to the past is open to discussion (cf. Maran 2006). In either case, it seems that some level of social recovery is evident in some places, and especially in some peripheral areas -such as Achaea- which might have actually benefited from the LHIIIB collapse (see 1.4). The new socio-political circumstances are characterised by significant re-organisation and redistribution of social power, and the emergence of new elites who promoted individual accomplishments and military prowess, as well as descent, as a reference to the past (Deger-Jalkotzy 2006; Maran 2006; Giannopoulos 2008; more on this in 1.4). It appears that different paths were followed in each region during LHIIIC; a final abrupt disruption came much earlier in areas such as the Argolid or Corinthia, in contrast to other regions (e.g., Arcadia, Elis, Achaea) which seem stable until the very end of the period (Eder 2006).

Continuity is clearly seen in LHIIIC burial customs (Cavanagh and Mee 1998: 89-102). Nevertheless, despite the similarity to the rites of earlier periods, disruption is also observed: funerary offerings are generally more modest (but not in all areas, cf. Cyclades and Dodecanese, Voutsaki 2001), regional differences become more distinct, and wide-spread novelties appear. In general, collective burial in chamber tombs remains the norm, even if mostly limited to re-using earlier tombs and not building new. Rare instances of newly built tombs, usually small in size, do exist, and even new cemeteries appear as well (e.g., Perati in Attica: Iakovidis 1969). Novelties are observed but on a small scale (e.g., cremation, mourners' figurines, increased use of pits), but the situation differs from area to area. Differences also include a decrease in the numbers of burials per tomb (except for unusual, regional novelties, such as the "cave-dormitory" large chamber tombs of Kephalonia, cf. Souyoudzoglou-Haywood 1999). Some areas, such as Achaea, show greater persistence of the typical Mycenaean customs, even beyond the end of the LHIIIC period, and well into the Sub-Mycenaean era (see 1.4). According to Cavanagh and Mee (1998: 95-97, 119-120), the mixture of continuity and disruption should be explained both by social changes with their subsequent "loss of ritual knowledge" (that often follows the dissolution of a centralised system), and population movements, at least to some extent. The former could explain the regional differences that arose and the latter the introduction of the same novelties across different regions.

Figure 1.1. Map of Mycenaean Greece.

1.4 Achaea in the Mycenaean times

1.4.1 A general background on Mycenaean Achaea

Achaea (geographically defined by the limits of the contemporary administrative district, whose territory is considered very similar to that of the Mycenaean region: e.g., Vermeule 1960) is strategically located in the NW corner of the Peloponnese, controlling the west entrance to the Corinthian Gulf and acting as a mediator between the Ionian and Adriatic seas, the Ionian islands, the West and central Peloponnese, and central Greece to the north (Figure 1.1). Its varied landscape is characterised by three prominent mountain ridges (Panachaikon, Erymanthos and Helmos), which divide the region into Western, Eastern, and central Achaea. Many rivers and streams run through the entire region, and broad coastal plains open up at the West (Patras and Pharai) and NE (Aigion); the NW part is the most fertile and densely populated area (Figure 1.2). It is usually argued that Achaea's advantageous geographical settings encouraged self-sufficient agricultural and livestock practices, as well as hunting, fishing, and wood procurement, but also exchange and trade activities with neighbouring areas (Papadopoulos 1979: 21-22; Giannopoulos 2008: 3-10).

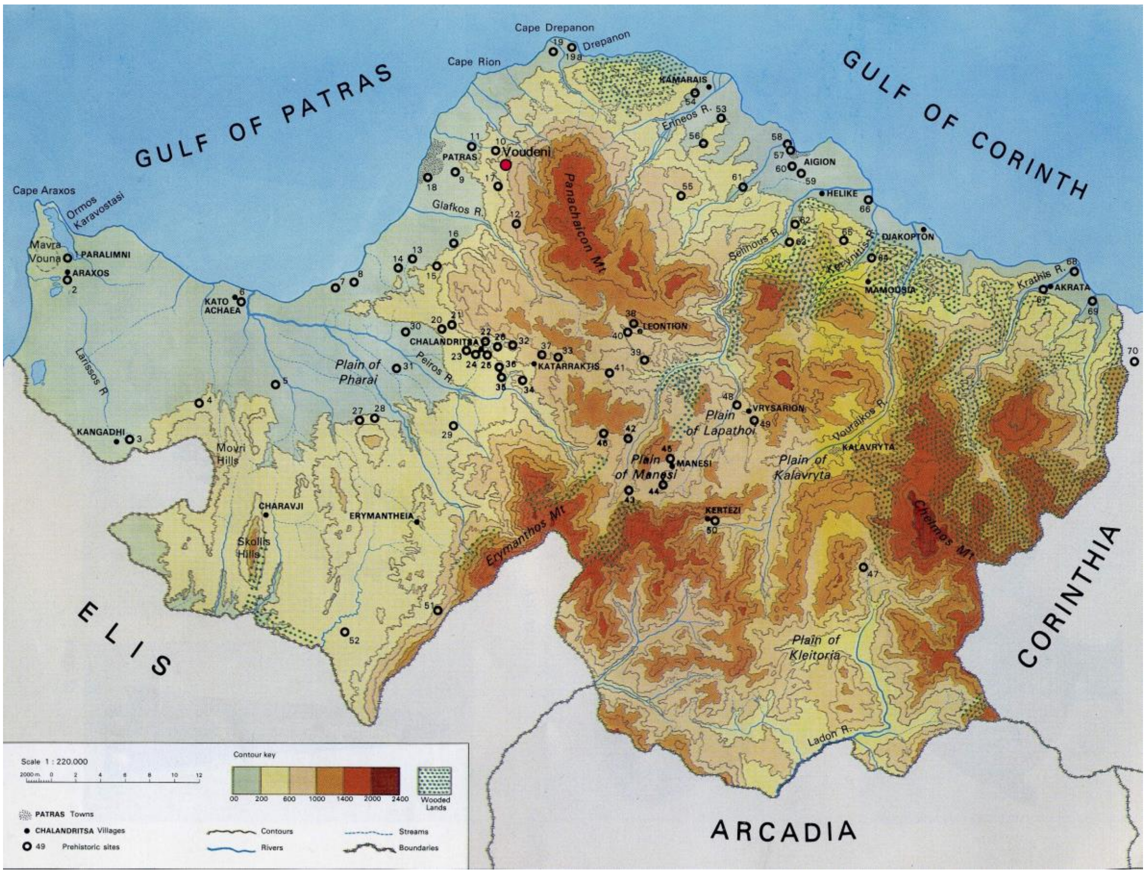


Figure 1.2. Map of prehistoric Achaea (modified after Papadopoulos 1979, Part 2, colour plate I).

Earlier scholars viewed Achaea as peripheral to the Mycenaean realm, in the absence of LHIII tholos tombs and a clear palatial centre. Habitation was considered scarce before the palatial times, and Achaea was thought to gain some prosperity only in the post-palatial (LHIIIC) period due to a presumed influx of refugees from the collapsed palatial centres (Vermeule 1960; Desborough 1964; Snodgrass 1971). Current archaeological research firmly rejects this view, as more and more sites come to light; the original inventory of Papadopoulos (1979) has recently been updated to more than 100 habitation sites (Moschos 2007: 16-17; Rizio 2011: 54-55; for recent reviews, Giannopoulos 2008: 18-97; Paschalidis 2014: 9-29). The archaeological evidence is mostly drawn from cemeteries rather than settlements (a common trend in the Mycenaean record: Papadopoulos 1979: 49), with most sites concentrated around the area of the modern town of Patras. The impression of this concentration, however, may be simply biased by high rates of rescue excavations in the Patras area due to current demographic density, and in reality, many more yet undiscovered sites may be extending outside of it (Giannopoulos 2008: 18-22). The wealth of archaeological evidence revealed in Achaea during the last decades, and a plethora of recent and forthcoming monographs on Mycenaean cemeteries offered a reliable and solid framework for study of the region (e.g., Papadopoulos 1979; Kolonas 1998; Giannopoulos 2008; Moschos 2009a,b,in preparation; Christakopoulou-Somakou 2010; Aktipi 2014; Paschalidis 2014; Papadopoulou-Chrysikopoulou 2015; Kaskantiri forthcoming; for extensive references on the work of founding figures of Mycenaean research in Achaea, see Papadopoulos 1979; Giannopoulos 2008; Paschalidis 2014; cf. recent monographs on parallel evidence from Mycenaean Elis: Vikatou 2008; Nikolentzos 2011). The overwhelming body of new evidence appears to fully confirm the original conclusion of Papadopoulos (1979) that Achaea was not simply non-marginal but in fact comprised the "*last stronghold"* of the Mycenaean world, home to its "*last elite*", as Giannopoulos (2008) recently argued.

During the Early Mycenaean times (LHI-II), Achaea's character seems more provincial than that of the major centres of the Peloponnese, but habitation is not as scarce as earlier suggested (Papadopoulos 1979: 183, *contra* Vermeule 1960). Continuity from the MH times is evident in several settlements, while new ones are also founded (Papazoglou-Manioudaki 2010, with further references; Rizio 2011).

Mortuary evidence suggests the presence of some high status groups (local rulers?) who express themselves through mortuary display (up to six tholoi discovered so far, including evidence of very lavish burials: Papazoglou-Manioudaki 2011, with further references). Pre-palatial Achaea seems therefore to participate in the common processes operating in small scale polities of the period (Giannopoulos 2008).

The transition to the Palatial era (LHIIIA-B) is characterised by socio-political changes similar to those observed in other areas of Mycenaean Greece (cf. 1.3). These include an expansion of settlements and cemeteries (Papadopoulos 1979: 172-174), the abandonment, or complete change in use, of earlier high-status funerary monuments (e.g., plundering of tholos tombs: Papazoglou-Manioudaki 2011; Jones, in preparation, current bioarchaeological analysis may further clarify the character of such acts), and the widespread use of chamber tombs. The occasional presence of distinctly rich burials and exceptionally large tombs (e.g., Tomb 4 at Voudeni), the evidence for significant contacts and trade with the outside world (in which Achaea possibly already acted as a mediator between Central Europe, Italy and Greece: Giannopoulos 2009), and the presence of large-scale constructions such as the LHIIIB fortification at Teichos Dymaion all suggest that Achaea was an active, important region of the Mycenaean world, characterised by the same (or similar) hierarchical social organisation observed in the central Mycenaean areas. Even though the present lack of evidence for a palace (or palatial administration) supports the dominant view that Achaea, no matter how significant, did not contain a palatial centre, the possibility that a 'palace' did exist but has simply not yet been discovered remains valid (Paschalidis 2014: 30).

In the post-palatial period (LHIIIC), Achaea seems to flourish, in contrast to what is observed in the main palatial regions (such as the Argolid and Messenia). Habitation continues on most sites, while some new ones also appear (Papadopoulos 1979: 172-174; Giannopoulos 2008: 95-97). The dynamics of trade with neighbouring areas, and especially the West, are now fully developed, and Achaea demonstrates evidence of intense contact with areas such as Italy, the Ionian Islands, mainland Greece, Cyprus, and Crete. Achaea seems to have enjoyed the role of the main mediator between all of them (Eder 2006; Giannopoulos 2008; Moschos 2009a, with extensive references), possibly acting as a significant point in the changed East-West trade routes (Sherratt 2001: 234-237; Moschos 2009a). Local pottery production, following on from the earlier tradition, is marked by a distinct local style from LHIIIC Early and reaches its peak in the LHIIIC Middle and Late period (Papadopoulos 1979: 62-137; Mountjoy 1999; Giannopoulos 2008, with further references). Finally, the appearance of 'warrior burials' in the LHIIIC period testifies to the presence of a -possibly new- elite class (Papadopoulos 1999; Papazoglou-Manioudaki 1994; Deger-Jalkotzy 2006; Giannopoulos 2008: 201-252, forthcoming).

Warrior-burials are characterised by distinctive offerings of military character (including Naue II and other types of swords, spearheads, boar's tusk helmets, greaves, as well as items of personal grooming: e.g., razors and tweezers). These burials also appear in other areas of the Late Mycenaean mainland Greece, but the vast majority are found in Achaea (see Deger-Jalkotzy 2006: figure 9.2; their total number is at least up to 16, excluding the ones accompanied by weaponry but not including Naue II swords: Giannopoulos forthcoming). Warrior burials speak of a conceptual interaction between social prestige and military prowess, reminiscent of the Early Mycenaean ideology of ostentatious funerary display often with similar characteristics (for the ideological relationship between the two concepts, the related iconography, and its survival to Early Iron Age and the Homeric poems, see Deger-Jalkotzy 2006; Maran 2006; Wiener 2007; Harrell 2010; Giannopoulos forthcoming). These individuals are taken to represent the top members of local elites, possibly small rulers derived from kinship units, reflecting perhaps a rise of the earlier *basileus* to the rank of chief (Deger-Jalkotzy 2006; Giannopoulos 2008, forthcoming).

The LHIIIC developments in Achaea and the assumed population increase have traditionally been attributed to the effects of a sudden influx of refugees, mostly from the Argolid, after the collapse of the palaces (Vermeule 1960: 18-19; Desborough 1964: 100, 226; Snodgrass 1971: 29, 86, 317). This idea was influenced by the myth of Tisamenos, described in Pausanias *Achaika*. Tisamenos, Agamemnon's grandson, led the Achaeans of Argolid and Laconia to a new homeland in Achaea, after their expulsion by the Dorians (Giannopoulos 2008: 11-16). However, the wealth of recent evidence rather implies a dynamic cultural continuity, seen both in settlement patterns and the development of pottery tradition and trade activities on a pre-existing basis. No evidence of a radical change is seen in LHIIIC Early, and it is only after LHIIIC Middle that the main characteristics of the period fully unfold (Eder 2006: 557-559; Giannopoulos 2008, forthcoming). Most researchers now accept a gradual infiltration of people from other areas of the Peloponnese (probably seeking the security and stability that the area seemed to offer during this period), which was not disruptive to the local cultural continuity (e.g., Papadopoulos 1979: 175-176; Papazoglou-Manioudaki 1994: 200). Others (e.g., Giannopoulos 2008) do not even recognise any marked population increase, viewing the habitation pattern as simply showing a prosperous stability. Finally, warrior burials occur in the same tombs as were previously in use, taken to imply a common lineage with the previous interments (already suggested by Yalouris 1960; for a current update on the issue: Giannopoulos forthcoming).

On these grounds, Achaea's role as that of the final stronghold of Mycenaean world, a conclusion reached both by the earliest and most recent synthetic monographs on the region (Papadopoulos 1979; Giannopoulos 2008) appears to be the cumulative outcome of local transformations within the changes in the broader socio-political framework. Achaea dynamically filled the vacuum left by the demise of palatial control elsewhere in the Peloponnese, enjoying the benefits of its strategic geographical position as a link between East and West. Its distance from the core of the palatial world of the past possibly permitted the propagandistic use of this very past by the emerging -or transforming- elites of the region, without the unpleasant connotations that this past might have carried in the areas of the dominant Mycenaean palaces (Giannopoulos 2008: 245-252). As elsewhere, it is possible that certain families claimed a leading role both through individual accomplishments and proof of descent from the former elite (Maran 2006). It is only in the 11^{th} century, at the end of Sub-Mycenaean times, that Achaea's overseas activities cease, and an abrupt abandonment of cemeteries and settlements all over the Western Peloponnese marks the definite end of Mycenaean culture (Eder 2006).

1.4.2 Burial customs of Late Helladic III Achaea

The burial customs of LHIII Achaea fall within the broader patterns of Mycenaean funerary practices (fully presented in Chapter 3). Of course, local peculiarities are also evident together with influences from neighbouring areas, especially Kephallonia (Papadopoulos 1979: 60-61). A brief summary of the main funerary characteristics of the region is given here, as the necessary framework for the bioarchaeological analysis of the Voudeni cemetery.

Chamber tombs are almost exclusively preferred in Achaea during this period; tholos tombs appear to have fallen out of use (Papazoglou-Manioudaki 2011) and only a very limited number of tumuli and simple cist or pit graves are found (Papadopoulos 1979: 59-60; Cavanagh and Mee 1998: 62, figure 6.1 with further references). The tombs are organised in cemeteries, associated with one or possibly more than one settlement (a possibility suggested for the largest examples, such as Voudeni: Kolonas 1996-1997: 482). The tombs were constructed taking into account the suitability of the rock, usually in foothills or in successive rows at different levels of the hill slope. There is no evidence for a fixed orientation rule. The chamber size is generally modest (from a minimum of $1.5m^2$ to maximum of $27.4m^2$, with very few exceptions; dromos length and chamber height usually vary proportionally). Chamber shape is usually rounded, and only occasionally rectangular/quadrangular or irregular. Side-chambers, niches, or benches are extremely rare. Burials are usually placed on the chamber's floor, while pits are rarely encountered, either for primary or secondary burials (deep pits for primary burials are found predominantly in Kephallonia, but are also common in Laconia and sometimes found in Elis and Messenia: Kontorli-Papadopoulou 1987: 149, with further references; the direction of transmission of the feature is debatable: see Papadopoulos 1979: 177-182; for further details on all tomb features: Papadopoulos 1979: 49-61; Cavanagh and Mee 1998: 66-67).

Inhumation is the dominant –and almost exclusive- mode of interment in Achaea (cf. Paschalidis 2014: 784-791 for a list of few occasional possible cremations of the LHIIIC period; from these, only that of the Klauss cemetery has been anthropologically confirmed: Paschalidis and McGeorge 2009). Primary burials are usually placed facing the entrance, most often located close to the walls of the chamber. The common body position is contracted on the side (extended and knees-up positions appear more rarely); arm position is quite variable, the most common being their placement along the sides. Papadopoulos (1979) did not recognise any chronological differentiations in these choices. Secondary practices are regularly applied. The earlier remains are either placed in pits or are piled up in heaps by the sides of the chamber; more rarely, they are found scattered in the chamber or the dromos (Papadopoulos 1979: 55-57). The Minimum Number of Individuals (MNI) is usually estimated around 8 burials per tomb (Papadopoulos 1979 gave lower values, but his later excavations at the Klauss and Kallithea cemeteries raised the number, which varied between 3 and 27: see Cavanagh and Mee 1998: 73; the estimations are based on the number of recognised crania and not osteological assessments). Finally, burials are accompanied by a variety of grave goods (mostly characterised by pottery, glass and stone beads, and stone 'buttons', but also occasionally including other adornment items, weaponry, and tools; figurines are extremely rare). The variation in the offerings is greater in LHIIIA-B. Distinctive characteristics are observed in the 'warrior burials' of the LHIIIC period (cf. 1.4.1). In terms of pottery shapes, the conspicuous rarity of kylikes and great predominance of stirrup jars and alabastra have been interpreted as evidence for decreased interest in feasting activities, in contrast to practice in other areas (Papadopoulos 1979; Cavanagh and Mee 1998: 73-74, with further references). The most recent analytical studies and full publications of several cemeteries (see in 1.4.1) are currently enriching to a great extent our knowledge of Achaean funerary practices.

1.5 The Voudeni cemetery: general background

The Mycenaean site of Voudeni is located in the north part of Western Achaea, 7km north of the modern city of Patras (Figures 1.1-1.2). The site consists of the cemetery and the associated settlement, and both extend over a series of hills that form part of a low ridge of the Panachaikon Mountain. The settlement (presently only partially excavated) is situated on the western hill of Bortzi, while the cemetery is immediately to the east of it, over the main hills of Amygdalia and Agrapidia (Figure 1.3). The large Mycenaean site occupied an advantageous geographical location, which provided fertile land, easy access both to the sea and mountain regions and their respective resources, and excellent visual monitoring of the Patras Gulf and the Rio-Antirrio channel, links to the Corinthia and central Greece (further details in Kolonas 1998: 1-5).

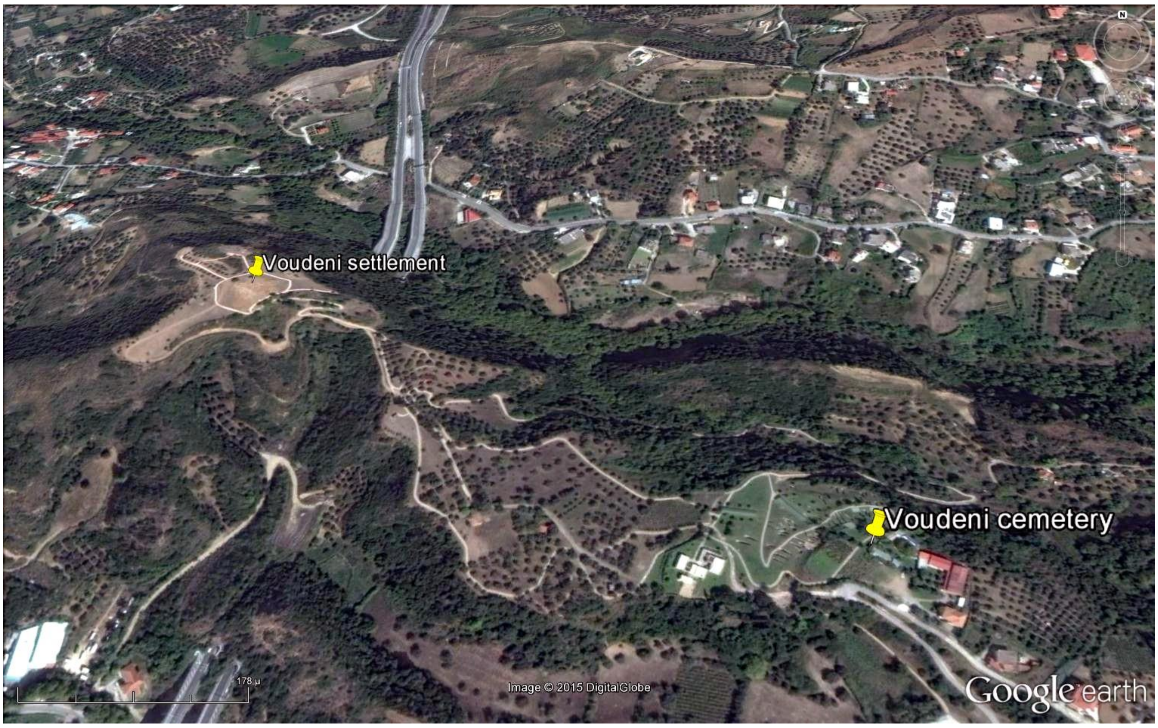


Figure 1.3. Google earth image of Voudeni hills: cemetery (right) and settlement (left), view from the south.

The cemetery was discovered in 1987, after the looting of one of the tombs. The local Ephorate of Antiquities immediately began the intensive and systematic archaeological excavation of the site, directed by Lazaros Kolonas. The excavations, which continue to date, revealed a very large Mycenaean cemetery, which was in use for more than three centuries, covering the entire time span between the end of LHIIB and the LHIIIC/Sub-Mycenaean period. The cemetery consists of more than 80 identified tombs, of which c. 75% have been excavated. Kolonas' (1998) doctoral dissertation contains the initial publication of the Voudeni cemetery, based on complete study of the 44 tombs (T1-T44) situated in its eastern half, on the NE slope of the Amygdalia hill (Figure 1.4); the updated publication of his study is shortly to appear as Kolonas (forthcoming; for a concise report: Kolonas 2012). The cemetery of Voudeni underwent major restoration works (funded by 2nd and 3rd European Community Support Framework) and is now open to visitors.

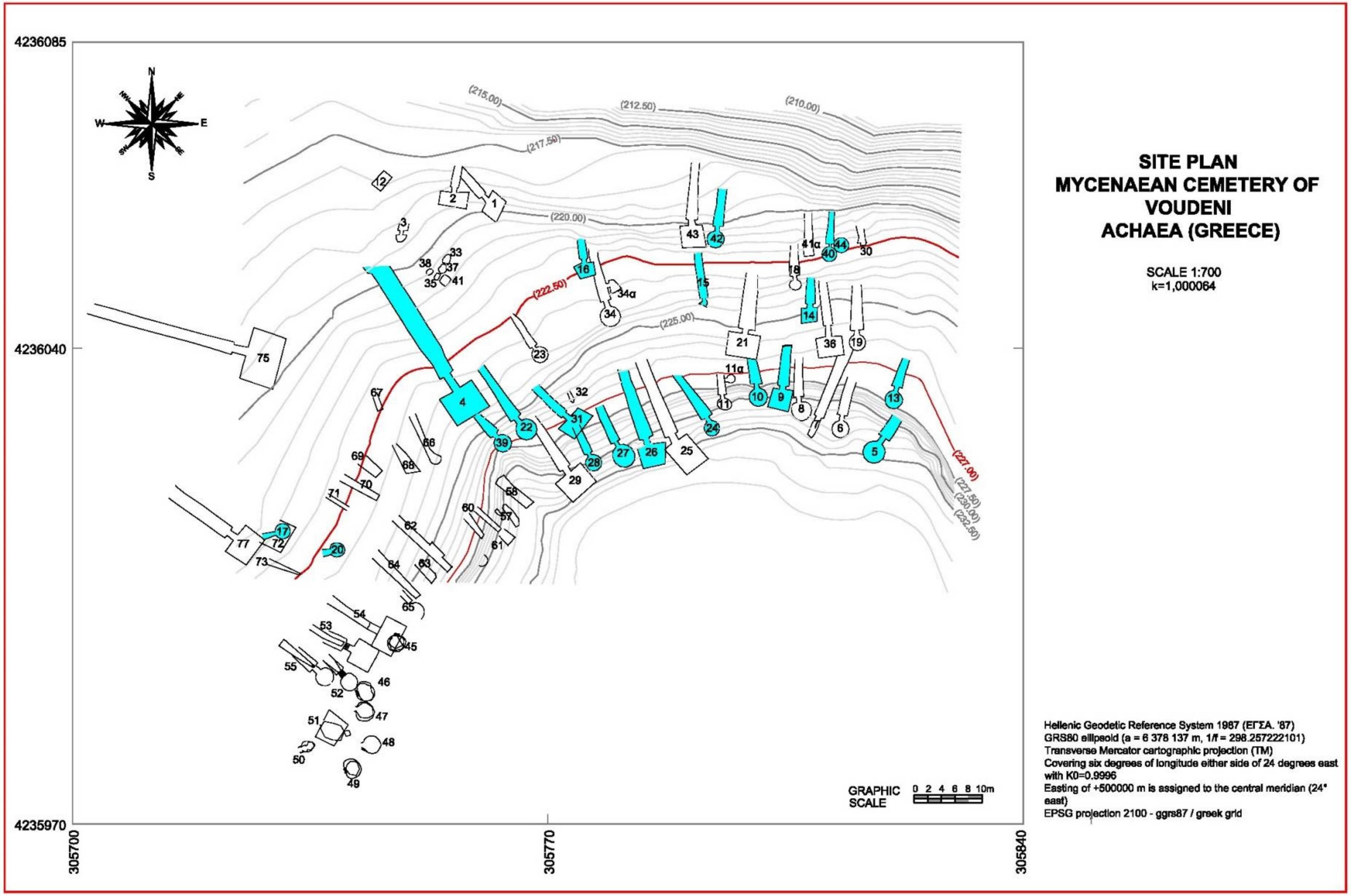


Figure 1.4. Site plan of Mycenaean cemetery of Voudeni (after Kolonas 1998, forthcoming; modified by G.J. Moutafis).

The cemetery, which consists almost exclusively of chamber tombs, is one of the largest in Achaea, estimated to cover in its entirety an area of c.6 *ha*. The 44 excavated tombs of the eastern half comprise 38 chamber tombs extending along the natural terraces of the slope, and six pit graves clustered together in the lower hill, east of the dromos of Tomb 4; the pits were found empty of finds, so their use remains unknown. In addition to the tombs, the excavation revealed two pathways and a large open area where no tomb was constructed (east of Tomb 4), presumably designated for mourners to gather (Kolonas 1998: 9). The tombs were cut into the soft limestone rock (*kimilia*), while the natural terraces of the slope provided enough room for the cemetery to expand without the need to overlap and intercut graves. In general, the tombs' state of preservation was good at the time of discovery, and only a limited number had suffered partial collapse due to initial structural problems, heavy rainfall and flooding, and earthquakes. In some cases, it was observed that measures to correct the damage had already been taken in antiquity (Kolonas 1998: 459-460).

The basic characteristics of Voudeni chamber tombs are summarised here, in order to provide the necessary background for the sample examined in this study (section 5.1) and to enable the evaluation of the sample's representativeness (cf. 7.1; main characteristics of all 38 chamber tombs summarised in Tables 7.1 and 7.X1). The prevailing tomb chamber shape is circular (50%), which is indeed the most common tomb type in Achaea and in neighbouring Elis (Kolonas 1998: 465 with further references). The next commonest chamber shape is rectangular/quadrangular (34.2%), and the largest tombs belong to this type (N.B. either rectangular or irregular quadrangular, shortened as *quadrangular* in this text). Variations include the square with tholos type (only tombs 9, 26 and 43), a possible imitation of Cretan tholos tombs, according to Kolonas (1998: 467). More unusual is the horse-shoe shape (5.3%), a type which rarely appears in Achaea (see parallels in Kolonas 1998: 467). Finally, some tombs are of irregular or ellipsoidal shape (10.5%), explained by the excavator as hasty or unfinished attempts due to the rock's unsuitability (Kolonas 1998: 467-468). The size of the tombs is also variable, with chamber area ranging from 1m^2 (in irregular/unfinished cases) to 27.4m^2 (in the largest T4), and dromos length from 1.45m (T32) to 19.60m (T4). According to Kolonas, neither shape nor size variation reflects chronological differences (cf. 7.1.2). Further differentiation exists in the construction and form of particular architectural elements, such as the roof, façade, lintel etc. (for a summary discussion of specific construction details, see Kolonas 1998: 462-472). In some cases, specific choices have been interpreted as deliberate attempts to emulate the grandeur of tholos tombs (e.g., the occurrence of domed roofs, or the pediment-like lintel in tombs 4 and 29). Nevertheless, except for the truly exceptional tomb 4 (both in architecture and funerary offerings, see 6.1), which has been suggested to belong to an early (LHIIB/LHIIIA) powerful ruler of the community, no signs of distinct social differences were recognised in Voudeni tombs by Kolonas (1998: 604).

Additional burial places were constructed in some of the tombs (either for primary or secondary burials, Kolonas 1998: 460-461). These include three cases of side-chambers cut in the side of the dromos (T3, T34; and collapsed in T42). This form of side-chamber is mostly known from Laconia and Messenia, in contrast to the usual Argolid type that appears connected to the chamber. The two cases were found to contain sub-adult burials (secondary in T3, primary in T34); unfortunately, these human remains did not survive into the final bone collection (cf. 5.1). Another variant of additional space is the small circular chamber (T11a) opened next to the beginning of tomb's 11 dromos, a mere imitation of a proper chamber tomb since all evidence points to the fact that this chamber was never roofed. Finally, the most unusual form of extra space consists of two oval niches, in the form of a mini-chamber, opened above the entrances of tombs 22 and 39. No skeletal remains were recovered from these, but Kolonas (1998: 461) interprets this peculiar characteristic as designed for infant burials of which the bones did not survive. In his view, their construction above the entrance could be explained as an easy solution to avoid extensive dromos fill removal for inserting them in the chamber.

Skeletal material was discovered in 35 of the 38 chamber tombs. Inhumation was the only mode of interment, except for a possible case of cremated bones in tomb 4 (impossible to confirm due to recovery problems of the bone material, see 6.1). The total number of burials recognised during excavation was 222 individuals (including 87 primary interments and a minimum of 135 individuals in secondary depositions, based on cranial evidence at the time of recovery). The number of burials in each chamber was estimated to vary between one and 14 individuals. The highest number of primary depositions was found in tomb 36 which contained 8 *in situ* burials. A preliminary osteological assessment conducted by a team of researchers from the Department of Biology, University of Athens raised the total MNI to 383 (Manolis et al. 1998; Stravopodi et al. forthcoming for all 35 tombs with skeletal material; cf. 5.1). These estimations are to be evaluated in the light of current results.

All burial attributes will be analytically defined, explored, and re-evaluated in the next chapters, based on the bioarchaeological evidence of this study. Nonetheless, the original observations of Kolonas (1998: 472-476) are summarised here as a comparative basis. Primary burials were deposited immediately upon the chamber floor. In the LHIIIC period, however, a thin layer of raw clay was used between the floor and the body (Kolonas 1998: 472, with some parallels from Achaea and other regions). Also in the LHIIIC period, a few primary interments were deposited in pits of 0.5-1m. depth, dug in the chamber's floor (in 4 of the 38 tombs). The custom was probably introduced from Kephallonia, and although quite common in Achaea during this period, it never became very popular in the Voudeni cemetery (Kolonas 1998: 473, cf. 1.4). No primary burials were found in the dromoi. The preferred body position was flexed/contracted, either supine or on the side, while the extended burials were rare (12 out of 87), and the knees-up (or 'squatting') position even more so (7 out of 87; cf. 5.4.5 for the precise definition of terminology on burial position used in this study). No particular preference was observed in body orientation, except for a tendency to place the bodies parallel to the dromos' axis, with the skulls towards the back of the chamber (Kolonas 1998: 472-473).

Secondary remains were re-deposited either in piles along the sides or close to the corners of the chamber, while more rarely they were placed in pits. Pits containing secondary remains inside the chamber occur in 10 of 38 tombs, and in the dromos in another four cases. Their dimensions vary, but they usually are quite shallow (depth: c.0.5m). Kolonas (1998: 474) attributes the choice of secondary burial location to space concerns, with pits favoured in cases of smaller tombs where there was insufficient available space for secondary collections. Disturbance of the tomb's contents (including secondary depositions) is usually observed to occur with the introduction of new burials; however, there are cases where tombs have been found disturbed or cleared of earlier primary burials without the addition of new interments. He also observed the absence of skulls from some of the secondary piles, which, in combination with the occasional presence of bone fragments within the dromos fill, he attributed to the possibility of occasional removal of bones from the tomb.

Grave offerings accompanied the majority of the primary burials (except for 13 out of 87), and they were also found in almost all the secondary deposits (Kolonas 1998: 475-476). They included all the common artefacts of the Mycenaean funerary set, such as ceramic vessels, personal belongings (i.e. tools, personal adornment, weaponry), and possibly items used by the mourners at the time of the funeral (cf. 3.4.1). The number of vessels accompanying the primary burials (which are mostly dated to the LHIIIC period) range between 1 and 11. Both in primary and secondary deposits, closed vessels predominate while drinking vessels are limited (a common pattern in Achaea, cf. 1.4). The majority of vessels appear to be locally produced (especially in the LHIIIC period), but influences and imports from outside Achaea are evident in many instances, especially in LHIIIA-B assemblages (notably examples from Crete: Kolonas 1998: 605). Metal objects are also limited, and only few weapons were found. It is, though, possible that more originally existed, being later removed by successive users of the tomb (e.g., sword handle found in tomb 4 but no sword, Kolonas 1998: 475-476). In the chamber tombs included in the original study by Kolonas (1998), no Naue II sword was found (the typical characteristic of a warrior burial, cf. 1.4); however, three cases of swords were encountered in the tombs he excavated later. The analytical publication and discussion of all finds can be found in Kolonas (1998, parts I and IV, and forthcoming). Even though the contextual analysis of grave offerings across the skeletal material lies beyond the scope of this study (cf. chapter 4), a full catalogue of finds from the 20 analysed tombs is given in Chapter 6.

In Kolonas' conclusions (1998: 603-606), the habitation site of Voudeni is seen as a large and prosperous Achaean community, inhabited certainly from the LHIIB period (and possibly earlier). The cemetery –as well as the settlement- was in use from the LHIIB/LHIIIA period until the end of the LHIIIC, well into the Sub-Mycenaean times. Evidence of direct contact between Voudeni and areas outside of Achaea (including Crete) are evident in the LHIIIA-B finds, while Cretan influence is suspected in the form of some of the tombs as well. The rich finds from tomb 4 are attributed to the local ruler and his successors. Towards the end of the LHIIIB period, a slight decline is suspected, possibly due to the instability caused by the turmoil in the palatial centres. Soon afterwards, Voudeni's economy seems to have regenerated, and the funerary finds attest to a thriving production of local pottery, and an overall –at least modest- prosperity. Towards the end of the LHIIIC period, though, richer finds (e.g., jewellery, weapons) cease to appear, and by the end of this period, the life cycle of the Voudeni cemetery finally ends.

CHAPTER 2

APPROACHES TO THE SOCIAL DIMENSIONS OF MORTUARY PRACTICES

2.1 A review of past approaches to mortuary data

2.1.1 The early approaches

Even in times before archaeology and at the dawn of the discipline, ancient burials evoked people's interest. The encounters of antiquarian travelers with monumental burial structures captivated both their imagination and public interest (for the Aegean: Karadimas 2009). The monuments were usually assumed to be related to direct ancestors of the local populations and thus ancient burials started playing a central role in disputes over national boundaries and ethnic identities (Chapman and Randsborg 1981: 2). The trend of using archaeology (including burials) as a powerful tool in nationalistic agendas has continued in various forms up to the present day (Parker Pearson 1999: 171-192; for the case of Greece: Hamilakis 2007)[4]. As the first systematic excavations began around the end of the 19th century, burial studies and the typology of grave contents were of the utmost importance for the development of the chronological schemes that formed the basis of prehistoric archaeology. Such a typological approach continued well into the 20th century, in more sophisticated mortuary studies, which still, however, were mostly concerned with seriation and chronological ordering (Chapman and Randsborg 1981: 2-3).

Theoretical interest in funerary customs appeared in the late 19th – early 20th century following two main tendencies. The first was primarily concerned with primitive religion, what Binford (1971: 6-7) regarded as the 'rationalist-idealist's argument'. Ideas and beliefs about after-life were considered as the main reasons behind the form of mortuary practices (e.g., Tylor 1871; Frazer 1886). The second tendency, which proved much more influential and was the first to relate burial customs to the social system, was expressed by Durkheim's followers, and especially

[4] A most recent example of such political exploitation in Greece: the management of the discovery of a monumental Hellenistic tomb in Amphipolis, Greek Macedonia, through a media frenzy in rapport with the governmental agenda (cf. Hamilakis 2014).

Hertz (1907) and Van Gennep (1909). These argued that burial practices could be linked to social status (and transitional changes of status) through rites of passage. They defined the familiar tripartite structure of funerary rituals (i.e. separation, segregation, and integration), linking it to the need to re-affirm social order; the length of the liminal phase varied according to the social position of the deceased and the level of his relationships or kinship to mourners. Despite the great significance of these pioneering observations,[5] the implied social associations have many flaws: their theory has been criticised as implying a unified social organism (Morris 1987: 29-31), while the meaning of the different stages of the rites certainly cannot be accepted as universal as suggested by Hertz's theory (see Parker Pearson 1999: 22 on the different meaning of southern Madagascar burials as discussed by Huntington and Metcalf 1991: 111-113).

The dominant theoretical approach to mortuary customs during the first half of the 20th century was the normative, cultural-historical one. 'Cultures' were defined by a complex of regularly associated traits, which were thought to represent the material expression of 'people', or races (Childe 1929: v-vi). The concept is normative since it presupposes that a common behaviour, defined by tradition, is common in all members of society and results in specific *types,* identifiable archaeologically; these types include burial rites (Childe 1956: 9-10). In this concept, similarities and differences are all interpreted on the basis of *diffusion* and related to population movements. The notion of genetic cultural relationship in direct association with the observed similarities resulted in the erroneous equation of cultures with racial or ethnic groups (cf. Binford's 1971 critic). For a very long time, such associations heavily influenced the disciplines of history, archaeology, and physical anthropology (Chapman and Randsborg 1981: 4). Even though the reaction against the normative character of these notions shaped the formation of the New Archaeology (see below), the interest in norms and behavioural regularities and 'cultural' interpretations of human practices remained implicit in several mortuary analyses (Chapman and Randsborg 1981: 4; for such examples in Aegean research, see Boyd 2000: 13-14).

[5] The tripartite structure of death rites of passage is still taken as quite universal, with probably the only exception being the customs of modern western civilisation (cf. Ariés 1974). The same is not, however, accepted for its meaning.

Within the cultural-historical approach, no particular emphasis was placed on social structure inferences, except in cases of high-rank burials (Chapman and Randsborg 1981: 4-5). Hawkes' (1954) 'ladder of inference' implied that archaeology can approach aspects such as technology and economy, while ritual and social organisation are much harder to grasp. This view was not significantly challenged until the coming of New Archaeology (Binford 1971; Chapman and Randsborg 1981: 6). A major exception was Childe's (1951) interest in social evolution and his discussion of gradual social complexity in direct correlation with inequality. His ideas, together with the evolutionary schemes proposed by the cultural anthropologists Sahlins, Service, and Fried (i.e. the band, tribe, chiefdom, and state: Sahlins and Service 1960; Service 1962; egalitarian, ranked, stratified, and state societies: Fried 1967), played a central part in the formation of processual approaches (see below). Even though his interpretations were later disproved, Childe's viewing of archaeology as a social science and the focus on the recognition of patterns in the archaeological record established his legacy as an ingenious scholar, far more insightful than his contemporaries (Sherratt 1989, 1990). Even though he did not work much on burial customs, the 'stress theory' owes a lot to his early observations. Childe (1945) noticed that burials and their material evidence do not always reveal a direct relationship with social status, since ostentatious funerary display often relates to unstable and tense political situations, when the need for legitimation is more pronounced. These pioneering ideas, far beyond a simplistic, normative interpretation, were later adopted and elaborated in post-processual works (cf. the Danish Iron Age cycles of crisis: Parker Pearson 1984, 1999: 86-87).

2.1.2 New Archaeology

A turning point in mortuary studies was marked by the publication of the collective volume *Approaches to the Social Dimensions of Mortuary Practices* (Brown 1971). The era of New Archaeology had just started and, contrary to past deterministic normative interpretations of funerary rites and general pessimism about their potential for social inferences, mortuary evidence was seen for the first time as a primary strand of evidence for the reconstruction of social organisation. Fundamental research in the new paradigm, such as that of Saxe (1970) and Binford (1971), highlighted *mortuary variability* as a measure of social complexity, asserting that different status in life is expressed in differential funerary treatment. Special interest was also placed on the archaeological investigation of social inequality and the determination of rank, approached in mortuary contexts mostly through the notion of *energy expenditure* (e.g., Tainter 1975; Peebles and Kus 1977, see below). The main theoretical and methodological tools to determine and interpret patterns of the mortuary record were the use of Goodenough's (1965) role theory, comparative ethnography, and quantitative analysis of biological and cultural evidence.

Binford (1971) successfully disproved the cultural approach and related mortuary variability to social complexity. In his view, two basic aspects are symbolised in burials: a) social personae (i.e. the social identities of life), which are related to several status dimensions (e.g., age, sex, rank, social affiliations, conditions of death) and receive different funerary treatment; and b) size and composition of the social group which is tied to the deceased and bears specific responsibilities towards him. In his cross-cultural sample, Binford found a strong correlation between the complexity of social organisation and that of the funerary treatment. Complexity levels, in his study, were pre-defined in terms of subsistence patterns, a correlation that later received significant criticism (e.g., Carr 1995).

Following a similar line of thought, Saxe (1970) argued that from the many roles that the deceased had when alive, only some will be emphasised in burials, and for specific reasons. He formed his famous eight hypotheses (for a brief summary: Parker Pearson 1999: 29-30), tested them in a cross-cultural sample and found several associations between mortuary rites and social structure. The most influential among them was certainly Hypothesis 8, later re-tested, confirmed, and elaborated by Goldstein (1976). The concept is that if a permanent, bounded area for formal disposal of the dead exists, then most likely social organisation is on the basis of corporate groups who have rights over restricted resources, legitimised by lineal descent and reinforced through the use of the bounded cemetery.

Since status is the *relative* position of an individual within society, New Archaeology correctly stressed the importance of relationships between social personalities. However, it was rather implied that some structural laws govern these relationships, and that this amalgam of roles is somehow specifically fixed by the structure of the larger social system (Parker Pearson's 1999: 73 critique on Saxe 1970). Furthermore, social differentiation was often approached solely in evolutionary terms. Nevertheless, New Archaeology successfully highlighted the variability of status aspects and social identities, including distinctions between vertical and horizontal status, as well as between achieved and ascribed.[6] To detect social differences, the cross cutting of several dimensions of the funerary record across age, sex (and other categories) was examined. In such analyses, grave offerings usually comprised the most prominent line of evidence and several ways of measuring artefactual wealth were devised (for a brief review of some of the most characteristic studies: Parker Pearson 1998: 78-79). Even though quite simplistic equations of status with grave goods were often encountered (already criticised by Ucko 1969), several scholars understood far more deeply the complex relationship between grave goods and ranking and proposed compelling interpretations on the meaning of grave offerings (e.g., 'risk-buffering' function: Halstead and O'Shea 1982). In the most sophisticated mortuary analyses, the complexity of funerary treatment was never measured simply through grave goods, and a variety of burial attributes was considered as meaningful of –possibly different– social distinctions.

One of the most influential ideas on the relationship between social status and funerary treatment is that of *energy expenditure*. Tainter (1975, 1977, 1978) identified multiple funerary practices associated with social rank (i.e. complexity of body treatment, construction and place of grave, extent and duration of mortuary ritual,

[6] Achieved status has been traditionally related with broadly egalitarian societies and ascribed status with non-egalitarian ones (Wason 2004; Ames 2008: 489-490).

material contribution, and human sacrifice), and came up with the notion of *energy expenditure,* which he found constantly correlated with social position. In contrast, only in 5% of his cases was rank marked by grave goods. Tainter even argued that the degree of redundancy in funerary attributes could be an actual numeric measure of social complexity. His analysis was, however, criticised on many grounds and particularly for not taking into account the complex interdependency of vertical and horizontal status differentiation (Pader 1982: 60-61; O'Shea 1984: 15-20; see further in Parker Pearson 1999: 74-75).

The distinction between vertical (i.e. hierarchical social ranks/strata) and horizontal status (i.e. membership to a certain group within the same stratum) was central in the work of Peebles and Kus (1977). They considered this distinction –and the capacity of the archaeologist to distinguish between the two– as critical for determining the type of social organisation. Indeed, several studies detected various links between aspects of funerary treatment and the type of status expressed by them. O'Shea (1984), in one of the most sophisticated studies in mortuary variability, suggested that vertical status was mostly reflected in non-perishable material culture (e.g., grave construction), while horizontal was reflected in perishable grave goods and/or body adornments, highlighting, thus, the critical issue of archaeological visibility. Carr (1995), through a large cross-cultural survey, did not confirm such a strict determination, but approved the point that horizontal status distinctions are much harder to grasp archaeologically. Carr tested several hypotheses of earlier processual works, observing, among others, that the only expressions which vary in burials in relation to increasing social complexity are personal identity (decreasing) and horizontal social position (increasing). Most importantly, he concluded that philosophical-religious factors determine mortuary variation at least as much as social organisation, and the two together far more than physical and circumstantial determinants (a point shared with post-processualists, see below).

Another key concept for processual approaches is that of *cultural ecology*, which regards society as a system adapting to the natural environment through various social sub-systems (see further in Parker Pearson 1998: 80). Under this framework and the scheme of social evolution, the concept of *adaptive efficiency* was investigated in mortuary contexts, through the evaluation of population fitness based on biological evidence from the skeletal remains (e.g., health, nutrition, and occupation; for some of the most advanced and critical works on this line: Buikstra 1981; Cook 1981). Regardless of the validity of the adaptational model (see criticism below), in certain conditions social position certainly may be detectable bioarchaeologically based on a key concept in archaeology of rank: that of *differential access*. As stated by Ames (2008: 490):

> *In egalitarian societies, there is equal access to positions of prestige and to basic resources; in rank societies there is differential access to positions of prestige but equal access to basic resources. In stratified societies, there is unequal access to both positions of prestige and basic resources.*

The notion of differential access is central in the discussion of biological status, since nutrition, health, and life expectancy can obviously be significantly affected (cf. 4.2).

2.1.3 Criticism of New Archaeology and early post-processual approaches

2.1.3.1 Criticism of the processual approach to mortuary practices

The positivist[7] character of processual archaeology started soon to be viewed as too narrow, and its confidence in structural laws or middle range theory as over-simplistic.[8] Already in 1981, Chapman and Randsborg (1981: 23), without placing themselves in the emerging framework of post-processualism, listed plenty of the short-comings of the processual approach to mortuary data, such as: insufficient attention to formation and transformation of the archaeological record; inadequate treatment of symbolism; neglect of spatial patterning and regional perspective; over-reliance on ethnography; insufficient archaeological testing of hypotheses. Similar issues were at the core of the initial critique by post-processualism, the theoretical movement that was formed mostly as a reaction to New Archaeology. As Hodder (2005b:155) summarised:

> *The critique primarily focused on the processual concern with adaptive technologies, its embrace of a cross-cultural anthropology at the expense of historical context, and its restrictive definition of archaeological science as 'positivist'.*

[7] Positivism (as used in archaeology) is the epistemological approach where arguments are built by testing theories against *independent* and *objective* data (Hodder 2005:155). See Wylie (1982) for an interesting review of positivism as an outdated epistemology even in natural sciences and thus ironically used by processual archaeology.

[8] It is beyond the scope of this chapter to review *all* criticism against New Archaeology; for extensive discussions on this, see: Hodder 1986; Shanks and Tilley 1987; Bapty and Yates 1990; Thomas 2000a.

The processual approaches were now viewed as mechanistic, reductionist, dehumanising, functionalist and structuralist, taken to imply that human behaviour is regulated by laws of the social organism which operate out of the members' consciousness in order to maintain social stability. In many aspects, the processual framework seemed to reproduce the functionalism of the cultural-historical paradigm that it had initially fought against.[9] Ironically, structuralism is exactly what the early post-processual approaches can also be criticised for (see below).

The criticism of the processual approach to social dimensions of mortuary evidence evolved mostly along the following lines:

- *Material culture is neither passive nor a mirror of social organisation.* Based on the fundamental post-processual principle of active and meaningfully constituted material culture (cf. 2.1.3.2), former interpretations of burials were considered as seriously faulted. Functionalist equations between burial wealth and social position were rejected, and the complexity of burial symbolism and its relation to 'reality' was stressed (e.g., Pader 1982; Parker Pearson 1982; Hodder 1982d). It was argued that the complex relationship between funerary ritual and social structure cannot be straightforwardly determined and/or measured as previously suggested. Burials do not reflect social 'reality' (if such a thing even exists), because real life social relationships can be equally disguised or distorted in funerals (Okely 1979; Hodder 1982d; Parker Pearson 1982; for further examples: Parker Pearson 1999: 23). As a solution to clarify the limits and potential of mortuary analyses, some scholars advocated a distinction between the rigid, idealised, *social structure* and the real, fluent *social organisation* (Pader 1982; followed by Morris 1987 and others). In this scheme, it was argued that only social structure can be grasped through mortuary evidence, while social organisation cannot (for my opposition to this: Chapter 4).

- *Dead don't bury themselves.* As Huntington and Metcalf (1979: 5) insightfully noted: "*death and its rituals not only reflect social values but are an important force in shaping them".* The suitability of mortuary practices as an

[9] Shanks and Tilley's (1987: 29) title "*The new paradigm -or traditional archaeology resurrected?"* speaks for itself.

active arena of conflict and power struggle, where social relationships are negotiated and social positions of the mourners are created and legitimised, emerged as a common theme in post-processualist mortuary analyses (Parker Pearson 1982). No direct living status could be reflected in burials, since simply *"the dead don't bury themselves"* (Parker Pearson 1999: 84).

- *Social dimensions of burials cannot be explained by role theory.* Understanding the potential of the mortuary arena for renegotiation of social relationships also signified the failure of the role concept in mortuary studies. As Parker Pearson (1982: 100) claimed: *"Social systems are not constituted **of** roles but **by** recurrent social practices"*. Any form of 'status' reflected in burials was now seen as the outcome of complex interactions between social norms, agency, and practices. In order to approach the social dimensions of burials, it was suggested that the emphasis should be placed on practices (e.g., Pader 1980, 1982; Parker Pearson 1982). Finally, the multiple meanings of grave goods were underlined, while concepts other than wealth and ownership, e.g., gender and personal identity, were taken as critical in shaping mortuary practices, together with philosophical/religious beliefs and moral values (e.g., Pader 1980, 1982; Carr 1995).

2.1.3.2 The structuralist early post-processual approaches: symbolism and meaning

The concepts presented above formed the basis of the main theoretical framework of early post-processualism, drawing back the attention to symbolism[10] and meaning. In the past, symbolism was treated mostly in relation to regional affiliations (cultural-historical archaeology, cf. 2.1.1), or with the emphasis placed to its functional, adaptational or evolutionary aspects (e.g., Wobst 1977 for symbols' function of information exchange; Renfrew and Shennan's 1982 interest in burial symbolism as a high-status marker; cf. critique by Carr 1995). It was in the early 1980s that the founding publications of the emerging paradigm, Hodder's (1982a) *Symbols in Actions* and (1982b) *Symbolic and Structural Archaeology*, brought symbolism to the centre of

[10] Usually defined as "*the secondary meanings that go beyond primary (often functional) use*" (Hodder 2005a: 190).

archeological enquiry, emphasising the meaning and active character of symbols. Material culture was viewed as *meaningfully constituted* and *active*, influencing how the social actors understood and experienced their world, and allowing the possibility of being variously used through people's agency. Thus, symbolism played a central role in structuring people's lives (Hodder 1982a, following anthropologists like Turner 1969; Sahlins 1976; Bourdieu 1977).

The emerging field of symbolic archaeology initially suggested that material culture should be treated as a text, thus placing its study in the wider area of semiotics (Hodder 1982a). *Structuralist theory* was adopted (Lévi-Strauss 1963, influenced by the linguistic works of de Saussure and Jacobsen), and structural, or *formal*, analyses of archaeological evidence worked through the principle of *binary opposites* (examples in Hodder 2005a). According to Lévi-Strauss, objects are organised into systems of signs, and thus obtain their meaning (as a sentence is required to give a specific meaning to individual words). These systems are organised by underlying structures, usually of binary form, which often reflect one central opposition. It was thus implied that the consequences of human action reflect these underlying structures, so in a way these structures actually determine all kind of action (for a brief review: Barrett 2000: 64).

To accept the text metaphor in archaeological interpretation poses several problems. Criticism was expressed early on and was acknowledged as reasonable even by those who, despite its problems, believed in structuralism's potential as a theoretical tool in archaeology (Hodder 1982c: 8-10 and Wylie 1982 both recognised that objects' meanings are not so arbitrary as supposed by the text metaphor, but rather connected to daily practices). The initial critique of structuralism in archaeology, based on the philosophical movements of post-structuralism and deconstructionism, unfolded around the following themes:[11]

- *Out-of-context individuals and problematic concepts of agency, lacking historical explanation***.** As Barrett (2000) summarises in an excellent argument on the failure of "archaeology of representations", both functionalism and structuralism are characterised by an erroneous understanding of processes in

[11] Bapty and Yates' (1990) edited volume brings together several critical papers on structuralism in archaeology.

terms of their consequences. Both approaches seem to share the same logic, which reduces individual actions in unconscious prerequisites for maintaining social and/or symbolic systems' stability. In the former, the individual is sub-ordinate to the system's internal self-regulation, and in the latter to the 'underlying structures' which can unconsciously regulate his/her acts (Hodder 1982c also recognised this similarity). Such concepts, not only deny any intentionality for individual agents in the use of material culture, but also completely overlook historicity, context, and the ambiguous, multiple meanings of people's actions in the complex relationship between them and their social surroundings.

- *Lack of theory of practice*. Structuralism's failure to recognise an individual's ability for conscious reflection underplayed the role of human practices, and ignored the problem of how structures are generated (which, according to practice theories, is *through* and *by* practice). This was probably the major trigger towards the articulation of practice theories in anthropology and sociology and their consequent adoption in archaeological theory.

- *Ontological concerns about the validity of 'truth claims'*. Post-structuralist critique brought up inherent ontological problems of structuralism, well summarised by Hodder (2005a: 191-192):

> *If systems of signs are seen as arbitrary…then the meaning of a sign can only be understood in relation to a total set of signs. And if all acts have a symbolic or sign dimension, then much of what we hold to be 'real' or 'true' can only be part of a system of signs. It becomes possible to critique any claim to truth or objective reality by showing that the claim is in fact based on an arbitrary system of signs.*

2.2 Recent and current interpretive approaches

2.2.1 Theory of Practice and Structuration

The limitations of structuralism constrained all aspects of the humanities and, in response, two of the most influential sociological theories were formed in the last quarter of the 20^{th} century. *Theory of practice* (Bourdieu 1977) and *structuration* (Giddens 1984) although not without their own bias, changed forever our understanding on the formation of social structure, and founded modern agency theory. The focus was now on the individual and his/her actions. These approaches, together with the impact of *existential phenomenology*, shaped the advanced post-processual archaeology and evolved into current interpretive archaeological theory (Dobres and Robb 2000a, b; Thomas 2000a; for a summary discussion: Dornan 2002: 305-308).

Bourdieu (1977), in his *Theory of Practice*, introduced the notion of '*habitus'*. For each individual, this refers to a unique system of dispositions (including perception, thought, and action) that the individual develops unconsciously as a reaction to the objective conditions of his/her life, and which operate in the actions of everyday life routines. Even though habitus appears structured beyond an individual's consciousness, it is at the same time structured and structuring the objective conditions, since it determines both how we perceive and act in the world (Dornan 2002). Bourdieu's notion tried to go beyond a central duality of past philosophy, the one between object and subject. However, the pronounced lack of consciousness in Bourdieu's agent[12] narrows the interpretive potential of his theory, and this is where Giddens moved forward; in his theory of Structuration, *intentionality* holds a central position.

Giddens (1976, 1979, 1984) articulated the *Structuration* theory, trying to move away from long-standing dualities, and particularly aiming at breaking down the one between agent and structure. Instead, he proposed the duality of structure: in his view, structures both constrain and enable people's actions, at the same time structuring and being structured by them. Giddens suggested that people create the

[12] Influenced by Marx's 'false consciousness', Bourdieu sees the agent with no conscious reflection upon his/her interests; habitus is unique only because the social conditions that shaped it are different for each individual, mostly influenced by his/her class affiliation (Dornan 2002: 305).

conditions in which they live, because even in unintended actions agents possess 'practical consciousness' (non-discursive but not unconscious) which allows them to reflect consciously upon their habituated actions, leaving room for intentionality. Stressing the ability of people to manipulate or transform the institutional rules acting as 'knowledgeable social actors', Giddens (1976: 127) views social structures as the "*reproduced conduct of situated actors with definite intentions and interests".*

Theory of Practice and *Structuration* formed the backbone of agency theory, and the advanced post-processual approaches, or interpretive archaeology, derived from them. However, both theories are seriously flawed in some aspects, and several criticisms were raised on the following issues: the degree of consciousness in each one of them, the possibility and extent of free-will (a recent review: Murphy and Throop 2010), and the application of a simplistic, universalised view of the pre-modern world. Particularly the application of Giddens' 'knowledgeable actor' in archaeology has been criticised on several, often contradictory, grounds. For example, as: a) ignoring completely the Marxist notion of dominant ideology and of unequal access to knowledge (Dornan 2002: 308; Mestrovic 1998); b) depicting a mere social construction, emphasising collective structures, and thus underplaying, in the end, individuality (Meskell 1999); c) power-centred, leaving out experiences and emotions (Tarlow 1999); and d) an anachronistic projection of modern western civilisation's notions of individuality, characterised by male bias (Gero 2000), and placed out of context, relational obligations, and tradition (e.g., Barrett 1987, 2000; Thomas 1996; Fowler 2004; Voutsaki 2010a; see further in 2.2.2).

Archaeological theory significantly expanded on the above through another philosophical current, that of *phenomenology* (for a brief review: Tilley 2005). Influenced by the existential phenomenology of Heidegger (1927) and its famous *Dasein* concept, phenomenological approaches emphasised the situatedness and embeddedness of human experiences. The need for contextual understanding of the historically constituted phenomena was realised, and research was prompted into looking at issues of embodiment and the multiple spheres of human experience (expressed in sensory, gender, queer archaeology etc.) under specific spatial and temporal dimensions.[13]

The incorporation of these currents into archaeological theory opened new ways of approaching social inferences through the archaeological record. In the next section, the application of agency and personhood in archaeology is explored, as potentially the most appropriate path for exploring social dimensions in mortuary practices.

2.2.2 Agency and personhood

2.2.2.1 The quest for the 'individual' and alternative concepts

The re-instatement of the individual actor to the centre of archaeological enquiries was a major reaction to the processual obsession with systems.[14] Despite the different degrees of consciousness allowed under specific philosophical theories (see above), early post-processual archaeology stressed the power of intentionality and the abilities of the individual to use the active material culture to his/her benefit (e.g., Hodder 1982a). This tendency raised immediate criticism. Barrett (1987) accused Hodder of decontextualising human beings by presenting them as entirely free agents who create their social practices irrespective of their surrounding conditions (i.e. cultural tradition, subjectification processes etc.). Several other scholars objected to the early post-processual understanding of agency as solely the power to act, arguing that this removes the real individual from the picture. As stated by Johnson (1989: 190): "*The individual has been triumphantly reinstated at the centre of the stage in theory, but written out of the script in practice"*. Gradually, new approaches to agency were formed. Many consequent studies tried to re-instate a real –and not generic– individual as something much more important than "*irrelevant noise"* on the general patterns (e.g., Meskell 1999). Gender archaeology had a pioneering role in the effort to put faces into the *"faceless blobs"* who dominated archaeological discussions instead of real people (Tringham 1991: 94). Hodder (2000) himself admitted that, in his early

[13] Some prominent phenomenological studies include Tilley (1994); Barrett (1994); Thomas (1996); Tarlow (1999); Meskell (1999).
[14] For reviews of various lengths on the issue: Meskell (1999); Dobres and Robb (2000b); Fowler (2004); Dornan (2002); Voutsaki (2010a).

writings, the individual was *"just a theoretical prop to intentionality"* (p.21), and eventually shifted his approach towards small-scale processes and "individual lives" (see 2.2.2.2), suggesting that we should look at the individual as a *"larger whole constructed by individual events"* (p.25).

It is questionable, however, if this fixation on the 'individual' is indeed the best approach to personhood and agency, particularly when applied to pre-modern societies, different from our own. The equation of the person with the individual self has been long ago discussed as a notion rather peculiar to western civilisation (cf. the work of sociologist Marcel Mauss [1938] 1985; further details on Budja 2010: 48-49). As Thomas stated (2000b: 13):

> *If the character of 'being human' is not fixed but culturally variable, it is open to question whether the notion of the active individual is not itself historically situated.*

The ethnographic work of Strathern (1988) exemplified the alternative to the western 'individual' (who is understood as an indivisible, impermeable, bounded, and stable entity) with the Melanesian 'dividual', a person understood as composed of its ongoing social relations, and thus divisible, permeable, partible, and fluid. The concept of relational personhood[15] has been lately widely adopted in archaeology, and mortuary studies in particular, as a better tool to understand past people and social interactions. Personhood is constantly changing through life and death, "*attained and maintained through relationships not only with other human beings but with things, places, animals and the spiritual features of the cosmos*" (Fowler 2004: 4). Therefore, it can be approached through the material relationship of bodies and objects (cf. Meskell 1999; Thomas 2002), especially as expressed in enchainment practices related to the reproduction of society through life as well as death, such as fragmentation, dispersal and reincorporation (Budja 2010; some of the most interesting archaeological approaches to the reproduction of personhood: Chapman 2000; Brück 2004, 2006). Despite some discord about the exact meaning and application of relational personhood,[16] as well as warnings on the risk of over-reliance on ethnographic data and lack of empirical evidence (Voutsaki 2010a) or of replacing one culturally-specific

[15] Personhood: the condition or state of being a person (Fowler 2004:4-5 for related key definitions).
[16] E.g., Voutsaki (2010a: 68-70) points out internal contradictions of Thomas 1996 and Meskell 1999; see also Knapp and Van Dommelen (2008: 20), emphasising how differently Strathern's (1988) dividual entities were read by Meskell (1999) and Thomas (2002).

notion with another (Fowler 2004: 20-22; Jones 2005: 196), there is certainly a general agreement for the need of broad contextual approaches, which will be able to come closer to past people's experiences by respecting personhood and agency as historically situated, embodied and embedded, and thus unique in its characteristics between different people, spaces, and time.

What exactly is meant by the term *agency* is of course at the heart of any relevant discussion, since it bears significant implications for the approach to the relationship between agency and social structure and its detection in the archaeological record. The use of the term has been quite problematic, since agency has often been employed as "*a deus ex machina used to explain any pattern, or even the absence of pattern"* (Voutsaki 2010a: 65), or "*a lingua franca – an ambiguous platitude meaning everything and nothing"* (Dobres and Robb 2000b: 3). The ambiguity surrounding the term stems both from a variety of different definitions[17] used by different authors (see in Dobres and Robb 2000b: table 1.1; Dornan 2002), and its frequent use without any definition. Ultimately, it is perhaps impossible to agree on a single notion –which is perhaps what makes agency such a fascinating concept, but it is certainly crucial to define our understanding of the term before we attempt to reconstruct it through empirical data. Therefore, I present below two of the current theoretical approaches to agency, which, despite their differences, can both be combined as the theoretical backbone of this bioarchaeological study (see Chapter 4).

[17] Equating agency with e.g., the individual; unique cognitive structures; resistance to social norms and inequalities; capacity of skillful social practice; free will etc.

2.2.2.2 Different ways of looking at agency: Hodder's 'individual lives' vs. Barrett's 'archaeology of inhabitation'

The small-scale narratives of lived lives and events

Hodder (2000), accepting a certain lack of historicity in early approaches to agency, proposed an alternative for approaching the expressions of agency in different circumstances: the study of 'individual lives' and the exploration of several dimensions of experiences. He argued quite convincingly that current archaeology –both processual and post-processual– places too much emphasis on long-term processes, whereas actual attempts to identify individuals and 'real people' were more often encountered in old cultural-historical approaches.[18] In his view, it is time to switch to completely different, small-scale, narratives *"of lived lives and events"* (p.22). Hodder thinks that phenomenological approaches (such as Barrett 1994; Tilley 1994; Thomas 1996) have to some extent dealt successfully with aspects such as the local, lived experience and multiple meanings, but nevertheless, they only remained concerned with long-term processes and the social construction of subjectivities as part of these processes. Thus, the focus on individual events that constitute a person's lived experience is suggested as a necessary supplement to structurationist and phenomenological approaches.

Hodder's argument has been criticised on the grounds that for small-scale approaches to be meaningful, they need to be tied to the larger macro-processes, otherwise the 'structure' part of the agency/structure equation is missing (Johnson 2000: 213). Dornan (2002: 311) further stressed the inherent methodological danger of narrowing agency in that way to limited archaeological data. In my opinion, the narrative of 'lived experiences' has great potential, as long as it is not understood in isolation, but as an integral part of a larger, phenomenological approach to the entirety of archaeological data.

[18] Indeed, this is observed in Mycenaean mortuary studies: a look at Mylonas' (1973) description of the burials from Grave Circle B at Mycenae confirms Hodder's suggestion (cf. Chapter 3).

Towards an 'archaeology of inhabitation'

Barrett (2000:61) appears to express quite the opposite position when he claims that "*the study of agency cannot be the study of the individuals per se*". In his famous *Thesis on Agency,* Barrett (2000) takes forward his phenomenological hermeneutic by proposing an '*archaeology of inhabitation*'. The focus of such an archaeology should be the "*situated context of action"* with its multiple meanings (p.66), and any isolated concept of agency "*which fashions the world without itself being fashioned"* (p.62) should be rejected. For Barrett (p.62), it is imperative that "*the concept of agency must therefore be conceptualised in terms which are historically situated and which are embodied".*

The distinction between *structural conditions* and *structuring principles* is central in his argument (p. 65):[19] The former refers to all conditions that agency may inhabit (e.g., distribution of resources, technology, symbolism); these carry their own tradition and history of formation. The latter refers to the agent's "*means of inhabiting certain structural conditions … an active maintenance of traditions and knowledgeability*". Thus structuring principles can be understood as "*the penetration of structuring conditions through embodied knowledgeability"*, discovered through sensing, feeling, moving, and acting. In this scheme, therefore, both structural conditions and structuring principles are in fact created through practice, while the essential factor of knowledgeability is always affected by history, tradition, and personal biographies. A *complex situatedness* is described, where structuring principles are both created by and create the agent, but it is only within specific structural conditions that acts obtain their historical significance (p.66). Barrett concludes that when looking at practices, we actually look at the structuring principles, and thus we can approach how structural conditions were experienced and constantly re-created.

[19] Barrett (2000: 65) stresses the considerable confusion that has arisen around the concept of 'structure' because of the interchangeable use of these two different words without a clear understanding: *structural* (derived from a noun) and *structuring* (derived from a verb).

2.3 Human remains in mortuary studies: past and current directions in bioarchaeology

The role of human remains in mortuary analyses and the way that archaeological skeletal material has been treated throughout the years is briefly reviewed in this section. Since approaches differ significantly from country to country, a more analytical discussion of past and current trends will be given specifically for Aegean bioarchaeology in Chapter 3. The emphasis here is on outlining the leading themes of bioarchaeological research throughout its history and the relationship of the field with mortuary archaeology. The current conceptual advances on understanding this relationship are finally presented as the basis for reaching a truly integrative approach to mortuary data (cf. Chapter 4).

2.3.1 Studying human remains from archaeological contexts

The early phase of physical anthropology, a field founded within the emerging nationalism of the 19th century, was dominated by craniometry, racial typology, and taxonomic descriptions (for an informative review: Cook 2006). Later in the 20th century, archaeological interest towards human remains was occasionally expressed, but still, up to the 1980s, their role in archaeological research was only marginal. Bones were often considered more trouble than they were worth (for several examples: Larsen 1997:1), and descriptive osteological studies, taxomony-oriented and concerned with biological differences between populations, remained the norm (for an early critique: Armelagos et al. 1982). Nonetheless, even within the general scope of the early paradigm, there were exceptions which paved the way towards themes that were later to become central in bioarchaeology: the ‘life histories’ of skeletons by Wilton Krogman (1935) and the ‘social biology’ of J. Lawrence Angel (cf. 3.2.1) are such examples.

The attention paid to skeletal evidence certainly increased through the positivism of New Archaeology. Human remains started to be viewed as an important strand of evidence, albeit mostly related –but not restricted- to questions of population fitness, adaptive efficiency, function, and form (cf. 2.1.2). Gradually, the relationship between archaeology and biological anthropology started to change and the necessity of integrating biological and cultural theories and methods in order to approach the social dimensions of mortuary practices was explicitly expressed for the first time. The publication of the edited volume *Biocultural Adaptation in Prehistoric America* (Blakely 1977) set the goals for a truly anthropological bioarchaeology. The new research programme, as defined by Buikstra (1977), advocated the population perspective and behavioural inference, addressing problem-oriented questions about life style and life quality (though health, diet, occupational activities), population structure, movements and genetic affinities, as well as burial programmes and social organisation. The basis for what evolved into the holistic concept of a critical and reflective *biocultural anthropology* was set (Blakey 1998; Goodman and Leatherman 1998), and bioarchaeology was defined as a multidisciplinary research programme which requires the equal participation of all scholars in both research design and execution (Buikstra 1977).[20]

Despite general agreement that, in theory, all aspects of burial practices are equally important, in practice, however, different disciplines usually continue to operate in isolation. As Goldstein (2006) correctly points out, recent bioarchaeological research appears to move further away from the true integration in the sense advocated by Buikstra (1977). Even though the bioarchaeological directions set in the late 1970s continue to expand through great scientific methodological advances (e.g., elaborate statistics, bone micromorphology, chemical and DNA analyses etc.), a shift towards introversion took place in the field. As Goldstein (2006: 377) remarks, this is evident in the sharp contrast of Larsen's (1997: 3) definition of bioarchaeology, solely as the study of human remains recovered from archaeological settings, with that of Buikstra (1977). The science-theory divide deepened during the post-processual debate, and the over-confidence of physical anthropologists in the new scientific techniques made things worse. The critique against processual approaches turned also against the functionalist and adaptational models initially used in bioarchaeology (Shanks and Tilley 1987; Parker Pearson 1998: 81). To some extent, this led to a generalised denial of the significance of scientific archaeological research, as Jones (2002) discusses. Human skeletal analyses were certainly not discarded but remained

[20] For alternative definitions of the term in both the Old and New World, see Buikstra's preface in Buikstra and Beck (2006: xvii-xx).

marginalised, considered as contributing to, but not fundamental to the social analysis of mortuary contexts (Gowland and Knüsel 2006a: ix-x), while there was a great delay in the involvement of the skeletal body in theoretical reflections (Sofaer 2006: 25). The lack of communication and misuse of evidence was mutual, as, for a long time, the majority of physical anthropologists completely ignored the theoretical advances of interpretive archaeology, while even basic archaeological data were most often overlooked or treated simplistically (Goldstein 2006).[21] Unfortunately, this is still largely the case for a great number of scholars in both fields.

2.3.2 Contemporary trends in bioarchaeology: towards an integrative approach to mortuary practices

The contextual interpretation of all strands of mortuary evidence through a truly integrative bioarchaeological approach and research design still remains an elusive goal (cf. Buikstra 1991). Nevertheless, especially in the last decade, there is a growing body of mortuary research which stresses the importance of context, theory, and integration for approaching the social dimensions of funerary remains (e.g., recent collective volumes on this direction: Gowland and Knüsel 2006b; Agarwal and Glencross 2011; Baadsgaard et al. 2012).

The need to look closer at persons, as a prerequisite to understand mortuary practices and then approach any wider population perspective, is increasingly realised in the analysis of human remains (cf. Goldstein 2006: 385-386), and has lately been approached through a methodological turn to *osteobiographies* (the term introduced by Saul 1972; more recent applications: e.g., Robb 2002; Boutin 2012; Zvelebil and Pettitt 2013). Subtler notions came also into play in bioarchaeology. Theoretical discussions on embodiment, materiality, and personhood, although increasingly explored through other archaeological evidence (cf. section 2.2.2), did not so far engage much with the human remains or, if they did, mostly failed to achieve a holistic understanding of the body (see further: Sofaer 2006: 86-88). This is progressively changing. A growing body of research now attempts to conceptualise human remains beyond dualities, both as material but also as a carrier of lived experiences (cf. Sofaer

[21] The science/theory divide reflects a series of binary structural oppositions (including the biological versus culturally constructed body) emanating from the fundamental tension between the concepts of nature and culture (Sofaer 2006: 25-29; cf. Chapter 4).

2006), giving them the role of primary evidence in the investigation of social relationships and personhood in funerary contexts (e.g., Boutin 2012).

CHAPTER 3
THE STATE OF PLAY IN MYCENAEAN MORTUARY RESEARCH

3.1 Introduction

The general development of the theoretical framework described in Chapter 2 is to some extent reflected in the evolution of Aegean mortuary studies. This chapter presents the current state of play in Mycenaean mortuary research, with a dual goal: a) to present the main questions in current Mycenaean mortuary studies, the sets of problems in which the field is interested, and main views about them; and b) to provide a brief review of the history of research so far (i.e. how the methodology and sets of problems evolved through time). This review is important in order to understand the process that shaped the current consensus, what we take for granted, what we can build upon, what we may need to forget and challenge anew. This chapter is focused on questions that are of special interest to the bioarchaeological study of the Voudeni cemetery (cf. Chapter 4). Even though several aspects of mortuary behaviour in prehistoric Aegean will be discussed, the emphasis is placed on funerary practices of the Mycenaean period, and especially on the ones observed in chamber tombs.

The history of Mycenaean mortuary research will be presented in section 3.2. The conceptual principle behind its classification in earlier, recent and current approaches concerns mostly the way mortuary evidence was selected, treated and interpreted, especially in terms of its relationship to social complexity. The nature and extent of the evidence, as well as the main research questions of each period will be discussed, while current research trends will be outlined at the end of the section. It should be noted here that by this, necessarily linear, presentation I have no intention to present a linear 'evolutionary progress' in Aegean archaeological theory. The theoretical and methodological developments in the field may have significantly moved research forward in recent years, but insightful ideas can be found in very old publications and, reversely, rather simplistic explanations may appear in recent ones.

In section 3.3, specific aspects of mortuary practice will be discussed. These include: a) a brief overview of Mycenaean mortuary architecture, with special emphasis on its relationship with human action (3.3.1); and b) the ritual and other activities, with emphasis on mode of burial, placement of the body, location of burial within the tomb (3.3.2.1). This section will also consider secondary treatment of the dead, including the background theory on Mycenaean collective burials, interference with past material culture and skeletal remains within the tomb, and rites of second funeral (3.3.3.2).

In section 3.4, the question of *who is in the tombs* will be addressed. The section summarises current views on the living vertical status (commoners, elite, or both?) of chamber tombs' occupants and users (3.4.1); identity aspects and group links (collective, family, ancestral, 3.4.2); as well as the possibility of horizontal status distinctions based on defining characteristics of personhood, such as age and gender (3.4.3). Finally, a few remarks on bioarchaeological research in the prehistoric Aegean are included in section 3.2, while a more comprehensive review is presented in section 3.5.

3.2 A review of Mycenaean mortuary research

3.2.1 Aegean mortuary research: the first 100 years (late 19thc.- late 1970's)

From the very first steps of Aegean prehistoric archaeology, around the end of the 19th century, tombs and burials have been regarded as primary evidence for the reconstruction of the past. The monumental burial structures of the Mycenaean era, in particular, captivated right away the interest of early scholars, especially since Schliemann's (1878) discoveries confirmed the Homeric notions of 'Mycenae, rich in gold' (see Fitton 1995; Karadimas 2009). Large Middle and Late Helladic cemeteries were excavated early on, especially in the Argolid and Messenia; these key sites provided the great bulk of mortuary evidence, which was regularly re-assessed in the years to follow (e.g., Tsountas and Manatt 1897; and Wace 1932 on Mycenae; Blegen 1937; Blegen *et al.* 1973 on Prosymna and Messenia; Persson 1931, 1942 on Dendra). The same regions (and sites) remained central in succeeding works on Mycenaean burials (e.g., Marinatos 1957; Mylonas 1973; Korres 1976), while new ones were added as well (e.g., Attica, Iakovidis 1969). It is beyond the scope of this chapter to expand on the history of research; it is, though, important to stress that the common factor that separates the Aegean mortuary research up to 1980 from what followed is the prevalence of a descriptive, non-reflexive approach to mortuary data and its complexity.

The characteristics of the dominant archaeological doctrine of the 20th century, the cultural-historical paradigm, are evident in these early mortuary approaches (cf. section 2.1). The mortuary evidence explored was generally limited to artefacts and tomb types. Detailed typological analyses of material culture were core to most studies, in the hope of accessing the precious chronological order and a 'successful' classification of the finds (Boyd 2002: 11). Observed patterns (similarities or changes) in material culture were not explored in social terms, but were usually explained with diffusionist and ethnic arguments (as pointed out by Dickinson 1983; Voutsaki 1998: 41). The social dimensions of burial customs were considered only in the simplest forms (Dickinson 1994: 208). Indeed, differentiations between rich and poor burials, or elaborate and simple tombs, were just assumed to reflect the living status of the dead (an assumption, though, which occasionally persisted even in works of scholars who tried to oppose it: e.g., to some extent in Dickinson 1994). Finally, in rapport with the other influential current of the early 20th century, the 'rationalist-idealist' argument, symbolic areas, such as eschatology or Mycenaean religion, have been somewhat approached through mortuary evidence (e.g., Mylonas 1951; Vermeule 1964; Andronikos 1968).

As expected, human bone remains were not included in the main line of evidence used by the early approaches, and the lack of anthropological examinations has been a serious flaw in Aegean studies so far, as has been repeatedly acknowledged (e.g., Dickinson 1994: 208; Cavanagh and Mee 1998: 51, 56, 71-2, 127-8). Oddly enough though, early scholars showed some interest in the Mycenaean skeletons, an interest which was largely abandoned by their followers, and only recently re-instated in Aegean mortuary studies (cf. section 3.5). Of course, the goals of this interest were well within the research questions of the period, narrowing, thus, the information that skeletal data could provide, and often leading to erroneous interpretations. Nonetheless, and especially thanks to the work of the pioneer biological anthropologist John Lawrence Angel, the basis of Aegean bioarchaeology was set.

The general political climate and the emerging nationalism of the 19th century stimulated several studies of racial typology and an interest in human remains, especially skulls, which became the object of both study and collection. This was the case in the Aegean as well, and R. Virchow, a German physician interested in prehistoric archaeology and friend of Schliemann, published one of the first such studies in 1893 (for an informative discussion, see Nowak-Kemp and Galanakis 2011). The emphasis on 'racial typology' and the problematic methodology and interpretation of craniometric studies completely devalued this line of research for the future (cf. Renfrew 1987: 4, describing craniometry as enjoying 'the prestige of phrenology'), significantly delaying a proper development of the methodology regarding such enquiries.

The man who really shaped Aegean bioarchaeological research was J. Lawrence Angel, who worked on Bronze Age material in Greece for more than three decades and published extensively (publications of Mycenaean skeletal material include Angel 1945, 1946, 1973; Bisel and Angel 1985; for extensive list of references: Buikstra and Lagia 2009; Buikstra and Prevedorou 2012). Angel developed, well ahead of its time, what he called 'social biology', which was a problem-oriented, contextual analysis, close to what we might now call 'life histories' (Buikstra and Lagia 2009: 8). Angel was not interested in compiling mere catalogues with skeletal descriptions, but he insightfully addressed many archaeological questions, often bringing into play more social dimensions than the archaeologists of his time. He used demography and palaeopathological information to discuss social distinctions on the basis of sex and age, to reconstruct ancient life and occupations, to explore the identity of the deceased on a group basis (e.g., family or clan: Angel 1971), and even to address burial practices and mode of interment (Angel 1973). Despite several methodological flaws, the trends that Angel set (both in terms of data collection protocols and of problem sets) influenced the following and current bioarchaeological research, not only in Greece but also worldwide (Buikstra and Hoshower 1990; Buikstra and Prevedorou 2012). Other skeletal studies towards the end of this period (after the 1970s) were mostly concerned with issues of genetic affiliations and migrations (e.g., Musgrave and Evans 1980); or palaeopathology (for a compiled bibliography: Roberts et al. 2005).

Despite the positive effect of Angel's work, the general attitude of most excavators towards human remains was that of indifference. Even when some interest was taken, this was focused mostly on either skulls alone or, at best, on intact primary burials, or on unusual cases such as cremations. Commingled assemblages were never carefully described, published, or even collected and stored. What happened at the excavation of the LHIII Perati cemetery is a good example (though not representative, since usually skeletal material met with even less luck): Even though Iakovidis (1969) showed an interest in bones, the anthropological study concerned only the cremated remains (Paidoussis and Sbarounis 1975); the bones from all tombs, although initially collected, were not kept but thrown all together into a large pit nearby (Iakovidis, *pers. comm.*). Even if the pit ever gets re-discovered, not much is to be gained as all contextual information is lost for ever. Similarly, Marinatos (e.g., 1959) took special interest in describing only primary burials, while many authors did not even bother doing that (discussed among other bias by Boyd 2002: 25-26, 75). This attitude towards the skeletal material originated from personal convictions about the form of an 'appropriate', therefore interesting, burial and a 'non-respected', destroyed one, therefore of no interest. In turn, it greatly influenced the interpretations and neglect of these acts of 'disturbance' for both the early scholars and many of their followers (cf. 3.3.2.2).

In this extremely partial consideration of the evidence, burial practices were largely overlooked, or addressed in very simple terms. Due to lack of any significant concern for complex social and ritual inferences or for a wider approach to the mortuary evidence, early accounts of burial practices tended to be normative, minimising variation and ignoring regional differences, outlining, thus, a generalised and uniform picture of the Mycenaean world (Dickinson 1994: 208). Nevertheless, it should be borne in mind that despite their many apparent flaws, these studies built a solid –though perhaps *too* solid– basis for the development of Mycenaean archaeology. The scholars mentioned above often had insightful ideas about their material, and sometimes touched on areas that were largely ignored by the succeeding, long-term process-oriented approaches, and only recently became re-instated as valid research questions. Mylonas' (1973) 'Hodder-like' interest in the 'real' people, the individuals buried in Grave Circle B of Mycenae, is a good example (cf. section 2.3). Even though the interpretive approach of these early works might now look quite simplistic, full of assumptions and personal projections, the main problems inherited by current research are not these interpretations *per se.* More problematic is the fact that many of the people who followed in Aegean studies have not been, unfortunately, as insightful as the early scholars. The original ideas were uncritically adopted, old assumptions were repeated, and a similar (or even worse) excavation methodology continued to be applied; this resulted in a long lasting indifference to posing new questions and looking more broadly at the totality of evidence. In addition, our ability to re-examine the original data of the early excavations is seriously compromised due to excavation, recovery, and documentation bias of the early works (cf. Boyd 2002: 24-5, for suggestions on how we might work around this problem).

3.2.2 Recent approaches: the fruitful years, 1980-2000.

The extremely influential ideas of New Archaeology rapidly managed to change mortuary approaches worldwide (Chapter 2). By the 1980s, their impact on Aegean mortuary studies was apparent. Even though the preconceptions of earlier approaches were hard to shake off, the significance of mortuary variability and its potential for complex social inferences were now realised. With a slight delay, the criticism imposed by the early post-processualists influenced also Aegean research and a greater array of questions started to be investigated. An increasing number of analyses of Mycenaean mortuary data started to include a theoretical background, address more complex questions, make finer distinctions, and take into account a wider spectrum of data.

Dickinson's (1983) paper on cist graves and chamber tombs is an early example of this shift in interests, addressing the relationship of these Mycenaean burial types with social complexity and status. As both Voutsaki (1998:41) and Boyd (2002:11) criticised, the approach was, however, quite narrow, simply equating the elaboration of the burial with the status of the dead. This equation and the presupposition of a hierarchical/evolutionary typology of the grave types (see below) were indeed typical characteristics in many Aegean studies at the time. Nevertheless, the interest in broader but finer questions and new strands of data was already evident in some works, many of which were presented collectively in two edited volumes representative of this phase of research: *THANATOS* (Laffineur 1987), and *Celebrations of Death and Divinity in the Bronze Age Argolid* (Hägg and Nordquist 1990). Both included papers that paved the ground for future research, looking more closely at previously ignored areas such as symbolism, ritual, funerary practices and their meaning.

The main themes that now came into play were quite variable, contextualising the data more and more. The relationship between mortuary data and social and political processes was the main focus in the early works of Cavanagh, Mee, and other scholars, while the "ethnic argument" ceased to be the basic explanation of observed change or continuity (e.g., Mee and Cavanagh 1984; Darcque 1987; Dabney and Wright 1990). Regional variation becomes more of a focus, and local peculiarities a matter of interest (e.g., Kontorli-Papadopoulou 1987, on chamber tombs). Spatio-temporal parameters were now taken into account and cluster or location analyses were applied (Cavanagh 1987; Cavanagh and Mee 1990; Mee and Cavanagh 1990). These studies proposed finer status distinctions and complicated relationships between different groups and/or identities (for example, possible alliances between poor and rich families were suggested by Cavanagh 1987; while Cavanagh and Mee 1998:78 concluded that the spatial distribution of chamber tombs reflects both horizontal and vertical status distinctions in the structure of Mycenaean society, cf. 3.4.1); most importantly, they started to reveal that social strategies were an important factor in the observed mortuary choices.

These new ideas attracted further interest and soon resulted in the elaboration of the theoretical basis and of the methodology for looking at the evidence, as well as in new questions and widening of the evidence. The influence of early post-processual ideas is evident during this phase. Wright's (1987) insightful paper on the changing symbolic choices both in the mortuary architecture and the fortifications of Mycenae contextualised for the first time such a wide range of evidence, bringing forward notions of landscape, funerary practices, and actual experience, in order to infer symbolism and finally relate it to changes in Mycenaean society. Regional variation is now certainly of interest, not only in terms of funerary types but also of practices (e.g., Cavanagh 1998). Against the notions of a unified social structure as implied before, it is now argued that spatio-temporal differences can illuminate the role of burial customs in the creation of social reality (Voutsaki 1995; 1998). As the close relationship between burial practices, ritual, and social structure became evident, many preconceptions of the older views (but not all of them, see below) were now challenged, especially with regard to the understanding of practices and ritual. Alternative explanations were sought and an effort to distinguish between the observed phenomena and interpretative projections was expressed (e.g., Wells 1990). Even if not approached with the scrutiny that our current views demand, it is in this period that some aspects started to get individual attention with more insightful interpretations than ever before: e.g., gender (Mee 1998); interference with past material culture and even bones of the dead (Cavanagh 1978; Branigan 1987); feasting and drinking activities (Hamilakis 1998). All in all, 1987-1998 was a very good decade in Aegean mortuary research, and 1998 a very good year in particular. The publication of *Death: a Private Place* by Cavanagh and Mee (1998) contained not only a synthesis of the Aegean mortuary data available so far, but a most informative summary of the advances described above; and the publication of the Sheffield Aegean Round Table *Cemetery and Society in the Aegean Bronze Age* (Branigan 1998) included many papers that helped set the new research agenda in Aegean mortuary studies. Together, these publications showed clearly both our progress so far and set the stage for what was to follow in the field's future.

However, the new approaches in Aegean mortuary studies (especially of the 1980s) were not free from weaknesses, flaws, and internal inconsistencies, correctly pointed out in later works, both by younger scholars but also by their original authors. A most detailed (though possibly excessive) criticism was made by Boyd (2002: 11-15), whose work was clearly influenced by the theoretical advances of post-structuralism and deconstructionism (cf. sections 2.1.4 & 2.2). Boyd stressed that several characteristics of the old cultural-historical approaches (such as the equation between status and elaboration of funerary rites, as well as the emphasis on ordering, roles, and evolutionary taxonomy) were still evident in recent works, even in those that superficially opposed them (e.g., Dickinson 1983). Indeed, many works did not avoid retrospective questions and circular arguments (e.g., considering the elaborate tomb types as a result of advanced social complexity *and* using the existence of this type as an argument to infer the advanced level of complexity; as Boyd (2002: 12) put it "status creates typology but is also embedded in typology". Even some of the more theoretically advanced papers of the period, which were interested in how mortuary practices do not simply reflect but also create ideology (e.g., Voutsaki 1995), followed a structuralist approach, assuming an imposed ideology, somewhat outside of the human being (a common problem in early post-processualist works, cf. section 2.1.4).

Moreover, the lack of explicit theory behind the methodology applied, or the data under study, was evident in many of the above works. Even though theory was considered, it was often only superficially so: a few introductory paragraphs of a paper were maybe devoted to it, but it easily got moved out of the picture through its course and was absent in the final conclusions. This lack of consistency between the theoretical basis we choose to use and the actual interpretive narrative we come out with is not surprising. The solid Aegean paradigm under which, until recently, we were all educated, embedded deeply in us its well-established preconceptions; and it is only through constant self-questioning of what we take for granted that one might really transcend it. This is why rather 'traditional' explanations may re-appear in current works of researchers whose hermeneutic may have been more unconventional in earlier papers (cf. Wright 1987 vs. Wright 2008b). On the other hand, research paths are almost never straight, and this is actually their fascination. Scholars can –and should- struggle between old and new ideas, and this conflict eventually moves us ahead. What finally matters is that the issues raised by these recent works formed the basis on which to elaborate a deeper, contextual understanding of Aegean mortuary practices and their relationship to social structure.

3.2.3 Current research

The basic question remains the same: how does complexity in mortuary behaviour/practice relate to social complexity, and how should we seek to answer this question? In this section, current theoretical views are summarised, mostly represented by the works of Michael Boyd and Sofia Voutsaki. The most thorough description of how the relationship between mortuary and social complexity works, largely based on Barrett's interpretive approach (cf. section 2.3) can be found in Boyd (2002). To approach social complexity, praxis needs to be put into a historical narrative, which is nothing else but an account of situated action. If spatio-temporal fixity is respected, then *tradition* (i.e. the institutionalisation of practice) can be approached. By looking contextually into continuity and change, into the routine and the unusual, the ordinary and the extraordinary, it is possible to differentiate between variation and normative action, and, thus, to approach the whole of social complexity and the historical narrative. The need to look both at the variation and the norm is also clearly stressed by Voutsaki (1998; 2010a).

To get there, current research tends to agree that the following points should be respected:

- Our approaches need an explicit theoretical background. As Voutsaki (2010a) correctly emphasises, abstract theory needs to be applied critically and the gap between its application and analysis of empirical data needs to be bridged. Indeed, the flaws described above can only be addressed if we start to understand deeply the theory we use and how it relates to the complexity of our evidence, avoiding superficial repetition of clichés and umbrella terms.
- A "theory of human action" (Boyd 2002, ch.3) is needed, since mortuary practices cannot be separated (or even exist) outside people's actions and understanding. Human action is directly related both to the mortuary locale

(i.e. the human understanding of the mortuary place) as its context, and to the human body as its medium. Thus, to approach social structure, the emphasis should be placed on the living and their agency, with caution regarding our own projections about their concepts, personhood, and motivations (Voutsaki 2010a).

- It goes without saying that the respect of spatio-temporal parameters is, therefore, of utmost importance, and the totality of evidence should be addressed. Perhaps this is the aspect which meets with the widest agreement (at least in theory). As Boyd (2002:14) suggests, what we need is a 'bottom-up' approach: first, all periods and places need to be studied in detail, and only then, can history be written.
- A final crucial point is the conviction that there is no such thing as one, universal meaning of mortuary evidence (e.g., the meaning of tomb type is not the same from one place and one time to another: Voutsaki 1998: 56). In fact, the meaning is not the same for every participant even in the *same* ritual occasion (as Wells 1990: 125 insightfully noticed). Therefore, the notion of complete uniformity in Mycenaean burial practices is now denied (cf. sections 3.3-3.4).

Current research approaches are progressively changing along these lines. Phenomenological approaches to Aegean mortuary evidence, with an interest in the entirety of contextual evidence in order to understand the complex interaction between the landscape, human experience, action, and society, are certainly growing, but they are not yet common (indicatively for Mycenaean data: Voutsaki 2010a; Galanakis 2011; Papadimitriou 2011; Boyd 2014a,b, in press a,b; for Minoan mortuary landscapes: Vavouranakis 2007). Recently, a colloquium at the 113th Archaeological Institute of America Annual Meeting (Philadelphia, January 5-8, 2012) focused exactly on such a contextual notion of funerary place as an intuitive concept with which to approach landscapes, buildings, bodies, societies and identities in the Aegean, inspiring the forthcoming edited volume *Staging Death: Funerary performance, architecture and landscape in the Aegean* (Dakouri-Hild and Boyd, forthcoming) which aspires to present collectively the current state of play in Aegean mortuary studies. Other recent scientific meetings have been exclusively dedicated to mortuary data, such as the conference *Honouring the Dead in the Peloponnese* (Sparta, 23-25 April 2009: Cavanagh et al. 2011); or, even if not focused specifically on mortuary practice, included interesting contextual approaches to mortuary evidence (e.g., the conference hosted by the University of Cyprus, *Embodied identities in the prehistoric Eastern Mediterranean: convergence of theory and practice*, Nicosia, 11-12/04/2012: Mina et al. in press). Finally, a most positive development is that well planned, large regional projects are finally being conducted in several areas of the Aegean, often including multidisciplinary excavation and study of both funerary and settlement evidence. In these projects, bioarchaeology comprises a central, integrated part of the research from the beginning. A few pertaining to Mycenaean research include: a) the *Shifting Identities* project on the Middle Helladic Argolid, directed by Sofia Voutsaki (Voutsaki et al. 2009a,b); b) the *Nemea Valley Archaeological Project,* directed by Jim Wright and others, including the up-to-date multi-disciplinary excavation of Barnavos Mycenaean tombs (Wright et al. 2008) and the Ayia Sotira Excavation project (Smith et al. 2009, in press; Karkanas et al. 2012); and c) ongoing multi-disciplinary excavations at the sites of Ayios Vasilios (Laconia), directed by Sofia Voutsaki (Voutsaki et al. forthcoming, Moutafi et al. 2014); and at Kirrha (Phokis), directed by Julien Zurbach and Raphael Orgeolet (Lagia et al. forthcoming).

3.3 Current issues in Mycenaean mortuary research

Mortuary practice relates to a complex nexus of different elements. The landscape, including the location and architecture of the grave, as the result of choices of the living and the context of their experience, goes hand in hand with the funerary praxis performed within the grave and around it. The praxis consists both of the ritualised acts (usually tied to tradition and possibly directed by it) and other, more mundane, personal or practical activities that might take place during the funeral or in succeeding occasions of re-visiting the grave. The development of the Mycenaean funerary set was essential in shaping Mycenaean identity and variously related to changes in socio-political conditions (cf. 1.3, 3.3.3.2). The triplet '*architecture-ritual-other activities*' touches on a vast array of intertwined human choices. From the long list of contextual evidence and themes of interest to Mycenaean mortuary analyses, I focus here only on those which comprise the necessary background for the bioarchaeological study of Voudeni and my methodological approach to it.

3.3.1. The architecture: Tomb types and their development

A variety of tomb types co-existed during the Mycenaean period, although the best represented are the monumental types of tholos and chamber tombs (for brief reviews: Dickinson 1994: 222-232; Cavanagh 2008: 328-330; for more extended discussions of all types: Cavanagh and Mee 1998, chapters 7-9; Boyd 2002: 5, 49-66). Simple graves mostly occur in the form of pits or cists (i.e. pits fully lined with stones or slabs), although some more unusual types exist as well (Lewartowski 2000: 5-12). These graves were in use throughout the Late Bronze Age, occurring either on their own or within the monumental types for separating individual burials or receiving secondary deposits. In the former case, these graves are usually built for one person and tend not to be visible or re-opened after the burial (for an overview and analysis of LH simple graves: Lewartowski 2000). The monumental types are both characterised by burial chambers designed for collective burials.[22] As Boyd (2002: 5) describes them:

> *A tholos tomb is a stone-built burial chamber with a single entrance consisting of a tunnel-like entryway ('stomion') into the chamber and often a long narrow approach to that entryway ('dromos'). The chamber is round and corbelled (so the layers of*

[22] For typology and analytical descriptions of tholos tombs: Pelon 1976; and chamber tombs: Papadopoulos 1975.

> *stone converge on high to form an apex). The tholos is often but not always built partly underground; it may be set in a mound, or a mound may be thrown up around the above-ground part; alternatively it may be covered in thick clay. Burials may be left on the floor of the chamber, or set in pits, cists or pithoi: these graves may also be found to contain disarticulated bones…*
>
> *A chamber tomb is similar in form to a tholos tomb but it is not stone built, but rather carved out of the ground, often on a sloping surface. Its chamber may be round, sub round, sub-rectangular or rectangular. Burials again may be set on the floor or in graves such as pits or cists; disarticulated bones may also be found, often in niches in the wall dug at floor level.*

Finally, a similar but more unusual type is the built chamber tomb, "*stone built tombs of non-circular plan with flat (or exceptionally vaulted) roof, designed to accept multiple burials through a lateral entrance*" (Papadimitriou 2001:1). Even though the architectural design of the monumental types was quite similar (especially for the LHIII chamber tombs), some characteristics varied from region to region and from period to period (see below). Their construction required considerable effort and knowledge, and the existence of corporate groups of builders is possible (Boyd 2002: 30, 61-2; Kolonas 1998 implies forward planning in the case of Voudeni on the evidence of tombs that seem like they were never used).

The most meaningful aspect for the typological assignment of a tomb to a certain category is "*the conceptual principle it reflects both in terms of funerary practices and architectural design*" (Papadimitriou 2001:2). This principle is fundamental to the interplay between the tomb and the people who interacted with it. The key is the number of burials these tombs could accommodate. Simple tombs tended to be designed for single burials in MH times, although this started to change as we enter the Mycenaean period (cf. 3.3.3.2); in contrast, both the tholos and the chamber tombs were designed from the beginning for collective burials.[23] The burial practices performed in both types are extremely similar, in terms of material culture used, ritual and treatment of the dead (Cavanagh and Mee 1998: 70, Boyd 2002: 46-48; see further in 3.3.3.2). The development of new tomb types and the formation of new burial practices characterised the MH/LH transition. As already mentioned, the notions of architecture and ritual are inextricable, and this symbiosis is perfectly

[23] I prefer the term 'collective' instead of 'multiple' burials, since it reflects better the sense of 'use for successive inhumations' (cf. Cavanagh and Mee 1998: 41), in contrast, for example, to a mass burial; alternatively, these tombs can be referred to as tombs of 'multiple use' (e.g., Boyd 2002).

illustrated in the development and spread of the characteristic Mycenaean burial types; based on this, the motivation behind these changes and further social implications can be approached (e.g., Boyd 2002: 93-96, in press a; Papadimitriou 2011; see below). To expand on this, we need to remember the basic tri-partite structure of the new types: passage (*dromos*) – entryway (*stomion*) – chamber. A link between this form and the famous tripartite structure of funerary rituals (cf. section 2.1) is apparent. The arrangement has been considered symbolic of the difference between the world of living (passage) – boundary and link in between the two (entry) – world of the dead (chamber) (e.g., Wells 1990; Voutsaki 1998; for an extensive discussion, Gallou 2005: 64-73; Papadimitriou 2011). Beyond this, tomb form is crucial for the type of funerary performance it allowed, the number of the audience and participants, their very experience (cf. Boyd forthcoming). As we will see, changes in these architectural characteristics progress together with changes in mortuary practices and vice-versa, in a strong reciprocal relationship.

The origin of the forms of tholos and chamber tombs has been discussed extensively, with the core of the debate being about the extent of local development or external (especially Minoan) influence (for a summary and further references, see Cavanagh and Mee 1998: 44-5; Boyd 2002: 55-7; especially for chamber tombs: Papadopoulos 1975; for tholos tombs: Galanakis 2008).[24] Boyd (2002: 49-66, ch. 6) approaches the development and spread of the types from a holistic point of view which emphasises the conceptual characteristics of the monuments. Following Korres' (1996) idea, he argues that the tholos form (which appeared first in Messenia, towards the end of MHIII) is a local development of a concept inspired by the pithos form (i.e. the huge vessels, with a narrow opening and a large belly, which held inhumations and were inserted into MH mounds), expanding in size the idea of the narrow opening with a dark inner chamber. The earlier tholos attempts were indeed smaller, incorporated into pre-existing mounds, and the dromos was not a very pronounced feature. The chamber tombs (which appeared at around the same time) were rock-cut instead of built; thus, they demanded the creation of a longer dromos in order to get deep

[24] To expand on the discussion of what came first, the chamber or the tholos, is beyond the scope of this paper. It is possible that the chamber tombs evolved from two different traditions, one influenced indeed straight out of Cretan forms (e.g., the chamber tombs in Kythera, see Boyd 2002: 58-61), and another one, the most common, as an alternative to tholos.

enough into the hill slope to carve the chamber. This characteristic could be of course quite variable,[25] but what is interesting is that this development can be explained as reciprocally related to specific actions and ritual practices (Boyd 2002: 93-95; in press a, b, forthcoming; Papadimitriou 2011). Boyd has argued that this architectural change, occurring first for practical reasons in the chamber tombs, brought about the emphasis on activities at the end of the dromos, and provided the necessary privacy for more secluded activities by a smaller group of persons inside the chamber. The adoption of these characteristics in the tholos permitted the secondary adaptation of this type with greater monumentalisation into a mound of its own, while the elaboration of both the practices and the architecture resulted in the ability to reach occasionally a much larger scale in the next phases of the LH period, both in terms of the monument and the group that could interact with it. The need for enough space for collective burials and the change in access process at the transitional MHIII/LHI phase triggered further development of the activities that I will explore analytically below. In brief, the architecture of the tomb changed in order to accommodate the needs of the living instead of simply the body of the dead (Boyd 2002: 83-88).

The current consensus on the spread of the new types is that the tholos type was invented in Messenia in the MHIII, appropriated soon afterwards (LHI-II) by elite groups in other areas (Cavanagh and Mee 1998: 49-51). In the palatial LHIII era it seems that its use became restricted and only few but more elaborate tholoi were constructed in the Argolid while few smaller tholoi were built in Messenia and peripheral areas (Cavanagh and Mee 1998: 63), indicating perhaps the rise of peripheral rulers (see Bennet 1995; cf. section 1.3). The chamber tombs followed an opposite trajectory, with their use starting around LHI essentially in Argolid, and then progressively spreading in N-S direction. It is only in the LHIIIA-B period that chamber tombs become the standardised tomb type of the times and spread widely to all areas of the Mycenaean world (Cavanagh and Mee 1998: 65-68). In the post-palatial (LHIIIC) period, most tholoi fall out of use (although a few small ones were still being built, especially at ‘marginal’ areas (e.g., Crete, Thessaly: Georganas 2000), while chamber tombs continue, mostly with re-use of the ones already existing, and limited construction of new ones (Cavanagh and Mee 1998: 92-93). As seen in previous

[25] Chamber tombs with very short dromoi do exist (e.g., at Volimidia), as they do with very long (e.g., at Thouria).

section, the motivations and sociopolitical factors underlying the development and spread of these types constitute a major question in Mycenaean mortuary research (cf. 3.4.1). Equally, the choice between a tholos or a chamber tomb, although certainly affected by regional or family traditions, structural considerations due to local geology, or the availability of skilled builders (see Wells 1990:127; Dickinson 1994: 228; Cavanagh and Mee 1998:61), also appears related to elite social strategies (e.g., Voutsaki 1998), different regional historical settings (e.g., Bennet and Galanakis 2005), and diverse conceptual links to the mnemonically charged funerary landscape (Galanakis 2011; Boyd 2014b, in press a,b). Since social implications cannot be inferred on the basis of the form alone, we will return to this question (section 3.4) after considering the basic activities practiced within the burial monuments.

3.3.2. Mortuary practice: ritual acts and other activities

The acts comprising mortuary practice can be divided into four main categories: choice of location of the cemetery, tomb and grave; construction and modification; acts outside the grave; acts at and within the grave (Boyd 2002: 27-32, forthcoming). These can be close in time, separated by centuries, or somewhere in between, and they can be performed by the same or different people. In this study, the focus is to illuminate the last category, as this is where human remains are involved the most. The several activities under these broad categories, and especially the last two, have often been considered together as 'ritual' acts. Cavanagh and Mee (1998: 103-120) in their chapter: *Ritual* include a long list of actions, such as processions, dance and gestures; primary treatment of the corpse; presentation of the body; offerings; feasting/funerary meals; gift giving or exchange; destructions of offerings by smashing or fire; religious beliefs; deliberate slighting of dead; sacrifice and libation; second funeral, re-opening of the grave, and post-burial rites. Detailed information on these actions by period can be found throughout their book, while Gallou (2005) offers an extensive discussion of diverse evidence for Mycenaean ritual and religion, especially in regard to funerary rituals. Boyd (2002, 2014a,b, in press a,b, forthcoming) has devoted the bulk of his work to a contextual reconstruction of these acts, with special focus in the MH and Early Mycenaean periods.

The term 'ritual', accurately characterised as 'poorly defined' (Goody 1977), poses indeed several problems. The distinction between ritual and non-ritual acts is obscure and hard to identify archaeologically, as it is extremely subject to our own preconceptions of 'appropriate ritual behaviour' when faced with death (cf. section 3.3.3.2). Ritual, nonetheless, could potentially be identified, since it is closely related to tradition, and thus supposed to be characterised by repetition, stylisation, redundancy, and formulaic language (Cavanagh and Mee 1998: 103, with further references). In fact, as mentioned earlier, the tension between the traditional and the ordinary, between institutionalised norms and the reality of people's acts, can reveal a lot about social structure as a whole. We will return to this issue in the next chapter; first, a brief review of the actions that are of primary interest in the current study is given below. Since the main characteristics of Mycenaean burial customs are thought to be quite similar between different periods, regions, and type of tombs (at least for collective types), this presentation describes the widespread characteristics, with the emphasis, on chamber tombs and the LHIII period (for a brief review of the specifics of these customs as seen in Mycenaean Achaea, see 1.4).

3.3.2.1. Mode of burial, body deposition, location of burial within the tomb

The primary mode of burial in the Mycenaean period, at least until LHIIIB, was almost exclusively inhumation (very few cremations have been reported, e.g., in central Greece, see Cavanagh and Mee 1998: 74-75). In LHIIIC, inhumation remains by far the dominant custom but increased numbers of cremations do appear in some areas (e.g., Perati, Attica: Iakovidis 1969; for Achaea, see 1.4). It should be noted that osteological analysis is necessary to identify cremation definitively in contrast to other circumstances that could result in a similar effect (Moutafi 2013); such an analysis so far exists only for the Perati cemetery (Paidoussis and Sbarounis 1975).

It is very difficult to identify archaeologically the preparatory acts performed on the body; nevertheless, the reconstruction of the body's placement in the grave may enable related inferences. Acts such as the binding of the corpse, tight wrapping in a shroud, or even cutting the tendons,[26] have been suggested as means to achieve the desired posture, especially for MH burials (see Cavanagh and Mee 1998: 30; Boyd

[26] Cutting the tendons has been suggested for cases of extremely contracted EH burials by Fountoulakis 1987, albeit on rather tenuous osteological evidence.

2002: 69 with further references). Boyd (2002: 30-31, 69) brings in the issue of *rigor mortis* and correctly points out that it could be used in assessing the timing of certain preparatory acts. Indeed, a careful documentation of the body position at the time of recovery may allow the reconstruction of these acts, and of the depositional sequence (e.g., if head or feet were first inserted, or how the body might have been carried and placed, cf. Boyd 2002: 80-91; for related methodology: 5.4.5).

A variety of body positions is seen in Mycenaean burials. Flexed or contracted positions with the body placed on its side continue from earlier periods, but the supine posture with the body placed on its back (appearing around the end of the MH period) soon becomes the most common (in central regions such as the Argolid or Messenia; cf. 1.4 for the continuation of the flexed position as the prevalent choice in Achaea, Papadopoulos 1979: 56). There are several variations around these basic themes, depending on body side of placement and exact position of the arms (along the sides, placed on abdomen, over the thorax etc.) or the legs. For the latter, a distinction is seen between the supine extended and supine with drawn-up knees (*knees-up*)[27] position; in the case of contracted burials, it is mostly the degree of contraction that varies (flexed vs. crouched). It is interesting to notice that the depositional choice does not seem correlated to the available space (Voutsaki 1993: 81-82; Lewartowski 1995). As mentioned, the positions might vary from place to place and time to time (for regional differences by time period, see: Boyd 2002 for all grave types up to LHII; Cavanagh and Mee 1998: 71-76 for chamber tombs in LHIIIA-B, p.73 especially for Achaea and p.93 for LHIIIC; for a general overview, see Lewartowski 2000: 20-22 and Vlachopoulos 2012: 44). Orientation of the body is another aspect of the placement, more rarely mentioned and usually discussed in terms of the basic cardinal points (a review in Lewartowski 2000: 25-26). No clear rule is evident, and it seems that to some degree the orientation of the body parallels the orientation of the grave along its main axes (Lewartowski 1995). I suggest that body orientation can be related to many different reference points (e.g., architectural features and orientation of the grave and the tomb; orientation of surrounding burials etc.), and it should always be examined contextually with the burial location within the overall tomb structure.

[27] The 'knees-up' position is an interesting posture, common in some instances until very late, e.g., LHIIIC Perati (Iakovidis 1969; Cavanagh and Mee 1998: 93).

The differentiations of body deposition can be meaningful at many levels (as expected, simplistic 'ethnic' explanations were among the first interpretations: e.g., Blackburn 1970: 19 attributed the change from MH contracted to LH extended burial position to the coming of a different population). The choice of burial position can facilitate social strategies (e.g., the suggestion that the change to supine position provided a larger area for conspicuous display in the late MH and Early Mycenaean times, Boyd 2002: 68), it can provoke further ritual changes (e.g., the supine position may allow for a longer preparation phase as *rigor mortis* is not such a significant factor any more: Boyd 2002: 30-31), and it can reflect social distinctions between different age or gender categories. So far, no significant trends have been identified in terms of sex- or age-based differentiations in burial position (Cavanagh and Mee 1998; Lewartowski 2000: 58; except for possible differentiation in preferred side of placement between females and males, cf. section 3.4.3). However, we cannot be certain of these patterns, if sex and age of the deceased are not osteologically assessed; the lack of osteological data adds up to other biases, such as: a) the inadequate documentation of the body position and of the state of the skeleton in most archaeological reports (see critique in Boyd 2002:75); b) the lack of differential explanations for the state of the skeletons (e.g., decay process, accurately noticed by Lewartowski 2000: 21); and c) problematic use of descriptive terminology (cf. Sprague 2005). The significance of an appropriate methodology for the detailed bioarchaeological recording and further analysis of body position is apparent (cf. section 5.4).

The increased complexity of burial ritual after the MH period is also seen in the variety of burial locations within the tomb (Boyd 2002: 46-48). Even though burials are usually placed on the floor, features such as pits, cists, niches, or benches sometimes occur inside tholos or chamber tombs, either for secondary or even primary burials. Burials are not always restricted inside the chamber but can also be found in the dromos. The regional and temporal variety of these features and burial location is also explored in current research (see Boyd 2002: 45-48 for late MH and EM times, 89-91 for LHI-II; Cavanagh and Mee 1998: 71-76 for LHIIIA-B, 92-93 for LHIIIC; a recent review in Vlachopoulos 2012: 44-47; especially for Achaea, see section 1.4). Differentiation in these features is more marked in the LHIIIC period, especially regarding the use of pits, which in some cases becomes predominant, in parallel with other local peculiarities (e.g., a much larger MNI in the new type of 'cave-dormitory' chamber tombs of Kefallonia: Souyoudzoglou-Haywood 1999). Different identities, from ethnicity to gender, age, or social status, have been explored as the reasons behind these differentiations. A raised number of features that separate burials inside a tomb has been seen as either a practical effect of burial accumulation or the outcome of the occupation of the tomb by a 'presumably different group' (Dickinson 1994: 229). The lower status of burials placed in the dromos has been suggested long ago (Blegen 1937: 157 identified a possible slave in such a burial), although current research avoids assumptions of this kind (for a discussion of burials in the dromos: Lewartowski 1996). Age and gender categories have not been found to differentiate clearly, although some segregation of non-adults in more 'special' places has been suggested (Cavanagh and Mee 1998: 128-130; see further in section 3.4.3.2 and Chapter 8).

3.3.3.2. A key characteristic of Mycenaean burial customs: collective burials and secondary treatment

One of the key developments in Mycenaean burial practices is the move from the individual (albeit associated) MH burials to the use of collective burial practices and the gradual introduction of secondary treatment for both the skeletal and cultural material from earlier funerary assemblages. Secondary treatment went hand in hand with the development of the new architectural form of collective tombs, and an entire set of associated practices before, during, and after the funeral. The secondary practices include various forms of re-arrangement of the material already in the tombs, basically characterised by commingling with other material, re-allocation, dispersal, and possibly removal to outside the tomb (Cavanagh 1978; Wells 1990; Voutsaki 1993; Cavanagh and Mee 1998: 76; Boyd 2002; Gallou 2005: 113-114; for a most recent interpretative discussion: Boyd in press a). Secondary activities are introduced by the end of the MH period and evolve quickly into the dominant widespread custom of the LH era (for a review of such cases dated to the MH/LH transition, and preliminary bioarchaeological publications of the finds from newly excavated MH/LH cemeteries that offer vast and diverse evidence of secondary practices, see Voutsaki et al. forthcoming; Moutafi and Voutsaki forthcoming for Ayios Vasilios, Laconia; and Lagia et al. forthcoming for Kirrha, Phocis).

Secondary treatment of the dead is a custom encountered cross-culturally and consists one of the most complex death rituals. The extremely influential studies of Hertz (1907) and Van Gennep (1909) established the prominent symbolic and social significance of this process, setting the basis of current interpretations (cf. section 2.1.1; for an extensive cross-cultural study and relevant discussion: Metcalf and Huntington 1991). The custom holds a central place in current discussions about Mycenaean society, and several, often controversial, views have been expressed about its role in shaping (or constantly re-shaping) the 'Mycenaean' identity (cf. Voutsaki 2010a *contra* Boyd in press a; the main opposition surrounds the directionality of spreading Mycenaean funerary innovations between elites and wider social groups; cf. section 1.3, 3.4.1, chapter 8). Any attempt at interpretation, however, requires extra care in the precise understanding of the relevant acts, as the term 'secondary treatment' (and even more 'secondary burial') may encompass a broad range of different practices. These practices, even if intentional, may have nothing to do with ritual, or may simply represent the result of accidental disturbance (cf. section 5.4.5; Weiss-Krejci 2005: 155-156). Indeed, the distinction between a ritual or purely practical character of these practices has also been central in the discussion of the custom (see below).

Excluding cases of accidental disturbance, an intentional act of interference with earlier remains may be prompted by several motivations: the preparation for new interments and the need to make space, a wish to remove valuable items (either for their value *per se* or their association with the dead), or a specific secondary rite (Boyd 2002: 31). In the past, evidence of secondary acts was mostly interpreted as indicative of disrespect, indifference, and carelessness towards the bones, taken to imply the change of beliefs towards the lost social members after the decay of their soft tissues (e.g., Mylonas 1966: 113). As noted already by Wells (1990: 135), the use of the word 'swept' for removed bones clearly bears such connotations (cf. Boyd 2014a,b linking such interpretations and word choice to the fixation of many researchers on pristine contexts, i.e. intact burials; cf. section 3.2.1). Presently, few scholars are sceptical about the existence of an ideological background to secondary acts. Even among those who may favour practical explanations, most no longer accept that the acts should be understood as 'disrespectful' (e.g., Papadimitriou 2001: 178-179). Current consensus has basically accepted Cavanagh's (1978) suggestion that a real secondary ritual (termed 'second funeral') was probably a central part of the funerary cycle, and not an occasional act out of practical necessities. His interpretation gains support on many grounds; a primary argument consists of the numerous examples of tombs which lack *in situ* primary interment(s) (Wells 1990: 135; Voutsaki 1993; Cavanagh and Mee 1998: 72,76; Boyd 2002, 2014b, in press b; Cavanagh 2008). Alternatively, tombs lacking primary interments have been interpreted as prepared for burials that never happened, cenotaphs, or affected by intense disturbance and ancient looting (further references and examples in Wells 1990; Cavanagh and Mee 1998: 72).

The engagement with the detritus of previous funerary episodes comprises a variety of acts, occurring both at the time of preparation for a new burial and as part of the secondary rites; accidental interference in other instances is also possible and should not be ignored. These acts include the removal and re-assembling of bones and artefacts in a variety of locations within and possibly outside the tomb, occasionally accompanied by deliberate destruction of offerings, fragmentation, re-use or re-circulation (Cavanagh and Mee 1998: 76, 116; Boyd 2002, in press a; Galanakis in press). The bones hold a central place in the secondary acts, and their arrangement might vary significantly, from scattered or isolated remains throughout the chamber, to defined piles or pit assemblages of different sizes, either in the chamber or the dromos. At a glance, these assemblages most often give to the excavator an image of complete disorder (hence the assumptions of 'disrespect'); however, cases of re-alignment, selective deference towards specific bones (e.g., skulls), and the appearance of 'order' in placement have been noted as well (Cavanagh and Mee 1998: 74; Gallou 2005: 118-119; for LHIII Achaea, see examples in Papazoglou-Manioudaki 1994: 176 and Vasilogamvrou 2000: 47). The frequency and sequence of ritual acts within a grave is hard to estimate. Since the dromos of the tombs was filled in after each event and re-opened for the next,[28] it is possible to attempt an estimation of the episodes of re-opening based on its stratigraphy (for early references on this, see Wells 1990: 133). Most recently, a geoarchaeological analysis managed to define a series of

[28] This is the dominant view; however, several scholars have expressed their scepticism arguing that at least the dromoi of some tholoi remained open; Wright (1987), Gallou (2005: 66), Boyd (2002: 63-64) and Papadimitriou (2011) argue for the possibility that even chamber tombs' dromoi (or of some of them) might have been remaining open for some period of time.

openings of chamber tombs dromoi through the use of field and micro-morphological observations (Karkanas et al. 2012).

The discussion about the meaning of Mycenaean secondary acts is marked by the practical-ritual dichotomy. As already mentioned, secondary assemblages are differentially interpreted based on which concept is mostly favoured (on the inadequacy of such dichotomies for a successful approach to human practices, see discussion in chapters 4 and 8). The current consensus acknowledges the ritual aspect and complex meanings in the variation and complexity of these acts. Despite diverse views on the exact causes of the development of the Mycenaean funerary set and its place and directionality in social strategies (e.g., Voutsaki 2010a; Boyd 2014b, in press a,b), it is widely accepted that the Mycenaean secondary acts are embedded in the meaning of collective identity and lineage, stressing the presence of ancestors and their relationship to the newly dead and the living. Funerary customs offer multiple opportunities for both differentiation and integration. The dead are initially placed into a collective tomb, maintaining, however, their individuality at the time of the primary burial. At some time afterwards, and most frequently after decomposition of the soft tissues, their bones and associated artefacts may get disarticulated, removed and re-deposited together with earlier interments. The dead are thus transformed from identifiable individuals to a collective mass, incorporated into a (presumably) anonymous and non-recognisable ancestral group. This serves as an ever-present resource for legitimation and renegotiation of social identity through its ties to the next users of the tomb and the special place it holds in their experience and funerary performance (Voutsaki 1993; 2010a: 77-82; Cavanagh and Mee 1998: 70, 76, 116; Boyd 2002: 85, 94; in press a; Cavanagh 2008). Changes in the concept of the body and the differences in perception between fleshed and de-fleshed remains are thought to be central to the ideology of the process from individuality to incorporation (Cavanagh and Mee 1998: 76, 116 with further references; Voutsaki 1993, 2010a; Boyd 2002, in press a; Galanakis in press). Despite regional and temporal differences, as well as differentiations from the normative pattern in exceptional cases, the Mycenaean secondary customs display a broadly similar image across different places and times. It is, however, exactly the variation and subtle differences of each case that may offer a better understanding of people's agency within the specific historical context of their acts, and reveal possible tensions between the prevailing norm and opposing personal will, strategies, even sentiments (see Chapter 4).

3.4 *Who is in the tombs?* Aspects of status, identity, and personhood in Mycenaean chamber tombs

The relationship of the entire set of Mycenaean funerary customs (i.e. tomb-ritual-other practices, described in the previous section) to society and its structure has been explored through several paths, with the focus shifting in parallel with changes in interpretive paradigms (section 3.2). Nevertheless, the question 'who is in the tombs?' remains central. This discussion involves several aspects of social identities, including vertical status and hierarchical social groups, as well as smaller groups of horizontal status defined by family, age, and gender identities. How to assess these aspects is not straightforward; etic rather than emic interpretations have unfortunately been quite common. Keeping in mind that the main observations summarised below do not necessarily reflect a stable, let alone uniform, social reality, it is worth reviewing these aspects before attempt to explore this question in the cemetery of Voudeni.

3.4.1 Vertical status

The tomb type, the rites, and the funerary offerings are all aspects that have been widely explored for status differentiations, between and within different tomb forms. In general, the main components of the typical Mycenaean rites appear to be the same across all collective tomb forms from the beginning of the Mycenaean era (Dickinson 1994: 222-232; Cavanagh and Mee 1998: 70, 124; Boyd 2002: 46-48). The only exception is the continuation of single burials in simple graves (cists and pits). Even though the occupants of simple graves seem to receive a similar primary funerary treatment to the primary interments of collective tombs, the lack of secondary activities has been attributed either to a different set of beliefs of this group or to lower economic status which prevented the undertaking of such activities (Lewartowski 1995, 2000). Cavanagh and Mee (1998: 124) provide ethnographic parallels for the possibility to put off secondary acts if finances do not permit, and suggest that this might explain why the rite was not always performed, even in collective tombs.

Despite a general uniformity in Mycenaean funerary rites and the remark that their collective character makes them a rather unsuitable arena for strategies of social differentiation (Boyd in press a *contra* Voutsaki 1998, 2010a), exceptions to the norm may indeed represent attempts for status differentiation (especially in Early Mycenaean times, reduced in LHIIA-B, and possibly re-explored in LHIIIC, cf. section 1.3). Finally, other parameters, such as the scale of the rites (e.g., number of people that could be involved) may be status-related and correlated (*or not*) to other aspects, such as the size of the tomb and the excess of the material culture to be consumed.

The equation of the architectural form of the tomb with status or cultural groups has been widely applied in Mycenaean mortuary studies; recently, however, such assumptions have been variously questioned (cf. 3.2, 3.3.1). Both the type and certainly the size of the tombs have been associated with specific groups of 'tomb users'. This is certainly the case for the simple graves of the Mycenaean period which are commonly associated with a group of lower status (Dickinson 1983; Lewartowski 2000), while even chamber tombs –and certainly the tholos– were until fairly recently thought to represent elite funerary monuments, possibly used by two distinct social groups (e.g., Alden 1981: 19; Taylour 1983: 81; Wells 1990). Some initial doubt on such crisp distinctions was cast by interpretations advocating subtler differences, for example, viewing the tholos occupants as representatives of the higher stratum of the same horizontal status group which occupied the neighbouring chamber tombs (Wright 1987). Indeed, the recognition of these finer distinctions and the exploration of a nexus of spatio-temporal parameters such as the tomb's size and location in regional and temporal specifics paved the way towards a much more complex image (e.g., Mee and Cavanagh 1984, 1990; Wright 1987, Cavanagh and Mee 1990; cf. section 3.2.2). Current theoretical approaches do not associate the choice and development of tomb characteristics (including type, size, location, structural details) with the social status of the deceased, but with complex strategies of social identification through the correlated development of funerary rites and tomb form, as well as through ideological and landscape associations (e.g., Boyd 2002, in press a; Galanakis 2008, 2011; Voutsaki 2010a; Papadimitriou 2011).

The material deposited in Mycenaean tombs has traditionally been the most explored category in terms of status, despite the limitations imposed by the frequency of tomb-robbing (especially in case of highly visible structures, such as the tholos tombs), but also by the cumulative nature of the collective tombs' contents. Biases include the transformations of the material due to secondary acts, the frequent lack of positive association of artefacts with specific individuals due to commingling or unclear, in-between, positioning, and various dating problems due to the variety of funerary episodes and the multi-phased nature of the depositional process (Voutsaki 1993: 72-74; Boyd 2002: 85, 2014a: 194). Furthermore, the material culture found in the tombs is not a single conceptual group but consists of three categories (Boyd in press a): a) the offerings accompanying the interment and deposited with it (such as vessels, personal belongings, weaponry); b) adornments of the deceased (such as jewels or clothing accessories, usually added at the preparatory phase outside the tomb); and c) items used by the mourners at the time of the funeral. A distinction between the three is not always easy to make. Despite these problems, several attempts to infer and even quantify status based on funerary items have been made, including the application of several, more and less sophisticated, processual scoring systems for measuring burial wealth or complexity (e.g., Laffineur 1989; Cavanagh and Mee 1990; Gradiazio 1991; Nordquist 1990 for MH burials; Lewartowski 2000 on simple graves). Voutsaki (1993:72-74) offers a more stable theoretical basis for the choice of her scoring system, arguing that from the three potentially status-related attributes of funerary material, i.e. quality, quantity, and diversity, it is only the latter that is less subject to theoretical and preservation bias.

Even though the material used in funerary consumption can certainly be related to social strategies for claiming or renegotiating social status, it is one of the most problematic areas to explore in terms of social differentiation and should certainly never be addressed in isolation. In fact, the multiple meaning of objects makes other aspects of materiality much more promising for revealing social interactions in the funerary arena, and the objects' central, evocative role in the funerary ritual (e.g., the significance of life histories of the objects themselves: Bennet 2004; Harrell 2010; and the powers of association through their multiple roles in the production of funerary context, Boyd 2014a, in press a). As a tool for larger scale socio-political discussions, then, funerary material should be addressed only contextually alongside other strands of data, including settlement and everyday economic data (e.g., Voutsaki 2010b, where instead of simply looking at funerary consumption, she applies a much more complex approach).

In conclusion, it is generally accepted that, notwithstanding exceptions and variation, the basic repertoire of Mycenaean burial customs displays strong similarities between different regions and times. Moreover, as recently argued by Boyd (in press a), the collective nature of the practices makes them far from ideal for vertical status projections. That is not to say that strategies for social differentiations were not applied in this sphere, but it makes it certainly more complicated for us to approach them. Regarding especially the chamber tombs (which is the only tomb form in Voudeni cemetery), it has long been accepted that they were used by significant numbers of the population throughout the LH period, and did not constitute the prerogative of an elite minority (Cavanagh and Mee 1984; Dickinson 1994: 228; Cavanagh and Mee 1998: 78). Details on the collective identity expressed in Mycenaean funerary rites, and on specific grouping factors (e.g., family), as well as the possibility of other social distinctions expressed by the differential inclusion of different sub-groups, are further matters of interest about status and identity of the deceased.

3.4.2 Collective and family identity

The collective character of the typical Mycenaean tombs and the clustering of these tombs in formal cemeteries express an emphasis on communal beliefs and group identity. The affiliations between the members of the group during life are strengthened by maintaining and stressing these ties after death. Even though the collective element is evident, the exact link between the individuals grouped together in death is not so straightforward to assess. The dominant view is still the initial interpretation of Tsountas and Manatt (1897: 132): Mycenaean tombs are used by families, and each cemetery comprises a community of families (Cavanagh and Mee 1998: 130-132; Wright 2008b with further references). What exactly is included under the term ‘family’ and its specifics (e.g., nuclear versus extended, cf. Voutsaki 1993: 84) is open to discussion. The emphasis on ‘families’ (or ‘small groups’, if caution is exerted in labelling them, e.g., Boyd 2002: 44) as opposed to a wider communal identity appears to have been a structural characteristic of the MH/LH changes in funerary customs (Voutsaki 1993; Cavanagh and Mee 1998: 130-132; Wright 2008b; Papadimitriou 2011: 468-470). The shift has been linked in various ways to the socio-political changes of the time, mostly seen as a passage from the simple MH collective identity (expressed through lineage) to more individualistic claims and complex strategies of the family groups in larger and more diverse communities that started to value descent (Voutsaki 1995; 2010a; Wright 2008b). Descent and continuity were certainly significant for these latter groups, as their funerary customs evolved from the simple association to literally *collective* forms of disposal of particularly long duration, entangling many generations (cf. Boyd in press a; 3.3.3.2).

Kinship affiliation has been accepted as the most obvious link among the group members, since the tombs included both sexes and a range of adult and sub-adult age categories. From early on, anthropological analyses of Bronze Age assemblages attempted to explore further the issue and investigate the extent of consanguinity (e.g., Angel 1971; Musgrave et al. 1995; for more recent works: Bowman et al. 2008, 2009; Papazoglou-Manioudaki et al. 2009, 2010; cf. section 3.5). Despite still existing methodological limitations that may hinder the level of accuracy, bioarchaeology is indeed the only promising path to the identification of kinship in the archaeological record. Without biological evidence, the funerary record is one of the most inadequate areas for positive kinship inferences, no matter how 'obvious' other evidence appears (for a brief review of limitations in inferring kinship in the funerary record: Parker Pearson 1999: 114).

3.4.3 Gender and age

Gender and age are two pivotal aspects of social identity. Following recent advances in the fields of sociology and social history, a growing interest in these parameters surged in archaeological research (for extensive references: Gowland 2006; Sofaer 2006). In contrast to the traditional view of both aspects as cross-culturally uniform concepts, directly related to the biological 'realities' of sex and physiological or chronological age respectively, it is now widely recognised that both concepts are culturally specific and historically situated. Gender, albeit related to, is not identified with biological sex; debated as might be the relationship between the two, gender certainly represents a socially constructed variable, which does not necessarily stay stable during life and reflects both the individual's personal understanding and other people's attitudes or expectations from it (Sofaer Derevenski 1998; Gilchrist 1999; Sorensen 2000). Similarly age is not identical with the universal process of growing up, but consists of several aspects (i.e. physiological/biological, chronological, social) that are variably intertwined in different cultural settings (Gilchrist 2000; Gowland 2006, with further references). Furthermore, gender and age are most often socially inter-linked; our approach to how past populations understood the respective categories, the social interactions they evoked, and their definition in social terms is best explored through a concurrent examination of both concepts (e.g., Ginn and Arber 1995; Sofaer-Derevenski 1997; Gowland 2001, 2006). This section summarises the state of play in Mycenaean funerary research regarding these social parameters, in order to outline the respective set of questions that a bioarchaeological study needs to address (for further discussion on possible tension between theory and method, the methodological scope, and the extent to which the current study will approach these issues, see Chapters 4 and 5).

3.4.3.1 Gender

Gender identity in the Bronze Age Aegean has been mostly explored through artistic representations in figurative art (cf. recent collective volume: Kopaka 2009) and the information provided by the Late Bronze Age administrative documents of Linear B tablets (Olsen 1998, 2014). Gender differentiation has also been explored in the Mycenaean funerary sphere, despite the limitations imposed by the scarcity of anthropological assessments that would determine the biological sex of the human remains (for a basic review: Cavanagh and Mee 1998: 127-128). In the lack of biologically sexed material, the main patterns summarised here are mostly based on cultural estimations of the sex of the deceased through their association with gendered artefacts. It is certain that this situation will soon change thanks to a growing number of bioarchaeological studies in different regions of the Mycenaean world (cf. 3.5, 8.2). A review of all related evidence is beyond the scope of this study; this summary aims at describing current trends of gender investigations in the Mycenaean funerary record, and outlining aspects that mostly display gender-related differences.

Gender distinctions in the Mycenaean funerary record have mostly been explored in terms of differential inclusion of the two sexes in formal funerary disposal as well as specific distinctions in ritual practices, type and wealth of associated offerings, and type of tomb or burial location (e.g., Mee 1998; Cavanagh and Mee 1998: 127-128). More recently, discussions evolved around more complex questions on interlinked social aspects, such as the onset of gendered distinctions in specific age thresholds (Haas-Lebegyev 2012), or the stressing of sex and age identities in correlation to the growing social complexity and changing organising principles of the transitional MHIII/LHI period and Early Mycenaean times (Voutsaki 2004). Spatio-temporal discrepancies –with the Argolid region and the pre-palatial times providing the bulk of the discussed evidence– prohibit direct comparisons with the case of Voudeni. In general, females are thought to be under-represented in comparison to males, a pattern first observed in the transitional Shaft-Grave period (Voutsaki 2004) and thought to be continued throughout the Late Bronze Age. In chamber tombs Cavanagh and Mee (1998: 127-128) suggest a percent ratio of 63 males to 37 females (although sample details are completely unclear), while Cavanagh (2008: 336) states that female burials are "seriously underrepresented". These observations although potentially biased due to preservation and methodological biases (already stressed by Halstead 1977) have led to suggestions of a dependent, if not lower, status of women, and even possible female infanticide (Cavanagh and Mee 1998: 128; cf. also Dickinson 1994: 88-89 discussing height averages in terms of higher levels of nutrition for males). However, the lack of a clear methodological approach and sample evaluation renders the validity of such assumptions extremely doubtful. Despite the observed gender differentiation in Shaft Grave funerary iconography and certain associated artefacts throughout the Mycenaean period (see further references in Voutsaki 2004 and Haas-Lebegyev 2012), no marked gender distinctions are demonstrated in tomb type or funerary offerings, especially in Late Bronze Age (Cavanagh and Mee 1998). Most aspects of ritual (e.g., secondary practices) seem invariably applied to both sexes, although a potential gender-related choice might be evident in the side of body deposition in the case of flexed/contracted burials: a tendency for females to be placed on their left side in contrast to males on the right has been noticed in MH burials and is thought to prevail at least in Early Mycenaean times as well (Ruppenstein 2010 with a summary of early discussion, confirmed by Haas-Lebegyev 2012; but cf. Lewartowski 2000:58 for a slightly opposing view).

3.4.3.2 Age

Age identity, mostly explored around the binary opposite of 'adult versus non-adult' and with an exclusive emphasis on childhood (a focus paradoxically explained precisely because of the adult-centric views of the past: Gowland 2006: 145), has come recently to enjoy a growing interest in archaeological studies of Ancient Greece, and of the prehistoric Aegean in particular (focused on Classical Greece: Neils and Oakley 2003; Cohen and Rutter 2007; and for a bioarchaeological approach: Lagia 2007). Similar to gender enquiries, the discussions of age in Aegean prehistory mostly include an examination of typical age-related characteristics as discerned from iconographic evidence (e.g., Rutter 2003), Linear B documents (e.g., Olsen 1998), and several strands of funerary evidence. The following brief summary focuses on the latter category, as evidenced in the Mycenaean funerary record.

It is generally accepted that children are significantly under-represented in Mycenaean tombs. In contrast to the MH period, a segregation of the age groups appears in the transitional Shaft-Grave and the following Early Mycenaean period, at least in the Argolid, although rich child burials occasionally occur. This segregation ceases in LHIIIA when children appear in chamber tombs, but still in low numbers (Voutsaki 1993, 2004). In summary, it is generally observed that children are rarely reported in tholos or early chamber tombs of the LHI-II period, while their frequency rises in the chamber tombs of the LHIIIA-B period (commonly encountered between 13% and 25%; cf. frequencies as informed by bioarchaeological analyses: 8.2.1), and then decreases again in LHIIIC (Cavanagh and Mee 1998: 128-130; Gallou 2004, with further references). This trend parallels the distinction in the choice of different burial locations for the two groups (i.e. intramural versus extramural locations, and progressive changes in the observed patterns of inclusion respectively: Lebegyev 2009, with further references). Subtler distinctions in terms of inclusion may relate to the correlation of specific age grades with the treatment received (see below).

Further differentiations are sometimes expressed in the choice of separate, distinct places within the collective tomb for child burials, such as pits, benches, or niches, either inside the chamber or in the dromos or around the entrance (Polychronakou-Sgouritsa 1987; Lewartowski 1996; Cavanagh and Mee 1998: 128). In terms of the offerings placed with children, these are usually of a smaller range and number than those of adults (despite notable exceptions, see in Voutsaki 1993: 82-83), and are often characterised by recurring items associated especially with the non-adult category (such as miniature vessels, feeding bottles, figurines, etc.: Polychronakou-Sgouritsa 1987; Gallou 2004). Gender associations of the chosen offerings have been shown to be introduced in specific age thresholds, possibly different for girls and boys (Lebegyev 2009, Haas-Lebegyev 2012). As for other important aspects of the funerary ritual, such as the secondary rites, it seems that, at least in the LHIII period, these are shared by both adult and sub-adult age categories (juvenile remains are found within secondary assemblages, and sometimes in separated, single secondary depositions, see examples in Voutsaki 1993: 83, table 7.4; Gallou 2005: 114).

In summary, age distinctions, although not very pronounced, are observed in the Mycenaean funerary record. Several interpretations have been proposed to explain these observations, approach the social position of juveniles, and understand the reaction to the death of children in different cases. The issue of sentimental involvement and the expression of grief have also been discussed, heavily influenced by Hertz' (1907: 132 ff.) discussion about a weak reaction to young children's death in societies that did not view them as fully fledged members. Cavanagh and Mee (1998: 129-30) offered a compromise conclusion trying to balance the observed underrepresentation with the special care often shown in the disposal of children: children might not have been fully fledged members of society, enjoying an ascribed rather than acquired status, but their special role might have been appreciated and stressed by their distinct treatment and placement in liminal zones. Temporal changes in the extent of stressing age identity have also been discussed in socio-political terms, attributed to changing organising principles and different social needs and values in the different periods (Voutsaki 1993, 2004; Gallou 2004). A recent focus has been placed on the scaled process of socially constructed age (rather than taking the non-adult category as a monolithic entity), in which specific thresholds signify changes in the social identity of the individual, and possibly significantly affect funerary inclusion and treatment. Lebegyev (2009, Haas-Levegyev 2012) identifies two important points: one at the age of 1-2 years and another at the age between 5 and 6 (as for the upper limit of childhood, this is usually placed around 13 years, but cf. Gowland 2006). By analogy to cult tradition of Ancient Greece, it has been hypothesised that specific rites of passage related to these stages may have been employed in Mycenaean times (Muskett 2008). Indeed, a distinction between younger and older children appears in Linear B tablets, even though it has not been possible so far to associate this distinction with specific chronological ranges (Olsen 1998, 2014).

3.5 Current bioarchaeological research in prehistoric Aegean: a brief review, focused on the Greek mainland and the Mycenaean period

Recent decades saw a significant change in the input of human osteological studies to Aegean mortuary research. The worth of information that may be gained from the study of skeletal remains becomes increasingly valued, and the professional recovery and analysis of skeletal material a common prerequisite of, at least the systematic, archaeological investigations of mortuary sites (for some current inter-disciplinary projects see 3.2.3). Nevertheless, context-lacking skeletal analyses are unfortunately still being conducted and normally published in the form of segregated appendices to the archaeological synthetic narrative. However an increasing number of contextual bioarchaeological studies are now being undertaken, resulting in a growing list of articles, monographs, and even collective volumes (reviews of bioarchaeological research in Greece: Roberts et al. 2005; MacKinnon 2007; Buikstra and Lagia 2009; Lagia et al. 2014; for a collection of papers exploring current directions in the bioarchaeology of Greece: Schepartz et al. 2009b). Current Aegean bioarchaeological studies usually follow problem-oriented approaches and respect the significance of context. The skeletal evidence is used to answer specific archaeological questions, expanding on the legacy of Angel's social biology (cf. 3.2.1) with the use of modern methodological tools. Current issues usually include palaeodemography, palaeopathology, differentiations in the funerary treatment of different groups, and, more rarely, further details of burial practice. Palaeopathology and diet are principal areas of interest, the latter increasingly assisted by the analysis of stable isotope data (Richards and Vika 2006; Vika et al. in press; for the most recent collection of isotope studies in the Aegean: Papathanasiou et al. in press; see further in Buikstra and Lagia 2009: 14-19). The analysis of strontium isotopes combined with metric and nonmetric skeletal variation has been recently applied in biodistance analyses with regard to questions of population mobility in Aegean prehistory (e.g., Nafplioti 2008, 2011; Prevedorou, in preparation). The analysis of aDNA is becoming important in the investigation of genetic affinities (e.g., Brown et al. 2000; Bowman et al. 2008, both on the skeletal material of Crave Circle B of Mycenae), while phenotypic approaches are still being undertaken towards the same goal (cf. current work, unpublished, of Efi Nikita). Most current approaches attempt to apply archaeological theory and integrate anthropological and archaeological data. The degree to which this integration is accomplished is, however, variable, and often remains restricted for several reasons (cf. 2.3).

Bioarchaeological studies of Late Bronze Age (Mycenaean) material from the Greek mainland are constantly increasing. This section summarises the most significant works among them, outlining their main areas of interest. Specific results from these studies will be discussed in relation to the Voudeni patterns in section 8.2. The following summary focuses only on the Late Helladic period.[29] (for recent works in MH/Early LH Argolid, see Triantaphyllou et al. 2008; Triantaphyllou 2010; Papazoglou-Manioudaki et al. 2009, 2010; Nafplioti 2009). Recently published LH osteological data are of three different types: a) publications of material earlier excavated and studied some time ago by physical anthropologists such as Angel and Bisel, without any re-examination (e.g., Messenia: Bisel 1992; Laconia: Duhig et al. 2008); b) re-examination of old material, previously studied by Angel (e.g., Attica: Smith 1998; Messenia: Schepartz et al. 2009a, 2014); and c) studies of recently excavated material, either from entire cemeteries or isolated tombs from different regions (e.g., Greek Macedonia: Triantaphyllou 2001; Valla et al. 2013; Thessaly: Papathanasiou 2009; Papathanasiou et al. 2012; East Locris: Iezzi 2005, 2009; Boeotia: Vika et al. in press; Laconia: Papathanasiou 2006; Attica: Moutafi 2010). Our principal region of interest, Mycenaean Achaea, displays a remarkable record of recent and ongoing bioarchaeological investigations, promising the compilation of a well-informed and large body of data in the near future (Papathanasiou 2005 on Spaliareika Lousikon; Paschalidis and McGeorge 2009 on Klauss; Petroutsa et al. 2009 and Moutafi, this study on Voudeni; Graff 2011 on Kallithea Laganidia; Nafplioti forthcoming on Ayios Konstantinos and Krini; Papathanasiou et al. forthcoming on Kalamaki; Jones in preparation on Chalandritsa and Petroto).

[29] For recent works in MH/Early LH Argolid, see Triantaphyllou et al. (2008); Triantaphyllou (2010); Nafplioti (2009); Papazoglou-Manioudaki et al. (2009, 2010).

All these studies explore a wide range of key bioarchaeological issues, of which those closest to the interests of the current study are here presented. First, our knowledge on the basic demographic data from Mycenaean tombs has significantly expanded. Sex and age estimations are provided by all studies, informed by contemporary methodologies. Demographic patterns and the observed discrepancies have been explored with regard to selective or differential mortuary practices and horizontal status distinctions. The new evidence demonstrated various patterns of sex distribution, usually attesting to fairly equal ratios between the two sexes (cf. 8.2.1; for a brief summary of different ratios: Triantaphyllou in press a: 292); these results challenged long-standing assumptions regarding male predominance in Mycenaean tombs (cf. 3.4.3.1, the traditional view shaped after Angel's original finds, mostly from Mycenae: Angel 1973, and Pylos: Blegen et al. 1973). Similarly, age distribution appears rather variable, both in terms of the adult: non-adult ratio, and the specific frequencies of each adult age category (Papathanasiou et al. 2012: 25, Table 1; Triantaphyllou in press a: 289; cf. 8.2.1). In addition, some attempts have been made towards the interpretation of demographic patterns through their comparison to modern life tables, on the basis of modern palaeodemographic principles (e.g., Triantaphyllou 2001, in press a).

Evidence pertaining to the life histories of the deceased, especially with regard to health, diet, and occupational activities, has often been investigated across different social, temporal, or regional groups of the Greek LBA as an indicator of social distinctions or differentiations in life-style (e.g., Triantaphyllou 2001; Iezzi 2005, 2009; Schepartz et al. 2009, 2014). The only monograph that exclusively focused on a theoretically justified bioarchaeological approach to social status is the doctoral thesis of Smith (1998) on Mycenaean Athens. Influenced by the theoretical advances of contemporary mortuary theory (cf. Chapter 2), Smith attempted to interweave theory and method, and use both archaeological and osteological evidence in order to investigate their relationships and thereby evaluate status inferences. Even though her approach lacks the current phenomenological understanding of social structure and its diverse aspects, Smith's pioneering analysis demonstrated the need for a firm theoretical background to this problem, highlighted potential bias, and stressed the significance of 'biological status' in the understanding of social status. Recent discussions of biological status in Mycenaean times expanded on the same lines, strengthening both the methodological and theoretical basis of the issue (Schepartz et al. 2009, 2014; Liston and Smith 2010).

The reconstruction of burial practices *per se*, i.e. the treatment of bodies at the time of the funeral and subsequent acts involving the manipulation of skeletal material, has not so far been a primary focus of Aegean bioarchaeological studies (notice the absence of this research area even from extensive reviews of current trends in Aegean bioarchaeology, such as that of Buikstra and Lagia 2009). One of the first studies that set burial practices as a central (albeit not the primary) research goal was conducted by Sevi Triantaphyllou (2001). Her study involved (among others) LBA material from Greek Macedonia, and comprises the first, and most analytical so far, attempt to develop a well-defined methodological approach to the study of commingled human remains from prehistoric Greece (her later works, especially on Neolithic and Minoan material, further expanded on the same questions). More recently, Mycenaean burial practices, with emphasis on specific details of the funerary actions performed in chamber tombs, have been thoroughly explored bioarchaeologically in two sites in Argolid: the Barnavos and Ayia Sotira cemeteries (Wright et al. 2008; Triantaphyllou in press a); and two different cases in Magnesia, Thessaly: Kazanaki (Papathanasiou 2009) and Velestino chamber tombs (Papathanasiou et al. 2012). In addition to these LH cases, a growing interest in bioarchaeological reconstructions of burial practices is evident and well applied in recent works from other periods and places (indicatively: Early and Middle Minoan Crete: Schoep et al. 2012; Triantaphyllou 2012, in press b with extensive references to earlier works; Vavouranakis and Bourbou in press; for Early Cycladic Aegean: Moutafi 2013, in press; for Neolithic Greek Macedonia: Triantaphyllou 2008; for MH/Early LH Peloponnese: Triantaphyllou 2010; Lagia et al. forthcoming; Moutafi and Voutsaki forthcoming).

CHAPTER 4

SCOPE AND AIMS OF THIS STUDY

4.1 Basic theoretical premises and aims

As discussed in previous chapters, the mortuary record variously relates to social structure, comprising one of the basic archaeological sources for social inferences. This relationship, however, is neither simple nor straightforward. Therefore, it is imperative to explicitly outline the theoretical framework through which we will attempt to approach the social dimensions of mortuary evidence. This has significant implications for the type of data we choose to work with and how we address it.

Current interpretive notions that I find most appropriate for the questions posed in this study were explored in chapters 2 and 3 (cf. 2.2.2 and 3.2.3, especially Barrett 2000; Boyd 2002; Fowler 2004; Voutsaki 2010a). Contemporary archaeological theory, drawing on theories of practice, agency and phenomenology, recognises the primary significance of human practice and agency in the experience and constant re-creation of social structure. The mortuary context is shaped by the acts of the living and experienced through them. Even though several representations may materialise in mortuary contexts (such as divisions based on age, gender, social status etc.), this is never directly performed but filtered through the acts, choices, and experiences of the mourners. In the case of tombs with collective burials, in particular, time and space perception may vary, as the tomb is constantly revisited and the mortuary context continues to be reformed. Thus, a complex and shifting network of beliefs, symbols, social relationships, and notions of the self and the society is actually reflected in the material remains of these acts. This is why social dimensions can only be approached if agency and personhood are understood as historically situated, embedded, and relational, and as many as possible dimensions of human action (*aka* social practices) are framed in a historical narrative which respects their spatio-temporal specifics.

As a result of the complex interaction between agency, personhood, and social structure in the mortuary sphere, the picture is fuzzy. Mortuary practices are certainly to some extent dictated by ritual and moral norms within a specific tradition which may constrain people's acts. At the same time, death, as an *a priori* stressful situation, naturally evokes personal reactions from the different participants and allows for innovation through personalised, unique actions and experiences. Mortuary practices may thus also be shaped through free will, personal taste, and of course social strategies regarding the renegotiation of social position and relationships. To complicate things even further, mortuary practices can be greatly affected by coincidental events, practical necessities, or even environmental conditions at the time of the primary or secondary rituals. And on top of all that, the inherent taphonomic bias of the archaeological record and our own agency (through recovery, analysis, interpretation) distort the picture even more. In this framework, it is evident that there is no one-dimensional social aspect to be reflected in the mortuary record,[30] neither is it always clear to what extent and how exactly status representations relate to the lived experiences of the deceased. Multiple meanings intersect all dimensions of the mortuary record; this is even more so in the context of multi-staged funerary events with different numbers of participants interacting over time.

To approach such fuzzy and fluid contexts, the best way to go is to adopt an equally fluid approach, which aims at an emic understanding of as many aspects of the human experience as possible. This approach should respect the following theoretical premises (presented in detail in 2.2.2):

- Social structure and agency are inseparable complementary notions, best understood through Barrett's (2000) concept of complex situatedness. Structuring principles always penetrate the structural conditions into which they are formed, through and by the acts of the agent, under specific history, tradition, and personal biographies. Thus, they can be approached through a spatio-temporally specific understanding of people's actions and experiences.

- Agency, however, cannot be understood outside the notion of personhood (Fowler 2004; Voutsaki 2010a). Personhood, best framed as a fluid 'negotiation between different concerns' (LiPuma 1998; Fowler 2004: 20-

[30] In contrast to functionalist approaches, but also to the equally limiting structuralist dichotomy between the rigid ritualised social 'structure' and the everyday fluid social 'organisation', with only the former considered approachable through the mortuary record (Pader 1982; Morris 1987; cf. 2.1.3).

22), embodies a vast array of social relationships between human beings and their surroundings, and there may be some tension between its individual and dividual facets.

- Small-scale narratives of lived lives and events (cf. Hodder 2000) are essential for an emic approach to real people and their experiences, and for respecting as fully as possible the specificity of the studied funerary contexts.

- False dichotomies and opposing dualities should be surpassed, through a holistic approach to as many different strands of evidence as possible. The complete human experience, consisting of the ritual and the everyday, the ordinary and the extraordinary, can be approached if we look contextually into both aspects. Exploring patterns in people's actions, it may be possible to distinguish the norm from variation, the routine from the unusual, tradition from innovation (cf. 3.2.3, especially Boyd 2002).

In such an approach, we should not be afraid to leave room for ambiguity, a concept not much tolerated in modern archaeology, as Andrew Sherratt pointedly remarked (1990: 12-13). The heavy burden of bivalent Aristotelian logic dominating western epistemology restricts our ability to fully appreciate past human experience. Therefore, this study is not interested in clear-cut distinctions between the above mentioned dualities and a whole list of others, such as personal/collective, individual/dividual, subject/object, living/dead, fleshed/defleshed, symbolic/practical, biological/cultural, science/theory (cf. Sofaer 2006: 31-61), but rather in how the emphasis shifts between these permeable notions, opening up various possibilities for our interpretation.

This study concerns the formation of a holistic bioarchaeological approach to the social dimensions of Mycenaean funerary practices, advocating an equal understanding of cultural and biological evidence within an explicit theoretical framework. Within this framework, past human action and experience can only be approached if historically situated. This is why a large and variable sample from a single specific cemetery (Voudeni, Achaea) with a specific life-span (LHIII period) was chosen. This choice offers the opportunity to look closely at the funerary practices of a community living in one of the most interesting areas of the Mycenaean world both during the palatial LHIIIA-B times and the transitional post-palatial LHIIIC period. Through the analysis of this very specific case, the intention is to shed light on several questions pertaining to the changing social conditions in Achaea during this time, but also inform on various issues of current Mycenaean mortuary research. Most importantly, this study aspires to show how reconciliation between abstract theoretical advances and empirical biocultural data may be possible, providing the most insightful path to a better understanding of the archaeological mortuary record.

4.2 Towards a holistic bioarchaeological approach

> *If one evaluates the respective place of the diverse elements that make up a burial as a function of the number of written lines an author devotes to them in a publication, one often has the unfortunate impression that the deceased had been placed as an offering to a ceramic vessel or to a flint projectile point, rather than the other way around.*
>
> Henri Duday (2006: 30)

A successful approach to funerary practices can only be bioarchaeological, in the most integrative sense of the term (cf. 2.3). In a contextual and historically specific mortuary analysis of both material and biological evidence, the skeletal human remains should be considered the primary and most powerful strand of evidence. In contrast to the unfortunate trend of marginalising their study and segregating its aspects, which fails to achieve a holistic understanding of the human body, human remains have a great potential to enable an emic approach to the human past, exactly because of their permeable inherent qualities of both subject and object, biological and cultural (cf. Sofaer 2006; section 2.3.2). An understanding of the dual facets of skeletal evidence is crucial in order to form a methodological path to social action through it. At the same time, though, we should remember that both aspects are intertwined and simultaneously expressed, much more than their segregation in order to facilitate our working methodology may suggest.[31]

The first aspect of the dual scope advocated here examines the bones of the dead as the *object* of the practices of the living. As with other aspects of material culture, the dead are manipulated by the living at the time of death and subsequent events, but at the same time they comprise active material which shapes, in turn, the experience of those interacting with it and influences their choices. Investigating as fully as possible the post-mortem treatment of the human body through the analysis of the composition of biocultural mortuary assemblages and the distribution patterns

[31] The two aspects constantly interpenetrate one another, and we should probably not talk of *one* but of *multiple* bodies (cf. Sofaer 2006: 11). This is especially true in the case of secondary funerary acts, where bones may shift from subject to object and to subject again, through another identity, that of the ancestor (cf. 3.3.3.2; Moutafi and Voutsaki forthcoming).

of both material culture and physical remains, we may approach a nuanced image of human action, detecting both social norms and their inhabitation by the agency and specific experiences of actual people. Informed by the other facet, i.e. the bones as subject, evidence on the identities that the deceased had in life (e.g., sex/gender and age) allows us to understand how the living perceived and/or manipulated these identities after death, which aspects they emphasised, preserved, or negated. As discussed earlier, the correct historical placement of human acts is essential for the understanding of their social meaning. Therefore, special care should be given in the clarification of funerary sequence and the precise temporal classification of mortuary assemblages. Finally, despite the increased difficulties posed by commingling, a special effort should be made to identify the post-mortem biography of each interment, and reliably distinguish between the effect of natural taphonomic factors and the human treatment that the bones received.

The second aspect looks at the bones of the dead as the *subject* of their own lived experiences, allowing further glimpses into the 'everyday' part of social structure. Skeletal human remains reveal their biological 'realities', such as sex and physiological age, which significantly affect the construction of culturally-specific social identities, such as gender and social age (cf. 3.4.3). Furthermore, the type and quality of lifestyle, health, and diet leave traces in bones, which can potentially inform us not only about differential social position of the deceased (through the concepts of differential access to resources and *biological status*, cf. 2.1.2), but also on embodied social experience and personhood. The active materiality of the living body, physically expressed through its plasticity and constant modification, reflects everyday practices and relationships with people and objects alike, denoting once again the artificiality of strict divisions between persons and artefacts, subjects and objects (cf. Sofaer 2006). The physical testimony of skeletal evidence provides, thus, a piece of 'truth' for the lived lives of the dead, which cannot have been manipulated or masked by ritual norms or the personal agendas of the mourners. That said, it must be stressed that I certainly do not accept the functionalist notion of a direct relationship between the bone evidence and past experiences. To appreciate the complex biocultural constitution of bones is the key for a holistic understanding of the diversity of our data.

A complete bioarchaeological study of social dimensions through mortuary evidence would require the extensive investigation of both aspects. The final interpretation would be immensely enriched by a multi-dimensional analysis across the different variables, identifying consistencies but also tensions between social dimensions (or notions of personhood) as created and experienced during life and after death. Furthermore, the comparison between biological status and aspects of social status as expressed in burial can be essential for the understanding of the creation, maintenance, and renegotiation of social distinctions between different groups, and may reveal serious interpretive bias in the analysis of material evidence alone.[32] The correlation between lived personhood and the one emphasised at death can be similarly explored. For a most successful interpretation of these intersections, all other aspects of the archaeological record should be engaged in a complex, multidisciplinary analysis, which ideally would include: other biological data (e.g., faunal or archaeobotanical remains), different uses of funerary material culture (including artefacts, structures etc.), as well as environmental or geomorphological parameters and the use of the wider landscape, including evidence from the non-funerary domain.

[32] Moving away from the old-fashioned adaptive model, the complex relationship between biological and social status has been successfully explored in a contextual way both in some pioneering studies, such as Powell (1988); Jacobs (1995), and more recent works, such as Robb et al. (2001); Cucina and Tiesler (2003); Porcic and Stefanovic (2009). For Mycenaean Greece, in particular, see Smith (1998); Schepartz et al. 2009 (cf. 3.5).

4.3 Focus of this study and basic methodological premises

The current study focusses primarily on the first aspect of the dual scope, i.e. the funerary practices of the living and the post-mortem treatment of the dead, and aims to illuminate their process through a bone-centred understanding of contextual evidence. The meaning (or better, *some* of the meanings) of the acts of the living will be approached across historical specifics and pivotal aspects of the living identities of the deceased, as these are outlined from basic parameters of the second aspect (i.e. demographic data). Due to time and space restrictions, the ultimate step of maximum appreciation of all aspects of bioarchaeological evidence, including a full reconstruction of osteobiographies and the comparison of biological status across the funerary treatment and material offerings, is not attempted here but will comprise the next stage of this research. This is because, in my view and under the theoretical framework described above, the first goal should be to fully contextualise the funerary acts of the living, concurrently entangling the active role of the dead. Only then, when the acts responsible for the creation of mortuary contexts are illuminated, can the mortuary record be investigated even further through the comparison of identified patterns across evidence for everyday aspects of past lives. The need for a bioarchaeological focus to funerary acts is especially stressed in Mycenaean mortuary studies, where, despite recent interpretive advances and a growing body of bioarchaeological information, no extensive bioarchaeological analysis focussed on the practices of the living has been so far published (cf. 3.5).

As stated above, overcoming dualities and disciplinary divides is considered essential for the success of this study and applies to its methodology. A strict division between processual and post-processual approaches did not prove productive in the development of the bioarchaeological field (cf. 2.3.2), and is therefore avoided. Even though the theoretical background of my approach is clearly more influenced by notions of current interpretive archaeology, the methodology of this work in terms of recording, analysis, and even final synthesis seeks to incorporate the most appropriate analytical tools for the questions posed, regardless of their 'processual' or 'post-processual' affiliation. Strong points of processualism, such as the importance placed on the meticulous analysis of empirical data, the use of clearly defined scientific methodologies and the application of quantitative analysis to both biological and cultural data from large cemetery samples, are adapted in the current approach, without the interpretive implications of generalised statements. At the same time, the micro-processes within each tomb and the osteobiographies of individual skeletons are equally investigated and taken into account for the final synthesis. In this way, different units of analysis are explored, from the skeletal body to the cemetery population, in order to answer different kind of questions and assess, as specifically as possible, the meanings of historically situated patterns of action. The skeletal evidence is the primary strand of evidence explored, analysed across precisely defined spatio-temporal parameters. Special care was given to the choice of a detailed recording procedure (5.2) and a multi-dimensional methodology for: a) the assessment and analysis of basic demographic parameters (5.3, 5.5); b) the reconstruction of funerary practices through preservation patterns and composition of the skeletal assemblages (5.4); and c) the analysis of intersecting patterns of biological and material evidence (excluding, at this stage, grave offerings) with the aid of the most appropriate statistical tests (5.6).

4.4 Specific questions

In order to explore the relationship of funerary practices to social conditions in Late Helladic Voudeni and entangle principal issues of current Mycenaean mortuary research (cf. 3.3), this study aims to address the following:

- *Formation character* of skeletal assemblages, discriminating between natural and cultural formation factors, and assessing intentionality.
- *Types of disposal,* including primary and secondary contexts of various forms.
- *Frequency and sequence of funerary events inside the tomb*, estimating minimum number of interments, episodes of use, tomb re-openings, and stages of secondary treatment.
- *Diversity of primary and secondary funerary treatment,* including the identification of specific acts and their details (e.g., attributes of primary or secondary deposition, spatial distribution, retention *versus* removal practices, selective processes etc.)

- *Organising patterns* in the diversity of funerary acts, discriminating between synchronic *versus* temporal differentiation, and exploring correlations between biological and cultural data.
- *Demographic composition* of the cemetery population and its various sub-samples, exploring changes through time.

The contextual analysis of all the above will assist the investigation of *funerary inclusion and differential funerary treatment between people of different social identities* (especially sex[33] and age)*, and of potentially different social positions* (as inferred by tomb groupings, based on potentially status-related tomb characteristics). Looking closer into temporal shifts in these patterns, especially between the LHIIIA-B (palatial) and LHIIIC (post-palatial) periods, it will be possible to approach shifting notions of the self, social relationships, and social strategies as expressed in Voudeni and relate them to wider social developments of the LHIII period. Specific questions pertaining to the study of Mycenaean Achaea will thereby be addressed, especially in terms of demographic and socio-ecomonic changes that presumably followed the palatial collapse (including issues of continuity and change, population influx, changes in social power; cf. 1.3-1.4).

[33] Acknowledging the sex/gender distinction (cf. 3.4.3), I will avoid using the terms interchangeably and hence examine the *sex* variable, since this study does not include a discussion of gendered grave goods.

CHAPTER 5
MATERIAL AND METHODS

5.1 The material: Choice of the current sample and related problems

The Voudeni cemetery was introduced in section 1.5, including information on the excavation project and basic funerary data. The sample of this study comprised skeletal material from 20 chamber tombs (the ones in blue in Figure 1.4; cf. 7.1). The aim was to include as many well-documented tombs as possible in order to cover the funerary diversity met in Voudeni and maximise the sample's strength. The sample pool consisted of the 38 chamber tombs in the eastern part of the Voudeni cemetery that had been fully published in Kolonas' (1998) doctoral dissertation (cf. 1.5; Tables 7.1 and 7.X1). After the exclusion of 18 tombs that lacked skeletal material or displayed significant problems in bone collection,[34] 20 tombs were selected. The final sample was representative of the general distribution in terms of main tomb characteristics (see 7.1). Access to all available documentation was kindly provided by the excavator, Dr. Lazaros Kolonas. In addition to Kolonas' doctoral thesis, I was able to consult the original notebook documentation, photographs and drawings, as well as the revised text for the updated publication of his original study (Kolonas forthcoming). Based on these, it was possible to address recovery/collection problems, and integrate cultural and osteological data in final analysis.

The study of skeletal material excavated over two decades ago faced specific limitations and occasional recovery/collection problems, which included:

- *Limitations in recovery and documentation of the skeletal material (despite otherwise high standards of Voudeni excavation), due to lack of a bioarchaeological excavation design and physical presence of osteoarchaeologist(s) in the field*. Systematic information pertaining to spatial bone relationships was lacking –especially for commingled assemblages– as the bones were not excavated, recorded, or collected in a micro-stratigraphic system. Photographic documentation was limited and

[34] The tombs were excluded either due to lack of human remains and/or looting (T1, T2, T21, T32), or serious post-recovery bias; the latter included skeletal material which could not be located in the Voudeni store-rooms at the time of this study (T6, T12, T18, T19, T34, T36), or displayed strong indications of post-excavation mixing between bone groups, which could not be resolved (T3, T7, T8, T11, T23, T25, T29, T43).

often of poor quality, not documenting the entire removal of layered contexts. No standard sieving procedure was applied, resulting in some recovery loss for small-sized bone elements and fragments, the extent of which cannot be estimated precisely.

- *Post-recovery bias, pertaining to the cleaning, curation, and preliminary study of the bone material*. The Voudeni material was already cleaned before the current study by non-specialists, resulting in some degree of post-recovery fragmentation and surface damage, and possibly extra bone loss. In addition, a brief preliminary osteological analysis conducted by students of the Biological Department of the University of Athens (Manolis et al. 1998)[35] was responsible for instances of post-recovery bone commingling and general mishandling (e.g., incorrect individuation, gluing, improper use of adhesive tape etc.; N.B. some of these effects still visible in bones photographed in this study). Finally, a small-scale isotope palaeodietary analysis of Voudeni population was conducted by Eirini Petroutsa (et al. 2009); sampling effects were evident in some femoral specimens of the current sample.
- *Inherent problems of this type of material*. The very nature of commingled and cumulative skeletal material from tombs of multiple use entails specific challenges for bioarchaeological analysis. The problems pertain to a) increased taphonomic damage/fragmentation by both natural and human agents; b) complicated record of different taphonomic trajectories shaped by both funerary and non-funerary human activities, as well as natural post-depositional disturbance; c) increased difficulties in the reconstruction of individual osteobiographies, due to commingling of individual skeletons.

All the above issues, if ignored, could significantly bias the results of this study. For this reason, special emphasis was given to a) the selection of the most appropriate methods in order to reduce bias (see below); and b) the analytical presentation and description of all recovery/collection problems encountered (and how they were dealt with) in order to enable a final evaluation of their effect. In Chapter 6, the results of osteological analysis for each tomb are presented, together with all available archaeological evidence and their contextual synthesis in terms of funerary practice.

[35] A revised presentation of preliminary results of this study is given by Stravopodi et al. (forthcoming) in Kolonas (forthcoming).

5.2 Collection of osteological data: Recording standards and procedure

Data collection was conducted in different stages, including a) several visits at the Voudeni site for preparatory and supplementary collection of *in situ* data, archaeological information, and consultation of the original documentation; and b) the transfer of the skeletal material to the Wiener Laboratory of the American School of Classical Studies at Athens, where the main part of osteological data collection and analysis were performed. The laboratory environment provided the necessary up-to-date facilities to ensure maximum success of this process.[36]

The standard procedure included the following steps:

- *Laying out the entire skeletal material of one tomb at a time, initial sorting, cleaning, and numbering of all bone fragments*. The first sorting (per element) was done on the basis of the bone sub-contexts as grouped at the time of excavation; initial observations, in particular related to possible collection and/or (post-)recovery errors were recorded. Most frequently, the material was already cleaned, so extra cleaning was only minimally applied.[37] All identifiable and large unidentifiable bone fragments were subsequently numbered, using extra fine pens of semi-permanent water-based ink; numbering was in sequential order for the entire tomb, recorded in association with the specific sub-context each fragment belonged to.
- *Refitting analysis and reconstruction of fractured material*. Bone associations and joints between fragments of the same element were assessed, within and between the different contexts. If joints were found, the fragments were mended with the use of water-soluble glue, in the case of modern (excavation and post-excavation) fractures; for old fractures, only paper-tape was used and subsequently removed.
- *Basic recording*, *final individuation, visual confirmation of maximum bone frequencies*. Skeletal inventory comprised the individual recording of each bone fragment and of reconstructed skeletal elements in excel

[36] Sufficiently large strewing area; fully operational wet lab for cleaning bones; human reference collection for identification of fragmentary remains; reference casts for the Suchey-Brooks sexing method and ASU dental anthropology system; photographic, microscopic, and x-ray equipment.

[37] In these cases, a water-alcohol solution (4:1) was applied to dense bone fragments; fragile elements were subjected only to dry cleaning, using soft brushes and wooden sticks, while dental remains were cleaned by lightly moist cotton swabs.

spreadsheets, supplemented by visual forms in the case of dental remains and primary burials. The recording included detailed information on several bone characteristics for each fragment (e.g., identification, preservation, demographic and palaeopathological data) in accordance with commonly used recording standards and generally accepted methodological protocols of commingling analysis (see below). With the aid of all recorded information, the final attempt for maximising the identification of skeletal elements that could be re-attributed to the same individual (i.e. individuation) was being made, followed by visual confirmation of maximum bone frequencies per element (see more in 5.4.1-2).

- *Visual recording*: Extensive photographic recording of work in progress documented the entire process of data collection, covering the majority of identifiable material. A series of better quality photos were taken in the end of each tomb's examination, in order to illustrate specific points and/or assist diagnoses.[38] If necessary, the latter got complemented by microscopic examination and radiographs.

The recording system was designed on the basis of the most commonly used standard protocols (Buikstra and Ubelaker 1994; Brickley and McKinley 2004), supplemented with additions and modifications in order to maximise the data for reconstructing funerary practice (cf. 5.4).

Information on each element or bone fragment included:

- *Precise identification,* in terms of skeletal element, distinct part of the element, and side (N.B. unidentifiable fragments were classified as cranial, long bone, or indeterminate bone fragments, and grouped based on maximum length as Type A: 0.1-3cm, Type B: 3.1-6cm; Type C: >6cm).
- *Completeness of skeletal element*, expressed in a percentage of both the whole bone and its distinct parts, and scored as follows (modified after Buikstra and Ubelaker 1994: 6-8): Long bones were divided in five sections (proximal and distal epiphyses, proximal, middle and distal thirds of shaft), while metacarpals/metatarsals and clavicles in three (shaft and epiphyses,

[38] Many of these are provided in the current study (Chapter 6); however, final publication will require further (professional) photographic documentation.

and mid-shaft with medial and lateral ends respectively), and scored as 1 (>75%), 2 (25-75%), 3 (<25%), or – (absent) for each segment. The remaining bones were given approximate percentage values for two segments in vertebrae (body and neural arch); three in ribs (head/neck, mid-shaft, sternal end); three in sternum (manubrium, sternal body, xiphoid); other hand and foot bones, as well as patellae, were scored as one unit. The completeness of scapulae, pelves, sacra, crania and mandibles was recorded for their discrete skeletal parts (i.e. *specimens*) or individual cranial bones (as specifically listed below, cf. Table 5.7); teeth were recorded individually. Based on these scores, the MNI and BRI values were calculated for bone frequencies analysis (see 5.4.2-3).[39]

- *Surface description,* which included: a) Erosion/abrasion alterations (weathering), following six grades of Brickley and McKinley (2004: 16, Grades 1 to 5+, with detailed description; N.B. if significant variability was noticed on the same bone, both grades were described); b) Notes on colour and distinct discolouration (e.g., copper staining, fungal activity); c) A note on the appearance of fracture edges, in order to determine time of fracturing (old or modern, before or during/after excavation respectively).
- *Sex & age information*, including morphological scores and sex or age related metric dimensions (see analytically in 5.3), and a note on bone's robustness/gracility (if pronounced).
- *Stature estimation*, based on complete long bone lengths. The formulae for white males and females of Trotter (1970) were selected for comparative reasons, as the most commonly used in other studies of prehistoric Greek populations. The average stature was calculated as the means of estimations of all measurable bones (with preference for lower limb, if available). Mean values are given in Chapter 6. In this study, stature estimation was primarily used to assist the individuation process, and to provide a database for comparative purposes; thus, it is not further explored at this stage (to be analysed in future analysis of biological status, cf. 4.2).

[39] The recording of bone weight is commonly suggested as useful information for the quantification of commingled remains (e.g., Ubelaker and Rife 2008). It was not used in the current study, considered as an extremely problematic variable for inhumed remains of this type due to diverse preservation levels and bias of soil infiltrations.

- *Additional metric dimensions* to assist bone individuation (cf. 5.4.1) and complement database for future study, as robusticity/gracility and size indicators: the anterior-posterior (sagittal) and medio-lateral (transverse) diameters of femur and humerus were taken at mid-shaft (following Steckel et al. 2006: 25-27).[40]
- *Cranial and post-cranial non-metric traits* (30 of each category, after Berry and Berry 1967; Finnegan 1978 respectively) were recorded as present, absent, or non-observable. Also, a list of entheseal changes (*musculoskeletal stress markers*) in upper and lower limbs (Table 5.X1, selected from Hawkey and Merbs 1995; Robb 1998; Capasso et al. 1999) was scored, when observable, in three grades (faint, moderate, strong). In this study, these recordings only assisted the individuation process; therefore, discussion of selection criteria, visual details of their scoring system and results are not included.
- *Indications of palaeopathology (and/or abnormalities)*. All indications of skeletal and dental pathology were recorded, based on appropriately modified coding systems of: a) Steckel et al. (2006: 12-14, 30-33) for periostitis, degenerative joint disease, porotic hyperostosis, cribra orbitalia; b) Buikstra and Ubelaker (1994: 54-57,121-122) for vertebral pathology and dental disease (the latter modified after Hillson 1996, 2000; Reid and Dean 2006); and c) Galloway (1999) and Boylston (2006) for trauma. At this point, recording was used only to assist the individuation process, since palaeopathological analysis is beyond the scope of the current study; therefore, details on modified coding system, analytical methodology, and results are not included.

[40] All bone dimensions were recorded in millimetres, taken twice using a sliding calliper or osteometric board (Bass 1995). Maximum length was recorded if the bone was complete, while estimated in approximation if preserved >75%. Transverse and sagittal dimensions were not taken if bone weathering was equal to or exceeded Grade 4 (recorded, though, as a minimum if so robust that could still be used for sex estimation).

5.3 Sex determination & age estimation

To acquire accurate demographic data was essential for all aspects of the current study; therefore, a holistic approach to sex and age estimations was applied. The maximum range of selected methods were applied on any complete skeleton (in the case of primary burials) or sex/age-diagnostic skeletal element (in the case of commingled remains), in order to reach the most accurate overall assessment.

5.3.1 Sex determination

In terms of sex, every observable sexually dimorphic skeletal element was scored as female (F), probable female (F?), ambiguous (?), probable male (M?), or male (M), and then sex was determined based on overall assessment (Buikstra and Ubelaker 1994: 21; if a bone or skeleton did not preserve sex-diagnostic areas was scored as non-observable: NO). Sex determination in juvenile remains was not attempted, as no widely accepted methods are yet available (Saunders 2000: 138; cf. Cox and Mays 2000: 121-123). Sexually diagnostic morphological characteristics of the skull and pelvis were considered as the most reliable sex indicators, and primarily used if available (for a discussion on levels of accuracy see Cox and Mays 2000: 118-121). The specific structures scored in this study are listed in Table 5.1 (with references for scoring descriptions). In addition, sexually dimorphic bone dimensions were measured (Table 5.2, with section points and references). Even though bone metrics are not as reliable sex indicators as morphological dimorphism, the accuracy of selected measurements was confirmed through the consistency shown between these and cranial or pelvic results in Voudeni’s complete skeletons; thus, their use in commingled remains was justified.

Table 5.1. Sex-diagnostic bone structures evaluated in the current study.

BONE	DIAGNOSTIC STRUCTURE	REFERENCE
CRANIUM	OVERALL SHAPE NASALS (shape, size) OCCIPITAL: size of condyles	Schwartz (1995)
	FRONTAL: Glabellar profile; Frontal slope; Frontal & Parietal tuberosities; Zygomatic process of frontal; Supraorbital ridges; Orbital outline ZYGOMATIC (size & lower margin) TEMPORAL: Temporal ridges; Suprameatal crest; Mastoid process OCCIPITAL: Nuchal area; External occipital protuberance	Ascadi and Nemeskeri (1970) Ferembach et al. (1980)
MANDIBLE	Mandibular ramus (anterior-posterior) Mental protuberance; Lower margin of mandible	Ferembach et al. (1980)
	Depth from incisors to mentum Angle of mandible; size of condyles	Schwartz (1995)
	Mandibular ramus (posterior border)	Loth and Henneberg (1996)
PELVIS	Overall structure; Pelvic inlet; Iliac blade; Greater sciatic notch; Auricular surface; Postauricular space; Acetabulum; Sub-pubic angle; Pubic tubercle; Inferior pubic ramus; Ventral arc; Obturator foramen; Ischial spine	Schwartz (1995)
	Overall shape (anter.view); Iliac crest (vert.view); Preauricular sulcus; Pubic symphysis height; Pubic rami; Ischial tuberosity	Ferembach et al. (1980)
	Sub-pubic concavity; Medial ischio-pubic ridge	Phenice (1969)
SACRUM	Width of sacral ala; Anterior sacral curvature; Sacral auricular surface	Schwartz (1995)

Table 5.2. Sex-diagnostic bone measurements used in the current study.

BONE	MEASUREMENT SITE	SECTION POINT (in mm)		REFERENCE
		Female	Male	
HUMERUS	Head vertical diameter	<43	>47	Stewart (1979: 100)
	Maximum length	<290	>350	Thieme (1957: 73)
	Epicondylar width	<60.1	>60.1	Thieme (1957: 73)
RADIUS	Head diameter	<21	>24	Berrizbeitia (1989)
SCAPULA	Length of glenoid cavity	<34	>37	Bass (1995: 129)
FEMUR	Head vertical diameter	<42.5	>47.5	Stewart (1979: 120)
	Bicondylar width	<72	>78	Pearson (1917-1919, table 27; cited in Bass 1995: 230)
	Mid-shaft circumference (*cf*)	<81	>81	Black 1978

* The indeterminate range was divided equally in F?, ?, M?. In the case of femoral circumference, 80mm:F?, 81mm:?, 82mm:M?

5.3.2 Age estimation

A variety of age categories are currently used in anthropological literature, with diverse age ranges often applying to the same age definition (Scheuer and Black 2004: 468-469). In this study, both sub-adult[41] and adult categories were precisely defined (Table 5.3). For sub-adult categories, the age ranges were selected to correspond as closely as possible both to milestones of skeletal development and behavioural changes (cf. Scheuer and Black 2004: 469; Lewis 2007: 2); adult categories were broader, in general agreement with ranges commonly used by other bioarchaeological studies in Greece (e.g., Triantaphyllou 2001; Bourbou 2010).

Table 5.3. Age categories used in the current study.

DEFINITION	AGE RANGE
Fetus	<38 weeks of gestation
INFANT I (INF I; young infant)	<1 year { *including* Perinatal: 38-42 weeks of gestation, Neonatal: <1 month }
INFANT II (INF II; older infant)	1 - <3 years
CHILD I (CH I; young child)	3 - <7 years
CHILD II (CH II; older child)	7 – <12 years
ADOLESCENT (ADOL) *sub-divided as:* Adolescent (young) Adolescent (older)	12 - <18 years *sub-divided as:* 12 – <14.6 years 14.6 – <18 years
YOUNG ADULT (YA)	18 - <30 years
PRIME ADULT (PA)	30 – <40 years
MATURE ADULT (MA)	40 - 50 years
OLD ADULT (OA)	>50 years

The methods for age estimation in sub-adult remains pertain to levels of dental and skeletal development, summarised in Table 5.4; as for adults, estimations are based on age-related morphological transformations of pelvic surfaces and ectocranial vault suture closure, as well as on dental attrition (Table 5.5).

[41] I chose to keep the most commonly applied term 'sub-adult'; however, the terms 'non-adult' (as suggested by Lewis 2007: 1-2), or 'juvenile' (e.g., Scheuer and Black 2004) are often preferred.

Table 5.4. Methods for age estimation in sub-adult remains.

AGE INDICATOR	AREA OF FOCUS	REFERENCE
Dental formation stages	Permanent teeth	Moorees et al. (1963a) Smith (1991)
	Deciduous teeth	Moorees et al. (1963b) Liversidge and Molleson (2004)
Diaphyseal length	Upper limb bones	Maresh (1970)
	Lower limb bones	Anderson et al. (1964) Maresh (1970)
	Hand bones	Scheuer and Black (2004: 339-340, with further citations)
	Clavicle	Black and Scheuer (1996)
Degree of epiphyseal union	All bones	Scheuer and Black (2004) Schaefer (2008)

Table 5.5. Methods for age estimation in adult remains.*

AGE INDICATOR	AREA OF FOCUS	REFERENCE
Changes on pelvis	Auricular surface	Lovejoy et al. (1985)
	Pubic symphysis	Brooks and Suchey (1990)
Cranial suture closure	Ectocranial vault	Meindl and Lovejoy (1985)
Dental attrition**	Molars	Miles (1962)
	Anterior teeth	Richards and Miller (1991)

* In Chapter 6, scores and mean age of each method are given for individual cases, then assigned to the appropriate age range; N.B. the composite score 7-11 of Meindl and Lovejoy (1985) corresponds to a mean age of 39.4 years, *but* is exceptionally categorised as MA for greater consistency with the suggested age range.

** Molar wear was scored after Miles (1962); of all other teeth after Smith (1984).

5.4 Methodology for the reconstruction of funerary practices

Since the reconstruction of funerary practices comprises the main focus of this research, the methodology pertaining to this aspect is presented in detail in this section. Brief review and critical comments complement the presentation of methods, if necessary to better illustrate the rationale for the opted selection. During the last decades, the taphonomic analysis of human remains greatly advanced in field anthropology and forensic research. Even though Aegean bioarchaeological research is increasingly exploring such issues (cf. 3.5), no large-scale systematic application of related methodology in Aegean material, as the one attempted here, is so far published. Despite the limitations in field recording of Voudeni's skeletal material (cf. 5.1), the current analysis was designed with the goal to apply, as much as possible, current principles in taphonomic and commingling analysis of skeletal remains.

The detailed examination of structural characteristics of each skeletal assemblage is essential for reconstructing the processes that led to its formation and, thereby, the actions of the people involved. The approach followed in the current study includes:

- *Collection and analysis of data regarding bone condition and skeletal frequencies, in order to illuminate the formation process of the bone assemblage*. Taphonomy works through natural (non-human) and cultural (human) agents which affect the bones after their deposition (Sorg and Haglund 2002); the ability to distinguish between the two is crucial in order to investigate the intentionality and funerary character of a skeletal deposit (Andrews and Bello 2006: 17; Duday 2006: 46-48).
- *Investigation of bone relationships within the assemblage and across the surrounding environment.* A careful study of these details can shed further light on particular details of the actions of the living. This process is guided by the principles of 'field anthropology' (*archaeothanatology*), the research field which thoroughly investigates the process of body deposition, decomposition and subsequent bone disturbances (Duday 2005, 2006, 2009).

- *Clear assignment of the bone assemblage in well-defined types of disposal, and unambiguous classification of burial attributes (e.g., body location, position, orientation) in well-defined categories.*
- *A multifaceted, contextual analysis of all taphonomic information across the demographic parameters and cultural data.*

5.4.1 Segregation and individuation of commingled remains

Commingled assemblages (which are the majority of the Voudeni material) present increased challenges for bioarchaeological analysis. Nevertheless, the methodology regarding detailed recording, as well as sorting (i.e. segregation) and individuation of the commingled remains (i.e. identification of the skeletal elements from the same individual) has significantly advanced in the last years. My analysis is guided by current approaches to commingling, as presented below.[42]

The inventory of Voudeni material was compiled based on precise and most analytical recording (see 5.2), which enabled advanced segregation of the material. Segregation aimed at pair-matching and individuation of the remains. Basically based on visual pair-matching, it was also assisted by: a) age differences (mostly successful in the case of sub-adults, cf. Schaefer 2008); b) simple osteometric sorting (i.e. comparison of size differences); and c) comparison of articulating bone portions (Buikstra et al. 1984; Rösing and Pischtschan 1995; Adams and Byrd 2006; Byrd 2008). Due to limitations imposed by the lack of a reference collection from the same population, both osteometric sorting and articulations were only used as tentatively diagnostic in visual, and not computed, pair-matching. Specific bone characteristics (non-metric traits, entheseal changes and pathological lesions) aided in the pair-matching process. Bone surface condition was not considered diagnostic, since the common environment of bone disposal may have affected different individuals in the same way; nevertheless, it was taken into consideration as supportive information.

[42] Limitations posed by recovery problems of the Voudeni material (cf. 5.1) and its vast quantity did not permit the use of technically sophisticated but excessively time-consuming recent methods. The latter include methods that require maximum precision in documentation at the time of recovery, multiple and repeated analytical measurements, and/or reference data (cf. GIS approaches by Beckett and Robb 2006; Herrmann and Devlin 2008, not applicable in the absence of the appropriate excavation design; or systematic evaluation of metric assessments with statistical analysis and regression models, e.g., Byrd 2008; Nikita and Lahr 2011, both requiring good reference data).

The final estimations of individuals or re-fitted bone pairs were kept conservative, claimed only when there was sound evidence of prominent similarities, and therefore most certainly underestimating the real pair frequencies.

5.4.2 Minimum Number of Individuals

The estimation of the minimum number of individuals (MNI) is the basis of demographic reconstruction and of any further analysis of skeletal part frequencies and preservation patterns. As there are several different approaches to MNI calculation, clear-cut definitions of the term used and its calculation process are essential. Without precise information on the term itself, as well as on the handling of the basic parameters related to pair-matching (sex, age, and preservation), the MNI values are unclear and impossible to be compared between different sets of data (Ringrose 1993).

The three basic ways of calculating MNI (drawn from Ringrose 1993; Lyman 1994), as well as the main alternative: the Most Likely Number of Individuals (MLNI, Adams and Konigsberg 2004), are presented in Table 5.6 (for further alternatives, see Adams and Konigsberg 2004; Ubelaker 2008). All methods have certain flaws. The most widely used variants (1 or 2) give the most conservative estimates, most probably underestimating the real number of present individuals, but they certainly remain true as a *minimum* value. The third variant is subject to errors regarding the identification of pairs (especially in poorly preserved material), which can lead to an over-estimation of the MNI. Finally the MLNI method of Adams and Konigsberg (2004, 2008) is a totally different alternative, since it estimates the minimum number of the original population that has contributed to the final assemblage and not that of the assemblage *per se*. It is, thus, a useful method for archaeological samples, where taphonomic biases operate and data loss is most certainly occurring. However, it only accounts for random data loss and not for selective processes, while it is also subject to errors regarding pair-matching in the case of very fragmentary material (Adams and Konigsberg 2008 proposed the criteria of >50% preservation and recognition of at least 7 pairs, *if* selective practices are not applied). Therefore, MLNI estimates were not considered suitable for the Voudeni material, first, because of the fragmentary state of the sample that prevented the recognition of *all* pairs, and second, due to possibility of selective practices applied in the formation of Voudeni's commingled assemblages.

Considering the specifics of the Voudeni material (i.e. increased fragmentation, diverse preservation levels, high possibility of selective funerary practices), it was opted to use the approach of MNI variant 1 (Max R or L) with some modifications. These allowed for the final estimate to be informed by pair-matching and individuation, using, however, only negative (and not positive) evidence. In my approach, even though pairs are identified, the non-paired elements are still accepted as pairs for the basic MNI estimation (as in Variant 1) *unless* some of them are clearly *not* paired (due to evident age, sex, or size differences), in which case the final estimate increases accordingly.

Table 5.6. Different MNI calculation formulas, based on frequencies of right (R) and left (L) bones, informed by pairs (P).

DESCRIPTION	CALCULATION	COMMENTS
MNI variant 1 (referred as Minimum MNI, MMNI, by Ringrose 1993)	MAX (L or R)	The most commonly used; it uses the largest number of R or L, assuming that all but one bones are pairs.
MNI variant 2	(L+R) / 2	This variant gives the most minimal counts, using the average for paired elements.
MNI variant 3 (referred as Grand Minimum Total by Horton 1984)	(L+R) - P	This variant takes pairs into account, and gives the highest basic estimate assuming that *all* non-paired elements are *not* pairs.
MLNI (Most Likely Number of Individuals, introduced by Adams and Konigsberg 2004)	[(L+1)(R+1) / (P+1)] - 1	A modification by Adams and Konigsberg (2004) of the Lincoln/Petersen Index (LI), originally used by biologists and archaeozoologists to estimate the living population from which the observed sample originated, based on recovery probability (r) function. As it does not estimate MNI of the sample but that of the original population, it always gives the highest estimates.

Finding the appropriate counting unit for each context we are working on is the key to maximising MNI accuracy. As Lyman (1994: 265) advises, *"we need to count our bones several different ways, or at several different levels of inclusiveness, in order to generate the frequency data appropriate to the frame of reference in which we wish to relate the data"*. MNI of the Voudeni sample is calculated based on frequencies of *specimens* (i.e. discrete, identifiable skeletal parts), that were differently defined in different *skeletal elements* (i.e. complete anatomically discrete units). These are presented in Table 5.7. To maximise the accuracy of the obtained frequencies, the specimens were counted in two different ways that both represent independent repetitions of slightly different counting units: a) when the specimen was preserved more than 50% and b) based on repetition of a discrete part of each specimen (e.g., radial tuberosity on proximal radius or glabella on frontal bone). The highest estimation was then chosen for calculating the frequencies for each skeletal element.

MNI was calculated for each context as the highest number of frequencies, finally informed by non-matching specimens due to age, sex or size differences. Total MNI of the tomb was not calculated based on cumulative frequencies, but it was separately counted after the specimen that gave the highest (informed) frequency, regarding all bone assemblages as a whole. In the case that the final number could be increased based on secure evidence of segregation of different contexts (e.g., a closed secondary deposition in a pit followed by later burials on top of it, making commingling impossible), that was counted but is clearly stated in the tomb's description. It should be noted that this method operates, however, on the assumption that material between the different tombs is independent. The analytical recording system of bone frequencies in the Voudeni material permits alternative future calculations and precise comparisons to other material (see Datasheets 6.S1-S4 in Digital Supplementary Material).

Table 5.7. Specimens and counting rules for MNI calculation in Voudeni tombs (abbreviations used: *PE*: proximal epiphysis; *PS: proximal shaft; MS: mid-shaft; DS: distal shaft; DE: distal epiphysis*; *R:* right, *L*: left, *uns:* unsided; *PP*, *MP, DP:* proximal, middle, distal phalanx; *C, T, L*: cervical, thoracic, lumbar vertebrae).

SKELETAL ELEMENT	SPECIMEN USED	COUNTING RULES
Long bones	PE – PS – MS – DS - DE (R-L-uns)	>50% or after characteristic area of specimen
Clavicle	Medial – central – lateral shaft (R-L-uns)	>50% or after characteristic area of specimen
Sternum	Manubrium - sternal body - xiphoid	>50%
Scapula	Glenoid – coracoid – acromion - lateral border (R-L-uns)	>50% or after characteristic area of specimen
Pelvis	Auricular, sciatic notch, acetabulum, ischium, pubis (R-L-uns)	>50% or after characteristic area of specimen
Sacrum	First sacral segment & S2-5 (as a unit)	>50% or after characteristic area of specimen
Patella	Whole bone as a unit (R-L-uns)	>50% or after characteristic area of the bone
Carpals/Tarsals	Whole bones, each one as a unit (R-L-uns)	>50%
Metacarpals/metatarsals	1-5 separately (R-L-uns) & unidentified (uns, counts)	>50% for the most frequently occurring segment of the bones (PE-shaft-DE)
Hand/Foot phalanges	PP1 (R-L-uns) - PP 2-5 (uns, counts) MP 1-5 (uns, counts) DP1 (uns) - DP 2-5 (uns, counts)	>50% (finally, the counts divided per total number in an individual, i.e. 8 or 10 respectively)
Ribs	Ribs 1,2,11,12 (R-L-uns) Ribs 3-10 (R-L-uns, counts)	>50% for the most frequently occurring segment of the bone (head-shaft-sternal end)
Vertebrae	C1, C2, C3-7 (counts) T (body & neural arches, counts) L (body & neural arches, counts)	>50% for each specimen (finally, the counts divided per total number in an individual, i.e. C3-7: 4; T: 12; L: 5)
Cranium	All cranial bones, each one as a unit (R-L-uns)	>50% or after characteristic area of each bone
Dentition	Each tooth separately (R-L-uns), informed by sockets displaying evidence of AM tooth loss	>50%

5.4.3 Different aspects of bone preservation: representation, completeness, surface preservation

Differential preservation of skeletal parts has been a major focus of archaeozoological research, leading to methodological advances in the use of skeletal part frequencies to explore taphonomy (for a comprehensive review: Lyman 1994: 223-293). The main idea behind all methods related to the estimation of bone preservation and differential skeletal survivorship is to enable meaningful comparisons between different bone frequencies, with the ultimate goal "*to study, and hopefully to* *explain, the differences and similarities between the archaeological observed skeletal part frequencies and the frequencies of the skeletal parts in a set of complete skeletons"* (Lyman 1994: 289). The principles of the archaeozoological methodology have been lately adopted by physical anthropology, in a similar effort to distinguish between *intrinsic* (i.e. related to anatomical structure, size, and bone density) and *extrinsic* (i.e. taphonomic, natural or cultural) factors which influence preservation in human bone deposits (e.g., Waldron 1987; Willey et al. 1997; Knüsel and Outram 2004; Bello & Andrews 2006). Despite these advances, 'preservation' in most bioarchaeological studies remains a rather vague term, used to imply interchangeably bone quantity, fragmentation, surface condition, and/or skeletal part representation. In this study, the main different aspects of preservation are defined and quantified, in order to ensure a precise description of the bone assemblages and enable their comparative investigation. The different aspects are bone representation (reflecting skeletal parts frequencies), completeness (as a measure of completeness and -to some extent- fragmentation), and surface preservation (denoting weathering).

Bone representation expresses the frequency of each skeletal element in a sample; in this study, it is quantified after the *Bone Representation Index* (BRI) (Bello and Andrews 2006, Bello et al. 2006; adapted from Dodson and Wexlar 1979). BRI is defined as 100 x Σ (No. of observed/No. of expected, i.e. Number of observed bones/Theoretical total Number of bones, according to the MNI of the sample). This method is chosen because it allows the standardised quantification of bone frequencies to the chosen level of precision, as BRI values can be calculated for each bone or for a group of bones as a unit, and allow comparisons through graph representation between sub-samples of different size and composition. The final BRI value for each element is calculated by the 100*(Observed/Expected) formula, but as with MNI, the precise definition of counting units is essential for the calculation. To obtain BRI values in this study, bone frequencies were estimated in accordance with the counting rules of MNI estimation (Table 5.7), and then edited as follows: Based on the specimen (i.e. bone part) with the maximum frequency for each bone, the maximum number of occurrences was calculated a) for right, left and unsided skeletal elements in the case of long bones, clavicles, scapulae, patellae, pelves; b) as a single value in the case of cranium, mandible, sternum, and sacrum; c) also as a single value for whole dentition, ribs, vertebrae, carpals, metacarpals, tarsals, metatarsals, hand and feet phalanges. The latter were viewed as single units, combining number of bones and different sides. These groupings were chosen as the most parsimonious for an effective level of precision, comparable with the BRI products of Bello and Andrews (2006), and informative enough for the questions explored by the current study. Even though the final BRI value for the grouped elements may over-estimate bone presence or mask significant differences (for example, the presence of one vertebral fragment would give the same value as of the total vertebral column), this does not affect the final qualitative interpretation of each assemblage since contextual evidence from other preservation values and raw bone counts are also taken into account. In addition, the interpretation of low BRI values (in the case of missing or under-represented elements) is not affected at all, as low values of the grouped elements certainly reflect (an even more pronounced) skeletal under-representation.

BRI values were produced for each context per tomb. Similarly to MNI estimation, the total quantification is based on independent frequencies of the entire tomb material, and may, thus, be lower than the cumulative values of separate contexts. The expected values were calculated based on the MNI of each context. Since sorting factors (e.g., pairs etc.) are taken into account for the MNI but not for the BRI bone occurrences, it is possible that no element has a BRI value of 100. Finally, it should be noted that in the case of primary, or disturbed primary, or single secondary bone assemblages, BRI pertains *exclusively* to the main individual, even if (rarely) a minimal quantity of extra scattered remains is also present (cf. chapter 6 and 7.3). The extraneous bones may be excluded from the BRI estimation of the specific contexts, but are taken into account in the total tomb bone frequencies.

Bone completeness regards the preserved quantity of osseous material. Even though it is fairly straightforward to systemically quantify this value for individual interments (cf. Anatomical Preservation Index: Bello et al. 2006), it is rather harder to apply it to assemblages of commingled remains. In the current study, bone completeness is presented as a general value which reflects the modal level of completeness for each skeletal assemblage, based on percentage of preservation of each bone. If no significant discrepancies occur, then only the prevalent value is given to the entire assemblage. If preservation is variable within an assemblage, the variation is reported and if necessary, specifically described for different types of bones.

‘Completeness’ value should not be confused with *fragmentation*, and it is not directly affected by it (N.B. a bone reconstructed from 50 fragments may have the same value as an intact one). The level of *fragmentation* is very difficult to quantify in large commingled assemblages, and is not analytically explored in this study. To assist in broadly outlining the extent of fragmentation, total counts of bone fragments are given per bone element, context, and tomb (Chapter 6). It should be borne in mind, however, that these counts do not account for the size of fragments and cannot give a measure of the original number of bones from which they originated.

Bone surface preservation expresses the modal stage of bone weathering for each skeletal assemblage in this analysis. If significant differences are observed within the same assemblage, the variation is reported. Weathering, though informative, is not considered as the most reliable taphonomic indicator (Lyman and Fox 1997), especially when recovery and post-excavation history is not fully documented. Therefore, it is not explored any more analytically in the current study.

Preservation patterns of each bone assemblage are described based on the above parameters by the classification of the assemblage into one of the following classes:

- *Class 1:* skeletal elements well-represented/preserved (BRI value: >50; level of completeness: >75%; weathering grade: 1-2)
- *Class 2:* skeletal elements fairly well represented/preserved (BRI value: 40-50; level of completeness: 50-75%, weathering grade: 3- to 3)
- *Class 3:* skeletal elements moderately represented/preserved (BRI: 30-40; level of completeness: 25-50%, weathering grade: 3+ to 4)
- *Class 4:* skeletal elements poorly represented/preserved (BRI: <30; level of completeness: <25%; weathering grade: >4)

It should be noted that the key interpretative value of taphonomic observations lies in the variation seen between the different elements of each skeletal assemblage. Therefore a strict classification based on average or modal preservation values was avoided as misleading. When increased diversity was seen within the same bone assemblage, it was preferred to describe the variation and assign the assemblage in more than one preservation classes (Chapter 6). Similarly, the strength of BRI analysis lies in the interpretation of the entire BRI graph and not each BRI value alone. To enable, however, the quantitative comparisons necessary in final analysis without masking the informative variation, classes 1-4 were slightly modified into broader categories in section 7.3.2.

To assess the taphonomic character of each assemblage and its formation causes (natural or cultural), preservation patterns were evaluated through a qualitative comparison to intrinsic patterns of bone preservation. The latter have been established by studies on bone mineral density (e.g., Willey et al. 1997) and BRI values of documented collections of complete skeletons, affected by minimal or no cultural disturbance (Bello et al. 2006; Bello and Andrews 2006). These studies have shown that naturally well-represented skeletal elements include the cranium, mandible, clavicles, as well as dense parts of scapula, spine, pelvis, and long bones; the less well-preserved include small and fragile bones such as patellae, sacrum, sternum and ribs. Hand and foot bones preservation varies as these can easily be lost due to small size, although they are quite dense to survive under normal circumstances. Direct comparisons to the state of preservation observed in the intact primary burials also assisted the interpretation of the patterns encountered in the commingled assemblages. When the observed preservation patterns differentiated considerably from intrinsic patterns of bone preservation, a cultural cause of the disturbance was inferred.

5.4.4 Anatomical articulations and position of skeletal remains

The examination of anatomical articulations and spatial bone relationships is a central issue in burial taphonomy, in both forensics and archaeological investigations (key publications: Boddington et al. 1987; Duday and Masset 1987; Haglund and Sorg 1997, 2002; Adams and Byrd 2008; Duday 2009). Assisted by the fact that the process of natural body decomposition follows specific stages in relatively standard rates (Bass 1997; Galloway 1997; Gill-King 1997; Rodriguez 1997), the study of anatomical articulations and the position of skeletal remains can be very informative on the identification of the exact character of a burial deposit (e.g., disturbed primary vs. secondary), possible post-depositional movements, time intervals between primary and secondary acts of bone deposition, and the sequence of burial episodes. In the case of high quality excavation and recovery standards, the anatomical relationships of skeletal material can even assist the reconstruction of the original burial conditions, assessing the place where disarticulation took place (e.g., in a container or in void) or distinguishing between skeletal disturbance as 'body reduction' (i.e. re-arrangement of skeletal remains for making space) or pre-planned secondary burial (Roksandic 2002; Andrews and Bello 2006; Duday 2006, 2009).

This approach was undertaken to the Voudeni material, with the aid of excavation photos and plans. Even though the absence of an osteoarchaeologist in the field and the lack of precise recording of individual bones in commingled assemblages impose severe limitations to the success of this part of the analysis, the aid of Voudeni's excavation original documentation (i.e. notebooks, photos, drawings) proved significant. A range of informative observations were made possible, as well as some tentative interpretations that remain to be confirmed in the future by excavation of more tombs, designed in full accordance with the principles of field anthropology.

5.4.5 Types of disposal and other funerary parameters: terminology and classification

A clear, unambiguous terminology of all funerary parameters is essential for mortuary interpretation. Unfortunately, this is seldom the case in most publications, causing problems both in their interpretation, but mostly messing inter-study comparisons. On top of the terminological confusion regarding bone preservation (addressed above), even simpler and repeatedly used terms related to the basic types of funerary disposal (e.g., primary vs. secondary) are often ambiguously used, encompassing a wide variety of different funerary practices. Sprague (2005) thoroughly addresses the issue and his work is a good basis to build on some level of standardisation. However, the establishment of solid universal terms might not be the optimal solution, as it bears the risk of narrowing the nuanced variety of funerary practices in different times and places. In my view, what is truly necessary is to reflect on the meaning of the terms and to define unambiguously the ones we choose to use.

The following definitions sum up the most commonly used terminology for the basic forms of funerary treatment. *Primary burial* refers to the placement of a 'fresh' body in a grave where the entire process of decomposition will take place. *Secondary burial* refers to intentional, socially sanctioned, re-arrangement of human remains by human action, which may include movement of skeletal elements from the temporary primary to another final resting place. A*ccidental disturbance* refers to possibly unintentional movement of human remains as a result of some later unrelated activity (Metcalf & Huntington 1991; Andrews & Bello 2006: 15-16; Duday 2006, 2009: 14; for a comprehensive review and alternative definitions, see Sprague 2005: 57-83). To determine the type of disposal, several strands of evidence are explored and different criteria applied, such as anatomical relationships, bone movement, change of location, time difference between the acts, evidence of intentionality and pre-planning. Without such evidence, more neutral terms should be preferred (e.g., Duday 2009: 89 suggests the term 'secondary deposit' instead of burial, if pre-planning is not shown).

Nevertheless, the application of precise definitions from an early stage of the analysis is in danger of resulting in a retrospective circular argument, since what we seek to identify is already part of our classification system (e.g., ritual or intentionality). Therefore, in this analysis, more neutral terms have been used for the original classification of the skeletal assemblages, after an initial examination of their basic characteristics. These are applied as a first level of formal classification, which will enable the further analysis of several parameters (in terms of intentionality, cause, and sequence of the acts) and ultimately assist the final evaluation of the exact mode of disposal (section 7.3, chapter 8).

Voudeni's skeletal assemblages (or tomb contexts) are, thus, classified in five different disposal types: 1) primary burial, 2) disturbed primary burial, 3) single secondary deposit, 4) commingled secondary deposit, and 5) scattered/isolated remains. Details on their definition are presented in Table 5.8.

Table 5.8. Types of disposal in Voudeni tombs and their definitions.

FORM OF DISPOSAL	DEFINITION	COMMENTS
Primary burial	Intact articulated skeleton (or minimally disturbed by natural taphonomic causes)	
Disturbed primary burial	Partially articulated remains in their original location	The accidental or intentional character of the non-complete disturbance/removal is to be evaluated
Single secondary deposit	Fully or partially disarticulated skeleton, of at least moderate bone representation, in a secondary location	The occurrence of at least moderate BRI values and presence of prominent bones from a single individual, necessary to qualify as a single secondary deposition rather than scattered/isolated remains. The term 'single secondary burial' may be used when intentional re-deposition is apparent by contextual evidence
Commingled secondary deposit	Fully or partially disarticulated, commingled human remains, in a secondary location	The term 'secondary burial' may be used when intentional re-deposition is apparent by contextual evidence
Scattered/isolated bones	Isolated disarticulated bones, of minimal/poor bone representation, either close to their initial location or dispersed away	These bones could represent either a) fairly *in situ* detritus from an earlier, removed, primary burial, or b) scattered remains, accidentally or intentionally dispersed during the removal of primary or secondary bone material to another location

Several additional funerary parameters to be investigated include spatial location of the skeletal assemblages, various attributes of the primary burials such as alignment/orientation, body deposition, position of arms and legs (Table 5.9), as well as specific acts and funerary choices pertaining to secondary deposits (4.5.6). Definitions and classification of the characteristics used to describe and further explore the Voudeni burials are presented in Table 5.9, generally following –if not stated otherwise– Sprague's definitions (for an inclusive discussion of terminology regarding the placement of primary burials: Sprague 2005: 83-115, figures 4-22). In my study, the description of burial positions reconstructs as much as possible the original placement, as inferred based on the study of anatomical relationships with the aid of excavation photos (e.g., cases are put in the category 'flexed on the side' if so inferred, even if found post-depositionally on their back, after the thorax collapse). This is very important as the archaeologist's description is only based on the state of the skeleton at the time of recovery, so even if detailed, it may not reflect faithfully the original deposition. It should be noted, however, that without *in situ* anthropological documentation, the process faces severe limitations. Therefore, all instances where final position may differ from the original are described in chapter 6, but only securely determined positions are included in further analysis (cf. 7.4.2).

Table 5.9. Definitions and classification of burial attributes in Voudeni tombs

BURIAL ATTRIBUTE	DEFINITION/FURTHER COMMENTS	CATEGORIES
Location	Location of each context within the tomb	1) On the chamber's floor 2) Inside pit of the chamber 3) Inside pit of dromos
For primary burials only:		
Orientation/alignment	Expressed by two cardinal points, reflecting the orientation of the spine, i.e. head to pelvis	S-N; N-S; W-E; E-W; SE-NW; NE-SW
Skull facing	The direction the eye orbits face, expressed by a single cardinal point	N; S; E; W; NW; SE
Side of body placement	Applied only in body deposition on the side, with flexed/contracted lower limbs; usually also associated with skull rotation	Right; Left
Body deposition/ position of lower limbs	*Deposition* refers on how the body is placed (e.g., supine or prone), while *position* refers to the relationship of body segments to each other. In this case, body deposition and lower limb position can be classified in combined categories. Lower limb position is defined based on the degree of flexure of the knee joint (except for the 'knees-up' position).	1) Extended supine (c. 180°) 2) Flexed* towards right (2a) or left (2b) side (≤90°) 3) Contracted* towards right (3a) or left (3b) side (>90°) 4) Knees-up (body placed supine with knees flexed but drawn up, not placed on ground) 5) Unusual/abnormal 6) Indeterminate/non-observable
Position of upper limbs	*Deposition* refers on how the body is placed (e.g., supine or prone), while *position* refers to the relationship of body segments to each other. Here it refers to placement of upper limbs in relationship to the trunk	1) Along the sides 2) Hands on pelvis (2a: both; 2b: Right hand on pelvis and left arm along the body; 2c: Right arm along the body and left hand on pelvis) 3) Arms folded on chest (3a: both; 3b: Right hand on chest and left arm along the body; 3c: Right arm along the body and left hand on chest) 4) Mixed, one hand on pelvis and the other on chest (R or L) 5) Hands to the shoulders (i.e. along the sides with hyper-flexed elbows) 6) Unusual/other 7) Indeterminate/non-observable

* The terms 'flexed' and 'contracted' here correspond respectively to 'semi-flexed' and 'flexed' in Sprague (2005). Sprague's terminology was not followed as it would be too far away from the terms commonly used in other Mycenaean mortuary studies. Indicatively: Cavanagh and Mee (1998) use the terms 'semi-contracted' and 'contracted' without specifics; Boyd (2002) uses only the term 'contracted'; Taylour and Janko (2008) use 'contracted' for the equivalent of my 'flexed' and 'crouched' for 'contracted'. In Greek literature the terms are usually referred as 'συνεσταλμένος' (flexed) and 'ισχυρά συνεσταλμένος' (contracted).

5.4.6 Inferring specific secondary acts

The study of preservation patterns with contextual taphonomic analysis in secondary and disturbed primary assemblages allows the potential identification of specific human actions that took place after the initial body deposition. The main activities that can potentially be inferred as either present or absent –*if* the general state of preservation and safe assumption of minimal recovery bias permit it-, are summarised in Table 5.10, together with the criteria for their inference. The following categories are not mutually exclusive. The process of inferring these acts for each separate context is presented per tomb in Chapter 6; the results are summed up and collectively explored in Chapter 7, finally discussed in Chapter 8.

Table 5.10. Inferred types of activities (*specific secondary acts*) performed in secondary and disturbed primary skeletal assemblages with criteria for their inference.

TYPE OF ACTIVITY		MAIN CHARACTERISTIC	MAIN CRITERIA FOR INFERENCE
REMOVAL	Bone removal (of any kind) to outside the tomb	Evidence that skeletal material of any kind has been removed from the tomb (including the dromos) to some other (unknown) place to the outside.	Inconsistency with intrinsic patterns of bone preservation based on the analysis of BRI values, *if* preservation and recovery of present elements is good enough to exclude natural factors or accidental disturbance (e.g., trampling) as the single cause of bone absence.
	Selective cranial removal	Evidence that cranial remains have been singled out and selectively removed from a skeletal assemblage.	Low representation of crania, in contrast with good representation and preservation of other skeletal elements.
RETENTION	Selective retention of prominent bones	Evidence that a secondary deposit is markedly predominated by specific, prominent bones (i.e. crania, large long bones, i.e. femora,tibiae, humeri, and pelves).	Inconsistent bone representation, showing contrast between high BRI values of larger (*prominent*) skeletal elements and low values of the rest, even of dense bones naturally well-preserved (e.g., clavicles, metacarpals, metatarsals).
	Individual retention of fairly complete skeletons	Evidence that enough attention was given to preserve the entirety or majority of an individual skeleton in a secondary deposit.	-*In single secondary deposits*: High (>50) BRI values for most (and not only prominent) skeletal elements -*In commingled secondary deposits:* Identification of re-assembled individuals with high (>50) BRI values of cranium and major post-cranial bones, plus indications for the presence of smaller elements (even if the latter not positively individuated).
	Selective retention of lower body/limbs (*lower body only*)	Evidence that a disturbed primary burial only preserves lower body, usually solely lower limbs (sometimes articulated with feet bones, lower spine, sacrum, pelves).	Absence of all skeletal elements of the upper body; only lower limbs, and possibly bones immediately joining, are represented.

5.4.7 Inferring date of tomb contexts

A reliable chronological frame for funerary assemblages is essential for the success of mortuary analysis. The constant re-use of chamber tombs and their cumulative character impose several dating problems, as our principal data represent the final residues of the tomb life cycle. Detailed dating and estimation of length of tomb use, as well as of the exact sequence of funerary acts, face limitations because of the multi-phased nature of the depositional process, the secondary removal and transformation of cultural and skeletal material, as well as the frequent lack of association between artefacts and specific individuals, especially in commingled contexts (cf. 3.3-3.4; Voutsaki 1993: 72-74; Boyd 2002: 85, 2014: 194). A special problem that has not been extensively addressed so far is the potential bias imposed by possible discrepancy between the date of the skeletal remains and the date of the (final) act(s) that produced the secondary burial assemblage in which they were found. Although to fully address these problems lies outside the scope of this study, since it requires an in-depth multi-disciplinary study of all types of dating evidence, care was taken to deal systemically with all dating problems encountered. Whenever possible, a distinction was made between the dating of the moment of creation and/or final manipulation of a funerary context and that of the skeletal material it includes.

The presentation of each tomb in Chapter 6 includes chronological information on all dated artefacts (the terminology of Mycenaean chronology introduced in section 1.2). Tomb contexts are further classified as follows. The first classification level in terms of dating is the variable *Detailed date*, which is subdivided into ten basic categories (Table 5.11). This classification is sufficiently inclusive to specify the inferred date of both primary and secondary contexts. Broader dating categories were also used for the *Concise date* variable (Table 5.12). The logic of the more inclusive groupings is to facilitate the investigation of differences between the Palatial and Post-Palatial era in demography and funerary customs.

Table 5.11. Chronological classification based on variable *Detailed Date.*
Symbols used: **/** : indeterminate or alternative dating between two phases/periods;
- : spanning two phases/periods; **&** : including two phases/periods, without the intermediate one. Combination of symbols (e.g., **-/**) is used for mixed groups of bones which belong to more than one dating category.

CATEGORIES	DATING GROUPS OF PRIMARY BURIALS	DATING GROUPS OF SECONDARY BURIALS
1	**LHIIIA** (including any of LHIIIA1, LHIIIA2, LHIIB/LHIIIA)	**LHIIIA** (including LHIIB/LHIIIA, LHIIIA1, LHIIIA2, LHIIIA1-A2)
2	**LHIIIB**	**LHIIIB**
3	**LHIIIC EARLY**	**LHIIIC EARLY**
4	**LHIIIC MIDDLE/LATE** (including any of LHIIIC Middle, LHIIIC Late, LHIIIC Middle/Late, LHIIIC Late/SM)	**LHIIIC MIDDLE-/LATE** (including any of LHIIIC Middle, LHIIIC Late, LHIIIC Late/SM, LHIIIC Middle/Late or LHIIIC Middle-Late)
5	**LHIIIC** (phase indeterminate)	**LHIIIC** (including any of LHIIIC Early-Late or SM, LHIIIC Early-Middle, LHIIIC Early & Late or SM)
6	-	**LHIIIA-B**
7	-	**LHIIIA & LHIIIC EARLY** (or indeterminate LHIIIA/LHIIIC Early)
8	-	**LHIIIA & LHIIIC** (including any of LHIIIC Early-Late or Middle-/Late, or Middle, or Late, or SM; or indeterminate LHIIIA/LHIIIC)
9	-	**LHIIIA - LHIIIC EARLY**
10	-	**LHIIIA – LHIIIC** (including any of LHIIIC Early-Late or Middle-/Late, or Middle, or Late, or SM)

Table 5.12. Chronological classification based on variable *Concise Date.*

CATEGORIES	DATING GROUPS OF PRIMARY BURIALS	DATING GROUPS OF SECONDARY BURIALS
Early group	**LHIIIA or LHIIIB** (including any of detailed categories 1 or 2)	**LHIIIA-/LHIIIB** (including any of detailed categories 1-2 or 6)
Late group	**LHIIIC** (including any of detailed categories 3-5)	**LHIIIC** (including any of detailed categories 3-5)
Mixed/Indeterminate group	-	**LHIIIA -/& LHIIIC** (including any of detailed categories 7-10)

The inferred dates are based on the dates of accompanying grave goods, as given by Kolonas (1998, forthcoming), in combination with contextual consideration of all available stratigraphic and bioarchaeological taphonomic observations. The ultimate goal was to reconstruct the sequence of funerary events, and distinguish, as precisely as possible, the date of the skeletal remains from that of their final context. Despite the advanced success of dating inferences thanks to the contextual use of both cultural and bioarchaeological evidence, the chronology of several contexts remains ambiguous. Different possible dates for ambiguous cases are discussed in Chapter 6. Nevertheless, the final dating choices for these contexts are fairly conservative, mostly classifying them in the Indeterminate/Mixed concise date category. This is to ensure that only securely dated cases are included in the Early (LHIIIA-/B) and Late (LHIIIC) groups, and to avoid bias in final interpretation. Tomb contexts of ambiguous date, occasionally subject to refinement, include:

1) *Skeletal assemblages without artefacts or with artefacts insecurely associated with them* (e.g., when objects are located in the space between two primary burials or in proximity to a pit but not inside it). In such cases, a specific date is only given if contextual evidence by proximate assemblages permits a fairly secure reconstruction of their sequence and thus the relative dating of the assemblage in question.

2) *Assemblages that do not display a wide chronological range but only a few outliers to the chronological norm, either of earlier or later date.* In the case of primary burials, the later date is naturally chosen, with the few outliers interpreted as heirlooms. In the case of commingled assemblages, artefacts that reflect a more recent date are considered to represent the date of the final act. In that case, two possibilities are open for the skeletal remains: either that a) they comprise the cumulative product of multiple re-depositions, thus being of mixed/indeterminate date, especially if the outliers are artefacts of early date; or that b) they are all early, and the exceptional vessel(s) of later date relate to the time of the act of secondary deposition, or final interference with the assemblage. The latter possibility is regarded as stronger when the next interments in the tomb are of the same date as the outlier of the secondary deposit.

Presently, the indeterminate date is chosen as the safest option for such cases, except for few assemblages where rich contextual evidence further clarified the funerary sequence. Advances of recent and forthcoming studies on Mycenaean Achaean pottery may allow a revision of certain details in the current chronology (cf. Moschos 2009b; Paschalidis 2014; cf. section 1.4).

5.5 A brief background to palaeodemographic analysis

Palaeodemography is the study of the structure (i.e. age/sex distributions) and dynamics (i.e. growth/decline in size of the whole or components) of past populations through the investigation of patterns displayed through time in key attributes, such as fertility and mortality (Chamberlain 2006: 1-10). Demographic parameters (such as population density or migration) had been directly related to cultural change from early on, even if views on the causality of this relationship differed (e.g., Binford 1968 and Renfrew 1973 *contra* Childe 1936). In the case of Achaea, changes in population size and structure due to an influx of immigrants after the collapse of the palatial centres have been suggested to occur in the LHIIIC period (see 1.4).

Palaeodemographic analysis can use a vast array of sources, including theoretical models, ethnographic, historical, archaeological (skeletal remains, settlements, and size catchments), genetic, and disease evidence (Chamberlain 2006: 10-14). In the present case, it is only possible to rely on skeletal remains and basic theoretical principles of palaeodemography, simply in order to outline the basic demographic parameters of the Voudeni population and assess age and sex distribution patterns, without attempting full demographic reconstruction. Comparisons will be made between sub-groups of the Voudeni population and the appropriate model life table from an analogous model population (Coale and Demeny 1983; for the theoretical justification of using model life tables and details on their compilation, see Chamberlain 2000, 2006: 31-32 with further references).

Palaeodemography has been extensively criticised due to extrinsic limitations and inherent problems of its theoretical basis. These mostly concern: a) the quality of the sample, i.e. the extent to which the sample departs from the once living population that it supposedly represents, due to cultural, environmental, or excavation/recovery bias (Henderson 1987; Walker et al. 1988; Bello and Andrews 2006), or even due to biological mortality bias (Wood et al. 1992); b) the accuracy of age and sex estimation methods (e.g., Weiss 1972, 1973; Bocquet-Appel and Masset 1982; Walker 1995); and c) uniformitarian assumptions about the population under study being stable and/or stationary, i.e. absent migration, and with constant or equal death/birth ratio (Wood et al. 1992; Chamberlain 2006: 25-26). Due to the strong criticism, methodological advancements on both the estimation techniques (e.g., the use of Bayesian approaches to age estimation: Hoppa and Vaupel 2002), and the theoretical justification of uniformitarian assumptions of population stability (Chamberlain 2000, 2006: 87-89) followed, with extended discussion on why past populations may be legitimately assumed to have similar age structures to the ones documented in model life tables. Furthermore, it is finally understood that, as Walker (1995) advised, bone condition and its causes need to be assessed in order to evaluate the representativeness of a sample (e.g., Bello et al. 2006; Bello and Andrews 2006; cf. Triantaphyllou 2001 for the first application of this approach in Aegean material).

Despite the potential for accurate and in-depth palaeodemographic analyses based on recent methodological advances, the Voudeni sample is not ideal for complete demographic reconstruction due to sample-related limitations, i.e. high probability of cultural and excavation bias and lack of other sources of comparative evidence through excavation of the associated settlement. Nevertheless, Voudeni's mortality profiles will be reconstructed with the aim to illuminate social changes and differential funerary practices. The basic principles of palaeodemography will be used to explore age and sex distributions between temporal and status-related sub-groups of the Voudeni population (7.2 and 7.3.4). The causes of the observed patterns can be approached on the grounds that: a) possible systematic biases of the applied methodology are affecting the *whole* of the sample, allowing thus meaningful *intra*-population comparisons (cf. Buikstra and Konigsberg 1985); and b) the differences between the age structure of an archaeological sample and that of the modern model population can reveal –if carefully interpreted– cultural and natural processes that may have affected the composition of the archaeological sample, illuminating thus further its formation process (Chamberlain 2006: 6-7). The specific process applied to create the equivalent of life tables for the Voudeni sample is explained in Section 7.2.2.

5.6 Statistical methods

The detailed presentation of data and results per tomb in Chapter 6 is followed by a synthetic multi-dimensional analysis of demographic and funerary parameters in Chapter 7. In order to explore relationships between different variables and accurately identify meaningful patterns in their distributions (or the absence thereof), qualitative observations were complemented by statistical analysis when appropriate. First, the aggregated data were explored through descriptive statistics (contingency tables and graphic representations). If basic preconditions for statistical analysis were satisfied (i.e. sample size, normal distribution, minimum number of expected frequencies, mutually exclusive variable categories), the most appropriate test for the examined relationship was selected based on the type of the examined variables, expected frequencies, and satisfaction of test assumptions. Selection criteria of statistical tests and graphic representations are shown in Table 5.13; detailed justification for their use can be found in the relevant references.

All statistical tests were performed with the use of IBM SPSS Statistics software package; graphs were produced either by SPSS or Microsoft Excel. All data are presented in Chapter 7, with tables and graphs; statistical results are given only when the test was significant, following the conventional templates of Kinnear and Gray (2000). In order to reject the null hypothesis (H_0: no preference for any variable category *or* no difference in samples' distribution across variable categories), the level of significance was set at 0.05; p values >0.05 and <0.07 were considered as marginally significant, and those between 0.07 and 0.1 as possibly showing trends, but non-significant. Basic statistical analysis was applied in most of the variables explored in this study, except for those of specific secondary acts; the latter is a problematic dataset in statistical terms, since variable categories are not mutually exclusive (5.4.6, 7.4.1).

Table 5.13. Statistical tests and graphic representations selected for this analysis and criteria of their selection.

	AIM TO EXPLORE	STATISTICAL TEST	GRAPH	REFERENCES
ONE SAMPLE	Normality of sample distribution in categories of nominal variables	Goodness-of-Fit x^2 (*or* Fischer's exact, if expected freq: <5)*	Bar/Column charts	Shennan (1997: 104-109); Kinnear and Gray (2000: 153-158)
	Normality of sample distribution in categories of quantitative variables	Kolmogorov-Smirnov	Histogram	Kinnear and Gray (2000: 151-153)
	Correlation between quantitative variables	Pearson correlation	Scattergram	Shennan (1997: 127-150); Kinnear and Gray (2000: 254-258)
INDEPENDENT SAMPLES	Association of nominal data in two-way contingency tables	Chi-square (x^2) for cross-classified data (*or* Fischer's exact, if expected freq: <5)*	Clustered bar/column charts	Shennan (1997: 109-113); Kinnear and Gray (2000: 17-18, 261-268)
	Comparison of averages (quantitative data) between two groups	T-test (*or* non-parametric Mann-Whitney U, if dataset not normal)*	Boxplots	Shennan (1997: 71-103) Kinnear and Gray (2000: 9-10; 142-150)
	Comparison of averages of quantitative data between >2 groups	One-way ANOVA	Boxplots	Kinnear and Gray (2000: 173-178)
	Comparison of age distributions (cumulative ordinal data)	Wilcoxon-Mann-Whitney	Line charts	Chamberlain (2006:43-44); Kinnear and Gray (2000: 149-150)

*Specific test assumptions were always tested before final choice

CHAPTER 6
RESULTS

This chapter presents the results of this study by tomb. Each tomb is set out in a different section, further divided in three sub-sections. The first summarises the archaeological data and initial evaluations as presented by the excavator (Kolonas 1998, forthcoming); the second presents the osteological results (including information on recovery/collection problems, if present); and the third the contextual bioarchaeological reconstruction of funerary activities. The tomb contexts are named after labels used by Kolonas (1998, forthcoming), to ensure consistency with his publication. The context names consist of the tomb number and greek numerals (e.g., T17/A-K); the latter correspond to the number of individuals attested at the time of discovery based on recognised crania, which is most often lower than present estimates. Hence, they should be viewed only as names. Excavation photos, plans, and information on tomb's artefacts used in this chapter, courtesy of Kolonas (1998, forthcoming).

The presentation of the osteological results always includes two tables. The first includes information on bone quantity, state of preservation, and Minimum Number of Individuals (MNI) by tomb context. It should be noted that this MNI corresponds to the osteologically attested cases that count for the tomb total MNI; if the context MNI was higher than that, it is clearly reported in the text. The other table summarises basic osteological information by context. In the case of commingled assemblages, the different cases are named consecutively with the prefix IND(ividual) (e.g., IND. A) for individuated skeletons (or those preserving crania, ensuring thus sex and age information), followed by the successive cases recognised based on partial bone(s) with the prefix E(xtra) (e.g., E2). The column *individuated elements* on this table is filled only for individuated cases and includes the bones securely attributed to them. Osteological information is supplemented by Digital Supplementary Material in cd-rom that includes: Digital Photographic Appendix (S), Datasheet 6.S1 (Number of fragments), Datasheet 6.S2 (MNI frequencies), Datasheet 6.S3 (frequencies for BRI calculations), Datasheet 6.S4 (BRI values).

6.1 TOMB 4

6.1.1 Tomb 4: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 4 was the largest tomb of the Voudeni cemetery, quadrangular, located between the middle and lower hill terraces (Figures 1.4 and 6.1.1a-b; further information: Table 7.1). The tomb was continuously used from the LHIIIA1 until the LHIIIC Late period. In addition to a very long dromos (c. 20m) and unusually large chamber area (c. 27.5m^2), this tomb is characterised by interesting structural details that add to its monumentality (e.g., imitation of relieving triangle above the lintel, impressive gabled roof). Due to monumental construction and wealth of artefacts, Kolonas (1998) argued that Tomb 4 is the only one that offers clear evidence for social differentiation and should have originally belonged to the leader of this community. The tomb had suffered from rock collapses already during its period of use (evident by evidence of ancient repair in the dromos wall). At a later stage, the roof, lintel and parts of interior walls partially collapsed, resulting in the accumulation of thick soil deposit and rock debris on top of the floor; within this, several LHIIIC Middle & Late vessels (T4/1, T4/5-14) were found -presumably displaced due to flood, as well as a broken pair of bronze tweezers. These taphonomic disturbances have to different degrees affected the preservation of the burials (see below). The tomb contained several burials, both primary and secondary, in distinct spatial distributions around its sides (Figure 6.1.1b). For analytical information on all accompanying grave goods, see Table 6.1.1.

***Burials located in eastern (NE) part of the chamber**:* The remains of four interments were recognised at the eastern part of the chamber. **Burial T4/A** was located close to the north corner (Figures 6.1.2a). The body was placed in E-W orientation, with lower limbs contracted and rotated to its right side, skull facing to the north, and upper limbs on chest. The skull was found slightly displaced towards the south-east. Kolonas (1998) identified T4/A as the last interment in the tomb, which caused the disturbance of T4/Γ, located just east of it. No grave goods accompanied T4/A. **Burial T4/B** was a disturbed primary burial south-east of T4/A (Figure 6.1.2b). The lower part of the skeleton was better preserved but the upper part was extensively decayed. The body was placed on its right side, with lower limbs contracted, in E-W orientation. The only artefact associated with this skeleton was an agate bead, found on the thorax. **Burial**

T4/Γ was a single secondary burial, located east of the other two, along the wall (Figure 6.1.3); according to the excavator, the body was possibly removed still semi-articulated in order to make space for the interment of T4/A. It was accompanied by two LHIIIB2 vessels, few beads, and a clay button (T4/16-19, Table 6.1.1). The primary **Burial T4/Δ** was located close to the east corner in W-E orientation (Figure 6.1.4). The body was placed on its left side (skull facing south-east), with lower limbs contracted, the right arm parallel to the body and left hand on pelvis. Fragments of a broken LHIIIC deep bowl (T4/89), a bronze knife and two bronze spear-heads were found in the vicinity of T4/Δ, possibly associated with it; two gold LHIIIA sheets (T4/23) also found close most likely belonged to earlier burials (Table 6.1.1). The presence of a few scattered skeletal remains of earlier burials in the area between T4/B and T4/Δ was recorded in excavation notebooks (visible in Figures 6.1.1b and 6.1.4).

Burials located in south part of the chamber*:* At the rear chamber, three primary burials, **T4/E-ΣT-Z** (from E to W), were placed in parallel, over a layer of raw clay (Figures 6.1.1b, 6.1.5). All three were placed extended, in SE-NW orientation. Only T4/E was clearly associated with a LHIIIC Late stirrup jar, as well as a bronze knife, a whetstone, and a steatite button (T4/24-27); another two bronze objects (brooch and spearhead T4/28-29) were found between T4/ΣT and T4/Z (Table 6.1.1). The later date of these burials was also stratigraphically confirmed, as their raw clay sub-floor was made a small distance above the original floor.

Burials located in west part of the chamber*:* The western part of the chamber was occupied by a large secondary bone assemblage, most extensively damaged (Figure 6.1.1b). This area received the greater mass of tumble from the roof's collapse, resulting in the compression of the bone material; the skeletal remains were so badly preserved that neither the recognition of a specific number of interments nor the recovery of bones was possible. The extended secondary deposit included a large number of artefacts, including several valuable items and weaponry (e.g., sword handle, bronze spear-head, arrowheads; gold beads, discs, and bands; a very large quantity of stone beads of which 11 necklaces were restored etc.), as well as many LHIIA1 vessels and a LMIIIA1 Minoan jar (Table 6.1.1). Close to this deposit, Kolonas (1998) noticed traces of fire and remains of burnt wood, which he interpreted as evidence for fumigation. Finally, close to the west corner, the fragments of a skull were recovered among broken LHIIIA1 vessels, labelled as **Burial T4/H**.

Table 6.1.1. Tomb 4: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
NO BONE ASSOCIATION	TUMBLE & INTRUSIVE DEPOSIT (DRY WALL)	T4/1	KRATER, RING-BASED	LHIIIC LATE	281	48:5
NO BONE ASSOCIATION	TUMBLE & INTRUSIVE DEPOSIT (DRY WALL)	T4/2	BRONZE COIN	ACHAEAN LEAGUE		
NO BONE ASSOCIATION	TUMBLE & INTRUSIVE DEPOSIT (DRY WALL)	T4/3	IRON NAIL	ROMAN		
NO BONE ASSOCIATION	TUMBLE & INTRUSIVE DEPOSIT (STOMION)	T4/4	BRONZE FIBULA	ROMAN		
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/5	STIRRUP JAR	LHIIIC LATE	175	43:i
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/6	STIRRUP JAR	LHIIIC LATE	175	71, 73:y
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/7	STIRRUP JAR	LHIIIC LATE	175	61
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/8	STIRRUP JAR	LHIIIC LATE	175	42:4
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/9	STIRRUP JAR	LHIIIC LATE	175	61A:5, 42:4
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/10	STIRRUP JAR	LHIIIC MIDDLE/LATE	176	73:ae
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/11	STIRRUP JAR	LHIIIC MIDDLE/LATE	175	61A:5, 58:22
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/12	LEKYTHOS	LHIIIC LATE	121	43:n, 71:1, 74
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/13	LEKYTHOS	LHIIIC MIDDLE	121	58:17, 71
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/14	CYLINDRICAL ALABASTRON	LHIIIC MIDDLE	96	41:6
NO BONE ASSOCIATION	TUMBLE AND INTRUSIVE DEPOSIT	T4/15	BRONZE TWEEZERS	LHIIIA-C		
T4/Γ		T4/16	COLLAR-NECKED JAR	LHIIIB2	64	41:6
T4/Γ		T4/17	2 GLASS & 1 CARNELIAN BEADS	LHIIIB2		
T4/Γ		T4/18	STIRRUP JAR	LHIIIB2	173	19:31, 52:4
T4/Γ		T4/19	CLAY BUTTON	LHIIIB2		
T4/Δ		T4/20	BRONZE KNIFE	LHIIIC		
T4/Δ		T4/21	BRONZE SPEARHEAD	LHIIIC		
T4/Δ		T4/22	BRONZE SPEARHEAD	LHIIIC		
T4/Δ		T4/23	2 GOLD SHEETS	LHIIIA		
T4/E		T4/24	BRONZE KNIFE	LHIIIC LATE		
T4/E		T4/25	STIRRUP JAR	LHIIIC LATE	175	73:ae
T4/E		T4/26	WHETSTONE	LHIIIC LATE		
T4/E		T4/27	STEATITE BUTTON	LHIIIC LATE		
UNCLEAR BONE ASSOCIATION	BETWEEN T4/ΣT-T4/Z	T4/28	BRONZE FIBULA	LHIIIC LATE		
UNCLEAR BONE ASSOCIATION	BETWEEN T4/ΣT-T4/Z	T4/29	BRONZE SPEARHEAD	LHIIIC LATE		

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
WEST CHAMBER		T4/30	BRONZE AND GOLD PARTS OF	LHIIIA1		
WEST CHAMBER		T4/31	NECKLACE (90 CARNELIAN BEADS)	LHIIIA		
WEST CHAMBER		T4/32	NECKLACE (151CARNELIAN BEADS)	LHIIIA		
WEST CHAMBER		T4/33	NECKLACE (121 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/34	NECKLACE (95 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/35	GLASS BEADS (75 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/36	GLASS BEADS (69 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/37	NECKLACE (15 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/38	NECKLACE (14 GOLD BEADS)	LHIIIA		
WEST CHAMBER		T4/39	NECKLACE (195 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/40	NECKLACE (175 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/41	NECKLACE (185 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/42	NECKLACE (152 GLASS BEADS)	LHIIIA		
WEST CHAMBER		T4/43	2 STEATITE BEADS	LHIIIA		
WEST CHAMBER		T4/44	9 GLASS BEADS	LHIIIA		
WEST CHAMBER		T4/45	2 GLASS BEADS	LHIIIA		
WEST CHAMBER		T4/46	2 GLASS BEADS	LHIIIA		
WEST CHAMBER		T4/47	27 GLASS PLATES	LHIIIA		
WEST CHAMBER		T4/48	3 GLASS JEWELS	LHIIIA		
WEST CHAMBER		T4/49	5 GLASS PENDANTS	LHIIIA		
WEST CHAMBER		T4/50	17 GLASS PLATES, ROSETTE TYPE	LHIIIA		
WEST CHAMBER		T4/51	3 GLASS PLATES, ROSETTE TYPE	LHIIIA		
WEST CHAMBER		T4/52	5 GLASS PLATES, ROSETTE TYPE	LHIIIA		
WEST CHAMBER		T4/53	NECKLACE (213 SHELL BEADS)	LHIIIA		
WEST CHAMBER		T4/54	4 GOLD SHEETS	LHIIIA		
WEST CHAMBER		T4/55	14 GOLD SHEETS	LHIIIA		
WEST CHAMBER		T4/56	22 GOLD SHEETS	LHIIIA		
WEST CHAMBER		T4/57	13 GOLD SHEETS	LHIIIA		
WEST CHAMBER		T4/58	GOLD SHEETS	LHIIIA		
WEST CHAMBER		T4/59	12 GOLD BANDS	LHIIIA		
WEST CHAMBER		T4/60	GOLD FRAGMENTS	LHIIIA		
WEST CHAMBER		T4/61	50 GOLD DISCS	LHIIIA		

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
WEST CHAMBER		T4/62	BRONZE NAIL	LHIIIA		
WEST CHAMBER		T4/63	7 FR OF BRONZE SPEARHEAD	LHIIIA?		
WEST CHAMBER		T4/64	17 BRONZE ARROWHEADS	LHIIIA		
WEST CHAMBER		T4/65	SEALSTONE	LHIIIA		
WEST CHAMBER		T4/66	SEALSTONE	LHIIIA		
WEST CHAMBER		T4/67	SEALSTONE	LHIIIA		
WEST CHAMBER		T4/68	KYLIX	LHIIIA1 LATE	267	
WEST CHAMBER		T4/69	KYLIX	LHIIIA1 LATE	264	
WEST CHAMBER		T4/70	SHALLOW CUP	LHIIIA1 LATE	204	
WEST CHAMBER		T4/71	KYLIX	LHIIIA1 LATE	267	
WEST CHAMBER		T4/72	KYLIX	LHIIIA1 LATE	267	
WEST CHAMBER		T4/73	SHALLOW ANGULAR BOWL	LHIIIA1 LATE	295	
WEST CHAMBER		T4/74	SHALLOW ANGULAR BOWL	LHIIIA1 LATE	295	
WEST CHAMBER		T4/75	SHALLOW ANGULAR BOWL	LHIIIA1 LATE	295	
WEST CHAMBER		T4/76	SHALLOW CUP	LHIIIA1 LATE	204	
WEST CHAMBER		T4/77	SHALLOW CUP	LHIIIA1 LATE	204	
WEST CHAMBER		T4/78	STIRRUP JAR	LMIIIA1 LATE	c. 167	
WEST CHAMBER		T4/79	JUG	LHIIIA	109	
WEST CHAMBER		T4/80	PIRIFORM JAR	LHIIIA1	23	49:5
WEST CHAMBER		T4/81	CONICAL STORAGE JAR	LHIIIA1	26	11:48, 9:16-17
WEST CHAMBER		T4/82	CLAY BUTTON	LHIIIA		
WEST CHAMBER		T4/83	CONICAL STORAGE JAR	LHIIIA1	26	70:1, 53:29
WEST CHAMBER		T4/84	TWO HANDLED KYLIX	LHIIIA1 LATE	272	
WEST CHAMBER		T4/85	TWO HANDLED KYLIX	LHIIIA1 LATE	271	
WEST CHAMBER		T4/86	ONE HANDLED KYLIX	LHIIIA1 LATE	271	
WEST CHAMBER		T4/87	ONE HANDLED KYLIX	LHIIIA1 LATE	267	
WEST CHAMBER		T4/88	ONE HANDLED KYLIX	LHIIIA1 LATE	267	
T4/Δ	NE CHAMBER	T4/89	DEEP BOWL	LHIIIC	285	

6.1.2 Tomb 4: Osteological results

Information on recovery/collection problems

The osteological analysis of Tomb 4 was hindered by both preservation and recovery bias. The primary burials T4/ΣΤ and T4/Ζ were so poorly preserved at the time of discovery that they could not be recovered. Similarly, only a small bone sample survived from the large secondary deposit in the west part of the tomb, considered in this analysis together with T4/H (see below). From the east part of the chamber, two small groups of scattered bones were collected during excavation; their precise location was not recorded, but they most likely comprise the scattered material north of T4/Δ. The rest of the burials were left *in situ* until 2003, suffering further surface damage due to the prolonged exposure.

The osteological results

The recovered osteological material from Tomb 4 comprised approximately 900 bone fragments (of which only 349 could be identified) from seven different contexts; with the exception of T4/A-T4/Γ primary burials, all other skeletal material was rather poorly preserved (Table 6.1.2; details below). The total tomb MNI was 7. Basic osteological information for all cases is given in Table 6.1.3.

Table 6.1.2. Bone quantity, state of preservation, and MNI by tomb context.

<table>
<tr><th rowspan="3">TOMB CONTEXT</th><th colspan="3">NO OF BONE FRAGMENTS</th><th colspan="4">PRESERVATION</th><th colspan="2">MNI</th></tr>
<tr><th rowspan="2">IDENTI FIED</th><th rowspan="2">TOTAL</th><th rowspan="2">TEETH</th><th colspan="2">COMPLETENESS</th><th colspan="2">SURFACE</th><th rowspan="2">MNI</th><th rowspan="2">Max. occ. skeletal element</th></tr>
<tr><th>DETAIL</th><th>CONCISE CLASS</th><th>DETAIL</th><th>CONCISE CLASS</th></tr>
<tr><td>**T4/A**</td><td>94</td><td>253</td><td>0</td><td>1</td><td>1</td><td>2</td><td>1</td><td>1</td><td></td></tr>
<tr><td>**T4/B**</td><td>59</td><td>145</td><td>6</td><td>c.3</td><td>3</td><td>2-3</td><td>2</td><td>1</td><td></td></tr>
<tr><td>**T4/Γ**</td><td>42</td><td>117</td><td>0</td><td>diverse c.2</td><td>2</td><td>2</td><td>1</td><td>1</td><td></td></tr>
<tr><td>**T4/Δ**</td><td>68</td><td>220</td><td>11</td><td>diverse c.3</td><td>3</td><td>3-4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>**T4/E**</td><td>8</td><td>68</td><td>0</td><td>4</td><td>4</td><td>4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>**T4/H & WEST CHAMBER**</td><td>13</td><td>30</td><td>0</td><td>4</td><td>4</td><td>4</td><td>4</td><td>1</td><td>cranium</td></tr>
<tr><td>**T4/EAST CHAMBER**</td><td>65</td><td>73</td><td>16</td><td>diverse c.2</td><td>1</td><td>3-4</td><td>3</td><td>1</td><td></td></tr>
<tr><td>**TOTAL**</td><td>**349**</td><td>**906**</td><td>**33**</td><td colspan="4"></td><td>**7**</td><td>cranium</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="4"></td><td></td><td></td></tr>
</table>

Table 6.1.3. Tomb 4: Basic osteological information by case (n=7) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T4/A	PRIMARY	M	Skull; pelvis; LB metrics	MA	Cranial sut.closure: 15 (45.2y)	c.167	humerus; femur	
T4/B	DISTURBED PRIMARY	F	Skull; pelvis; LB metrics	PA	R aur: 4 (35-39y); Dental wear: 20-25y.	150	femur	
T4/Γ	SINGLE SECONDARY	F	Skull; femoral metrics	MA	Cranial sut.closure: 10 (39.4y)			
T4/Δ	PRIMARY	M	Skull; femoral metrics	YA	Dental wear: 25y.			
T4/E	PRIMARY	NO		AD				
T4/H & WEST CHAMBER (E1)	COMMINGLED SECONDARY	M	Skull (temporal); femoral metrics	AD				
T4/ EAST CHAMBER (E2)	SCATTERED /ISOLATED	F	Skull; femoral metrics	YA	Dental wear: 25y.			Skull (including mandible); (& *tentatively*: R femur and pair of tibiae)

Burial T4/A: T4/A was the most well-preserved skeleton of Tomb 4, with reference to all aspects (completeness, surface condition, representation; Table 6.1.2; Figures 6.1.6a-6.1.7). The bones missing or significantly under-represented were small-sized elements (hand and foot bones), indicating both natural taphonomic and expected recovery bias (Figure 6.1.6a). The absence of the mandible is, though, unusual, considering the good state of preservation of the remaining skeleton; the extensive taphonomic and recovery problems encountered in Tomb 4 do not permit, however, to discriminate between the possibility of intentional removal and taphonomic or post-excavation loss (N.B. the mandible is not discerned in the excavation photo, making recovery bias more unlikely). The examination of the skeletal material across excavation photos (Figure 6.1.2a) confirmed the body position as described above. The cranium was clearly dislocated after soft tissue decomposition, displaced further to the east. The poor photo quality did not allow discerning its exact position, preventing further inferences about the cause of dislocation (whether naturally or human-induced). T4/A skeleton belonged to a mature adult male (Table 6.1.3).

Burial T4/B: Burial T4/B was moderately preserved, both in terms of completeness and surface condition (Table 6.1.2; Figure 6.1.6a; 6.1.S1). The bones suffered significant fragmentation, and many elements, even with high BRI values, were only represented by a few fragments (e.g., skull); the pattern of bone representation suggested a significant degree of random disturbance, with mostly fragile and small-sized elements under-represented. The examination of excavation photos (Figure 6.1.2b) confirmed the contracted placement of lower limbs but the upper part of the body was so decayed that the position of the upper limbs could not be determined. The poor condition of the upper skeleton did not permit identification of the extent of possible disturbance of this area. Limited disturbance was, though, evident in the lower limbs, with the left femur being clearly dislocated from the correct anatomical position and found proximally, inverted, with its posterior side on top and distal end over right thoracic area. T4/B context is, thus, classified in this study as a disturbed primary burial; with reference to the cause of disturbance, however, the context remains ambiguous, since this cannot be precisely determined (cf. 5.4.5, 7.3.3). The skeleton of T4/B belonged to a gracile mature adult female (Table 6.1.3; a significant discrepancy was noticed between dental and pelvic age information; the latter was chosen as more accurate).

Burial T4/Γ: Burial T4/Γ comprised few bones from a single individual, preserved fairly well in terms of completeness and surface condition, but only sporadically represented (Table 6.1.2; Figure 6.1.6a, 6.1.S2-3). Both the analysis of BRI values and the examination of photographic documentation (Figure 6.1.3) suggested the secondary deposition of a single individual rather than a case of disturbed primary burial. The impression of some preserved semi-articulation given to the excavators at the time of discovery was false, not upheld by careful examination of excavation photos across the recovered material (left humerus and tibia were identified lying in parallel next to the skull, while left femur and right tibia were dispersed further north). BRI values (Figure 6.1.6a) clearly showed good representation only of the cranium and some prominent long bones, while other elements were only represented by few fragments (N.B. the top value of vertebrae and tarsals is misleading, as it corresponds only to single fragments). Since surface condition and completeness of the recovered elements was not poor and the accompanying ceramic vessels were found intact, the absence of missing bones should not be attributed to severe decay or extensive taphonomic disturbance but rather to selective human action (cf. 6.1.3). T4/Γ skeleton belonged to a mature adult female (Table 6.1.3).

Burial T4/Δ: The skeletal assemblage collected in T4/Δ included the main primary skeleton, as well as an extra right talus, apparently a scattered remain of some earlier burial in the same area.[43] T4/Γ skeleton was moderately to poorly preserved in terms of element completeness, and rather poorly in terms of surface preservation (Table 6.1.2, Figures 6.1.S4-6). Bone representation was good for most elements (Figure 6.1.6b), even though it should be stressed that several elements actually had very low raw frequencies. The skeleton was clearly more fragmentary than at the time of discovery (cf. Figure 6.1.4), suggesting significant post-excavation damage inflicted due to the prolonged *in situ* exposure. Based on the photo, the burial position was confirmed as originally described. The skeleton belonged to a young adult male.

[43] N.B. The extra bone frequencies were analysed with the total frequencies of the tomb's secondary remains, insufficient to add an extra case to the total MNI.

Burial T4/E: From the three extended burials in the rear of the chamber, only very few cranial and post-cranial fragments of T4/E survived into the final collection. The material was extremely poorly preserved in all aspects, and the only bones that could be recognised were the skull, scapula, upper limbs, and femora (Table 6.1.2; Figures 6.1.6b and 6.1.8). This pattern of bone representation reflects a most extreme case of natural taphonomic decay, with preservation affected by the detrimental effects of immediate contact with the raw clay that was used below these interments (cf. Tombs 13, 20, 22 and 26). As observed in Figure 6.1.5, bone decay was so pronounced, that only the general outline of the skeleton and soil imprint of the weathered bones offered the basic information on burial positions. The osteological assessment was severely limited because of such poor bone condition; T4/E was an adult individual whose sex could not be determined (Table 6.1.3).

T4/H & West Chamber: The few cranial fragments recovered as T4/H from the west corner belonged to a poorly represented adult cranium of indeterminate sex (younger than prime adult, all observed cranial sutures open), which preserved only a small part of occipital and left parietal (Figure 6.1.S7). Based on the archaeological description of the extended western secondary deposition and of T4/H location, these cranial fragments could not be considered separately from the remaining secondary deposit. The minimal bone sample that survived from the western deposit included few incomplete, poorly preserved bones (Table 6.1.2, Figure 6.1S8); their condition was consistent with the extreme taphonomic damage in west chamber as described by Kolonas (1998). A MNI of 1 was estimated in this group (including T4/H), comprising at least one male (E1, based on fragments of a robust male femur and temporal bone; Table 6.1.3).

East chamber extra bones: A small quantity of scattered bone material from the east part of the chamber was collected in two groups during the original excavation (*Groups A-B 1988*; Figures 6.1.S9-12). This material was fairly well-preserved in terms of completeness, but only moderate as of surface condition. The major bones of this group (especially three lower limb bones and a fairly complete cranium) most likely represent the scattered remains noticed between T4/B and T4/Δ (unfortunately not fully documented in notebook, and already partially removed in final photography). The bone group also included small-sized bones and fragments; some of these may in fact originate from the primary burials (T4/A-B) or the single secondary context (T4/Γ), erroneously removed and collected separately at the time of discovery, as suggested by the contextual analysis of all bone frequencies (compare, for example, metatarsal BRI values between the various contexts, Figures 6.1.6a-b).[44] The most prominent bones of this group (skull and lower limbs) could all belong to a young female individual, raising the total tomb MNI to 7 (Table 6.1.3).

6.1.3 Tomb 4: Bioarchaeological reconstruction of funerary activities

The bioarchaeological information provided by Tomb 4 was severely compromised due to serious preservation and recovery issues. For this reason, the reconstruction of funerary sequence and specific activities in the tomb is minimally addressed and should be treated with caution, especially in terms of the MNI, which most likely under-represents the actual number of interments. The total MNI of 7 includes three females, three males, and one individual of indeterminate sex (Table 6.1.3).[45] Except for the non-recovered primary burials T4/ΣT-Z, it is certain that this number profoundly under-estimates the number of burials encountered in the tomb at the time of discovery; the description of the extended western bone pile testified to a much larger quantity than the few surviving fragments that gave the estimate of one individual for this entire context.

Despite these limitations, a basic reconstruction of funerary sequence and specific activities in Tomb 4 can be attempted based on the contextual evaluation of bioarchaeological evidence. The first major phase of use spanned the entire LHIIIA period, including an unknown number of burials that most likely occupied the entire chamber, as indicated by the presence of scattered LHIIIA artefacts all over the floor. Later on, these burials were removed and secondarily collected in the extended pile of bones at the west part of the chamber, in one or multiple episodes. Certainly the bone transfer(s) mostly took place in LHIIIA-LHIIIB, as the next interment in the eastern chamber (T4/Γ) was of LHIIIB date, and the western secondary assemblage did not

[44] Because of the special recovery and preservation problems in Tomb 4, the secondary skeletal elements from both east and west chamber were aggregated for BRI analysis, calculated on the basis of their total MNI: 2.
[45] N.B. The consideration of primary burials T4/ΣT-Z may securely raise the total tomb MNI to 9; however, only the osteologically determined MNI of 7 will be considered in final analysis, cf. 7.2.

contain later artefacts. Kolonas (1998) found traces of fire in close proximity to the secondary deposit (cf. 6.1.1). Whether this related to ritual activities or the practical necessity of supplying artificial light in order to facilitate re-arrangements of the funerary space, is open to debate; however, no trace of cremated or charred bone was observed in recovered skeletal elements, rejecting the possibility of an extended fire in the chamber.

The second phase of use, dated to LHIIIB, comprised at least one interment, the female of T4/Γ. Burial T4/Γ should have been originally placed somewhere in the area later occupied by burials T4/A-T4/B. The time of removal should then be placed between LHIIIB and LHIIIC Late. As shown above, bone preservation patterns indicated a selective act of removal, with the mourners retaining the most prominent bones of this skeleton in a single individual context. It is noteworthy that, although a huge pile of bones already covered the other half of the chamber at the time of T4/Γ removal, the people interacting with this body decided not to place it within the commingled remains but kept it separate, close to its original burial place and the burials that followed. The LHIIIB phase of use appears quite limited, since no other burial can be securely associated with this phase. The scattered remains of the east area, and mostly the bone concentration between T4/B and T4/Δ which included at least one female individual (T4/East-E2), could also be dated to the same period, with the bone concentration possibly representing another single secondary deposit, similar to T4/Γ. Unfortunately, the problematic recording of these bones does not permit a positive conclusion.

The primary burials found *in situ* (both east and south) were all dated to the last phase of the tomb's use in the LHIIIC period. Burials T4/A-B were not accompanied by grave goods but their dating certainly postdates T4/Γ, placing them either later in LHIIIB or in the LHIIIC period. The fact that they were largely undisturbed and that any minor traces of disturbance (such as the T4/A skull displacement) could be due to non-human taphonomic agents suggest the latter. These burials should also post-date T4/Δ, since it was mentioned in notebook that some scattered bones were found close to T4/Δ but also *on top* of it. This suggests that when T4/Δ was interred perhaps an earlier burial (most likely the E2 female individual) was still *in situ* in close proximity; then, when the space was needed for placing T4/B, the bones were displaced ending up adjacent to and some on top of T4/Δ. The three extended burials at the back of the chamber (T4/Ε-ΣΤ) were dated to the LHIIIC Late based on ceramic evidence, but it is not possible to assess the exact chronological relationship with T4/A-B.

In terms of spatial characteristics, it is interesting that the two LHIIIC sub-groups (east and south burials) were characterised by distinctly different burial positions: the former were all placed contracted on their sides, while the latter were all supine and extended. Finally, it is worth noticing that care was clearly taken to keep the central part of the chamber free of burials.

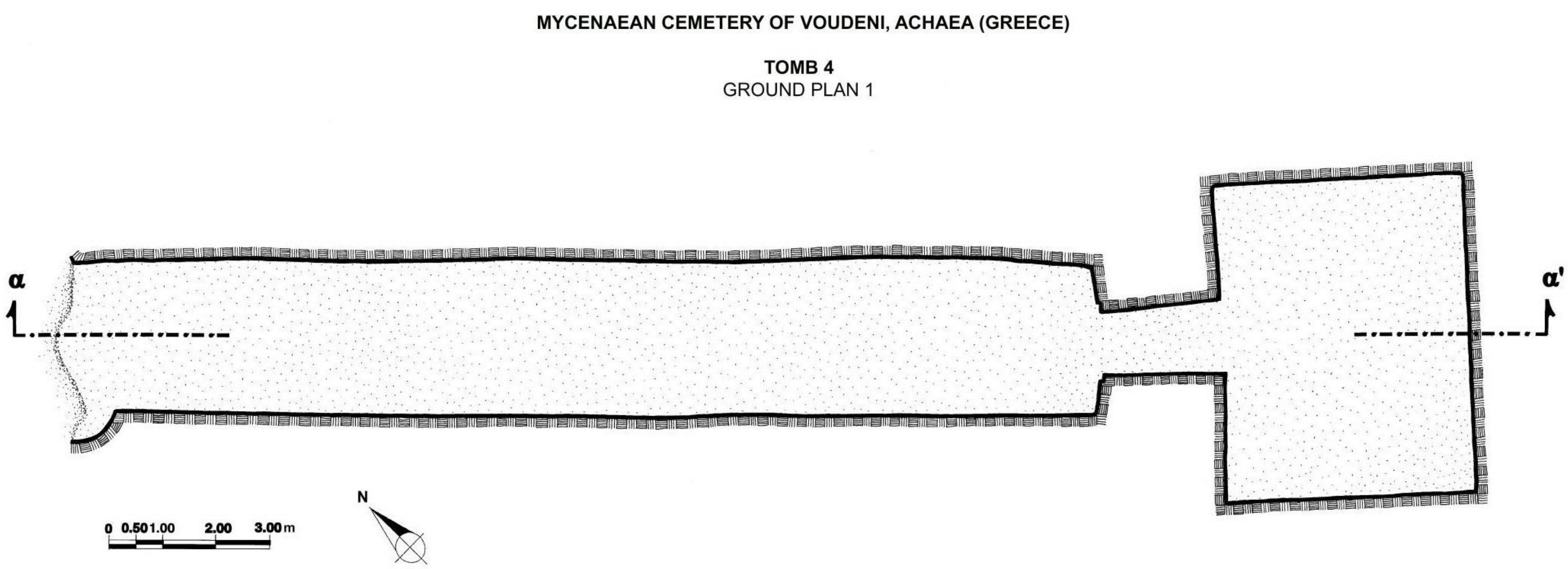


Figure 6.1.1a. Tomb 4: ground plan 1 (after Kolonas 1998, forthcoming); chamber and dromos.

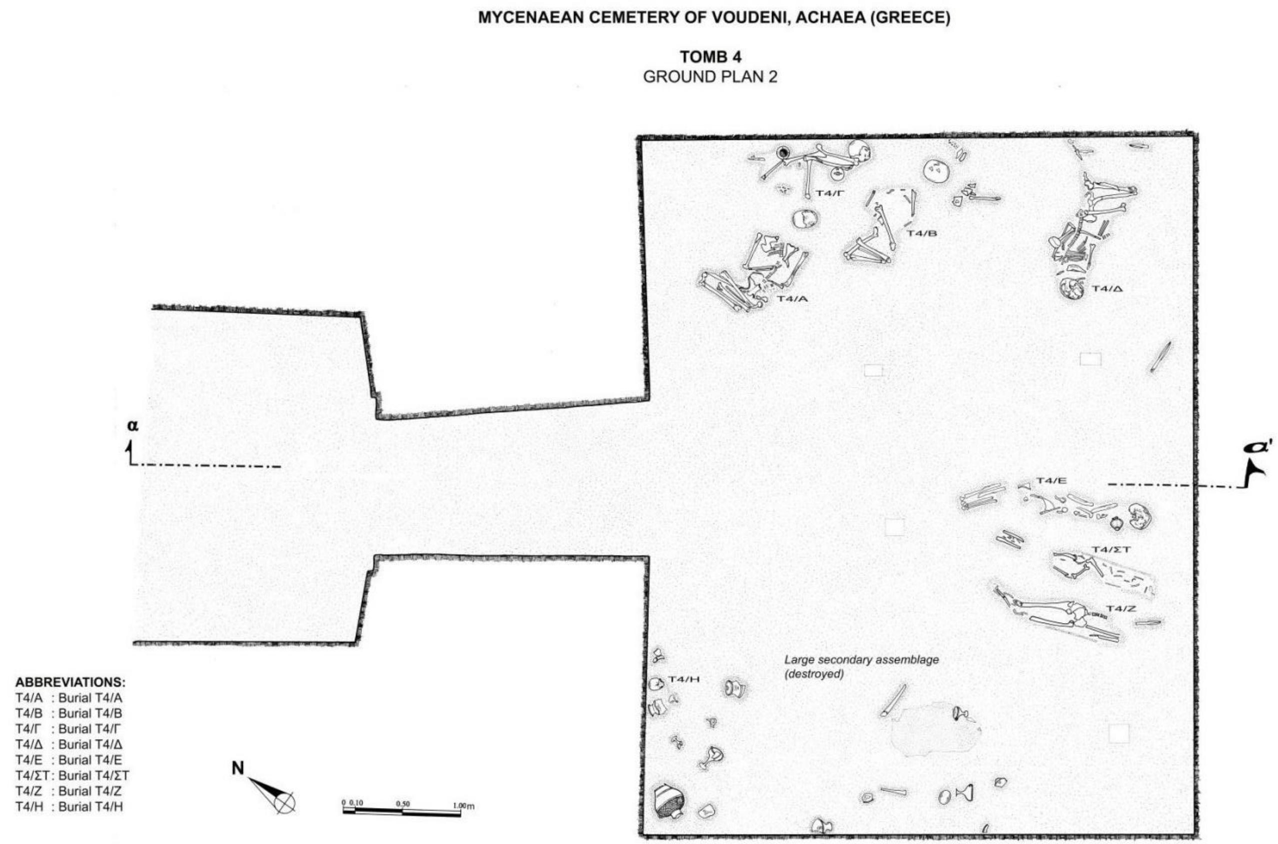


Figure 6.1.1b. Tomb 4: ground plan 2 (after Kolonas 1998, forthcoming); the chamber.

Figures 6.1.2a-b. Burial T4/A (left) and Burial T4/B (right), view from the west.

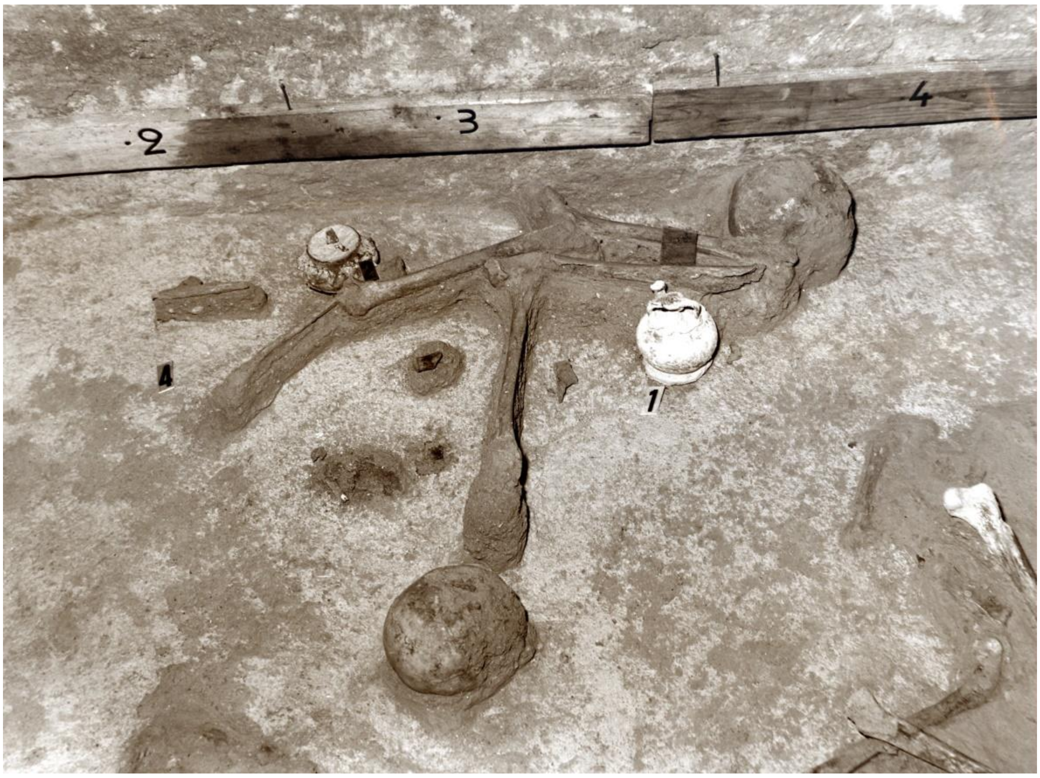
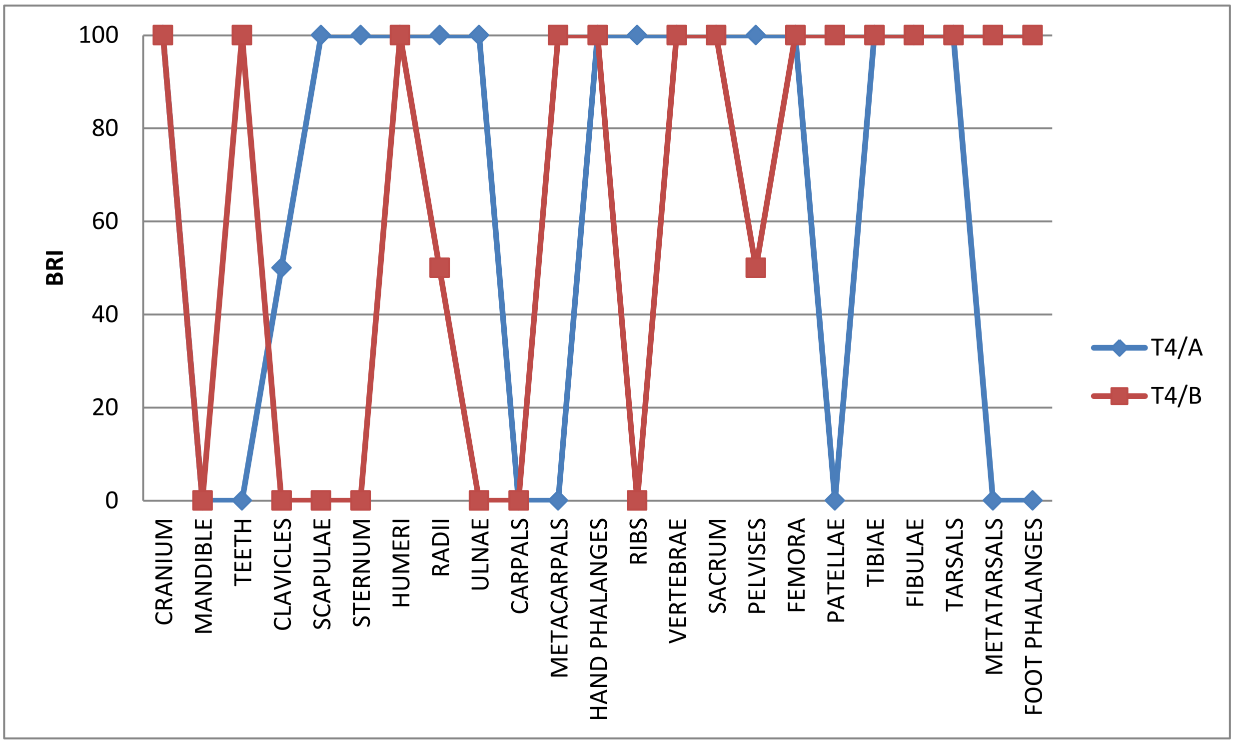


Figure 6.1.3. Burial T4/Γ, view from south-west; skull of T4/A also visible at the south and T4/B at the right.

Figure 6.1.4. Burial T4/Δ (left) view from the west; traces of earlier remains also visible north of it (right), already partially removed.

Figure 6.1.5. Burials T4/Ε –T4/ΣΤ – T4/Ζ (bottom to top), view from the east.



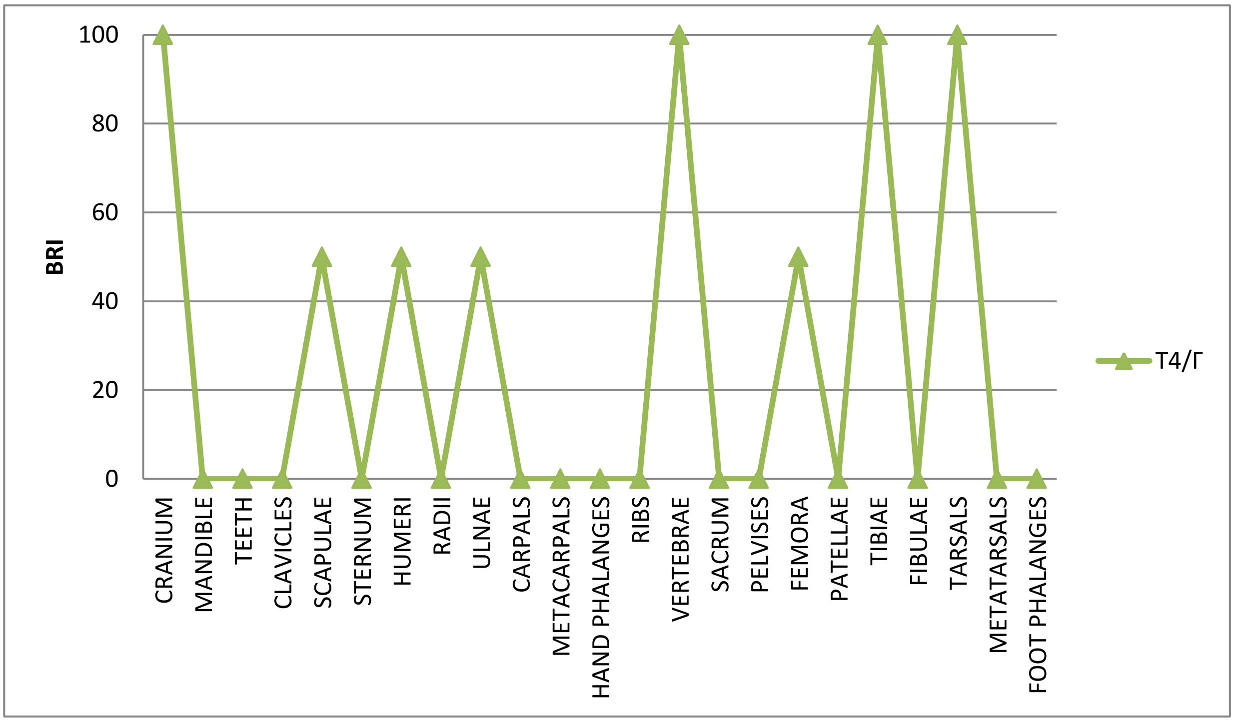
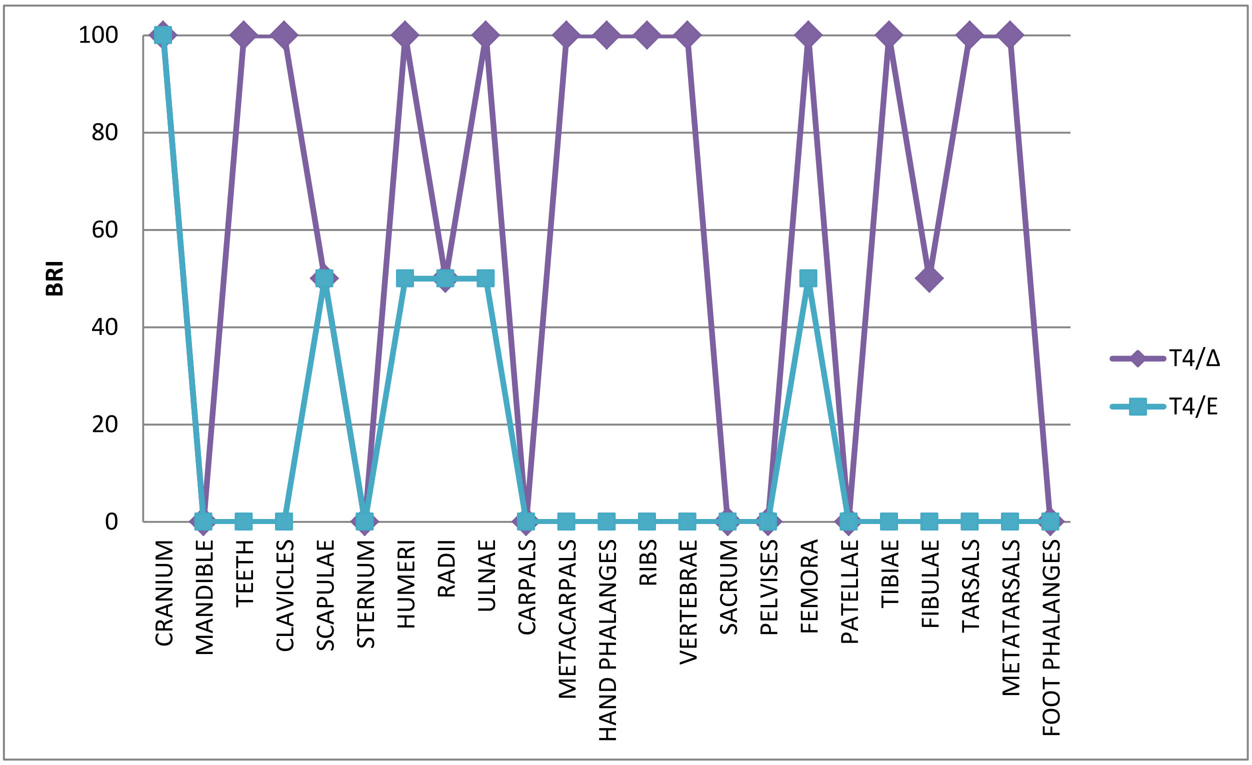


Figure 6.1.6a. Tomb 4: Bone Representation Index (BRI) by tomb context (T4/A-T4/Γ).



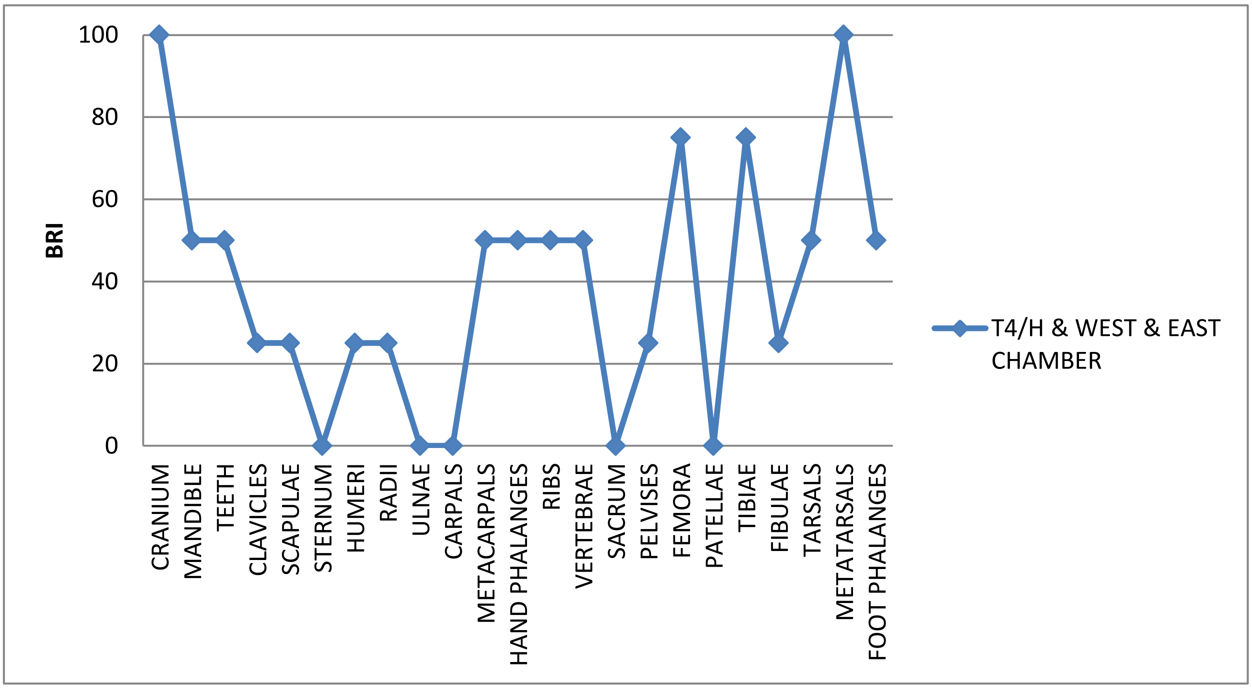


Figure 6.1.6b. Tomb 4: Bone Representation Index (BRI) by tomb context (T4/Δ-T4/E and T4/H & west-east chamber).

Figure 6.1.7. Burial T4/A: cranial and post-cranial bones.

Figure 6.1.8. Burial T4/E: the total quantity of recovered cranial and post-cranial bone fragments.

6.2 TOMB 5

6.2.1 Tomb 5: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 5 is a circular tomb of medium size, located at the eastern end of the upper hill terrace (Figures 1.4 and 6.2.1a-c; further information: Table 7.1). The tomb was in use in two time periods: LHIIIA and LHIIIC (Table 6.2.1). The various funerary deposits were found in two successive burial layers (a rare instance in the Voudeni cemetery). The tomb was found with its roof completely collapsed, while the dry wall of the entrance was only partially closed.

Upper layer: The latest, upper, floor (thickness: c. 25cm) was roughly made above the burial layer of the original one (Figures 6.2.1a-b and 6.2.S1). As Kolonas (1998) suggests, that happened either because a limited amount of soil debris from wall spalling may have already accumulated over the earlier burials or because the mourners did not wish to remove them. The final floor was found covered by soil deposits and debris of the fallen roof, which caused some damage to bones and artefacts. The central part of the chamber was occupied by **Burial T5/A**, presumably a very disturbed primary burial preserving only lower limbs *in situ*; the burial position was not determined due to very poor bone condition. Six LHIIIC Late stirrup jars accompanied this burial, while two very large LHIIIC Late vessels (T5/1-2), placed immediately in front of the stomion, were also attributed by Kolonas (1998) to T5/A, taken to represent the final tomb interment. At the NW part of the tomb, the presumably secondary **Burial T5/B** comprised a small quantity of extremely decayed bones, accompanied by several vessels of the LHIIIC Middle/Late and Late period, bronze awl and fibulas, and a clay button (Table 6.2.1; Figures 6.2.1a-b). Other LHIIIC Middle/Late and Late vessels were found either complete (T5/9-15) or fragmented (T5/27-28) within the deposits that had accumulated over the floor, at the eastern part of the chamber. Finally a few long bones, also extremely decayed, were identified at the NE part of the chamber (*scattered bones* in Figure 6.2.1b, depicted in Ground Plan 2 albeit belonging to the upper and not the lower layer; cf. Figure 6.2.2a).

Lower layer: The original floor was occupied by six primary burials (T5/Γ-H), placed in parallel to each other in S-N orientation, except for the north-western T5/H that was placed in W-E orientation (Figures 6.2.1b and 6.2.2a-b; cf. summary info: Table 7.18).

Burial T5/Γ was placed on its left side, with lower limbs contracted, and skull facing to the west; left arm was parallel to the body and right hand placed on pelvis. A LHIIIC Middle/Late stirrup jar accompanied the burial. **Burial T5/Δ** was placed next to it, in exactly the same position but in opposite direction: the body was placed on its right side with legs contracted, with right arm parallel to the body and left on pelvis. A LHIIIC Middle askoid vase, one jug, and a steatite button accompanied this burial; another LHIIIC Middle stirrup jar (T5/31) was placed between T5/Δ and T5/E. **Burial T5/E** was presumably placed in 'knees-up' position, as inferred by the excavator based on the disturbed position of the lower limbs. The right hand was found below the pelvis and the left on pelvis. This burial could not be securely associated with an artefact, but it may have been related to vessel T5/31 or the bronze spearhead T5/59, also found between T5/Δ and T5/E. Further west, **Burial T5/ΣT** was placed contracted on its left side, skull facing east, with right arm parallel to the body and left hand on pelvis. No grave goods were found in association with this burial, except perhaps for the bronze plates (T5/62) that were found between this and T5/Z. **Burial T5/Z** was placed with lower limbs flexed and skull facing east, with arms extended along the sides. The burial was accompanied by a bronze spearhead and a bronze spiral foil dated to the LHIIIC Middle period. Finally, **Burial T5/H** was placed just north of T5/Z. The body was placed on its right side, with lower limbs flexed, left arm placed on pelvis and right parallel to the body. The lower limbs were slightly displaced due to some later disturbance. Two LHIIIC Middle vessels and a bronze knife accompanied the burial (Table 6.2.1).

At the NE part of the chamber, partially below the lower limbs of T5/Γ, the large **Pit I** (1.44x0.80x0.35m) contained a secondary deposition of commingled human remains (**Burials T5/Θ-IΓ**, assessed at the time of discovery to comprise at least five individuals; Figures 6.2.1c and 6.2.S2). Several vessels dated from the LHIIB/IIIA1 until the LHIIIA2 period were deposited with the bones, as well as a gold foil plated bronze ring, a clay button, several carnelian, glass and shell beads, but also two LHIIIC Early stirrup jars (Table 6.2.1). Based on a joining fragment of a shallow cup both from the bottom and the top of the pit, the excavator inferred that the pit deposition should have occurred in one episode, probably in the LHIIIC Early period.

Table 6.2.1. Tomb 5: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T5/A		T5/1	KALATHOS	LHIIIC LATE	291	53:18, 52:3, 61:10
T5/A		T5/2	BELLY-HANDLED AMPHORA	LHIIIC LATE	58	53:17, 75:2
T5/A		T5/3	STIRRUP JAR	LHIIIC LATE	177	43:31
T5/A		T5/4	STIRRUP JAR	LHIIIC LATE	177	43:31
T5/A		T5/5	STIRRUP JAR	LHIIIC LATE	175	43:n
T5/A		T5/6	STIRRUP JAR	LHIIIC LATE	175	43:31
T5/A		T5/7	STIRRUP JAR	LHIIIC LATE	175	43:i
T5/A		T5/8	STIRRUP JAR	LHIIIC LATE	175	43:31
NO BONE ASSOCIATION	UPPER LAYER	T5/9	JAR (2-HANDLED)	LHIIIC LATE	58	43:h
NO BONE ASSOCIATION	UPPER LAYER	T5/10	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	71:9, 58:15
NO BONE ASSOCIATION	UPPER LAYER	T5/11	STIRRUP JAR	LHIIIC LATE	177	71:9
NO BONE ASSOCIATION	UPPER LAYER	T5/12	STIRRUP JAR	LHIIIC LATE	175	
NO BONE ASSOCIATION	UPPER LAYER	T5/13	STIRRUP JAR	LHIIIC LATE	177	
NO BONE ASSOCIATION	UPPER LAYER	T5/14	STIRRUP JAR	LHIIIC LATE	177	
NO BONE ASSOCIATION	UPPER LAYER	T5/15	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	
T5/B		T5/16	STIRRUP JAR	LHIIIC LATE	177	
T5/B		T5/17	STIRRUP JAR	LHIIIC LATE	177	
T5/B		T5/18	STIRRUP JAR	LHIIIC LATE	177	
T5/B		T5/19	DEEP BOWL	LHIIIC MIDDLE-LATE	285	
T5/B		T5/20	STIRRUP JAR	LHIIIC LATE	177	
T5/B		T5/21	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	
T5/B		T5/22	STIRRUP JAR	LHIIIC LATE	176	
T5/B		T5/23	STIRRUP JAR	LHIIIC MIDDLE-LATE	177	
T5/B		T5/24	STIRRUP JAR	LHIIIC LATE	175	
T5/B		T5/25	STIRRUP JAR	LHIIIC LATE	175	
T5/B		T5/26	DEEP BOWL	LHIIIC MIDDLE-LATE	285	
NO BONE ASSOCIATION	UPPER LAYER	T5/27	STIRRUP JAR	LHIIIC LATE	175	71
NO BONE ASSOCIATION	UPPER LAYER	T5/28	STIRRUP JAR	LHIIIC MIDDLE-LATE	179	53:39
T5/Γ		T5/29	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T5/Δ		T5/30	RING ASKOID VASE	LHIIIC MIDDLE	196	
UNCLEAR BONE ASSOCIATION	BETWEEN T4/Γ-Δ	T5/31	STIRRUP JAR	LHIIIC MIDDLE	181	43:7
T5/Δ		T5/32	JUG	LHIIIC MIDDLE	114	
T5/H		T5/33	JUG WITH CUTAWAY NECK	LHIIIC MIDDLE	136	
T5/H		T5/34	STIRRUP JAR	LHIIIC MIDDLE	177	43:h, 53:39
T5/Θ-IΓ (PIT I)		T5/35	RING-HANDLED CUP	LHIIIA2	253	
T5/Θ-IΓ (PIT I)		T5/36	RING-HANDLED CUP	LHIIIA2	238	
T5/Θ-IΓ (PIT I)		T5/37	LEKYTHOS	LHIIIC EARLY	122	42:8
T5/Θ-IΓ (PIT I)		T5/38	ROUNDED ALABASTRON	LHIIIA1	85	
T5/Θ-IΓ (PIT I)		T5/39	STIRRUP JAR	LHIIIC EARLY	175	53:18
T5/Θ-IΓ (PIT I)		T5/40	ROUNDED ALABASTRON	LHIIIA2	85	
T5/Θ-IΓ (PIT I)		T5/41	RING-HANDLED CUP	LHIIIA2	253	
T5/Θ-IΓ (PIT I)		T5/42	STIRRUP JAR	LHIIIC EARLY	174	53:18
T5/Θ-IΓ (PIT I)		T5/43	ROUNDED ALABASTRON	LHIIIA1	85	
T5/Θ-IΓ (PIT I)		T5/44	PIRIFORM JAR	LHIIIA1	39	53:5
T5/Θ-IΓ (PIT I)		T5/45	PIRIFORM JAR	LHIIIA1	39	
T5/Θ-IΓ (PIT I)		T5/46	ROUNDED ALABASTRON	LHIIIA2	85	
T5/Θ-IΓ (PIT I)		T5/47	ROUNDED ALABASTRON	LHIIIA2	85	
T5/Θ-IΓ (PIT I)		T5/48	SHALLOW CUP	LHIIIA1	204	
T5/Θ-IΓ (PIT I)		T5/49	PIRIFORM JAR	LHIIIA2	39	
T5/Θ-IΓ (PIT I)		T5/50	SMALL HANDLE-LESS JAR	LHIIB/IIIA1	77	
T5/Θ-IΓ (PIT I)		T5/51	SQUAT JAR	LHIIB/IIIA1	87	
T5/Θ-IΓ (PIT I)		T5/52	PIRIFORM JAR	LHIIIA2	39	
T5/Θ-IΓ (PIT I)		T5/53	JAR	LHIIIA1	77	
T5/Θ-IΓ (PIT I)		T5/54	ROUNDED ALABASTRON	LHIIIA2	85	
T5/Θ-IΓ (PIT I)		T5/55	BRONZE RING	LHIIB/IIIA1-IIIC		
T5/B		T5/56	BRONZE AWL	LHIIIC MIDDLE-LATE		
T5/B		T5/57	BRONZE FIBULA	LHIIIC MIDDLE-LATE		
T5/B		T5/58	BRONZE FIBULA	LHIIIC MIDDLE-LATE		
UNCLEAR BONE ASSOCIATION	BETWEEN T5/Δ-T5/E	T5/59	BRONZE SPEARHEAD	LHIIIC MIDDLE		
T5/Z		T5/60	BRONZE SPEARHEAD	LHIIIC MIDDLE		
T5/Z		T5/61	BRONZE FOIL	LHIIIC MIDDLE		
UNCLEAR BONE ASSOCIATION	BETWEEN T5/ΣT-T5/Z	T5/62	2 BRONZE PLATES	LHIIIC MIDDLE		
T5/H		T5/63	BRONZE KNIFE	LHIIIC MIDDLE		
T5/B		T5/64	CLAY BUTTON	LHIIIC LATE		
T5/Δ		T5/65	STEATITE BUTTON	LHIIIC MIDDLE		
T5/Θ-IΓ (PIT I)		T5/66	CLAY BUTTON	LHIIB/IIIA-C EARLY		
T5/Θ-IΓ (PIT I)		T5/67	CARNELIAN GLASS AND BEAD	LHIIB/IIIA-C EARLY		

6.2.2 Tomb 5: Osteological results

Information on recovery/collection problems

The study of Tomb 5 faced severe limitations due to recovery and collection problems. First, all upper layer remains (T5/A-T5/B and scattered bones) were missing from the final study bone collection, probably not surviving recovery due to poor preservation. Few remarks on these bones (included below) were possible based on excavation photographic documentation. Second, all primary burials (T5/Γ-T5/H) are still located *in situ*, part of the tomb site display. On these, it was only possible to conduct a basic osteological assessment after *in situ* inspection. The only bones removed from this group comprised the lower body of skeleton T5/Γ, which was lifted in order to enable the excavation of Pit I below (cf. Figure 6.2.1c). Her femora were left in the chamber, placed adjacent to the intact upper body, but pelvis, tibiae, and fibulae were not found in the final bone collection. The contents of Pit I (T5/Θ-IΓ) were fully recovered.

Brief remarks on skeletal remains from the upper layer

Based on photographic examination of the human remains from the upper floor (Figures 6.2.1a-b and 6.2.S1), the following remarks were possible: Burial T5/A displayed no signs of articulation; the bones attributed to this group consisted of a few disarticulated bones (including at least four long bone shafts and a pelvis), dispersed in two groups around the vessels T5/3-8. Burial T5/B, immediately above and NW of T5/H feet (Figure 6.2.2b), comprised very few bones, including two long bone fragments and some smaller elements that could not be precisely identified. Based on photographic evidence, MNI of both T5/A-B contexts could not surpass 1. Finally, the scattered remains of the NE upper floor comprised shafts of four lower limb bones (femora and tibiae; cf. Figure 6.2.2a). Although articulation could not be positively affirmed, the placement of these bones was strongly reminiscent of a disturbed primary burial, particularly of those preserving only the lower limbs *in situ* (cf. Tombs 27 and 31). On these grounds, it was possible to attest a MNI of 2 *at minimum* for the upper layer.

The osteological results

The studied contexts of Tomb 5 (lower layer) comprised a large quantity of osteological material, attesting to a MNI of 18.[46] The *in situ* inspection of primary contexts did not permit the detailed quantification of the skeletal material. Hence, bone fragment numbers are not enlisted in Table 6.2.2, while bone representation was presumably classified as excellent for all primary cases even though it is possible that some of the most fragile elements may have not survived in all skeletons (Figure 6.2.3). Skeletal preservation in both primary contexts and Pit I was good in terms of completeness but rather diverse in terms of surface condition (Table 6.2.2, details below). Basic osteological information for all 18 cases is given in Table 6.2.3.

Table 6.2.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			**PRESERVATION**				**MNI**	
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	COMPLETENESS		SURFACE		MNI	Max. occ. skeletal element
				DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS		
T5/Γ				1	1	3	3	1	
T5/Δ				1	1	3	3	1	
T5/Ε				1	1	2	1	1	
T5/ΣΤ				1	1	3	3	1	
T5/Ζ				1	1	3	3	1	
T5/Η				1	1	2	1	1	
T5/Θ-ΙΓ (PIT I)	845	1039	43	c.2 (diverse)	1	2-3	2	12	Femur & tibia
TOTAL								**18**	Femur & tibia

[46] N.B. The consideration of the upper layer raises the total tomb MNI at least to 20; however, only the osteologically determined number will be considered in final analysis, cf. 7.2.

Table 6.2.3. Tomb 5: Basic osteological information by case (n=18) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T5/Γ	PRIMARY	F?	Cranium: ? Femoral metrics: F	PA	Cranial sut. closure: 3-4 (34.7y) Dental wear: 30-34y.	-		
T5/Δ	PRIMARY	M	Skull; Pelvis	OA	Cranial sut. closure: 21 (OA) & complete AM loss of dentition	164	humerus	
T5/E	PRIMARY	M	Skull; Pelvis	AD	(Some cranial suture observed)	165	tibia	
T5/ΣΤ	PRIMARY	F?	Cranium: ? Femoral metrics: F	YA	Dental wear: 18-22y.	157	humerus	
T5/Z	PRIMARY	M	Skull; LB metrics	AD		173	tibia	
T5/H	PRIMARY	M	Skull; pelvis; LB metrics	YA/PA	L aur: 2-3 (25-34y); Dental wear: 20-26y	166.5	humerus	
T5/Θ-IΓ (PIT I) – IND.A	COMMINGLED SECONDARY	F	Pelvis; femoral metrics	YA	Stage of epiphyseal fusion: Just fused femoral and tibial epiphyses, ischial tuberosity, lumbar annular rings, coracoid (c.20y)	162	tibia	L femur; R tibia; R scapula; L vertebra; R+L pelves; sacrum
T5/Θ-IΓ (PIT I) – IND.B	COMMINGLED SECONDARY	-		CH II (10-12y)	Stage of epiphyseal fusion: Fusing iliac spine and superior acetabular epiphysis (10-13y) Diaphyseal length: Hum, fem, tib, & clavicle: c.9-10y. Stage of dental eruption/wear: c.12y.			L hum; R+L fem + tib; R clavicle; R pelvis; sacrum; ribs; vertebrae; Cranium and teeth
T5/Θ-IΓ (PIT I) – IND.C	COMMINGLED SECONDARY	-		CH I (5-7y)	Diaphyseal length: Upper limbs: c.5y, Femora: c.7y Vertebral fusion: lines of neurocentral fusion still visible			R+L hum; L rad; R ulna; R+L femora; R+L pelves; MC1; patella; calcaneus; ribs; vertebrae
T5/Θ-IΓ (PIT I) – E4	COM.SECONDARY	M	Femoral metrics	AD				
T5/Θ-IΓ (PIT I) – E5	COM.SECONDARY	M	Femoral metrics	AD				
T5/Θ-IΓ (PIT I) – E6	COM.SECONDARY	M	Femoral metrics	AD				
T5/Θ-IΓ (PIT I) – E7	COM.SECONDARY	M?	Femoral metrics	AD				
T5/Θ-IΓ (PIT I) – E8	COM.SECONDARY	F	Femoral metrics	AD				
T5/Θ-IΓ (PIT I) – E9	COM.SECONDARY	?	Femoral metrics	AD				
T5/Θ-IΓ (PIT I) – E10	COM.SECONDARY	?	Femoral metrics	AD				
T5/Θ-IΓ (PIT I) – E11	COM.SECONDARY	NO		AD				
T5/Θ-IΓ (PIT I) – E12	COM.SECONDARY	NO		AD				

Primary burials (T5/Γ - T5/H): The *in situ* inspection of the primary contexts in the restricted tomb conditions did not permit full observations, as most diagnostic bone areas were not observable. The surface preservation, although slightly variable, usually was only moderate (Table 6.2.2). The bones had clearly suffered post-excavation damage, as indicated by the presence of fungus staining and generally worse condition that that attested at the time of discovery based on excavation photos. Completeness, though, as well as bone representation, was excellent, and the skeletons suffered only minimal fragmentation.

Burial T5/Γ preserved *in situ o*nly the skull and upper part of the skeleton, since the lower body was removed for the excavation of Pit I (Figure 6.2.S3). Surface preservation was moderate to poor for all skeletal elements. The examination of both the *in situ* remains and original photographic documentation (Figure 6.2.2a), confirmed the body position as originally described, with the exception that the left arm was not extended but hyper-flexed with wrist on chin (forearm discerned medially, parallel to left humerus). The skeleton belongs to a mature adult, probably female (Table 6.2.3).

Burial T5/Δ also showed evidence of increased surface decay due to post-excavation exposure (Figure 6.2.S4). The body position was as described above (6.2.1), but it was noticed that the right arm was not exactly parallel but slightly rotated laterally (towards the east). The cranium was detached from the mandible and appeared to have rolled slightly to the south; however, the lack of field recording and detailed microstratigraphic data impedes the interpretation of this dislocation (e.g., potential existence of a perishable head support). The skeleton belongs to an old adult male (Table 6.2.3).

Burial T5/E was well preserved (Figure 6.2.S4). As described in 6.2.1, the lower limbs were not found in correct anatomical position. The left femur showed pronounced medial displacement, with its distal end fallen over the left pelvis of T5/Δ; the right femur was possibly minimally displaced, as its distal end was over T5/Δ feet. The tibiae were significantly displaced, found at the left side of the skeleton, reversed, with posterior side on top and distal end close to pelvis. The bone dislocations could be consistent with the collapse of the suggested 'knees-up' position after soft tissue decomposition. However, the possibility of human disturbance during later activities (e.g., related to the construction of the upper floor) cannot be ruled out. As for arm position, left hand was placed on pelvis, while the position of the right remained unclear. The skeleton belongs to an adult male (Table 6.2.3; a precise age estimate was not possible since the observation of age diagnostic areas was restricted).

Burial T5/ΣΤ was badly affected from the prolonged exposure, showing evidence of extensive fungal staining (Figure 6.2.S5). The cranium had suffered a large excavation breakage, while fragmentation was also evident in the forearms. The position of this skeleton was also contracted, with the right lower limb extremely so. The arm position was not clarified, due to post-excavation fragmentation. The skeleton belongs to a young adult, probably female (Table 6.2.3).

Burial T5/Z had moderate surface preservation and displayed post-excavation damage, including some fragmentation of forearms and femur as well as their displacement, which was not seen in excavation photos (Figures 6.2.2b and 6.2.S6). The burial position was confirmed as described in 6.2.1. It should be noted that the feet of the skeleton were partially below the skull of Burial T5/H. The skeleton T5/Z belongs to an adult male; as with T5/E, precise age estimation was not possible (Table 6.2.3).

Burial T5/H was better preserved, suffering minor post-excavation damage attested in limited fragmentation and displacement of lower limbs and forearms (not seen in excavation photos (Figures 6.2.2b and 6.2.S7). The cranial vault was extensively fragmented, missing the major part of both parietals and posterior frontal; whether this was the result of excavation damage or past disturbance was unclear (lab analysis required to further study the fracture). The burial position was confirmed as described in 6.2.1. The skull was lying over T5/Z feet. The skeleton belongs to a young adult male (Table 6.2.3).

PIT I (Burials T5/Θ-ΙΓ): The pit included a large quantity of commingled human remains; completeness in general was fairly good (albeit diverse), while surface preservation was moderate to fairly food (Table 6.2.2; Figures 6.2.4a-c). Fragmentation was evident (both in old and recent fractures), and bones were frequently reconstructed from several joining fragments. MNI was estimated as 12. Bone representation was quite typical for a secondary assemblage of that size, showing fairly good or good representation for most elements of BRI values 40-60; lower limb bones and metatarsals were very well preserved while the under-representation (or absence) of very fragile (e.g., sternum) and very small elements (e.g., phalanges) reflects expected taphonomic and recovery loss (Figure 6.2.3). MNI and BRI frequencies of most elements consistently attested to the presence of approximately seven individuals more or less fully re-deposited into the pit, while the remaining skeletons were more partial. Due to diverse bone completeness however, pair recognition was not highly successful, usually not surpassing two pairs per long bone. Individuation was successful only for skeletons showing distinct morphological or age characteristics. These included: a) IND.A, a young female of around 20 years of age at death; b) IND.B, a 10-12-year-old child; and c) IND. C, a younger child (5-7 years). Among the remaining cases, the presence of three males, a probable male, and another female was recognised (N.B. sex information provided by different elements, with femur being the most frequently occurring sex diagnostic bone, corroborated by pelvic and cranial evidence). Ageing evidence was provided by pelvic, cranial, and dental evidence, indicating an age of prime and mature adulthood for four individuals (males and females); however, since no individuation of the diagnostic bones was possible, the additional ageing evidence was not related with specific cases.

6.2.3 Tomb 5: Bioarchaeological reconstruction of funerary activities

The total MNI of Tomb's 5 studied contexts was 18 (but total tomb's MNI was 20, considering the missing bones from upper floor contexts). The primary burials included four males and two probable females (all adults), while the secondary remains comprised three males and a probable male, two females, and four adults of indeterminate (or non-observable) sex, as well as two children. The tomb displayed evidence of intense use in two distinct chronological phases: LHIIIA and LHIIIC. A synthetic view of the bioarchaeological evidence helps to clarify the form and sequence of observed -and inferred- funerary activities.

The detailed photographic documentation of the excavation allowed certain remarks on the skeletal remains from the upper floor, even though they did not survive into the final bone collection. The remains from the final phase of use in Tomb 5 were scarce, found scattered throughout the chamber. Although it is certain that natural taphonomic damage, mostly induced by the roof collapse, may have significantly impacted bone preservation, the fact that most associated artefacts were not fragmented implies that at least some degree of human disturbance is also to be assumed. The bone contexts should be classified in the categories of scattered/isolated bones (T5/A-B) and of disturbed primary burial (T5/NE bones, cf. Table 7.X4).

The original (lower) floor comprised six primary burials that were minimally disturbed in antiquity, most probably during the construction of the upper floor, as already noticed by Kolonas (1998) and confirmed by current analysis of bone preservation. The secondary remains assembled in Pit I showed evidence of diversity in bone representation, as well as in bone completeness and, to a lesser extent, surface condition. As presented above, skeletal elements from approximately six adults and two sub-adults were represented much more consistently than the remaining individuals. In addition, although bone recovery appeared rather satisfactory (containing, for example, a large number of loose teeth or smaller bone fragments), small hand and foot bones were very under-represented and several fragmented bones could not be reconstructed by conjoining fragments. It is, thus, concluded that some skeletons suffered greater fragmentation before their final deposition, and random skeletal material was removed from the tomb as not all skeletons ended up in the pit complete.

Combining the above evidence with ceramic and stratigraphic evidence, the funerary sequence can be broadly reconstructed as follows. Based on the artefacts that were accompanying Pit I interments, the first use of the tomb appears to span the entire LHIIIA period (starting early, around the end of the LHIIB period). The vast majority of its ceramic contents were of the LHIIIA period, implying that date for the majority of the bone material. However, the presence of three LHIIIC Early vessels dated the construction of the pit in that period; as Kolonas (1998) noticed, joining fragments of the same vase were found in the bottom and top of the pit, indicating its filling in one episode. As explained in 5.4.7, the outliers of later date in an otherwise earlier deposit are most likely related to the time of the context's creation, while the majority of the skeletal contents (*if not all*) should be dated to the earlier ceramic date.

However, since the next phase of use in Tomb 5 is in the LHIIIC Middle period, it may be conceivable that the skeletal material actually includes few interments of the LHIIIC Early as well, and the opening of the pit could have taken place as late as early in the LHIIIC Middle (cf. Table 7.X5). In any case, the chamber floor area is not large enough to accommodate 12 intact primary burials at the same time. The removal of some of the skeletal material before the final transfer to Pit I should be inferred (within the tomb, in the form of secondary piles, and possibly also to outside of it); this explains the observed taphonomic damage and corroborates the conclusions drawn above on partial representation and diversity of bone completeness.

The second major phase of use was during the LHIIIC Middle period, with the interment of the six primary burials (T5/Γ-H). Whether these burials were simultaneously or successively interred, and in what sequence, is difficult to infer. Their unusually orderly placement appears more consistent with the idea of a multiple interment (an opinion shared by Kolonas 1998). Observations on bone relationships, on the other hand, illuminated the successive placement of the skeletons (T5/E was later than T5/Δ, since T5/E lower limbs had collapsed on top of T5/Δ; and T5/H was placed after T5/Z, since his cranium was lying partially over T5/Z foot bones). However, without the micro-stratigraphic details of osteoarchaeological field recording, it is not possible to conclude whether this succession relates simply to order of placement - within one funerary episode- or to multiple events.

Finally, the last major phase of use was attested in the funerary events of the upper floor, dated to the LHIIIC Middle/Late and Late period. The absence of these bones from the final study collection does not permit their proper consideration. Nonetheless, the observations made possible based on photographic documentation suggested wide dispersal and disturbance of these remains, most likely not induced by natural taphonomic agents alone; on this evidence, it is suggested that the original number of burials from that phase may have been higher than the MNI of 2 that was estimated based on excavation photos.

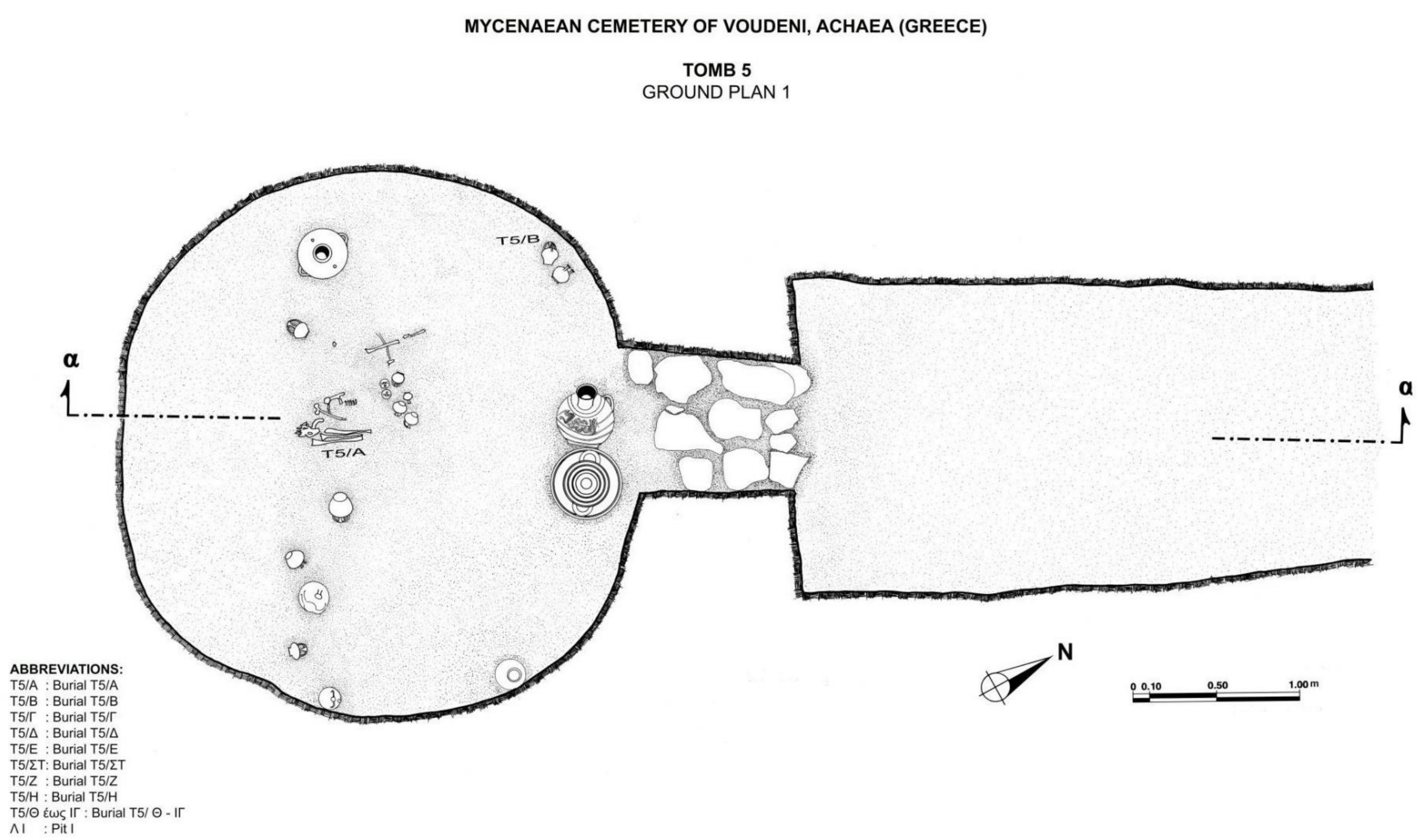


Figure 6.2.1a. Tomb 5: ground plan 1 (after Kolonas 1998, forthcoming). During excavation of the upper layer, with T5/A fully and T5/B partially revealed.

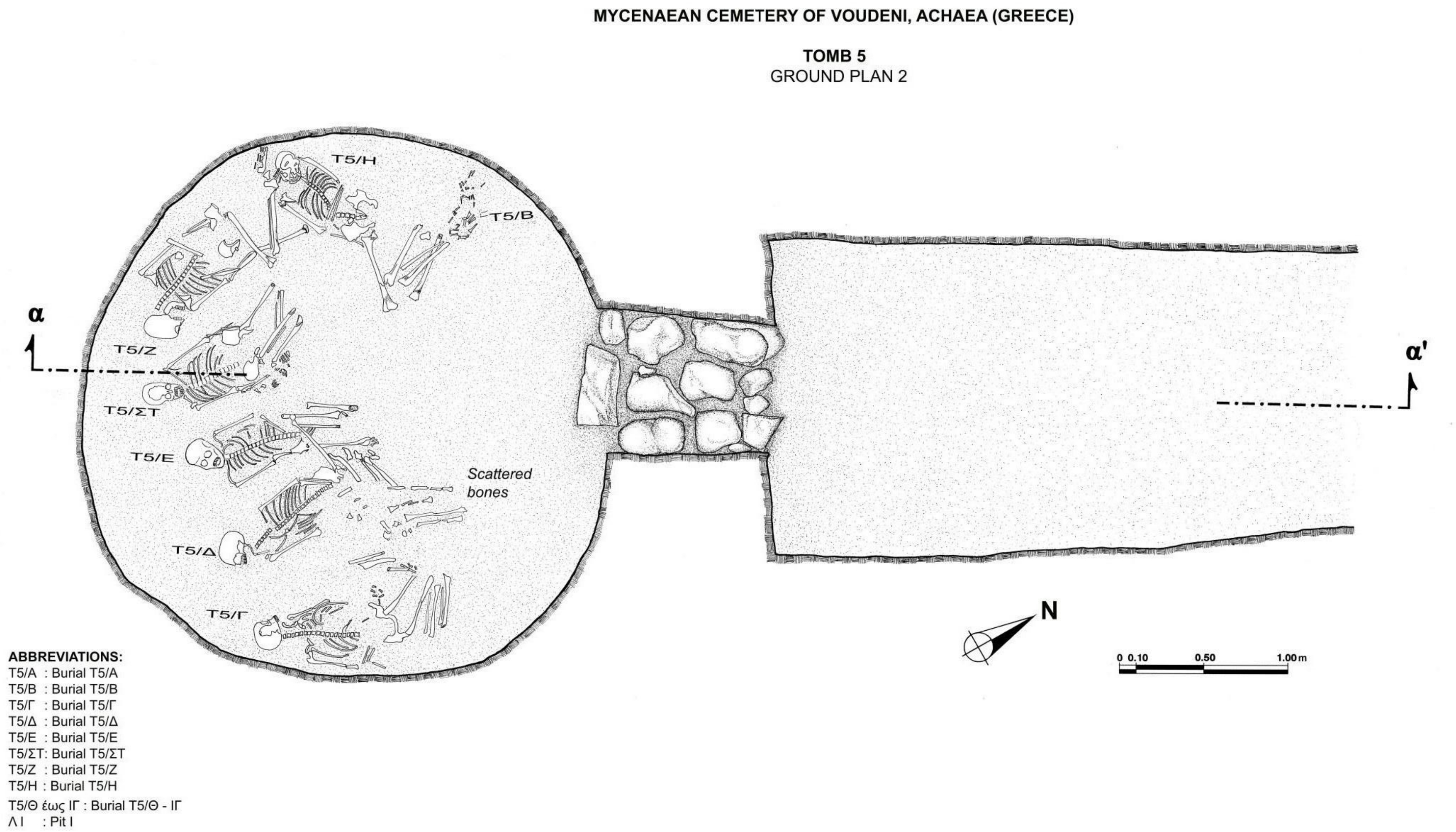


Figure 6.2.1b. Tomb 5: ground plan 2 (after Kolonas 1998, forthcoming). During excavation of lower layer, with T5/B and scattered bones from the upper floor still *in situ*.

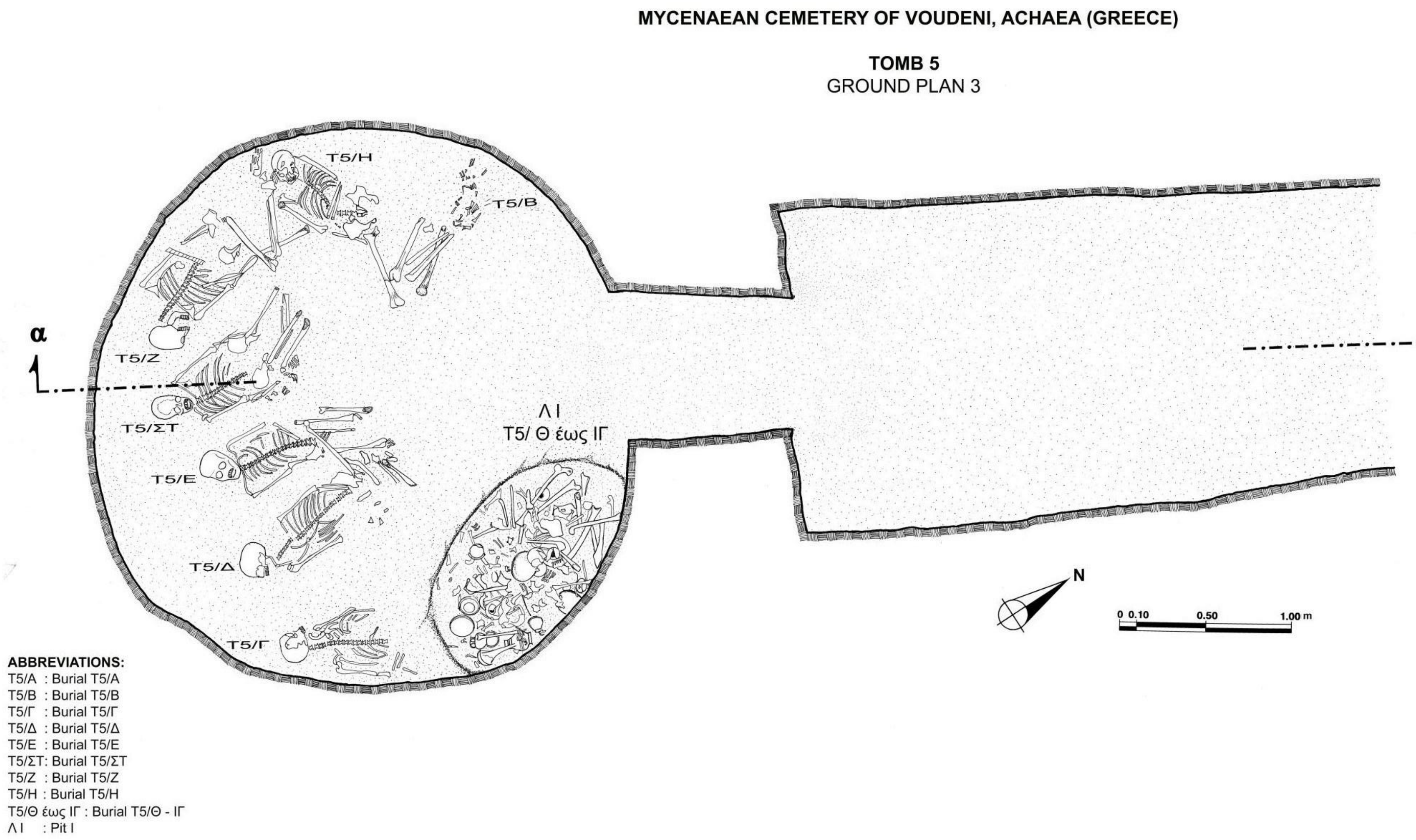


Figure 6.2.1c. Tomb 5: ground plan 3 (after Kolonas 1998, forthcoming). Lower layer, after the removal of T5/Γ lower body and during excavation of Pit I.

Figure 6.2.2a. Burials T5/Γ (Σ8, left), T5/Δ (Σ7, middle), and T5/E (Σ6, right) during excavation. Scattered long bone fragments still *in situ* in the upper layer between T5/Γ & T5/Δ.

Figure 6.2.2b. Burials T5/E (Σ6), T5/ΣT (Σ5), T5/Z (Σ4), and T5/H (Σ3) *in situ,* from left to right. Bones from upper layer Burial T5/B (Σ2) visible still in place north of T5/H lower limbs.

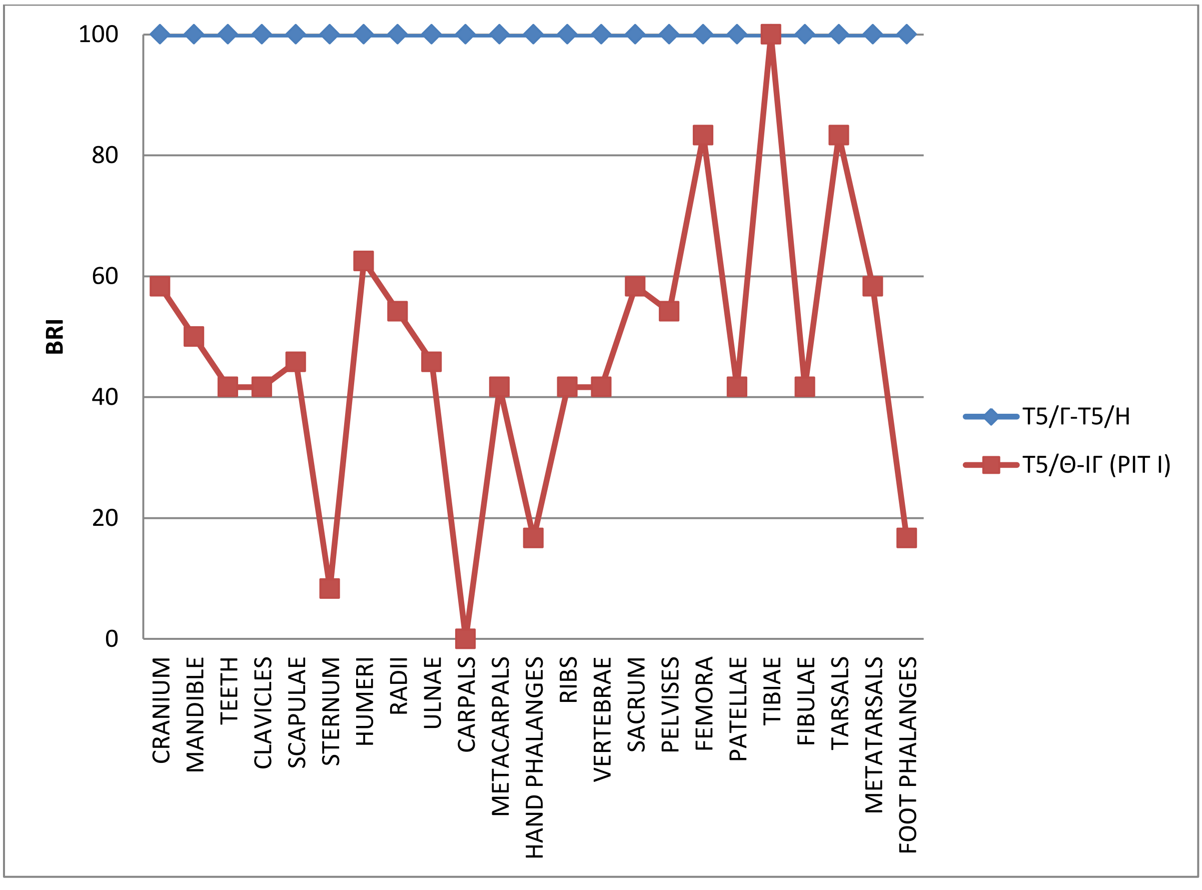


Figure 6.2.3. Tomb 5: Bone Representation Index (BRI) by tomb context.

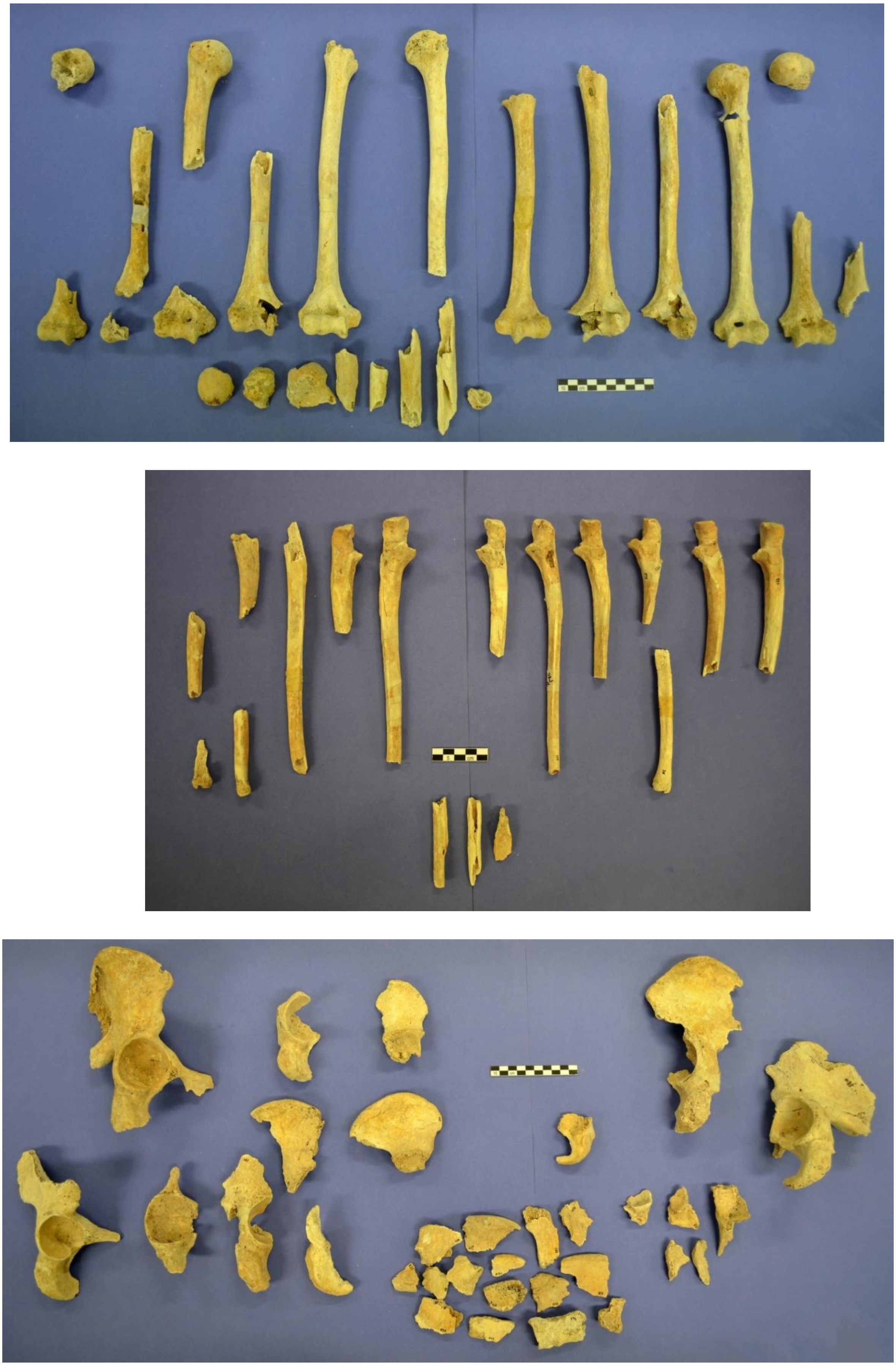


Figure 6.2.4a-c. T5/Θ-IΓ (PIT I): Examples of diverse completeness in humeri (top), ulnae (middle), and pelves (bottom).

6.3 TOMB 9

6.3.1 Tomb 9: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 9 is a quadrangular tomb of medium size, located in the eastern part of the upper hill terrace (Figures 1.4 and 6.3.1a-b; further information: Table 7.1). The tomb was found well-preserved, affected only by minor wall spalling that resulted in the accumulation of thin deposits, mostly over the north corners. The tomb's contents testify to a long period of continuous use spanning the entire LHIII period (Table 6.3.1). Evidence of multiple, successive re-openings was also manifested in the destruction of the east jamb and enlargement of the original entrance.

The excavator described four distinct bone groups that included disturbed primary burials T16/A and T16/B, isolated long bones T16/Γ, and the large secondary deposition at the south-west part of the chamber (Figures 6.3.1a-b). The disturbed **Burial T9/A** was located at the NE corner, in S-N orientation, and originally classified as probably placed in the 'knees-up' position (Figures 6.3.1b-2). As mentioned in excavation notebook, the skull was not discovered, presumably removed to facilitate the placement of Burial T9/B. Several vessels dated to the LHIIIC Middle and Late period (T9/25-34), as well as two LHIIIA2 piriform jars (T9/35-36) were found in close proximity to T9/A. Close to the skeleton and partially superimposed upon it, a mixed group of LHIIIB and LHIIIC Late jars (T9/37-40) were extending along the north part of east wall, while a few LHIIIC Late stirrup jars and buttons were found close to the entrance (T9/41-44; Table 6.3.1). Located just south of T9/A, another disturbed primary burial, **T9/B**, preserved *in situ* only the lower limbs (Figures 6.3.1a-b, 6.3.2). The limbs were contracted, rotated towards the west, and the body was placed in S-N orientation. Even though no artefacts were securely associated with this burial by the excavator, finds of the SE part of the chamber dated to the LHIIIB/LHIIIC Early period may be tentatively related to it (buttons, beads/plates, and a small stirrup jar: T9/45-50, Table 6.3.1), since they were placed in very close proximity to the area that would have been occupied by the upper part of the body.

A large **secondary deposition** of bones and artefacts extended along the south and west walls of the chamber (Figures 6.3.1a, 6.3.3-4; N.B. final vessel numbers do not all correspond to the numbers shown in excavation photos). Even though the assemblage appeared rather continuous, distinct sub-groups could be discerned: a) The finds along the east half of the south wall included no skeletal material; they comprised several LHIIIC Late but also LHIIIC Middle vessels, as well as bronze sheets, glass plates, clay and steatite buttons (T9/51-68, 114). Human remains were mostly clustered in a pile at the SW corner, also extending to the east and north of it. East of the pile, several jars of mixed date (LHIIIA-C) were found, as well as one LHIIIB seal-stone (T9/69-78). Exactly at the SW corner, at the focus of the secondary deposit, jars T9/79-82 and 85 were placed, also of mixed date (LHIIIA2, LHIIIB, LHIIIC Late). Below the bones, the finds included LHIIIB and LHIIIC Early and Middle vessels, as well as one spearhead, a bronze pin, and many gold, faience and steatite beads (T9/83-84, 95-104). A fragmented LHIIIA2 flask (T9/108) was also located here, while its joining fragment was discovered in the dromos fill. Immediately north of the central corner deposition, more grave goods were located among scattered bones; they included one LHIIIB (T9/113) and several LHIIIC Early-Middle and Late vessels (T9/86-88, 90), plus many valuable artefacts, such as gold sheets, seal-stone, several beads of precious stone, shell and glass, a silver ring, and a bronze knife (T9/89-93, 105-106, 109-112). Along the northern half of the west wall (Figure 6.3.4), another cluster of scattered bones was found adjacent to a LHIIIB2/LHIIIC Early stirrup jar (T9/94). North of them, two isolated femora were classified as **Burial T9/Γ** (considered at the time of discovery as possibly semi-articulated). Finally, in the NW corner, a large concentration of vessels (T9/1-24) spanning the entire LHIIIA2 to LHIIIC Late period was found, as well as a pair of bronze tweezers (T9/107; Table 6.3.1); no human remains were found in association with this cluster.

Table 6.3.1. Tomb 9: List of artefacts by tomb context, including location, chronological and typological information.
(*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
NO BONE ASSOCIATION	NW CHAMBER	T9/1	STIRRUP JAR	LHIIIC LATE	175	
NO BONE ASSOCIATION	NW CHAMBER	T9/2	STIRRUP JAR	LHIIIC LATE	175	43:31
NO BONE ASSOCIATION	NW CHAMBER	T9/3	STIRRUP JAR	LHIIIC LATE	177	52:8
NO BONE ASSOCIATION	NW CHAMBER	T9/4	STIRRUP JAR	LHIIIC LATE	175	43:31
NO BONE ASSOCIATION	NW CHAMBER	T9/5	STIRRUP JAR	LHIIIC LATE	177	43:31
NO BONE ASSOCIATION	NW CHAMBER	T9/6	KALATHOS	LHIIIC LATE	291	53:18, 52:3, 43:h
NO BONE ASSOCIATION	NW CHAMBER	T9/7	LEKYTHOS	LHIIIC LATE	121	43:h
NO BONE ASSOCIATION	NW CHAMBER	T9/8	STORAGE JAR	LHIIIC LATE	58	58:22, 53:18,
NO BONE ASSOCIATION	NW CHAMBER	T9/9	STORAGE JAR	LHIIIC LATE	58	
NO BONE ASSOCIATION	NW CHAMBER	T9/10	STAMNOS (LARGE)	LHIIIC EARLY	63	
NO BONE ASSOCIATION	NW CHAMBER	T9/11	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	43:32
NO BONE ASSOCIATION	NW CHAMBER	T9/12	STIRRUP JAR	LHIIIB	173	
NO BONE ASSOCIATION	NW CHAMBER	T9/13	ASKOS	LHIIIC EARLY	195	
NO BONE ASSOCIATION	NW CHAMBER	T9/13α	STIRRUP JAR	LHIIIB	171	19:32
NO BONE ASSOCIATION	NW CHAMBER	T9/14	JUG	LHIIIC	115	
NO BONE ASSOCIATION	NW CHAMBER	T9/15	BASKET VASE	LHIIIB	317	
NO BONE ASSOCIATION	NW CHAMBER	T9/16	CUP	LHIIIA2/B	226	
NO BONE ASSOCIATION	NW CHAMBER	T9/17	PIRIFORM JAR	LHIIIB	48	60:2
NO BONE ASSOCIATION	NW CHAMBER	T9/18	STIRRUP JAR	LHIIIA2	171	19:8, 25
NO BONE ASSOCIATION	NW CHAMBER	T9/19	STIRRUP JAR	LHIIIB	180	19:31
NO BONE ASSOCIATION	NW CHAMBER	T9/20	JUG	LHIIIC	115	
NO BONE ASSOCIATION	NW CHAMBER	T9/21	STIRRUP JAR	LHIIIC LATE	175	61A:1 52:5
NO BONE ASSOCIATION	NW CHAMBER	T9/22	CLAY BUTTON	LHIIIA-C		
NO BONE ASSOCIATION	NW CHAMBER	T9/23	LID	LHIIIC LATE		
NO BONE ASSOCIATION	NW CHAMBER	T9/24	STIRRUP JAR	LHIIIC LATE	177	
T9/A		T9/25	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	
T9/A		T9/26	STIRRUP JAR	LHIIIC LATE	175	
T9/A		T9/27	JUG	LHIIIC MIDDLE-LATE	114	
T9/A		T9/28	STIRRUP JAR	LHIIIC LATE	115	43:d

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T9/A		T9/29	JAR	LHIIIC MIDDLE-LATE	59	
T9/A		T9/30	JAR	LHIIIC MIDDLE-LATE	59, F82	
T9/A		T9/31	STIRRUP JAR	LHIIIC MIDDLE-LATE	177	52: 7
T9/A		T9/32	CLAY BUTTON	LHIIIC		
T9/A		T9/33	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	42:32
T9/A		T9/34	LEKYTHOS SMALL	LHIIIC MIDDLE-LATE	122	
T9/A		T9/35	PIRIFORM JAR	LHIIIA2	35	
T9/A		T9/36	PIRIFORM JAR	LHIIIA2	35	
T9/SEC.DEPOSIT (POSSIBLY)	ALONG E WALL (NE CORNER)	T9/37	STIRRUP JAR LARGE	LHIIIC LATE	176	
T9/SEC.DEPOSIT (POSSIBLY)	ALONG E WALL (NE CORNER)	T9/38	PIRIFORM JAR	LHIIIB	NO PAR	
T9/SEC.DEPOSIT (POSSIBLY)	ALONG E WALL (NE CORNER)	T9/39	STORAGE JAR (TWO HANDLED)	LHIIIC LATE	58	
T9/SEC.DEPOSIT (POSSIBLY)	ALONG E WALL (NE CORNER)	T9/40	STORAGE JAR (TWO HANDLED)	LHIIIC LATE	58	
T9/SEC.DEPOSIT (POSSIBLY)	NE CORNER	T9/41	CLAY BUTTON	LHIIIC		
T9/SEC.DEPOSIT (POSSIBLY)	NE CORNER	T9/42	3 DISC BUTTONS	LHIIIC		
T9/SEC.DEPOSIT (POSSIBLY)	NE CORNER	T9/43	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT (POSSIBLY)	NE CORNER	T9/44	STIRRUP JAR	LHIIIC LATE	175	
T9/B (POSSIBLY)	SE CHAMBER	T9/45	STEATITE BUTTON	LHIIIA-C		
T9/B (POSSIBLY)	SE CHAMBER	T9/46	GLASS PLATES (28)	LHIIIA-C		
T9/B (POSSIBLY)	SE CHAMBER	T9/47	GLASS BEADS (21)	LHIIIA-C		
T9/B (POSSIBLY)	SE CHAMBER	T9/48	GLASS PLATES (3)	LHIIIA-C		
T9/B (POSSIBLY)	SE CHAMBER	T9/49	STIRRUP JAR	LHIIIB MID-C EARLY	173	
T9/B (POSSIBLY)	SE CHAMBER	T9/50	CLAY BUTTON	LHIIIC		
T9/SEC.DEPOSIT	ALONG S WALL	T9/51	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/52	STORAGE JAR (4 HANDLED)	LHIIIC MIDDLE	58	
T9/SEC.DEPOSIT	ALONG S WALL	T9/53	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/54	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/55	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/56	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/57	STIRRUP JAR	LHIIIC LATE	179	
T9/SEC.DEPOSIT	ALONG S WALL	T9/58	BIRD VASE	LHIIIC LATE	NO PAR	
T9/SEC.DEPOSIT	ALONG S WALL	T9/59	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/60	STIRRUP JAR	LHIIIC LATE	177	

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T9/SEC.DEPOSIT	ALONG S WALL	T9/61	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/62	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/63	STEATITE BUTTON	LHIIIC MIDDLE-LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/64	CLAY BUTTON	LHIIIC MIDDLE-LATE		
T9/SEC.DEPOSIT	ALONG S WALL	T9/65	STEATITE BUTTON	LHIIIC MIDDLE-LATE		
T9/SEC.DEPOSIT	ALONG S WALL	T9/66	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	
T9/SEC.DEPOSIT	ALONG S WALL	T9/67	GLASS PLATES (14)	LHIIIA-C		
T9/SEC.DEPOSIT	ALONG S WALL	T9/68	BRONZE SHEETS (4)	LHIIIA-C		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/69	SEAL STONE	LHIIIA-B		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/70	ROUNDED ALABASTER	LHIIIB	85	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/71	STIRRUP JAR	LHIIIB	180	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/72	PIRIFORM JAR	LHIIIB	48	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/73	STIRRUP JAR	LHIIIA2/B	178	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/74	STIRRUP JAR	LHIIIA2	178	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/75	JAR (TWO HANDLED)	LHIIIC EARLY	59	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/76	JAR (TWO HANDLED)	LHIIIC MIDDLE	59	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/77	SMALL STIRRUP JAR	LHIIIC EARLY	171	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES E OF SW	T9/78	STIRRUP JAR	LHIIIB	180	
T9/SEC.DEPOSIT	CLOSE TO SW CORNER	T9/79	STIRRUP JAR	LHIIIB2/IIIC EARLY	173	
T9/SEC.DEPOSIT	CLOSE TO SW CORNER	T9/80	PIRIFORM JAR	LHIIIA2	35	
T9/SEC.DEPOSIT	CLOSE TO SW CORNER	T9/81	STIRRUP JAR	LHIIIB	178	
T9/SEC.DEPOSIT	CLOSE TO SW CORNER	T9/82	STIRRUP JAR	LHIIIC LATE	177	
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/83	BRONZE PIN	LHIIIA2-C EARLY		
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/84	SHALLOW CUP	LHIIIC EARLY	249	
T9/SEC.DEPOSIT	CLOSE TO SW CORNER	T9/85	STIRRUP JAR	LHIIIB2-C EARLY	173	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/86	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/87	CUP	LHIIIC LATE	226	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/88	CYLINDRICAL ALABASTER	LHIIIC EARLY-MIDDLE	96	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/89	GOLD SHEETS (34)	LHIIIA-B		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/90	STIRRUP JAR	LHIIIC LATE	175	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/91	KNIFE	LHIIIB-C		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/92	8 ROCK CRYSTAL & 4 CARNELIAN	LHIIIB-C		

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/93	SEALSTONE	LHIIIA2-C		
T9/Γ		T9/94	STIRRUP JAR	LHIIIB2-C EARLY	173	
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/95	SPEARHEAD	LHIIIC		
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/96	ROUNDED ALABASTER	LHIIIB	85	
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/97	STIRRUP JAR	LHIIIC MIDDLE	174	
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/98	CUP WITH SPOUT	LHIIIA2-B	249	
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/99	SMALL STIRRUP JAR	LHIIIB	178	
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/100	STIRRUP JAR	LHIIIC EARLY	175	
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/101	ROUNDED ALABASTER	LHIIIA2-B	85	
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/102	24 GOLD BEADS (NECKLACE)	LHIIIA2-C		
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/103	STEATITE BEAD	LHIIIA2-C		
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/104	FAIENCE BEAD	LHIIIA2-C		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/105	GLASS PLATE	LHIIIA2-C		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/106	FR OF CHALK	LHIIIA2-C		
NO BONE ASSOCIATION	NW CHAMBER	T9/107	TWEEZERS	LHIIIA2-C		
T9/SEC.DEPOSIT	BELOW BONES OF SW CORNER	T9/108	FLASK	LHIIIA2	191	
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/109	GLASS BEADS (11)	LHIIIA2-C		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/110	GLASS BEADS (288)	LHIIIA2-C		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/111	SHELL BEADS (23)	LHIIIA2-C		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/112	SILVER RING	LHIIIA2-C		
T9/SEC.DEPOSIT	AMONG SCATTERED BONES N OF SW	T9/113	STIRRUP JAR	LHIIIB	184	
NO BONE ASSOCIATION		T9/114	JUG	LHIIIC	115	

6.3.2 Tomb 9: Osteological results

Information on recovery/collection problems

All bones of the secondary deposition were collected in one group during excavation, with no spatial segregation. Skeletal assemblages T9/A, T9/B and T9/Γ were kept *in situ* until 2006, when they got separately collected. T9/Γ group comprised only one femur instead of the two documented femora at the time of discovery; whether the absence of the other is due to preservation or recovery bias is uncertain. This single bone was considered with the secondary remains as one context, since no evidence of articulation was discerned in excavation photo.

The osteological results

The total skeletal assemblage in Tomb 9 comprised a MNI of 8, in diverse skeletal preservation (Tables 6.3.2, Figure 6.3.5). Basic osteological information for all cases is given in Table 6.3.3.

Table 6.3.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			PRESERVATION				MNI	
				COMPLETENESS		SURFACE			
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS	MNI	Max. occ. skeletal element
T9/A	28	30	0	c.3	3	2-3	2	1	
T9/B	18	26	0	2	1	2	1	1	
T9/SEC.DEPOSIT & T9/Γ	268	300	4	1-3 diverse	2	2-3 diverse	2	6	Femur + tibia
TOTAL	**314**	**356**	**4**					**8**	tibia

Table 6.3.3. Tomb 9: Basic osteological information by case (n=8) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T9/A	DISTURBED PRIMARY	F	LB metrics	YA	<u>Stage of epiphyseal union:</u> recently fused radial PE; fusing epiphyseal plate of ischial tuberosity (c.18y)	-		
T9/B	DISTURBED PRIMARY	M?	General robustness	AD				
T9/SEC.DEPOSIT & T9/Γ - IND.A	COMMINGLED SECONDARY	F	Pelvis; LB metrics	PA	R aur: 3 (30-34y)	155	femur; tibia; humerus	all LB pairs; R+L pelves; L scapula; vertebrae, ribs; hand & foot bones; cranial fragments; mandible
T9/SEC.DEPOSIT & T9/Γ - IND.B	COMMINGLED SECONDARY	(F)	LB metrics	ADOL (14-15y.)	<u>Stage of epiphyseal fusion:</u> R hum: PE just fused, L hum: unfused PE; Fem+tib: unfused; metatarsals: just fused; rib heads, sacral S4-5: unfused			Pairs of humeri, femora, tibiae, R fibula; R+L pelvis, sacrum; some ribs + vertebrae; sternum; metacarpals, metatarsals
T9/SEC.DEPOSIT & T9/Γ - E3	COMMINGLED SECONDARY	F	Femoral metrics	AD				
T9/SEC.DEPOSIT & T9/Γ - E4	COMMINGLED SECONDARY	M	Femoral metrics	AD				
T9/SEC.DEPOSIT & T9/Γ - E5	COMMINGLED SECONDARY	NO	Femoral metrics	AD				
T9/SEC.DEPOSIT & T9/Γ - E6	COMMINGLED SECONDARY	NO	Femoral metrics	AD				

Burial T9/A: The skeleton of T9/A was fragmentary, showing diverse completeness and surface condition, moderate in general (Figures 6.3.S1-3). Bone representation was also diverse with several elements missing, lacking both fragile and small but also larger and denser bones (Figure 6.3.5). The observed pattern was consistent with preservation as attested at the time of discovery (cf. Figure 6.3.2). A slight increase in fragmentation and recovery loss due to the effects of prolonged exposure at the site was identified (e.g., recovery loss of left humerus distal fragment), but most missing elements did not appear in excavation photo, attesting to ancient taphonomic disturbance (e.g., foot and hand bones). The same is the case for cranium, which, as Kolonas (1998) reported, was completely missing. Natural and/or accidental taphonomic damage had certainly impacted the extent of fragmentation, especially for the right side of the body (N.B. the cultural material superimposed upon this burial). However, the condition of the recovered material was not that poor as to explain the complete absence of prominent bones such as the skull (see 6.3.3). Finally, the close examination of the excavation photo across the recovered material did not confirm the suggestion of 'knees-up' burial position. The position was reconstructed as follows: Left femur and tibia were clearly articulated in flexed position, while the right lower limb was discerned in photo close-ups rotated medially and similarly flexed (N.B. right femur was extremely poorly preserved and finally non-recovered). The upper body appeared in worse condition and thus, the reconstruction of arm position was not possible. The skeleton belonged to a very young adult female, approximately 18 years old (Table 6.3.3).

Burial T9/B: The skeleton T9/B was very partially represented, preserving *in situ* only lower limbs below the knee; these elements displayed good completeness and surface condition (Table 6.3.2, Figures 6.3.5 and 6.3.S4-5). The examination of excavation photos confirmed the description of body position and orientation, as well as the complete absence of other skeletal remains, which cannot be attributed solely to natural taphonomic damage (cf. 6.3.3). Even though sex-diagnostic element were lacking, general robustness suggested that the skeleton probably belonged to a male (Table 6.3.3).

Burial T9/Γ: From the two partially preserved femora documented in Figure 6.3.4, only one was recovered in the study bone collection: this was the right femur of a fairly robust adult male (Figure 6.3.S6, matching the smaller shaft in excavation photo). Even if the missing bone was indeed the left matching femur, the bones in excavation photo appear disarticulated, placed in immediate contact with the chamber's wall. Their placement was, thus, estimated as non-consistent with the outcome of *in situ* decomposition, classifying the context as scattered secondary material. Hence, the bone is added in frequencies of T9/secondary deposit, analysed below.

The secondary deposition of the SW chamber: The secondary assemblage comprised a moderate quantity of human remains in diverse state of preservation (Table 6.3.2). A MNI of six was attested based on femoral and tibial fragments (including T9/Γ). Bone completeness, surface condition, and representation displayed great diversity, with the remains of two individuals (IND. A-B) far better represented and preserved than other skeletons (cf. Figures 6.3.6a-b and 6.3.7a-b). BRI values were very inconsistent, not conforming to normal preservation patterns expected by natural decay and/or recovery taphonomic loss. In addition to small-sized and fragile bones, denser and larger elements were also under-represented (e.g., crania), while representation of other fragile elements (e.g., sternum, ribs, vertebrae) was better than normally seen in Voudeni secondary assemblages (Figure 6.3.5). This pattern was significantly influenced by the good representation of the two main individuals (IND.A in particular); if their frequencies were to be removed, the pattern of inconsistent and low representation would be even more stressed. Evidence of rodent gnawing (in four bone fragments) was also attested, as well as of copper staining (in six fragments, see IND.A tibia in Figure 6.3.S7).

Individuation was very successful for IND.A, a prime adult female who was so well-preserved that the majority of her skeleton could be individuated (Figure 6.3.6a; the deposition of this skeleton further discussed in 6.3.3). Many elements of IND.B, an adolescent female,[47] were also successfully segregated due to distinct age characteristics (Figure 6.3.6b). The remaining cases included one female, one male and two adults of non-observable sex, whose age could not be precisely determined (Table 6.3.3).

[47] IND.B sex estimation excluded from final analysis due to sub-adult age.

6.3.3 Tomb 9: Bioarchaeological reconstruction of funerary activities

The total MNI of 8 comprised the remains of two disturbed primary burials (female and probably male) and at least six interments in the secondary deposition (all adults of both sexes, except for one adolescent, Table 6.3.3). However, both stratigraphic and cultural data (e.g., evidence for multiple re-openings, very long time-span of ceramic vessels, ceramic joints between dromos and chamber) indicate an intensive and complex history of tomb use during the entire LHIII period, most likely involving a higher number of funerary episodes than the one suggested by the MNI. The contextual analysis of skeletal preservation patterns corroborates this hypothesis and sheds some light on specific funerary activities.

The reconstruction of funerary sequence in Tomb 9 is very complicated; especially in terms of discriminating the date of skeletal remains and the time of final formation of the context they belonged to (cf. Table 7.X5). This is due to wide chronological mixing of cultural material and weak associations between grave goods and specific skeletons. The chronological relationship between Burials T9/A and T9/B was not possible to be established. Kolonas' (1998) hypothesis of T9/A being later than T9/B (based on the assumption of practical causes for T9/A skull removal) was not supported by careful examination of the burial position: the area that would have been occupied by T9/A skull would be sufficient to accommodate it, even if close to T9/B feet (such body proximity is not uncommon in Voudeni tombs). The lack of secure ceramic associations for both burials renders their dating indeterminate, placed at any time between LHIIIA2 and LHIIIC Middle/Late, since the material distribution around them was completely mixed. The date of their disturbance, however, should be placed in the LHIIIC Late period, when a large concentration of vessels got accumulated over T9/A. The removal of the missing elements (T9/A skull and T9/B entire skeleton except for lower limbs) should be attributed to human agency and not natural decay, as indicated by the moderate to good surface preservation of the recovered material. BRI patterns of the secondary deposit (see below) suggest that the bones removed from the primary burials were not added to the secondary assemblage but were removed from the chamber. The bone removal does not appear related to the practical need of making space for the immediate interment of a new body, as the chamber did not contain other primary burials. The removal act rather appears as part of other secondary activities, dated to the LHIIIC Late period, which included re-arrangements of the chamber's contents and the introduction of additional ceramic material.

Extensive commingling is also seen in the ceramic material of the secondary deposition, especially in the focus area of the SW corner. The prevalence of LHIIIB/LHIIIC Early artefacts, mostly at the corner and below the bones, possibly indicate that a significant part of the skeletal assemblage is of that date; nevertheless, earlier (LHIIIA2) and later (LHIIIC Middle and Late) artefacts were present as well. To avoid bias in further analysis, both the bones and the time of their transfer into the secondary assemblage are classified in the indeterminate LHIIIA-LHIIIC category (cf. Table 7.X5). Nevertheless, the results of the osteological analysis illuminate to some extent the formation process of this secondary deposit and should be discussed.

Based on the observed variation in surface preservation, element completeness, and bone representation, two distinct skeletal groups were identified. The first included one very well preserved skeleton (IND.A) and one slightly less so (IND.B); the other comprised moderately to poorly preserved fragmentary remains from at least four individuals. The lack of the appropriate field documentation of bone recovery restricts our observations, but careful examination of excavation photos across the recovered material allowed us to identify the position of IND.A bones in the upper layers of the cluster in SW corner: left femur, both femora, ribs, vertebrae and sacrum were positively identified in Figure 6.3.3. Considering the good preservation quality and the clustering seen in secondary placement of this skeleton, it can be assumed that IND.A was dated to the LHIIIC period, comprising (perhaps together with IND.B, the other fairly well-preserved skeleton) the final addition on a pre-existing deposit of secondary remains. The analysis of bone frequencies points out to a thorough secondary deposition, which included even small-sized and fragile elements, commonly non-recovered in secondary assemblages. A final note should be made about the copper staining observed in parts of this skeleton (right pelvis and tibia), which implied proximity, and possible association, to bronze grave goods. Unfortunately, the lack of precise micro-stratigraphic recording did not allow a discussion on the relationships of bones and artefacts. The skeletal remains of the second group, most likely of earlier date, were only partially retained in the chamber. Under-representation was not only observed in small-sized or fragile elements, but also in prominent bones, such as skulls. Preservation discrepancies within the same bone assemblage indicate that the absence of the missing elements cannot be solely attributed to complete decay due to natural taphonomic agents. Therefore, a practice of bone removal to outside the tomb, including skulls, may be suggested. The lack of joining fragments -despite the high fragmentation of the material- corroborates this hypothesis.

In summary, Tomb 9 was used continuously from the LHIIIA until the LHIIIC Late period. Within this time period, it is possible to identify at least three major phases of funerary episodes, although we cannot precisely establish how many interments or other activities pertained to each phase. The first phase was attested through ceramic evidence of the secondary deposition and included a series of interments from LHIIIA2, LHIIIB, and LHIIIC Early. The remains of at least four individuals of the early phase were identified in the secondary deposit; their fragmentary state testified to a long and variable taphonomic history, which included bone removal to outside the tomb. The second major phase is represented by burials most likely dated to the LHIIIB/LHIIIC Early to LHIIIC Middle period, two of which should be the well-preserved remains in the secondary deposit: IND.A and IND.B. The disturbed primary burials T9/A and T9/B most likely also belong to this phase. Finally, the LHIIIC Late phase appears unrelated to the introduction of new interments, unless these got later completely removed from the tomb. During this last phase, the attested activities involved the introduction of new ceramic material, re-arrangements of the chamber’s contents, and removal to outside the tomb of skeletal material from Burials T9/A and T9/B. In conclusion, Tomb 9 demonstrates a rich diversity of funerary activities, including a persistent custom of secondary body removal to outside the tomb (particularly of crania), a widespread commingling of artefacts and bodies from different chronological periods, and clear evidence of an extensive chamber re-arrangement without the placement of a final interment.

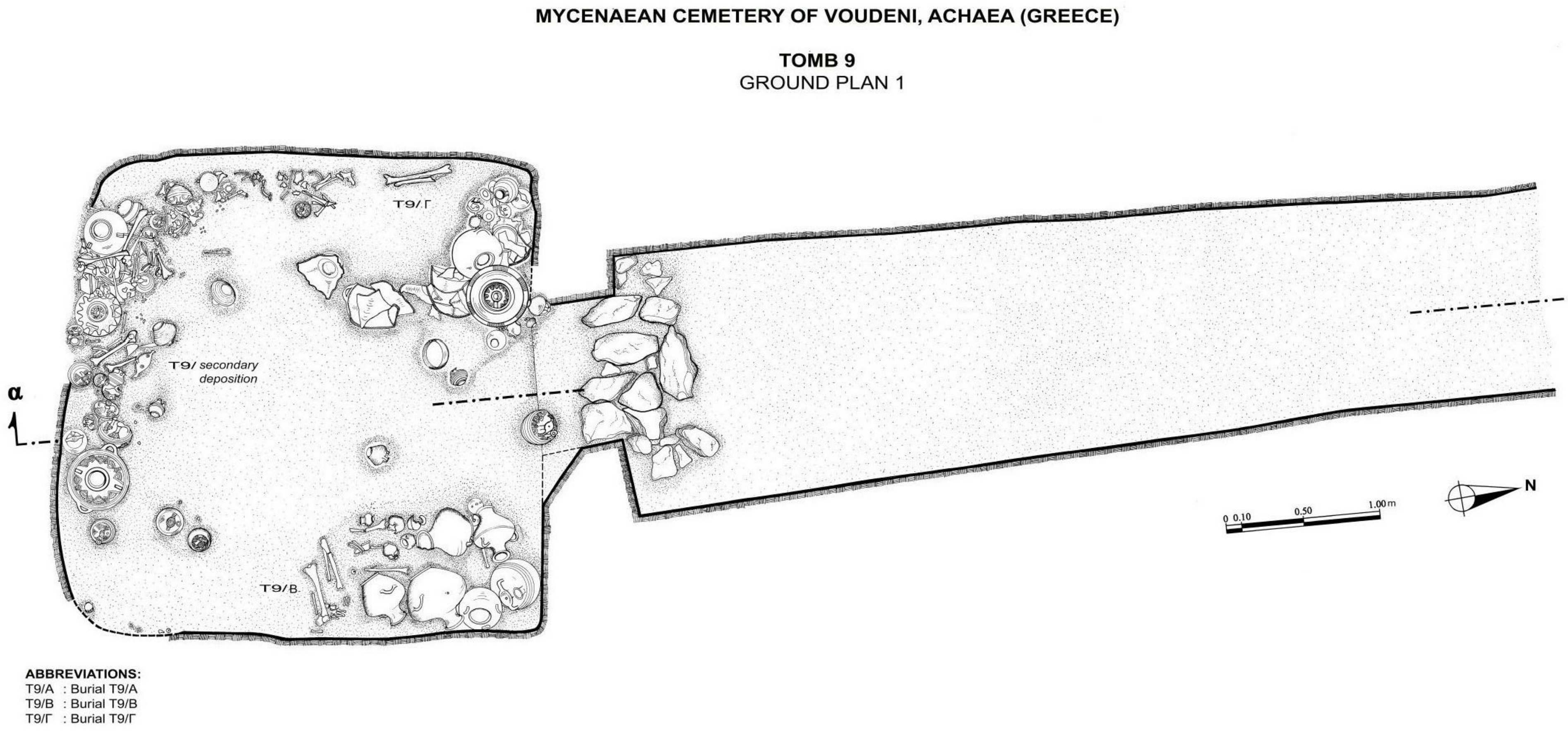


Figure 6.3.1a. Tomb 9: ground plan 1 (after Kolonas 1998, forthcoming). Upper spit plan with T9/B and T9-secondary deposition (including T9/Γ).

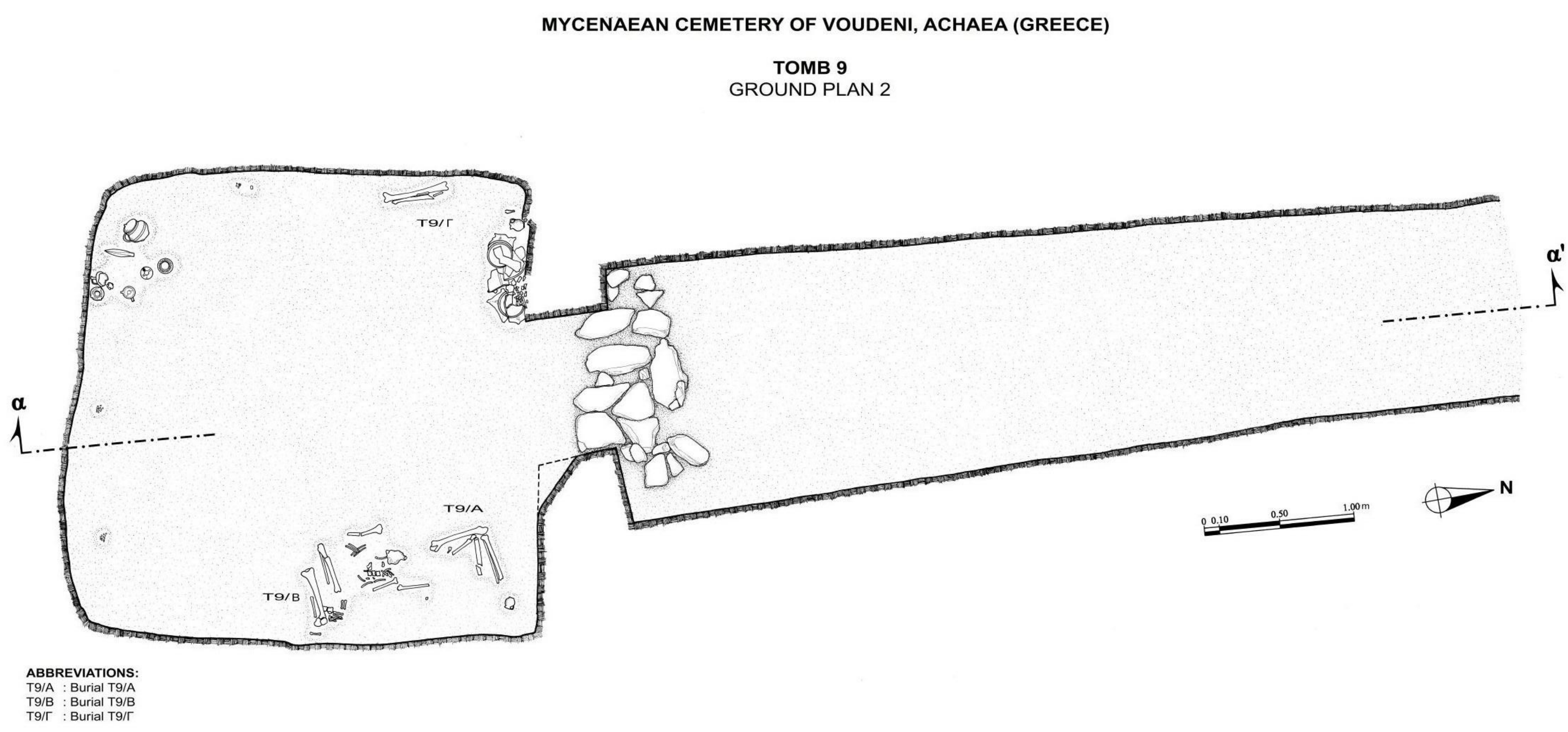
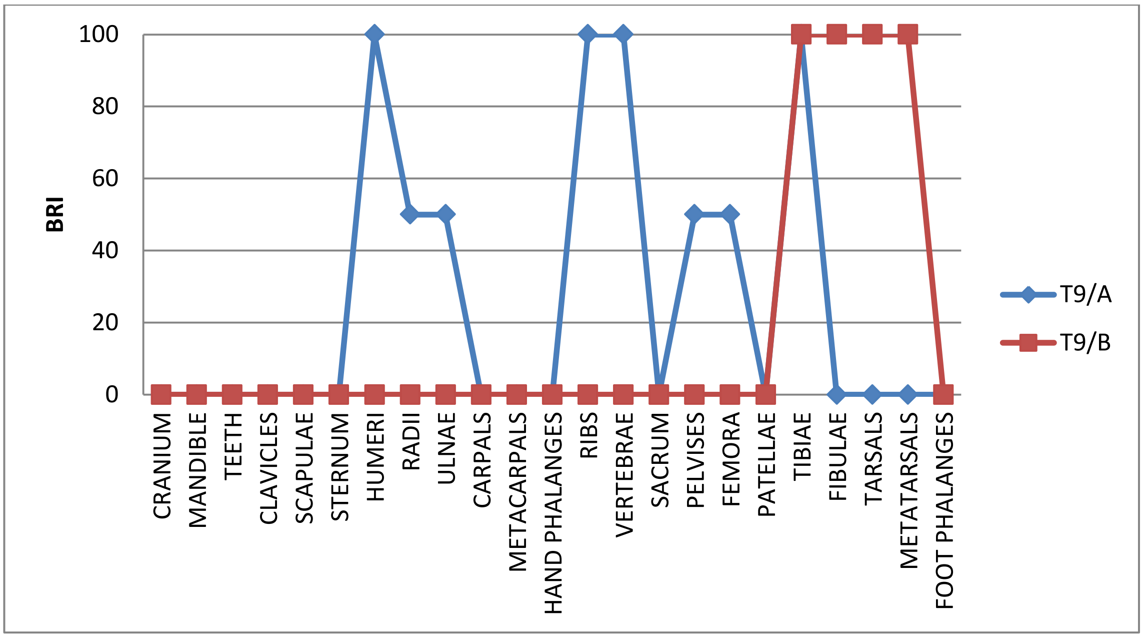


Figure 6.3.1b. Tomb 9: ground plan 2 (after Kolonas 1998, forthcoming). Burials T9/A, T9/B, and T9/Γ, after the removal of upper spit artefacts and of secondary deposition.

Figure 6.3.2. Burial T9/A (Σ1, left) and T9/B (Σ2, lower limbs only, right); view from the west.

Figure 6.3.3. Tomb 9 secondary deposition: concentration at the SW corner, view from NE.

Figure 6.3.4. T9/secondary deposition northern concentration along the west wall (left) - T9/Γ long bones (right); view from the east.



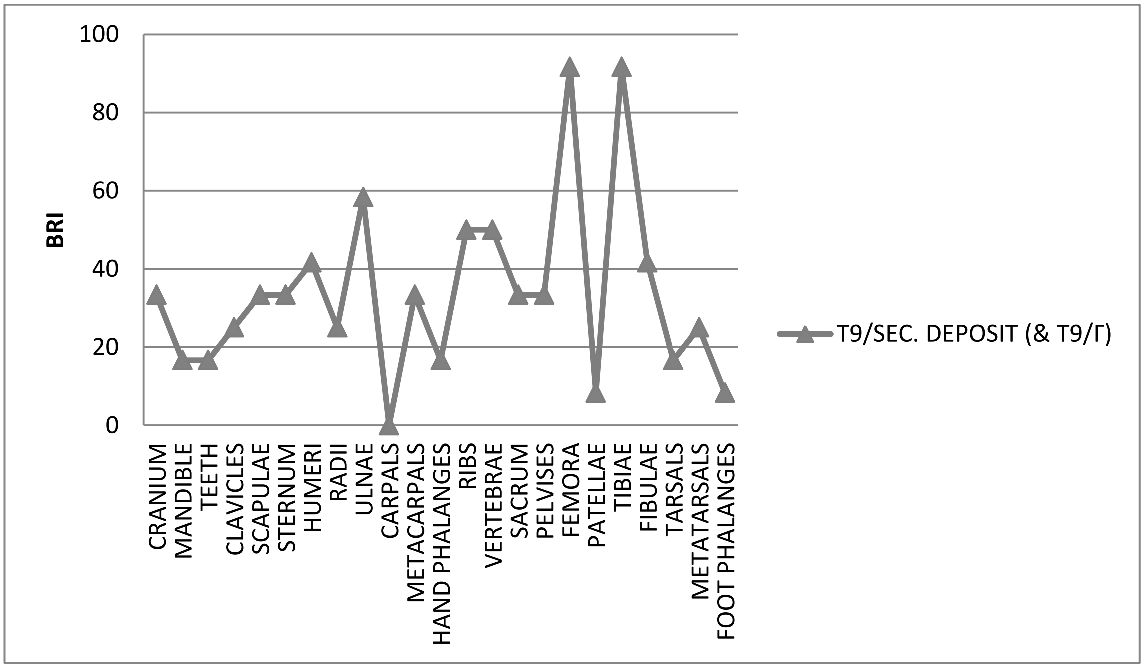
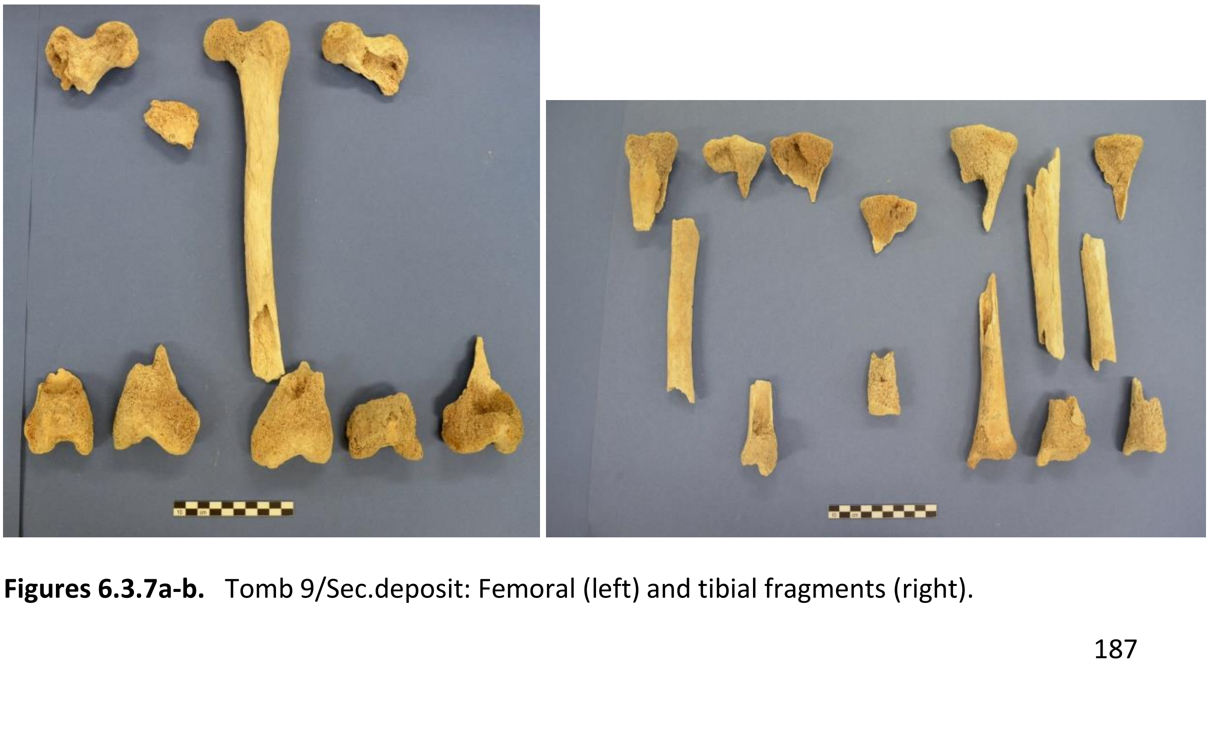


Figure 6.3.5. Tomb 9: Bone Representation Index (BRI) by tomb context.

Figures 6.3.6a-b. Tomb 9/Sec.deposit: Individuated post-cranial elements of IND.A (top) and IND.B (bottom).



Figures 6.3.7a-b. Tomb 9/Sec.deposit: Femoral (left) and tibial fragments (right).

6.4 TOMB 10

6.4.1 Tomb 10: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 10 is a small, circular tomb of the upper hill terrace (Figures 1.4 and 6.4.1; further information: Table 7.1). Based on its ceramic assemblages, the tomb was first used in the LHIIIA1 and then in the LHIIIC Late period. The dry wall closing the entrance was found partially disturbed, with stones missing from its right side. The roof of the tomb had collapsed but the burial assemblages were found fairly intact. Stratigraphic data indicated that infiltrating soil deposits had already accumulated over the floor, preserving the burial layer from the fallen roof debris. Within these deposits, three LHIIIC Late stirrup jars (T10/1-3, Table 6.4.1) were discovered c.30cm above the floor, presumably elevated due to flooding effects according to the excavator.

The chamber included no primary burials; all human remains were collected in a large secondary pile along the rear wall. The central part of the chamber was almost completely free of bones and artefacts. Along the east wall a large number of LHIIIC Late vessels and two beads were found (T10/4-21, Table 6.4.1). Another group of five LHIIIC Late stirrup jars was located just west of the centre (T10/22-26). The secondary bone deposition of the rear wall was commingled with LHIIIA1 vessels (mostly alabastra and piriform jars: T10/27-31, 33-34) and small artefacts (a bronze ring, glass, carnelian and amber beads,a knife handle, a gold hair ring, clay and steatite buttons: T10/35-45). Over the bones, one LHIIIC Late stirrup jar was placed (T10/32), while immediately west of the pile a LHIIIC Late deep bowl (T10/46) was found reversed (Table 6.4.1).

Table 6.4.1. Tomb 10: List of artefacts by tomb context, including location, chronological and typological information.
(*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
NO BONE ASSOCIATION	SW CHAMBER	T10/1	STIRRUP JAR	LHIIIC LATE	175	43:i
NO BONE ASSOCIATION	SW CHAMBER	T10/2	STIRRUP JAR	LHIIIC LATE	175	43:i
NO BONE ASSOCIATION	SW CHAMBER	T10/3	STIRRUP JAR	LHIIIC LATE	177	43:h
NO BONE ASSOCIATION	N EAST SIDE	T10/4	STIRRUP JAR	LHIIIC LATE	175	42:4, 58:22, 42:21,75:29
NO BONE ASSOCIATION	N EAST SIDE	T10/5	BELLY-HANDLED AMPHORA	LHIIIC LATE	58	43:i
NO BONE ASSOCIATION	N EAST SIDE	T10/6	STIRRUP JAR	LHIIIC LATE	175	53:18
NO BONE ASSOCIATION	N EAST SIDE	T10/7	STIRRUP JAR	LHIIIC LATE	175	43:h
NO BONE ASSOCIATION	N EAST SIDE	T10/8	BRONZE BEAD	LHIIIC LATE		
NO BONE ASSOCIATION	CENTRAL EAST SIDE	T10/9	STIRRUP JAR	LHIIIC LATE	177	43:l
NO BONE ASSOCIATION	CENTRAL EAST SIDE	T10/10	STIRRUP JAR	LHIIIC LATE	177	43:32
NO BONE ASSOCIATION	CENTRAL EAST SIDE	T10/11	STIRRUP JAR	LHIIIC LATE	175	43:i
NO BONE ASSOCIATION	CENTRAL EAST SIDE	T10/12	AMPHORISKOS	LHIIIC LATE	59	53:18
NO BONE ASSOCIATION	CENTRAL EAST SIDE	T10/13	AMPHORISKOS	LHIIIC LATE	59	41:6, 53:17, 48:5
NO BONE ASSOCIATION	CENTRAL EAST SIDE	T10/14	STIRRUP JAR	LHIIIC LATE	177	61:5, 52:5
NO BONE ASSOCIATION	CENTRAL EAST SIDE	T10/15	STIRRUP JAR	LHIIIC LATE	175	43:h
NO BONE ASSOCIATION	W OF T9-15	T10/16	STIRRUP JAR	LHIIIC LATE	175	
NO BONE ASSOCIATION	W OF T9-15	T10/17	STIRRUP JAR	LHIIIC LATE	175	43:i
NO BONE ASSOCIATION	S EAST SIDE	T10/18	LEKYTHOS	LHIIIC LATE	121	71:9, 75;2, 43:i
NO BONE ASSOCIATION	S EAST SIDE	T10/19	ALABASTRON STRAIGHT-SIDED	LHIIIC LATE	96	64:21
NO BONE ASSOCIATION	S EAST SIDE	T10/20	LEKYTHOS	LHIIIC LATE	120	53:18
NO BONE ASSOCIATION	S EAST SIDE	T10/21	CARNELIAN BEAD	LHIIIC LATE		
NO BONE ASSOCIATION	CENTRAL W CHAMBER	T10/22	STIRRUP JAR	LHIIIC LATE	175	43:h
NO BONE ASSOCIATION	CENTRAL W CHAMBER	T10/23	STIRRUP JAR	LHIIIC LATE	175	43:h
NO BONE ASSOCIATION	CENTRAL W CHAMBER	T10/24	STIRRUP JAR	LHIIIC LATE	175	
NO BONE ASSOCIATION	CENTRAL W CHAMBER	T10/25	STIRRUP JAR	LHIIIC LATE	177	43:h
NO BONE ASSOCIATION	CENTRAL W CHAMBER	T10/26	STIRRUP JAR	LHIIIC LATE	175	43:i
T10/SEC.DEPOSIT	S WALL	T10/27	ALABASTRON STRAIGHT-SIDED	LHIIIA1	93	53:5
T10/SEC.DEPOSIT	S WALL	T10/28	ALABASTRON ROUNDED	LHIIIA1	83	12:25 or 19:1
T10/SEC.DEPOSIT	S WALL	T10/29	SMALL HANDLELESS JAR	LHIIIA1	77	

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T10/SEC.DEPOSIT	S WALL	T10/30	ALABASTRON ROUNDED	LHIIIA1	84	32:5, 11:54, 11:59
T10/SEC.DEPOSIT	S WALL	T10/31	SMALL HANDLELESS JAR	LHIIIA1	77	
T10/SEC.DEPOSIT	S WALL	T10/32	STIRRUP JAR	LHIIIC LATE	177	43:i
T10/SEC.DEPOSIT	S WALL	T10/33	SQUAT JUG	LHIIIA1	87	
T10/SEC.DEPOSIT	S WALL	T10/34	ALABASTRON ROUNDED	LHIIIA1	93	57:2, 64:21
T10/SEC.DEPOSIT	S WALL	T10/35	GLASS BEADS (6)	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/36	CARNELIAN BEADS (3)	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/37	BRONZE RING	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/38	HANDLE OF KNIFE	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/39	GOLD HAIR SPIRAL	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/40	CLAY BUTTON	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/41	CLAY BUTTON	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/42	CLAY BUTTON	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/43	STEATITE BUTTON	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/44	STEATITE BUTTON	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/45	AMBER BEADS (4)	LHIIIA1		
T10/SEC.DEPOSIT	S WALL	T10/46	DEEP BOWL-SKYPHOS	LHIIIC LATE	285	

6.4.2 Tomb 10: Osteological results

T10/Secondary Deposition: The commingled bone assemblage of the secondary deposition (T10/Sec.Dep.) comprised a moderate bone quantity in very diverse state of preservation, with a MNI of 6 (Table 6.4.2; Figure 6.4.2). Most bones were fragmented, but the bone completeness was extremely diverse, as several of them could be reconstructed by joining fragments, but others were very partially preserved (Figures 6.4.S1-3). Surface condition was also variable, with most bones moderately or fairly well preserved but others rather poorly. Sometimes, uneven weathering was even noticed on the same skeletal element (Figure 6.4.3), suggesting a turbulent taphonomic environment and progressive covering of the bone by accumulating soil deposits. A limited number of rodent (Figure 6.4.S4) and root marks (with the latter bearing evidence of recent activity) were also noticed. Bone representation was also diverse, with both prominent and smaller bones well-represented (such as most long bones, pelves, scapulae, metacarpals and all foot bones; the latter not in high raw frequencies), while others rather poorly (including both dense, e.g., clavicles, and fragile or very small elements, e.g., sternum, teeth, carpals). The absence of the latter should be attributed to recovery bias, quite common in most Voudeni tombs. The marginally good representation of crania was rather unusual in comparison with the values of other prominent bones, especially considering that the observed cranial BRI values were estimated on the basis of very fragmentary partial cranial elements (see Figure 6.4.S3 with all recovered cranial fragments).

Table 6.4.2. Bone quantity, state of preservation, and MNI by tomb context.

<table>
<tr><th></th><th colspan="3">NO OF BONE FRAGMENTS</th><th colspan="4">PRESERVATION</th><th colspan="2">MNI</th></tr>
<tr><th rowspan="2">TOMB CONTEXT</th><th rowspan="2">IDENTI FIED</th><th rowspan="2">TOTAL</th><th rowspan="2">TEETH</th><th colspan="2">COMPLETENESS</th><th colspan="2">SURFACE</th><th rowspan="2">MNI</th><th rowspan="2">Max. occ. skeletal element</th></tr>
<tr><th>DET AIL</th><th>CONCISE CLASS</th><th>DETAIL</th><th>CONCISE CLASS</th></tr>
<tr><td>T10/SEC.DEP</td><td>366</td><td>421</td><td>2</td><td>1-4</td><td>2</td><td>c.2</td><td>2</td><td>6</td><td>Humeri+femora</td></tr>
<tr><td>TOTAL</td><td>366</td><td>421</td><td>2</td><td colspan="4"></td><td>6</td><td>Humeri+femora</td></tr>
</table>

Table 6.4.3. Tomb 10: Basic osteological information by case (n=6) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T10/SEC.DEP – IND.A	COMMINGLED SECONDARY	F	Humeral metrics; general gracility	YA (17-19y)	<u>Stage of epiphyseal union:</u> Fusing iliac tuberosity (c.20y); Iliac crest unfused (<17-20y); Sacral bodies: just fusing; fusion lines still visible in humeri, fibulae, MT heads (c.17y)	158	Humerus	R+L humeri; L ulna; R+L femora; R+L fibulae; R+L pelves; sacrum; vertebrae metatarsals
T10/SEC.DEP – IND.B	COMMINGLED SECONDARY	M	Sacrum; Humeral metrics; general robustness	YA	<u>Stage of bone fusion</u>: All sacral segments fused, except the 1st (20-30y)	172	Humerus; tibia	R humerus; R+L ulnae; pairs of femora, tibiae, fibulae; sacrum
T10/SEC.DEP – E3	COMMINGLED SECONDARY	F		MA	R+L aur: 5-6 (40-49y)			
T10/SEC.DEP – E4	COMMINGLED SECONDARY	F		OA	R aur: 6-7 (50-59y)			
T10/SEC.DEP – E5	COMMINGLED SECONDARY	NO		AD				
T10/SEC.DEP – E6	COMMINGLED SECONDARY	-		INF I (perinate)	<u>Diaphyseal length:</u> estimated femoral length: perinate (c.80mm).			

The MNI of the total assemblage was 6, based on the frequencies of the most frequently occurring long bones (humerus and femur), informed by distinct age data (Table 6.4.3). Individuation was limited due to the fragmentary condition of the material, even though several pairs were found, especially in humeri and femora. It was possible to segregate several bones from two individuals who displayed distinct age and morphological characteristics: IND.A, a gracile young adult female (17-19 years), and IND. B, a young adult male. The remaining cases included two more females (E3-4, sexed and aged based on pelvic evidence), an adult of indeterminate sex and age (E5), as well as a perinate individual (E6), identified only after an incomplete left femur (Figure 6.4.4).

6.4.3 Tomb 10: Bioarchaeological reconstruction of funerary activities

The human remains found in Tomb 10 comprised a MNI of 6, including 5 adults (3 females and one male) and a very young infant of perinate age. In terms of dating of the skeletal assemblage and the timing of specific funerary acts, Tomb 10 is a rather ambiguous case, due to high frequencies of both LHIIIA1 and LHIIIC Late artefacts but association of the bones almost exclusively with the former. Kolonas (1998) precisely described that the two LHIIIC Late vessels associated with the secondary deposition were not mixed with the bones (as the LHIIIA artefacts), but distinctively placed one on top of the pile and the other reversed in close proximity. At the same time, a large quantity of exclusively LHIIIC Late ceramic material, with no primary burials or any evidence of skeletal remains from earlier interments, was found in all other tomb contexts. As explained in 5.4.7, the outliers of later date in an otherwise earlier deposit are most likely related to the time of the context's (re-)creation, while the majority of the skeletal contents (*if not all*) should be dated to the earlier ceramic date. This is strongly suggested here, as the later evidence of use in the tomb is of exactly the same date as the two outliers of the secondary deposit. Nevertheless, the absence of later skeletal material on the floor allows for the possibility that LHIIIC interments may have also been removed in the secondary deposit; for this reason, the final dating remains indeterminate, with both the bones and the time of the deposit's creation classified in the LHIIIA & LHIIIC category (cf. Table 7.X5). In any case, it is evident that after the LHIIIA1 period, the tomb was re-used in LHIIIC Late, when all earlier material was gathered in the secondary pile, and new material was added into the tomb. The absence of skeletal remains from the LHIIIC assemblages is very interesting as it cannot be entirely attributed to natural decay; every other material in the tomb (ceramics and earlier bones) got protected from severe damage through the gradual accumulation of soil debris before the final roof collapse.[48] Therefore, two possibilities may be logically assumed: *either* a through removal of the LHIIIC Late skeletal material from the tomb to the outside without a following interment *or* the deposition of all LHIIIC Late vessels as part of a funerary ritual irrelevant to actual interment(s).

Finally, the preservation patterns of the secondary bone assemblage illuminate certain specific acts related to its formation. The diverse preservation implies differential taphonomic trajectories for the bones, which should be associated both with the effects of gradual soil covering and of previous human manipulation within the tomb. The BRI analysis also revealed unusual patterns: the under-representation of some small and fragile bones could be attributed to taphonomic and recovery bias, but the unusually low frequencies of cranial and mandibular elements -while most other prominent bones were well-represented- appears to imply a selective removal of skulls (at least of some individuals) from the tomb. The date of these inferred activities cannot be positively discriminated between the LHIIIA and LHIIIC Late periods (cf. Table 7.16).

[48] As attested in several other tombs (e.g., Tomb 4), remnants of skeletal material were archaeologically recognised even if too decayed to survive recovery in the case of extreme taphonomic damage.

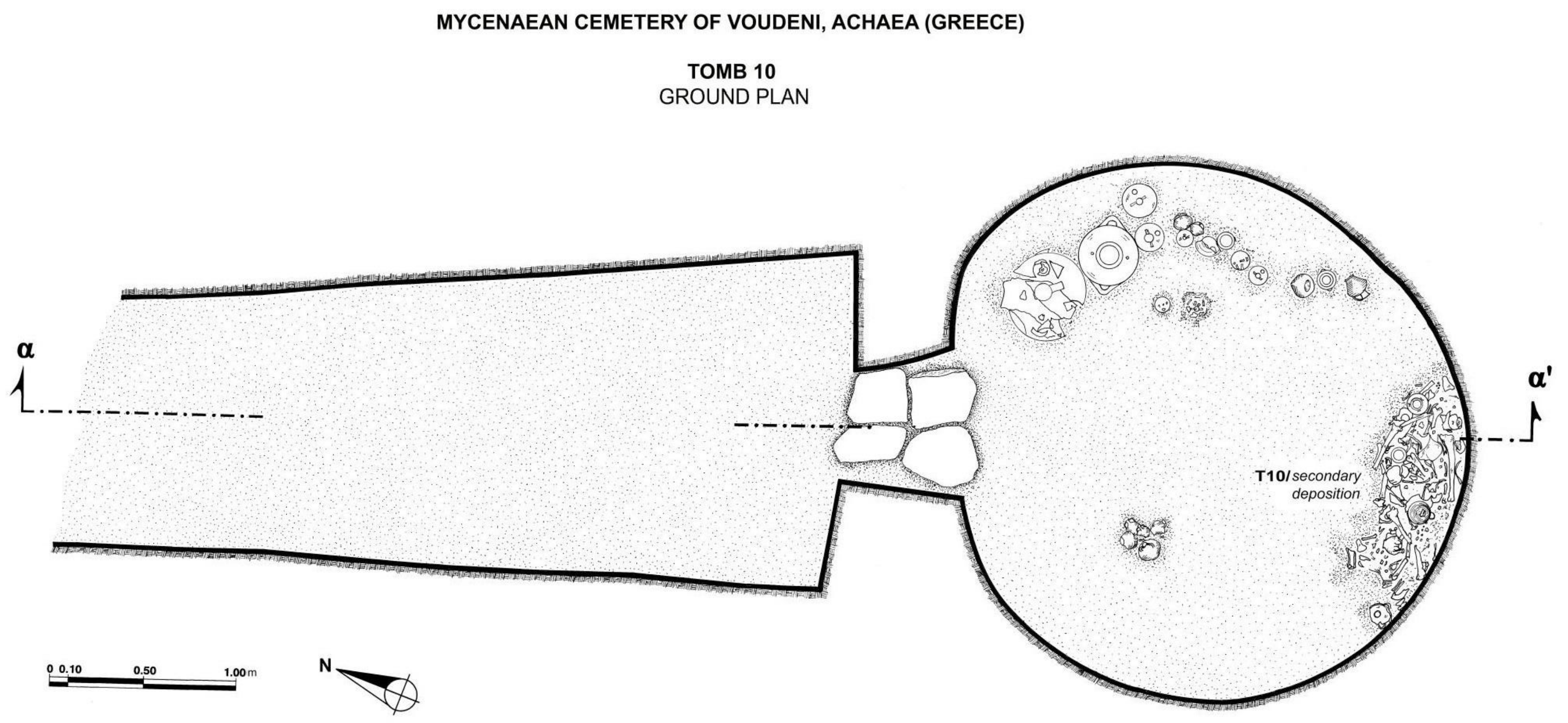


Figure 6.4.1. Tomb 10: ground plan (after Kolonas 1998, forthcoming).

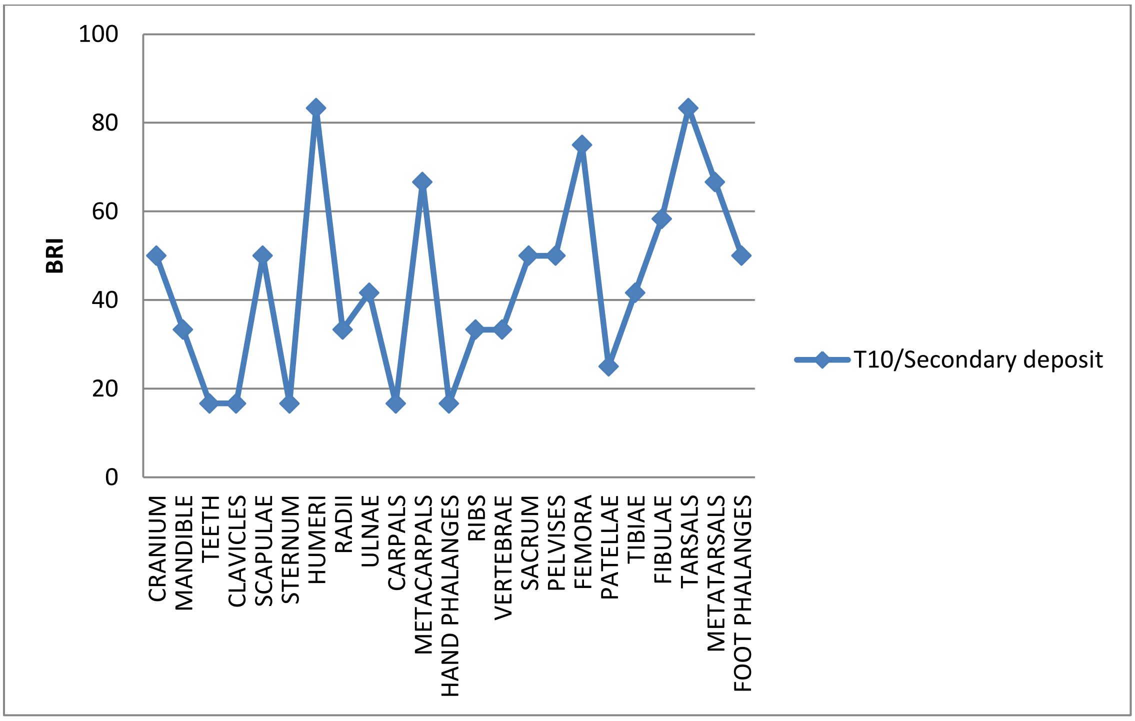


Figure 6.4.2. Tomb 10: Bone Representation Index (BRI) by tomb context.

Figure 6.4.3. Tomb 10/Sec.Deposit: uneven surface preservation on proximal right femur.

Figure 6.4.4. Tomb 10/Sec.Deposit: Left femur of a perinate individual (E6).

6.5 TOMB 13

6.5.1 Tomb 13: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 13 is a circular tomb of medium size, located at the eastern end of the middle hill terrace, and used between the LHIIIC Middle/Late and Late period (Figures 1.4 and 6.5.1a-b; further information: Table 7.1). The tomb was found with its dry wall intact, but the roof had collapsed. At the SW corner of the dromos, the presence of a shallow pit with a limited quantity of very decayed human remains was reported, but the extensively poor state of preservation did not permit their further description and collection. The chamber floor was empty, except for a group of LHIIIC Late stirrup jars and a clay button placed centrally along the rear wall. All burial assemblages were placed in pits (Figures 6.5.2a-b). East of the entrance, the oblong shallow **Pit I** (1.35x0.60x0.13m) was found containing a moderate quantity of commingled human remains (**Burials T13/A-B**, estimated as of two individuals at the time of discovery; Figure 6.5.1a). Inside the pit, some raw clay fragments and a pair of bronze tweezers were also found; at the outside, a broken large stirrup jar was placed along its north edge, while a group of five smaller stirrup jars were placed to its south, all dated to the LHIIIC Late period (Table 6.5.1). In the central part of the chamber, the deep **Pit II** (1.45x0.44x1m) contained a single primary burial (**T13/Γ**). The skeleton was placed supine, in S-N orientation, with lower limbs flexed towards the east (right side of the body), the right hand placed on pelvis and the left on chest (Figure 6.5.3a; cf. Table 7.18). The burial was accompanied by eight LHIIIC Late stirrup jars. The pit was found with no covering slabs, although a flange was reported along its rim. The excavator recorded limited evidence of taphonomic disturbance inside the north part of the pit, as a few stones from the dry wall and few sherds from the broken large jar located next to Pit I were discovered inside the north part of Pit II. At the west part of the chamber, **Pit III (**1.34x0.60x0.70m) contained another primary burial (**T13/Δ**). The body was placed on its left side in S-N orientation, with lower limbs contracted and skull facing west; its left arm was parallel to the body and the right one placed on chest (Figure 6.5.3b; cf. Table 7.18). The grave goods comprised three LHIIIC Middle-Late stirrup jars (Table 6.5.1).

Table 6.5.1. Tomb 13: List of artefacts by tomb context, including location, chronological and typological information.
(*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T13/A-B	PIT I	T13/1	BRONZE TWEEZERS	LHIIIC LATE		
POSSIBLY T13/A-B	N OF PIT I	T13/2	STIRRUP JAR	LHIIIC LATE	175	61A:6, 42:4, 52:8, 43:p
POSSIBLY T13/A-B	S OF PIT I	T13/3	STIRRUP JAR	LHIIIC LATE	175	43:31
POSSIBLY T13/A-B	S OF PIT I	T13/4	STIRRUP JAR	LHIIIC LATE	175	61A:1
POSSIBLY T13/A-B	S OF PIT I	T13/5	STIRRUP JAR	LHIIIC LATE	182	61A:5, 58:33
POSSIBLY T13/A-B	S OF PIT I	T13/6	STIRRUP JAR	LHIIIC LATE	177	43:h, 43:i
POSSIBLY T13/A-B	S OF PIT I	T13/7	STIRRUP JAR	LHIIIC LATE	175	61A:5
NO BONE ASSOCIATION	S (REAR) WALL	T13/8	STIRRUP JAR	LHIIIC LATE	175	43:31
NO BONE ASSOCIATION	S (REAR) WALL	T13/9	STIRRUP JAR	LHIIIC LATE	175	43:31
NO BONE ASSOCIATION	S (REAR) WALL	T13/10	STIRRUP JAR	LHIIIC LATE	175	43:31
NO BONE ASSOCIATION	S (REAR) WALL	T13/11	STIRRUP JAR	LHIIIC LATE	175	43:31, 53:39
NO BONE ASSOCIATION	S (REAR) WALL	T13/12	CLAY BUTTON	LHIIIC LATE		
T13/Γ	PIT II	T13/13	STIRRUP JAR	LHIIIC LATE	177	61A:3, 43:i
T13/Γ	PIT II	T13/14	STIRRUP JAR	LHIIIC LATE	175	61:5, 52:5
T13/Γ	PIT II	T13/15	STIRRUP JAR	LHIIIC LATE	175	43:l, 43:32
T13/Γ	PIT II	T13/16	STIRRUP JAR	LHIIIC LATE	175	58:23
T13/Γ	PIT II	T13/17	STIRRUP JAR	LHIIIC LATE	175	43:h, 43:32
T13/Γ	PIT II	T13/18	STIRRUP JAR	LHIIIC LATE	175	43:31
T13/Γ	PIT II	T10/19	STIRRUP JAR	LHIIIC LATE	175	43:31
T13/Γ	PIT II	T13/20	STIRRUP JAR	LHIIIC LATE	175	43:31
T13/Δ	PIT III	T13/21	STIRRUP JAR	LHIIIC MIDDLE/LATE	175	43:32
T13/Δ	PIT III	T13/22	STIRRUP JAR	LHIIIC MIDDLE/LATE	181	43:h
T13/Δ	PIT III	T13/23	STIRRUP JAR	LHIIIC MIDDLE/LATE	182	43:l, 53:39, 61A:1

6.5.2 Tomb 13: Osteological results

Information on recovery/collection problems

The skeletal assemblages of Tomb 13 were revealed but not removed at the time of discovery; they remained *in* situ for some years (covered and protected) and finally collected in 2010 by the team of conservators. Surface bone condition was probably affected to some extent by the prolonged exposure, but higher recovery standards were ensured, while post-excavation biases were minimised, as I personally conducted the cleaning of this material. The only bones missing from the final study collection are the few remains reportedly found at the dromos corner, which did not survive recovery.

The osteological results

The three tomb contexts comprised a fairly large quantity of human remains in diverse state of preservation, with the primary burials preserved far better than the secondary remains of Pit I (Tables 6.5.2; Figure 6.5.4). The total tomb MNI was 6, and basic osteological information for all cases is given in Table 6.5.3.

Table 6.5.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			**PRESERVATION**				**MNI**	
				COMPLETENESS		SURFACE			
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS	MNI	Max. occ. skeletal element
T13/A-B (PIT I)	271	498	43	3	3	3	3	4	
T13/Γ (PIT II)	224	263	23	1-2	1	2	1	1	
T13/Δ (PIT III)	222	273	1	1	1	2	1	1	
TOTAL	**717**	**1034**	**67**					**6**	

Pit I (Burials T13/A-B): The human remains in Pit I (MNI: 4) were moderately to poorly preserved in all aspects (Table 6.5.2); they were also extensively fragmented, displaying mostly old but also recent (excavation) fractures. Especially the crania had all broke down in several fragments during recovery, but it was possible to reconstruct them from several joining fragments (cf. Figure 6.5.2b and 6.5.S1-2). Bone representation was predominantly poor to moderate, with the exception of cranial fragments and the denser post-cranial elements both from larger and smaller bones (Figure 6.5.4). The state of preservation (and especially of surface condition) was reminiscent of the detrimental effects of raw clay contact as seen in primary burials from other tombs (e.g., T4 and T22), albeit slightly milder; the reported presence of raw clay fragments inside the pit corroborated this observation. The state of preservation hindered pair-matching and re-individuation of the remains; however, the low MNI number permitted the segregation of elements with distinct sex and age characteristics in the following individuals: a) IND.A, a mature male adult (c. 40 years); b) IND.B, a mature adult female (40-45 years); c) IND. C, an older female adolescent (c.17 years; N.B. sex not counted in further analysis since the individual is still classified as sub-adult); and d) IND.D, a neonate/very young infant, only represented by few cranial fragments and four deciduous, still forming, teeth (Figure 6.5.5; Table 6.5.3).

PIT II, Burial T13/Γ: The skeleton in Pit II was fully represented (Figure 6.5.4) and fairly well preserved in terms of completeness and surface condition (Table 6.5.2). However, the bones displayed extensive evidence of old fragmentation, with the right side of the skeleton affected worse than the left (Figures 6.5.6a-c). The fragmentation is consistent with the pit disturbance as described by Kolonas (1998, see above). The examination of excavation photos (Figure 6.5.3a) confirmed the burial position as originally described, but with the upper body turned on its right side. The body position relates the heavier damage observed on the right skeletal side to the crushing effects of the weight of soil debris accumulating over the burial. The skeleton belonged to a mature adult male (Table 6.5.3).

PIT II, Burial T13/Δ: The skeleton in Pit III was very well preserved, in all aspects (Table 6.5.2; Figure 6.5.4). Although generally not very fragmented, the upper part of the skeleton, and especially the skull, displayed several old fractures (Figures 6.5.7a-b; recovery modern fractures were mostly noticed on lower limbs). The old fragmentation should also be attributed to the effects of debris accumulation; the pattern was the reverse of that seen in T13/Γ, with the left side of T13/Δ affected the most, consistent with its burial position. The examination of the bones across the photographic documentation at the time of discovery (Figure 6.5.3b) confirmed the burial position exactly as described by Kolonas (1998). The medial displacement of the right humerus, found disarticulated from the forearm and with its dorsal side on top, suggests that the body was decomposing in an open space, and, thus, the pit was not originally filled with soil. This hypothesis corroborates the attribution of bone fracturing to the weight impact of the soil debris accumulating over the skeletonised remains. The skeleton belonged to a mature adult male (Table 6.5.3).

Table 6.5.3. Tomb 13: Basic osteological information by case (n=6) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T13/A-B – IND.A	COMMINGLED SECONDARY	M	Skull; Pelvis	MA	Dental wear: c.40y.			R+L pelves; Skull (includ. mandible, teeth)
T13/A-B – IND.B	COMMINGLED SECONDARY	F	Skull	MA	Dental wear: c.40y.			R humerus; R radius; L pelvis; Skull (includ. mandible, teeth)
T13/A-B – IND.C	COMMINGLED SECONDARY	(F)	Skull; LB metrics	ADOL (c.17y)	Stage of epiphyseal fusion: Recently fused Hum PE, fused Hum DE, recently fused radius (c.17y) Dental formation stage: M_3: $R_{1/4}$ (c.15y)			R+L humeri; R radius; Skull (includ. mandible, teeth)
T13/A-B – IND.D	COMMINGLED SECONDARY	-		INF I (<6mo)	Dental formation stage: dm^1: $R_{3/4}$, dm^2: $R_{1/2}$ (<6mo)			Few cranial remains & deciduous teeth
T13/Γ	PRIMARY	M	Skull; pelvis; LB metrics	MA	L aur: 4-5 (35-44y) Cranial sut.closure: (partially observable) significant closure/obliteration (MA) Dental wear: >50y	166	Radius, ulna, tibia	
T13/Δ	PRIMARY	M	Skull; pelvis; LB metrics	MA	R+L aur: 5-6 (40-49y) L pub: 4-5 (35-40y) Cranial sut.closure: 9 (39.4y)	170	Lower limbs	

6.5.3 Tomb 13: Bioarchaeological reconstruction of funerary activities

The total number of interments in Tomb 13 (MNI: 6) comprised two primary burials of male mature adults and a secondary deposit of at least four individuals (one female and one male mature adults, a female 17-year-old, and a neonate). Accompanying grave goods suggested that all funerary events occurred within a rather short time period, spanning only the LHIIIC Middle/Late times. Since all artefacts were dated roughly to the same period (with the possible exception of Pit III contents being slightly earlier), it is very difficult to reconstruct the funerary sequence. The complete absence of vessels clearly dated to the LHIIIC Late in Pit III may suggest that this was the first interment of the series, even though the indeterminate LHIIIC Middle/Late dating of its contents does not permit a positive inference. Whether the interments that, fully or partially, ended up in Pit I (the four individuals of T13/A-B) pre-dated or post-dated the LHIIIC Late burial T13/Γ is an interesting question because in the latter case their removal would not have been related to the practicality of a following interment. The osteological preservation suggested that the burials were originally placed on the floor, probably on top of a raw clay sub-layer. Even though raw clay fragments were recognised inside Pit I (most likely transferred accidentally along with the bones), no such traces were recorded on the tomb's floor. Based on this, if the tomb was found intact, it would have been plausible to suggest that the opening of the primary pits was the last event; in order to construct the pits (or at least Pit II), a thorough floor cleaning was necessary and their digging may have eliminated all traces of earlier interments from the central floor area (such as raw clay fragments and small scattered bones). However, our data is too limited for any positive conclusion; the roof collapse surely disturbed significantly the stratigraphic evidence over the pits, hindering the potential of archaeological recognition of these traces, even if the four burials had followed the pit burials and were actually placed over them before their final transfer. Therefore, the possibility that an act of 'second funeral' took place, irrelevant to the need of a following interment, remains open.

As for specific activities in relation to this secondary removal, the following remarks can be made. The composition of the secondary assemblage, as analysed through preservation patterns, is not suggestive of selective retention of prominent bones, but rather of random retention of four individual skeletons. The partial representation of these skeletons should be predominantly attributed to natural taphonomic loss, but some (minimal) degree of bone removal from the same skeletons to outside the tomb cannot be excluded. The find of a very small quantity of human remains at the dromos, unfortunately not surviving into the study bone collection, corroborates this possibility. Nonetheless, the general consistency in bone representation and sex/age information from the recovered elements indicates that the original interments were not significantly more than the estimated number of four.

Finally, a comment on the custom of primary burials in pits should be added. The bioarchaeological evidence suggested that the bodies decomposed in an open space, i.e. the pit was not filled with soil, but it may have been covered with slabs of a perishable material (cf. the flange noticed in Pit II, 6.5.1). This was suggested by: a) the observations of bone relationships and articulation, even on the limited evidence of photographic examination; b) the fracturing patterns on both skeletons; and c) the archaeological observations of Kolonas (1998) about the presence of intrusive sherds and rocks in Pit II.

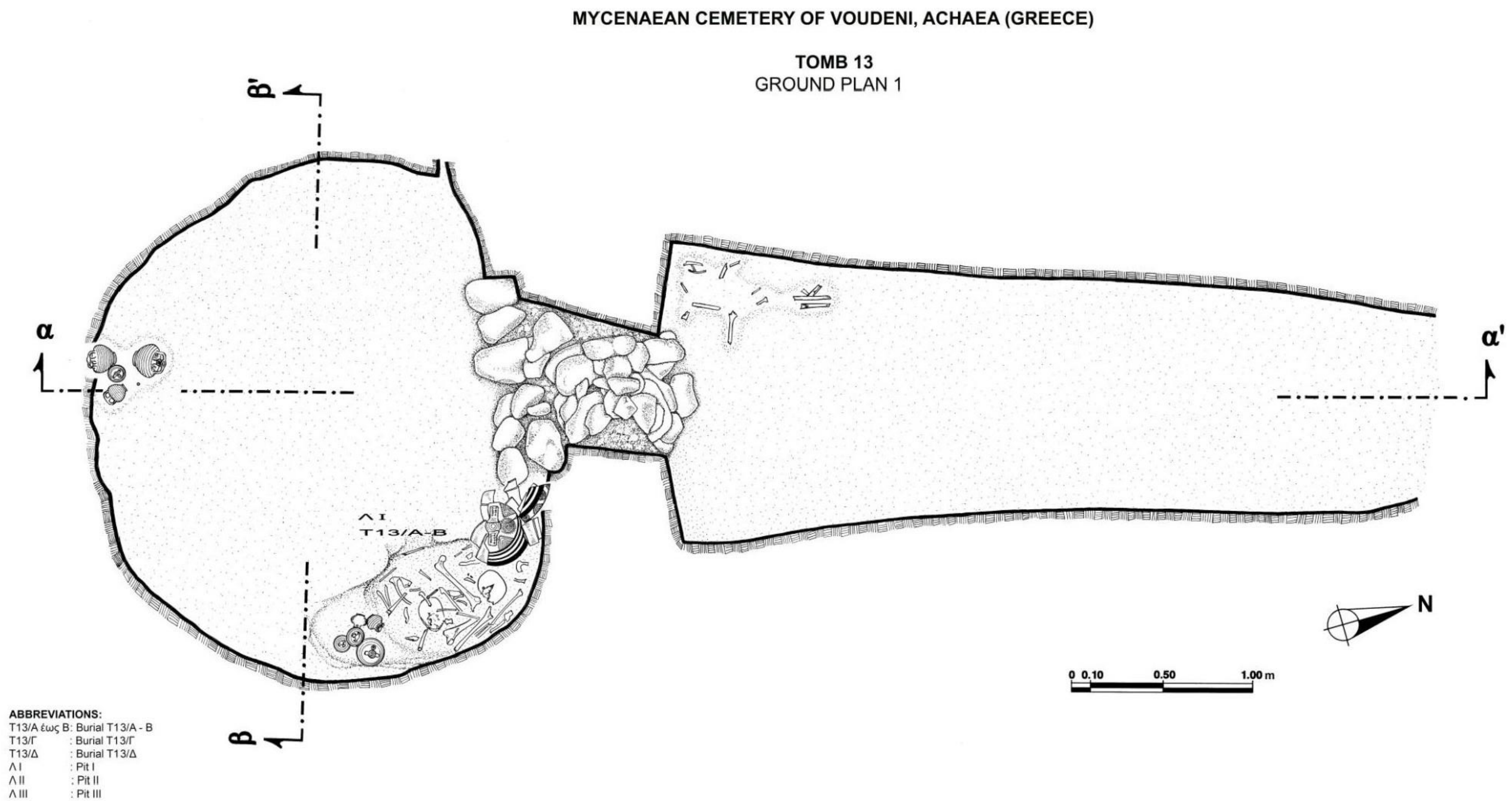


Figure 6.5.1a. Tomb 13: ground plan 1 (after Kolonas 1998, forthcoming). Pit I, T13/A-B.

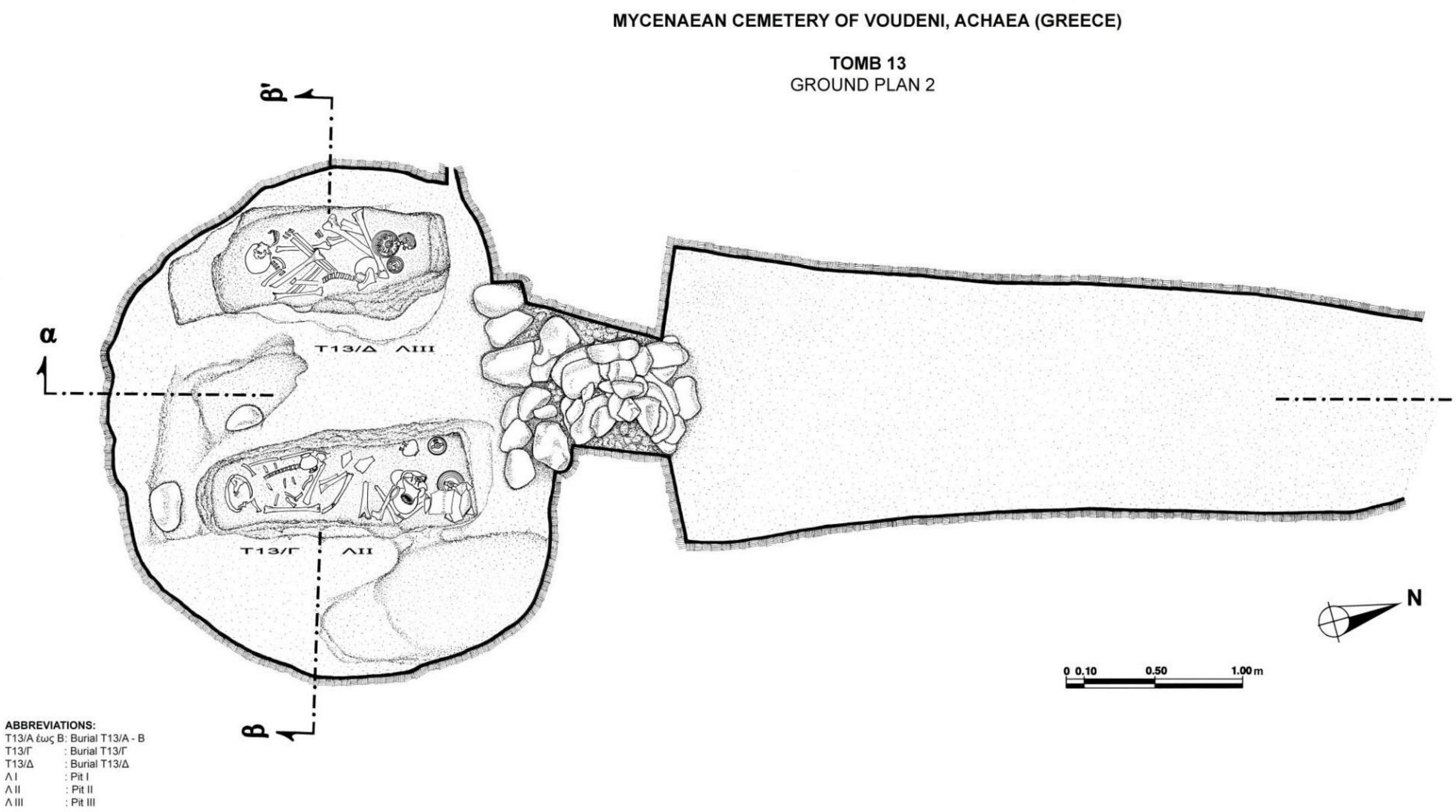


Figure 6.5.1b. Tomb 13: ground plan 2 (after Kolonas 1998, forthcoming). Pit II, T13/Γ & Pit III, T13/Δ.

Figure 6.5.2a. Tomb 13: The chamber during excavation, with Pit III already excavated; view from the north.

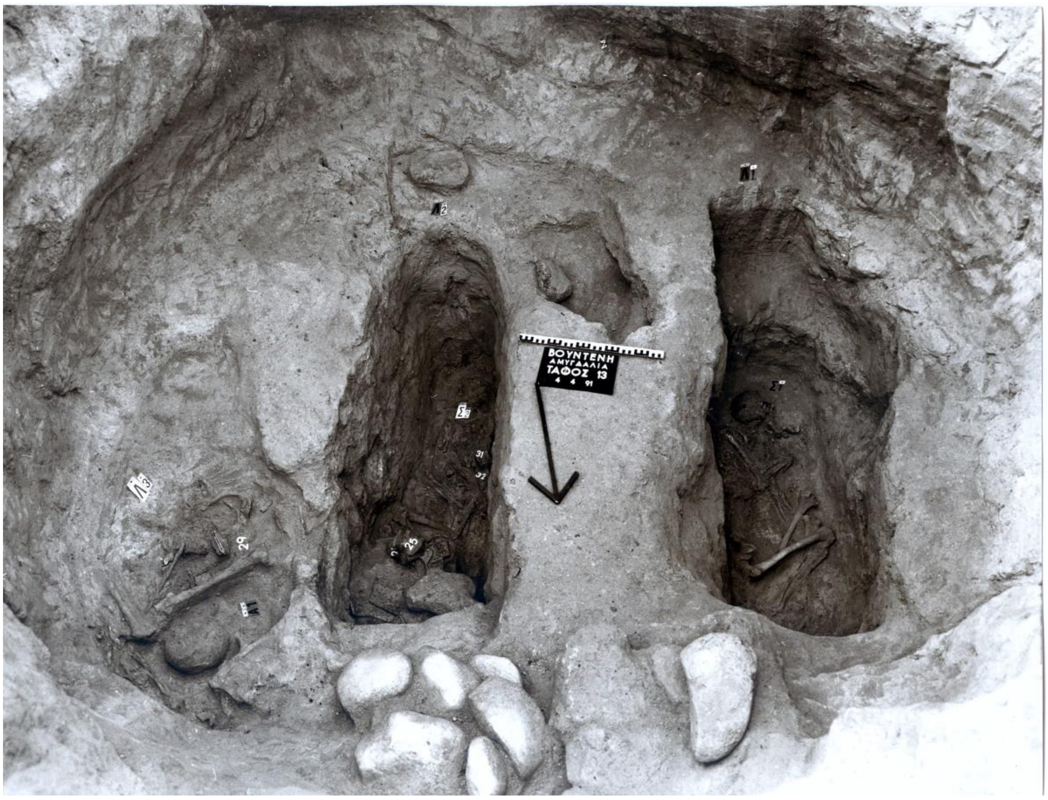


Figure 6.5.2b. Tomb 13: The chamber during excavation, from left to right: Pits I, II, and III.

Figures 6.5.3a-b. Burials T13/Γ-Pit II (left) and T13/Δ-Pit III (right) *in situ.*

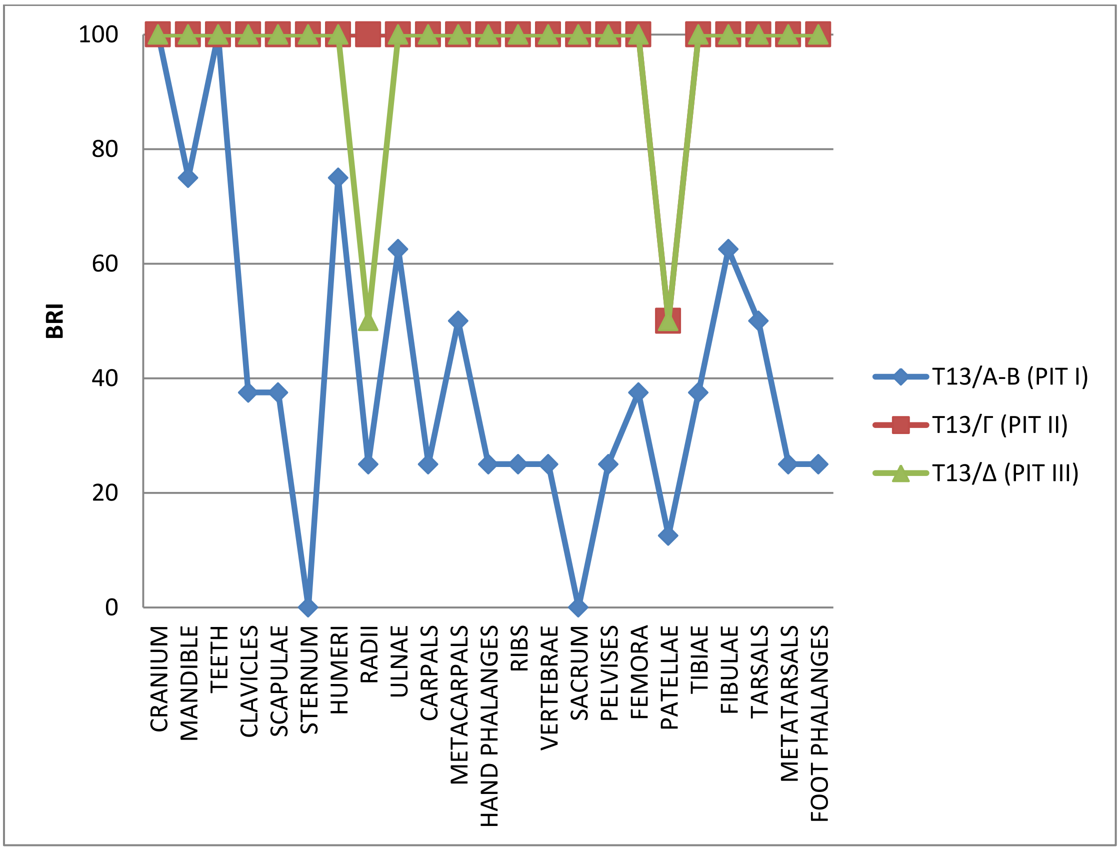
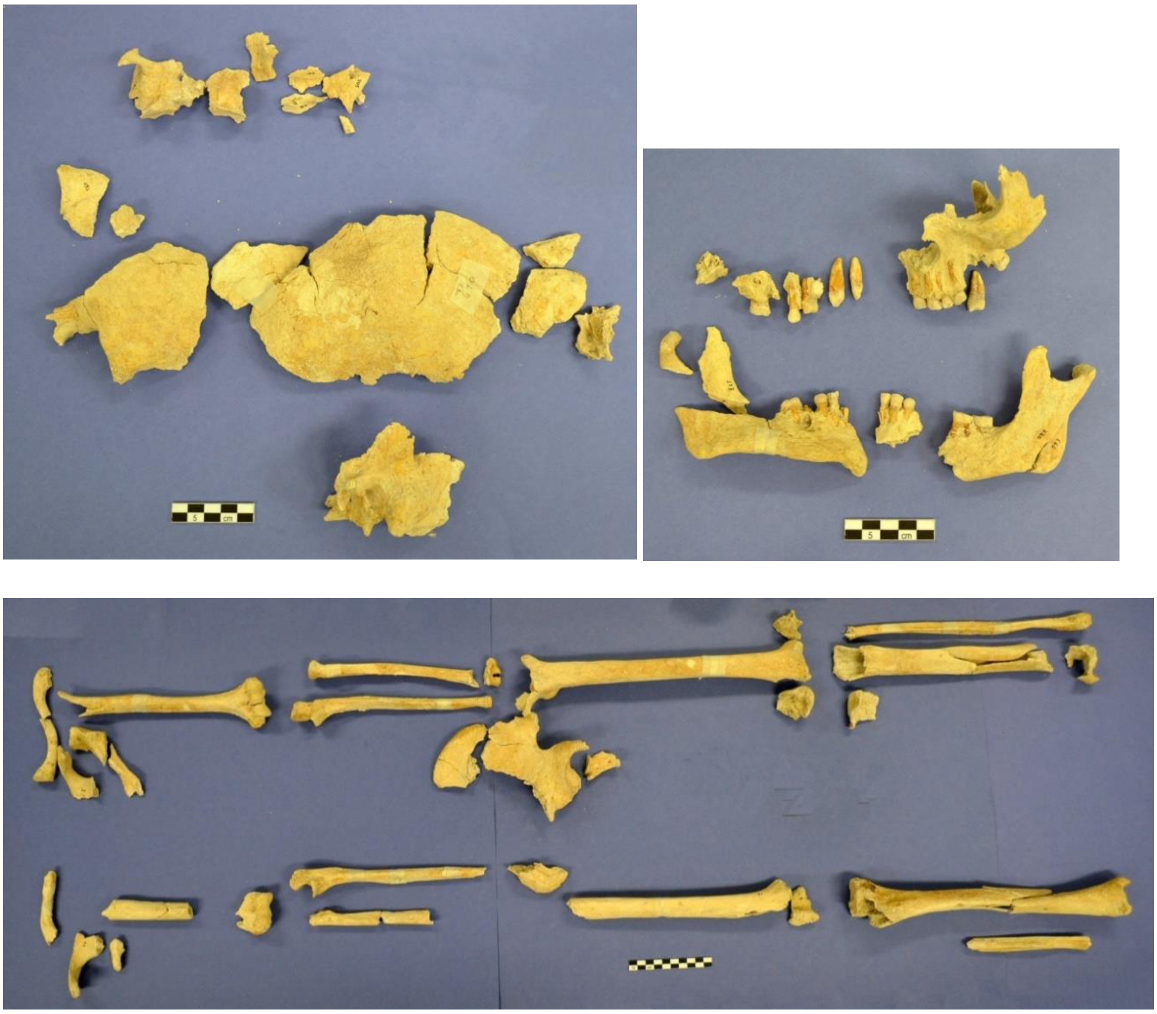


Figure 6.5.4. Tomb 13: Bone Representation Index (BRI) by tomb context.

Figure 6.5.5. T13/A-B – IND.D: Cranial remains and deciduous (non-erupted) teeth.



Figures 6.5.6a-c. T13/Γ: Cranial remains (top left), maxilla and mandible (top right); major post-cranial elements (bottom).

Figures 6.5.7a-b. T13/Δ: Skull remains (top) and major post-cranial elements (bottom).

6.6 TOMB 14

6.6.1 Tomb 14: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 14 is a small quadrangular tomb located in the east part of the middle hill terrace (Figures 1.4 and 6.6.1; further information: Table 7.1). Based on ceramic evidence, the tomb was used only during the LHIIIC Early and Middle periods (Table 6.6.1). Structural problems were evident, including partial roof collapse and a wall gap at the west part of the chamber, which had been repaired during the tomb's use with the construction of a supportive dry wall. The dry wall closing the entrance was also found only partially preserved, missing its upper part.

A large secondary bone pile occupied the SE corner of the chamber. Based on crania recognised at the time of discovery, the assemblage was estimated to include at least 8 burials (**T14/A-H**); another three crania (**Burials T14/Θ-K**), in decayed condition, were found immediately west of the pile, presumably rolled out of it (Figures 6.6.1-3). Three steatite buttons, a bronze pin and one ring were found within the T14/A-H bone assemblage, and two LHIIIC Early *lekythoi* were placed adjacent to it (Table 6.6.1). The remains of a disturbed primary burial (**T14/Λ**) were located centrally in the chamber (Figures 6.6.1-2). The skeleton was found in very decayed condition, described to preserve only the lower part of the body *in situ* (pelvis and lower limbs). The body was placed in E-W orientation, probably extended. Two stirrup jars, a rounded *alabastron*, and an *amphoriskos* were found in the vicinity of this burial, all dated to the LHIIIC Middle period. Two more vessels (T14/12-13) of the same date were located closer to the entrance (Table 6.6.1; N.B. final vessel numbers do not correspond to the numbers shown in excavation photos).

Table 6.6.1. Tomb 14: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T14/A-H		T14/1	STEATITE BUTTON	LHIIIC EARLY		
T14/A-H		T14/2	STEATITE BUTTON	LHIIIC EARLY		
T14/A-H		T14/3	STEATITE BUTTON	LHIIIC EARLY		
T14/A-H		T14/4	BRONZE PIN	LHIIIC EARLY		
T14/A-H		T14/5	BRONZE RING	LHIIIC EARLY		
T14/A-H		T14/6	LEKYTHOS	LHIIIC EARLY	122	64:20
UNCLEAR BONE ASSOCIATION	BETWEEN T14/A-H & T14/Θ-K	T14/7	LEKYTHOS	LHIIIC EARLY	122	19:26, 41:7, 64:22
T14/Λ		T14/8	STIRRUP JAR	LHIIIC MIDDLE	175	19:29
T14/Λ		T14/9	STIRRUP JAR	LHIIIC MIDDLE	175	43:I, 61A:1
T14/Λ		T14/10	ALABASTRON ROUNDED	LHIIIC MIDDLE	86	
T14/Λ		T14/11	AMPHORISKOS	LHIIIC MIDDLE	59	43:31, 53:39
NO BONE ASSOCIATION	CLOSE TO ENTRANCE	T14/12	LEKYTHOS	LHIIIC MIDDLE	122	
NO BONE ASSOCIATION	CLOSE TO ENTRANCE	T14/13	STIRRUP JAR	LHIIIC MIDDLE	175	73:γ

6.6.2 Tomb 14: Osteological results

Information on recovery/collection problems

The bone collection from this tomb included only the remains of the secondary deposition T14/A-H. The three T14/Θ-K crania and the disturbed primary burial T14/Λ most likely did not survive recovery due to extremely poor preservation. The fact that adult crania in the bone collection matched exactly the number recognised during excavation confirmed that the T14/Θ-K material was missing and not erroneously collected with T14/A-H remains. Therefore, the inferred tomb MNI can be securely raised at least by three, even though only the osteologically attested number will be used in further analysis (cf. 7.2.1).

The osteological results

T14/A-H secondary deposition comprised a moderate bone quantity of a MNI of 10 (Table 6.6.2). The material displayed diverse completeness, which in general was rather good. Surface condition was moderate but also diverse; several bones were brittle and few showed the characteristic brownish discolouration in patches, usually related to the effects of increased moisture and fungal activity. Bone representation was inconsistent, with a marked discrepancy shown between very good BRI values of the largest and most conspicuous bones (i.e. crania, femora, tibiae, fibulae and humeri) and all other remains that were only moderately to poorly represented (Figure 6.6.4). The discrepancy between crania and mandibles was particularly pronounced, especially considering the very partial completeness of the recovered mandibles, of which only one was fully preserved (Figures 6.6.5a-c).

Table 6.6.2. Bone quantity, state of preservation, and MNI by tomb context.

<table>
<tr><th></th><th colspan="3">NO OF BONE FRAGMENTS</th><th colspan="4">PRESERVATION</th><th colspan="2">MNI</th></tr>
<tr><th rowspan="2">TOMB CONTEXT</th><th rowspan="2">IDENTI FIED</th><th rowspan="2">TOTAL</th><th rowspan="2">TEETH</th><th colspan="2">COMPLETENESS</th><th colspan="2">SURFACE</th><th rowspan="2">MNI</th><th rowspan="2">Max. occ. skeletal element</th></tr>
<tr><th>DETAIL</th><th>CONCISE CLASS</th><th>DETAIL</th><th>CONCISE CLASS</th></tr>
<tr><td>T14/A-H</td><td>499</td><td>629</td><td>9</td><td>c.2</td><td>1</td><td>3</td><td>3</td><td>10</td><td>Cranium
(& age info)</td></tr>
<tr><td>TOTAL</td><td>499</td><td>629</td><td>9</td><td colspan="4"></td><td>10</td><td>Cranium
(& age info)</td></tr>
</table>

The MNI of 10 was estimated based on maximum occurrence of cranial elements, informed by age discrepancies. The individuation process was restricted by the marked discrepancies in completeness and bone representation. Nevertheless, distinct age characteristics allowed the individuation of cranial fragments and few post-cranial elements to IND.A, a 3-4 year-old child, and IND.B, a perinate infant whose presence was attested solely on the basis of an immature left tibia (Figure 6.6.6, Table 6.6.3). A precise segregation of post-cranial material between the eight adults recognised by crania was not possible, except for certain elements that could be securely individuated to a very young female adult, possibly IND.D (or alternatively IND.G, Table 6.6.3). The adult remains included two mature adult males and two probable males (young and prime/mature adult), two young females, and two individuals whose sex could not be determined (Table 6.6.3).

6.6.3 Tomb 14: Bioarchaeological reconstruction of funerary activities

The osteologically attested MNI in Tomb 14 was 10, including eight adults, a young child, and a perinate infant. However, this number could be securely raised to 13, considering the three additional adult skulls (T14/Θ-Κ) that did not survive into the final study bone collection. In terms of funerary sequence and specific activities that took place in Tomb 14, the following remarks can be made.

The human remains in T14/A-H bone assemblage are dated to the LHIIIC Early period based on their accompanying artefacts, but the final secondary re-arrangement of bones in the SE corner pile should have taken place in LHIIIC Middle, before the interment of T14/Λ. The clustered bone arrangement, with long bones on bottom and crania on top, indicate that the pile was made in one event. However, the limited space in the chamber area for simultaneous accommodation of 10 primary interments (even more for 13, counting the extra three crania T14/Θ-Κ) suggests that other secondary removals within, and possibly from, the chamber had already taken place before this final re-arrangement. The fact that some material was actually removed to outside the tomb is confirmed by the pronounced BRI discrepancies, which clearly indicate a selective retention of prominent bones in this pile. The underrepresentation of other elements, including dense bones such as mandibles, cannot be explained on the basis of normal taphonomic and/or recovery loss, especially considering the moderate/good preservation of the recovered material.

To assess preservation condition of the disturbed primary burial T14/Λ is problematic, since the bone material is lacking and the poor quality of photographic documentation did not allow the precise identification of all visible bones (Figure 6.6.2). The original description of pelvis and lower limbs being the only bones preserved *in situ* appears consistent with the photo for lower limbs, since two femora and a right tibia are discerned in more or less correct (semi-articulated) anatomical position. However, it is not possible to discern if the element immediately east of the femora is indeed a fragmented decayed pelvis; another long bone, visible adjacent to the presumed pelvis, cannot be identified either (possibly right forearm?). If the excavation description is to be accepted -at least with reference to the lower limb bones-, then the primary interment T14/Λ was placed after the creation of the secondary assemblage based on the LHIIIC Middle ceramic evidence. Without additional documentation and lacking the skeletal remains, it is not possible to evaluate whether the absence of the upper part of the body should be attributed to excessive natural decay and disturbance caused by artefacts and crania fallen from the secondary pile, or to post-depositional human activities involving its removal. In any case, it is possible that the cranium of T14/Λ could have been displaced into the T14/Θ-K group, therefore the total tomb MNI cannot be further raised.

Table 6.6.3. Tomb 14: Basic osteological information by case (n=10) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T14/A-H - IND. A	COMMINGLED SECONDARY			CH I (3-4y)	Diaphyseal length: 3-4y (femur&tibia) Bone fusion: unfused ilium			R+L femora and tibiae; L ilium; cranial remains
T14/A-H - IND. B	COMMINGLED SECONDARY			INF I (perinate)	Diaphyseal length: perinate (tibia: c.70mm)			Left tibia
T14/A-H – IND. C	COMMINGLED SECONDARY	M	cranium	MA	Cranial sut. closure: 6 (34.7y)			
T14/A-H – IND. D	COMMINGLED SECONDARY	F	cranium	YA	Cranial sut. closure: 0 (<PA); Stage of epiphyseal union: Recently fused humerus; unfused med.clavicle (c. 20y); fusing annular rings			L humerus; L clavicle; some vertebrae; cranium
T14/A-H – IND. E	COMMINGLED SECONDARY	M	cranium	MA	Cranial sut. closure: 3 (34.7y)			
T14/A-H - IND. F	COMMINGLED SECONDARY	M?	cranium	MA/OA	Cranial sut. closure: all observed closed (>PA)			
T14/A-H - IND. G	COMMINGLED SECONDARY	F	cranium	YA	Cranial sut. closure: 0 (<PA)			
T14/A-H - IND. H	COMMINGLED SECONDARY	M?	cranium	YA	Cranial sut. closure: all observed open (<PA)			
T14/A-H - IND. I	COMMINGLED SECONDARY	?	cranium	MA	Cranial sut. closure: all observed closed but not obliterated (>PA)			
T14/A-H - IND. J	COMMINGLED SECONDARY	?	cranium	MA/OA	Cranial sut. closure: all observed closed (>PA)			

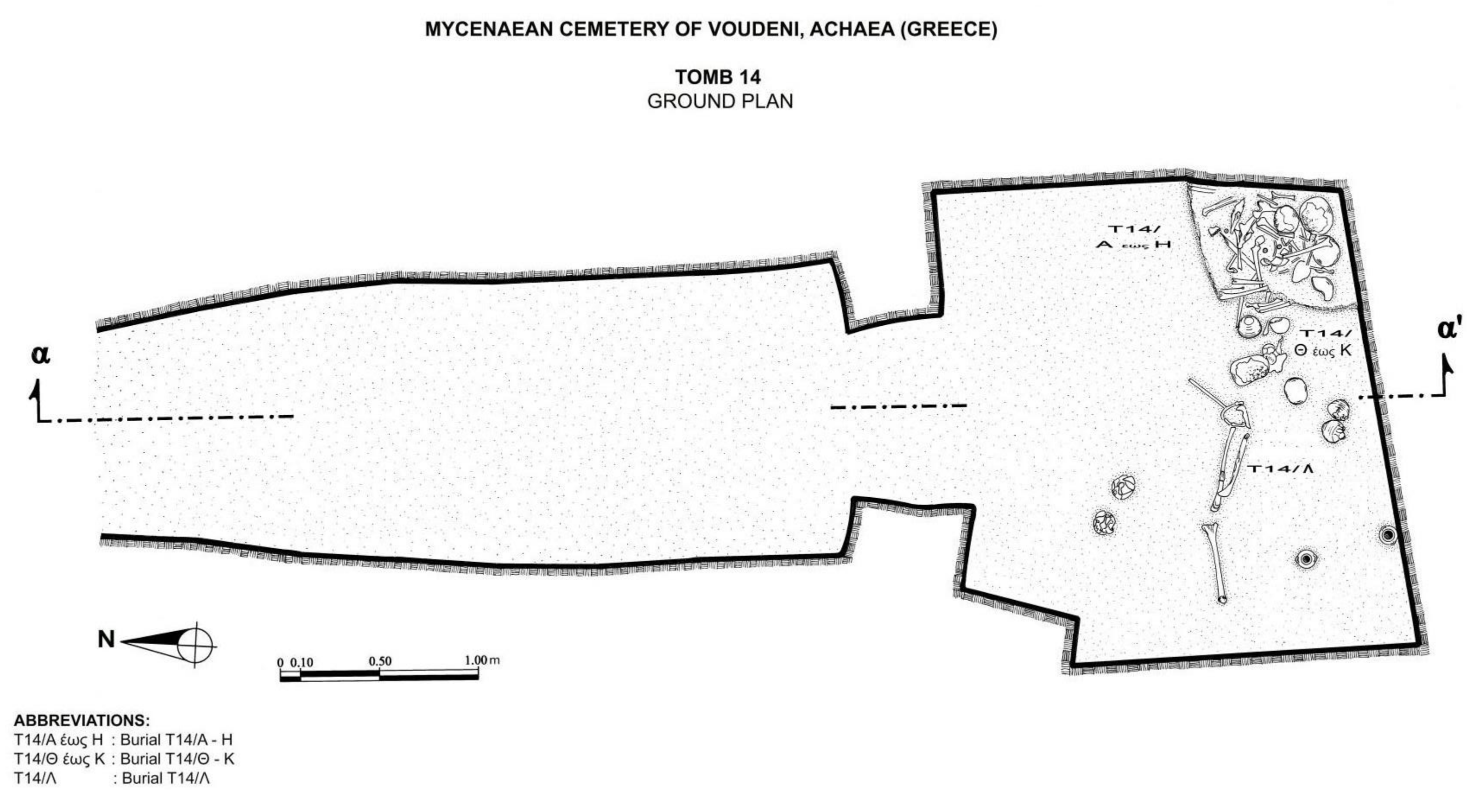


Figure 6.6.1. Tomb 14: ground plan (after Kolonas 1998, forthcoming).

Figure 6.6.2. Tomb 14: General view of the chamber from the north.

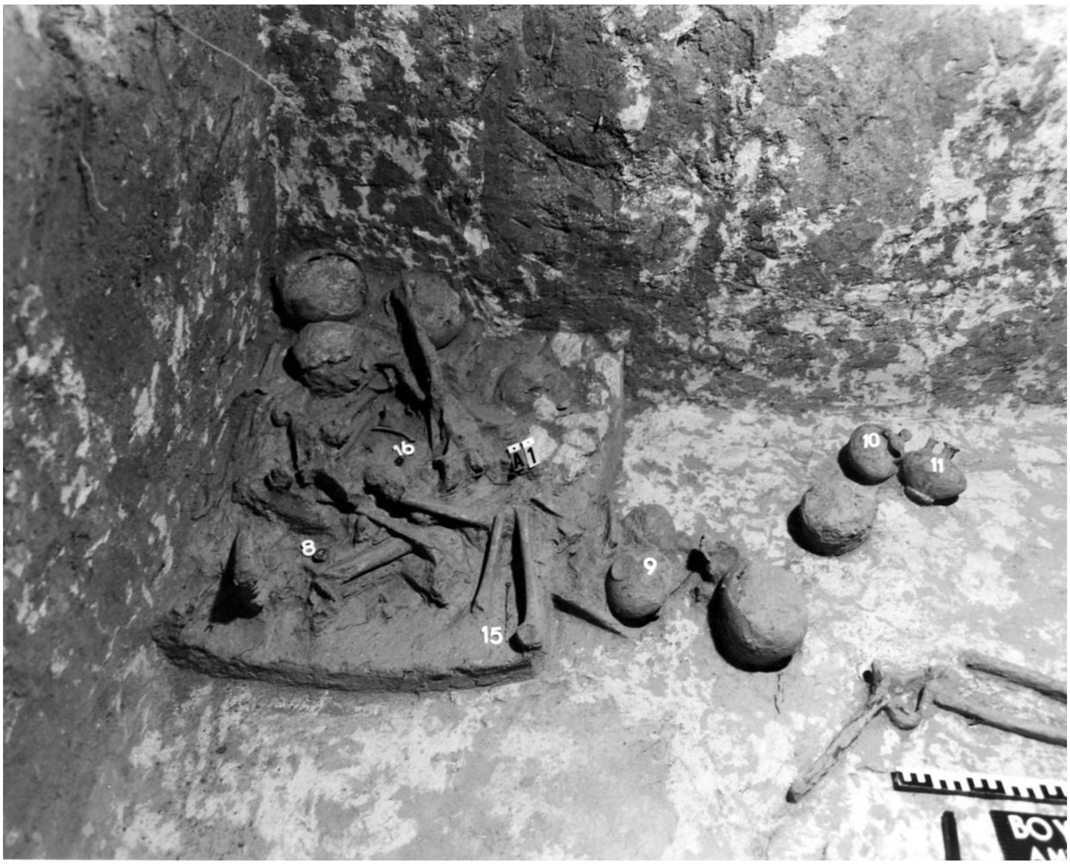


Figure 6.6.3. Burial T14/A-H at the SE corner, view from the north.

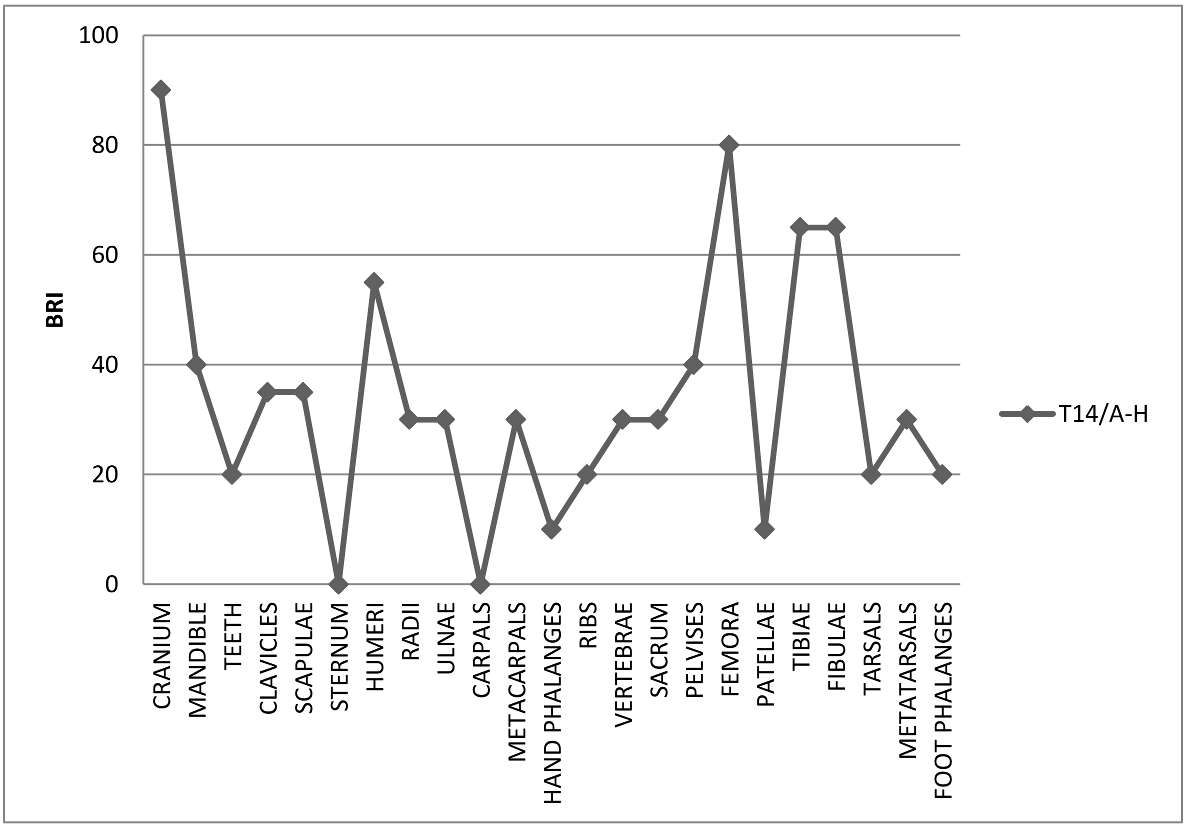
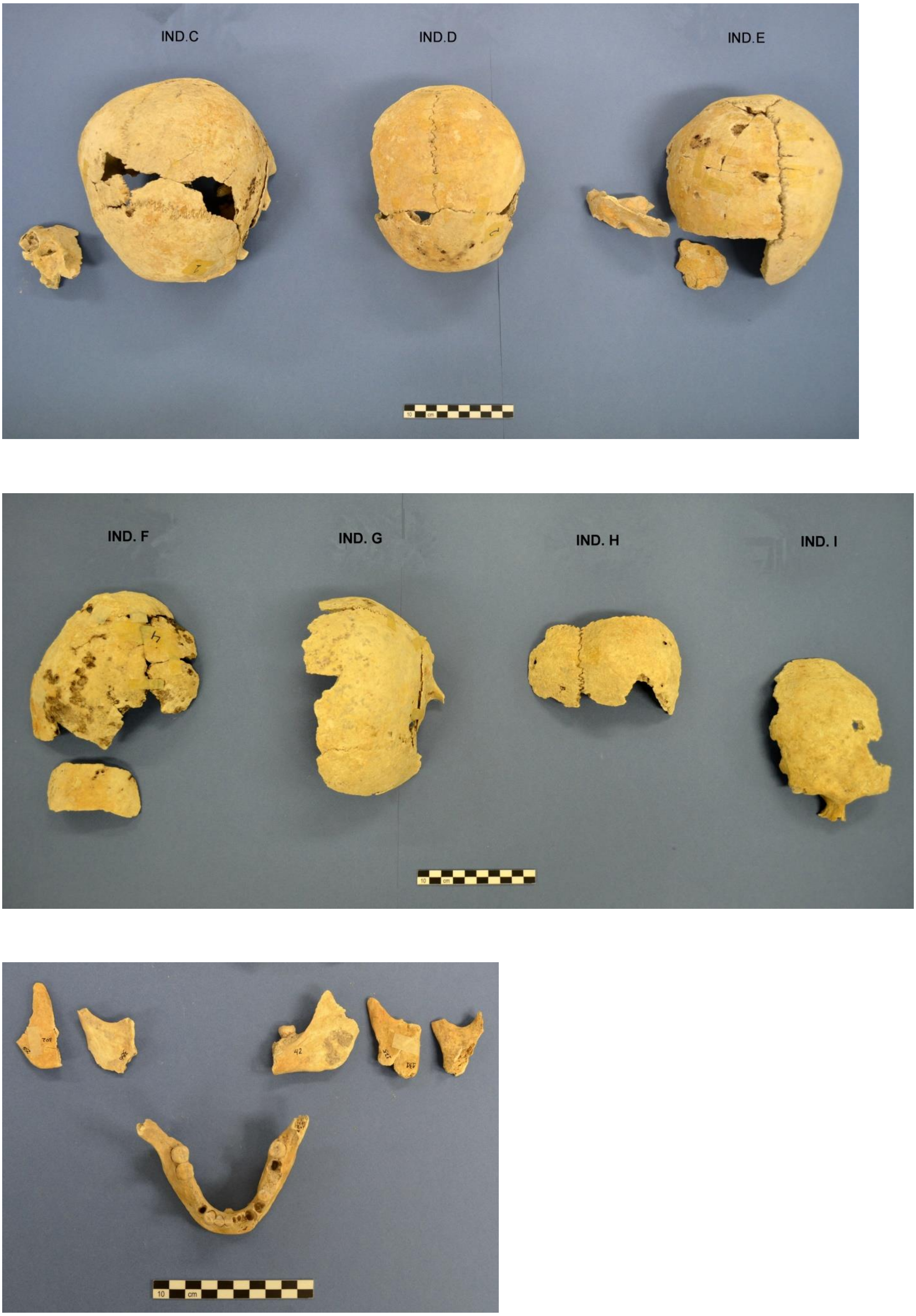


Figure 6.6.4. Tomb 14: Bone Representation Index (BRI) by tomb context.



Figures 6.6.5a-c. T14/A-H: Adult crania (top-middle, IND. C-I) and mandibles (bottom).

Figures 6.6.6. T14/A-H: Post-cranial immature bones. IND.A (left) & IND. B (right).

6.7 TOMB 15

6.7.1 Tomb 15: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 15, located at the middle terrace of the hill, is exceptional because of its unfinished chamber (Figures 1.4 and 6.7.1; further information: Table 7.1). Even though the dromos was completed and the stomion was formed, the cutting of the chamber stopped abruptly, most likely because of rock unsuitability. The irregular space that was used instead of a chamber covered an area of c.1m^2 (height: 1m) and contained a small quantity of disarticulated human remains. The entrance was closed with a dry wall. No grave goods were placed with the bones; a broken sub-Mycenaean globular amphora (T15/1, FS:69) was found in the dromos filling. Unfortunately, no photographic documentation of the chamber's excavation was available.

6.7.2 Tomb 15: Osteological results

The skeletal assemblage comprised a rather small bone quantity. The material was well preserved in terms of completeness, while it showed moderate to poor surface condition (Table 6.7.1). The bones were brittle, showing increased evidence of recent root and fungal effects (Figure 6.7.2). The MNI was 4, with partial and diverse bone representation; the most conspicuous elements (long bones and crania) were in general well-represented, while other bones were only minimally represented or absent (Figures 6.7.3 and 6.7.S1-S5).

Table 6.7.1. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			PRESERVATION				MNI	
				COMPLETENESS		SURFACE			
TOMB CONTEXT	IDENTI FIED	TOTAL	TEETH	DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS	MNI	Max. occ. skeletal element
T15	69	86	0	1	1	3	3	4	Femur
TOTAL	**69**	**86**	**0**					**4**	Femur

The small MNI of this tomb permitted a successful segregation process (for major elements); two to three pairs were identified in most long bone groups, while individuation was possible due to distinct morphological differences between the different cases. Several long bones were segregated between one male (IND.A) and two females (IND.B-C), but only female crania were preserved (Table 6.7.2; Figures 6.7.4-5). The presence of a fourth, sub-adult, individual (IND.D) was solely attested by an immature femoral shaft, aged at approximately six months (Figure 6.7.S6).

Table 6.7.2. Tomb 15: Basic osteological information by case (n=4) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON	STATURE (~ mm)	BASED ON	
T15 - IND. A	COMMINGLED SECONDARY	M		AD				Pairs of femora, tibiae, fibulae; & tentatively: R+L radii and R ulna
T15 - IND. B	COMMINGLED SECONDARY	F		AD				R+L femora; uns. tibia; & tentatively: R humerus; R+L radii; L clavicle; cranium
T15 - IND. C	COMMINGLED SECONDARY	F		MA	Cranial sut.closure: 7 (39.4y)			Pairs of femora, tibiae, clavicles & tentatively R+L humeri; R radius; cranium
T15 - IND. D	COMMINGLED SECONDARY	-		INF I (6 mo)	Estimated diaphyseal length: femur c.120mm (6mo)			Femur (unsided)

6.7.3 Tomb 15: Bioarchaeological reconstruction of funerary activities

The MNI of 4 attested in Tomb 15 (including one adult male, two females, and one infant) is considered close to the original number of interments present in the tomb, as indicated by the high success of the individuation process. The placement, though, of these interments in Tomb 15 represents a unique case in the Voudeni sample: a secondary deposition of burials that were most probably originally placed elsewhere (at least some of them, see below). The BRI index and commingling analysis clearly indicated that this material consists of a selective collection of prominent bones from three adult individuals, with minimal fragmentary evidence of extraneous elements and a single infant bone. Even though surface preservation was only moderate, it was not extremely poor; in addition, the good level of completeness of the recovered material and lack of unidentified small fragments reject the possibility of natural decay as the sole cause for under-representation of other elements.

Whether these remains were originally placed here or elsewhere is a question we need to assess. The available floor space (area: $1m^2$) in the unfinished chamber was not sufficient to accommodate more than one adult primary burial (in contracted position), if empty. This favours the possibility that the bones were transferred from elsewhere. However, it is not possible to ascertain whether the tomb was exclusively used as a secondary locus –in the form of an ossuary–, or some of these interments (e.g., the most complete gracile female, IND.B) were primarily placed here and eventually relocated within this space while additional material was also brought in. The complete absence of loose teeth and small elements –not even from one individual– favours the former scenario; the assemblage most likely resulted from the selective secondary transfer of bones from other place(s), in one or more instances. In any case, the act of removal of prominent bones (including crania) from another tomb can be inferred, as well as the selective retention of these elements in Tomb 15.

The ceramic sherds found within the dromos fill indicate that the final act of this secondary deposition should be placed in the LHIIIC Late/Sub-Mycenaean period. However, the chronology of the bones is to remain indeterminate, since the lack of grave goods accompanying the skeletal remains precludes a secure date inference (cf. Table 7.X5).

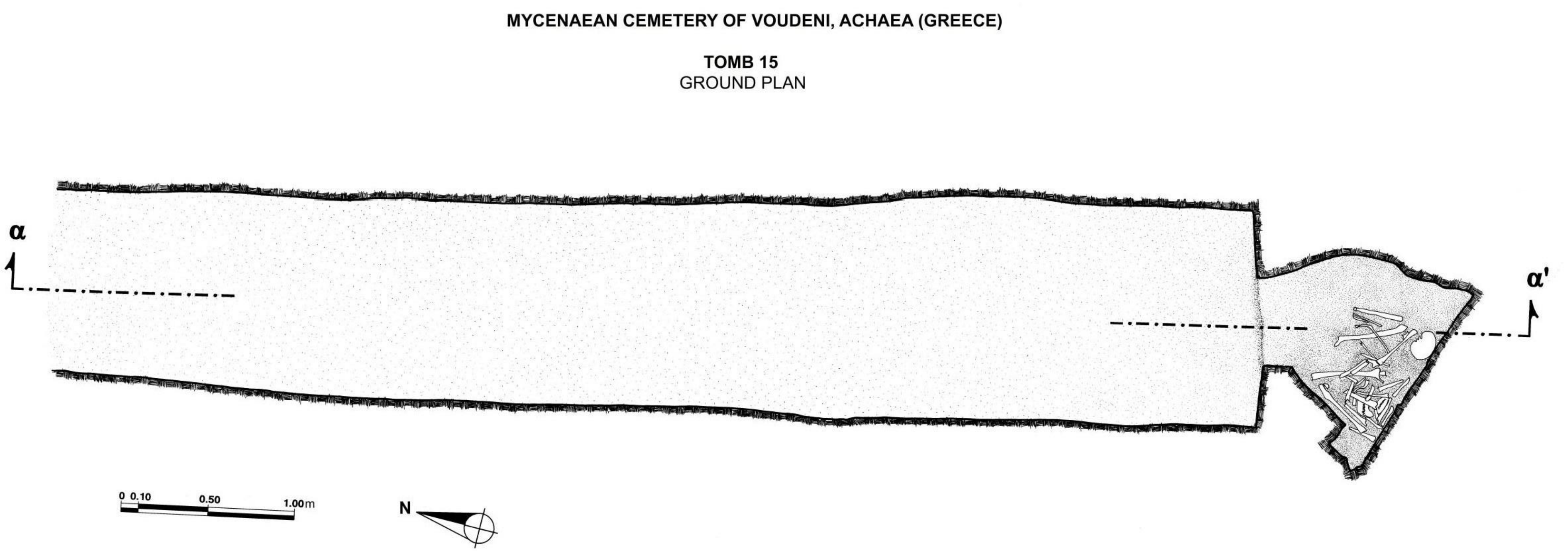


Figure 6.7.1. Tomb 15: ground plan (after Kolonas 1998, forthcoming).

Figure 6.7.2. Tomb 15: Pronounced evidence of taphonomic damage on right humerus, including root activity; anterior (top) and medial views (bottom).

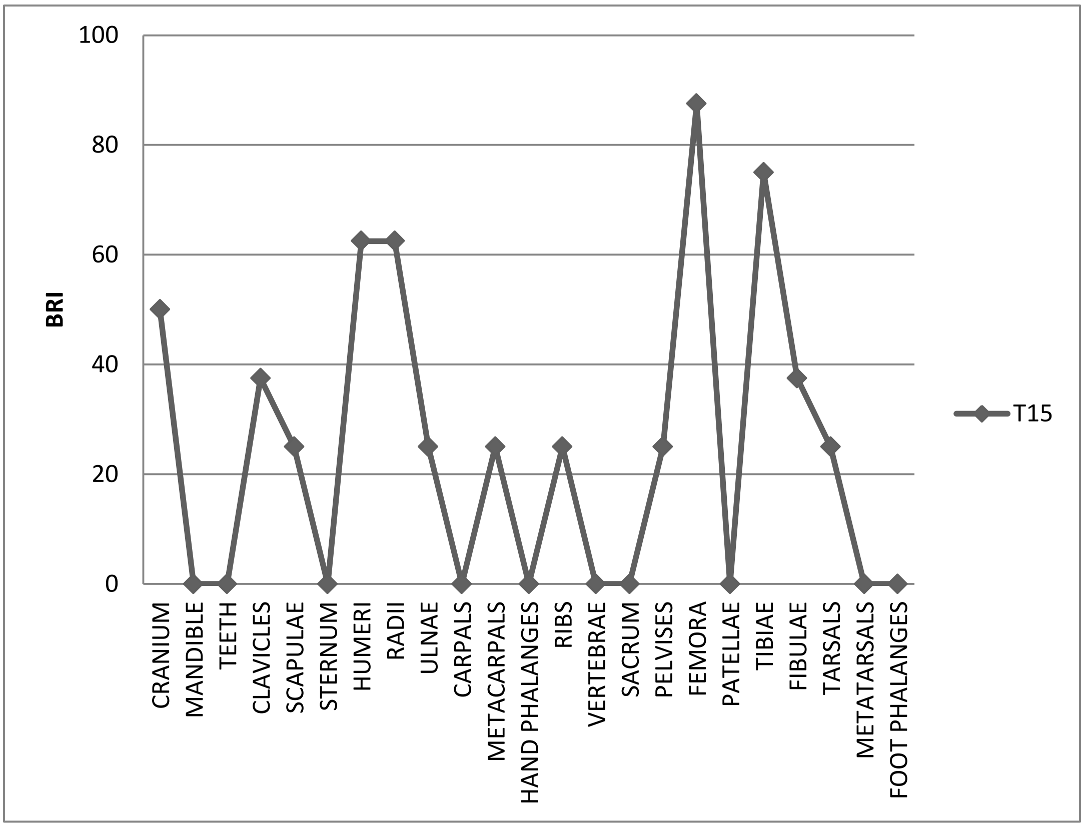


Figure 6.7.3. Tomb 15: Bone Representation Index (BRI).

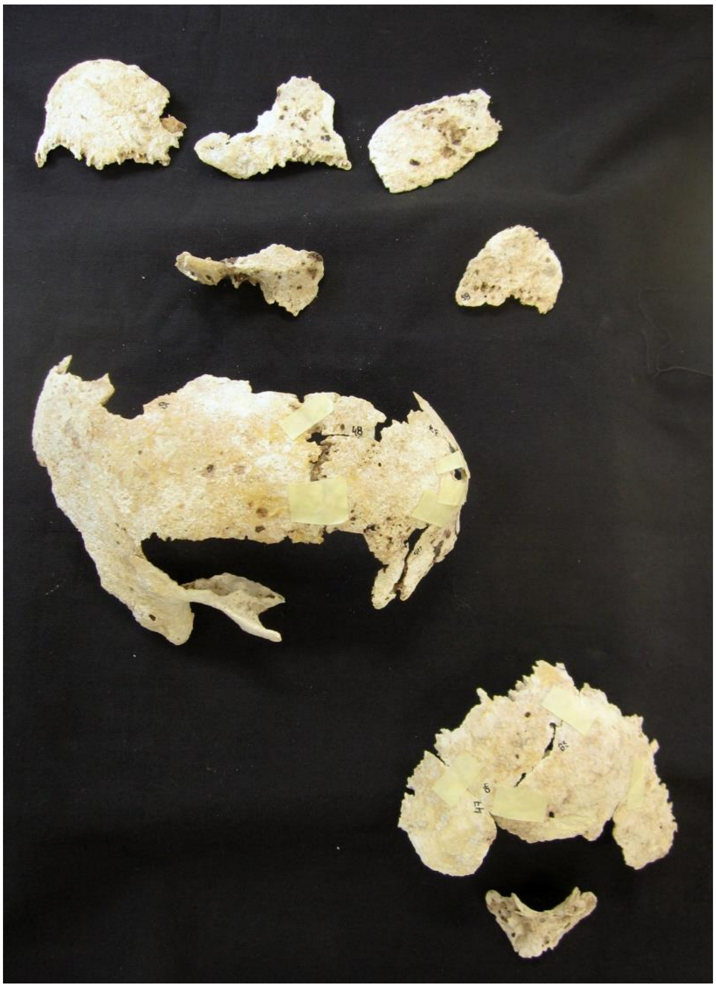


Figure 6.7.4. Tomb 15: Female IND.B cranial fragments.

Figure 6.7.5. Tomb 15: Female IND.C cranium, right lateral view.

6.8 TOMB 16

6.8.1 Tomb 16: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 16 is a quadrangular tomb of medium size, located at the base of the middle hill terrace (Figures 1.4 and 6.8.1a-c; further information: Table 7.1). Some partial rock collapse had occurred at the dromos, but the chamber was found with its roof intact. However, structural problems were evident in the form of a large transverse fault of the east chamber wall (visible in Figure 6.8.S1). Kolonas (1998) concluded that the damage was already present when the tomb was in use, permitting the accumulation of a large quantity of intrusive soil deposits and spalls which eventually covered the earliest tomb burial layer and necessitated the construction of a second upper floor for the next series of interments. The tomb showed evidence of long and continuous use, spanning the entire LHIII period. The upper burial layer contained two primary burials (T16/A and T16/B), and one secondary deposition of earlier interment(s) (T16/Γ). Within the sub-floor of the upper layer, two skulls (T16/Δ-E) were reportedly found (N.B. probably erroneously confused with context T16/N-Ξ, see below). The lower layer comprised a large secondary bone pile on the floor (T16/ΣT-M), and two smaller secondary deposits in pits (T16/O and T16/Π-Y). In addition, two isolated crania (T16/N- Ξ) were found between the two burial layers.

Upper burial layer:

Burial T16/A was a primary burial, placed in N-S orientation along the east wall; the body was described as placed on its right side, with skull facing west, lower limbs flexed and hands on pelvis (Figures 6.8.1a, 6.8.2). The skeleton was accompanied by three stirrup jars, a mug, and an *amphoriskos*, all dated to the LHIIIC Late period (Table 6.8.1). **Burial T16/B** was a disturbed primary burial, centrally located (Figures 6.8.1a and 6.8.S1). The skeleton was found in poor condition, especially the upper part, which was found very decayed preventing the identification of arm position; the skull was partially preserved and lower limbs almost completely decayed. The body orientation was S-N, with lower limbs flexed, rotated towards the east (right side of body). Several LHIIIC Late vessels accompanied this burial (Table 6.8.1). **Burial T16/Γ** was a secondary deposition (estimated as single at the time of discovery), in the form of a pile at south-west corner (Figures 6.8.1a and 6.8.3). The bones were accompanied by five LHIIIC Middle/Late stirrup jars and three clay buttons (Table 6.8.1).

Between the two layers:

Two vessels dated to LHIIIC Early and Middle/Late (T16/22-23) were found within the sub-floor of the upper layer. Kolonas (1998) also reported the find of two skulls (T16/Δ-E) in this deposit. However, the documentation of these skulls was unclear in excavation notebooks, and the reference was most likely due to a double entry of the skeletal material labelled as T16/N-Ξ (see below).

Lower burial layer:

The secondary deposition **T16/ΣT-M** was located along the east wall, in a large bone concentration extending north of and below T16/A (Figures 6.8.1b, 6.8.4, 6.8.S1). At the NE corner, a pile of at least eight fairly complete crania was located, commingled with other skeletal material in fragmentary condition. NE of the crania, a LHIIIA2 ring-handled cup (T16/24) was placed, while clay buttons (T16/34-36) and sherds of a broken LHIIIB2/LHIIIC Early stirrup jar (T16/37) were also found in this area. South of the pile of crania, along the east wall, a large bone quantity of predominantly long bones was placed in an 'orderly' manner, with long bones aligned N-S. Several LHIIIA2/LHIIIB and LHIIIB vessels (T16/28-31) were found in association with this assemblage, as well as two LHIIIC Early stirrup jars (T16/26-27), bronze pin and fibula (T16/25 and 38), one steatite button (T16/39) and three seal-stones (T16/51-53). From the entire T16/ΣT-M area, some glass plates (T16/40α-β) and carnelian and glass beads (T16/41α-41β) were also collected. Adjacent to the south wall, two more vessels were found, dated to the LHIIIA2-LHIIIB period (T16/32-33), in no evident association with skeletal material, while a few more buttons were collected across the floor of the east chamber (T16/42-44, Table 6.8.1).

At the opposite side of the chamber (SW), three isolated crania (**T16/N-Ξ)** were located, in proximity to one LHIIIC Early feeding bottle (T16/45) and one LHIIIC Middle/Late *amphoriskos* (T16/46). The crania are seen in Figure 6.8.3. The possible confusion with context T16/Δ-E is discussed below (cf. the separate drawing of one of the crania, Figures 6.8.1a-b).

Finally, two pits containing secondary deposits were located at opposing sides of the entrance (Figure 6.8.1c). **Pit I** (0.57x0.51x0.15m) was in the NE corner below the pile of T16/ΣT-M skulls. Pit I contained a secondary deposition **(Burial T16/O)**. Kolonas' (1998) description was brief, but in the excavation notebook the assemblage was described as including at least two skulls (N.B. one reported as removed before photographic documentation), with the most well-preserved placed centrally in the pit, adjacent to crossed long bones (Figure 6.8.5). Few glass beads and plates were found in the pit, as well as some sherds that Kolonas (1998) joined with fragments of T16/37 stirrup jar (found among the T16/ΣT-M pile of crania). **Pit II** (0.58x0.59x0.42m) was located towards the NW corner and included the secondary remains of at least five individuals (**T16/Π-Y),** based on the number of crania recognised at the time of the discovery (Figures 6.8.S2-S3). A LHIIIA2 rounded *alabastron* (T16/47) was placed on the upper pit layer; carnelian, glass, and shell beads (T16/48-50) were also found among the bones (Table 6.8.1).

Table 6.8.1. Tomb 16: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T16/A		T16/1	STIRRUP JAR	LHIIIC LATE	177	43:n
T16/A		T16/2	STIRRUP JAR	LHIIIC LATE	175	73:y, 75:36
T16/A		T16/3	STIRRUP JAR	LHIIIC LATE	175	
T16/A		T16/4	MUG	LHIIIC LATE	226	
T16/A		T16/5	AMPHORISKOS	LHIIIC LATE	59	48:5, 53:19
T16/B		T16/6	STIRRUP JAR	LHIIIC LATE	177	
T16/B		T16/7	AMPHORISKOS	LHIIIC LATE	62	
T16/B		T16/8	STIRRUP JAR	LHIIIC LATE	175	43:h
T16/B		T16/9	STIRRUP JAR	LHIIIC LATE	175	43:h
T16/B		T16/10	STIRRUP JAR	LHIIIC LATE	175	43:31
T16/B		T16/11	STIRRUP JAR	LHIIIC LATE	175	43:h
T16/B		T16/12	STIRRUP JAR	LHIIIC LATE	175	43:31
T16/B		T16/13	ASKOS	LHIIIC LATE	196	53:18
T16/Γ		T16/14	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	61:A5
T16/Γ		T16/15	STIRRUP JAR	LHIIIC MIDDLE-LATE	177	43:35
T16/Γ		T16/16	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	61:A5
T16/Γ		T16/17	STIRRUP JAR	LHIIIC MIDDLE-LATE	177	43:31
T16/Γ		T16/18	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	61:A5
T16/Γ		T16/19	CLAY BUTTON	LHIIIC		
T16/Γ		T16/20	CLAY BUTTON	LHIIIC		
T16/Γ		T16/21	CLAY BUTTON	LHIIIC		
UNCLEAR BONE ASSOCIATION	IN UPPER LAYER DEPOSIT	T16/22	STIRRUP JAR	LHIIIC MIDDLE/LATE	175	61:A5
UNCLEAR BONE ASSOCIATION	IN UPPER LAYER DEPOSIT	T16/23	SHALLOW ANGULAR BOWL	LHIIIC EARLY	295	
T16/ΣT-M	CLOSE TO SKULLS	T16/24	RING-HANDLED CUP	LHIIIA2	238	
T16/ΣT-M	CLOSE TO LONG BONES	T16/25	BRONZE PIN	LHIIIA2-LHIIIC EARLY		
T16/ΣT-M	CLOSE TO LONG BONES	T16/26	STIRRUP JAR	LHIIIC EARLY	173	53:7
T16/ΣT-M	CLOSE TO LONG BONES	T16/27	STIRRUP JAR	LHIIIC EARLY	173	
T16/ΣT-M	CLOSE TO LONG BONES	T16/28	ALABASTRON	LHIIIB	85	64:19
T16/ΣT-M	CLOSE TO LONG BONES	T16/29	ALABASTRON	LHIIIB	85	64:21

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T16/ΣΤ-Μ	CLOSE TO LONG BONES	T16/30	ALABASTRON	LHIIIB	85	41:6
T16/ΣΤ-Μ	CLOSE TO LONG BONES	T16/31	STIRRUP JAR	LHIIIA2-B	173	64:19
NO BONE ASSOCIATION	S WALL	T16/32	STIRRUP JAR	LHIIIB	180	18:135
NO BONE ASSOCIATION	S WALL	T16/33	PIRIFORM JAR	LHIIIA2-B	47	64:22
T16/ΣΤ-Μ	CLOSE TO SKULLS	T16/34	CLAY BUTTON	LHIII		
T16/ΣΤ-Μ	CLOSE TO SKULLS	T16/35	CLAY BUTTON	LHIII		
T16/ΣΤ-Μ	CLOSE TO SKULLS	T16/36	CLAY BUTTON	LHIII		
T16/ΣΤ-Μ	CLOSE TO SKULLS	T16/37	STIRRUP JAR	LHIIIB2 - LHIIIC EARLY	171	64:20
T16/ΣΤ-Μ	SOUTH OF LONG BONES	T16/38	BRONZE FIBULA	LHIII		
T16/ΣΤ-Μ	SOUTH OF LONG BONES	T16/39	STEATITE BUTTON	LHIII		
T16/ΣΤ-Μ		T16/40a	GLASS PLATES	LHIIIA - LHIIIC EARLY		
T16/ΣΤ-Μ		T16/40b	GLASS PLATES	LHIIIA/B - LHIIIC EARLY		
T16/ΣΤ-Μ		T16/41a	CARNELIAN BEADS	LHIIIA/B - LHIIIC EARLY		
T16/ΣΤ-Μ		T16/41b	GLASS BEADS	LHIIIA/B - LHIIIC EARLY		
NO BONE ASSOCIATION	CENTRAL/EAST CHAMBER	T16/42	BUTTON	LHIIIA - LHIIIC EARLY		
NO BONE ASSOCIATION	CENTRAL/EAST CHAMBER	T16/43	BUTTON	LHIIIA - LHIIIC EARLY		
NO BONE ASSOCIATION	CENTRAL/EAST CHAMBER	T16/44	BUTTON	LHIIIA - LHIIIC EARLY		
T16/Ν-Ξ	SW CHAMBER	T16/45	FEEDING BOTTLE	LHIIIC EARLY	162	53:17
T16/Ν-Ξ	SW CHAMBER	T16/46	AMPHORISKOS	LHIIIC MIDDLE-LATE	59	41:7
T16/Π-Υ	**PIT II**	T16/47	ROUNDED ALABASTRON	LHIIIA2	85	61A:1
T16/Π-Υ	**PIT II**	T16/48	CARNELIAN BEADS	LHIIIA2		
T16/Π-Υ	**PIT II**	T16/49	GLASS BEADS	LHIIIA2		
T16/Π-Υ	**PIT II**	T16/50	SHELL BEADS	LHIIIA2		
T16/ΣΤ-Μ	SOUTH OF LONG BONES	T16/51	SEAL-STONE	LHIIIA - LHIIIC EARLY		
T16/ΣΤ-Μ	SOUTH OF LONG BONES	T16/52	SEAL-STONE	LHIIIA - LHIIIC EARLY		
T16/ΣΤ-Μ	SOUTH OF LONG BONES	T16/53	SEAL-STONE	LHIIIA - LHIIIC EARLY		

6.8.2 Tomb 16: Osteological results

Information on recovery/collection problems

The bone collection of Tomb 16 faced recovery problems, as the contents of some contexts differed from Kolonas' (1998) description. With the aid of the original documentation (notebook, plans, photographs), it was possible to clarify these problems and evaluate the extent of possible interpretive bias, ultimately allowing the secure inclusion of Tomb 16 in this study. All issues are analytically enlisted here in order to prevent confusion with Kolonas' (1998) text (N.B. the text to be revised in Kolonas forthcoming).[49]

a) In Kolonas (1998), two sets of crania were mentioned within the soil deposit between the two burial floors: T16/Δ-Ε (vaguely referred to) and T16/Ν-Ξ (specifically reported as located at the SW corner). This was most likely due to erroneous double entry of the same material. In the excavation notebook, as well as in drawing and photographic documentation, a set of *three* crania was recorded in the SW part of the chamber. Therefore in this study, the context T16/Δ-Ε is crossed out and T16/Ν-Ξ is classified as one secondary context in the category scattered/isolated remains, which contains three crania.

b) The three crania (T16/Ν-Ξ) were not collected as a separate bone group but included in the group of T16/Γ (i.e. the secondary assemblage in close proximity). The distinct discrepancy in bone frequencies of T16/Γ group and the identification of the skeletal material on a close-up of Figure 6.8.3 permitted the secure assignment of the three crania in context T16/Ν-Ξ (*skulls AB, AC, AD*, see below).

c) The description of Pit I (T16/O) in Kolonas (1998) referred to a probably single secondary deposition, referring to the finds of the lower pit layer (cf. Figure 6.8.5) but omitting at least an extra cranium and other bone fragments mentioned in the notebook. (N.B. the latter could comprise intrusive material from T16/ΣΤ-Μ deposit that was over Pit I, see below). T16/0 bone collection included the extra

[49] Additional notes on original labelling (used in initial excavation documentation, including original group tags): Final T16/A was originally 'Burial B' (Σ2); final T16/B was 'Burial A' (Σ1); final T16/Γ was '*Anakomidi* 1' (A1); final T16/ΣΤ-Μ was '*Anakomidi* 2' (A2); final T16/O (Pit I) was '*Anakomidi* 4 in pit 2' (A4 *λάκκος 2*); and final T16/Π-Υ (Pit II) was '*Anakomidi* 3 in pit I' (*λάκκος 1*).

remains, indicating a full recovery of the pit skeletal material, albeit not segregated between upper and lower layers.

e) There is at least one identified case of missing skeletal material from the final bone collection albeit present at the time of discovery: the cranium of T16/A main skeleton (Figure 6.8.2). The cranium can be clearly seen in close-up of the excavation photo and it was not located in T16/A bags, not in any other group. Its condition did not appear in photo so poor as to suggest complete destruction at the time of removal, therefore its absence should be attributed to some post-excavation error (e.g., during cleaning or UoA Biological Department preliminary study). Evidence for limited recovery loss was also noticed in T16/ΣT-M bone group: some bones showed modern (excavation) fractures but joining fragments were missing. Finally, from the five documented cases in Pit II only three crania were found in the bone group, the other two probably too decayed to survive recovery.

The osteological results

The total skeletal material comprised a large quantity of bone, in a diverse state of preservation that varied between the different contexts (Tables 6.8.2, Figure 6.8.6). The MNI of the tomb was 27; basic osteological information for all cases is given in Table 6.8.3.

Table 6.8.2. Bone quantity, state of preservation, and MNI by tomb context.

<table>
<tr><th></th><th colspan="3">NO OF BONE FRAGMENTS</th><th colspan="4">PRESERVATION</th><th colspan="2">MNI</th></tr>
<tr><th rowspan="2">TOMB CONTEXT</th><th rowspan="2">IDENTI FIED</th><th rowspan="2">TOTAL</th><th rowspan="2">TEETH</th><th colspan="2">COMPLETENESS</th><th colspan="2">SURFACE</th><th rowspan="2">MNI</th><th rowspan="2">Max. occ. skeletal element</th></tr>
<tr><th>DETAIL</th><th>CONCISE CLASS</th><th>DETAIL</th><th>CONCISE CLASS</th></tr>
<tr><td>T16/A</td><td rowspan="2">61</td><td rowspan="2">63</td><td rowspan="2">7</td><td>2-3</td><td>2</td><td>3-4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>T16/A extra scattered</td><td>3</td><td>3</td><td>3</td><td>3</td><td>1</td><td>femur</td></tr>
<tr><td>T16/B</td><td>9</td><td>9</td><td>0</td><td>1-2</td><td>1</td><td>4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>T16/Γ</td><td>75</td><td>99</td><td>6</td><td>c.3 divers e</td><td>2</td><td>4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>T16/ΣT-M</td><td>472</td><td>570</td><td>27</td><td>1-2</td><td>1</td><td>2</td><td>1</td><td>12</td><td>Cranium; femur</td></tr>
<tr><td>T16/N-Ξ</td><td>20</td><td>20</td><td>0</td><td>c.2 divers e</td><td>2</td><td>4</td><td>4</td><td>3</td><td>Cranium</td></tr>
<tr><td>T16/O (Pit I)</td><td>168</td><td>185</td><td>25</td><td>c.2</td><td>1</td><td>2-3</td><td>2</td><td>5</td><td>Cranium</td></tr>
<tr><td>T16/Π-Y (Pit II)</td><td>151</td><td>163</td><td>18</td><td>c.2 divers e</td><td>2</td><td>2</td><td>1</td><td>3</td><td>Cranium</td></tr>
<tr><td>TOTAL</td><td>956</td><td>1109</td><td>83</td><td colspan="4"></td><td>27</td><td>Cranium; femur</td></tr>
</table>

Table 6.8.3. Tomb 16: Basic osteological information by case (n=27) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T16/A	PRIMARY	M	Femoral metrics (& general robustness) Mandible: M Pelvis: sex?	PA	R aur: 4 (35-39y) Dental wear: 36-40y.	165	Femur	
T16/A – E2	SCATTERED/ISOLATED	NO		AD				
T16/B	DISTURBED PRIMARY	M?	Cranium (occipital): M	YA/PA	All observed cranial sutures open and minimally closed (<MA)			
T16/Γ – IND.A	SINGLE SECONDARY	F	Pelvis; LB metrics	MA	R aur: 5-6 ; R pub: 4-5 (40-49y)	150	fibula	Pairs of humeri, ulnae, radii, femora; L tibia; L fibula; R+L scapulae; some ribs + vert; some hand/foot bones; skull (includ. mandible)
T16/ΣT-M – IND.A	COMMINGLED SECONDARY	F?	cranium	PA	Cranial sut. closure: 6 (34.7y)			cranium
T16/ΣT-M - IND. B	COMMINGLED SECONDARY	F	cranium	PA	Cranial sut. closure: 4 (34.7y)			cranium
T16/ΣT-M - IND. C	COMMINGLED SECONDARY	M	cranium	MA	Cranial sut. closure: 14 (45.2y)			cranium
T16/ΣT-M - IND. D	COMMINGLED SECONDARY	F	cranium	PA	Cranial sut. closure: 6 (34.7y); Dental wear: 22-32y.			cranium
T16/ΣT-M - IND. E	COMMINGLED SECONDARY	M?	cranium	MA	Cranial sut. closure: 7 (39.4y)			cranium
T16/ΣT-M - IND. F	COMMINGLED SECONDARY	?	cranium	PA	Cranial sut. closure: 6 (34.7y)			cranium
T16/ΣT-M - IND. G	COMMINGLED SECONDARY	M	cranium	MA	Cranial sut. closure: 8 (39.4y)			skull (includ. mandible)
T16/ΣT-M - IND. H	COMMINGLED SECONDARY	F?	cranium	MA	Cranial sut. closure: 14 (45.2y)			skull (includ. mandible)
T16/ΣT-M - IND. I	COMMINGLED SECONDARY	F	cranium	YA	All observed cranial sutures open (<PA)			cranium
T16/ΣT-M - IND. J	COMMINGLED SECONDARY	M	cranium	AD				cranium

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T16/ΣT-M - IND. K	COMMINGLED SECONDARY	M	cranium	AD				cranium
T16/ΣT-M - IND. L	COMMINGLED SECONDARY	F?	cranium	AD				cranium
T16/N-Ξ - IND. A (SKULL AB)	SCATTERED/ISOLATED	F	cranium	MA	All observed cranial sutures closed, some obliterated (>PA)			
T16/N-Ξ - IND. B (SKULL AC)	SCATTERED/ISOLATED	NO		AD				
T16/N-Ξ - IND. C (SKULL AD)	SCATTERED/ISOLATED	M	cranium	MA/OA	All observed cranial sutures closed/obliterated (>PA)			
16/O (PIT I) - IND. A	COMMINGLED SECONDARY	SA		CH II (9-11y)	Diaphyseal length: 8-9y (after femur, humerus, clavicle) Degree of epiphyseal union: unfused glenoid & ischium: <11y; Stage of dental eruption: 12y. (+/-30mo) Dental wear: 10-13y.			All LB pairs (exc.fibula) R+L scapulae; L ischium; L calcaneus Mandible (& tentatively cranial frs)
16/O (PIT I) - IND. B	COMMINGLED SECONDARY	SA		INF II (2-3y)	Diaphyseal length: 1.5-2y (fem+hum); Dental formation: I^2: Cr_c (3y +/-12mo)			R+L humeri; R+L femora; L tibia; rib; cranial fragments; mandible
16/O (PIT I) - IND. C	COMMINGLED SECONDARY	M	cranium	YA/PA	All observed cranial sutures open or minimally closed (<MA)			cranium
16/O (PIT I) - IND. D	COMMINGLED SECONDARY	F	cranium	YA	All observed cranial sutures open (<PA)			Cranium (and tentatively mandible; and pairs of fem+ tib)
16/O (PIT I) - IND. E	COMMINGLED SECONDARY	F	cranium	YA/PA	All observed cranial sutures open or minimally closed (<MA)			cranium
T16/Π-Y (PIT II) - IND. A	COMMINGLED SECONDARY	F	Pelvis; skull; LB metrics	MA	R aur: c.5 ; L pub: 5- (38-48y) Cranial sut.closure: 1 (<MA)	149	Hum; rad	all LB pairs; R+L pelves & scapulae; vertebrae; some ribs; Some MC; many tarsals & MT Skull (includ. mandible)
T16/Π-Y (PIT II) - IND. B	COMMINGLED SECONDARY	?	cranium	MA	Cranial sut. closure: 9 (39.4y)			cranium
T16/Π-Y (PIT II) - IND. C	COMMINGLED SECONDARY	F	cranium	PA	Cranial sut. closure: 5 (34.7y)			cranium

Burial T16/A: This group comprised the remains of primary burial T16/A, as well as a few extra bones from earlier interments, finally classified separately as 'T16/A extra scattered bones'. The recovered material from the main skeleton was moderately preserved in terms of completeness and poorly in terms of surface condition; weathering was quite distinct, including some localised dark brown discolouration (indicative of fungal activity) and partial soil encrustations (Table 6.8.2; Figure 6.8.S4). Bone representation was good, even though several elements were attested as present only on the basis of very low raw frequencies. Small-sized bones (hand, foot, patellae) were completely missing, as well as the most fragile elements (sternum, ribs), in a pattern consistent with commonly expected taphonomic and recovery loss (Figure 6.8.6).[50] The burial position could not be fully examined, since only the upper body was photographed *in situ* with parts of it (e.g., right forearm) already removed; in combination with the plan, though, the original description of burial position was confirmed. The skeleton belonged to a prime adult male (Table 6.8.3).

A few extra bones, belonging to remains of at least two earlier interments, were also recorded; they included fragments of one left and two right (possibly female) femora, an unsided tibia and a left humerus (the latter possibly sub-adult). These bones contributed one adult case of indeterminate sex to the total tomb MNI, classified as a separate context (Tables 6.8.2-3). Since analytical field recording was lacking, it was not possible to determine whether this extra bone material comprised scattered remains from (upper floor) interments previously occupying the area of T16/A or it was part of the earlier secondary assemblage T16/ΣT-M that was lying in close proximity (cf. Figure 6.8.2).

Burial T16/B: The remains of this disturbed primary burial were almost completely decayed at the time of discovery (Figures 6.8.3 and 6.8.S1). Bone representation was extremely low for a primary burial (Figure 6.8.6); only nine bone fragments survived into final collection (including the partially preserved cranium and right humerus, left ulna and unsided femur). The bones were in diverse levels of completeness, and surface condition was extremely poor (Table 6.8.2; Figure 6.8.S5).

[50] As mentioned above, T16/A cranium was missing due to post-recovery error but its presence was positively attested in excavation photos; hence, it was included as present in the BRI graph of the context.

Even though the remaining skeleton was too decayed to be recovered, the outline of lower limbs was discerned in the excavation photo confirming the burial position as described by the excavator. The identification of lower limbs at the time of discovery also allowed the positive increase of the total MNI of the tomb (which was calculated on the basis of femora and crania, see below). The skeleton belonged to an adult, probably male (Table 6.8.3).

Burial T16/Γ: The MNI of T16/Γ bone assemblage was 2 (excluding the erroneously mixed T16/N-Ξ crania that were successfully segregated and separately recorded). However, except for an ulnar fragment and few fragments from a very gracile, possibly immature, cranium (*Skull AE*, poorly and partially preserved, Figure 6.8.S6*;* not increasing the total MNI of the tomb) all other bones could be attributed to one mature adult female (IND.A; Table 6.8.3, Figures 6.8.7a-b). The material displayed diverse completeness, mostly moderate to good, but it was very poorly preserved in terms of surface condition (Table 6.8.2). Most bones were covered by soil encrustations, while surface erosion and discolouration was often diverse even on the same bone; fragmentation, however, was not pronounced. These taphonomic effects reflect gradual and uneven covering of the material by intrusive soil deposits. BRI frequencies -estimated on the basis of the main individual- demonstrated very good representation of most parts of the skeleton (Figure 6.8.6), indicating a rather thorough transfer of the body into the secondary deposit. As observed in Figure 6.8.3, the material was randomly dispersed and completely disarticulated when deposited.

T16/N-Ξ: The crania were all poorly preserved but in diverse levels of completeness (Table 8.6.2). Careful examination of the skeletal material across close-ups of Figure 6.8.3 permitted the identification of the three crania, as follows (Figures 6.8.1a-b, 6.8.3; 6.8.S7-S9; Table 6.8.3):

a) T16/N-Ξ –IND.A (S*kull AB*) was the most complete cranium placed at north of the concentration), and belonged to a mature adult female.

b) T16/N-Ξ –IND.B (S*kull AC*) corresponded to the most decayed cranium at the southern end of the concentration. It was very fragmentary, preserving only parietal fragments, and belonged to an adult individual whose sex could not be determined.

c) T16/N-Ξ –IND.C (S*kull AD*) corresponds to the western cranium. The vault was in poor condition but fairly complete, and belonged to a male, at least of mature adult age at death.

Burial T16/ΣT-M: The secondary deposition along the east wall comprised a fairly large bone quantity, showing moderately good completeness and surface condition, especially for the majority of crania and long bones (Table 6.8.2; Figures 6.8.S10-S21). Several bones, however, displayed the characteristic dark brown localised discolourations, indicative of fungal activity and/or increased moisture effects. Fragmentation was evident but not extensive; some degree of recovery/post-recovery bias was confirmed since many fractures were modern but joining fragments were often missing. Joining fragments were identified between the T16/ΣT-M assemblage and Pit I (T16/O), a find expected due to the direct contact of the two contexts. The MNI of T16/ΣT-M was 17 (based on maximum occurrence of right femur); the BRI analysis of the context was conducted based on this number but only twelve cases contributed to the total tomb MNI, as maximum demographic information for the entire tomb was obtained on the basis of cranial (and not femoral) evidence (Table 6.8.3). Bone representation was diverse, with good values for the most prominent bones (crania, humeri, tibiae, and femora) but only moderate to poor representation for all other elements (Figure 6.8.6). The diverse bone representation (indicative of selective practice, see 6.8.3), impacted negatively the individuation process. Even though a significant number of bone pairs were found, it was not possible to securely re-attribute many skeletal elements to specific individuals.

Nonetheless, the high representation of crania allowed precise demographic assessment for twelve individuals. Eight cranial vaults were fairly complete (IND.A-H), while the remaining ones were very fragmentary (individuated based on maximum occurrence of frontal bone). The individual cases comprised an almost equal number of females and males of all adult ages (Table 6.8.3). Sex determination was fairly consistent with evidence provided from pelvic morphology (five females, three males) and femoral metrics (nine females, four males). The observed age ranges were also confirmed by pelvic and mandibular evidence. The presence of a single fragment from an immature fibula was also recorded; it was, though, insufficient to raise the total MNI, probably comprising a remnant of an earlier sub-adult interment, cf. T16/O).

Burial T16/O (Pit I): Modal preservation in Pit I bone assemblage was moderate to good both in terms of completeness and surface condition; completeness, however, was very diverse, with some bones only partially preserved (Table 6.8.2). As already mentioned, the documentation of this pit is problematic. The lack of a clear stratigraphic segregation of its contents from the overlying T16/ΣT-M apparently impacted their recovery and collection; in addition, a detailed stratigraphic description was lacking and Kolonas (1998) referred solely to the finds of the lower layer. A few instances of actual recovery errors were manifested: fragments collected in both groups displayed recent (excavation) fractures that were possible to join. The MNI of this group was six (four adults and two sub-adults, on the basis of mandibles and left femur), but only five cases could be added to the total tomb MNI (Table 6.8.3). Bone representation (on the basis of six) was inconsistent, showing marked discrepancies between the most prominent elements (crania, mandibles femora, tibiae) and the remaining ones (Table 6.8.6). Successful individuation was only possible for two cases of distinct age characteristics (IND.A-B), while only crania could be securely segregated between the three adults (Figures 6.8.S22-S25). The sub-adults included: IND.A, a 9-11-year-old, and IND.B, an older infant, 2-3-year-old. The adult cases were identified on the basis of three distinct crania, including one male (IND.C), and two females (IND.D-IND.E). IND.D (*skull* 2) was the cranium shown in excavation photo (Figure 6.8.5). Pairs of femora and tibiae also recognised in photo were identified among the skeletal material; the femora were sexed as female, rendering plausible that long bones and cranium in this cluster belonged in fact to the same individual.

Burial T16/Π-Υ (Pit II): The bone assemblage in Pit II was preserved in moderate (diverse) completeness and fairly good surface condition (Table 8.6.2); several bones displayed the characteristic discolouration of brown spots, same as in other contexts. As mentioned above, the five crania reported by Kolonas (1998) and documented in Figures 6.8.S2-S3 were not all recovered in the study bone collection of this group, which preserved only three crania. The MNI of this assemblage was 4 (after maximum occurrence of calcanei); on this basis, bone representation was moderate to poor for most elements (Figure 6.8.6), with only crania showing high values. Bone frequencies and individuation process suggested that only one individual was transferred into the pit fairly complete: IND.A, a mature adult female (Figures 6.8.8a-b; Table 6.8.3).

Through careful examination of photographic documentation across the recovered material, it was shown that her skull corresponded to the most complete skull of the lower pit layer, while her post-cranial bones were identified in both layers, rejecting any true stratigraphic separation between the two layers. Two more fairly complete crania were attributed to a) IND.B, a mature adult of indeterminate sex (one of the two crania seen in the upper pit layer); and b) IND.C, a prime adult female (Table 6.8.3; Figures 6.8.S26-S27; identified as the cranium placed next to IND.A skull in lower pit).

6.8.3 Tomb 16: Bioarchaeological reconstruction of funerary activities

The total MNI of the tomb was 27, comprising two primary burials and 25 individuals dispersed in various secondary contexts. The tomb demonstrated evidence of intense and continuous use throughout the entire LHIIIA period, with the vast majority of the remains being found in the lower layer, dated between LHIIIA2 and LHIIIC Early. The cases included two sub-adults and 25 adults of all ages, showing a slight female predominance (Table 6.8.3). Despite certain documentation and post-recovery problems that restricted some aspects of the analysis (fully addressed above), the contextual consideration of all bioarchaeological data allows the clarification of the broad outline of funerary sequence and of specific funerary choices.

According to the excavator, the initial burial layer was affected by taphonomic damage due to structural problems of the east wall; its disturbance by accumulation of spalls and intrusive soil deposits necessitated the construction of a new upper floor. Skeletal preservation confirmed these observations, with the bones showing evidence of gradual soil accumulation and increased moisture effects; in some cases, it was suggested that damage was already inflicted during the earlier exposure of bones, before their inclusion into the final secondary deposit. In addition to natural taphonomy, preservation patterns indicated that the composition of the secondary bone assemblages was also due to specific human choices (see below). The bones from the upper burial layer suffered from similar taphonomic damage which was more severely expressed. Certain characteristics (i.e. excessive moisture-related discolouration, partial soil encrustations, frailty and brittleness) were very reminiscent of the effects seen in bones exposed to raw clay contact in Voudeni tombs (cf. for example Tomb 4); this was particularly evident on T16/Γ main individual and mostly on the extremely decayed T16/B skeleton. Even though evidence of raw clay was not recorded at the time of excavation, it is plausible that some sub-floor of the kind was used for these last interments. Such hypotheses cannot, however, be confirmed without multi-disciplinary studies on the basis of soil micromorphology.

Ceramic evidence places the first use of the tomb in the LHIIIA2 period. The single context containing skeletal material in association only with that period was Pit II. Pit II (T16/Π-Υ) comprised the secondary deposition of at least five interments of that phase (based on documented cranial evidence at the time of discovery). The deposit clearly indicated an act of selective retention of crania, except for the single female individual (IND.A) who was re-deposited in a fairly complete state; in addition, some extraneous, small-sized elements (e.g., tarsals) were present, not necessarily placed here but possibly interred as by-products of a sweeping act mixed with the soil filling of the pit or even as later intrusions. Bones missing from this context should have been relocated within or removed outside the tomb (*or both*). That some of them (especially long bones) remained in the chamber and got finally included in the large secondary deposition T16/ΣΤ-Μ is probable, considering the fairly equal bone frequencies between crania and femora in the total tomb data. This find favours the possibility of bone dispersal and commingling between the different contexts. The date of Pit II construction and bone transfer should be placed between LHIIIB and LHIIIC Early at most, since LHIIIB material was found in T16/ΣΤ-Μ deposition but not in Pit II.

The other contexts of the lower burial layer (large pile T16/ΣΤ-Μ, Pit I, and the three isolated crania of T16/Ν-Ξ) comprised the remains of at least 20 individuals. The grave goods associated with T16/ΣΤ-Μ date the skeletal assemblage to all phases between the LHIIIA2 and the LHIIIC Early period. Even though the stratigraphic relationship of T16/ΣΤ-Μ and Pit I was not clearly described, it is evident that the construction and filling of Pit I predated the super-imposed concentration of T16/ΣΤ-Μ crania at the NE corner. The joining fragments of the broken stirrup jar T16/37 (dated to LHIIIB/C Early) as well as bone joints (of both old and recent fractures) between the two contexts suggest that the pit was unsealed, in actual contact with the floor pile; fragments of the same bone were mixed in both contexts in antiquity (old fractures' joints), but also the lack of a distinct separation apparently increased collection errors at the time of recovery (new fractures). Skeletal representation across photos of Pit I showed that the pit was possibly opened for the clustered deposition of prominent bones of a single female individual at the bottom (T16/O-IND.D), while it is unknown whether the extra material was added later on (during final arrangements of T16/ΣT-M) or at the same time. In any case, the extra material included the fairly complete re-deposition only of two sub-adults, while the remaining adult bones were inconsistent, showing a predominance of cranial fragments and femora, similar to T16/ΣT-M dominant pattern. The large number of interments (n=12) in T16/ΣT-M is clearly indicative of the gradual formation for this secondary deposit, since the chamber area was not sufficiently large to simultaneously accommodate twelve primary burials. BRI patterns demonstrated the selective retention of most prominent bones, especially skulls and prominent long bones such as femora; Kolonas' (1998) observation about their 'orderly' placement was confirmed by photographic documentation. Under-representation of other elements was equally observed in fragile but also denser bones, suggesting that bone removal to outside the tomb affected the final preservation in addition to natural taphonomy. Bone frequencies showed that femora in T16/ΣT-M were even more represented than crania; the latter, however, gave the highest MNI in the entire tomb, suggesting that some of the crania specially placed in other contexts (i.e. pits and T16/N-Ξ) may have belonged to individuals whose long bones were retained here.

The date of the final re-arrangement of the floor secondary deposits in the lower layer should be placed at LHIIIC Early or LHIIIC Middle at the latest, since intrusive soil deposits partially accumulated over it before the final LHIIIC Middle use of the new upper layer. It is worth noticing that all primary burials were removed at this stage. The construction of the upper floor should be dated to the LHIIIC Middle/Late, based on ceramic evidence of sub-floor finds (T16/22, 46) and T16/Γ single secondary deposit. Based on notebook descriptions and photographic documentation, we can see that the upper burial layer was made over accumulated soil deposits on top of the original floor but without being completely separated from it, especially in the east part (cf. Figure 6.8.2). For this reason, the extra remains discovered within the upper contexts (i.e. T16/A scattered and extra of T16/Γ) did not necessarily represent the first LHIIIC Middle burials, but could belong to earliest interments. The first securely identified LHIIIC Middle/Late burial was the T16/Γ female skeleton, transferred in the single secondary deposition along the west wall. After the secondary removal of this burial, the final two interments (T16/A and T16/B) were interred in the LHIIIC Late period. The sequence between them cannot be determined, but the central placement of T16/B and its close proximity to the entrance suggest that it was most likely the final interment. The analysis of preservation patterns suggested that the disturbance of this burial should be solely attributed to natural factors.

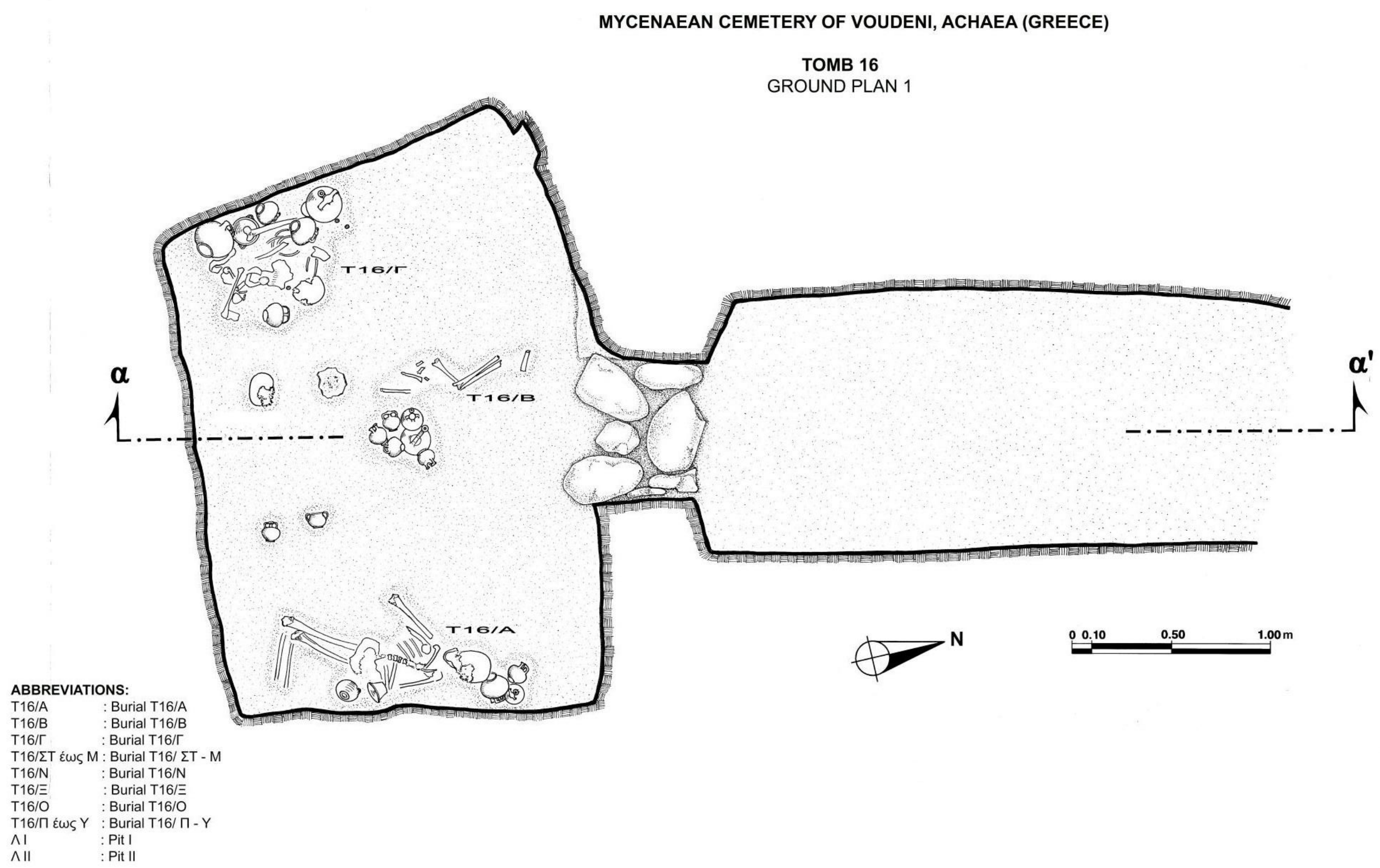


Figure 6.8.1a. Tomb 16: ground plan 1 (after Kolonas 1998, forthcoming).
Upper layer: Burials T16/A – T16/Γ (the northern skull of skull concentration T16/N-Ξ, located in lower level, also shown SE of T16/Γ).

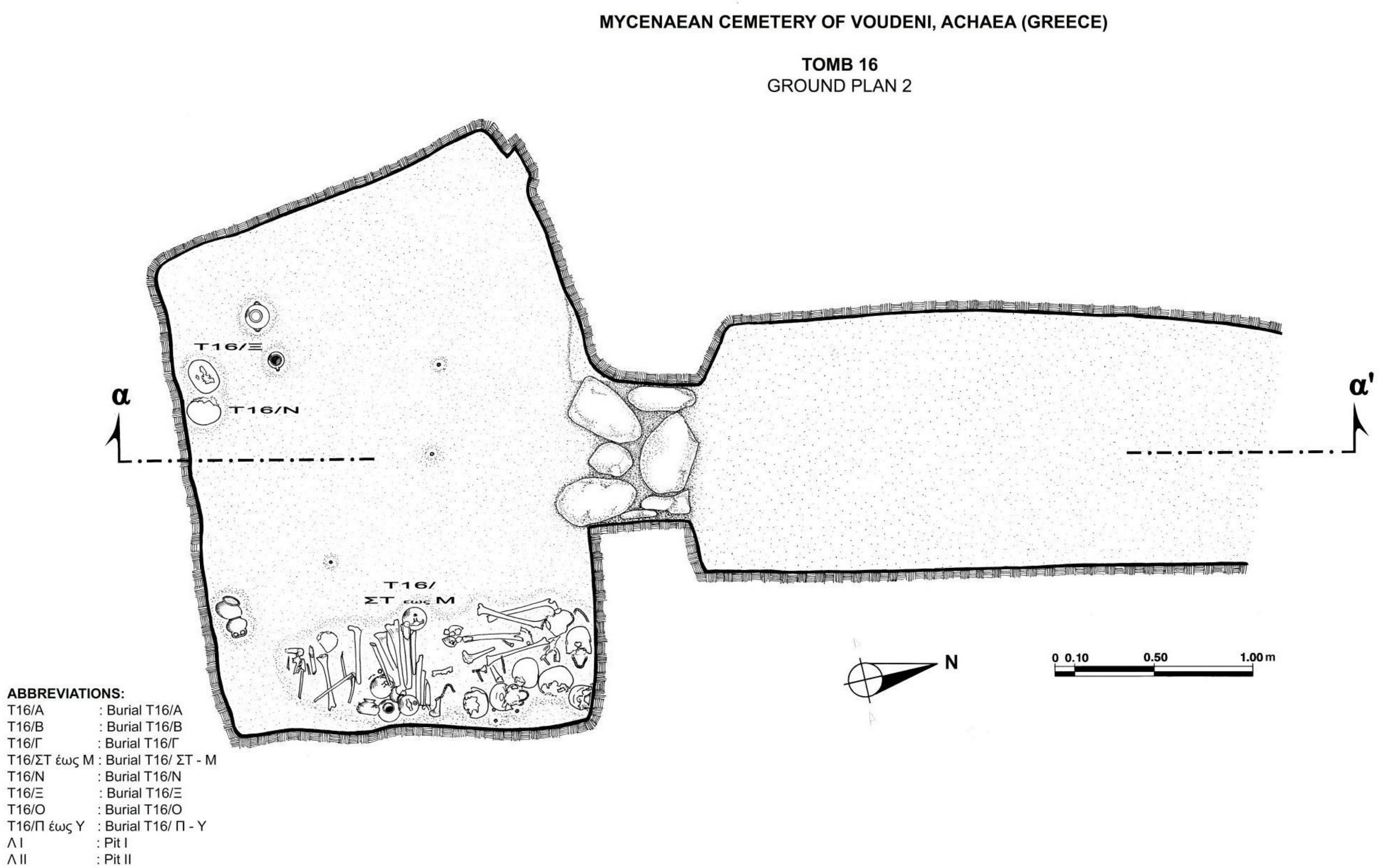


Figure 6.8.1b. Tomb 16: ground plan 2 (after Kolonas 1998, forthcoming). Lower layer: Burials T16/ΣΤ–Μ, T16/Ν-Ξ.

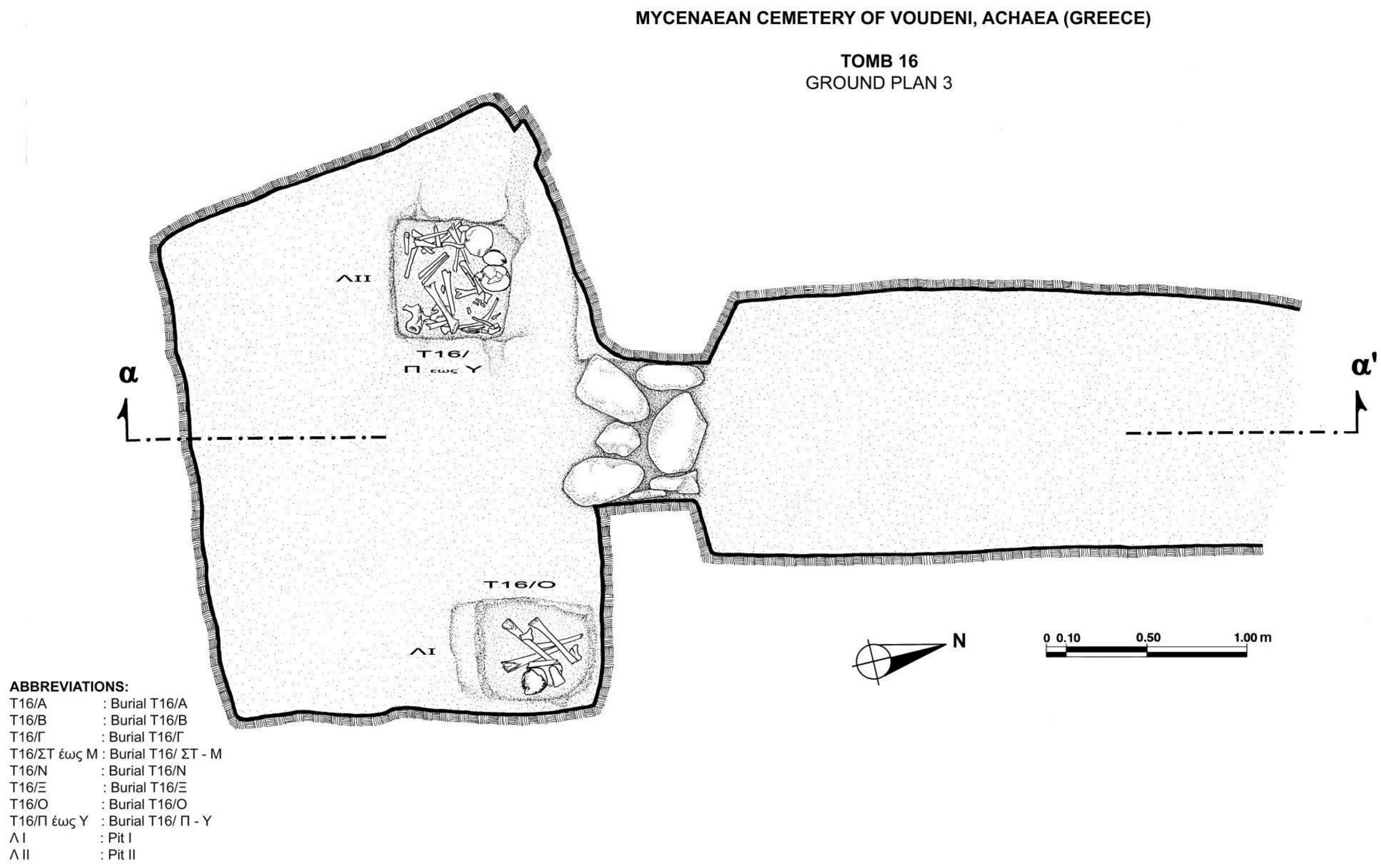


Figure 6.8.1c. Tomb 16: ground plan 3 (after Kolonas 1998, forthcoming). Pits in chamber: Burials T16/0 (Pit I) and T16/Π-Y (Pit II).

Figure 6.8.2. Burial T16/A (only upper body visible), view from the west; bones from T16/ΣT-M deposit also visible at the NE corner.

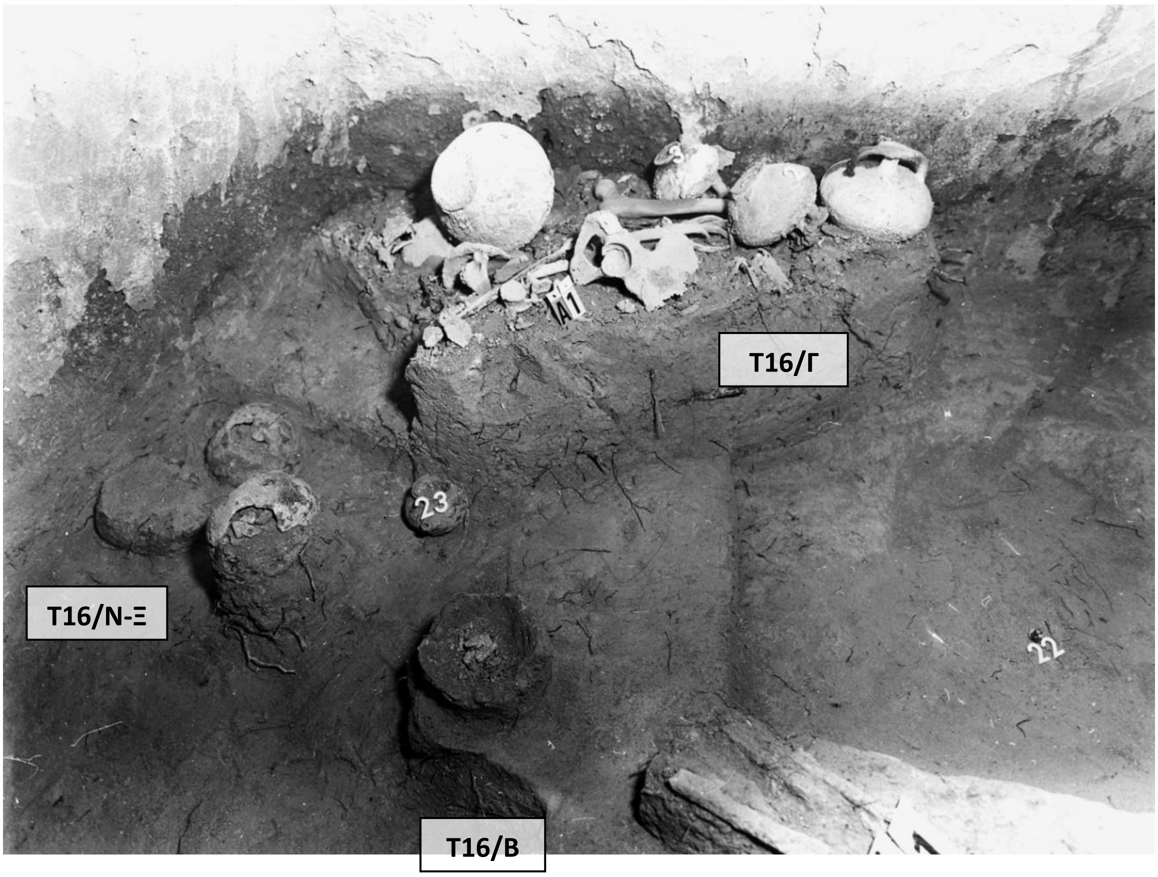


Figure 6.8.3. Burial T16/Γ on top, view from the east. T16/B fragmented cranium and long bones seen at centre-right; in lower level (at left), the concentration of crania T16/N-Ξ.

Figure 6.8.4. The secondary deposit T16/ΣT-M, view from NW.

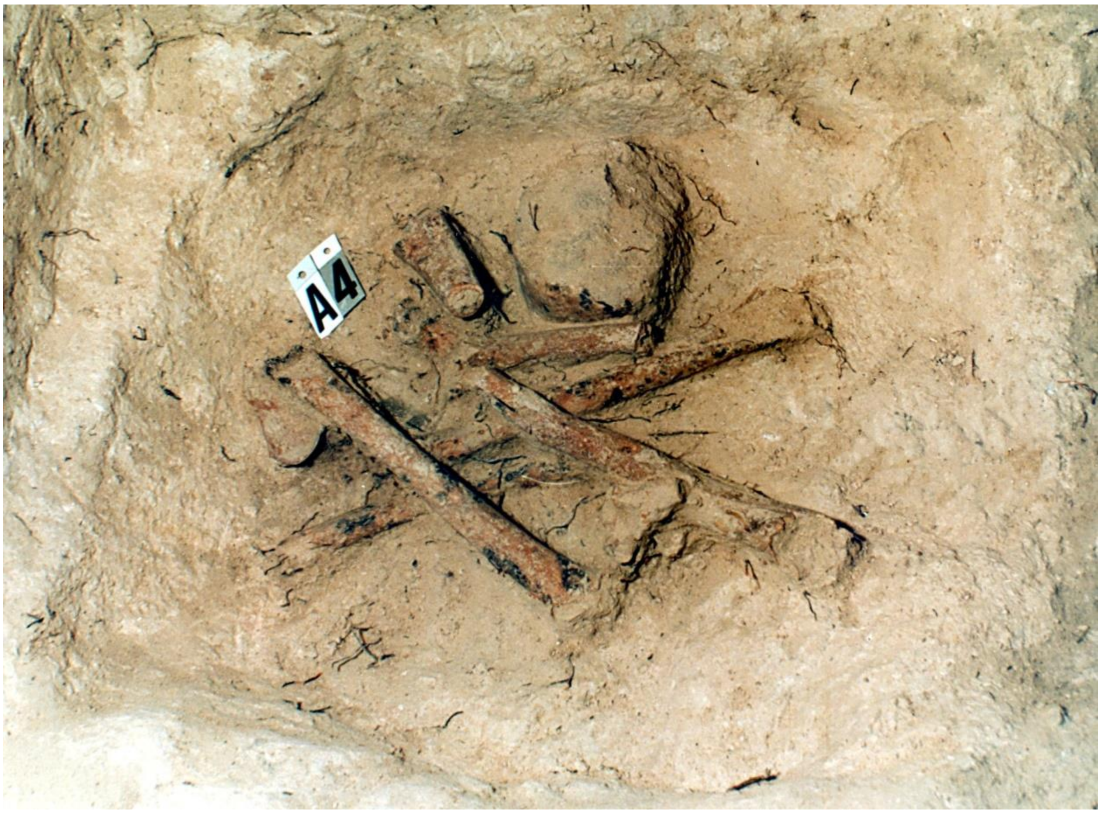


Figure 6.8.5. Burial T16/O (Pit I), view from the west; during excavation of lower layer.

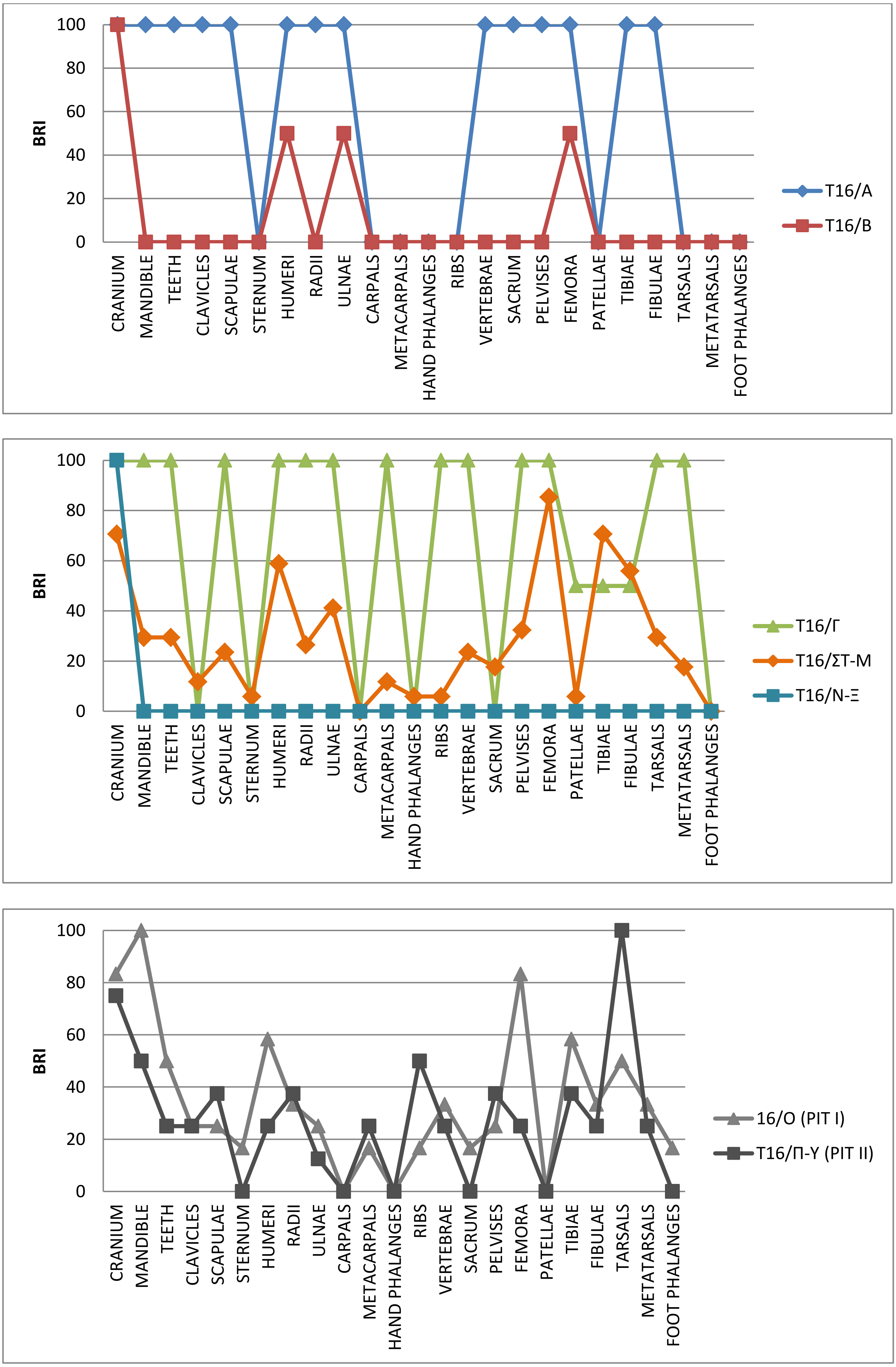


Figure 6.8.6. Tomb 16: Bone Representation Index (BRI) by tomb context.

Figures 6.8.7a-b. Burial T16/Γ-IND.A: long bones (top) and cranium (bottom).

Figures 6.8.8a-b. T16/Π-Υ –IND.A: Skull (bottom) and post-cranial bones (top).

6.9 TOMB 17

6.9.1 Tomb 17: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 17 is a small circular tomb, located at the south side of the hill, in a rather unusual E-W orientation (Figures 1.4 and 6.9.1a-b; further information: Table 7.1). The tomb was found below a modern road, the construction of which caused serious structural damage and collapse of both the roof and the walls of dromos and chamber, resulting in the accumulation of soil and rock debris over the floor. The tomb included a variety of burial contexts, indicating its intense and continuous use throughout the entire LHIII period.

Pit I was a large deep pit (1.02x1.70x1.35m) in the dromos end, immediately in front of the tomb's entrance (Figure 6.9.1a; N.B. the dry wall was founded partially over it). The pit contained the skeletal remains of at least 11 burials (as estimated at the time of discovery, **T17/A-K**), accompanied by one LHIIIC Early rounded alabastron and several LHIIIA2 and LHIIIB vessels, as well as clay and steatite buttons, two carnelian beads and bronze tweezers (Table 6.9.1). Inside the chamber, a LHIIIC Late stirrup jar (T17/12) was found west of the stomion, but all burials were placed in the east half of the chamber (Figures 6.9.1-2). **Burial T17/Λ** was placed at the rear part of the chamber, in NE-SW orientation, with the body on its left side (skull facing south), lower limbs flexed, and upper limbs on the chest (summary characteristics for all primary burials: Table 7.18). The burial was accompanied by an *amphoriskos* and a composite vase dated to the LHIIIC Early period. Just SW of T17/Λ, the disturbed primary burial **T17/M** was located. The original burial position could not be precisely determined since the long bones had been displaced (originally assumed because of the roof collapse); the skull and upper spine were, however, preserved *in situ*, partially placed over T17/Λ legs, indicating a SE-NW orientation. A steatite seal was found below the bones, but no vessels could be undoubtedly associated with this burial. Kolonas (1998) suggested that two LHIIIC Late stirrup jars (T17/19, found upside down, and 17/20) could possibly be associated with it; these were placed on top of Pit II covering slabs, south of T17/M and east of T17/N. **Burial T17/N** was the southern primary burial, placed along the south wall on top of Pit II covering slabs, in E-W orientation. The body was on its right side, with skull facing north, lower limbs flexed, right arm on chest and left hand on pelvis. Artefacts of different dates were found close to the skeleton: a LHIIIC Early/Middle *amphoriskos* (T17/21) was found east of the skull (below T17/20) and one LHIIIC Late jug (T17/22) adjacent to the mandible, while between the pelvis and the south wall, an inverted stirrup jar (T17/23), a lid (T17/24), another stirrup jar (T17/26), and a clay button were located, all dated to the LHIIIC Late; two additional clay buttons were found close to the lower limbs. Another set of three clay buttons (T17/16-18) that could not be precisely attributed to one of the burials were found over the most eastern covering slab (for details on all artefacts, Table 6.9.1). **Pit II** was a fairly deep pit along the south wall (0.28x1.45x0.72m), which was covered by stone slabs and contained the primary **Burial T17/Ξ** (Figure 6.9.1b). The skeleton was placed in NE-SW orientation, with the skull facing south. The burial position was unusual (see discussion below); the excavator described the left lower limb leaning on the south pit wall and the right one found strongly flexed below it, while the left arm was placed on chest, and right arm was found under the thorax. No artefacts were placed inside the pit.

Table 6.9.1. Tomb 17: List of artefacts by tomb context, including location, chronological and typological information.
(*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T17/A-K	PIT I	T17/1	BRONZE TWEEZERS	LHIIIA2-LHIIIC EARLY		
T17/A-K	PIT I	T17/2	ALABASTRON	LHIIIC EARLY	85	64:14
T17/A-K	PIT I	T17/3	STIRRUP JAR	LHIIIB	173(?)	18:126
T17/A-K	PIT I	T17/4	STIRRUP JAR	LHIIIB	173	27:19
T17/A-K	PIT I	T17/5	SMALL PITHOS	LHIIIA2	77	
T17/A-K	PIT I	T17/6	ALABASTRON	LHIIIA2	93	64:21
T17/A-K	PIT I	T17/7	ALABASTRON	LHIIIA2	94	57:2
T17/A-K	PIT I	T17/8	OSTRAKA OF SMALL PIRIFORM JAR	LHIIIB		
T17/A-K	PIT I	T17/9	CLAY BUTTON	LHIIIA2-LHIIIC EARLY		
T17/A-K	PIT I	T17/10	STEATITE BUTTON	LHIIIA2-LHIIIC EARLY		
T17/A-K	PIT I	T17/11	2 CARNELIAN BEADS	LHIIIA2-LHIIIC EARLY		
NO BONE ASSOCIATION	CLOSE TO STOMION	T17/12	STIRRUP JAR	LHIIIC LATE	177	61A:6, 43:h, 19:54
T17/Λ		T17/13	AMPHORISKOS	LHIIIC EARLY	59	48:5
T17/Λ		T17/14	KERNOS (COMPOSITE VESSEL)	LHIIIC EARLY		
T17/M		T17/15	STEATITE SEAL STONE	LHIIIC		
UNCLEAR BONE ASSOCIATION	BETWEEN T17/Λ-T17/N	T17/16	CLAY BUTTON	LHIIIC		
UNCLEAR BONE ASSOCIATION	BETWEEN T17/Λ-T17/N	T17/17	CLAY BUTTON	LHIIIC		
UNCLEAR BONE ASSOCIATION	BETWEEN T17/Λ-T17/N	T17/18	CLAY BUTTON	LHIIIC		
T17/M (POSSIBLY)		T17/19	STIRRUP JAR	LHIIIC LATE	175	43:h
T17/M (POSSIBLY)		T17/20	STIRRUP JAR	LHIIIC LATE	175	43:h
T17/N		T17/21	AMPHORISKOS	LHIIIC EARLY/MIDDLE	59	
T17/N		T17/22	PROCHOISKI (SMALL JUG)	LHIIIC LATE	115	
T17/N		T17/23	STIRRUP JAR	LHIIIC LATE	175	
T17/N		T17/24	LID	LHIIIC LATE	334	
T17/N		T17/25	CLAY BUTTON	LHIIIC LATE		
T17/N		T17/26	STIRRUP JAR	LHIIIC LATE	175	43:p, 48:5
T17/N		T17/27	CLAY BUTTONS	LHIIIC LATE		
T17/N		T17/28	CLAY BUTTONS	LHIIIC LATE		

6.9.2 Tomb 17: Osteological results

Information on recovery/collection problems

The recovery and collection of human remains from Tomb 17 did not face significant problems.[51] A collection problem was only encountered in the bone group of Burial T17/N, which comprised several extra bones in addition to the single skeleton seen in photographs and plans, inconsistent with the description of original notebooks and Kolonas (1998). The type and number of the extra remains (which was possible to segregate from the main skeleton, see below) made difficult to assume that they could have originated from the area of T17/N, representing scattered remains from earlier burials, without being noticed and reported. Although the inclusion of extra bones within primary assemblages is not rare, and a few such instances occur even in Tomb 17 (see below), the remains in question comprised fairly large and characteristic elements (such as fragments of three different mandibles), that made their omission from the excavation record rather improbable. The most likely explanation is that these extra bones belonged with Pit I deposit, erroneously mixed with T17/N bone group during post-excavation procedures (e.g., cleaning or preliminary osteological work by UoA Biological Department team, cf. 5.1); alternatively, they could belong with the other few scattered remains from the chamber deposits, erroneously mixed with this group at the time of discovery (but still unlikely not to have been reported). In conclusion, these extra bones can safely be attributed to earlier interments, either from Pit I or the chamber. In any case, their frequencies did not affect either the Pit's or the total MNI of the tomb; the bones were considered in synthetic analysis but excluded from BRI calculations since their provenance could not be specified.

The osteological results

The total bone assemblage comprised 980 bone fragments attesting to a large MNI of 19 (Table 6.9.2). Preservation varied between the different contexts, analytically discussed below. Basic osteological information for all cases is given in Table 6.9.3.

[51] N.B. The original labelling of all tomb contexts as described in notebooks and tags was as follows: T17/A-K (Pit I) was collected as "dromos secondary deposit" and Burials T17/Λ-Ξ as Burials T17/A-Δ respectively.

Table 6.9.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			**PRESERVATION**				**MNI**	
TOMB CONTEXT	IDENTI FIED	TOTAL	TEETH	COMPLETENESS		SURFACE		MNI	Max. occ. skeletal element
				DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS		
T17/A-K (PIT I)	552	590	90	1-2	1	1	1	15	Cranium (occipital)
T17/Λ	44	62	13	c.2	1	3	3	1	
T17/M	78	80	5	3	3	4	4	1	
T17/N	161	162	19	1	1	3	3	1	
T17/Ξ	86	86	27	1	1	1	1	1	
TOTAL	**921**	**980**	**154**					**19**	Cranium

Pit I in dromos (BurialsT17/A-K): Pit I included a significant bone quantity, with most skeletal elements fairly well preserved in terms of completeness and surface condition (Table 6.9.2; limited evidence of rodent gnawing and root marks was noticed). The material has suffered both old and recent (excavation) fragmentation, but mending of joining fragments was highly successful. Crania were exceptionally well-preserved (Figures 6.9.S1-S15:crania; 6.9.S16-S24:long bones). MNI was estimated as 15, based on cranial evidence and specifically the occurrence of occipital bone. Bone representation, however, was diverse, with all small-sized bones being under-represented or completely absent; only prominent long bones showed good BRI values, but yet not of the top range, reached only by cranial and mandibular elements (Figure 6.9.3). Due to the large MNI and lack of distinct age or morphological characteristics, the individuation success was limited. Even though several long bone pairs and some individual matches were identified, secure individuation of more than a few bones was not possible. Therefore, it was opted to assign the maximum number of cases to individuals as identified from cranial vaults (and matching mandibles where possible), avoiding weak associations with post-cranial elements (Table 6.9.3).

Since all crania, except for IND. M-O, preserved the largest part of the cranial vault offering sex and age information, the basic demographic parameters were established based on them in order to maximise consistency. The 15 adult cases included five females, two probable females, four males, one probable male, and three indeterminate individuals, spanning the entire adult age range (Table 6.9.3). Additional dental and pelvic ageing data was consistent with the cranial estimates. The presence of a very young female (late adolescent or very young adult) was attested by a pelvic fragment, possibly associated with an adolescent femur identified in the extra remains of bone group T17/N (see below). Finally, femoral metrics confirmed the presence of five females but raised male numbers to seven, indicating that possibly some of the sexually indeterminate cranial elements were actually male.

Burial T17/Λ: The skeleton of T17/Λ was fairly well-preserved in terms of completeness but only moderately as of surface condition (Table 6.9.2); several bones were covered by hard soil encrustations (e.g., skull in Figure 6.9.S25). Bone representation was good in general, but several small and fragile elements were missing, while even some of the denser or larger bones (e.g., clavicles, tibiae) were only partially represented (Figure 6.9.3); these BRI values indicated both taphonomic decay and some extent of recovery bias (the latter supported by the lack of small broken fragments and dense small-sized bones). The burial position was confirmed as originally described. Careful examination of photographic close-ups showed that some extent of skeletal fragmentation attested in the lab (on skull and upper limbs in particular), was present at the time of discovery. This should be attributed to the effects of rock collapses and the accumulated soil weight over the bones (notice old fractures on the cranium and slight compression of left parietal, Figure 6.9.S25). Further damage, however, occurred during recovery due to bone fragility, and many modern fractures were also recorded. The skeleton belongs to a very gracile young adult female (Table 6.9.3).

Burial T17/M: The skeletal material from T17/M was very fragmented, moderately to poorly preserved in terms of completeness and poorly in terms of surface condition (Table 6.9.2; Figures 6.9.S26-S27). The assemblage basically included the bones of one individual; however, an additional femoral fragment and two tarsal bones raised the MNI of this group to two, without affecting the total tomb's MNI. The extra remains obviously comprised scattered fragments of earlier interments, hence excluded from this group's BRI analysis which was performed on the basis of one individual in order to precisely evaluate the character of the main deposition. The BRI values of this assemblage were very good, with only the most fragile and very small-sized elements missing, consistent with the pattern of natural and recovery loss seen in Voudeni's intact primary burials (Figure 6.9.3). Kolonas (1998) had observed the preservation of semi-articulation in parts of the upper body (cf. 6.9.1), correctly classifying this burial as disturbed primary. Lacking though the osteological information, the disturbance was solely attributed to natural taphonomic damage caused by the roof collapse. Careful examination of the skeletal material across the burial position at the time of discovery (as seen in Figure 6.9.2) confirmed that parts of the burial, namely the skull and upper thorax, were indeed found *in situ*, but the long bones were not randomly dislocated but orderly placed in parallel to each other, assembled on the upper part of the body. This placement implies human action, a secondary re-arrangement rather than natural damage or accidental human disturbance (see further in 6.9.3). The main skeleton T17/M belonged to a young adult, probably male (Table 6.9.3).

Burial T17/N: As presented above, extra skeletal material was erroneously mixed in the same bone group with T17/N skeleton, and will be separately discussed below. The segregation of T17/N actual skeleton was facilitated by the distinct preservation of the remains (good completeness, moderately good surface condition, distinct yellowish colouration), and the comparison of skeletal material with the excavation photos (Figures 6.9.2 and Figures 6.9.S28-S29). As observed in the BRI graph (Figure 6.9.3), the skeleton was very well-represented, lacking only the usually non-recovered elements such as very fragile (e.g., sternum) and small-sized bones (e.g., hand phalanges). Despite the low quality of excavation photos, their cross-examination with the recovered bones allowed the clarification of T17/N burial position. The body was originally placed on its right side (not supine): the left upper side had collapsed to the ground after the soft tissue decay, as clearly indicated by the comparison of the two sides of the rib cage. The left upper limb was medially flexed on chest, while the right arm was parallel to the body with hyper-flexed elbow, resulting in the wrist lying close to the right shoulder). T17/N skeleton belonged to a prime adult male (Table 6.9.3).

The additional remains collected in T17/N bone group: The extra remains included several bone fragments[52] in moderate state of preservation, from at least three individuals. Some of these remains could be re-attributed to a gracile mature adult

[52] R+L humeri; 2R and 1L radii; 3 L ulnae; 2R+3L femora; 1L tibia; 1R+3 uns. fibulae; 1R+2L pelves; 1 sacrum; 1L scapula; few rib and vertebral fragments; 3 mandibles.

female (long bones, pelvis, lumbar vertebrae, and mandible), while the remaining bones could not be matched. Additional sex information was provided by femoral metrics and pelvic morphology, indicating the presence of another female and one male. Based on dental wear, the mandibles were attributed to two young adults; the group also included a distally unfused left femur of adult size, belonging to an adolescent, c. 15 years at the time of death. The bone frequencies of these elements considered across T17/A-K did not exceed the maximum MNI of Pit I, and were, thus, not included in the total cases of the tomb as extra cases. The sub-adult left femur was the only identified sub-adult element in Tomb 17, and could, thus, be used to raise the total MNI. Since, however, this individual was a late adolescent, it is possible that other elements from the same skeleton were included in Pit I cases but classified as young adult due to lack of a more precise age indication (for example, a female right pelvis of a late adolescent/young adult was found in Pit I, see above). For this reason, it was opted not to increase the total MNI of the tomb.

Burial T17/Ξ (Pit II): The primary burial of Pit II was very well preserved in all aspects, even though soil encrustations were evident on some bones (Table 6.9.2, Figure 6.9.4). Despite the minimal fragmentation and very good preservation, the most fragile and smallest elements were once again missing from the bone collection (i.e. sternum, patellae, phalanges, Figure 6.9.3), apparently suggesting some recovery bias, since Pit II was a safe context covered with slabs at the time of discovery. The lack of photographic documentation of T17/Ξ did not allow a clarification of the unclear burial position. The excavation plan (Figure 6.9.1b) appeared to suggest a rather unusual (finally semi-prone) position: the body should have been placed on its left side (probably later collapsing towards the south, if indeed we are correct in recognising the posterior side of skeleton at the plan), with one lower limb contracted and the other placed in 'knees-up' style. The unusual placement of the lower limbs was possibly dictated by spatial restrictions, while the manner of post-mortem body collapse indicated decomposition in a void rather than in a pit filled with soil (cf. Duday 2006: 32-38). The skeleton belonged to a mature adult female (Table 6.9.3).

Table 6.9.3. Tomb 17: Basic osteological information by case (n=19) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T17/A-K (PIT I) – IND.A	COM.SECONDARY	M	Cranium	PA	Cranial sut.closure: 10 (39.4y); Dental wear: 36-40y			Cranium
T17/A-K (PIT I) – IND.B	COM.SECONDARY	M	Cranium	OA	Cranial sut.closure: 19 (51.5y)			Cranium
T17/A-K (PIT I) – IND.C	COM.SECONDARY	F	Cranium	PA	Cranial sut.closure: 4 (34.7y)			Cranium
T17/A-K (PIT I) – IND.D	COM.SECONDARY	F	Cranium	PA	Cranial sut.closure: 1 (30.5y)			Cranium
T17/A-K (PIT I) – IND.E	COM.SECONDARY	?	Cranium	PA	Cranial sut.closure: 6-8 (PA)			Cranium
T17/A-K (PIT I) – IND.F	COM.SECONDARY	M	Cranium	MA	Cranial sut.closure: 16 (48.8y)			Cranium
T17/A-K (PIT I) – IND.G	COM.SECONDARY	F?	Cranium	MA	Cranial sut.closure: 7-16 (MA)			Cranium
T17/A-K (PIT I) – IND.H	COM.SECONDARY	F	Cranium	MA	Cranial sut.closure: 13-16 (45.2y)			Cranium
T17/A-K (PIT I) – IND.I	COM.SECONDARY	F	Cranium	MA	Cranial sut.closure: 6-9 (39.4y)			Cranium
T17/A-K (PIT I) – IND.J	COM.SECONDARY	?	Cranium	PA	Cranial sut.closure: 2-5 (PA)			Cranium
T17/A-K (PIT I) – IND.K	COM.SECONDARY	F	Cranium	AD				Cranium
T17/A-K (PIT I) – IND.L	COM.SECONDARY	?	Cranium	PA	Cranial sut.closure: 2-6 (PA)			Cranium
T17/A-K (PIT I) – IND.M	COM.SECONDARY	M?	Cranium	YA/PA	Cranial sut.closure: 0-3 (YA/PA)			Cranium
T17/A-K (PIT I) – IND.N	COM.SECONDARY	F?	Cranium	AD				Cranium
T17/A-K (PIT I) – IND.O	COM.SECONDARY	M	Cranium	AD				Cranium
T17/Λ	PRIMARY	F	Pelvis; skull; LB metrics	YA	Dental wear: 20-25y.	147	Humerus; radius	
T17/M	PRIMARY	M?	Mandible; femoral metrics	YA	Dental wear: 25-30y.	-		
T17/N	PRIMARY	M	Pelvis; skull; LB metrics	PA	Dental wear: 25-30y; R aur: (partially observable) 3-5 (30-44y); Cranial sut. closure: 9 (39.4y)	162	Radius; ulna; femur; fibula	
T17/Ξ	PRIMARY	F	Pelvis; skull; LB metrics	MA	R+L aur: 4-5 (34-44y); pub: 5 (48.1y) Dental wear: >40y. Cranial sut. closure: 15 (45.2y)	152	Humerus; radius; ulna; femur	

6.9.3 Tomb 17: Bioarchaeological reconstruction of funerary activities

The total skeletal material of Tomb 17 (MNI: 19) comprised four primary adult burials of the LHIIIC Early to Late period (two females, one male and a probable male), and the secondary remains of another 15 adults, dated between LHIIIA and LHIIIC Early (Table 6.9.3). The contextual consideration of bioarchaeological and ceramic evidence helps to clarify the funerary sequence in Tomb 17 and further details of specific funerary acts.

The 15 interments in dromos Pit I (T17/A-K) should be dated between the LHIIIA2 and LHIIIC Early according to their accompanying artefacts. The inclusion of one LHIIIC Early vessel suggests that the filling of the pit occurred in that period, just before the following interments. As the LHIIIC Early vessel was the only outlier in an otherwise LHIIIA-B ceramic assemblage, it can be inferred that the majority (if not all) of the skeletal remains were dated to the LHIIIA-B period (cf. 5.4.7; Table 7.X5). The primary burials found inside the chamber comprised the next major phase of tomb use in the LHIIIC period. T17/Ξ certainly predated the other three interments, since they were all (partially or fully) placed over Pit II covering slabs. T17/Ξ should be dated to the LHIIIC Early, and although no artefact was placed inside the pit, it is conceivable that the earliest vessel from the ones placed on top of the slabs could be related to it. T17/Λ was the second interment, dated to the LHIIIC Early period as well. The following burial appears to be T17/M, since its skull was found partially over T17/Λ lower limbs but the skeleton was disturbed, most likely pre-dating the final T17/N interment. The presumed association of T17/M with some of the LHIIIC Late artefacts found on top of Pit II (cf. 6.9.1) cannot be securely accepted because of the very close proximity of Burials T17/M-N. In any case, T17/N was most likely the final LHIIIC Late interment, before (or during) the burial of which T17/M got disturbed and re-assembled. The bone relationships observed in T17/M were consistent with a typical case of body reduction (i.e. the re-arrangement of a primary skeleton to make space for a new interment, Duday 2006: 47), implying that it was placed before T17/N. A reverse order between the two final burials, however, cannot be completely ruled out; in that case, the secondary handling of T17/M would have occurred independently of a following interment. Finally, it is interesting to note that all successive LHIIIC burials (T17/Λ-N) have all been placed in close proximity to Pit II as a cluster, even though there was plenty of free space at the north-west part of the floor.

Looking at preservation patterns of the large secondary pit assemblage (T17/A-K), specific funerary choices can be approached. Even though bone preservation (completeness and surface condition) was fairly good, bone representation demonstrated significant discrepancies between prominent skeletal elements (i.e. skull, long, and flat bones) and the remaining bones. The discrepancies were so marked that should not be solely attributed to recovery and natural taphonomic bias. The criteria for inferring a preference for retaining prominent bones –and skulls in particular– are satisfied (cf. 5.4.6). The relative consistency between the frequencies of major bones for a large number of the total MNI suggests that many individuals have been transferred to the pit fairly complete; however, the much more fragmentary evidence for at least four out of the 15 implies that both taphonomic loss and some transfer to outside the tomb had occurred before the final deposition in the pit, at least for fragmented material and smaller elements. Indeed, the number of 15 individuals is larger than the floor's capacity for intact primary burials, implying more than one episode of removals from primary location before the final transfer to the pit. Pit I was more likely constructed and filled in one episode: both its location (immediately in front of the entrance with the dry wall founded on top of it) and its unusually large size favour a simultaneous placement of the secondary material, suggesting that the amount of bones that it was going to receive was already known. The good preservation of the skeletal material (probably enhanced by the depth and soil filling of the pit) also corroborates the one-episode event, since multiple re-openings would have resulted in increased fragmentation. The old fragmentation observed here (excluding excavation damage) should have mostly occurred during the earlier (within the chamber) movements of the remains, since the pit deposit did not contain a significant number of small unidentified bone fragments.

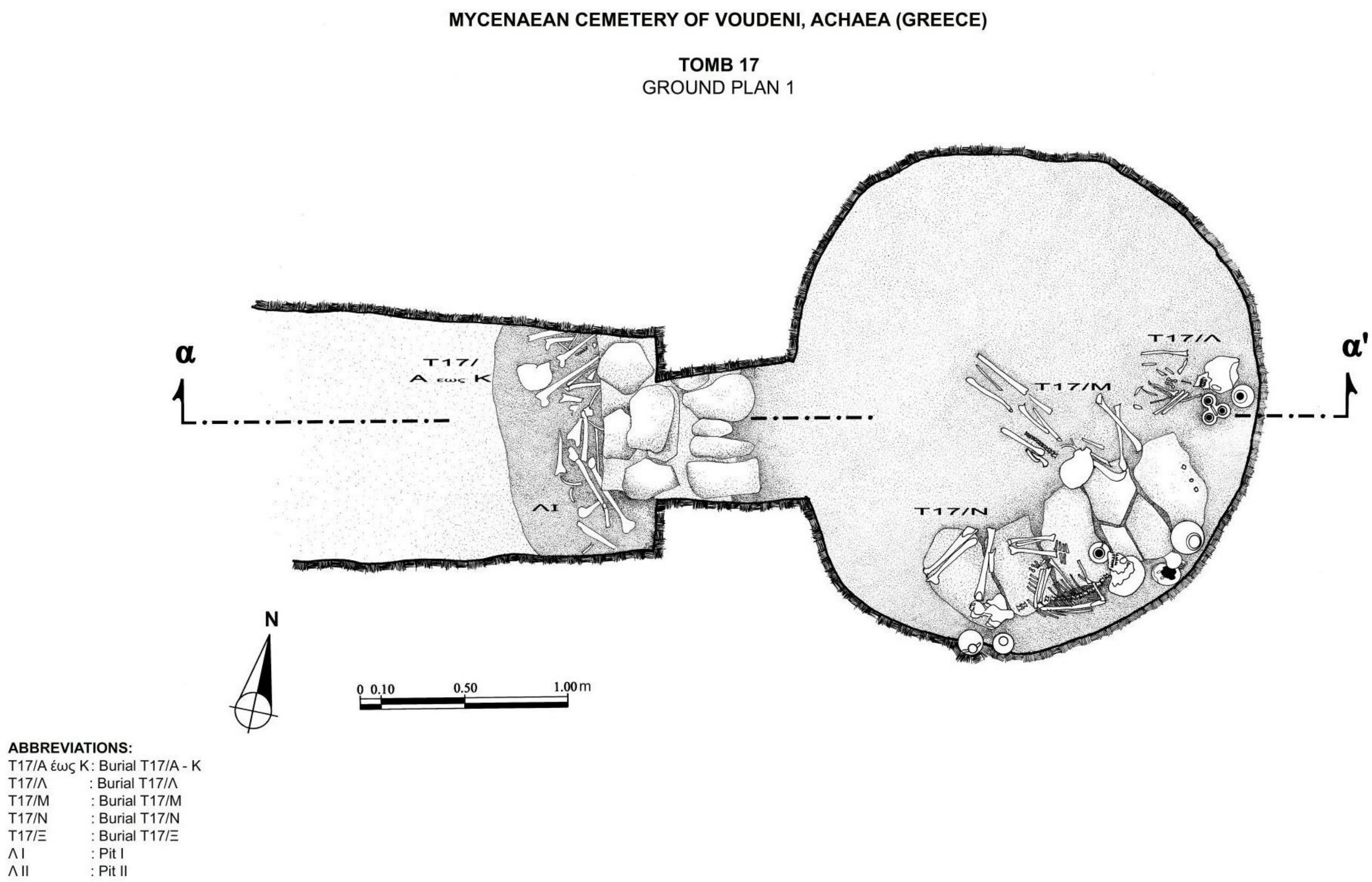


Figure 6.9.1a. Tomb 17: ground plan 1 (after Kolonas 1998, forthcoming); Burials T17/A-K (Pit I), T17/Λ, T17/M, T17/N.

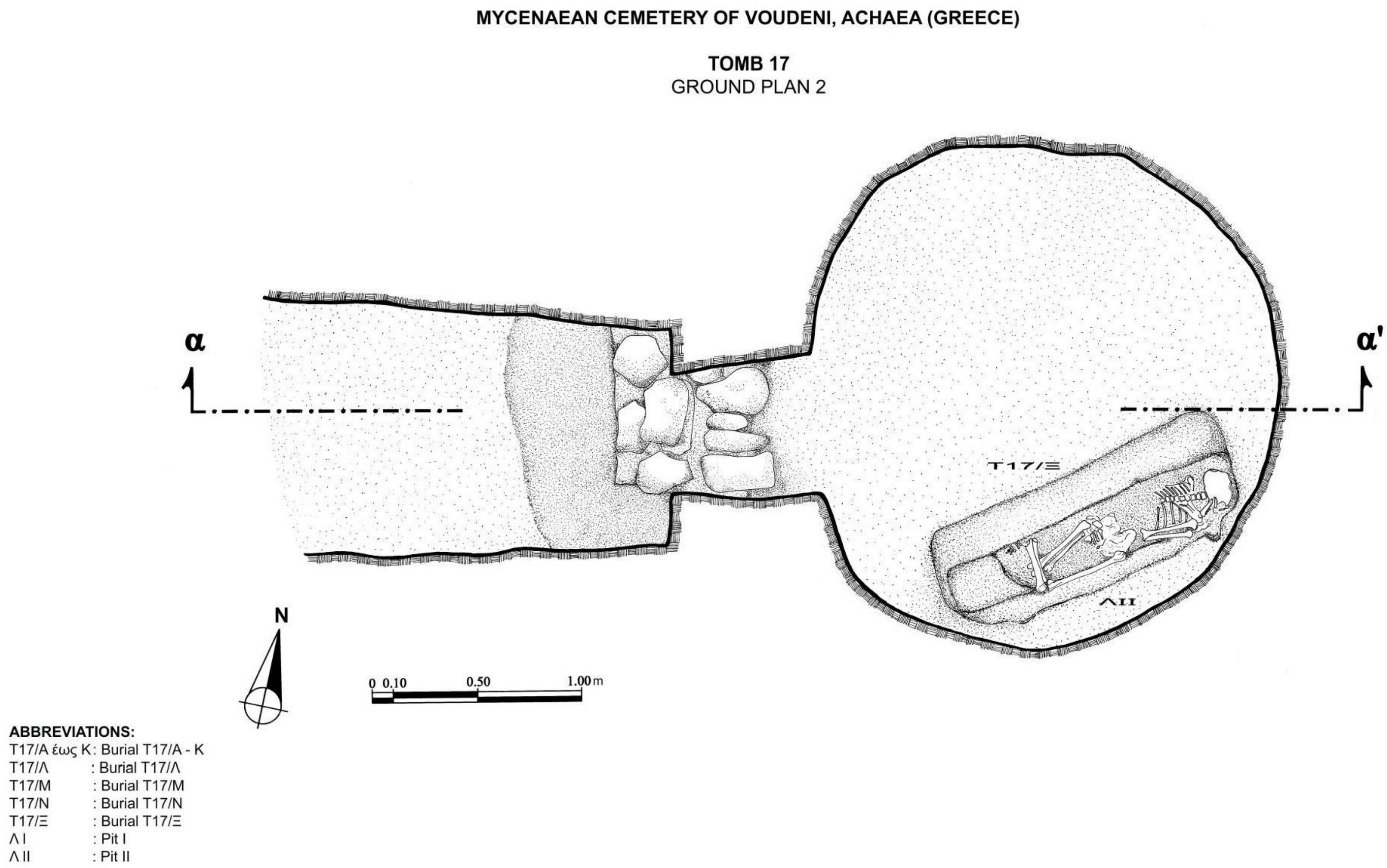


Figure 6.9.1b. Tomb 17: ground plan 2 (after Kolonas 1998, forthcoming); Burial T17/Ξ (Pit II).

Figure 6.9.2. Tomb 17: excavation of chamber; Burial T17/Λ (east), Burial T17/M (middle), Burial T17/N (south).

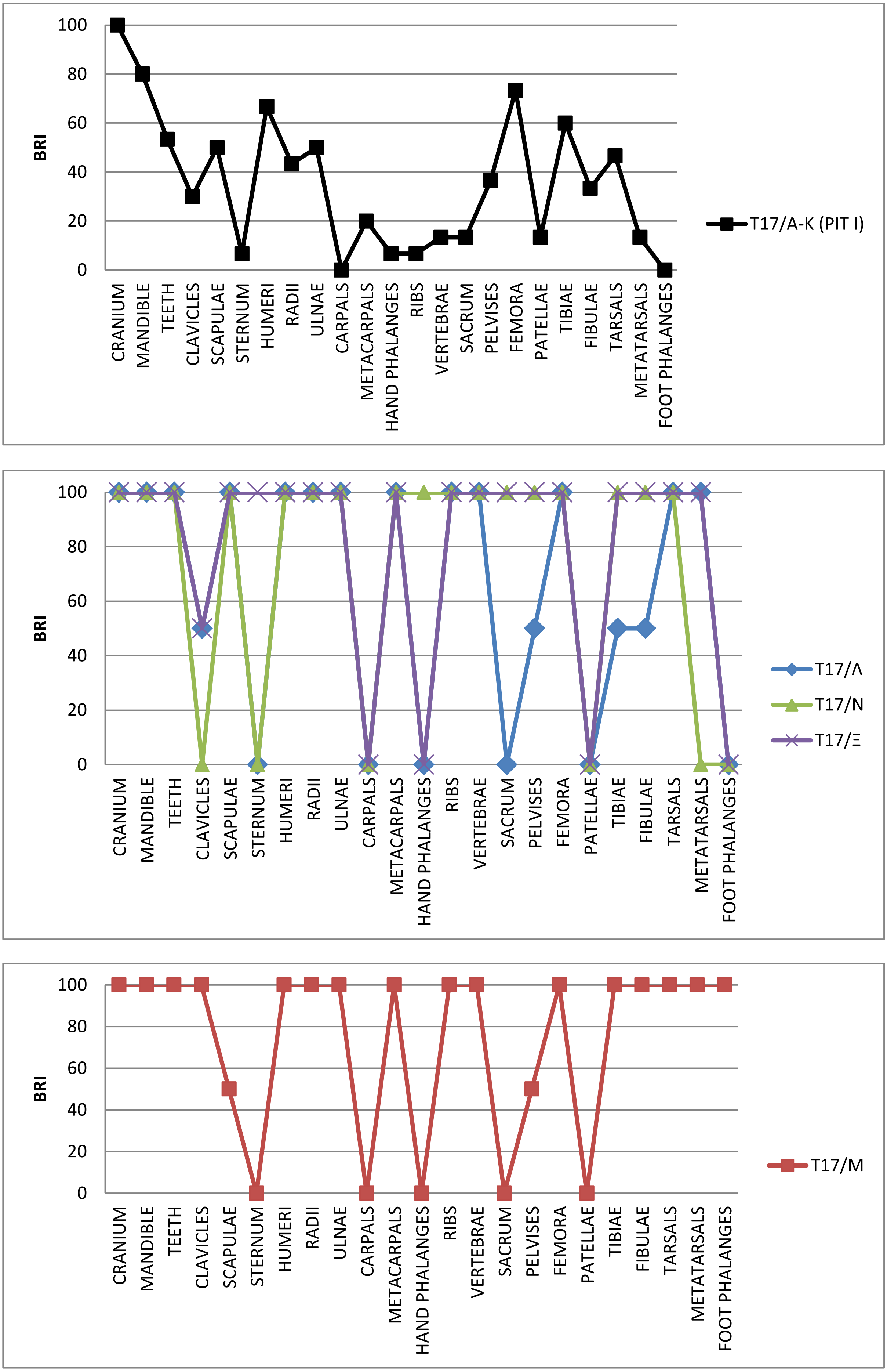


Figure 6.9.3. Tomb 17: Bone Representation Index (BRI) by tomb context.

Figures 6.9.4a-b. Burial T17/Ξ (Pit II): post-cranial skeleton (top) and skull (bottom).

6.10 TOMB 20

6.10.1 Tomb 20: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 20 is a small tomb of irregular, horse-shoe, shape, located at the west part of the middle hill terrace, in an uncommon W-E orientation (Figures 1.4 and 6.10.1; further information: Table 7.1). The tomb was accidentally discovered when the construction of a modern road caused the partial collapse of its roof, but the chamber was found well-preserved. The road construction prevented the excavation of its dromos.

Burial T20/A, the only primary burial of the tomb, was placed along the south wall, in E-W direction. The body was deposited on its left side (skull facing south) in flexed lower limb position, with hands folded on pelvis (Figures 6.10.1-2). The body was placed straight on the floor, except for the upper part of the skeleton which was positioned on top of a raw clay layer (interpreted, in this case, as used to even a damaged part of the floor: Kolonas 1998). The grave goods include only one LHIIIC Early stirrup jar and bronze tweezers (Table 6.10.1).

In the central part of the chamber, towards the entrance, Pit I (0.46x0.76x0.36m) contained a secondary deposit (T20/B-Δ) of commingled bones and artefacts, including a globular vessel, and tweezers, buttons, and beads, dated to the LHIIIB period (Table 6.10.1). Adjacent to the pit, at the NW chamber corner, a group of vessels also dated to the LHIIIB period was located; a single stirrup jar (T20/3) of the same date was found inverted at the rear chamber.

Table 6.10.1. Tomb 20: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T20/A		T20/1	BRONZE TWEEZERS	LHIIIC EARLY		
T20/A		T20/2	STIRRUP JAR	LHIIIC EARLY	175	64:21, 41:7, 41:14
NO BONE ASSOCIATION	E (REAR) WALL	T20/3	STIRRUP JAR	LHIIIB	180	27:24
NO BONE ASSOCIATION	NW CHAMBER	T20/4	ALABASTRON	LHIIIB	85	57:2
NO BONE ASSOCIATION	NW CHAMBER	T20/5	STIRRUP JAR	LHIIIB	180	19:31
NO BONE ASSOCIATION	NW CHAMBER	T20/6	PIRIFORM JAR	LHIIIB	48	64:14
T20/B-Δ	PIT I	T20/7	BRONZE TWEEZERS	LHIIIB		
T20/B-Δ	PIT I	T20/8	CLAY BUTTON	LHIIIB		
T20/B-Δ	PIT I	T20/9	STEATITE BUTTON	LHIIIB		
T20/B-Δ	PIT I	T20/10	GLOBULAR VESSEL	LHIIIB (FROM CONTEXT)		
T20/B-Δ	PIT I	T20/11a	960 GLASS BEADS	LHIIIB		
T20/B-Δ	PIT I	T20/11b	84 GLASS BEADS	LHIIIB		
T20/B-Δ	PIT I	T20/12	14 SHELL BEADS	LHIIIB		
T20/B-Δ	PIT I	T20/13	1 CHLORITE BEAD	LHIIIB		

6.10.2 Tomb 20: Osteological results

Both contexts of Tomb 20 comprised well preserved skeletal remains of a MNI of 10 (Tables 6.10.2, Figure 6.10.3) Basic osteological information for all cases is given in Table 6.10.3.

Table 6.10.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			PRESERVATION				MNI	
				COMPLETENESS		SURFACE			
TOMB CONTEXT	IDENTI FIED	TOTAL	TEETH	DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS	MNI	Max. occ. skeletal element
T20/A	154	156	5	1	1	2	1	1	
T20/B-Δ (PIT I)	652	843	27	1-2	1	2	1	9	Talus & MT
TOTAL	**806**	**999**	**32**					**10**	

Burial T20/A: The skeleton of T20/A was very well-preserved in terms of bone completeness and representation, and fairly well preserved in terms of surface condition. The latter was characterised by diverse weathering, with variation observed even on the same skeletal element. Bones of the left upper body and left side of the cranium demonstrated more advanced weathering (stage 3+ to 4) than the right side (Figure 6.10.4); furthermore, several left bones (but also the right foot) displayed a characteristic whitish discolouration with dark brown spots, most likely associated with the effects of increased moisture (Figure 6.10.5). These effects should be attributed to the contact of the upper left body with the raw clay layer used below it, and the possibility of increased moisture in proximity. The difference in surface condition between right and left parts of upper body offers a strong clue for a better reconstruction of the original body position: it is, thus, indicated that the body was initially deposited on its left side with skull rotated to the left; after the soft tissue decomposition the posterior part of the thorax and the right arm collapsed to the ground. This is consistent with the movements expected during decomposition of an unsupported body in open space (cf. Duday 2009: 45-52). As observed in Figure 6.10.2, the right humerus was found disarticulated in a small distance from the scapula, lying on its anterior side with humeral head facing away from scapula's glenoid cavity; both elbow joints also appeared disarticulated, while right radius was not preserved (unclear, though, if it was completely fragmented or displaced and lost at the time of recovery). These data suggest further dislocation, most likely due to natural taphonomic factors (e.g., damage caused by the fallen debris from the roof collapse, rodent activity, earthquake effects etc.). The lack of *in situ* anthropological recording prevents, however, discrimination between these possibilities. The skeleton of T20/A belonged to a robust mature adult male (Table 6.10.3).

The commingled secondary deposit of Pit I (T20/B-Δ): A fairly large quantity of cranial, post-cranial and dental commingled remains was found in Pit I. The bones were generally well preserved in all main aspects, and showed moderate to very good BRI values (Table 6.10.2, Figure 6.10.3). Their condition was rather uniform and fragmentation was not very pronounced, suggesting normal to low taphonomic disturbance (N.B. the single occurrence of gnawing marks: radius 527). A MNI of 9 was estimated, based on maximum occurrence of foot bones (left talus and right metatarsals) and differential age evidence. For most skeletal elements, however, MNI varied consistently between five and seven, a fact also reflected in BRI values; the small bones of the foot, however, demonstrated higher representation.

The segregation and individuation process allowed the secure re-attribution of skeletal elements to one adult and two sub-adult individuals (IND. A-C), based on distinct morphological and age characteristics. These include: a) the fairly complete skeleton of a very gracile mature adult female (IND. A); b) several bones of a 5-6 year-old child (IND. B); and c) few bones of an infant around 1.5 years (IND. C; all sub-adult fragments: Figure 6.10.6). In addition to these, the identification of extra pairs and matching elements, as well as good representation of another four adult crania, corroborated the result of bone frequencies: this skeletal assemblage contained both skeletons removed fairly complete (belonging to at least four adults and the child, including IND.A & IND.B) and far more fragmentary skeletal elements of another four individuals (including the infant IND.C), represented to different, in general much lower, degrees. Among the extra cases that could not be further individuated, the presence of three adult males and one female was attested. Precise age could not be determined, but cranial suture closure and dental age indicated that the extra female and one of the males could not be older than prime adults (Table 6.10.3).

Table 6.10.3. Tomb 20: Basic osteological information by case (n=10) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T22/A	PRIMARY	M	Cranium, pelvis, LB metrics	MA	R+L aur: 5 (40-44y); Rib end: 6 (43-55y); Cranial sut clos: 11 (39.4y)	166.5 (165-168)	All LB	
T20/B-Δ (PIT I) IND. A	COM. SEC.	F	Pelvis, LB metrics	MA	R aur: 5 (40-44y); L pub: 4-5 (38-48y)	145	Hum; rad; fem	Pairs of all LB, pelvises, scapulae, clavicles; some ribs & vertebrae; hand & foot bones (including even phalanges). N.B. Skull present but impossible to securely individuate
T20/B-Δ (PIT I) IND. B	COM. SEC.	-		CH I	Epiphyseal union: R ulna: unfused olecranon (<12-14F, 13-16M); Femur estimated length: c. 270mm (5-7y); Dental formation stage: M_1: R1/4 (c. 5y)			R+L humeri, R ulna, R+L femora, fibula; talus, calcaneus, clavicle, rib, metacarpal; cranium; tooth (M_1)
T20/B-Δ (PIT I) IND. C	COM. SEC.	-		INF II	L ulna estimated length: c. 100mm (c.1.5y)			L ulna, femur/humerus, fibula (uns)
T20/B-Δ (PIT I) E4	COM. SEC.	M	Cranium; pelvis; LB metrics	YA/PA	Cranial sut clos: 0 (YA/PA); possibly associated dental age: c.40y.			
T20/B-Δ (PIT I) E5	COM. SEC.	M		AD				
T20/B-Δ (PIT I) E6	COM. SEC.	M		AD				
T20/B-Δ (PIT I) E7	COM. SEC.	F		YA/PA	Cranial sut clos: 2 (30.5y.); dental age: 20-25y.			
T20/B-Δ (PIT I) E8	COM. SEC.	NO		AD				
T20/B-Δ (PIT I) E9	COM. SEC.	NO		AD				

6.10.3 Tomb 20: bioarchaeological reconstruction of funerary activities

The total MNI of 10 in Tomb 20 comprises the remains of at least ten LHIIIB interments (2 females, 3 males, and 3 adults of indeterminate sex, plus the two sub-adults), secondarily deposited in Pit I (T20/B-Δ), and one LHIIIC Early primary burial (T20/A). Since the excavation of the pit was not conducted in a way that would have ensured recording of each bone's micro-stratigraphic location, it is not possible to positively determine if the pit contents were deposited in a single or multiple episodes. However, it is more likely that the bone removal to the pit took place as a single event, since, first, no evidence of sequential filling was noticed at the time of recovery (in contrast to other cases, e.g., T27/Z, where such observations were actually made), and second, surface condition of the bone material was not distinctly diverse. In any case, the date of the pit construction and bone transfer to it should be placed between (late) LHIIIB and LHIIIC Early, i.e. at the time of, or sometime before, the interment of T20/A.

Based on the results of the commingling analysis, it is possible to infer certain activities that most likely took place before the final transfer. First, the MNI of 9 in the pit indicates that previous acts of removal should have already taken place within and from Tomb 20 during the LHIIIB period, because the chamber space is not large enough to simultaneously accommodate nine primary burials. However, no earlier remains were found scattered inside the tomb, suggesting a fairly thorough cleaning before the T20/A interment, which is corroborated by the high representation of small skeletal elements inside Pit I. Both these clues suggest some sweeping involved in the final process of the secondary bone collection. Since no other remains were left inside the chamber and bone preservation was fairly good, the discrepancies observed in bone frequencies between the different commingled elements should be attributed to an earlier act of partial bone removal of the least represented skeletons (i.e. 3-4 adults and the infant) to outside the tomb, in contrast to the other five (i.e. a female, two males, and the child) that appear more fully transferred into Pit I. It may, thus, be suggested that the former represent the first group of burials, from which the most prominent bones (including skulls) were removed from the tomb, while their smaller remains (such as foot bones) were left inside the chamber, later transferred to the pit when the second group of burials had also to be removed.

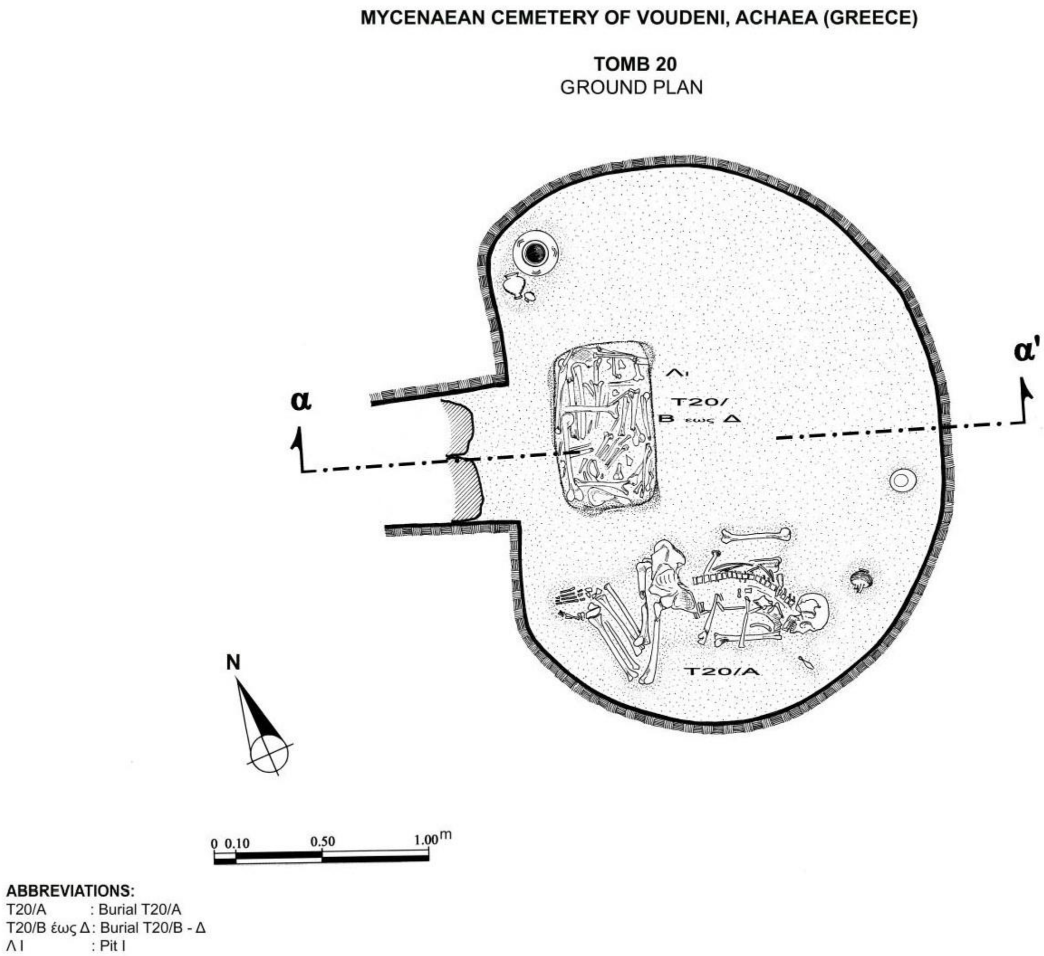


Figure 6.10.1. Tomb 20: ground plan (after Kolonas 1998, forthcoming).

Figure 6.10.2. Tomb 20: Burial T20/A, post-excavation.

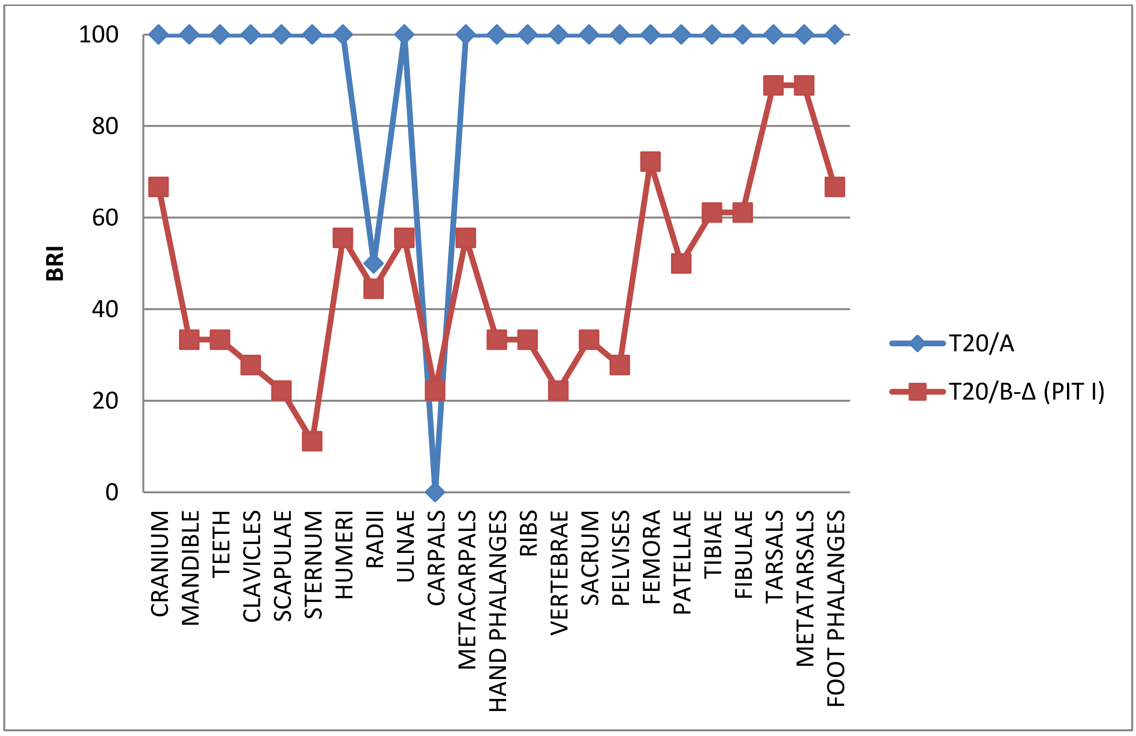


Figure 6.10.3. Tomb 20: Bone Representation Index (BRI) by tomb context.

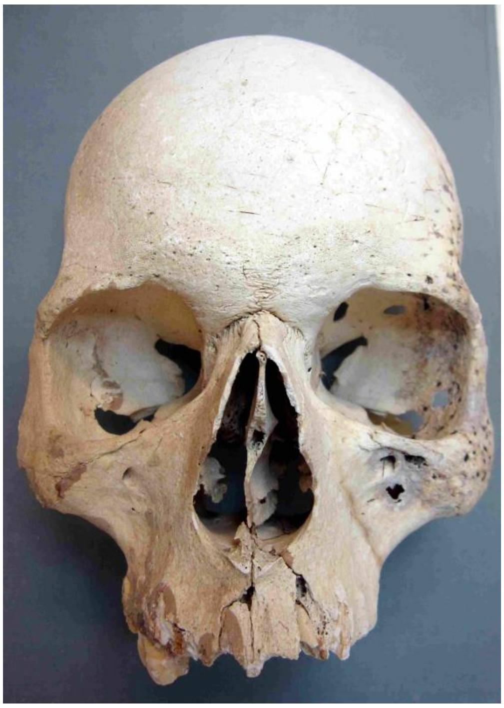


Figure 6.10.4. T20/A: Cranium; cf. weathering between right and left sides.

Figure 6.10.5. T20/A: Right metatarsals showing evidence of advanced taphonomic alterations.

Figure 6.10.6. T20/B-Δ (Pit I): Re-individuated sub-adult post-cranial elements (IND.B & IND.C).

6.11 TOMB 22

6.11.1. Tomb 22: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 22 is a circular tomb of medium size, located at the middle terrace of the hill (Figures 1.4 and 6.11.1; further information: Table 7.1). The tomb's contents testify to a long period of continuous use, spanning over three centuries, from the LHIIIA1 to the LHIIIC Late/Sub-Mycenaean period (Table 6.11.1). Its roof is preserved and had only suffered limited rock collapses, especially around the south part of the chamber. The dry wall closing the entrance was found intact, but part of the east side of the dromos was cut in Late Roman times for the construction of a roof tile lined grave for a single burial (not part of this study). At the top of the tomb's entrance façade, a small niche was located, closed by a rough dry wall. This was reported to probably contain a few decayed skeletal remains, presumably of an infant, which were not recovered. Since no photographic documentation exists, the presumed infant remains are not considered further in this study.

At the west corner of the dromos, a shallow pit (**Pit I,** 0.78x0.37x0.15m) was discovered adjacent to the entrance. The pit was not cut directly into the dromos floor but within the lower layers of the fill deposits (Figure 6.11.2). It contained a secondary deposit of commingled skeletal remains (**Burials T22/A-B**), together with several vessels of the LHIIIA1 to LHIIIC Early period, as well as one steatite and three clay buttons, and several carnelian beads (Table 6.11.1).

Four primary burials (T22/Γ-ΣΤ) were found inside the chamber (Figure 6.11.3). **Burial T22/Γ** occupied the east part, placed extended on top of a raw clay layer, in S-N orientation. The skeleton was found extensively decayed. A cylindrical *alabastron* and two stirrup jars of the LHIIIC Late period accompanied the burial (Table 6.11.1). Immediately to the west, towards the rear chamber, **Burial T22/Δ** was located also in S-N orientation. The lower limbs were contracted, rotated towards the east (i.e. right side of the body), while the upper limbs were found extended along the sides of the body. The lower limbs of skeleton T22/Δ were in part placed on top of the upper left side of T22/Γ, implying a later date for T22/Δ. The grave goods accompanying T22/Δ were all of the LHIIIC Late/Sub-Mycenaean period (stirrup jars, including two probably imported from Elis; a belly-handled amphora, and one steatite and two clay buttons,

Table 6.11.1). The SW part of the chamber was occupied by two primary burials with no grave goods. **Burial T22/E,** closer to the centre, was the most well-preserved. The body was placed extended, in a SE-NW orientation, with hands on pelvis. Located just west of it, **Burial T22/ΣT** was placed in the same orientation. It was also extended, but with upper limbs placed along the sides. This skeleton was heavily damaged by the fallen debris from rock collapses that had affected the SW part of the chamber (Figure 6.11.4).

Table 6.11.1. Tomb 22: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T22/A-B	PIT I	T22/1	ALABASTRON	LHIIIA2	85	43:d & e, 53
T22/A-B	PIT I	T22/2	ALABASTRON	LHIIIA2	85	53:37
T22/A-B	PIT I	T22/3	ALABASTRON	LHIIIA2	85	32:5, 17:21
T22/A-B	PIT I	T22/4	ALABASTRON	LHIIIA2	85	32:5
T22/A-B	PIT I	T22/5	ALABASTRON	LHIIIA2	85	32:5
T22/A-B	PIT I	T22/6	ALABASTRON	LHIIIA2	93	64:19
T22/A-B	PIT I	T22/7	ALABASTRON	LHIIIA2	93	64:21
T22/A-B	PIT I	T22/8	ALABASTRON	LHIIIB	93	57:2
T22/A-B	PIT I	T22/9	PIRIFORM JAR	LHIIIB	48	57:2
T22/A-B	PIT I	T22/10	PIRIFORM JAR	LHIIIB	48	57:2
T22/A-B	PIT I	T22/11	PIRIFORM JAR	LHIIIB	47	57:2
T22/A-B	PIT I	T22/12	RING-HANDLED CUP	LHIIIA1	237	
T22/A-B	PIT I	T22/13	RING-HANDLED CUP	LHIIIA1	237	
T22/A-B	PIT I	T22/14	FLASK	LHIIIA2	190	53:7, 64:20
T22/A-B	PIT I	T22/15	LEKYTHOS	LHIIIC	122	19:31
T22/A-B	PIT I	T22/16	CONICAL BOWL, SPOUTED	LHIIIA2-B	300	
T22/A-B	PIT I	T22/17	STEATITE BUTTON	LHIIIA-LHIIC EARLY		
T22/A-B	PIT I	T22/18	CLAY BUTTON	LHIIIA-LHIIC EARLY		
T22/A-B	PIT I	T22/19	CLAY BUTTON	LHIIIA-LHIIC EARLY		
T22/A-B	PIT I	T22/20	CLAY BUTTON	LHIIIA-LHIIC EARLY		
T22/A-B	PIT I	T22/21	55 CARNELIAN BEADS	LHIIIA-LHIIC EARLY		
T22/Γ		T22/22	STIRRUP JAR	LHIIIC LATE	175	43:h
T22/Γ		T22/23	ALABASTRON	LHIIIC LATE	96	
T22/Γ		T22/24	STIRRUP JAR	LHIIIC LATE	175	42:27
T22/Δ		T22/25	STIRRUP JAR	LHIIIC LATE-SUB MYC.	175	
T22/Δ		T22/26	STIRRUP JAR	LHIIIC LATE-SUB MYC.	175	58:33
T22/Δ		T22/27	STIRRUP JAR	LHIIIC LATE-SUB MYC.	175	33:22
T22/Δ		T22/28	BELLY-HANDLED AMPHORA	LHIIIC LATE-SUB MYC.	58	73:k, 58:23
T22/Δ		T22/29	STIRRUP JAR	LHIIIC LATE-SUB MYC.	176	61A:1
T22/Δ		T22/30	CLAY BUTTON	LHIIIC LATE-SUB MYC.		
T22/Δ		T22/31	STEATITE BUTTON	LHIIIC LATE-SUB MYC.		
T22/Δ		T22/32	CLAY BUTTON	LHIIIC LATE-SUB MYC.		

6.11.2 Tomb 22: Osteological results

Information on recovery/collection problems

The study of the main bone collection did not include the skeleton of Burial T22/E, since the latter is on display in the Patras Archaeological Museum and, thus, impossible to remove. A basic osteological assessment was, however, conducted through a preliminary examination of the skeleton in the museum; (N.B. Bone frequencies recorded as a minimum, not fully quantified).

The osteological results

The five different contexts of Tomb 22 comprised a fairly large quantity of skeletal remains (MNI: 15) in markedly diverse state of preservation (Table 6.11.2, Figure 6.11.5). Basic osteological information for all cases (after MNI) is given in Table 6.11.3.

Table 6.11.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			**PRESERVATION**				**MNI**	
				COMPLETENESS		SURFACE			
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS	MNI	Max. occ. skeletal element
T22/A-B (PIT I)	363	455	22	1-4 (c.2)	2	3	3	1	humerus
T22/Γ	57	117	-	3-4	4	4	4	1	
T22/Δ	113	117	-	1	1	2	1	1	
T22/E	108	108	-	1	1	1	1	1	
T22/ΣΤ	86	156	-	1-3	2	2-3	2	11	
TOTAL	**727**	**953**	**22**					**15**	humerus

T22/A-B (Pit I): Pit I (in dromos) contained a fairly large quantity of cranial, post-cranial, and dental remains. The preservation of the material, with reference to all aspects, was diverse. Fragmentation was pronounced while completeness was variable (fairly good to moderate). Bone surface condition also varied but with moderate preservation prevailing. BRI frequencies demonstrated variable and unequal representation of different elements, with the more prominent bones, such as long bones, pelves and skulls, showing much higher values than smaller and/or fragile elements; nonetheless, even dense elements, normally expected (e.g., mandibles and clavicles, cf. 5.4.3), were poorly represented (Figure 6.11.5). Total MNI of this context was 11 (based on humerus) while other long bones and cranial remains gave far lower estimates (5-8). Recognition of paired elements was difficult due to the fragmentary state of the remains, and re-individuation was similarly limited. It was possible to safely re-attribute some bones to two individuals, due to distinct common age characteristics: a) several bones from a 6-7-year-old child (IND.A, Figure 6.11.6) and b) few elements from a young adult female (IND.B). Among the remaining skeletal elements, it was possible to determine sex for three males and two more females (based on femoral metric characteristics; corroborated by cranial and mandibular evidence from two females and two males, and pelvic fragments of three male individuals). In terms of age, the two female mandibles belonged to young adults: a 18-20-year-old (possibly IND.B) and a 22-26-year-old; while male pelvic bones suggested the presence of one prime and two mature adults.

Burial T22/Γ: The material from Burial T22/Γ was in a poor state of preservation in all aspects (Table 6.11.2). The extreme decay, most likely induced by the raw clay environment of its sub-floor, made even the basic identification difficult. Many fragments preserved only spongy parts, having totally lost their periosteum, while others were completely covered in soil encrustations (Figure 6.11.S1: cranial fragments). The prevalence of low BRI values in this primary burial together with good representation of certain robust elements despite their otherwise poor preservation, give a most characteristic example of naturally-caused taphonomic bone loss. When comparing excavation photos with the final collection, it is observed that much of the original *in situ* material did not survive recovery and removal. Due to the poor preservation, it was not possible to reconstruct any more precisely the exact body position of this burial. Scattered small bones and fragments from earlier interments can be seen in excavation photo west of the lower body (Figure 6.11.3).

The main T22/Γ skeleton belongs to a gracile adult female. Providing an age was not possible, as only limited age information was provided by the presence of cranial suture closure in observed sutures, excluding a young adult estimation. In addition to the main T22/Γ skeleton, a few additional elements could securely be attributed to remains of earlier interments. They included a few fragments from an adult skull and a left fourth metatarsal, as well as the following sub-adult elements: one right clavicle, one thoracic vertebra, and a proximal tibial fragment (Figure

6.11.S2). These sub-adult remains all indicated an age similar to that of T22/A-B IND.A child from Pit I (5-9 years).

Burial T22/Δ: The skeleton of T22/Δ was well preserved and represented, in all aspects (Table 6.11.2, Figure 6.11.5). The cranium (especially its left side) and the right upper limb were the only elements in worse condition, both in terms of completeness and fragmentation, but also displaying more advanced weathering (c. 3-4 grade), bearing evidence of root marks and rodent gnawing (Figures 6.11.S3-S4: skull and upper limbs respectively). The worse damage of the right upper body is consistent with increased rock debris accumulation and root activity at this chamber area, as confirmed by excavation photo (Figure 6.11.4). The examination of *in situ* photographic documentation across the recovered material confirmed the burial position as described by the excavator and allowed the identification of a pair of disarticulated long bones and few smaller skeletal elements (remains of earlier interments), lying immediately north of the contracted lower limbs of T22/Δ.

The skeleton T22/Δ belongs to a mature adult female. In addition to her remains, the bone group included some extra skeletal elements from different individual(s). These included a left femur and right tibia from earlier interments (both identified on Figure 6.11.3), plus a very decayed ulna fragment (in a poor state of preservation, similar to the condition of T22/Γ skeleton and most likely belonging with it, mixed erroneously with T22/Δ at the time of recovery), an extra patella, two tarsal bones, and a lumbar vertebra from a late adolescent/YA individual (unfused annular rings), matching the fusion stage of T22/A-B IND.A vertebrae.

Burial T22/E: The display of T22/E skeleton at Patras Museum only permitted the basic osteological assessment of the skeleton, preventing full recording. The skeleton was very well preserved and represented, minimally affected by post-mortem fracturing and taphonomic damage (Figure 6.11.S5; except for evidence of gnawing, present on both femoral heads). The comparison of the initial photographic documentation at the time of discovery (Figure 6.11.4) and of the final one just before recovery (Figure 6.11.3) attest to post-excavation bone displacement of the mandible and cervical vertebrae; this example stresses the need for extreme caution in the effort to reconstruct skeletal taphonomic history without specialised field recovery, due to the possibility of increased bias. Excavation photography, nonetheless, testifies to the presence of a small cluster of extra bones (i.e. remains of earlier interments) immediately south-east of T22/E cranium; these were missing from the final study bone collection. T22/E skeleton was a male mature adult.

BURIAL 22/ΣΤ: The skeleton of T22/ΣΤ was fairly well to moderately preserved and well represented (Table 6.11.2, Figure 6.11.5), despite being heavily affected by the rock collapse (Figure 6.11.4). A right calcaneus was the only extra bone identified in this group. The skeleton belonged to a male individual, aged older than prime adulthood (precise ageing was not possible as only part of cranial suture closure was observable).

Table 6.11.3. Tomb 22: Basic osteological information by case (n=15) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON	STATURE (~ mm)	BASED ON	
T22/A-B (PIT I) IND. A	COM. SEC.	-		CH I	Hum L: 199mm [T vert: stage of fusion: 5-8y]			R & L hum+fem; L ulna, R scapula; L pelvis [Extra from T22/Γ: R clavicle; T vert; tibia (uns)]
T22/A-B (PIT I) IND. B	COM. SEC.	F	Pelvis	YA	Recently fused pelvic iliac crest; unfused ring of T vertebra			Pelvis (uns); T vertebra [Extra from T22/Δ: L vertebra]
T22/A-B (PIT I) E3	COM. SEC.	F		YA	Dental age: 22-26y.			
T22/A-B (PIT I) E4	COM. SEC.	M	Pelvis; cranium; femoral metrics	PA	R aur: 4 (35-39y)			
T22/A-B (PIT I) E5	COM. SEC.	M		MA	L aur: 5 (40-44y)			
T22/A-B (PIT I) E6	COM. SEC.	M		MA	L aur: c.5 (40-44)			
T22/A-B (PIT I) E7	COM. SEC.	F		AD				
T22/A-B (PIT I) E8	COM. SEC.	NO		AD				
T22/A-B (PIT I) E9	COM. SEC.	NO		AD				
T22/A-B (PIT I) E10	COM. SEC.	NO		AD				
T22/A-B (PIT I) E11	COM. SEC.	NO		AD				
T22/Γ	PRIMARY	F	Cranium	YA/PA	Cranial suture closure (some)	-		
T22/Δ	PRIMARY	F	Cranium, pelvis, LB metrics	MA	R+L aur: 5-6 (40-49y); R+L pub: 4-5 (38-48y)	155	Ulna; fem; tib; fibula	
T22/E	PRIMARY	M	Cranium, pelvis	MA	R+L aur: 4-5 (35-44y); Cranial sut: c. 16 (c. 48.8y)	159	Hum; fem; fibula	
T22/ΣΤ	PRIMARY	M	Cranium, pelvis, femur metrics	MA/OA	Significant cranial sut closure (>10, not fully observed)	165	Ulna; femur; tibia	

6.11.3 Tomb 22: Bioarchaeological reconstruction of funerary activities

The total MNI (n=15) for Tomb 22 consists of the remains of at least eleven burials of LHIIIA-LHIIIC Early date, secondarily deposited in Pit I, and the final four primary burials of LHIIIC Late/Sub-Mycenaean date found in the chamber (cf. Table 7.X5). The total assemblage comprised 14 adults (5 males, 5 females, 4 of indeterminate sex) and a child of c.7 years.

The artefacts deposited in Pit I indicate that the tomb had been continuously used over a long period of time (LHIIIA1 to LHIIIC Early) before the cleaning of the chamber for a next group of burials and the construction of Pit I. The wide discrepancies of T22/A-B (Pit I) BRI values and of MNI estimations by element, the fragmentary condition of this material and the diverse preservation levels, as well as the under-representation of identifiable bone pairs, all suggest that the skeletal remains found in the pit (MNI: 11) represent only a portion of the total burials in the tomb throughout this long period. Based on criteria outlined in 5.4.6, it can be inferred that before the act of final deposition of these bones in the pit, some material had also been removed to another location outside the tomb, while a selection of prominent bones prevailed in the compilation of the pit assemblage. The diverse preservation of the pit bone material suggests a variable taphonomic history before their deposition in the same final environment (i.e. the pit); the latter likely prevented further significant taphonomic decay due to soil filling. This is consistent with the inadequacy of the chamber's area to simultaneously accommodate eleven primary burials, indicating that the earliest burials would have been removed before the later ones were deposited. The inferred previous removal within the chamber should have taken the form of pile(s) of bone. It is likely that these bone piles were primarily located in the east part of the tomb, since the majority of scattered earlier remains inside the chamber were found in this vicinity, within contexts T22/Γ and T22/Δ. The inclusion of a single LHIIIC Early vessel (T22/15, Table 6.11.1) in Pit I indicates that the transfer took place in the LHIIIC period, but the majority of these bones are dated to the earlier period. Since the chamber's primary burials are dated to the LHIIIC Late period, the pit construction and the associated bone transfer could have occurred any time between LHIIIC Early and LHIIIC Late. In this act, the chamber was cleaned, but not thoroughly, as few elements of earlier interments were left inside. The association of these finds with the pit's contents was confirmed by matching elements from the child and the young female between the two locations. The final four LHIIIC Late burials appear to have been interred starting with the eastern one (T22/Γ) and followed by the ones placed west of it, based on the bone relationships and the slightly earlier date of T22/Γ grave-goods. Even though chronological information on T22/E and T22/ΣT is lacking, their location suggests that they are both later than T22/Δ, and so they may be dated closer to the Sub-Mycenaean period (notice also the absence of accompanying offerings).

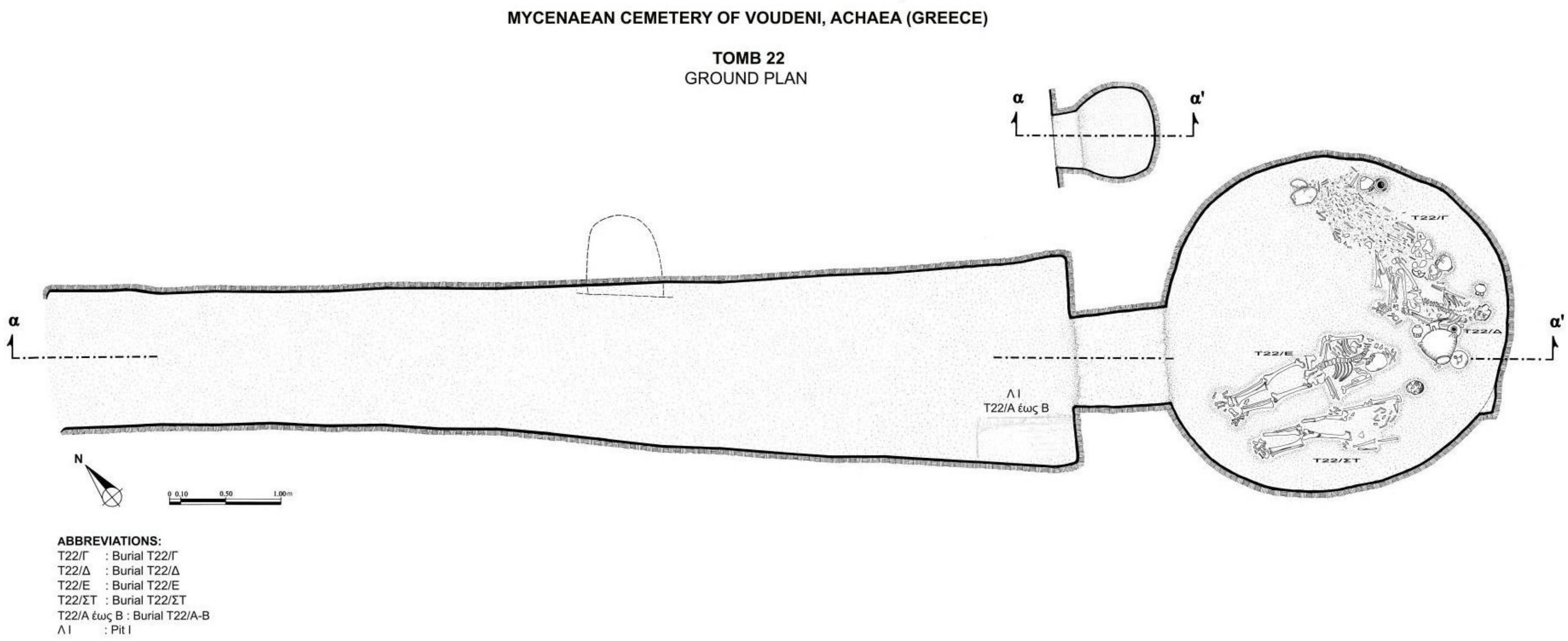


Figure 6.11.1. Tomb 22: ground plan (after Kolonas 1998, forthcoming).

Figure 6.11.2. Pit I at SW corner of Tomb 22 dromos.

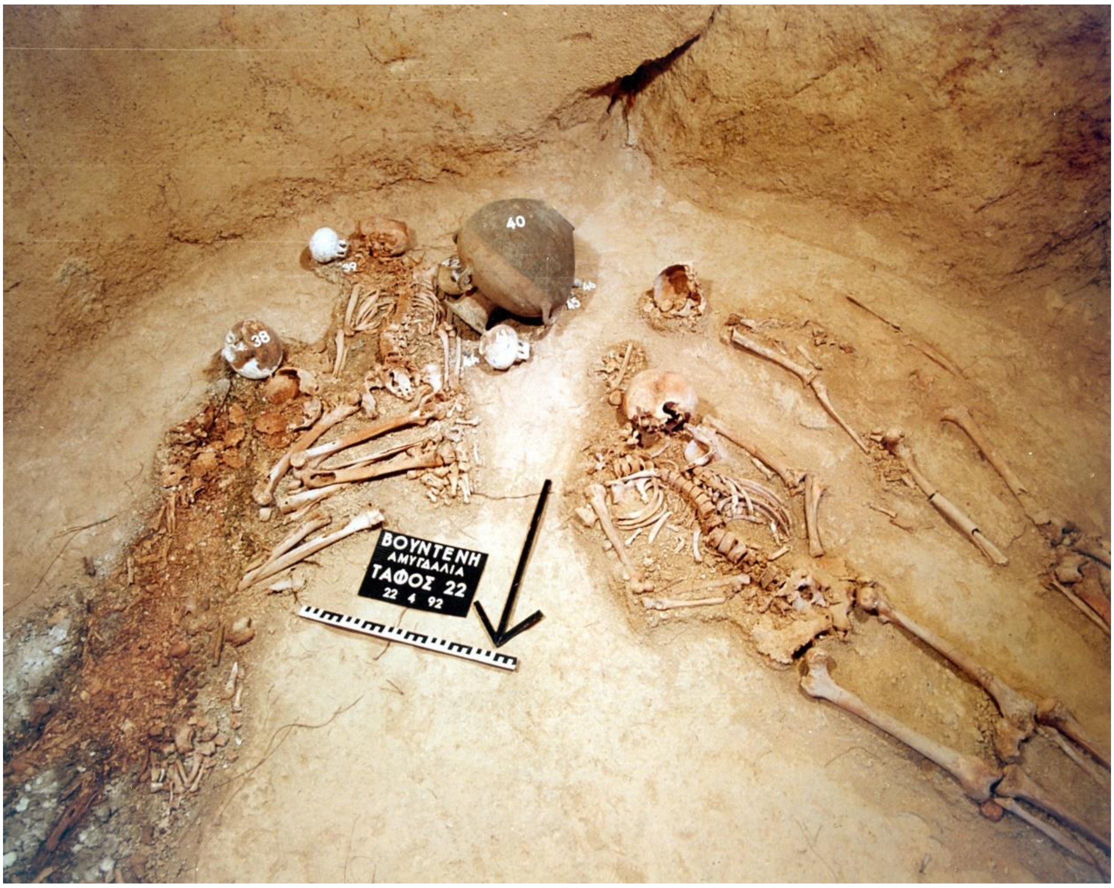


Figure 6.11.3. Tomb 22: Burial T22/Γ to T22/ΣΤ (from left to right), post-excavation.

Figure 6.11.4. Tomb 22: Chamber at the time of discovery, pre-excavation.

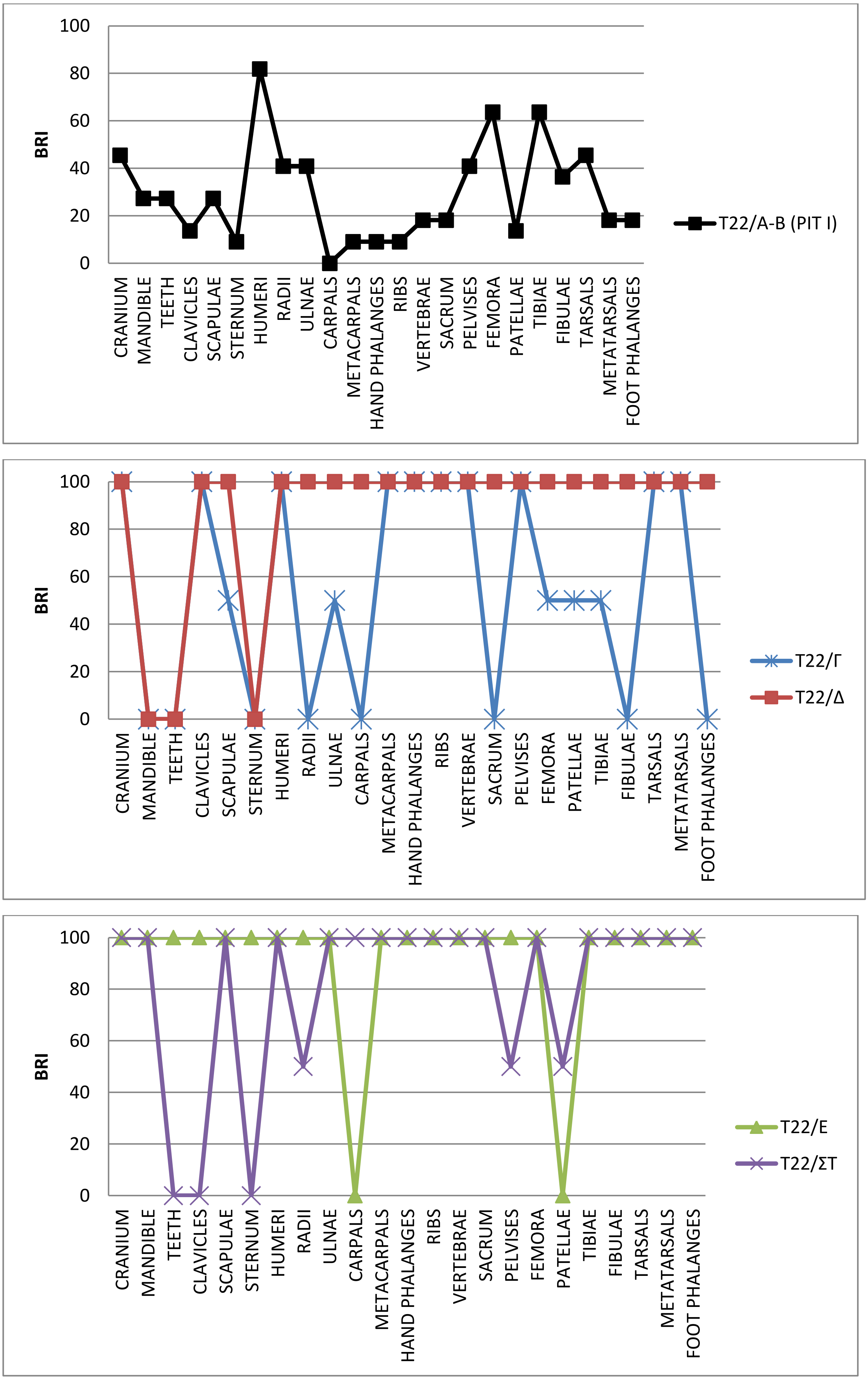


Figure 6.11.5. Tomb 22: Bone Representation Index (BRI) by tomb context.

Figure 6.11.6. T22/A-B (Pit I) IND.A: post-cranial remains of a child (6-7 years).

6.12 TOMB 24

6.12.1 Tomb 24: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 24 is a small circular tomb, centrally located at the upper hill terrace (Figures 1.4 and 6.12.1; further information: Table 7.1). The tomb presented evidence of use both in the LHIIIA and the entire LHIIIC period, but did not include any LHIIIB pottery (Table 6.12.1). Both skeletal and ceramic material were found extensively affected by taphonomic damage, as the roof had completely collapsed resulting in the accumulation of significant quantities of soil and rock debris over the chamber's floor.

The dromos fill contained the sherds of a fragmented LHIIIA2 kylix (T24/1). The chamber did not include primary burials, but it comprised various secondary assemblages and scattered bone material. A large pile of commingled bones occupied the entire east part (classified as **Burial T24/A** at the time of discovery, based on the recognition of a single mandible only). The contents of this assemblage were found fragmented by the debris of collapsed roof. The ceramic material was of mixed date, including a LHIIB rounded alabastron, several LHIIIC (Early to Late) vessels, as well as some steatite buttons, several glass beads, and a necklace reconstructed from 159 carnelian beads. At the rear, south, part of the chamber, two isolated decayed long bones were found together with a LHIIIC Late stirrup jar, a steatite button, a stone bead and a bronze pin. Finally, west of the entrance, a smaller pile of human remains, presumably comprising a single secondary deposition (**T24/B**), was accompanied by another ceramic assemblage of mixed date, including three LHIIIC Late vessels (two stirrup jars and a kalathos), but also a small handle-less jar dated to the LHIIB/IIIA1 period (Table 6.12.1).[53]

[53] In addition to these grave goods, four slivers of a boar tusk helmet were found mixed with skeletal remains during the osteological study, associated with the eastern bone concentration (T24/A).

Table 6.12.1. Tomb 24: List of artefacts by tomb context, including location, chronological and typological information.
(*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
DROMOS	DROMOS FILL	T24/1	GOBLET OR KYLIX	LHIIIA2	264	47
T24/A		T24/2	STIRRUP JAR	LHIIIC LATE	175	43:31
T24/A		T24/3	STIRRUP JAR	LHIIIC LATE	175	43:31
T24/A		T24/4	STIRRUP JAR	LHIIIC EARLY	174	19:53
T24/A		T24/5	STIRRUP JAR	LHIIIC MIDDLE	176	19:31
T24/A		T24/6	STIRRUP JAR	LHIIIC LATE	176	43:i
T24/A		T24/7	STIRRUP JAR	LHIIIC MIDDLE	176	61:A(?)
T24/A		T24/8	ALABASTRON	LHIIIC MIDDLE	92	64:29
T24/A		T24/9	ALABASTRON	LHIIIC MIDDLE/LATE	94	
T24/A		T24/10	DUCK-VASE	LHIIIC LATE		
T24/A		T24/11	ALABASTRON	LHIIIC EARLY	79b	
T24/A		T24/12	AMPHORISKOS	LHIIIC LATE	59	
T24/A		T24/13	ALABASTRON	LHIIB	82	32:5, 32:12, 35:1
T24/A		T24/14	CLAY BUTTON	LHIIB-LHIIIC		
T24/A		T24/15	CLAY BUTTON	LHIIB-LHIIIC		
T24/A		T24/16	CLAY BUTTON	LHIIB-LHIIIC		
T24/A		T24/17	CLAY BUTTON	LHIIB-LHIIIC		
T24/A		T24/18	GLASS BEADS	LHIIB-LHIIIC		
T24/A		T24/19	159 CARNELIAN BEADS	LHIIB-LHIIIC		
INCLUDED IN T24/A	S (REAR) CHAMBER CLOSE TO ISOLATED	T24/20	CLAY BUTTON	LHIIIC LATE	175	43:h
INCLUDED IN T24/A	S (REAR) CHAMBER CLOSE TO ISOLATED	T24/21	CLAY BUTTON	LHIIIC LATE		
INCLUDED IN T24/A	S (REAR) CHAMBER CLOSE TO ISOLATED	T24/22	STONE BEAD	LHIIIC LATE		
INCLUDED IN T24/A	S (REAR) CHAMBER CLOSE TO ISOLATED	T24/23	BRONZE PIN	LHIIIC LATE		
T24/B		T24/24	STIRRUP JAR	LHIIIC LATE	175	43:p
T24/B		T24/25	STIRRUP JAR	LHIIIC LATE	175	43:h
T24/B		T24/26	SMALL HANDLELESS JAR	LHIIB-LHIIIA1	77	77:2
T24/B		T24/27	KALATHOS	LHIIIC LATE	291	43:p, 61:18, 53:22

6.12.2 Tomb 24: Osteological results

Information on recovery/collection problems

The osteological analysis was impeded by recovery problems of the bone collection. Bone recovery in Tomb 24 was conducted in two phases: more than half of the skeletal material was collected at the time of excavation in a single bone group ('bones from the chamber'), while the remaining bones were kept *in situ* for over ten years, finally collected in 2006 in three distinct groups, according to the observed bone clusters: 1) NE chamber 2) Rear chamber 3) NW chamber, close to the tomb's entrance. The uncertain origin of the bones in the original collection and the lack of photographic documentation prevented the determination of the relationship between the different bone groups. Cross-examination of the skeletal material with the excavation drawing (Figure 6.12.1) confirmed that the 2006 rear chamber group (2) did not pertain to the two scattered long bones originally described and discerned in the plan, but to a larger bone quantity, most likely the remains that can be seen in the southern concentration of the east secondary deposit T24/A. The 2006 group 1 corresponded to the core material of T24/A, the same as the original 'bones from the chamber' collection. Finally, the western bone group (3) could be positively associated with T24/B context, even though it is possible that some small quantity from this assemblage was already removed with the initial general bone group. For these reasons, all separate groups were collectively analysed as T24/A, except for Group 3 that comprised the core part of T24/B, and hence was separately addressed.

The osteological results

The total skeletal material from Tomb 24 belonged to secondary deposits and comprised 738 bone fragments and 23 teeth (MNI: 7) in moderate state of preservation (Tables 6.12.2, Figure 6.12.2). Basic osteological information for all cases is given in Table 6.12.3.

Table 6.12.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			**PRESERVATION**				**MNI**	
				COMPLETENESS		SURFACE			
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS	MNI	Max. occ. skeletal element
T24/A	530	688	23	diverse c.2	1	3	3	6	Fibula, MT5
T24/B	30	50	0	3	3	3	3	1	Tibia
TOTAL	**560**	**738**	**23**					**7**	Tibia, fibula, MT5

Table 6.12.3. Tomb 24: Basic osteological information by case (n=7) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T24/A - IND. A	COMMINGLED SECONDARY	-		CH I (6-6.5y)	Stage of dental formation: C: R1/4; PM^1: R_i; M^2: CR_c (6-6-5y) Stage of epiphyseal union: all LB unfused			Mandible, maxilla + teeth; Fragments of radius; fibula; pelvis; several LB epiphyses (incl. tibia); patella; tarsals; metatarsals.
T24/A – IND.B	COMMINGLED SECONDARY	-		ADOL (c. 14-17y)	Adult-like size & stage of epiphyseal fusion: distal tibia unfused => just before fusion time (c. 14-16F; 15-18M)			L tibia and distal epiphysis
T24/A – E3	COMMINGLED SECONDARY	M	LB metrics	AD				
T24/A – E4	COMMINGLED SECONDARY	F	Pelvis, mandible	MA	L pubis: 5b (c.48y)			
T24/A – E5	COMMINGLED SECONDARY	F	Pelvis, mandible	PA	Dental wear (mandible): c. 25y.			
T24/A – E6	COMMINGLED SECONDARY	NO		AD				
T24/B	SINGLE SECONDARY	M	Femoral metrics	MA	R aur: 5 (40-44y)			R hum; L ulna; R+L fem; R+L tib; R pelvis; sacrum; metacarpals; metatarsals; tarsals; few ribs+vert; cranial fragments *(tentatively attributed)*.

Burial T24/A: As explained above, the vast majority of the chamber's skeletal remains was aggregated under the label T24/A. Several joining fragments (of both old and new fractures) as well as matching bones from the same individuals were found between the initial 'chamber group' and 2006 Group 1, attesting to wide commingling throughout the east half of the chamber. One match (right and left ulnae) between T24/A and T24/B was also identified (Figure 6.12.S1), but the possibility of recovery bias does not permit secure interpretation of this find. The state of bone preservation reflected both the damage imposed by extensive structural collapse and the recent taphonomic effects caused by the prolonged exposure of the bones after their initial excavation. The surface condition was generally moderate, but preservation differences observed between the initially collected bones and the more recently collected ones confirmed the deleterious effects of post-excavation *in situ* exposure. Worse preservation of the latter was evident, stressed by discrepancy observed even in joining fragments of the same bone (see example of fibula fragmented at the time of discovery, reconstructed from fragments of both the first and recent collection: Figure 6.12.S2). Evidence of mould effects in the form of green staining was also observed in a few bones, strictly from the recently collected material; microscopic examination confirmed the presence of fungus over the bone (Figure 6.12.S3), allowing the differentiation of this post-excavation effect from ancient taphonomic marks, such as for example copper staining due to the proximity to metal artefacts. Bone completeness was diverse, but often fairly good despite the extensive fragmentation, and several bones were reconstructed of several joining fragments (Figure 6.12.S4). The MNI of T24/A reached 7 (based on metatarsals and fibular fragments), but bone representation was calculated on the basis of 6, since the few elements from a seventh individual could possibly match T24/B and hence did not add up to the total MNI of the tomb. Bone representation was good for most elements, including small bones (e.g., foot: Figure 6.12.3), with the exception of cranial remains and of very small and/or fragile elements (i.e. phalanges, ribs, vertebrae, Figure 6.12.2). Despite the good representation and high levels of MNI consistence between major bones, the effects of fragmentation hindered the individuation process. It was only possible to positively re-individuate some of the remains from two sub-adults (T24/A-IND A and B), even though a few adult long bone pairs and matches were also identified. T24/A-IND.A was a child around 6 years of age at death, represented by several skeletal elements, albeit poorly preserved (Figure 6.12.4). T24/A-IND.B was a late adolescent (14-17 years), to whom only a fragment of left distal tibia and its unfused epiphyseal plate could be positively attributed (Figure 6.12.5). The extra remains comprised elements from at least four adults: two females, one male, and one of indeterminate sex (Table 6.12.3).

Burial T24/B: The small bone quantity of 2006 Group 3 that could be safely attributed to T24/B was rather fragmentary, moderately preserved in terms of completeness and surface condition (Table 6.12.2). All skeletal elements from this group could be attributed to one male mature adult (c. 40-44 years), even though only few of them could be positively individuated, due to the state of preservation (Table 6.12.3). The bone inventory suggested a single secondary re-deposition, but it should be noticed that bone representation was rather uncommon, with BRI pattern following neither natural preservation patterns nor the most common selective processes (Figure 6.12.2); however, this pattern cannot be fully trusted due to the possibility of erroneous mixing of some of T24/B bone remains with T24/A in the initial bone collection.

6.12.3 Tomb 24: Bioarchaeological reconstruction of funerary activities

The total MNI of 7 in Tomb 24 comprised the secondary remains from two sub-adults and five adults (2 males, 2 females, 1 indeterminate), with no primary burial *in situ*. The wide commingling of the skeletal material and the mixing of grave goods dated both to the LHIIB/IIIA and the LHIIIC period did not allow specific inferences for the date of the skeletal material, or the reconstruction of funerary sequence, or the date of occurrence of specific funerary acts. Nonetheless, it was possible to reconstruct certain specific funerary acts. BRI frequencies suggested that removal of some skeletal material to outside the tomb had taken place, specifically involving cranial remains. The significantly lower representation of crania[54] cannot be explained on the basis of natural taphonomic decay, since, despite the increased levels of natural taphonomic disturbance in Tomb 24 and the fragmentation caused by it, bone representation was not significantly affected.[55] Apart from crania, there were no

[54] N.B. Crania are counted as present even on the basis of a distinct fragment, cf. 5.4.3.
[55] Especially since, in Tomb 24, even small and fragile elements, often lost in other Voudeni cases due to taphonomic and recovery bias, were actually recovered (e.g., loose teeth, coccyx, distal foot phalanges).

indications of extensive removal to the outside, unless this involved fairly complete skeletons, being thus impossible to attest. Within the chamber, there was evidence of wide commingling in the large continuous pile occupying the eastern third of the floor, even though a separate smaller clustering towards the rear wall was evident; unfortunately the recovery bias precluded the separate study of these remains. The only context clearly separated was T24/B, which is identified as a single secondary deposition, despite our inability to draw further inferences due to lack of photographic documentation and the possibility of erroneous mixing of some of this material with T24/A. In any case, the final internal arrangements in this chamber appear to have occurred at some point in the LHIIIC Late period, with no final interment taking place.

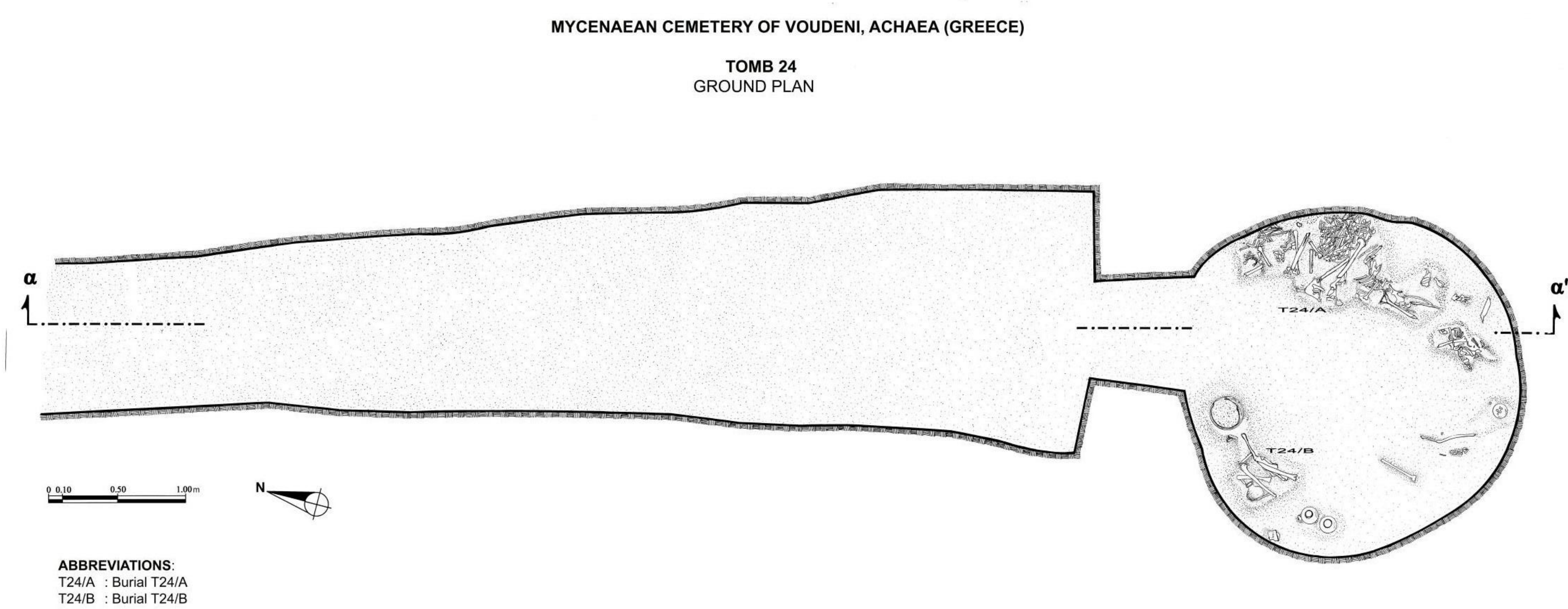


Figure 6.12.1. Tomb 24: ground plan (after Kolonas 1998, forthcoming).

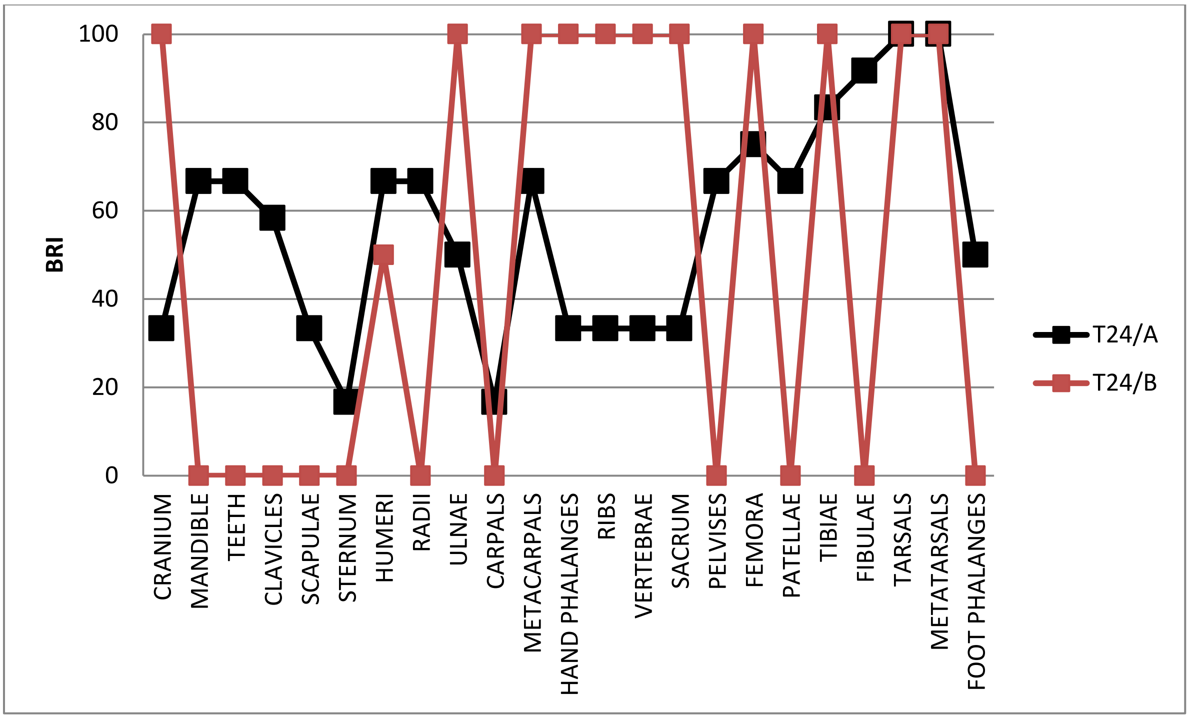


Figure 6.12.2. Tomb 24: Bone Representation Index (BRI) by tomb context.

Figure 6.12.3. Tomb 24: Foot bones.

Figure 6.12.4. T24/A-IND.A: Selection of post-cranial remains (left) and maxilla (right).

Figure 6.12.5. T24/A: Comparison of two immature distal epiphyses of left tibia.T24/A-IND.A (right) vs. T24/B-IND.B (left).

6.13 TOMB 26

6.13.1 Tomb 26: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 26 is a large quadrangular tomb, centrally located at the upper terrace of the hill (Figures 1.4 and 6.13.1; further information: Table 7.1). The tomb was found rather well-preserved, suffering only from minor rock collapses of the roof, the NE wall, and part of the lintel, which had caused the accumulation of intrusive soil deposits (max. height: 1.2m) over the chamber's floor. The dry wall of the entrance displayed evidence of re-building, attesting to multiple re-openings; a steatite seal-stone of indeterminate date was found within its lower course, while a Φ type figurine dated to the LHIIIA2/B, a LHIIIC early rounded alabastron, and a steatite button were found within the dromos fill (Table 6.13.1).

The chamber contained a large amount of artefacts, spanning over three centuries, but only a small quantity of poorly preserved human remains, in both primary and secondary contexts (Figures 6.13.1-2). **Burial T26/A** was located at the NW part of the chamber in SE-NW orientation, placed extended on top of a raw clay layer. The excessive bone decay (with the skeleton described as 'almost disappearing') prevented further information on the burial position. The body was accompanied by several grave goods placed around it, all dated to the LHIIIC Middle period (four stirrup jars and one alabastron positioned around the body, a fragmented stirrup jar on top of the bones, as well as steatite buttons, a glass plate, and a bronze knife by the body: Table 6.13.1). Located east of it, **Burial T26/B** was placed close to the chamber's centre, on top of a raw clay layer in S-N orientation. The skeleton was discovered extremely decayed, and did not survive recovery for most of its part. Due to the extreme skeletal decay, the burial position was unclear but assumed similar to that of T26/A. The burial was associated to the Sub-Mycenaean phase, based on artefacts that were lying in close proximity (three stirrup jars and two clay buttons, Table 6.13.1). South of these two burials, close to the south corner, the bones of **Burial T26/Γ** were at the time of excavation identified as scattered secondary remains, associated with a LHIIIC clay button and a broken bronze pin. Close to them at the south corner, a stirrup jar, a belly-handled amphora, a deep bowl, and a bronze knife were located, all dated to the LHIIIC Late period (Table 6.13.1; Figure 6.13.3).

Along the rear (S) wall, several artefacts were located in three distinct clusters. The western concentration included various LHIIIC Middle and Late vessels, as well as two clay buttons and a bone pin (T26/23-30, Table 6.13.1). The second, central, group comprised mixed LHIIIC Early, Middle, and Late vessels, carnelian and glass beads, and clay and steatite buttons (T26/31-39). A single decayed femur bone was reportedly found close to these assemblages (seen in Figures 6.13.1-2 southeast of T26/B). The final cluster included four vessels at the eastern part of the south wall, all dated to the LHIIIC Middle/Late period (T26/40-43). Just east of this group, at the corner, a single cranium was located, labelled as **Burial T26/Δ**. North of the cranium, adjacent to the middle of the east wall, an isolated LHIIIA2 small piriform jar (T26/44) was found upside down (Table 6.13.1). Finally, a large accumulation of vessels spanning the entire LHIII (from LHIIIA1 to the Sub-Mycenaean period) was placed in the north corner, in no association to skeletal material (T26/45-82, Table 6.13.1).

Table 6.13.1. Tomb 26: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
NO BONE ASSOCIATION	DROMOS FILL	T26/α	FIGURINE Φ	LHIIA2-B		
NO BONE ASSOCIATION	DROMOS FILL	T26/β	ROUNDED ALABASTRON	LHIIIC EARLY	85	53:5
NO BONE ASSOCIATION	DROMOS FILL	T26/γ	STEATITE BUTTON	LHIIIA-C		
NO BONE ASSOCIATION	DRY WALL	T26/1	STEATITE SEALSTONE	LHIIIA-C		
T26/A		T26/2	SQUAT JAR WITH ANGULAR PROFILE	LHIIIC MIDDLE	98	61A
T26/A		T26/3	CYLINDRICAL ALABASTRON	LHIIIC MIDDLE		
T26/A		T26/4	STEATITE BUTTON	LHIIIC MIDDLE		
T26/A		T26/5	GLASS PLATE/BEAD	LHIIIC MIDDLE		
T26/A		T26/6	STIRRUP JAR	LHIIIC MIDDLE	175	53:21
T26/A		T26/7	STIRRUP JAR	LHIIIC MIDDLE	176	61A:2, 58:30
T26/A		T26/8	STIRRUP JAR	LHIIIC MIDDLE	176	
T26/A		T26/9	STIRRUP JAR	LHIIIC MIDDLE	174 or 175	
T26/A		T26/10	STIRRUP JAR	LHIIIC MIDDLE	174	64
T26/A		T26/11	BRONZE KNIFE	LHIIIC MIDDLE		
T26/B (PROBABLY)		T26/12	STIRRUP JAR	SUBMYCENAEAN	177	
T26/B (PROBABLY)		T26/13	CLAY BUTTON	SUBMYCENAEAN		
T26/B		T26/14	STIRRUP JAR	SUBMYCENAEAN	177	71
T26/B		T26/15	CLAY BUTTON	SUBMYCENAEAN		
NO BONE ASSOCIATION	CENTRAL CHAMBER	T26/16	STIRRUP JAR	SUBMYCENAEAN	175	17:21
T26/Γ		T26/17	CLAY BUTTON	LHIIIC		
T26/Γ		T26/18	BRONZE PIN	LHIIIC		
NO BONE ASSOCIATION	S CORNER	T26/19	STIRRUP JAR	LHIIIC LATE	176	43:p, 73:w
NO BONE ASSOCIATION	S CORNER	T26/20	BELLY-HANDLED AMPHORA	LHIIIC LATE	58	53:18,61A:1
NO BONE ASSOCIATION	S CORNER	T26/21	DEEP BOWL	LHIIIC LATE	285	
NO BONE ASSOCIATION	S CORNER	T26/22	BRONZE KNIFE	LHIIIC LATE		
NO BONE ASSOCIATION	W PART OF S (REAR) WALL	T26/23	STIRRUP JAR	LHIIIC MIDDLE	175	41:6
NO BONE ASSOCIATION	W PART OF S (REAR) WALL	T26/24	AMPHORISKOS	LHIIIC MIDDLE	59	57:2
NO BONE ASSOCIATION	W PART OF S (REAR) WALL	T26/25	MUG	LHIIIC LATE	226	
NO BONE ASSOCIATION	W PART OF S (REAR) WALL	T26/26	CLAY BUTTON	LHIIIC MID-LATE		

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
NO BONE ASSOCIATION	W PART OF S (REAR) WALL	T26/27	CLAY BUTTON	LHIIIC MID-LATE		
NO BONE ASSOCIATION	W PART OF S (REAR) WALL	T26/28	BONE PIN	LHIIIC MID-LATE		
NO BONE ASSOCIATION	W PART OF S (REAR) WALL	T26/29	LEKYTHOS	LHIIIC LATE	122	43:h
NO BONE ASSOCIATION	W PART OF S (REAR) WALL	T26/30	STIRRUP JAR	LHIIIC LATE	175	43:p
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/31	STIRRUP JAR	LHIIIC MIDDLE	176	48:22, 53:18
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/32	CARNELIAN (10) AND GLASS (6)	LHIIIC		
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/33	MUG	LHIIIC LATE	226	
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/34	CLAY BUTTON	LHIIIC		
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/35	CLAY BUTTON	LHIIIC		
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/36	CLAY BUTTON	LHIIIC		
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/37	STEATITE BUTTON	LHIIIC		
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/38	STIRRUP JAR	LHIIIC LATE	175	43:h
NO BONE ASSOCIATION	CENTRAL PART OF S (REAR) WALL	T26/39	CONICAL BOWL, SPOUTED	LHIIIC EARLY	301	
NO BONE ASSOCIATION	E PART OF S (REAR) WALL	T26/40	CYLINDRICAL ALABASTRON	LHIIIC MID-LATE	96	
NO BONE ASSOCIATION	E PART OF S (REAR) WALL	T26/41	AMPHORISKOS	LHIIIC MID-LATE	59	53:18
NO BONE ASSOCIATION	E PART OF S (REAR) WALL	T26/42	LEKYTHOS	LHIIIC MID-LATE	122	52:3
NO BONE ASSOCIATION	E PART OF S (REAR) WALL	T26/43	STIRRUP JAR	LHIIIC MID-LATE	175	71:1
NO BONE ASSOCIATION	N OF T26/Δ	T26/44	PIRIFORM JAR	LHIIIA2	45	57:2
NO BONE ASSOCIATION	N CORNER	T26/45	STIRRUP JAR	LHIIIC LATE	175	43:p
NO BONE ASSOCIATION	N CORNER	T26/46	STIRRUP JAR	LHIIIC LATE	175	43:31, 43:32
NO BONE ASSOCIATION	N CORNER	T26/47	STIRRUP JAR	LHIIIC LATE	175	61A:5
NO BONE ASSOCIATION	N CORNER	T26/48	STIRRUP JAR	LHIIIC LATE	177	43:h, 43:34
NO BONE ASSOCIATION	N CORNER	T26/49	STIRRUP JAR	SUBMYCENAEAN	177	61A:1
NO BONE ASSOCIATION	N CORNER	T26/50	STIRRUP JAR	SUBMYCENAEAN	177	61A:1
NO BONE ASSOCIATION	N CORNER	T26/51	ROUNDED ALABASTRON	LHIIIB	85	43:7
NO BONE ASSOCIATION	N CORNER	T26/52	CLAY BUTTON	LHIIIA-C		
NO BONE ASSOCIATION	N CORNER	T26/53	STIRRUP JAR	LHIIIC LATE	176	43:31
NO BONE ASSOCIATION	N CORNER	T26/54	STIRRUP JAR	LHIIIC LATE	175	43:p
NO BONE ASSOCIATION	N CORNER	T26/55	STIRRUP JAR	LHIIIC LATE	175	43:p
NO BONE ASSOCIATION	N CORNER	T26/56	STIRRUP JAR	LHIIIB	182	27:30
NO BONE ASSOCIATION	N CORNER	T26/57	STIRRUP JAR	LHIIIC LATE	177	43:p
NO BONE ASSOCIATION	N CORNER	T26/58	STIRRUP JAR	LHIIIB	183	27:28

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
NO BONE ASSOCIATION	N CORNER	T26/59	ROUNDED ALABASTRON	LHIIIA1	84	43
NO BONE ASSOCIATION	N CORNER	T26/60	ROUNDED ALABASTRON	LHIIIA1	84	32:5
NO BONE ASSOCIATION	N CORNER	T26/61	ROUNDED ALABASTRON	LHIIIB	85	57:2
NO BONE ASSOCIATION	N CORNER	T26/62	ROUNDED ALABASTRON	LHIIIA2	85	32:5
NO BONE ASSOCIATION	N CORNER	T26/63	ROUNDED ALABASTRON	LHIIIA2	85	17:23
NO BONE ASSOCIATION	N CORNER	T26/64	ROUNDED ALABASTRON	LHIIIA2	85	32:5
NO BONE ASSOCIATION	N CORNER	T26/65	ROUNDED ALABASTRON	LHIIIA2	85	32:5
NO BONE ASSOCIATION	N CORNER	T26/66	ROUNDED ALABASTER	LHIIIA2	85	32:5
NO BONE ASSOCIATION	N CORNER	T26/67	CYLINDRICAL ALABASTRON	LHIIIA1	94	64
NO BONE ASSOCIATION	N CORNER	T26/68	CYLINDRICAL ALABASTRON	LHIIIA1/A2 EARLY	93	61:2
NO BONE ASSOCIATION	N CORNER	T26/69	CYLINDRICAL ALABASTRON	LHIIIA1	93	19:7
NO BONE ASSOCIATION	N CORNER	T26/70	PIRIFORM JAR	LHIIIA2	35	
NO BONE ASSOCIATION	N CORNER	T26/71	PIRIFORM JAR	LHIIIB/C EARLY	38	70:8
NO BONE ASSOCIATION	N CORNER	T26/72	PIRIFORM JAR	LHIIIA1	44	57:2
NO BONE ASSOCIATION	N CORNER	T26/73	PIRIFORM JAR	LHIIIA1	23	
NO BONE ASSOCIATION	N CORNER	T26/74	PIRIFORM JAR	LHIIIA1	44	67:9
NO BONE ASSOCIATION	N CORNER	T26/75	PIRIFORM JAR	LHIIIA1	44	57
NO BONE ASSOCIATION	N CORNER	T26/76	MUG	LHIIIA2	225	49:21, 53:5
NO BONE ASSOCIATION	N CORNER	T26/77	CARINATED CONICAL CUP	LHIIIA1/A2	230	19:7
NO BONE ASSOCIATION	N CORNER	T26/78	RING-HANDLED CUP	LHIIIA2	238	
NO BONE ASSOCIATION	N CORNER	T26/79	CONICAL BOWL, SPOUTED	LHIIIA2-B1	301	
NO BONE ASSOCIATION	N CORNER	T26/80	FLASK	LHIIIB	190	27:14
NO BONE ASSOCIATION	N CORNER	T26/81	JUG	LHIIIA-C	114	
NO BONE ASSOCIATION	N CORNER	T26/82	STIRRUP JAR	LHIIIA2	182	

6.13.2 Tomb 26: Osteological results

Information on recovery/collection problems

The examination of the recovered bones across excavation photos confirmed that the skeletal remains of all main contexts, despite extremely poor preservation, were collected as long as they could survive removal. The bones, however, from contexts T26/B and T26/Γ were collectively removed as one group, impeding their secure segregation during lab analysis (see below). The only bone not included in the final study collection (most likely not surviving recovery due to its poor condition) was the isolated femur that was located SE of T26/B.

The osteological results

The four main tomb contexts comprised only a small quantity of poorly preserved human remains, of a total MNI of 4 (Table 6.13.2; Figure 6.13.4). Even though it was attempted to segregate the erroneously mixed T26/B and T26/Γ remains, it was not possible to positively re-attribute *all* elements to the correct context; for this reason, MNI bone frequencies, BRI values (Figure 6.13.4), and numbers of fragments (Table 6.13.2) are presented collectively.

Table 6.13.2. Bone quantity, state of preservation, and MNI by tomb context.

<table>
<tr><th></th><th colspan="3">NO OF BONE FRAGMENTS</th><th colspan="4">PRESERVATION</th><th colspan="2">MNI</th></tr>
<tr><th rowspan="2">TOMB CONTEXT</th><th rowspan="2">IDENTI FIED</th><th rowspan="2">TOTAL</th><th rowspan="2">TEETH</th><th colspan="2">COMPLETENESS</th><th colspan="2">SURFACE</th><th rowspan="2">MNI</th><th rowspan="2">Max. occ. skeletal element</th></tr>
<tr><th>DETAIL</th><th>CONCISE CLASS</th><th>DETAIL</th><th>CONCISE CLASS</th></tr>
<tr><td>T26/A</td><td>29</td><td>76</td><td>2</td><td>4</td><td>4</td><td>4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>T26/B</td><td rowspan="2">43</td><td rowspan="2">69</td><td rowspan="2">0</td><td>4</td><td>4</td><td>4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>T26/Γ</td><td>3</td><td>3</td><td>3</td><td>3</td><td>1</td><td></td></tr>
<tr><td>T26/Δ</td><td>3</td><td>3</td><td>0</td><td>4</td><td>4</td><td>3</td><td>3</td><td>1</td><td></td></tr>
<tr><td>TOTAL</td><td>75</td><td>148</td><td>2</td><td colspan="4"></td><td>4</td><td>Femur; cranium</td></tr>
</table>

Table 6.13.3. Tomb 26: Basic osteological information by case (n=4) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T26/A	PRIMARY	M	Mandible; femoral metrics	AD	M_3 erupted (>18y)			
T26/B	PRIMARY	NO		AD				
T26/Γ	DISTURBED PRIMARY	M	Femoral metrics	AD				
T26/Δ	SCATTERED/ISOLATED	F?	Cranium (temporal)	AD				

Burial T26/A: The skeleton of this primary burial was extremely fragmentary and poorly preserved in terms of both completeness and surface condition (see extreme weathering of cranial fragments: Figures 6.13.5 and 6.13.S1). Bone representation was slightly better, with good/moderate values for the larger and most resilient bones, since it was possible to attest their presence even on the basis of a single identifiable fragment (Figure 6.13.4). The skeleton belonged to an adult male, but precise ageing was not possible (Table 6.13.3).

Burials T26/B and T26/Γ: Despite the erroneous mixing of the skeletal material of both contexts at the time of recovery, the close examination of excavation photos allowed the partial segregation of these remains based on a positive individuation of bones clearly identified in the zoom photo of T26/Γ (Figure 6.13.3, see below). The mixed assemblage comprised very few elements from two individuals, with the majority re-attributed to T26/Γ. Preservation was poor, showing low completeness and extreme weathering for the bones of T26/B, while the ones attributed to T26/Γ were far better preserved, displaying moderate preservation (Table 6.13.2). Since it was not possible to securely segregate all elements, bone representation was estimated for both on the basis of MNI: 2 (Figure 6.13.4). The fragmentary state of both skeletal assemblages is reflected in the low (or zero) BRI values for most elements, while it should be noticed that the presence of cranial and upper limb bones corresponds solely to T26/B skeleton. After excluding the bones most likely belonging to T27/Γ, the remaining identifiable elements (including some long bones fragments, foot bones, vertebrae, and a single cranial fragment) were tentatively attributed to T26/B. The skeleton belonged to a gracile adult, but the lack of sex-diagnostic elements prevented sex determination (Table 6.13.3). The extremely poor state of preservation and the inability to discern any details of T26/B skeleton on excavation plan and photo (Figures 6.13.1-2) necessitated the classification of its burial position as indeterminate.

Through careful examination of the close-up to Burial T26/Γ, it was confirmed that these bones were much better preserved, most likely because they had not been in contact with raw clay. The examination of the recovered bones across *in situ* photographic documentation demonstrated that T26/Γ remains comprised a decayed left tibia still articulated with the left foot, a femur and fibula lying closely but displaced, and remnants of most likely the other femur and tibia, disarticulated and preserved in worse condition (Figure 6.13.3). The presence of articulation –even if limited at the ankle– and the slight displacements of the other lower limb bones suggest that this assemblage was most likely the outcome of *in situ* disturbance of a primary burial here located. Alternatively, a secondary displacement of these bones before complete decomposition of the soft tissues may also be considered. Within the material collected in the mixed T26/B and Γ group, identified fragments of right femur, fibula, tibia, as well as tarsals and metatarsals of both sides could be securely attributed to T26/Γ (see foot: Figure 6.13.6). The skeleton belonged to an adult male, based on femoral metrics (Table 6.13.3).

Burial T26/Δ: The skull identified as T26/Δ was represented by only three fragments (right temporal, parietal and frontal bone). They were moderately preserved in terms of surface condition, while completeness was poor for the entire skull but moderate/good for these specific cranial bones (Table 6.13.2; Figure 6.13.7). T26/Δ did not match other cranial remains from the chamber, securely confirming the presence of a third individual. Based on the morphology of the temporal bone, the skull was identified as belonging to a probable female, increasing the total tomb MNI to 4 because of the sex difference from T26/Γ.

6.13.3 Tomb 26: Bioarchaeological reconstruction of funerary activities

The total MNI of 4 in Tomb 26 included the remains of four adults: two males, a probable female, and an individual of indeterminate sex (Table 6.13.3). The contextual consideration of preservation patterns and taphonomic data suggest that contexts T26/A and T26/B comprised the extensively decayed remains of primary burials, whose state of preservation should be attributed to natural taphonomic effects, as only fragments of the denser skeletal elements survived and no selective cultural practices were attested. What differentiated the environment of these two interments from that of contexts T26/Γ and T26/Δ was the use of raw clay in the floor layer below the bodies, which appears to have a detrimental effect on bone preservation. The moderate state of surface preservation and completeness of T26/Γ and T26/Δ remains, in combination with distinct BRI patterns, suggested that, even though the natural taphonomic disturbance in the tomb (i.e. partial rock collapses and soil infiltrations, cf. 6.13.1) contributed to the final preservation state, the complete absence of all other elements from these skeletons cannot be explained on the basis of natural decay alone; the formation of these assemblages should be, thus, understood as mostly due to human agency and selective mortuary practice. T26/Γ comprised the remains of a disturbed primary burial preserving *in situ* only the lower limbs, while the upper part of the body had been removed to outside the tomb. T26/Δ was classified in the category of isolated remains, indicating the partial retention of cranium, while the remaining skeleton got moved outside the tomb.

Ceramic dating indicates a long history of use of Tomb 26, spanning the entire LHIII period to the Sub-Mycenaean times. The two primary burials, comprising the final tomb interments, were dated to the LHIIIC Middle (T26/A) and LHIIIC Late/Sub-Mycenaean period (T26/B). The disturbed primary burial T26/Γ may be tentatively associated with the LHIIIC Late artefacts that were located in its vicinity, while T26/Δ is classified as of indeterminate date as it cannot be securely associated to specific grave goods (cf. Table 7.X5). In contrast to the paucity of human remains, the richness of the ceramic assemblages points out to several funerary events and multiple re-arrangements taking place within the chamber. The fact that the ceramic deposit of the north corner comprised material from the entire LHIII period, including all of LHIIIA-B finds, while the assemblages along the south wall were only dated to the LHIIIC, suggests that the earlier material had already been removed in the north corner in some episode(s) of extensive floor cleaning, while more artefacts were later added to it as the LHIIIC funerary activities continued in the main floor area. It is, thus, conceivable that extensive skeletal removal to outside the tomb had taken place before the LHIIIC Middle/Late burials got interred, suggesting that the true number of burials in Tomb 26 was definitely larger that the MNI of 4 that was finally recovered.

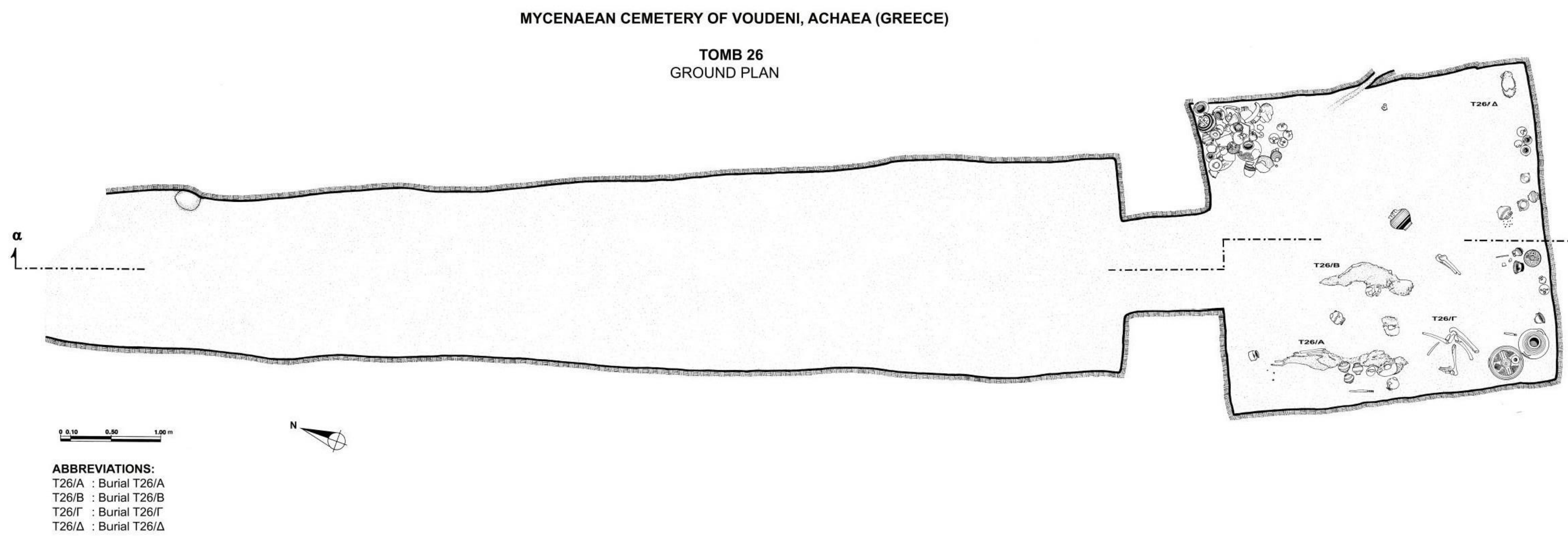


Figure 6.13.1. Tomb 26: ground plan (after Kolonas 1998, forthcoming).

Figure 6.13.2. Tomb 26, post-excavation (view from the north).

Figure 6.13.3. Burial T26/Γ, post-excavation (view from the east). Red arrow pointing to articulation of left tibia with foot.

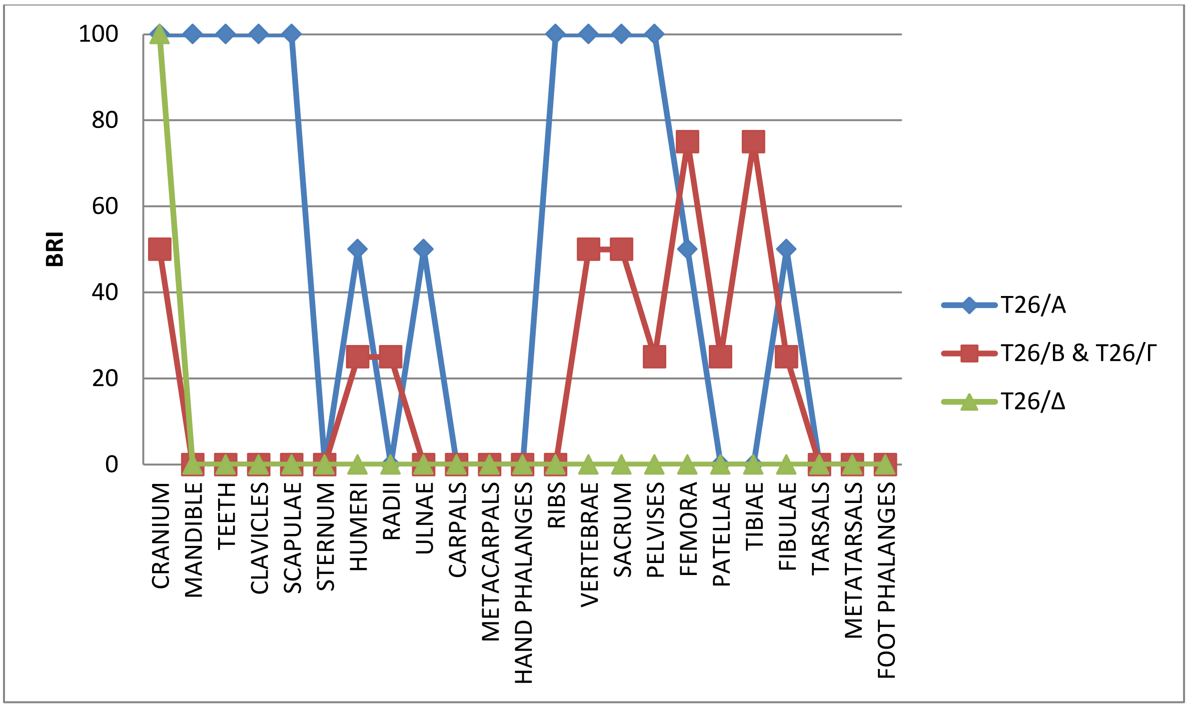


Figure 6.13.4. Tomb 26: Bone Representation Index (BRI) by tomb context.

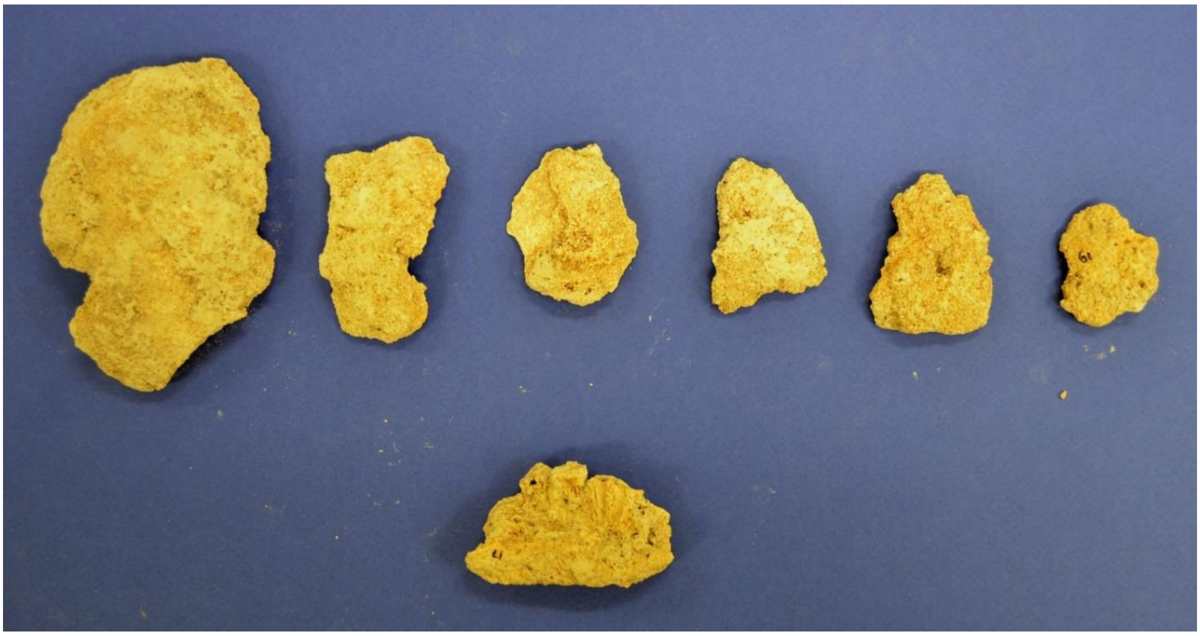


Figure 6.13.5. T26/A: Cranial fragments (top) and mandibular fragment (bottom).

Figure 6.13.6. T26/Γ: Foot bones.

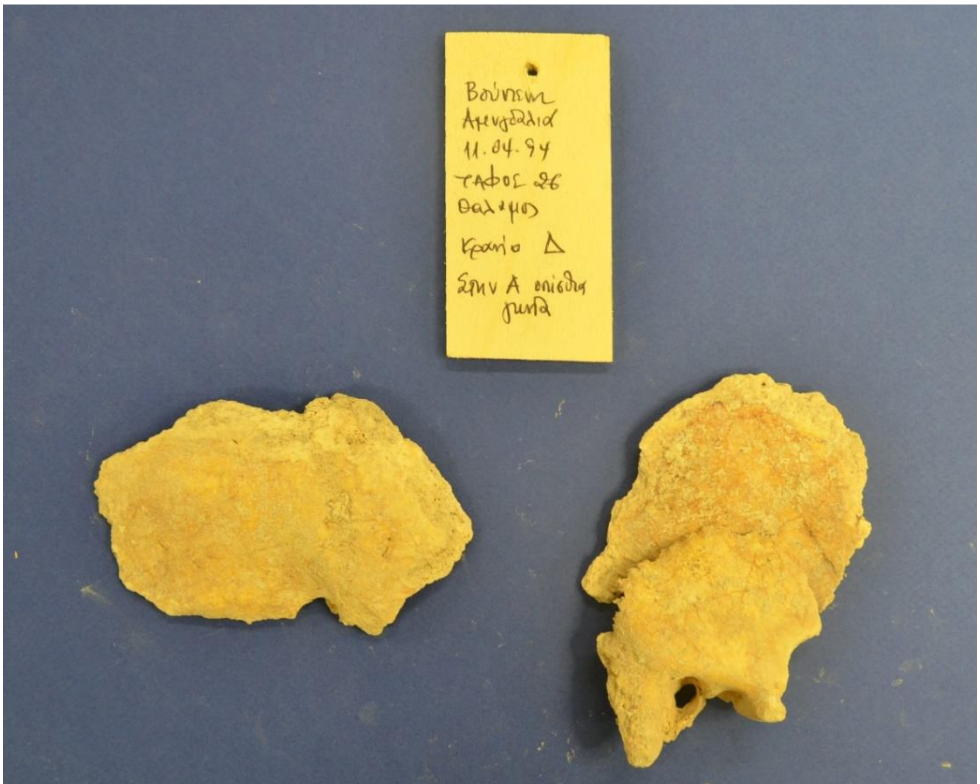


Figure 6.13.7. T26/Δ: Cranial remains.

6.14 TOMB 27

6.14.1. Tomb 27: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 27 is a circular tomb of medium size located at the upper terrace of the hill (Figures 1.4 and 6.14.1a-c; further information: Table 7.1). Its contents indicated a long period of continuous use, spanning the entire LHIII period. The tomb was found intact but displayed evidence of limited wall spalling and cracking, which permitted the accumulation of an uneven layer of infiltrated soil deposits over its floor. Within these deposits, six LHIIIC vessels were found, presumably displaced during flooding episodes (T27/1-6, Table 6.14.1).

The centre of the chamber was occupied by the decayed remains of three, presumably disturbed, primary burials (T27/A-Γ), all placed on top of a raw clay layer (Figure 6.14.1a). **Burial T27/A** was the most northern of them, described as placed in E-W orientation, with lower limbs flexed towards the north (i.e. right side of the body). The body was reported to preserve only its lower limbs, with the rest of the body presumably decayed due to the effects of raw clay. A group of grave goods located just NE of T27/A were presumably associated with it, dating the burial to the LHIIIC Late period (including stirrup jars, clay buttons, glass beads, and a broken bronze ring (T27/7-16, Table 6.14.1). **Burial T27/B** was the southern context, towards the back of the chamber. The body was placed extended in W-E orientation. It was so extensively decayed that the bones did not survive recovery. Three LHIIIC Middle/Late vessels, a clay button, and a flint blade (T27/26-29, 31) accompanied this burial, while a LHIIIA arrow head (T27/50) found below the pelvis of the skeleton may have belonged to a previous interment (Table 6.14.1). Between T27/A and T27/B, the central part of the floor was occupied by **Burial T27/Γ**, placed in S-N orientation. The lower limbs were found contracted towards the east (i.e. right side of the body), while the position of upper limbs was unclear due to poor preservation of the bones. A LHIIIC Late stirrup jar (T27/30) accompanied this skeleton.

Along the west wall, a large pile of commingled secondary human remains was originally identified comprising at least two individuals (**Burial T27/Δ-E,** Figure 6.14.2). The skeletal remains with their accompanying grave goods occupied an area of 1.90x0.80m, with the skeletal material mostly concentrated in the centre of the deposit. The accompanying artefacts were divided in two groups: a) south of the central bone concentration, a gold necklace, a very large number of carnelian and glass beads (later reassembled into six necklaces), a carnelian seal-stone, a clay button, as well as two LHIIIA2 and one LHIIIC Middle vessels; and b) north of the central bone concentration, a necklace of several glass beads and many LHIIIA1 to LHIIIA2/B vessels, as well as few fragments of a boar tusk helmet (Table 6.14.1). Below the central bone concentration, bronze tweezers (T27/49α) and a bronze ring (T27/49β) were found. Another group of artefacts, but with no bones, was clustered along the opposite (east) wall. This included several amber, carnelian, and glass beads, steatite and clay buttons, a few arrowheads dated to the LHIIIA period, a jug and a stirrup jar dated to the LHIIIC Early, and a composite vessel dated to LHIIIB/C Early (Table 6.14.1).

Partially below the primary remains, in the central-west part of the chamber, two pits with secondary depositions of earlier interments were located (Figure 6.14.3). **Pit I** (0.65x0.35x0.26m) contained **Burial T27/ΣΤ**, identified at the time of discovery as the secondary deposition of a child. A LHIIIA/B mastoid cup and a broken bronze knife were also included in this deposit (Table 6.14.1). **Pit II** (0.97x0.50x0.38m), located just south of Pit I, contained secondary deposits of human bones and artefacts, which were understood to have occurred in two phases based on their stratigraphic distinction. The lower pit included a dense bone concentration from at least two individuals (**T27/Η-Θ**) and was accompanied by several vessels, most of them dated to the LHIIIA period except for one cylindrical alabastron that was dated to the LHIIIB/C Early, as well as steatite, clay and lead buttons, three bronze sword handle nails, the handle of a bronze dagger, some arrowheads, two bronze awls, a broken bronze pin, and a large quantity of gold, carnelian, and glass beads, later reassembled in five necklaces. The upper layer of the pit included fewer human remains (**T27/Ζ**) accompanied by three LHIIIC Middle vessels, one LHIIIA/B feeding bottle, and one clay button (Table 6.14.1).

Table 6.14.1. Tomb 27: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
NO BONE ASSOCIATION	RAISED DEPOSIT CLOSE TO N WALL	T27/1	BELLY-HANDLED AMPHORA	LHIIIC LATE	58	61A, 43
NO BONE ASSOCIATION	RAISED DEPOSIT CLOSE TO N WALL	T27/2	STIRRUP JAR	LHIIIC LATE	175	61A:5, 71:10
NO BONE ASSOCIATION	RAISED DEPOSIT CLOSE TO N WALL	T27/3	CYLINDRICAL ALABASTRON	LHIIIC EARLY-MIDDLE	96	57
NO BONE ASSOCIATION	RAISED DEPOSIT CLOSE TO N WALL	T27/4	STIRRUP JAR	LHIIIC EARLY-MIDDLE	173	43:p
NO BONE ASSOCIATION	RAISED DEPOSIT CLOSE TO N WALL	T27/5	STIRRUP JAR	LHIIIC EARLY-MIDDLE	175	64
NO BONE ASSOCIATION	RAISED DEPOSIT CLOSE TO N WALL	T27/6	LEKYTHOS	LHIIIC EARLY-MIDDLE	123	43:h
T27/A		T27/7	STIRRUP JAR	LHIIIC LATE	175	43:p
T27/A		T27/8	STIRRUP JAR	LHIIIC LATE	177	43:31
T27/A		T27/9	STIRRUP JAR	LHIIIC LATE	175	77:1
T27/A		T27/10	CLAY BUTTON	LHIIIC LATE		
T27/A		T27/11	CLAY BUTTON	LHIIIC LATE		
T27/A		T27/12	CLAY BUTTON	LHIIIC LATE		
T27/A		T27/13	3 GLASS BEADS	LHIIIC LATE		
T27/A		T27/14	STIRRUP JAR	LHIIIC LATE	175	61A:5
T27/A		T27/15	STIRRUP JAR	LHIIIC LATE	177	43:31
T27/A		T27/16	BRONZE RING	LHIIIC LATE		
NO BONE ASSOCIATION	ALONG E WALL	T27/17	6 AMBER BEADS	LHIIIA-C		
NO BONE ASSOCIATION	ALONG E WALL	T27/18	STEATITE BUTTON	LHIIIC		
NO BONE ASSOCIATION	ALONG E WALL	T27/19	CLAY BUTTON	LHIIIA-C		
NO BONE ASSOCIATION	ALONG E WALL	T27/20	JUG	LHIIIC EARLY	114	
NO BONE ASSOCIATION	ALONG E WALL	T27/21	STIRRUP JAR	LHIIIC EARLY	175	64
NO BONE ASSOCIATION	ALONG E WALL	T27/22	3 CARNELIAN BEADS	LHIIIA-C		
NO BONE ASSOCIATION	ALONG E WALL	T27/23	COMPOSITE VESSEL	LHIIIB-C EARLY	326	70:7
NO BONE ASSOCIATION	ALONG E WALL	T27/24	38 GLASS BEADS	LHIIIA-C		
NO BONE ASSOCIATION	ALONG E WALL	T27/25	4 ARROW HEADS	LHIIIA		
T27/B		T27/26	CLAY BUTTON	LHIIIA-C EARLY		
T27/B		T27/27	STIRRUP JAR	LHIIIC MIDDLE-LATE	175	43:i
T27/B		T27/28	LEKYTHOS	LHIIIC MIDDLE-LATE	123	
T27/B		T27/29	AMPHORISKOS	LHIIIC MIDDLE-LATE	59	64

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T27/Γ		T27/30	STIRRUP JAR	LHIIIC LATE	181	41:21
T27/B		T27/31	FLINT BLADE	LHIIIC MIDDLE-LATE		
T27/Δ-E		T27/32	GOLD NECKLACE (19 TABLETS)	LHIIIA-B		
T27/Δ-E		T27/33α-στ	6 NECKLACES OF CARNELIAN & GLASS	LHIIIA-C MIDDLE		
T27/Δ-E		T27/34	SEALSTONE CARNELIAN	LHIIIA		
T27/Δ-E		T27/35	STIRRUP JAR	LHIIIC MIDDLE	176	58:17, 58:20
T27/Δ-E		T27/36	ROUNDED ALABASTRON	LHIIIA2	84	32:5
T27/Δ-E		T27/37	CLAY BUTTON	LHIIIA-C MIDDLE		
T27/Δ-E		T27/38	PIRIFORM JAR	LHIIIA2	45	57:2
T27/Δ-E		T27/39	1 NECKLACES OF 95 GLASS BEADS	LHIIIA-C MIDDLE		
T27/Δ-E		T27/40	ROUNDED ALABASTRON	LHIIIA2-B	85	32:5
T27/Δ-E		T27/41	SMALL HANDLELESS JAR	LHIIIA	77	
T27/Δ-E		T27/42	PIRIFORM JAR	LHIIIA2	45	64:21
T27/Δ-E		T27/43	PIRIFORM JAR	LHIIIA2	45	64:21
T27/Δ-E		T27/44	JUG WITH CUTAWAY NECK	LHIIIA2	135	
T27/Δ-E		T27/45	10 BOAR TUSK & 12 FRAGMENTS	LHIIIA		
T27/Δ-E		T27/46	SHALOW CUP	LHIIIA1	219	
T27/Δ-E		T27/47	PIRIFORM JAR	LHIIIA2	45	41:19
T27/Δ-E		T27/48	SHALLOW CUP	LHIIIA1	219	
T27/Δ-E		T27/49a	BRONZE TWEEZERS	LHIIIA-C MIDDLE		
T27/Δ-E		T27/49b	BRONZE RING	LHIIIA-C MIDDLE		
UNCLEAR BONE ASSOCIATION	BELOW T27/B (POSSIBLY FROM EARLIER	T27/50	ARROW HEAD	LHIIIA		
T27/ΣT	PIT I	T27/51	MASTOID CUP	LHIIIA-B		
T27/ΣT	PIT I	T27/52	SMALL BRONZE KNIFE	LHIIIA-B		
T27/Z	UP PIT II	T27/53	STIRRUP JAR	LHIIIC MIDDLE	176	53:39
T27/Z	UP PIT II	T27/54	STIRRUP JAR	LHIIIC MIDDLE	175	48:5
T27/Z	UP PIT II	T27/55	CUP, SEMI-GLOBULAR	LHIIIC MIDDLE	216	
T27/Z	UP PIT II	T27/56	FEEDING BOTTLE	LHIIIA-B	172	46:52
T27/Z	UP PIT II	T27/57	CLAY BUTTON	LHIIIA-C MIDDLE		
T27/H-Θ	LOW PIT II	T27/58	CYLINDRICAL ALABASTRON	LHIIIB-C EARLY	95	95:5
T27/H-Θ	LOW PIT II	T27/59	CYLINDRICAL ALABASTRON	LHIIIA2	94	64:22
T27/H-Θ	LOW PIT II	T27/60	CYLINDRICAL ALABASTRON	LHIIIA1	93	57:2

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T27/H-Θ	LOW PIT II	T27/61	ROUNDED ALABASTRON	LHIIIA1	84	19:39
T27/H-Θ	LOW PIT II	T27/62	PIRIFORM JAR	LHIIIA1	31	49:4
T27/H-Θ	LOW PIT II	T27/63	PIRIFORM JAR	LHIIIA1	45	49:5
T27/H-Θ	LOW PIT II	T27/64	PIRIFORM JAR	LHIIIA	47	64:27
T27/H-Θ	LOW PIT II	T27/65	CYLINDRICAL VESSEL	LHIIIA		
T27/H-Θ	LOW PIT II	T27/66	STEATITE BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/67	STEATITE BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/68	STEATITE BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/69	STEATITE BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/70	STEATITE BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/71	STEATITE BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/72	CLAY BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/73	CLAY BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/74	LEAD BUTTON	LHIIIA		
T27/H-Θ	LOW PIT II	T27/75	3 BRONZE NAILS FROM SWORD	LHIIIA		
T27/H-Θ	LOW PIT II	T27/76	BRONZE HANDLE OF DAGGER	LHIIIA		
T27/H-Θ	LOW PIT II	T27/77	PARTS OF 6 ARROW HEADS	LHIIIA		
T27/H-Θ	LOW PIT II	T27/78	BRONZE AWL	LHIIIA		
T27/H-Θ	LOW PIT II	T27/79	BRONZE AWL	LHIIIA		
T27/H-Θ	LOW PIT II	T27/80	BRONZE PIN	LHIIIA		
T27/H-Θ	LOW PIT II	T27/81	1 NECKLACE FROM 150 GOLD BEADS	LHIIIA		
T27/H-Θ	LOW PIT II	T27/82	1 NECKLACE FROM 173 CARNELIAN	LHIIIA		
T27/H-Θ	LOW PIT II	T27/83	1 NECKLACE FROM 184 CARNELIAN	LHIIIA		
T27/H-Θ	LOW PIT II	T27/84	1 NECKLACE FROM 147 GLASS BEADS	LHIIIA		
T27/H-Θ	LOW PIT II	T27/85	1 NECKLACE FROM 203 GLASS BEADS	LHIIIA		

6.14.2 Tomb 27: Osteological results

Information on recovery/collection problems

The final bone collection did not include all human remains identified at the time of discovery. The remains from contexts T27/B and T27/H-Θ were missing. The bones of T27/B did not survive the excavation removal due to their extremely poor state of preservation, while the absence of the bone group T27/H-Θ from lower Pit II was attributed to post-excavation bias, as it was not possible to locate it in the storage area. Even though this material is not included in the osteological results of this study, few observations were made possible through the use of excavation plans and photos as considered below.[56] However, the quality of both drawing and photographic documentation was too low, especially for the three primary contexts.

The osteological results:

The total bone assemblage from the five recovered tomb contexts comprised a moderate quantity of skeletal remains of moderate to poor preservation (Tables 6.14.2; Figure 6.14.4). The osteologically attested MNI was 6 (based on maximum occurrence of the right femur and age-sex considerations), but the original assemblage included at least 7 individuals, since one more individual can be securely added to the total based on the excavation description of T27/B.

Table 6.14.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			**PRESERVATION**				**MNI**	
				COMPLETENESS		SURFACE			
TOMB CONTEXT	IDENTI FIED	TOTAL	TEETH	DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS	MNI	Max. occ. skeletal element
T27/A	15	21	0	3	3	3	3	1	
T27/Γ	43	86	0	4	4	4	4	1	
T27/Δ-E	104	241	0	4	4	4	4	2	Femur
T27/ΣT (PIT I)	113	156	7	1	1	3	3	1	
T27/Z (UPPER PIT II)	47	76	1	4	4	4	4	1	
TOTAL	**322**	**580**	**8**					**6**	Femur

[56] N.B. At the time of discovery, Pit I was labelled as Pit II and vice versa, later corrected in Kolonas (1998). The original names appear in notebooks and excavation photographic records.

Table 6.14.3. Tomb 27: Basic osteological information by case (n=6) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T27/A	DISTURBED PRIMARY	F	Femoral metrics; general gracility	AD	LB epiphyseal fusion complete	-		R+L femora; R tibia; Fibula(e)
T27/Γ	DISTURBED PRIMARY	NO		AD	LB epiphyseal fusion complete			Fragments of all elements, except for skull, clavicles, scapulae, sternum, ribs, pelves
T27/Δ-E – E1	COM. SEC.	M	Femoral metrics	AD	LB epiphyseal fusion complete			
T27/Δ-E – E2	COM. SEC.	M	Femoral metrics	AD	LB epiphyseal fusion complete			
T27/ΣT (PIT I)	SINGLE SEC.	-		CH II (7-9y)	Diaphyseal length: All LB: 6.5-7y; metacarpals: 4-5y. Dental formation stage: 9y (+/-2y). (PM_1: $R_{3/4}$; M^2: $R_{1/2}$) Stage of bone fusion: c. 8y. (based on recently united neuro-central vertebral and sacral segments)			Complete skeleton (exc. patellae, metatarsals, foot phalanges)
T27/Z (UPPER PIT II)	COM. SEC.	-		CH II (11-13y)	Stage of epiphyseal fusion: Proximal radius fused (>11-13y); Distal fibula unfused (<12-15y); Calcaneus post. plate fused (>10-12y); MC, MT, FP unfused: <11-13y)			L scapula; cervical vertebrae; R radius; DE of L fibula; metacarpal; many foot bones

Burial T27/A: The skeleton of T27/A was moderately to poorly preserved in all aspects (Table 6.14.2). The recovered bones (pair of femora, right tibia and fibula) were all fragmented but it was possible to reconstruct them from several fragments (Figure 6.14.5). The poor bone representation displayed a very unusual pattern with zero BRI values of every element but the lower limb bones (Figure 6.14.4). The skeleton was identified as a female adult, but its poor condition prevented further information (Table 6.14.3).

Burial T27/Γ: The skeleton of T27/Γ was very poorly preserved in terms of completeness and surface condition, but bone representation was far better than for T27/A, with high BRI values for most skeletal elements, even if their representation was based on partial and weathered fragments (Table 6.14.2, Figures 6.14.4, 6.14.6). The skeleton belonged to an adult individual of non-observable sex, as no sex-diagnostic elements were preserved (Table 6.14.3).

Burial T27/Δ-E: The bones of the secondary deposition T27/Δ-E were poorly preserved when revealed (Figure 6.14.2) and got further damaged during recovery, as inferred by the co-existence of old and modern fractures. The assemblage comprised a limited quantity of bone fragments, poorly preserved in all aspects (Table 6.14.2; Figures 6.14.S1-S2). The MNI of this assemblage was 3 based on the presence of left second metatarsals, but frequencies of all other elements did not exceed a MNI of 2, which is the number that T27/Δ-E attributes to the tomb total. However, the BRI estimation was based on the internal MNI of 3, in order to accurately understand the formation of this assemblage. Bone representation was diverse and generally moderate, demonstrating a rather unusual pattern: smaller bones (i.e. metacarpals and all foot bones) gave the highest BRI values while the denser and most prominent elements were only moderately (or poorly) preserved (Figure 6.14.4). The fragmentary bone condition allowed only the pair identification of a very limited number of bones (ulnae, patellae, foot bones) and prevented precise individuation. The presence of two adult males was identified based on femoral metrics (Table 6.14.3). The stage of epiphyseal union (just fusing) of the lower segments of a sacral body indicated the presence of a young adult (c. 20 years) among the remains; however, since individuation was not possible, the bone was not used to further specify the age estimation for either of T27/Δ-E cases.

Pit I (Burial T27/ΣT): Pit I contained the very well preserved skeleton of a child (Table 6.14.2, Figures 6.14.4, 6.14.7a-b). Despite moderate surface condition, completeness and representation were excellent, with the skeleton missing only patellae, metatarsals and foot phalanges. Slight copper staining was observed on the distal epiphysis of the left tibia and the talus, most likely due to the bronze knife accompanying the burial. As presented in 6.14.1, T27/ΣT was identified as a secondary burial at the time of discovery. The BRI pattern of this assemblage indicated minimal taphonomic or recovery bone loss, pointing either to a well-preserved primary burial or a meticulously removed secondary deposit. In order to attempt discrimination between the two possibilities, the excavation photo (Figure 6.14.7a) was carefully examined across the recovered material. It was possible to observe that the skeleton, albeit certainly not in correct anatomical position, preserved some semi-articulation of the rib cage, as well as evidence of close proximity between matching elements (e.g., cranium and mandible). Thus, both possibilities remained open: the observed disarticulation could be due to the decomposition of a seated burial in a void pit or, alternatively, the preserved semi-articulation could be due to secondary removal before complete decomposition of the soft tissues. The lack of analytical field recording of the precise bone positions did not permit the secure assessment of the original state of the skeleton at the time of its disposal; however, certain observations on the available photo supported the scenario of secondary placement, taking place not too long after the time of death. This was mostly suggested by the pronounced displacement of certain bones (such as the left scapula seen close to the north-west corner of the pit with the right one found diagonally opposed at the south-east part), which signified a level of extensive bone disarray, inconsistent with the expected displacement following the decomposition of 'seated' pit primary burials (cf. Ortiz et al. 2013). Therefore, the retention of partial articulation observed on the ribs, the very good bone representation of most elements, and the high frequencies of very small bones and epiphyseal plates, may be more likely attributed to the secondary deposition of this sub-adult skeleton, before the complete decay of the soft tissues. The presence of a perishable material wrapping the body (e.g., shroud) may have assisted the full removal of the entire skeleton as a single secondary deposit. The skeleton belonged to a child, aged 7-9 years (Table 6.14.3).[57]

[57] N.B. A discrepancy between skeletal and dental age was recorded (Table 6.14.3). Considering the

Pit II-upper layer (Burial T27/Z): The recovered remains from the upper layer of Pit II (T27/Z) comprised a rather small bone quantity, in poor state of preservation (Table 6.14.2). The MNI of this context, based on which BRI values were calculated, was 2. However, only one individual was contributed to the total tomb MNI. Bone representation was fairly poor, with low (or zero) BRI values for many elements, including dense and prominent ones (e.g., humeri, ulnae); on the contrary, certain small elements (such as foot bones) were well represented (Figure 6.14.4). It is worth noticing that long bones were virtually absent (except for a right radius), as even the moderate representation of some of them was attested on the basis of few fragments (Figure 6.14.S3). Individuation was limited due to the poor preservation, but with the aid of distinct age characteristics some bones were attributed to T27/Z-IND.A, an older child (11-13 years, Table 6.14.3). Among the other remains, a male radius was identified; this was not added in total MNI since it could belong with the male individuals identified in T27/Δ-E.

Contexts missing from the study bone collection

Burial T27/B: The lack of photographic documentation of T27/B prevented any observations. The excavation drawing (Figure 6.14.1a) is rather unclear, permitting though to discern the rough position of lower limb bones and cranium and confirming the description given at the time of discovery.

Pit II-lower layer (Burial T27/H-Θ): The photographic and drawing documentation of this assemblage (Figures 6.14.1c and 6.14.S4) permitted some interesting observations. The lower pit assemblage was significantly larger than that of the upper layer**.** The bones included appeared far better preserved both in terms of surface condition and completeness. The available photograph depicts only part of the assemblage at around the mid-level of its excavation; the presence of one skull, a femur, two tibiae, and a left humerus could be confirmed, but these elements are not enough to increase the total MNI of the tomb.

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observed pathological evidence –not included in this study–, the discrepancy between dental and skeletal age could be attributed to skeletal retardation due to health issues, and thus the older (c. 9 years) age at death, estimated based on the stage of dental formation, should be accepted as the most accurate.

6.14.3 Tomb 27: Bioarchaeological reconstruction of funerary activities

The osteologically assessed MNI of Tomb 27 is 6, but this number can be securely raised to 7 based on excavation documentation of T27/B. The recovered remains included a female adult and one adult of indeterminate sex from disturbed primary burials, as well as two male adults and two children from secondary deposits. The tomb was in use during the entire LHIII period and comprised a variety of funerary contexts. The character of these assemblages and specific details of their formation process and sequence are addressed below through a synthetic view of the bioarchaeological evidence.

The bone preservation in all studied contexts, except for T27/ΣΤ, was poor, confirming the archaeological inference of extensive natural taphonomic damage due to possible flooding episodes, wall spalling, soil infiltrations, and the detrimental effects of raw clay. The examined primary burials (T27/A and T27/Γ) are both classified as disturbed, even though it is ambiguous whether disturbance was caused by natural factors alone or –intentional or unintentional- human activities (cf. 7.3.3). The schematic drawing of the bones in excavation plans does not permit clarification of the skeletal position in order to further assess this question. However, the comparison of bone preservation patterns suggests some differentiation between T27/A and T27/Γ. T27/Γ, despite its worse preservation in terms of surface condition and completeness, is far better represented, showing BRI values consistent with naturally damaged primary burials. On the contrary, T27/A displays a very characteristic BRI pattern, with only the lower limbs partially preserved; their preservation is not, however, so poor as to support natural decay as the most parsimonious explanation for the total absence of the upper body (N.B. the upper body was not even visible at the time of discovery, cf. 6.14.1). Moreover, on the excavation drawing, it can be seen that some of the artefacts associated with T27/A were located over the area of the upper body (Figure 6.14.1a). Therefore, it appears more likely that the upper part of T27/A skeleton was removed due to human agency, while the lower limbs remained more or less *in situ*.

The secondary deposits of Tomb 27 differed both in terms of location (floor pile *versus* pits) and composition. The bones assembled in T27/Δ-E were in the worse condition, due to their prolonged exposure on the chamber's floor. Bone representation is quite unusual for secondary bone piles, in the sense that the highest

BRI values are here shown by small skeletal elements (i.e. foot bones). Even though the extensive impact of natural taphonomic bias does not allow positive inferences about the under-representation of the most prominent elements (e.g., skulls), the recovery of so many small bones in this group suggests that T27/Δ-E had received swept skeletal material from all over the floor.[58] The missing prominent bones may have been removed from the tomb, but preservation is too problematic to securely infer such activities (cf. 7.4). The upper layer of Pit II (T27/Z) had received a small bone quantity of partial secondary remains from at least two individuals. In this assemblage, the predominance of small-sized bones and fragments was even more evident, strongly suggesting an act of floor cleaning rather than intention of retaining complete skeletons or prominent bones. As before, it is conceivable that the prominent skeletal elements of these interments had already been removed. The bones of T27/Z were deposited at the top of the pre-existing pit that was presumably filled up with soil: the excavators stratigraphically identified two distinct layers and the upper deposit (T27/Z) was not mixed with the lower (T27/H-Θ). Since the pit was re-filled and closed after deposition of these bones, we can assume that their poor state of preservation is mostly due to their previous exposure on the floor. Since we lack the earliest deposit of Pit II (T27/H-Θ), we can only assume, based on their fairly good bone preservation that can be observed on excavation photos, that they comprised a more common type of secondary removal of earlier interment(s), which included prominent bones (e.g., cranium, long bones). Finally, the deposit of Pit I, T27/ΣΤ, was a very different case. This was a thorough secondary deposition of a single individual, where care was clearly taken to preserve the totality of the skeleton. As shown above, the bone transfer took place fairly close to the time of death. The good preservation suggests that the bones remained well protected in the pit, which was probably not only covered with some lid but filled with soil after the deposit of bones and grave goods, as corroborated by the position of the bones and the ceramic vessel (cf. Figure 6.14.7a).

Pairing the ceramic evidence with the above observations, it is possible to broadly reconstruct the funerary sequence and further clarify both the formation date

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[58] Alternative explanations, such as the removal of still semi-articulated foot remains or close proximity to the original location of earlier burials, do not seem as plausible, since several hand/foot bones were discerned in photographic close-ups of T27/Δ-E, commingled with ceramic material and completely disarticulated.

of each assemblage and that of the bones included within (cf. Table 7.X5). The tomb was used for multiple interments throughout the LHIIIA-B period. Removal to outside the tomb of some of the interments of this phase can be assumed, but the increased taphonomic and recovery bias do not permit its positive confirmation. Certainly, removal within the tomb during that period can be attested in the creation of both pits. Pit I and its skeletal contents were positively dated to the LHIIIA-B period, while the lower layer of Pit II (T27/H-Θ) contained exclusively LHIIIA artefacts and one LHIIIB/C Early vessel, implying an early date for the skeletal remains and placing the date of pit construction around the LHIIIB/C Early. A large quantity of early cultural material was also deposited in T27/Δ-E, but the co-presence of a LHIIIC Middle/Late vessel in combination with the composition of the skeletal sample (that implied a mixture of swept bones) indicates that this bone pile was the cumulative outcome of secondary activities from all periods.

After the removal episode attested in the lower layer of Pit II (in LHIIIB/C Early), the tomb received LHIIIC Early interment(s), as inferred by the presence of several LHIIIC Early vessels in the east wall group. Skeletal remains of this phase were not, however, separately identified; parts of them may have been included through later removal in T27/Δ-E and T27/Z. LHIIIC Middle use was also attested, and the re-opening of Pit II for T27/Z should be dated to that phase. As shown above, T27/Z comprised a very partial bone assemblage of mixed earlier remains of LHIIIA and LHIIIC Middle phases; the low bone representation (mostly of extraneous, small elements) is to be understood either as the product of sweeping or a bone 'token' deliberately collected. Why the mourners chose to re-open a pre-existing pit in order to add these few remains inside is, in fact, very interesting, especially since the alternative destination of the bone pile T27/Δ-E was lying in close proximity. In any case, the fact that the skull of T27/B primary burial was lying partially over Pit II confirms that the final opening of Pit II occurred in LHIIIC Middle, before the final interments.

The final phase of use is the LHIIIC Middle/Late period. The earliest of the three primary burials was T27/B. The other two appear both dated to the LHIIIC Late period, even though their exact internal sequence cannot be assessed. The act of removing the upper body of T27/A occurred also in LHIIIC Late, if the association of the burial with LHIIIC Late grave goods is correct.

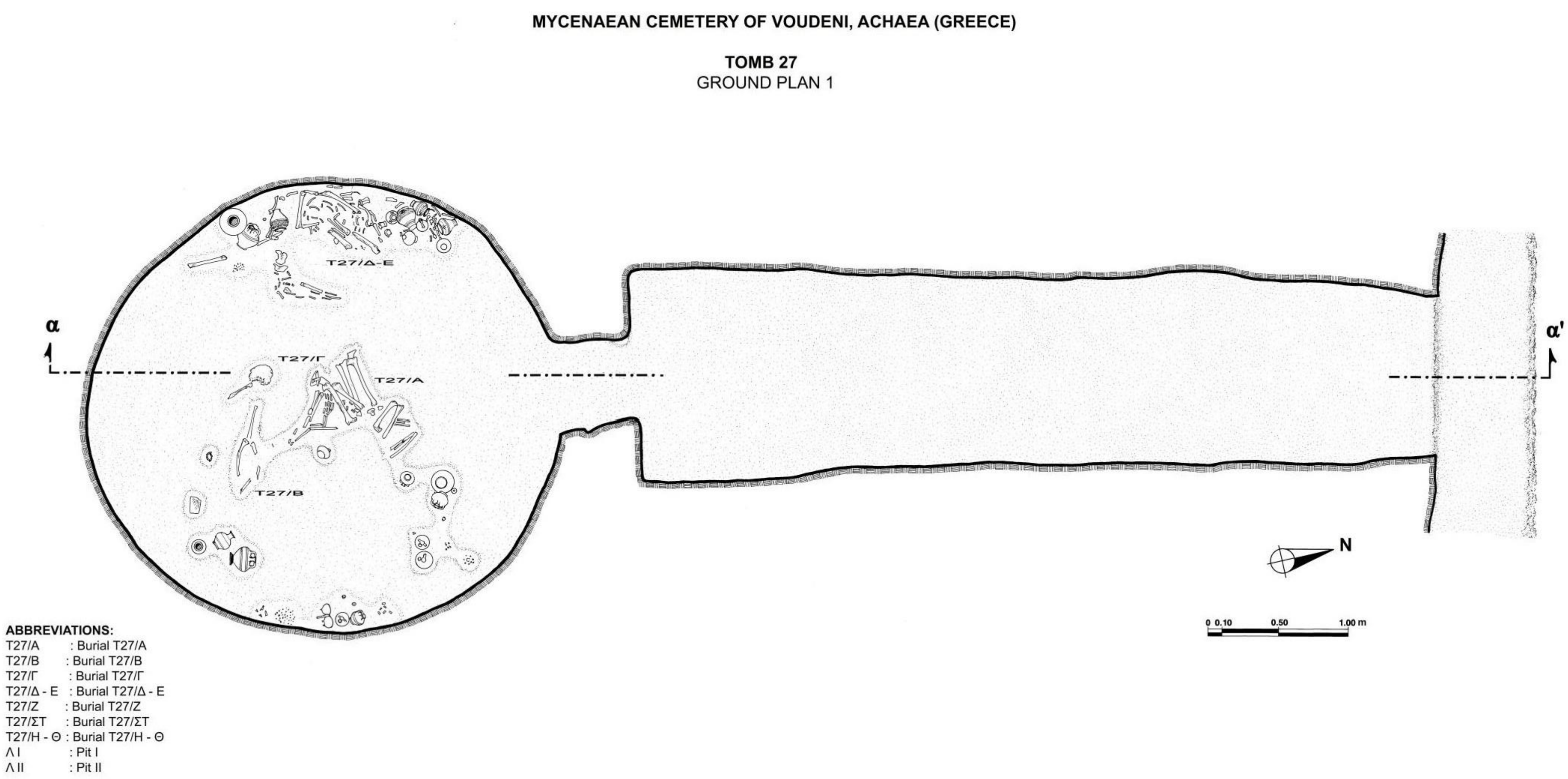


Figure 6.14.1a. Tomb 27: ground plan 1 (after Kolonas 1998, forthcoming). T27/A, T27/B, T27/Γ and T27/Δ-E.

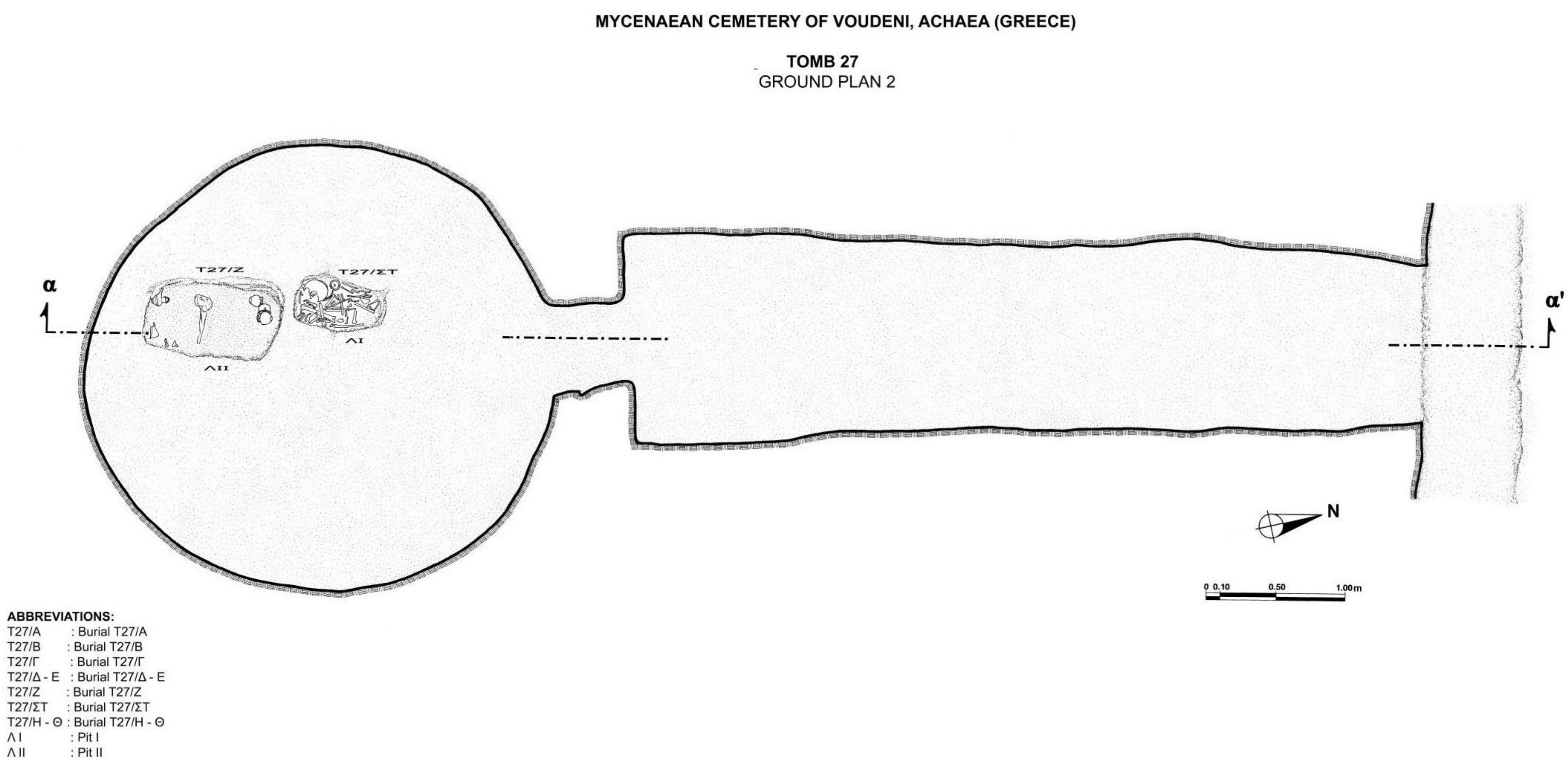


Figure 6.14.1b. Tomb 27: ground plan 2 (after Kolonas 1998, forthcoming). T27/ΣΤ (Pit I) and T27/Z (Pit II, upper layer).

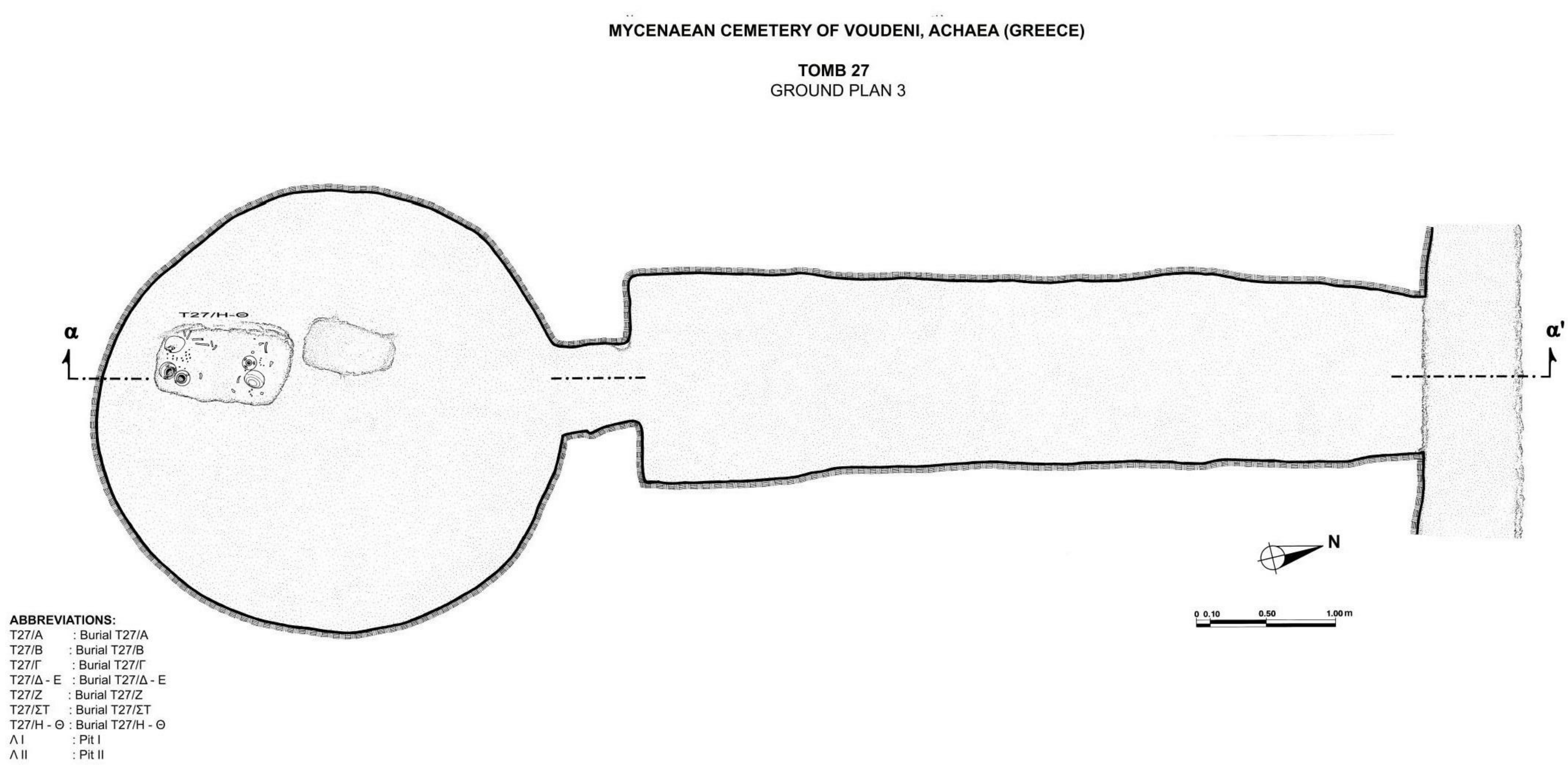


Figure 6.14.1c. Tomb 27: ground plan 3 (after Kolonas 1998, forthcoming). T27/H-Θ (Pit II, lower layer).

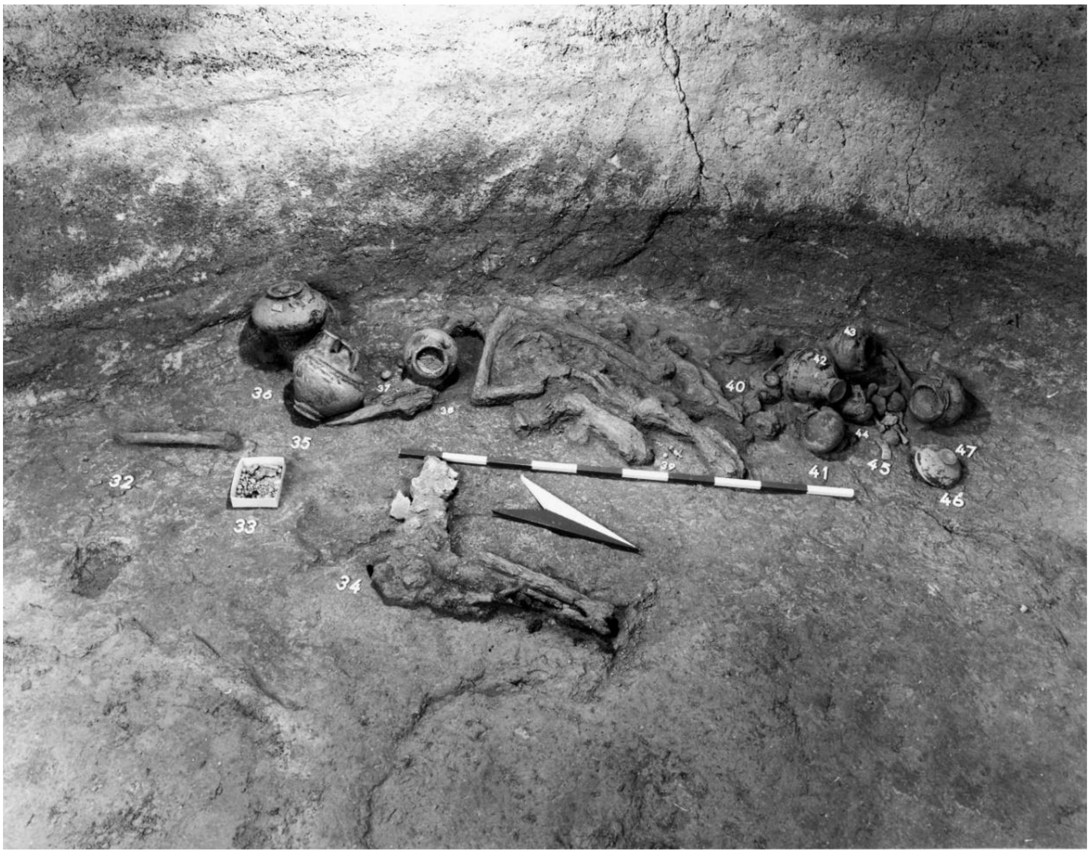


Figure 6.14.2. Burial 27/Δ-E: Secondary bone deposit along the west wall of Tomb 27.

Figure 6.14.3. Tomb 27: T27/Z - Pit I (right) and T27/ΣT – Pit II (left), view from the east.

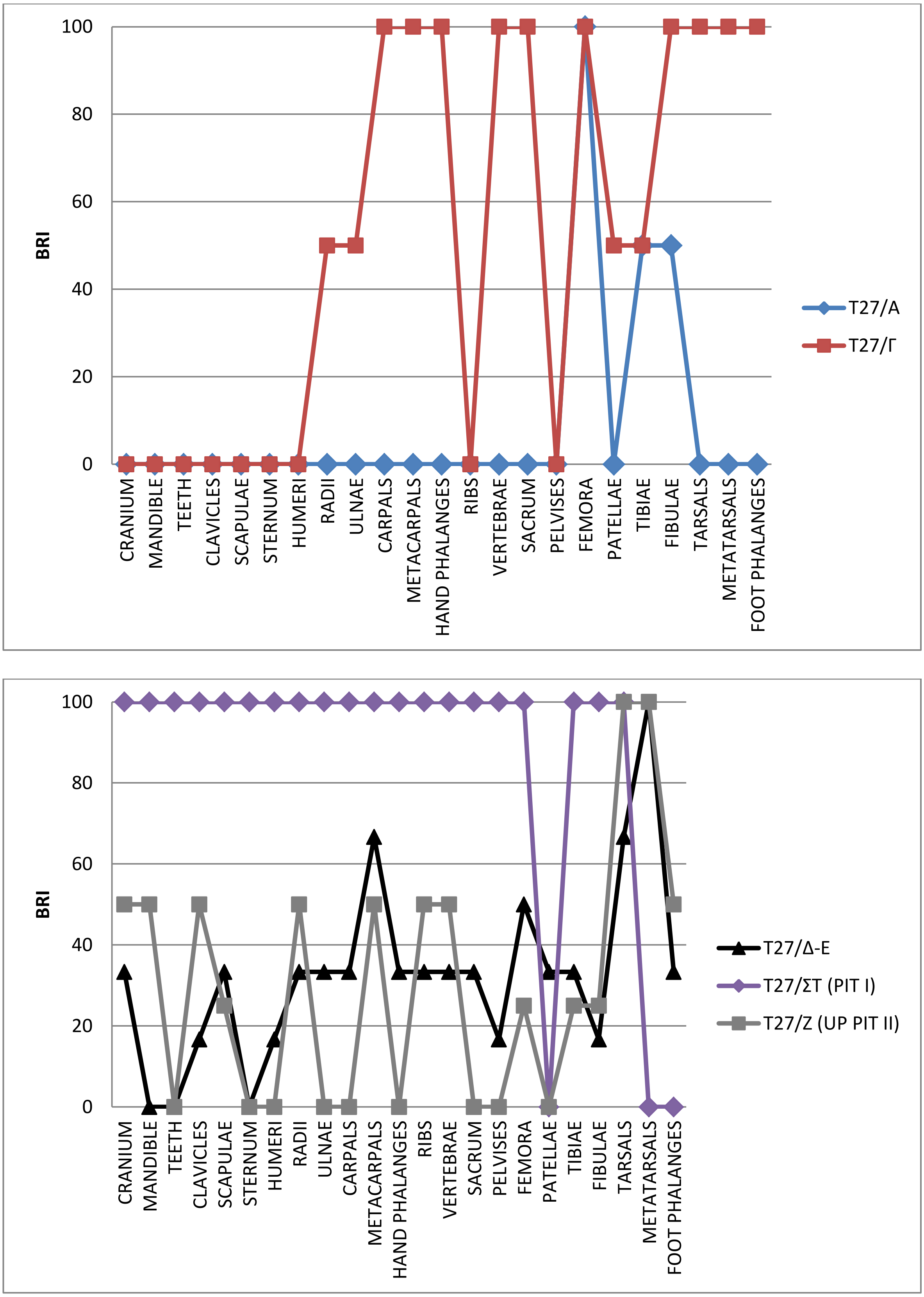


Figure 6.14.4. Tomb 27: Bone Representation Index (BRI) by tomb context.

Figure 6.14.5. Burial T27/A: all recovered bone fragments.

Figure 6.14.6. Burial T27/Γ: all recovered bone fragments.

Figure 6.14.7a. Burial T27/ΣT *in situ*, view from the east.

Figure 6.14.7b. Burial T27/ΣT: lab reconstruction.

6.15 TOMB 28

6.15.1 Tomb 28: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 28 is a small circular tomb, located at the upper terrace of the hill (Figures 1.4 and 6.15.1; further information: Table 7.1). Even though the tomb's roof was found intact, localised wall spalling had caused the accumulation of thin internal soil deposits. The wall collapse was especially prominent in the south-west part, resulting in the opening of a connecting gap with the neighbouring Tomb 29.

Ceramic evidence confirmed the use of the tomb in the LHIIIA and the LHIIIC Early and Middle period. The chamber contained no primary burials, but only the following distinct secondary deposits (Figures 6.15.1-2): a) small group of scattered human remains, located east of the entrance, with no grave goods; b) small bone assemblage (labelled as **Burial T28/A**), located along the east wall, accompanied by LHIIIC Early and LHIIIC vessels, several glass plates (later re-assembled in a partial necklace), a bronze knife and two steatite buttons (Table 6.15.1); c) isolated long bone and skull fragment at the south, close to the wall gap; and d) SW of the entrance, Pit I (0.76x0.47x0.30m) comprising commingled remains of at least six individuals, as estimated at the time of discovery (**Burials T28/B-Z**); the bones were described as "compressed in a disorderly manner"(Kolonas 1998). The pit assemblage also included three LHIIIA1 small handle-less jars, three clay buttons, several glass plates matching the ones found in T28/A, and a large quantity of other types of beads made of glass, carnelian, and shell (Table 6.15.1).

Table 6.15.1. Tomb 28: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T28/A		T28/1	STIRRUP JAR	LHIIIC MIDDLE	177	58:22, 61:4
T28/A		T28/2	STIRRUP JAR	LHIIIC EARLY	174	64:20
T28/A		T28/3	STIRRUP JAR	LHIIIC EARLY	174	17:28
T28/A		T28/4	STIRRUP JAR	LHIIIC MIDDLE	176	61A
T28/A		T28/5	STIRRUP JAR	LHIIIC MIDDLE	174	64:20
T28/A		T28/6	STIRRUP JAR	LHIIIC MIDDLE	174	53:18
T28/A		T28/7	1 NECKLACE GLASS	LHIIIA-C		
T28/A		T28/8	BRONZE KNIFE	LHIIIC EARLY-MIDDLE		
T28/A		T28/9	STEATITE BUTTON	LHIIIC EARLY-MIDDLE		
T28/A		T28/10	STEATITE BUTTON	LHIIIC EARLY-MIDDLE		
T28/B-Z	PIT I	T28/11	CLAY BUTTON	LHIIIA		
T28/B-Z	PIT I	T28/12	SMALL HANDLELESS JAR	LHIIIA1	77	77:2
T28/B-Z	PIT I	T28/13	SMALL HANDLELESS JAR	LHIIIA1	77	
T28/B-Z	PIT I	T28/14	SMALL HANDLELESS JAR	LHIIIA1	77	
T28/B-Z	PIT I	T28/15	CLAY BUTTON	LHIIIA1		
T28/B-Z	PIT I	T28/16	CLAY BUTTON	LHIIIA1		
T28/B-Z	PIT I	T28/17	1 NECKLACE CARNELIAN BEADS (31)	LHIIIA1		
T28/B-Z	PIT I	T28/18	1 NECKLACE GLASS PLATES/BEADS (3)	LHIIIA1		
T28/B-Z	PIT I	T28/19	GLASS PLATES (3)	LHIIIA1		
T28/B-Z	PIT I	T28/20	GLASS BEADS (10)	LHIIIA1		
T28/B-Z	PIT I	T28/21	SHELL BEADS (29)	LHIIIA1		

6.15.2 Tomb 28: Osteological results

Information on recovery/collection problems

The bone collection from Tomb 28 is problematic, as it consists only of the human remains found in Pit I. Even though it was not possible to determine the cause of absence of the T28/A and scattered floor remains from the study bone collection (e.g., recovery bias due to poor preservation, post-recovery bias due to storage misplacements, or erroneous mixing with the Pit's material), the availability of adequate photographic documentation allowed a rough assessment of the missing bone material. This suggested that the quantity and composition of the missing bone groups could not have significantly altered the total tomb MNI or the inferred funerary activities based on characteristics of Pit I bone assemblage. Based on the examination of photographic and notebook documentation, the following remarks were made on the missing skeletal contexts: a) The bones found east of the entrance were very few: they included only two long bone fragments (adult tibia and humerus(?), possibly non-adult), one vertebra, a rib fragment, at least one metacarpal and one metatarsal, a hand phalanx, and a few tarsals (Figure 6.15.S1); b) Burial T28/A comprised very few bones: on the photo, it was possible to identify a few cranial fragments, hand/foot phalanges, two small-sized long bone fragments (east of the ceramic assemblage) as well as one vertebra and very few weathered bone fragments (west of the ceramic assemblage, Figure 6.15.S2); c) Just south of Pit I, the two isolated bone fragments belonged indeed to a cranial fragment and a decayed lower limb bone (either femur or tibia), as originally reported (Figure 6.15.2). All these assemblages should be classified in the category of scattered/isolated secondary remains, since no articulation was preserved. Considering the low frequencies of that material, it is estimated that, either missing or even mixed with Pit I contents, it would not have significantly affected bone representation patterns, demographic results, or the final interpretation of Tomb 28 funerary activities; the total MNI could have been maximally affected by ±1 (cf. 6.15.3).

The osteological results

Pit I (Burials T28/B-Z): Pit I included a fairly large quantity of human remains of a MNI of 13, characterised by good completeness and good/moderate surface preservation, with only few elements demonstrating higher fragmentation and more advanced weathering (Table 6.15.2; e.g., diverse preservation in femora: Figure

6.15.S3. Bone representation was also noticeably good for such a high MNI, with all elements except for the most fragile or smallest bones (i.e. sternum, ribs, vertebrae, phalanges) showing moderate to good BRI values (Figure 6.15.3). BRI values in combination with the individuation process indicated great consistency in high representation of most elements belonging to three or four adults and three sub-adults (Table 6.15.3). It should be noted that the actual raw bone frequencies even of small-sized elements (e.g., hand/foot bones; juvenile epiphyseal plates) were exceeding the numbers usually encountered in other Voudeni tombs (cf. Figures 6.15.S4-S5, Datasheet 6.S1).

Table 6.15.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			**PRESERVATION**				**MNI**	
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	COMPLETENESS		SURFACE		MNI	Max. occ. skeletal element
				DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS		
T28/PIT I	867	1008	45	1-2	1	2-3	2	13	Femur; MT4
TOTAL	**867**	**1008**	**45**					**13**	**Femur; MT4**

The total MNI of this assemblage was 13, based on maximum occurrence of femora and the left fourth metatarsal, informed by age discrepancies between different elements. The good preservation of the remains allowed a detailed individuation of the major elements with distinct morphological or age characteristics of five individuals (IND. A-E), while additional pairs of long and pelvic bones were also found within the extra remains. IND. A was a gracile female of approximately 30 years of age at death (Figure 6.15.S6). The skeletons of three sub-adults (IND. B-D) were very well re-individuated based on distinct age differences: IND. B was a younger child (7-8 years, Figure 6.15.4a), IND. C an older infant (c. 3 years, Figure 6.15.4b), and IND. D a young infant (8-12 months, Figure 6.15.5a). In contrast to the good representation of these skeletons, the fourth sub-adult, IND. E, was recognised only by the presence of a fragmented right ilium; its age at death was estimated as c. 1 year, based on slight size difference from IND. D. (Figure 6.15.5b). Since both infants are of a very similar age, it is possible that the skull attributed to Ind. D, showing a dental age slightly older than the skeletal one (based on diaphyseal lengths), could alternatively belong to IND. E. Within the extra cases (E6-13), it was possible to specifically identify the presence of at least another prime adult female, four adult males, and a mature adult of non-observable sex; the remaining cases remained indeterminate (Table 6.15.3).

Table 6.15.3. Tomb 28: Basic osteological information by case (n=13) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T28/B-Z (PIT I) - IND. A	COM. SEC.	F	Pelvis, LB metrics	PA	L aur: 2-3 (25-34y)	c.145	All LB (range: 143-150)	All LB pairs; R+L clav; L scap; ribs and vertebrae; R+L pelves; sacrum; L patella; few carpals; several metacarpals; many tarsals; all R+L metatarsals
T28/B-Z (PIT I) - IND. B	COM. SEC.	-		CH II (7-8y)	Diaphyseal length: all LB: 7-8y. Vertebral fusion: recent neurocentral fusion; sacral posterior synchondrosis just starting fusion Dental formation stage: all teeth c. 7.5y			R Hum; pairs of radii and ulnae; R+L femora; L tibia; R fibula; R+L clavicles; L scapula; ribs; vertebrae; R+L pelves; sacrum; few metacarpals; some tarsals; almost all metatarsals; several unfused epiphyseal plates; skull (includ. mandible, teeth)
T28/B-Z (PIT I) - IND. C	COM. SEC.	-		INF II (c. 3y)	Diaphyseal length: all LB: c. 4y. Vertebral fusion: post.synchondr. fused; neurocentral unfused (c.3y); Dental formation stage: M_1: $Cr_{3/4}$ (2-2.5y)			All LB pairs; L scap; ribs; vertebrae; R-L pelves; few metacarpals; one hand phalanx; tarsals; few metatarsals; several unfused epiphyseal plates; Skull (includ. mandible, teeth)
T28/B-Z (PIT I) - IND. D	COM. SEC.	-		INF I (8-12mo)	Diaphyseal length: LB & clavicle: 6-12mo Dental formation stage: M_1: $Cr_{1/2}$ (1-1.5y)			Humerus; pairs of ulnae,femora, tibiae; fibula; R clavicle; L scapula; R+L pelves; some ribs; skull (includ.mandible)
T28/B-Z (PIT I) - IND. E	COM. SEC.	-		INF I (c. 1y)	Slightly larger ilium than IND.D			R pelvis (ilium)
T28/B-Z (PIT I) – E6	COM. SEC.	F	Pelvis, skull; LB metrics	PA	Cran. sut. closure: 4 (34.7y) Pelvis: R aur: 4 (35-39y)			
T28/B-Z (PIT I) – E7	COM. SEC.	M	Skull; LB metrics	MA	Cran. sut. closure (observed only): >6-8 (>39.4y)			
T28/B-Z (PIT I) – E8	COM. SEC.	M	LB metrics	AD				
T28/B-Z (PIT I) – E9	COM. SEC.	M	LB metrics	AD				
T28/B-Z (PIT I) – E10	COM. SEC.	M	LB metrics	AD				
T28/B-Z (PIT I) – E11	COM. SEC.	NO		MA	Cran. sut. closure (observed only): >6-8 (>39.4y)			
T28/B-Z (PIT I) – E12	COM. SEC.	NO		AD				
T28/B-Z (PIT I) – E13	COM. SEC.	NO		AD				

6.15.3 Tomb 28: Bioarchaeological reconstruction of funerary activities

The total MNI (n=13) of the secondary assemblage includes 9 adults (two females and four males) and 4 sub-adults, all dated to the LHIIIA period based on associated artefacts. As discussed in 6.15.2, even in the extreme scenario of post-excavation erroneous mixing of the chamber's skeletal material with this group, then the Pit's MNI would have been *at maximum* erroneously increased by one adult (as only two femoral shafts were located at the chamber) and the IND.E sub-adult (whose tiny fragment iliac fragment could have gone unnoticed in the chamber's photos). If, as is more likely, the floor material is actually missing, then the MNI of 13 certainly reflects the true frequencies of the pit, while the total MNI of the tomb could not have been larger than 14. In either case, neither the bioarchaeological reconstruction of funerary activities nor the demographic information would get significantly affected.

The good skeletal preservation of most elements, in terms of completeness and surface condition, indicated that at the time of transfer into the pit they had not suffered from extensive post-depositional damage within the chamber. The BRI and individuation analysis demonstrated that seven individuals (3-4 adults and 3 sub-adults) were generally well-represented, and some of them fairly complete; the representation of the remaining skeletons varied (for example, the ninth adult and the fourth sub-adult were identified on the basis of a single bone respectively). Moreover, a limited extent of variation was noticed in both completeness and surface condition. These observations put forward the possibility that two distinct sub-groups of interments, with different taphonomic histories, ended up in Pit I: one with fairly completely removed skeletons of 4 adults and 3 sub-adults, and the other of only partially represented cases. A synthetic discussion of all bioarchaeological evidence can shed further light on the character and sequence of the acts that affected the final formation of Tomb 28 funerary contexts.

Lacking micro-stratigraphic data from the pit excavation, it is very difficult to determine whether the secondary remains were placed in one or multiple episodes and in what manner. The excavation recordings documented that all ceramic vessels were placed at the pit's bottom, while matching beads were found both at the bottom and the top of the pit but also the chamber (possibly belonging to one necklace). These observations are more in support of one (or at most a few) filling episode(s). Similarly, the low degree of bone fragmentation, despite the dense accumulation in the pit, does not favour a scenario of multiple re-openings, as the latter would have increased bone damage. The discrepancies in bone preservation between the two skeletal sub-groups sheds light on their manipulation before their final placement in the pit. As assessed above, around six individuals are far less well preserved than the other seven. Taking into account space availability in the chamber, it can be inferred that a number of approximately seven is the maximum number of interments the floor can accept simultaneously. It is, thus, conceivable that the first group of burials was already removed within the chamber in the form of bone pile(s), and parts of them probably outside of it, as suggested by the more fragmentary preservation and worse surface condition of some skeletons. When the successive burials accumulated, all the material was removed into the pit, with the latter skeletons removed fairly complete. The high frequencies even of very small bones indicate careful bone collection, possibly assisted by an act of sweeping (cf. the large numbers of beads); the retention of semi-articulation (e.g., hands, feet) in some of the cases (indicating a short time span between their primary placement and the secondary removal) could also be the reason of these high frequencies but unfortunately cannot be confirmed, as we lack the appropriate field recording. The particularly good representation of sub-adult remains may suggest the use of a shroud or some other perishable material that held the bones in place. Finally, the immediate filling of the pit with soil should be assumed, since the bones remained so well-preserved.

The grave goods accompanying the pit assemblage were all of the LHIIIA period while the next phase of tomb use, as attested by the floor's contents, was in the LHIIIC Early and Middle periods. The construction of the pit and the secondary deposition in it should, thus, be dated in LHIIIC Early at the latest. From the LHIIIC Early and Middle interments that followed, there was only a very small quantity of bones surviving in the chamber. The condition of most surviving bones at the time of discovery, as seen in excavation photos, is not poor; therefore, the complete disappearance of other bones and the absence of *in situ* primary burials cannot be explained on the basis of natural decay alone. The extensive removal of bone material from the tomb during the LHIIIC period, finally irrelevant to the need of interring another body, is in that case a rather plausible explanation.

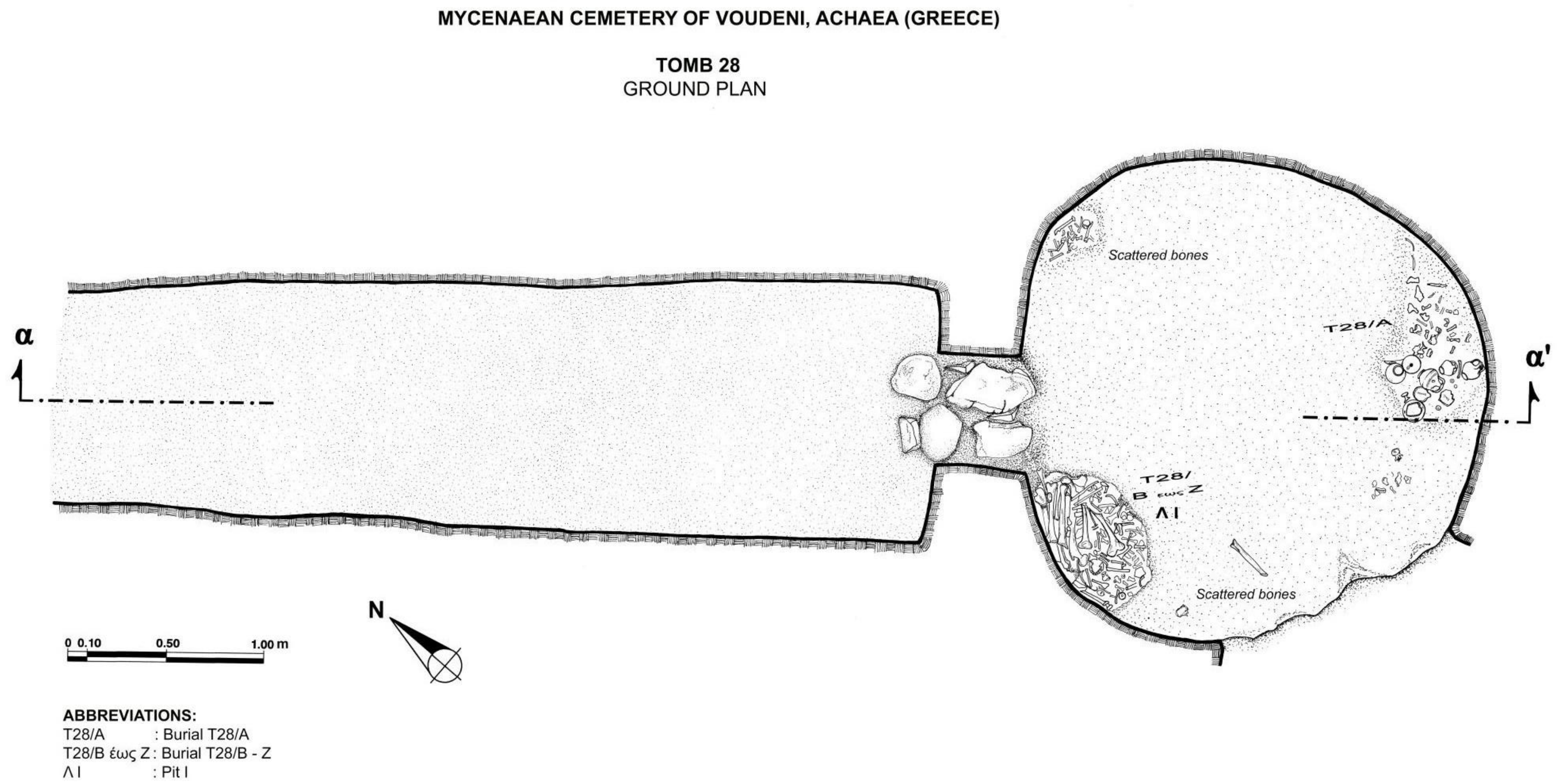


Figure 6.15.1. Tomb 28: ground plan (after Kolonas 1998, forthcoming).

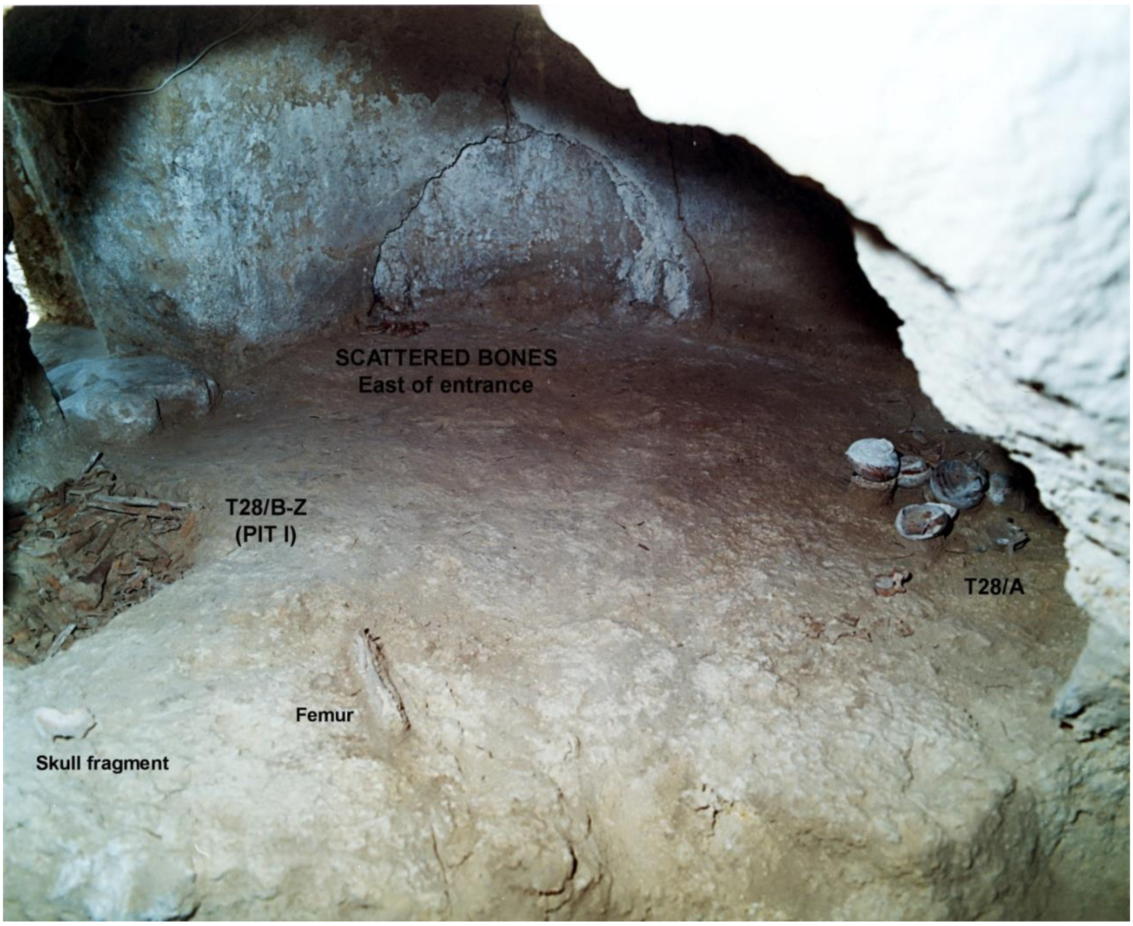


Figure 6.15.2. Tomb 28: the skeletal assemblages, view from the south.

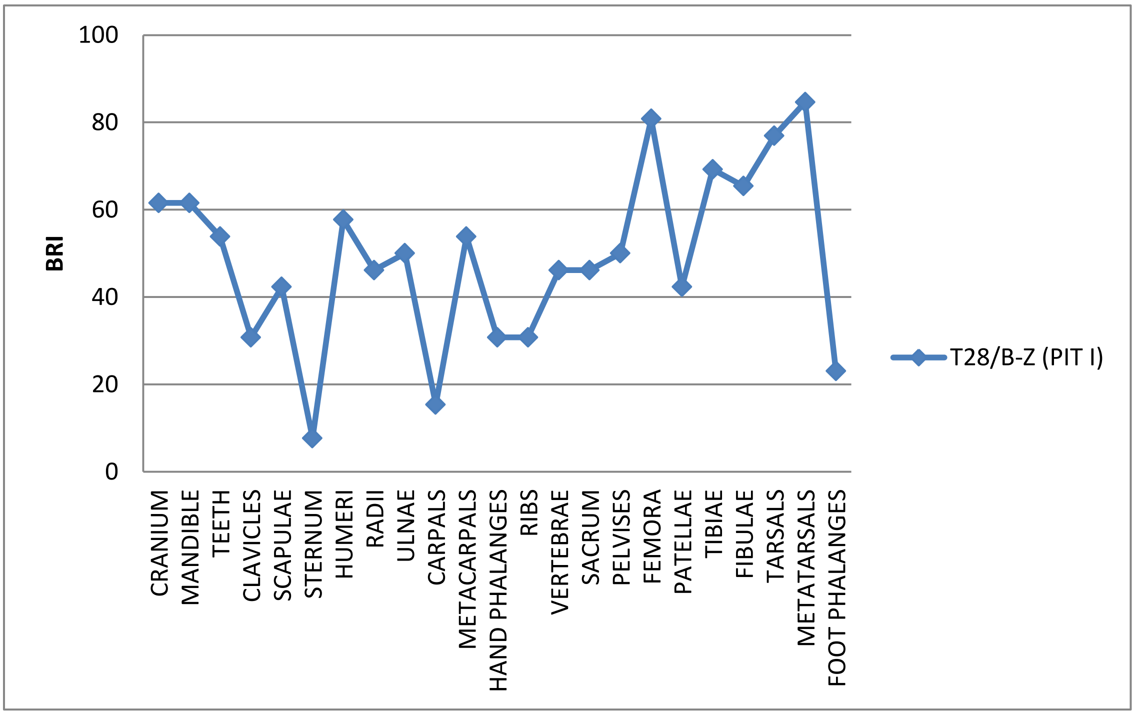


Figure 6.15.3. Tomb 28: Bone Representation Index (BRI) by tomb context.

Figure 6.15.4a-b. T28/B-Z – IND.B (left) and IND. C (right): post-cranial remains.

Figure 6.15.5a-b. T28/B-Z – IND.D: post-cranial remains (left) and IND. D *versus* IND.E right ilium (right).

6.16 TOMB 31

6.16.1 Tomb 31: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 31 is a large quadrangular tomb, located at the middle terrace of the hill, dated exclusively to LHIIIC (Figures 1.4 and 6.16.1; further information: Table 7.1). The tomb's roof was preserved intact, but partial collapses of the chamber's walls had resulted in the accumulation of thick soil deposits (of c. 0.85m) over the floor. A LHIIIC Middle stirrup (T31/32) was found inverted within these deposits.

A group of four large LHIIIC Middle vessels (T31/1-4) was located in the north corner, with no obvious association to human remains. South of it, three LHIIIC Late stirrup jars (T31/5-7) were found in proximity to an extremely decayed human femur that did not survive recovery. Close to this bone and towards the rear east side of the chamber, more traces of decayed human remains were found in association with a LHIIIC Early/Middle cultural assemblage that included several vessels, buttons, and a clay bead. This context was labelled **T31/A**, attributed to a presumably disturbed primary burial, the bones of which did not survive recovery due to their extreme state of decay.[59] Traces of fire were noticed close to this assemblage, interpreted as an indication of 'cleansing ritual' by Kolonas (1998). Another small group of LHIIIC Late stirrup jars (T31/17-19) and a steatite button (T31/20) was located adjacent to the centre of the east wall, with no evident association to human remains (Table 6.16.1).

In the middle of the south part of the chamber, the poorly preserved lower limb remains of the disturbed primary burial **T31/B** were located, accompanied by five LHIIIC Late stirrup jars (T31/21-25). The poor state of preservation precluded the identification of articulation and burial position at the time of discovery. In the west corner, another disturbed and poorly preserved primary burial, **T31/Γ**, was found, preserving only the lower body; pelvis and lower limbs were reportedly found in articulation. The excavators assumed that the body was placed in the knees-up position, in NE-SW orientation, since the lower limbs were found crossed, but some degree of articulation was also observed. T39/Γ was accompanied by six LHIIIC Late stirrup jars (Table 6.16.1).

[59] N.B. The description of this context is more consistent with a classification as scattered/isolated remains rather than disturbed primary burial; since no osteological material survived, this context is excluded from final analysis, but see 7.3.1.1 and Table 7.X4 for its general classification. Notice also that, at the time of discovery, no specific name was given to these decayed fragments; this is why, in excavation notebooks and original tags, Burials T31/B and T31/Γ were labelled A and B respectively.

Table 6.16.1. Tomb 31: List of artefacts by tomb context, including location, chronological and typological information.
(*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
NO BONE ASSOCIATION	N CORNER	T31/1	BELLY-HANDLED AMPHORA	LHIIIC MIDDLE	58	43:34
NO BONE ASSOCIATION	N CORNER	T31/2	BELLY-HANDLED AMPHORA	LHIIIC MIDDLE	58	57:2
NO BONE ASSOCIATION	N CORNER	T31/3	STIRRUP JAR	LHIIIC MIDDLE	176	61A
NO BONE ASSOCIATION	N CORNER	T31/4	STIRRUP JAR	LHIIIC MIDDLE	175	43:h, 43:34, 41:8, 48:5
UNCLEAR BONE ASSOCIATION	SOUTH OF N CORNER, CLOSE TO FEMUR	T31/5	STIRRUP JAR	LHIIIC LATE	175	61A:4
UNCLEAR BONE ASSOCIATION	SOUTH OF N CORNER, CLOSE TO FEMUR	T31/6	STIRRUP JAR	LHIIIC LATE	175	43:p
UNCLEAR BONE ASSOCIATION	SOUTH OF N CORNER, CLOSE TO FEMUR	T31/7	STIRRUP JAR	LHIIIC LATE	177	43:h
T31/A		T31/8	STIRRUP JAR	LHIIIC EARLY-MIDDLE	176	43:d, 58:2, 42:4
T31/A		T31/9	STIRRUP JAR	LHIIIC EARLY-MIDDLE	176	58:22, 43:h
T31/A		T31/10	CLAY BEAD	LHIIIC EARLY-MIDDLE		
T31/A		T31/11	CYLINDRICAL ALABASTRON	LHIIIC EARLY-MIDDLE	96	61A:5
T31/A		T31/12	STIRRUP JAR	LHIIIC EARLY-MIDDLE	176	58:22
T31/A		T31/13	STIRRUP JAR	LHIIIC EARLY-MIDDLE	176	43:h, 75:2, 61A:7
T31/A		T31/14	STEATITE BUTTON	LHIIIC EARLY-MIDDLE		
T31/A		T31/15	CLAY BUTTON	LHIIIC EARLY-MIDDLE		
T31/A		T31/16	STEATITE BUTTON	LHIIIC EARLY-MIDDLE		
NO BONE ASSOCIATION	CENTRAL E WALL	T31/17	STIRRUP JAR	LHIIIC LATE	175	43:h
NO BONE ASSOCIATION	CENTRAL E WALL	T31/18	STIRRUP JAR	LHIIIC LATE	175	61A
NO BONE ASSOCIATION	CENTRAL E WALL	T31/19	STIRRUP JAR	LHIIIC LATE	175	43:h, 58:22
NO BONE ASSOCIATION	CENTRAL E WALL	T31/20	STEATITE BUTTON	LHIIIC LATE		
T31/B		T31/21	STIRRUP JAR	LHIIIC LATE	175	43:p
T31/B		T31/22	STIRRUP JAR	LHIIIC LATE	177	43:h
T31/B		T31/23	STIRRUP JAR	LHIIIC LATE	177	43:h
T31/B		T31/24	STIRRUP JAR	LHIIIC LATE	177	43:p
T31/B		T31/25	STIRRUP JAR	LHIIIC LATE	176	43:h
T31/Γ		T31/26	STIRRUP JAR	LHIIIC LATE	176	43:h
T31/Γ		T31/27	STIRRUP JAR	LHIIIC LATE	175	43:h
T31/Γ		T31/28	STIRRUP JAR	LHIIIC LATE	175	43:h
T31/Γ		T31/29	STIRRUP JAR	LHIIIC LATE	176	43:p
T31/Γ		T31/30	STIRRUP JAR	LHIIIC LATE	177	43:h
T31/Γ		T31/31	STIRRUP JAR	LHIIIC LATE	175	43:h
NO BONE ASSOCIATION	RAISED DEPOSIT	T31/32	STIRRUP JAR (LARGE)	LHIIIC MIDDLE	174	18, 73:o

6.16.2 Tomb 31: Osteological results

The recovered skeletal material from the two burial contexts of Tomb 31 (T31/B and T31/Γ) comprised a very small bone quantity, poorly preserved in all preservation aspects (Tables 6.16.2, Figure 6.16.3). The total MNI is only 2, and basic osteological information for both cases is summarised in Table 6.16.3.

Table 6.16.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			PRESERVATION				MNI	
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	COMPLETENESS		SURFACE		MNI	Max. occ. skeletal element
				DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS		
T39/B	4	4	0	4	4	3	3	1	
T39/Γ	15	20	0	3	3	4	4	1	
TOTAL	**19**	**24**	**0**					**2**	

Burial T31/B: The skeleton of T31/B was very poorly preserved in terms of completeness and surface preservation, as well as bone representation, with only four fragments of the femora and right tibia preserved (Figure 6.16.4). The quality of photographic documentation is not sufficient for securely discriminating between a disturbed primary burial (preserving *in* situ some articulation) or scattered secondary remains of a single individual. However, the exclusive representation of lower limb fragments and the flexed position that can be discerned in Figure 6.16.2 suggest that T31/B represents indeed a very partially preserved disturbed primary burial, with lower limbs partially *in situ*, in flexed position. No further details of the burial position can be inferred. These remains belonged to a fairly robust adult male (Table 6.16.3).

Burial T31/Γ: The skeleton of T31/Γ was also poorly preserved, only slightly better in terms of completeness and representation than T31/B (Table 6.16.2). Their BRI patterns were quite similar with reference to the upper body, which was completely missing, but T31/Γ demonstrated better representation of the lower body, albeit far from complete (Table 6.16.3, Figure 6.16.5). The burial position as inferred at the time of discovery (i.e. knees-up) cannot be confirmed due to the poor quality of *in situ* photographic documentation. Bone representation is, however, consistent with partial preservation of the lower body of a disturbed primary burial; T31/Γ tomb context is classified as such, even though the alternative of a single secondary deposition exclusively of the lower body cannot be completely ruled out. T31/Γ skeleton was a male, at least in prime adulthood at the time of death (Table 6.16.3).

Table 6.16.3. Tomb 31: Basic osteological information by case (n=2) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON	STATURE (~ mm)	BASED ON	
T31/B	DISTURBED PRIMARY	M	Femoral circumference	AD		-		R+L femora, R tibia
T31/Γ	DISTURBED PRIMARY	M	Femoral metrics	PA/MA	Fused sacral segments (>30y); only minimal evidence for degenerative joint disease	-		R+L femoral; L tibia; Pelvis; sacrum; lumbar vertebrae; calcaneus

6.16.3 Tomb 31: Bioarchaeological reconstruction of funerary activities

The total MNI of Tomb 31 is two (both male adults). The identification of a presumed femur in the middle of the tomb at the time of excavation, possibly related to a third burial (T31/A), cannot be securely accepted in this analysis, since those bones could represent missing elements from T31/B or T31/Γ skeletons. However, if that bone was correctly identified as a femur, the presence of a third individual is to be assumed. Since the archaeological identification of major bones (i.e. crania, femora) in the excavation notebooks was most frequently proven correct, the inference of a third burial in the tomb is quite likely and consistent with the large quantity of ceramic material found in different clusters. This is also corroborated by the dates of the ceramic evidence, which suggest the use of the tomb for at least three interments: the first in the LHIIIC Early/Middle period and the others in the LHIIIC Late.

The preservation patterns, showing very low representation and completeness of the skeletal material, may be somewhat attributed to natural taphonomic damage, but not exclusively. The tomb suffered only from limited wall spalling and not massive roof collapses (cf. the non-fragmented state of ceramic material); moreover, the surface preservation is moderate/poor but not extremely poor (particularly in the case of T31/Γ), and thus natural taphonomic damage cannot sufficiently explain the complete destruction of the majority of skeletal elements. Finally, some selective process is implied by the similarities shown in the exclusive preservation of lower bodies in both tomb contexts that contradicts patterns of bone preservation, even if extreme natural decay was to be assumed. It is, thus, suggested that a selective retention not of all prominent bones, but of the lower body in particular, took place, while the other parts of the skeletons were most probably removed from the tomb.[60] Multiple tomb re-openings and funerary activities that resulted in the final bone arrangements are likely responsible for the disturbance and increased fragmentation of the preserved remains. The presence of vessel groups in no association to skeletal material and the reported evidence of fire are also suggestive of multiple funerary acts.

[60] However, due to the poor state of surface bone preservation and the lack of field observations to positively assess the extent of natural taphonomic damage, the inferred activities of removal to outside the tomb and intentional selective retention in this case will be considered as strongly possible but finally indeterminate activities in final analysis (cf. 7.4).

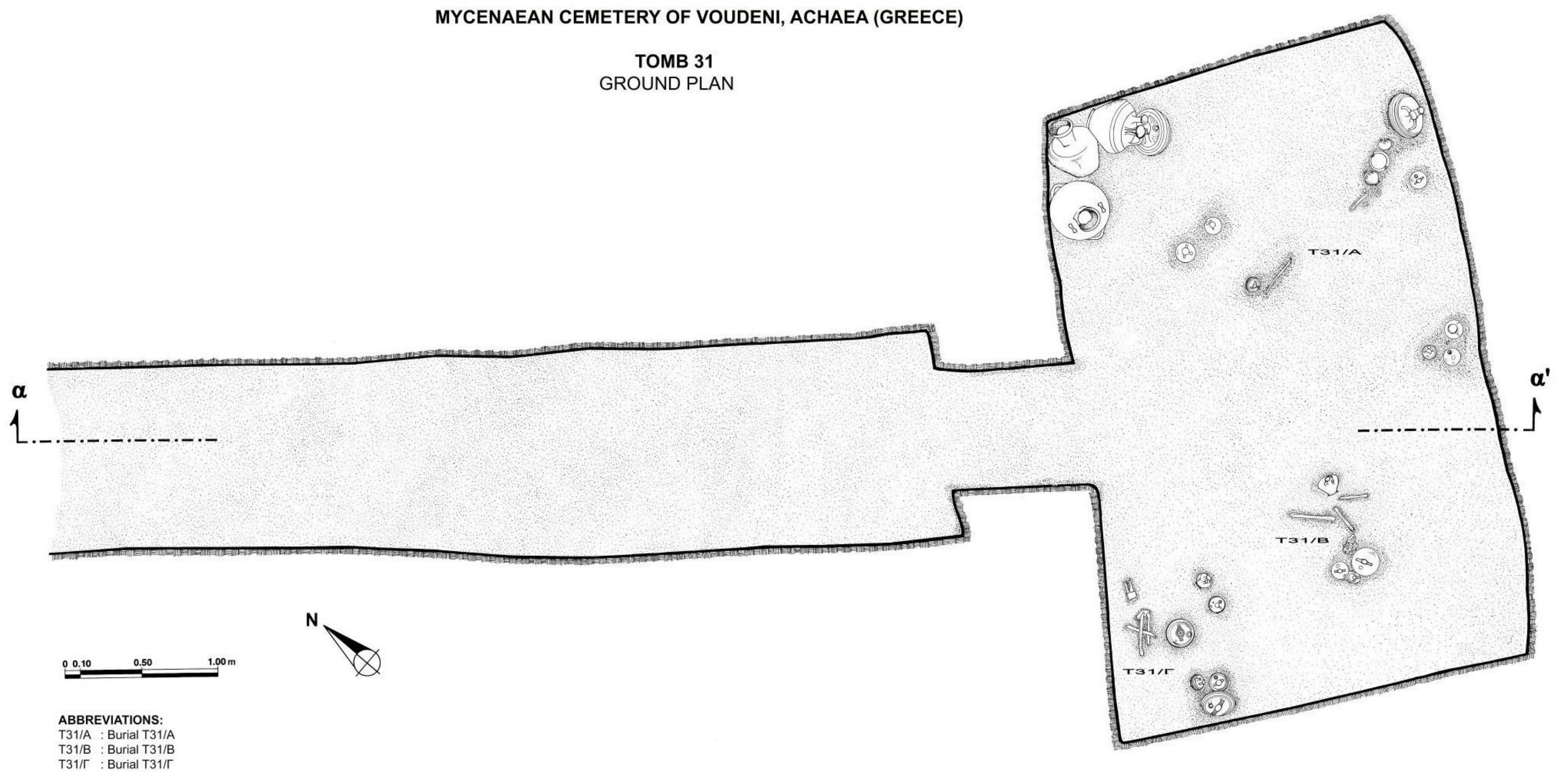


Figure 6.16.1. Tomb 31: ground plan (after Kolonas 1998, forthcoming).

Figure 6.16.2. Tomb 31: west part of the chamber, post-excavation (view from the east); from left to right: Burials T31/Β and T31/Γ.

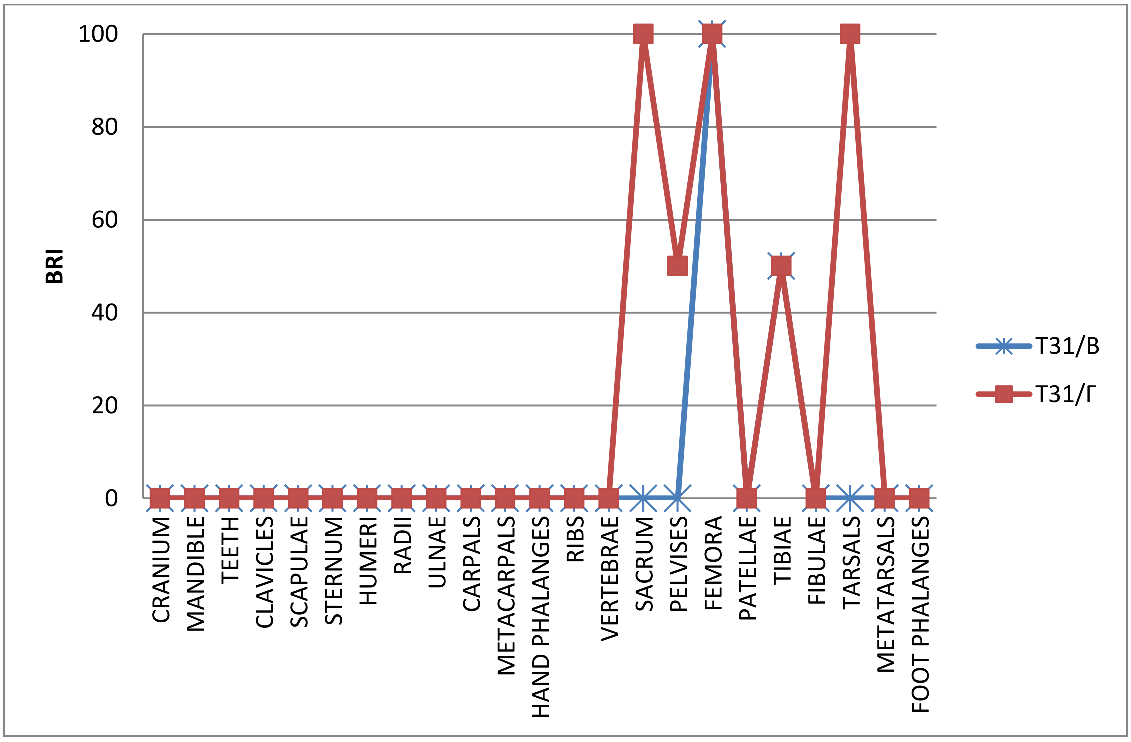


Figure 6.16.3. Tomb 31: Bone Representation Index (BRI) by tomb context.

Figure 6.16.4. T31/B: preserved skeletal elements.

Figure 6.16.5. T31/Γ: preserved skeletal elements.

6.17 TOMB 39

6.17.1 Tomb 39: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 39 is a circular tomb of medium size, located at the middle terrace of the hill (Figures 1.4 and 6.17.1; further information: Table 7.1). The tomb was discovered fairly intact, with its vaulted roof preserved; spalling of its walls (particularly the north), however, was evident, resulting in partial covering of the skeletal assemblages with the fallen debris. At the top of the entrance façade, a small irregular niche was reported to contain a few skeletal remains, presumably of an infant.[61] The chamber contained three *in situ* primary burials (T39/A-T39/Γ), and two secondary depositions (T39/Δ and T39/E) in the form of separate piles placed along the rear wall (originally interpreted as single secondary depositions). A clay coating of the floor was made before the deposition of the last primary burials, as they were placed on top of it, while the secondary deposits were found mixed with it, in a slightly lower level. Tomb 39 was in use in at least two periods, LHIIIA and LHIIIC, based on the artefacts present (Table 6.17.1).

Burial T39/A was a primary burial placed E-W in the NE part of the chamber (Figures 6.17.1-2). The lower limbs were flexed towards the south, while the left arm was found in parallel to the body and the right folded over lower part of the thorax (cf. the summary of main characteristics of all primary burials: Table 7.18). The skeleton was found in good condition, except for the skull which was broken. Three LHIIIC Middle stirrup jars were associated with this burial, two (T39/1-2) placed north of the lower limbs and close to the wall, and another jar (T39/3) immediately south of the skull (Table 6.17.1). **T39/B** was a primary burial, lying south of T39/A, in the same orientation (E-W), but in extended position. Both arms and forearms were parallel to the upper part of the torso, the elbows hyper-flexed and hands adjacent to the shoulders. The skull and thoracic area were reportedly found decayed but the remaining skeleton was in good condition. **T39/Γ**, also a primary burial, was placed immediately to the south of T39/B, in the same orientation (E-W); the lower limbs were contracted towards the north, where to the skull was also facing, while the hands were both placed on pelvis. Two vessels of the LHIIIC Early/Middle period (T39/4-5)

[61] N.B. These bones did not survive recovery, presumably due to their extremely poor state of preservation; therefore, they are not further considered in this study.

were located between the skulls of burials T39/B-Γ, while a LHIIIC Middle stirrup jar (T39/6) was found between their lower limbs. Kolonas (1998) suggested that the earlier vessels belong to one of the burials and the later to the other, but a secure assignment was impossible. Another group of vessels dated to the LHIIIC Middle period (T39/7-9, Table 6.17.1) was found adjacent to the NW wall, in no association with skeletal material.

Burial T39/Δ was a secondary deposition in the SE part of the chamber, partially around and below the skulls of T39/A and T39/B. The bones were found decayed, partially covered with the clay coating of the floor (on top of which the primary burials were placed). They were accompanied by a whetstone, a bronze knife, a clay button, and bronze tweezers, and were dated between LHIIIA and LHIIIC Early. A broken bronze razor (T39/14) could either belong to T39/Δ or to T39/B. **Burial T39/E** was another secondary deposition in the form of a pile located between the south wall and Burial T39/Γ; the skeletal remains were accompanied by three vessels dated to the LHIIIA1 period (Table 6.17.1).

Table 6.17.1. Tomb 39: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T39/A		T39/1	STIRRUP JAR	LHIIIC MIDDLE	176	45:11, 42:21, 42:7
T39/A		T39/2	STIRRUP JAR	LHIIIC MIDDLE	175	58:17
T39/A		T39/3	STIRRUP JAR	LHIIIC MIDDLE	175	73:y, 57:z, 53:18
UNCLEAR BONE ASSOCIATION	BETWEEN T39/B-T39/Γ	T39/4	CONICAL BOWL, SPOUTED	LHIIIC EARLY-MIDDLE	301	
UNCLEAR BONE ASSOCIATION	BETWEEN T39/B-T39/Γ	T39/5	STIRRUP JAR	LHIIIC EARLY-MIDDLE	176	64:20
UNCLEAR BONE ASSOCIATION	BETWEEN T39/B-T39/Γ	T39/6	STIRRUP JAR	LHIIIC MIDDLE	175	61A
NO BONE ASSOCIATION	NW WALL	T39/7	STIRRUP JAR	LHIIIC MIDDLE	175	64:20
NO BONE ASSOCIATION	NW WALL	T39/8	STIRRUP JAR	LHIIIC MIDDLE	176	61A:2
NO BONE ASSOCIATION	NW WALL	T39/9	CYLINDRICAL ALABASTRON	LHIIIC MIDDLE	98	48:5
T39/Δ		T39/10	BRONZE KNIFE	LHIIIB-C		
T39/Δ		T39/11	CLAY BUTTON	LHIIIB-C		
T39/Δ		T39/12	BRONZE TWEEZERS	LHIIIB-C		
T39/Δ		T39/13	WHETSTONE	LHIIIA-B		
UNCLEAR BONE ASSOCIATION	BETWEEN T39/B-T39/Δ	T39/14	BRONZE BLADE	LHIIIB?		
T39/E		T39/15	SQUAT JUG	LHIIIA1	87	
T39/E		T39/16	SMALL HANDLELESS JAR	LHIIIA1	77	
T39/E		T39/17	SMALL HANDLELESS JAR	LHIIIA1	77	77:2

6.17.2 Tomb 39: Osteological results

Tomb 39 comprised a fairly large quantity of skeletal remains, found in five different tomb contexts in diverse state of preservation (Tables 6.17.2, Figure 6.17.3). The total assemblage includes three primary burials, and the remains of at least five more individuals in the secondary assemblages. Basic osteological information for all cases (MNI: 8) is given in Table 6.17.3.

Table 6.17.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			PRESERVATION				MNI	
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	COMPLETENESS		SURFACE		MNI	Max. occ. skeletal element
				DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS		
T39/A	162	226	1	1	1	2	1	1	
T39/B	116	148	1	2	1	2-3	2	1	
T39/Γ	136	254	0	1	1	2	1	1	R ulna
T39/Γ (extra scattered)				1-2	1	3-4	4	1	
T39/Δ	123	177	4	2-3	2	3	3	2	R ulna
T39/E	43	78	1	2-3	2	3-4	4	2	Fibula (+age info)
TOTAL	**580**	**883**	**7**					**8**	R ulna (+age info)

Burial T39/A: T39/A skeleton was the most well-preserved, in all preservation aspects (Table 6.17.2; Figures 6.17.3 and 6.17.S1-S4; N.B. not only BRI values were excellent, but also raw bone frequencies, even of small-sized bones, were high: cf. Datasheets 6.S1-S2). Despite good surface preservation, the bones were brittle and light; these characteristics appear related to the presence of the clay-based floor coating (cf. 6.17.1), even though further multi-disciplinary analysis is needed to investigate the effects of raw clay on bone preservation. The burial position as described at the time of discovery was confirmed by the cross-examination of the skeletal material and excavation photos (Figure 6.17.2). Even though the lack of *in situ* recording of bone relationships and the indication of taphonomic disturbance at the upper body (presumably induced by the fallen rock debris of wall spalling) preclude a precise reconstruction of the body deposition, certain details observable in photographic documentation, such as the position of the lower limbs and particularly the lateral displacement of the right femur, suggest that the body was not initially placed supine but rather on its left side, and after soft tissue decomposition the right body parts gradually collapsed to the floor (cf. Duday 2009: 16-19, 45-52).

The skeleton belongs to a mature adult female (Table 6.17.3). In addition to the main skeleton, the T39/A bone collection included extra elements of at least one more adult individual (two thoracic vertebrae, a left talus, and fragments of left radius, unsided tibia and femur, Figure 6.17.4). These bones should be attributed to scattered remains of removed earlier burials and are discerned in post-excavation plan and photo (Figures 6.17.1-2) immediately north-west of T39/A right upper limb. They could belong with the secondary deposition T39/Δ (comprising its northern limit), but they could equally represent remains that were left fairly *in situ* when an earlier interment occupying the same area was removed. Therefore, they are not aggregated with T39/Δ, but since they do not add another individual to the tomb's MNI, they are not classified as a separate context either.

Burial T39/B: T39/B skeleton was generally fairly well preserved, but less so than the other two primary burials. Both surface condition and completeness showed diverse values, with long bones well preserved (Figure 6.17.S5) but cranial remains and other post-cranial bones demonstrating lower completeness, even though their representation was not significantly affected (Table 6.17.2, Figure 6.17.3). Photographic examination confirmed the burial position as originally described. The moderate/poor completeness of the skull and its extensive state of fragmentation did not permit the precise recording of its position at the time of discovery. Nonetheless, discrepancies in the condition of the cranial surface are suggestive of cranial rotation towards the north (i.e. its right side, facing T39/A), which may, however, have occurred post-depositionally. This was inferred by the extensive fragmentation and poor completeness and representation of the left side of the skull; moreover, colour discrepancies on the skull surface suggested that the right side was in contact with the floor, most likely partially buried under the thin deposits that later accumulated due to wall spalling, and, thus, protected from further taphonomic damage (Figure 6.17.5). T39/B skeleton belongs to a fairly robust mature adult (Table 6.17.3).

Burial 39/Γ: The skeleton T39/Γ was generally well preserved in all aspects, with good bone representation (Table 6.17.2, Figure 6.17.3). The skull, however, was poorly and very partially preserved (Figure 6.17.6b), possibly affected worse by fallen debris due to its location. The remaining bones, despite their good preservation, were all very brittle (similar to T39/A), probably due to the effects of the clay floor coating. T39/Γ is poorly depicted in excavation photos, and, thus, no further clarification of its burial position was possible.

T39/Γ skeleton belongs to a mature adult male (Table 6.17.3; Figures 6.17.6a-b). In addition to the main skeleton, the T39/Γ bone collection included some extra elements from at least another adult individual (right ulna, lateral and intermediate cuneiforms, T39/Γ-E2) and a left calcaneus that matched the T39/B skeleton (Figure 6.17.S6). The erroneous collection of the latter could be attributed to some recovery mistake at the time of excavation, but could also reflect an actual displacement of the small tarsal, caused by past human movement or rodent activity; unfortunately, the lack of precise field recording of the bones does not allow any discrimination between these possibilities. The other extra remains (similarly to the extra skeletal material in the T39/A group) should be either attributed to fairly *in situ* remains of a removed earlier interment, or could be part of the secondary deposition T39/E, which lies in close proximity. Due to the presence of an extra right ulna among them which raises the total tomb MNI, these remains are labelled as an extra tomb context, in the category of scattered/isolated bones, to facilitate further bone analysis.

Burial T39/Δ: The secondary bone deposition T39/Δ extended for c.1.5m along the wall at the east part of the chamber, partially below the skulls of primary burials T39/A and T39/B. The deposit comprised bones from at least two different individuals (MNI: 2) in diverse state of preservation (generally good/moderate). The bones were brittle with evident post-depositional damage and despite the fairly good level of completeness, fragmentation was pronounced and several bones were reconstructed of many joining fragments. Bone representation was generally good (with only the smallest or very fragile elements completely missing, i.e. sternum, ribs, carpals); however, most BRI values were around 50, suggesting that one of the two individuals was better represented than the other (Table 6.17.2). Re-individuation was possible for the majority of prominent skeletal elements of a prime adult female (T39/Δ-IND.A; see skull photo in Figure 6.17.S7), while at least another individual (T39/Δ-E2) was present among the remaining bones that could not be further individuated (Table

6.17.3). The bone assemblage also included a fragment from an unfused lower sacral body of adult-looking size, suggesting an age below 20 years. The latter cannot be positively attributed to a third individual, since it could potentially match the T39/Δ-E2 for whom we have no precise age information. However, the more likely estimation is that it belongs to a younger adolescent, possibly matching the one found in T39/E bone deposit (see below).

Burial T39/E: The other secondary deposit, a small pile of bones south of skeleton T39/Γ, comprised only a modest quantity of bone fragments (exclusively post-cranial) from three individuals and one loose tooth. The modal state of preservation was rather poor in terms of surface condition and moderate in terms of completeness (Table 6.17.2). Even though bone frequencies, informed by age discrepancies, attested to a MNI of 3, bone representation was only poor/moderate for the vast majority of skeletal elements (Figure 6.17.3). The advanced bone decay is most likely responsible for some recovery loss, suggesting that the quantity of the originally deposited material and even of the *in situ* preserved remains at the time of discovery was rather larger (cf. post-excavation plan: Figure 6.17.1). Distinct age characteristics permitted the segregation of most bones in two sub-adult individuals (Table 6.17.3): a) T39/E-IND.A, a young adolescent (around 12-13 years at the time of death, Figure 6.17.7a); and b) T39/E-IND.B, an old infant (2-4 years at the time of death, Figure 6.17.7b). The group also included few adult remains (two patellae and fragments of tibia) which raised the T39/E assemblage MNI to three but did not add an extra case to the tomb total.

Table 6.17.3. Tomb 39: Basic osteological information by case (n=8) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T39/A	PRIMARY	F	Skull, pelvis, LB metrics	MA	R aur: 6-7; L aur: 6 (45-50y) Cranial sut.closure: 0 (<49y) Dental age: PM_2: 6 (MA)	153 (152-154)	Hum; rad; fem	
T39/B	PRIMARY	M	Skull, pelvis, LB metrics	MA	L aur: 6 (45-49y); Cranial sut.closure: 6 (39.4y); Ossified thyroid (MA)	170	All LB	
T39/Γ	PRIMARY	M	Skull, pelvis, LB metrics	MA	R aur: 5 (40-44y)	167 (165-169)	Hum; fem; tib	
T39/Γ - E2	SCAT/ISOL	NO		AD				
T39/Δ - IND. A	COMMINGLED SECONDARY	F	Pelvis; skull; femoral cf.	PA	Cranial sut.closure: 5 (34.7y)			R hum, R+L ulnae, radii and femora; L tib; fib (uns); R+L pelvises and scapulae; Skull
T39/Δ - E2	COMMINGLED SECONDARY	NO		AD				
T39/E - IND. A	COMMINGLED SECONDARY	-		ADOL	Epiphyseal union: Pelvis with unfused acetabulum (<11-14F, 12-15M); all long bones epiphyses unfused except for ulnar proximal epiphysis (12-14F, 13-16M) Dental age: L PM^1: Root complete but no dental wear (10-12y).			Hum (uns); R ulna; L fem; R tib; R fib; R+L pelvises; lower limb epiphyseal plates; PM^1
T39/E - IND. B	COMMINGLED SECONDARY	-		INF II	Approximate size estimation: 2-4y.			Fragments of hum; fem; fib (uns); MTs; PFP1; R talus

6.17.3 Tomb 39: Bioarchaeological reconstruction of funerary activities

The total MNI of Tomb 39 is 8, assessed by bone frequencies and age information (2 females, 2 males, 2 adults of indeterminate sex, and 2 sub-adults). The total assemblage included three primary burials dated to the LHIIIC Early-/Middle period, two earlier secondary deposits of commingled human remains dated between LHIIIA and LHIIIC Early based on associated artefacts, plus few scattered remains from the earlier interments found in close proximity with the primary burials.

Stratigraphic and ceramic evidence dates the earliest interments of the secondary deposits in the LHIIIA1 period, even though the T39/Δ secondary deposit could include LHIIIC Early material as well (cf. 6.17.1). Acts of removal within and from the tomb before the final arrangements for the interment of the last primary burials (T39/A-Γ) should be presumed based on preservation patterns (see below); therefore, the time of creation of the secondary deposits could be anytime between LHIIIIA & LHIIIC (cf. Table 7.X5). Distinct alterations of the chamber space occurred, however, in the LHIIIC Early/Middle period, when a clay coating of the floor was made before the placement of the final group of burials and got partially mixed with the secondary assemblages. The vast majority of earlier skeletal material was then (if not already before) assembled in the two distinct piles along the chamber's east and south walls, albeit a limited number of small bones or bone fragments were left scattered around the chamber floor. Spatial segregation on the basis of age differences is implied by the clustering of sub-adult bones in the south secondary deposit (T39/E) and of adult in the east one (T39/Δ). The very few extra adult remains found in T39/E were so partially preserved that they most likely represent accidental remains of once *in situ* burials at this part of the chamber, rather than bones intentionally removed to this secondary pile. Equally, the single sub-adult fragment (unfused sacrum) in T39/Δ may be associated with the young adolescent of T39/E (IND.A), indicating that the original place of that interment was somewhere around the east part of the tomb. The deposition sequence of the final primary interments in the LHIIIC Early/Middle period cannot be further clarified, since their positions do not intersect each other.

Based on preservation patterns of the secondary remains, specific acts may be inferred. From the total of three adults and two sub-adults of the earliest remains, only the skeletons of two (T39/Δ-IND.A and T39/E-IND.A; and much less T39/E-IND.B) were relatively fully represented, while the remaining individuals were only identified on the basis of very scarce remains. It is, thus, most likely that bone transfer to outside the tomb had already taken place during the LHIIIA1 period and evidence for retention of fairly complete skeletons was present but limited (cf. 7.4). The worse preservation levels in terms of completeness and surface condition of the secondary remains as opposed to the primary ones is also consistent with increased exposure to disturbance due to displacement and removal, and with the effects of their partial coverage by the floor coating and the latest burials. The latter had only been subjected to minimal fragmentation due to wall spalling (with crania worse affected being closer to the walls), but also bear evidence of advanced decay (especially of the most fragile elements and mostly of T39/B), probably due to the clay effects as well.

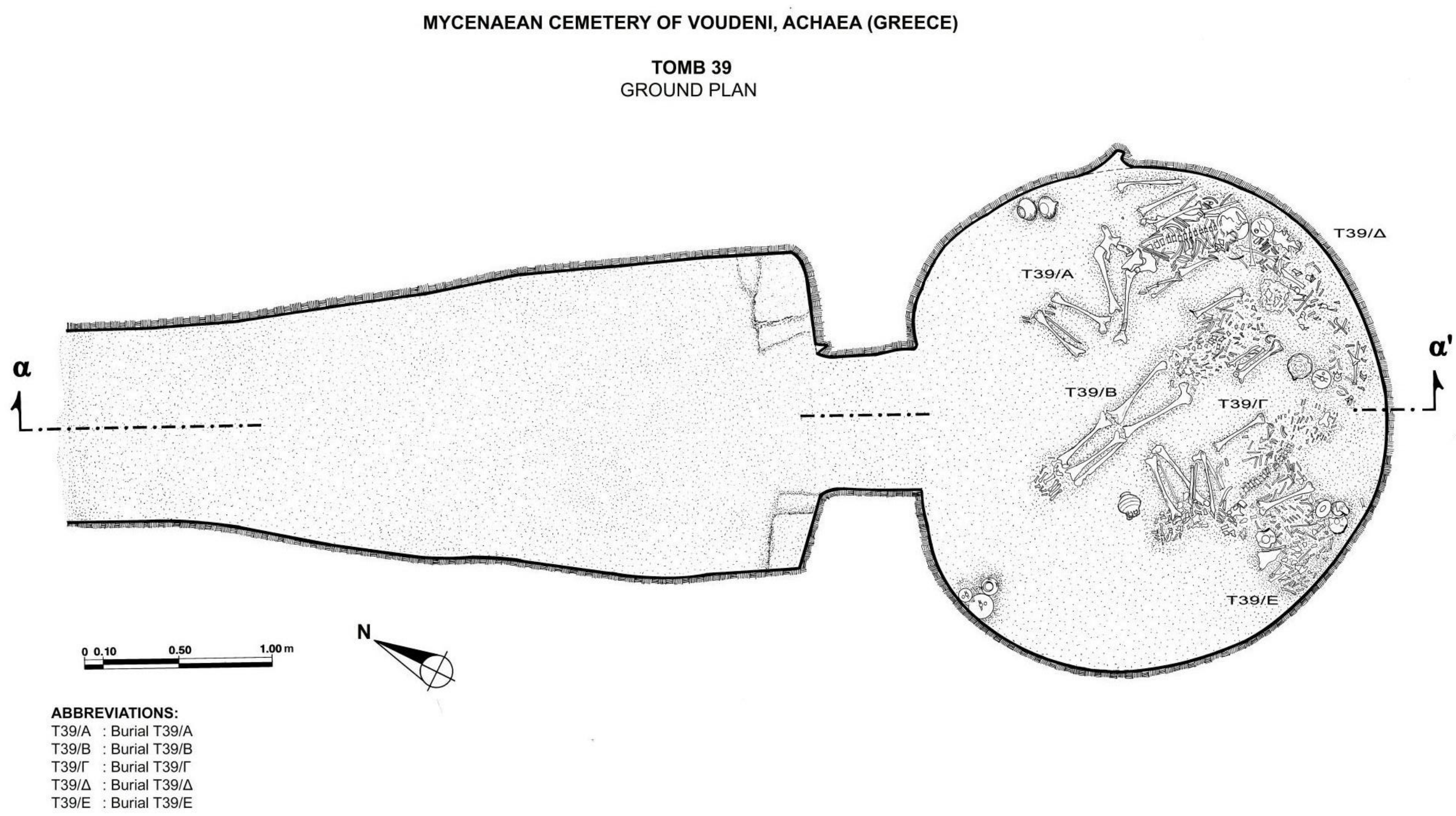


Figure 6.17.1. Tomb 39: ground plan (after Kolonas 1998, forthcoming).

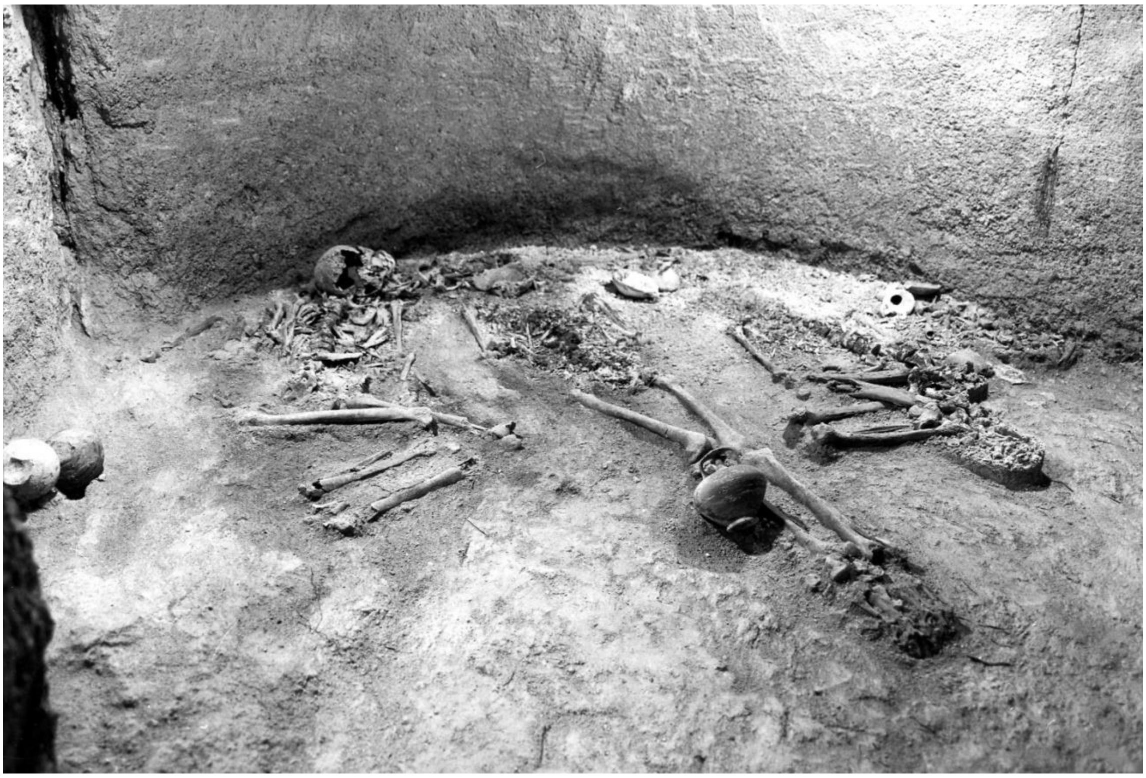
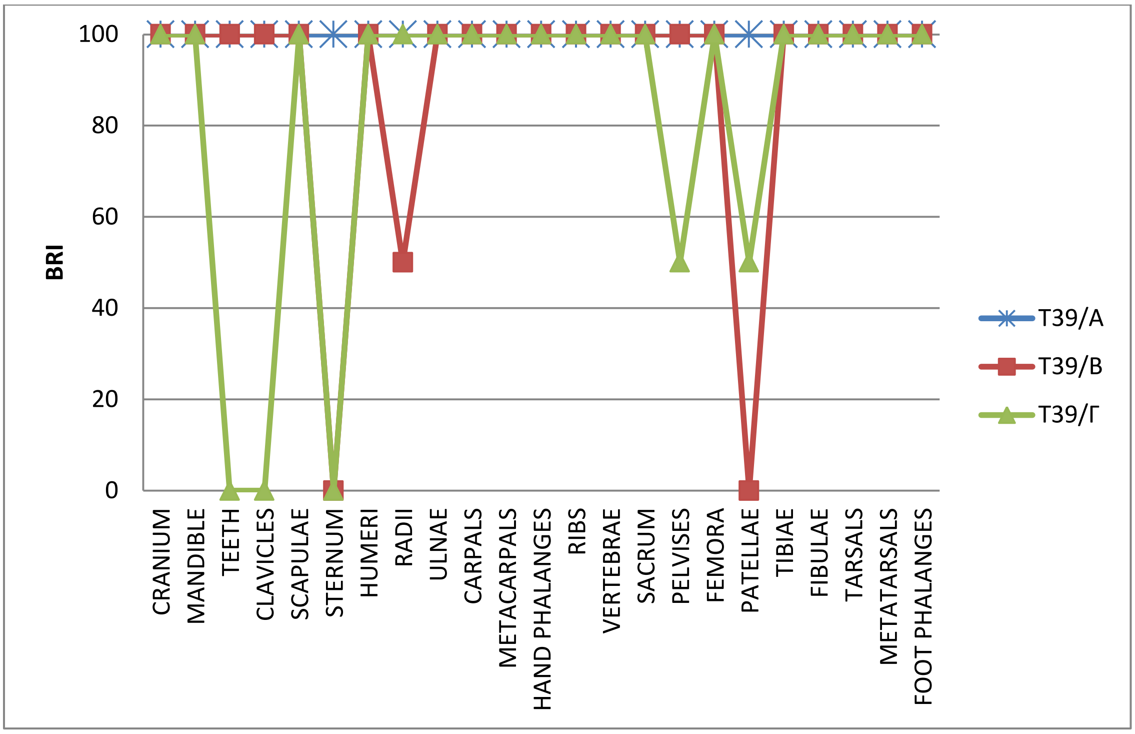


Figure 6.17.2. Tomb 39, post-excavation (view from the north). T39/A (left), T39/B (middle), T39/Γ (far right); T39/Δ and T39/E along the wall.



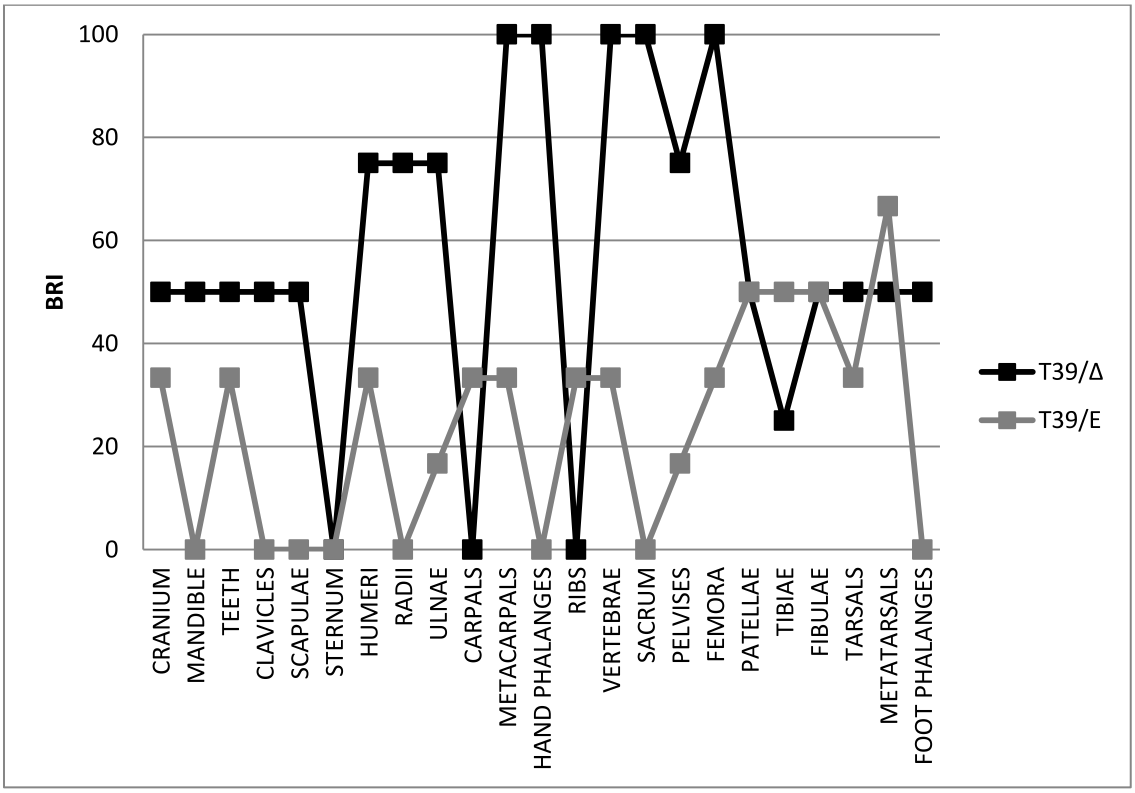


Figure 6.17.3. Tomb 39: Bone Representation Index (BRI) by tomb context.

Figure 6.17.4. T39/A: Scattered bone remains from earlier interment.

Figure 6.17.5. T39/B: Skull fragments.

Figures 6.17.6a-b. T39/Γ: Post-cranial (top) and cranial fragments (bottom).

Figures 6.17.7a-b. T39/E – Individuated elements of IND.A (left) & IND.B (right).

6.18 TOMB 40

6.18.1 Tomb 40: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 40 is a small circular tomb, located at the eastern end of the lower hill terrace (Figures 1.4 and 6.18.1; further information: Table 7.1). Extensive wall collapse was encountered at the north-east part of the chamber, which had resulted in the opening of a connecting gap with the adjoining Tomb 44; otherwise, the tomb was intact. A thin layer of infiltrated soil deposits had accumulated over the burial layer. Tomb 40 included three primary burials found in disturbed condition (T40/A-Γ) and a very large pile of commingled human remains of earlier interments (T40/Δ-I). Ceramic evidence indicated that it was used exclusively during the LHIIIA period (Table 6.18.1; Figures 6.18.1-2).

Burial T40/A was centrally located, close to the tomb's entrance, in S-N orientation (Figure 6.18.2). The upper part of the body and the skull (which was found broken) were partially placed over skeleton T40/Γ and commingled human remains of the secondary pile. The lower limbs were flexed towards the west and the right upper limb (fragmented) was parallel to the body, while the position of the left upper limb was unclear due to poor preservation. A bronze knife (T40/1) was found adjacent to the thorax. Located just east of it, **Burial T40/B** was placed in the same orientation but opposite direction, with lower limbs flexed towards the west. The upper part of the skeleton was poorly preserved (roughly depicted on excavation plan) and the upper limb position could not be established. Immediately south and partially below T40/A, the semi-articulated skeleton **T40/Γ** was found in contact with bones of the large secondary deposit. Only parts of the skeleton were recorded as being *in situ*, i.e. lower spine, pelvis, and femora. The remaining bones were disturbed, and as noticed in the excavation notebook the upper half of the spine was dislocated at a 90^{o} angle towards the south (Figure 6.18.2). The original body position could not be accurately determined but body orientation was along the E-W axis. A piriform jar (T40/2), bronze razors and tweezers (T40/3-4), as well as two LHIIIA1 alabastra (T40/5-6) were placed in proximity to T40/Γ, with at least one of these vessels associated with it by the excavators (Table 6.18.1).

The entire SW half of the chamber was occupied by a very large and dense secondary deposition of bones and artefacts, within which at least seven individuals were recognised by the excavators (**Burials T40/Δ-I**).The cultural assemblage included one LHIIB and one LHIIIA1 jug, six LHIIIA1 small handle-less jars, as well as eight clay buttons, three gold and silver hair-rings, bronze pins, awls and needles, two bronze daggers and three knives, as well as a knife's handle, and several carnelian and glass beads (Table 6.18.1). The extensive commingling prevented specific associations between the artefacts and human remains.

Table 6.18.1. Tomb 40: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T40/A		T40/1	BRONZE DAGGER	LHIIIA		
T40/Δ-I		T40/2	PIRIFORM JAR	LHIIIA1	31	57:2
T40/Δ-I		T40/3	BRONZE BLADE	LHIIIA1		
T40/Δ-I		T40/4	BRONZE TWEEZERS	LHIIIA1		
T40/Δ-I		T40/5	ROUNDED ALABASTRON	LHIIIA1	85	19:8, 57:2
T40/Γ		T40/6	CYLINDRICAL ALABASTRON	LHIIIA1	93	61:2
T40/Δ-I		T40/7	ROUNDED ALABASTRON	LHIIIA1	84	32:5
T40/Δ-I		T40/8	ROUNDED ALABASTRON	LHIIIA1	84	67:7
T40/Δ-I		T40/9	ROUNDED ALABASTRON	LHIIIA1	84	32:5, 12:25
T40/Δ-I		T40/10	ROUNDED ALABASTRON	LHIIIA1	84	
T40/Δ-I		T40/11	ROUNDED ALABASTRON	LHIIIA1	84	33:15, 32:5
T40/Δ-I		T40/12	SMALL HANDLELESS JAR	LHIIIA1	77	
T40/Δ-I		T40/13	SMALL HANDLELESS JAR	LHIIIA1	77	
T40/Δ-I		T40/14	SMALL HANDLELESS JAR	LHIIIA1	77	
T40/Δ-I		T40/15	SMALL HANDLELESS JAR	LHIIIA1	77	
T40/Δ-I		T40/16	SMALL HANDLELESS JAR	LHIIIA1	77	
T40/Δ-I		T40/17	SMALL HANDLELESS JAR	LHIIIA1	77	19:2
T40/Δ-I		T40/18	JUG	LHIIIA1	150	
T40/Δ-I		T40/19	SQUAT JUG	LHIIB	87	63:8
T40/Δ-I		T40/20	CLAY BUTTON	LHIIB-IIIA		
T40/Δ-I		T40/21	CLAY BUTTON	LHIIB-IIIA		
T40/Δ-I		T40/22	CLAY BUTTON	LHIIB-IIIA		
T40/Δ-I		T40/23	CLAY BUTTON	LHIIB-IIIA		
T40/Δ-I		T40/24	CLAY BUTTON	LHIIB-IIIA		
T40/Δ-I		T40/25	CLAY BUTTON	LHIIB-IIIA		
T40/Δ-I		T40/26	CLAY BUTTON	LHIIB-IIIA		
T40/Δ-I		T40/27	CLAY BUTTON	LHIIB-IIIA		
T40/Δ-I		T40/28a	2 HAIR SPIRAL	LHIIB-IIIA		
T40/Δ-I		T40/28b	1 HAIR SPIRAL	LHIIB-IIIA		

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T40/Δ-I		T40/29	BRONZE PIN	LHIIB-IIIA		
T40/Δ-I		T40/30	BRONZE AWL	LHIIB-IIIA		
T40/Δ-I		T40/31	BRONZE AWL	LHIIB-IIIA		
T40/Δ-I		T40/32	BRONZE PIN	LHIIB-IIIA		
T40/Δ-I		T40/33	BRONZE PIN	LHIIB-IIIA		
T40/Δ-I		T40/34	BRONZE DAGGER	LHIIB-IIIA		
T40/Δ-I		T40/35	BRONZE KNIFE	LHIIB-IIIA		
T40/Δ-I		T40/36	BRONZE KNIFE	LHIIB-IIIA		
T40/Δ-I		T40/37	BRONZE KNIFE HANDLE	LHIIB-IIIA		
T40/Δ-I		T40/38	BRONZE KNIFE	LHIIB-IIIA		
T40/Δ-I		T40/39	BRONZE DAGGER	LHIIB-IIIA		
T40/Δ-I		T40/40	BRONZE NEEDLE	LHIIB-IIIA		
T40/Δ-I		T40/41a	76 CARNELIAN BEADS	LHIIB-IIIA		
T40/Δ-I		T40/41b	12 GLASS BEADS	LHIIB-IIIA		
T40/Δ-I		T40/41c	2 GLASS BEADS	LHIIB-IIIA		
T40/Δ-I		T40/41d	4 GLASS BEADS	LHIIB-IIIA		

6.18.2 Tomb 40: Osteological results

Tomb 40 contained the largest quantity of skeletal material within the studied tombs (n=2362 bone fragments) in moderate to good state of completeness and preservation and diverse bone representation (Tables 6.18.2, Figure 6.18.3). The total tomb MNI is 17 (including 14 adults and three sub-adults) and basic osteological information is provided in Table 6.18.3.

Table 6.18.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			**PRESERVATION**				**MNI**	
TOMB CONTEXT	IDENTI FIED	TOTAL	TEETH	COMPLETENESS		SURFACE		MNI	Max. occ. skeletal element
				DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS		
T40/A	123	187	3	2-3	2	2	2	1	
T40/B	69	115	0	2-3	2	3	3	1	
T40/Γ	108	123	4	1-2	1	2	1	1	
T40/Δ-I	1316	1937	85	2	1	3	3	14	Humerus
TOTAL	**1616**	**2362**	**92**					**17**	Humerus

Burial T40/A: The skeleton was in moderate/good state of preservation, both in terms of completeness and surface condition, although the former showed greater diversity (e.g., the cranium was poorly preserved). Fragmentation was high (with several bones showing both old and new fractures) but completeness was not extremely affected as many bones could be reconstructed from joining fragments (Figure 6.18.S1). Bone representation was also good, since most elements were represented, even if on the basis of few fragments (Figure 6.18.3). As for the missing elements (e.g., left forearm), these may have been mixed with the large T40/Δ-I bone assemblage, due to the partial contact of the skeleton with the widespread pile of secondary remains. The skeleton belonged to a prime adult female.

Within the T40/A bone group, a few extra bone fragments from at least two individuals (an adult and a child) were found. These included: a) few adult humeral and femoral fragments, a lumbar vertebra, a proximal hand phalanx; b) a very gracile, possibly sub-adult, fragmented metacarpal, and the left mandibular first incisor of a 6-7 year-old child. These remains belonged to earlier interments (either as *in situ* scattered remains from earlier removals or part of the adjacent secondary deposit, mixed with T40/A skeleton due to the close proximity).

Burial T40/B: The skeleton was only moderately preserved, in all aspects. As with T40/A fragmentation was extensive but several bones could be reconstructed by joining fragments, resulting in higher completeness of represented long bones levels, although other elements were far less complete (e.g., cranium and axial bones) (Figure 6.18.S2). Bone representation was inconsistent, but generally good; the missing elements mostly comprised small or fragile bones (e.g., foot, vertebrae, sternum) and teeth, even though a few denser elements (i.e. mandible, clavicles) were also absent (Figure 6.18.3). BRI patterns of T40/B do not appear selective but rather consistent with increased disturbance due to natural taphonomic bias and possible accidental damage due to past human movement (N.B. the close proximity of this burial to the collapsed wall and the disturbed state of the bones on the excavation plan). Unfortunately, the low quality of excavation plan and the lack of photographic documentation did not permit the examination of bone disturbance. T40/B skeleton belonged to a prime adult female. Within the same bone group, a few extra elements from at least another adult were found, representing scattered remains from earlier interment(s). These included fragments of frontal, right and left tibiae, left pelvis, and one tarsal bone.

Burial T40/Γ: The skeletal material of group T40/Γ comprised a moderate bone quantity in fairly good state of preservation (Table 6.18.2). As described in 6.18.1, the skeleton T40/Γ was found partially displaced and mixed with skeletal material of the widespread secondary deposit. As a result, several extra bones were collected in this group (Figure 6.18.S3). In the absence of good photographic documentation, the segregation of the remains belonging to T40/Γ was restricted to the extent allowed by the individuation process and careful examination of the skeletal material across the excavation plan (Figures 6.18.1-2). Even though it was possible to obtain all necessary demographic information based on the re-individuated elements, it would be flawed to attempt an individual BRI analysis for T40/Γ main skeleton alone; therefore, it was opted to include bone frequencies with the total BRI frequencies of T40/Δ-I (Figure 6.18.3). The excavator's impression that T40/Γ was a partially *in situ* primary burial, albeit extensively disturbed and partially displaced, was confirmed by the examination of the re-individuated bones across the excavation plan. Articulation between the lumbar spine and pelvic girdle could be seen on the plan, while the pair of lower limbs appeared somewhat displaced, with femora possibly discerned slightly to the east. The thoracic cage (preserving vertebrae and some ribs) was clearly seen displaced towards the south, rotated approximately 90^{o}; on the plan the thoracic spine is seen lying in a vertical angle to its lumbar counterpart. Some (right?) ribs appear to have been left in their original place, while other bones, most likely upper limb elements, are also seen displaced both south of T40/B fragmented cranium and adjacent to the removed T40/Γ upper spine. Due to the level of displacement, it was not possible to reconstruct the original body position of T40/Γ, except for the E-W body orientation. Further discussion about the act of partial displacement and the time-frame between that and the primary event (as inferred based on the observed bone relationships) follows in 6.18.3.

The skeleton belonged to a prime adult probable female; the individuated bones (some of them securely and others only tentatively assigned) are shown in Table 6.18.3. In addition to her remains, the bone group included extra remains from at least another individual (not adding to the total MNI of the tomb and aggregated with the T40/Δ-I bone frequencies); these comprised a right ulna that paired with a left one from T40/Δ-I; a right metacarpal that did not match the left metacarpals tentatively attributed to T40/Γ, a pair of non-matching tarsals (left calcaneus-talus; one of the two certainly did not belong to T40/Γ); and an extra mandible.

Burials T40Δ-I: This large and widespread secondary deposition was the largest secondary deposit in the studied tombs; the skeletal material comprised close to 2000 bone fragments (Table 6.18.2; nine animal bone fragments were also encountered, a rare instance in the Voudeni tombs). Bone completeness was fairly good for most elements, despite the high degree of fragmentation (both old and recent) that required the reconstruction of many bones from joining fragments. Most easily fragmented elements (and less fully reconstructed) comprised pelves, scapulae, vertebrae, and crania; complete cranial vaults were not preserved. The presence of a very large quantity of small unidentified fragments (n>600) also indicated increased fragmentation. Surface condition was worse, with the vast majority of skeletal elements only moderately preserved in this aspect. Some bone fragments displayed poor surface condition, while gnawing and insect marks were occasionally identified. Finally, copper staining was evident on a few adult fragments (including a left clavicle, sternum, left rib, vertebrae, and a left calcaneus) and the infant scapula of IND. C. The lack of precise micro-stratigraphic recording of the finds precluded, though, further remarks on the association between the stained bones and specific metal artefacts in close proximity.

The MNI was 14 (based on humeral frequencies), including 11 adults and three sub-adult individuals (N.B. the MNI calculation does not change by the addition of the extra material found among the primary contexts). In order not to bias the BRI analysis by the (strong) possibility of some remains of T40/Γ skeleton being part of the secondary assemblage, the two contexts were combined and BRI values were calculated on the basis of 15 individuals. Bone representation was surprisingly good for such a large MNI; all elements were well or at least moderately represented and only the smallest and most fragile bones (i.e. carpals and sternum) showed poor representation (Figure 6.18.3). It should be noted that even raw bone frequencies were unusually high, and the assemblage included rare findings for Voudeni's recovery standards (e.g., many distal hand and foot phalanges, and even a styloid process of temporal bone). The general consistency observed between the BRI values of the most prominent bones (and their MNI estimates) indicated the fairly complete bone presence of the majority of individuals attested by MNI (approximately 8-11 out of 14). Pair-matching of long bones was also fairly successful, with approximately six pairs identified per element. However, individuation was not equally successful, since the large number of interments and moderate surface preservation most often hindered a secure matching between different skeletal elements, large enough to validate individuation. Nonetheless four individuals were positively identified (IND.A-D), and several other matches were found, even between the material of T40/Δ-I and the extra remains of contexts T40/A and T40/Γ. These included the match of the child bones T40/Δ-I -IND.B with the tooth showing precisely the same age in T40/A, and the pairing of ulnae between the secondary assemblage and T40/Γ.

Based on distinct morphological and age characteristics, several bones pertaining to the following individuals were identified: a) IND.A: a very gracile prime adult female; b) IND. B, a 6-7-year –old child; c) IND.C: an infant, 1-1.5 years; and d)

IND. D, an infant, 2-2.5 years at the time of death (Table 6.18.3; Figure 6.18.4: all sub-adult remains). Maximum sex information for the remaining cases was obtained by humeral metrics (as this was the most frequently occurring bone); the presence of four males, a probable male, and four females was attested, while one case remained indeterminate. Cranial and pelvic evidence, when available, corroborated the sex determination. Based on pelvic evidence, age information was also provided for two of the extra cases, a prime adult male (E5) and a mature adult female (E10). Additional age information based on cranial and dental evidence attested to the presence of at least two young adults; since the latter could not be associated with sexed bones, they were not included in aggregated demographic results.

Table 6.18.3. Tomb 40: Basic osteological information by case (n=17) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T40/A	PRIMARY	F	Pelvis; LB metrics	PA	L aur: 4 (35-39y)			
T40/B	PRIMARY	F	Pelvis; femoral metrics	PA	R aur: 3-4 (30-39y)			
T40/Γ	DISTURBED PRIMARY	F?	Pelvis-sacrum; femoral metrics	PA	L aur: 4 (35-39y)			Pairs of humeri +ulnae; R radius; R+L femora; R+L pelves; sacrum; vertebrae; ribs; (*Tentatively attributed*: hand bones; skull, including mandible)
T40/Δ-I – IND.A	COM. SEC.	F	Pelvis; LB metrics	PA	R aur: 3 (30-34y); L pub: 3-4 (30-38y)	150	R upper limb	Pairs of humeri + radii; R ulna; pairs of femora, tibiae, fibulae; R+L clavicles; R+L pelves
T40/Δ-I – IND.B	COM. SEC.	-		CH I (6-7y)	Diaphyseal length: 6-7y. Vertebral fusion: fusing line still visible at neuro-central junction			Humerus (unsided, includ. PE); R rad (DE); Pairs of femora, tibiae, fibulae; few hand bones (MC, PHP); sacrum (S1); few vertebrae;
T40/Δ-I – IND.C	COM. SEC.	-		INF II (1-1.5y)	Diaphyseal length: 1-1.5y			L humerus; femur (uns); R scapula; L clavicle
T40/Δ-I – IND.D	COM. SEC.	-		INF II (2-2.5y)	Diaphyseal length: 2.-2.5y			L humerus; L ulna; R radius; pairs of femora + tibiae; R+L clavicles; occipital fragment
T40/Δ-I – E5	COM. SEC.	M	Pelvis; humeral metrics	PA	R aur: 4 (35-39y)			
T40/Δ-I – E6	COM. SEC.	M	humeral metrics	AD				
T40/Δ-I – E7	COM. SEC.	M	humeral metrics	AD				
T40/Δ-I – E8	COM. SEC.	M	humeral metrics	AD				
T40/Δ-I – E9	COM. SEC.	M?	humeral metrics	AD				
T40/Δ-I – E10	COM. SEC.	F	Pelvis; humeral metrics	MA	L aur: 5 (40-44y)			
T40/Δ-I – E11	COM. SEC.	F	humeral metrics	AD				
T40/Δ-I – E12	COM. SEC.	F	humeral metrics	AD				
T40/Δ-I – E13	COM. SEC.	F	humeral metrics	AD				
T40/Δ-I – E14	COM. SEC.	NO		AD				

6.18.3 Tomb 40: Bioarchaeological reconstruction of funerary activities

The length of use in Tomb 40, one of the earliest Voudeni tombs (LHIIB/LHIIIA1), did not exceed more than a century according to the ceramic evidence that it contained. Nonetheless, the osteological assemblage comprised one of the highest MNI (n=17) in the Voudeni cemetery, including at least 14 adults (four males, one probable male, seven females, one probable female, one indeterminate) and three sub-adults (Table 6.18.3). This number confirms the intensive use of the tomb, despite its small size and short life-span.

The reconstruction of basic funerary activities in Tomb 40 may be approached through the bioarchaeological evidence, despite the limitations imposed by the lack of osteoarchaeological field recording and photographic documentation. The MNI of 14 assessed in the secondary assemblage suggests the gradual accumulation of the secondary remains, since the chamber's space was too limited to accommodate such a high number of primary interments simultaneously. Estimating that a maximum number of approximately six primary interments could only fit concurrently in the available area ($3m^2$), multiple removal episodes are certainly inferred. The analysis of bone representation patterns demonstrated very good levels of retention and preservation of all skeletal elements, except for very small and fragile bones, suggesting an act of random and widespread bone retention within the chamber, of most –if not all– earlier interments. The consistency shown in the frequencies of prominent elements, the good representation even of smaller bones, and the presence (albeit in limited numbers) of very small and rarely recovered bones (e.g., distal phalanges, juvenile epiphyses) rule out the hypothesis of this deposit representing an ossuary-like assemblage, made of bones transferred into Tomb 40 from other places. The limited success of re-individuation analysis was the result of the wide, extensive commingling and of increased fragmentation; the latter was most likely induced predominantly by accidental destruction during the continuous and intensive use of the limited tomb space, trampling etc. (which also explains the under-representation of fragile elements, such as sub-adult cranial fragments). Even though a limited extent of bone removal from the tomb cannot be completely ruled out, no evidence points to this act.

Burial T40/Γ was the earliest of the three final interments of Tomb 40. T40/A was certainly placed partially over it, while the cranium of T40/B occupied the area that should have originally been taken by the upper body of T40/Γ. It is likely that the interment of T40/B triggered the partial removal of T40/Γ, in the effort to place T40/B body without blocking completely the entrance to the tomb. When this happened, T40/Γ should have been in a state of partial skeletonisation, as indicated by the dispersal of upper and lower limbs coupled with retention of semi-articulation in the spinal column. The rates of decomposition may be affected by several factors, but the time-span between the two events could not have been more than a few years (Galloway 1997; Rodriguez 1997; cf. 5.4.4). T40/A was most likely the final addition in the tomb. A final re-arrangement of the secondary remains before the last interments, in the form of 'pushing' the bone mass towards the south, may be inferred by looking at how the commingled bones surround the pelvis of T40/Γ, found in actual contact with the broken skull of T40/A (Figures 6.18.1-2). The analysis of preservation patterns of T40/A and T40/B suggested that their post-depositional disturbance was clearly attributed to natural taphonomic damage rather than human action (especially for T40/B, due to its close proximity to the collapsing NE wall), as fragmentation and under-representation of certain elements was limited and random (Figure 6.18.3). For this reason, both these contexts were classified as primary burials, suffering only from natural taphonomic disturbance (cf. 7.3).

Tomb 40 demonstrated a most characteristic example of wide dispersal and commingling within the chamber, with no intention of preserving the individuality of the removed skeletons within the commingled bone mass. Even the still semi-articulated T40/Γ body was removed in a way that showed no objection for her mixing with the commingled assemblage. Moreover, the placement of the final primary burials was in actual contact with earlier interments.

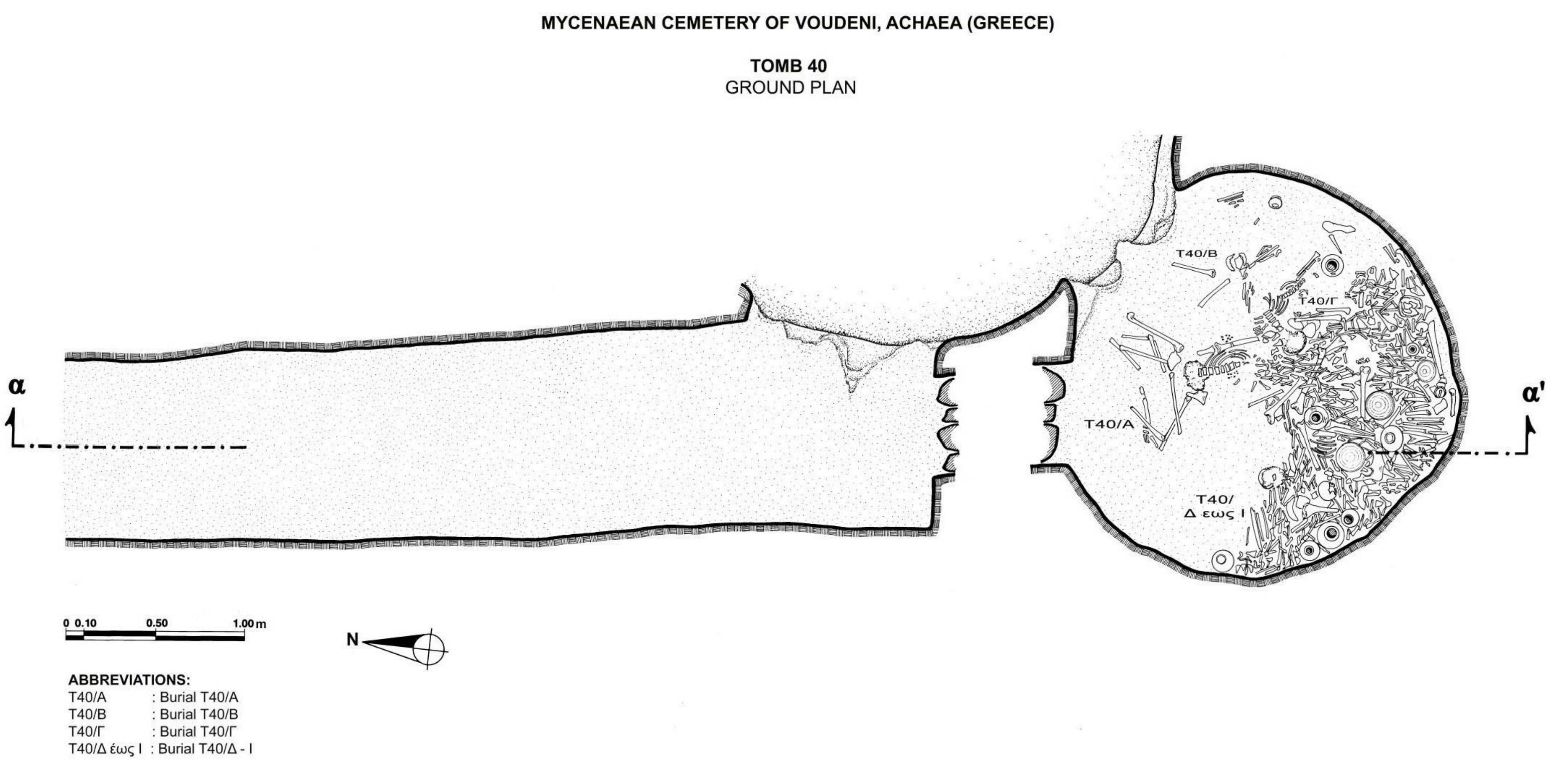


Figure 6.18.1. Tomb 40: ground plan (after Kolonas 1998, forthcoming).

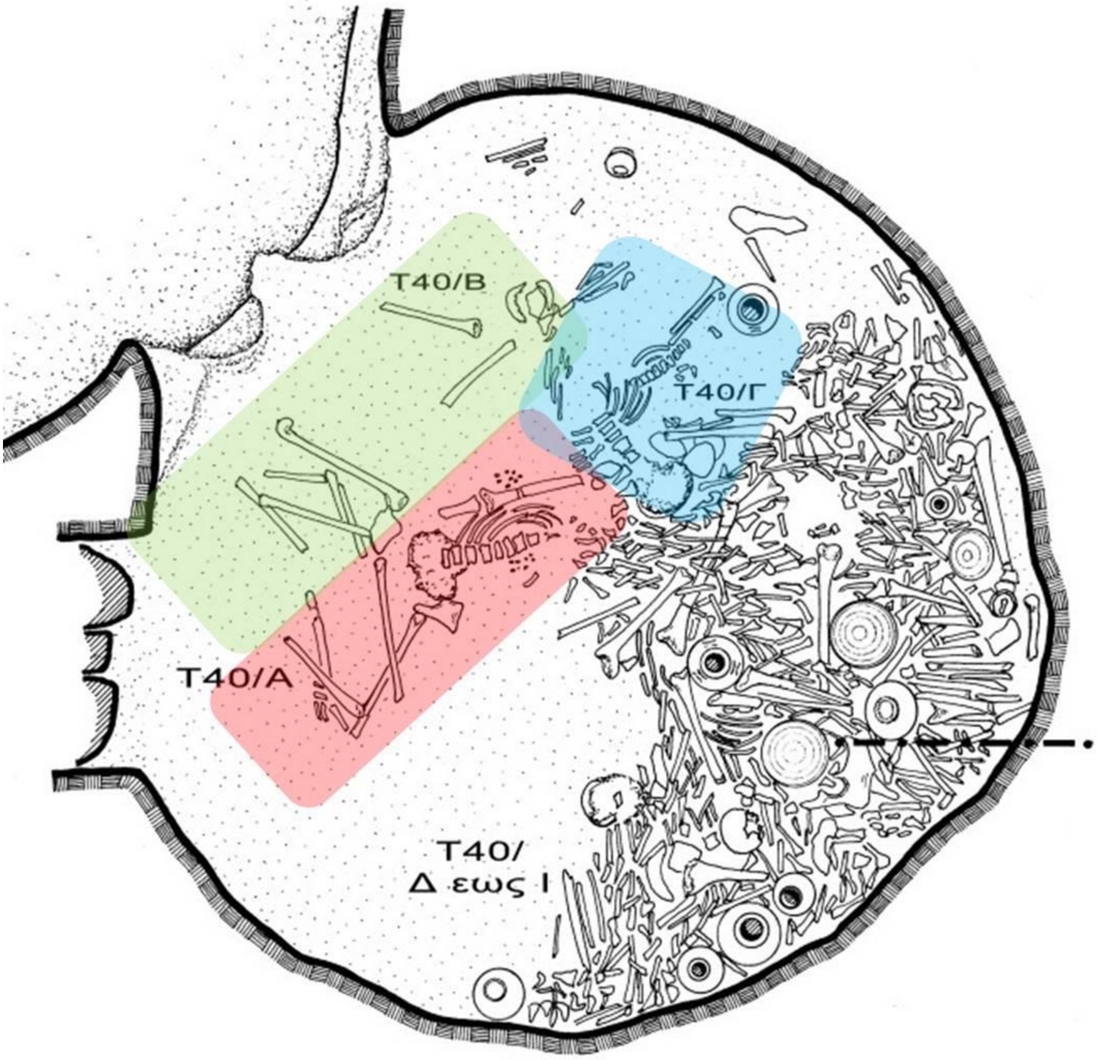


Figure 6.18.2. Tomb 40: Skeletal material assigned to primary burials, disturbed to different extents. T40/A highlighted in red, T40/B in green, and T40/Γ in blue.

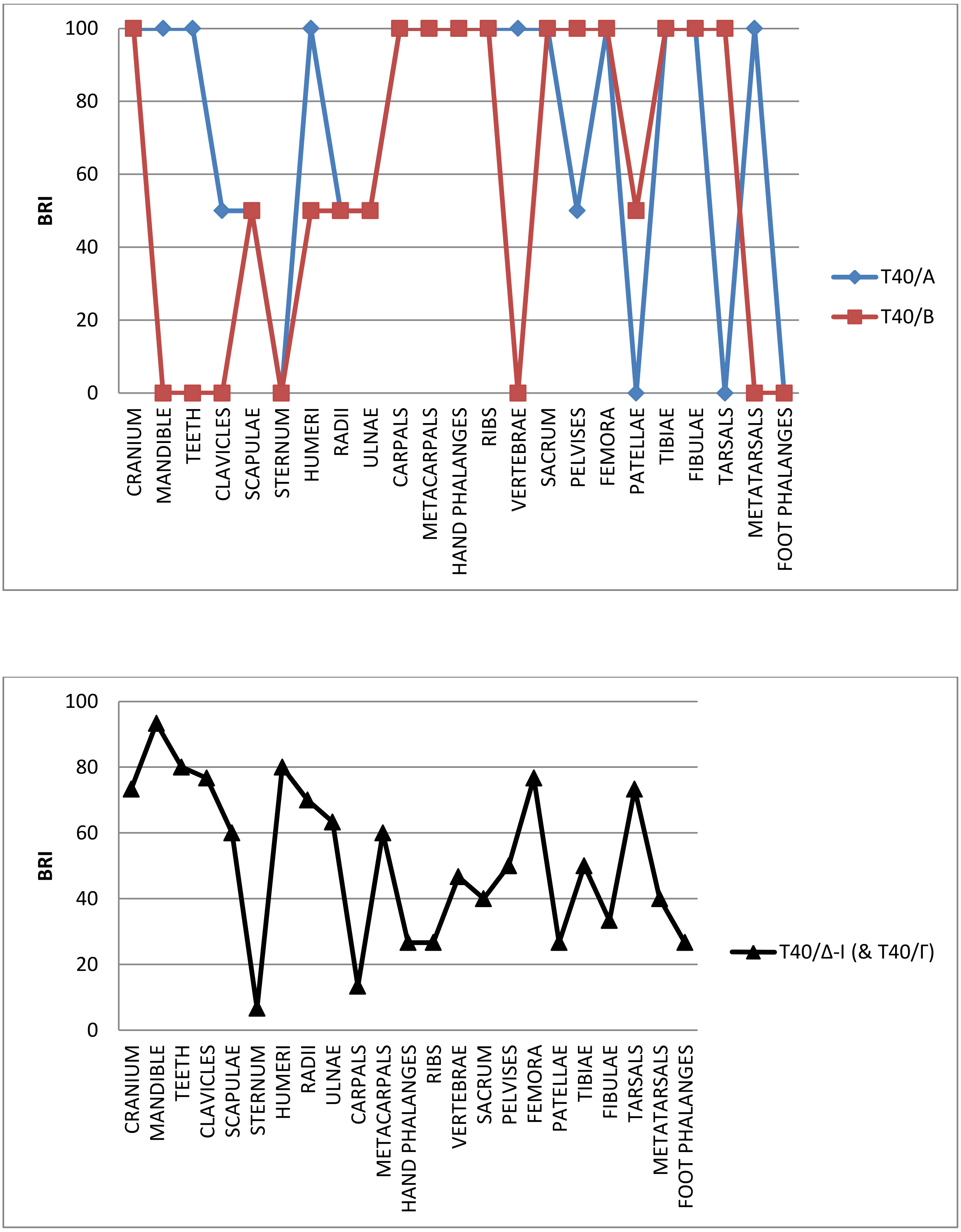


Figure 6.18.3. Tomb 40: Bone Representation Index (BRI) by tomb context.

Figure 6.18.4. Burial T40/Δ-I (secondary deposit): sub-adult remains.

6.19 TOMB 42

6.19.1 Tomb 42: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 42 is a medium-sized circular tomb, located at the lower terrace of the hill (Figures 1.4 and 6.19.1; further information: Table 7.1). A collapsed side-chamber was opened at the west side of dromos, while a failed attempt to open another one was noticed further south. Even though the chamber's roof had not collapsed, the tomb suffered extensive structural damage: wall spalling was evident; the south wall displayed a large crack; the lintel and entrance jambs were destroyed. As a result, thin soil deposits and rock debris accumulated over the floor. The tomb contained a variety of primary and secondary skeletal deposits, both in the chamber and the dromos.

The primary burial **T42/A** was centrally located in the rear part of the chamber, in S-N orientation. The body was placed on its left side, with skull facing to the west, lower limbs flexed, left upper limb along the body and right hand on pelvis. A group of three LHIIIC Late vessels was placed north of the lower limbs, immediately in front of the entrance, while a clay button was found west of the knees and a LHIIIC Middle stirrup jar besides the left humerus. Three LHIIIC Middle stirrup jars were placed between the rear wall and the skull, and a bronze knife west of the skull (Table 6.19.1).

The disturbed primary burial **T42/B** was lying east of T42/A, preserving only the lower limbs *in situ*. The position of the lower limbs was described as flexed towards the east, suggesting that T42/B was placed in a similar orientation and position but in opposite direction of T42/A. The burial was accompanied by a LHIIIC Late stirrup jar (Table 6.19.1).

Burial **T42/Γ,** a small pile of secondary remains, was located between the south wall and T42/A. The excavators suggested that these remains may represent the upper part of T42/B skeleton, presumably removed in the effort to clear space for a next interment that never took place. This assemblage was accompanied by a LHIIIC Late stirrup jar and a steatite button (Table 6.19.1).

In the NW part of the chamber, **Pit I** (0.98x0.80x0.30m) contained the secondary deposition of cranial and post-cranial remains from at least six individuals (**T42/Δ-Θ**), as identified at the time of excavation. The bones were accompanied by one whetstone, a bronze sheet, and several vessels dated to the LHIIIA2 period (Table 6.19.1).

During restoration works in 2010, another pit (**Pit II**) was investigated, which had been identified at the east dromos corner but was not originally excavated (only its outline shown in the original plan: Figure 6.19.1). Pit II (1x0.75x0.40m) included secondary human remains from at least two individuals as estimated at the time of recovery, as well as a tile fragment and a few ceramic sherds (T42/F20) of indeterminate date (cf. Voudeni Notebook 2010).

Table 6.19.1. Tomb 42: List of artefacts by tomb context, including location, chronological and typological information. (*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T42/A		T42/1	BELLY-HANDLED AMPHORA	LHIIIC LATE	58	73
T42/A		T42/2	STIRRUP JAR (LARGE)	LHIIIC LATE	176	43:p
T42/A		T42/3	STIRRUP JAR (LARGE?)	LHIIIC LATE	176	43:p
T42/A		T42/4	CLAY BUTTON	LHIIIC MIDDLE		
T42/A		T42/5	STIRRUP JAR*	LHIIIC MIDDLE	176	43:d-e
T42/A		T42/6	STIRRUP JAR*	LHIIIC MIDDLE	175	61A
T42/A		T42/7	STIRRUP JAR*	LHIIIC MIDDLE	176	43:40
T42/A		T42/8	STIRRUP JAR*	LHIIIC MIDDLE	176	43:e, 53:18
T42/A		T42/9	BRONZE KNIFE	LHIIIC MIDDLE		
T42/B		T42/10	STIRRUP JAR	LHIIIC LATE	177	43:p
T42/Γ		T42/11	STIRRUP JAR**	LHIIIC LATE	177	43:p
T42/Γ		T42/12	STEATITE BUTTON**	LHIIIC LATE		
T42/Δ-Θ	PIT I	T42/13	WHETSTONE	LHIIIA2		
T42/Δ-Θ	PIT I	T42/14	ROUNDED ALABASTRON	LHIIIA2	85	49:17, 19:32
T42/Δ-Θ	PIT I	T42/15	PIRIFORM JAR	LHIIIA2	44	46:52
T42/Δ-Θ	PIT I	T42/16	ROUNDED ALABASTRON	LHIIIA2	85	19:2
T42/Δ-Θ	PIT I	T42/17	CYLINDRICAL ALABASTRON	LHIIIA2	94	57:2
T42/Δ-Θ	PIT I	T42/18	ROUNDED ALABASTRON	LHIIIA2	85	49:17
T42/Δ-Θ	PIT I	T42/19	BRONZE SHEET	LHIIIA2		

*Possibly erroneously associated with T42/A and actually related to T42/Γ

**Possibly erroneously associated with T42/Γ and actually related to T42/A

6.19.2 Tomb 42: Osteological results

The five different contexts of Tomb 42 comprised a large quantity of human remains (MNI: 15), in diverse state of preservation (Tables 6.19.2, Figure 6.19.2). Basic osteological information for all cases (n=15) is given in Table 6.19.3. Bone recovery biases posed certain problems for the analysis of contexts T42/B and T42/Γ. At the time of recovery, the remains of both contexts were collected in one group due to erroneous attribution of all bones to the T42/B skeleton, presumably partially displaced. The lack of photographic documentation from the tomb's excavation impeded the segregation process of this mixed assemblage. Nonetheless, it was possible to distinguish the most prominent bones between the two contexts, and illuminate their taphonomic history (see below). However, since it was not possible to positively re-attribute all elements to the correct context, MNI bone frequencies (Datasheet 6.S2), BRI values (Figure 6.19.2, Datasheets 6.S3-S4), and numbers of fragments (Table 6.19.2, Datasheet 6.S1) are presented collectively.

Table 6.19.2. Bone quantity, state of preservation, and MNI by tomb context.

<table>
<tr><th rowspan="3">TOMB CONTEXT</th><th colspan="3">NO OF BONE FRAGMENTS</th><th colspan="4">PRESERVATION</th><th colspan="2">MNI</th></tr>
<tr><th rowspan="2">IDENTIFIED</th><th rowspan="2">TOTAL</th><th rowspan="2">TEETH</th><th colspan="2">COMPLETENESS</th><th colspan="2">SURFACE</th><th rowspan="2">MNI</th><th rowspan="2">Max. occ. skeletal element</th></tr>
<tr><th>DETAIL</th><th>CONCISE CLASS</th><th>DETAIL</th><th>CONCISE CLASS</th></tr>
<tr><td>T42/A</td><td>107</td><td>169</td><td>17</td><td>1</td><td>1</td><td>3</td><td>3</td><td>1</td><td></td></tr>
<tr><td>T42/B</td><td rowspan="2">105</td><td rowspan="2">170</td><td rowspan="2">21</td><td>1-2</td><td>1</td><td>3-4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>T42/Γ</td><td>1-2</td><td>1</td><td>3-4</td><td>4</td><td>1</td><td></td></tr>
<tr><td>T42/Δ-Θ (PIT I)</td><td>638</td><td>943</td><td>32</td><td>1</td><td>1</td><td>2</td><td>1</td><td>10</td><td>Femur</td></tr>
<tr><td>T42/PIT II (dromos)</td><td>151</td><td>335</td><td>18</td><td>1-3</td><td>2</td><td>4</td><td>4</td><td>2</td><td>Femur; humerus</td></tr>
<tr><td>TOTAL</td><td>1001</td><td>1617</td><td>88</td><td colspan="4"></td><td>15</td><td>Femur</td></tr>
</table>

Burial T42/A: The skeleton of T42/A was characterised by moderate surface preservation but was well preserved in terms of completeness and representation (Table 6.19.2; Figure 6.19.2). The few elements that were missing completely (i.e. sternum, hand and foot bones) were all fragile and/or small, and their absence was consistent with patterns of normal taphonomic and/or recovery loss. The lack of photographic documentation and the low resolution of the excavation plan prevented confirmation of the exact burial position and of the arms placement in particular.[62] The skeleton belongs to a young adult (c.25 years), probably male (Table 6.19.3).

Burials T42/B & T42/Γ: As explained above, the skeletal remains from T42/B and T42/Γ were erroneously collected together at the time of recovery. This mixed assemblage contained a fair quantity of human remains, fairly well preserved in terms of completeness (except for axial bones) but of diverse, moderate to poor surface preservation (Table 6.19.2). The MNI of both contexts together was estimated as 3, but the only element attesting to a third individual was an extra left tibia. As the segregation of the skeletal remains suggested that this tibia was an isolated element within a bone group otherwise attributed to two specific interments (see below) and since its presence could not raise the total MNI of the tomb, the BRI values of the mixed T42/B&Γ context (Figure 6.19.2) were calculated on the basis of MNI:2 in order τo facilitate the interpretation of bone frequencies (see 6.19.3).

The mixed assemblage comprised skeletal material of two adult males and an additional left tibia that was the single represented bone of an earlier interment, possibly female, based on its gracile morphology. The very successful individuation of all skeletal elements to the two male individuals suggested that the mixed assemblage was not the outcome of intense commingling, but of a disturbed primary burial (T42/B) and a single secondary deposition (T42/Γ) with the only exception of an isolated scattered bone. It was possible to re-allocate most skeletal elements to a single prime adult male, and an additional pair of femora and tibiae to another adult male, whose age could not be precisely estimated (Figure 6.19.3). Despite the lack of photographic documentation, excavation description clearly referred to *in situ* preservation of lower limbs alone in T42/B; furthermore, it was possible to identify certain bones on excavation plan, roughly depicted but yet discerned (i.e. lower limb long bones in T42/B *versus* long bones, cranium and mandible in T42/Γ, Figure 6.19.1). Hence, it was

[62] N.B. The right humerus of T42/A skeleton was identified in T42/Γ bone collection, same with an ulnar and a mandibular fragment that matched T42/A right ulna and mandible. The fracture separating the ulnar fragments was modern, implying that the presence of these bones within T42/Γ collection should be attributed to excavation recovery bias due to the proximity of the two assemblages rather than true dislocation. For this reason, these bones were recorded with the T42/A skeleton in all data tables. Nevertheless, the fact that T42/A right humerus cannot be discerned on excavation plan (Figure 6.19.1) allows for the possibility that the right upper limb may have been disturbed and slightly displaced in antiquity. The lack of precise field bone recording and photographic documentation does not permit to explore the issue any further.

inferred that the skeleton who preserved all prominent bones and some of his smaller elements should be attributed to T42/Γ single secondary deposit (in the vicinity of which an isolated tibia from an earlier interment was also located), while the other pair of lower limbs to the disturbed primary burial of T42/B (Table 6.19.3).

Pit I (Burials T42/Δ-Θ): Pit I included a fairly large quantity of skeletal remains, well preserved in all aspects (except for few exceptions, see below) and well represented (Table 6.19.2). Total MNI was 10 (7 adults and 3 sub-adults); especially for such a large MNI number, the bone representation was remarkably good, with only sternum and carpal bones missing and very few other small-sized bones showing moderate BRI values (Figure 6.19.2). The analysis of bone frequencies and the results of re-fitting and individuation process demonstrated that the assemblage comprised the secondary remains of six fairly complete adult skeletons (IND. A-F) and of two sub-adults (G-H), while the presence of another infant (IND.I) and an extra adult (E10) was attested based on an additional sub-adult femur and an adult right femur and tibia respectively. The surface preservation of the two extra adult long bone fragments was poor (stage 4), in sharp contrast with the other remains in Pit I (Figures 6.19.S1-S2).

The six main re-individuated adults included two males (IND.A-B), two females (IND. E-F), and two probable females (IND. C-D). The level of robustness to gracility of these skeletons followed the sequence: IND. A-B-D-C-E-F; the skeletons of each respective pair (A-B, C-D, E-F) were fairly similar. For this reason, although the segregation of long bones was positive, the attribution of crania (skulls 1-6) and associated mandibles was thought safer to follow each pair, and to be only tentatively identified per skeleton (N.B. the aggregated sex and age results are not affected). Of the remaining post-cranial bones, the ones that could be individuated with a degree of confidence, at least for a pair of skeletons, are included in Table 6.19.3; no attempt was made to individuate ribs, vertebrae, hand and foot bones. To ensure consistency, ageing followed the most securely individuated and maximally occurring element (i.e. the skull), while corroboration was provided by dental wear and pelvic degenerative changes, when possible. The sub-adult remains found in Pit I comprised a fairly complete 3-4-year-old child (IND. G) and a moderately represented young infant of around 6 months at the time of death (IND.H). The presence of a neonate (1-2 months old) was solely attested on the basis of an additional immature femur (Table 6.19.3; sub-adult remains from Pit I in Figures 6.19.4a-b).

Pit II in dromos: The secondary deposit in the dromos pit comprised a moderate quantity of skeletal remains. Element completeness was diverse, with long bones and cranial remains better preserved. Surface preservation was poor, showing extreme weathering and often hard soil encrustations, while characteristic brownish stains, associated with increased moisture, were also evident (Figures 6.19.S3-S4; Table 6.19.2). The MNI of this assemblage was 3 (based on humeral and cranial frequencies), but only two cases contributed to the tomb's total MNI. Indeed, the BRI values show clearly that only the most prominent skeletal elements of basically two (and not three) individuals were well represented, while all small-sized bones were absent (cf. Figure 6.19.2). It was possible to re-individuate most long bones and cranial remains to: a) T42/PIT II-IND. A, prime adult male, and b) T42/PIT II-IND. B, adult female (Table 6.19.3). The third individual (who could not be added to the total tomb MNI as he could match lower limb remains from either the chamber or Pit I) was only represented by a pair of humeri and a few cranial fragments; based on the limited cranial evidence (occipital bone), his sex was determined as possibly male.

Table 6.19.3. Tomb 42: Basic osteological information by case (n=15) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T42/A	PRIMARY	M?	Pelvis (M?); (Skull & femur metrics: ?)	YA	Epiphyseal fusion: medial clavicle fused (>25y) Cranial sut.clos: all observed sutures open or minimally closed (YA) Dental wear: 20-25y.	-		
T42/B	DISTURBED PRIMARY	M	Femoral metrics	AD		-		Pairs of femora + tibiae
T42/Γ	SINGLE SEC.	M	Skull; pelvis; LB metrics	YA	Cranial sut. clos: 0 (YA) Dental wear: 25-30y.	-		Skull (includ. mandible); all LB pairs; pelves; scapulae; clavicles; ribs; vertebrae; hand/foot bones
T42/Δ-Θ (PIT I) – IND.A	COM. SEC.	M	Skull; LB metrics	MA/OA	Cranial sut. clos: 14 (45.2y)	170	All LB (exc.fib)	Skull (includ. mandible); All LB pairs; R+L clavicles; R+L pelves
T42/Δ-Θ (PIT I) – IND.B	COM. SEC.	M		MA/OA	Cranial sut. clos: 12 (45.2y)	165	Rad; fem; tib	Skull (includ. mandible); All LB pairs; R+L clavicles; R+L scapulae
T42/Δ-Θ (PIT I) – IND.C	COM. SEC.	F?		YA	Cranial sut. clos: 0 (YA)	162.5 (160-165)	Hum; rad; fib	Skull (includ. mandible); All LB pairs; R+L clavicles; R+L scapulae
T42/Δ-Θ (PIT I) – IND.D	COM. SEC.	F?		MA	Cranial sut. clos: 7 (39.4y)	157.5 (155-160)	Hum; rad; ulna; fem	Skull (includ. mandible); All LB pairs; R+L clavicles; L scapula; R+L pelves
T42/Δ-Θ (PIT I) – IND.E	COM. SEC.	F		MA	Cranial sut. clos: 10 (39.4y); adentulous mandible	157	Hum; rad; fem	Skull (includ. mandible); All LB pairs; L scapula
T42/Δ-Θ (PIT I) – IND.F	COM. SEC.	F		MA	Cranial sut. clos: 7 (39.4y)	155	Femur	Skull (includ. mandible); All LB pairs; L scapula
T42/Δ-Θ (PIT I) – IND.G	COM. SEC.	-		CH I (3-4y)	Diaphyseal length: all LB: 3-4y. Dental formation stage: I_2=Crc (3-4y)			Skull (includ. mandible); All long bone pairs (exc. L ulna); pelves; sacrum; L clavicle; ribs, metatarsal; C vertebra
T42/Δ-Θ (PIT I) – IND.H	COM. SEC.	-		INF I (6 mo)	Diaphyseal length: All LB: c.6mo Stage of cranial fusion: petrous fused with temporal squamous			Cranium; R+L humeri and femora; R tibia
T42/Δ-Θ (PIT I) – IND.I	COM. SEC.	-		INF I (1-2mo)	Femoral estim. length: c. 1-2mo			Unsided femur
T42/Δ-Θ (PIT I) – E10	COM. SEC.	?		AD				
T42/PIT II – IND.A	COM. SEC.	M	Skull; pelvis; femoral metrics	PA	Dental wear: M_{1-3}: 6-4 (34-38y)			Skull (includ. mandible); all LB pairs; clavicles, scapulae, pelves
T42/PIT II – IND.B	COM. SEC.	F	Skull; femoral metrics	AD				Cranial fragments; all LB pairs; clav; scap; and pelv. fragments

6.19.3 Tomb 42: Bioarchaeological reconstruction of funerary activities

Tomb 42 was used during the entire LHIIIA and in LHIIIC Middle and Late period, although LHIIIB evidence was lacking. The tomb displayed a variety of funerary choices, and included a large number of interments in both primary (intact and disturbed) and secondary deposits, both in the form of bone piles as well as pits in the chamber and the dromos. The total assemblage comprised a MNI of 15 (five males, a probable male, three females and two probable females, from young to middle/old adults, as well as a child and two young infants, Table 6.19.3). The following bioarchaeological observations on the various contexts assist a broad reconstruction of Tomb 42's funerary sequence and of specific acts.

The date of Pit II (dromos) assemblage could not be positively inferred, as it did not include datable grave goods. As described above, the dromos pit contained the secondary deposit of two individuals, fairly completely removed but only in terms of the most prominent skeletal elements, while smaller bones were completely missing (Figure 6.19.2). The complete absence of smaller bones cannot be attributed to recovery or post-recovery bias, especially since Pit II was recently excavated and the skeletal material was not affected by post-excavation handling before my study. An intentional choice of the mourners for selective retention of the prominent bones from two specific individuals can be inferred; the mode of collection could be presumed as hand-picking, since the presence of smaller fragments was very limited and could be attributed to fragmentation of the present bones during or after the pit transfer. The missing elements, as well as the main part of the skeleton of the third individual who was minimally represented in Pit II, were not found on the chamber's floor, so they should have been removed elsewhere, either within the chamber (i.e. Pit I) or outside of it. The poor surface condition of this skeletal assemblage (distinctly worse than that of Pit I contents) implies long exposure before the final secondary deposition. This suggests that the skeletal remains are most likely dated to the early phase of the tomb's use, as they certainly pre-date the LHIIIC burials, probably following immediately after the Pit I interments and then remaining in the chamber over a long time, finally transferred into the dromos pit in the LHIIIC period.

In Pit I (T42/Δ-Θ), preservation patterns indicate an act of thorough re-deposition of six adult and two sub-adult skeletons. The remarkably good preservation and bone representation of these cases, which appear to miss only very small-sized bones and teeth, suggest that extra care was taken in their complete individual removal. At the same time, few extra partial fragments of another adult and an infant, in distinctly worse state of surface preservation, were included in the pit. The distinctly worse preservation of these scarce bones suggests that they comprised scattered 'left-overs' of older LHIIIA interments (already removed from the chamber before the burials of these eight main individuals) that were left exposed in the chamber and affected by the continuous human activities related to the following interments, until the time that they got transferred into the pit together with the eight main individuals, perhaps even accidentally. As it concerns the main group that comprised the focus of this transfer, it can be presumed that the bodies were already in a state of complete disarticulation at the time of removal. This is inferred by the scarcity of small-sized bones and especially of loose teeth, which is too high to attribute exclusively to recovery bias. The hypothesis of complete soft tissue decay at the time of the transfer is corroborated by the fairly small size of the pit, which could not accommodate that many bodies, if not disarticulated. The very good state of bone surface preservation suggests, however, that the eight individuals had not been exposed over a very long time period neither had been subjected to many previous dislocations within the chamber. In addition, it may be inferred that the pit was filled with soil, which provided a closed environment that ensured minimal taphonomic damage for the bones after their deposition. Based on all these, since the bones were dated to the LHIIIA2 period based on associated grave goods, it can be suggested that the episode of the pit opening and bone transfer took also place not much later than the LHIIIA period. Whether the bone transfer took place in a single or multiple events is not possible to assess without field recording of exact bone locations within the pit; however, the uniformity of bone condition implies the former. Indeed, six adults and two sub-adults appear to be the maximum number of burials that the chamber space could accommodate simultaneously, if no extensive within-chamber removal and bone piling is to be assumed.

The sequence of the final LHIIIC funerary events is also difficult to assess, because the position of artefacts obscures the secure association with specific individuals. Nevertheless, bioarchaeological evidence illuminates to some extent the character and sequence of T42/A to T42/Γ burial contexts. As presented in 6.19.2, the T42/Γ assemblage comprises the remains of a single secondary deposition and of an extra bone that should have been left from some earlier interment, previously removed either in Pit II or to outside the tomb. We can also assume that the upper body of disturbed primary burial T42/B was removed to the tomb's exterior, since the remains were not found within the secondary deposits of the tomb. The placement of the largely undisturbed primary burial T42/A appears to post-date T42/Γ, since T42/A skull was found in such close proximity to the secondary remains that its position would have been disturbed if those were placed there afterwards. Based on these, the T42/A should not be dated to the LHIIIC Middle, but to the LHIIIC Late period, while the LHIIIC Middle grave goods should be related to the T42/Γ individual. T42/B appears also dated to the LHIIIC Late period, although the relationship between its disturbance and the placement of T42/A remains unclear.

To sum up, a series of primary and secondary funerary events took place during the LHIIIA period. These included acts of bone removal to outside the tomb, but also the exceptionally complete retention of individual skeletons in a pit secondary deposit. Following the removal of the pit group, another two –at least- LHIIIA burials took place, as inferred by selective removal of the most prominent bones of these latter remains into the dromos Pit II, most likely in the LHIIIC period (before the interments T42/A to T42/Γ). At least three LHIIIC burials were the final interments in Tomb 42. The first (T42/Γ) was secondarily removed and individually retained in a bone pile, before the placement of T42/B and T42/A in the LHIIIC Late. The upper body of T42/B was also removed, most likely to outside the tomb. Both these removals do not appear necessitated by practical concerns, and certainly cannot be attributed to lack of space inside the chamber. The inferred acts of bone removal to outside the tomb, mostly in the LHIIIA but also in the LHIIIC period (as for the upper body of T42/B), may not be irrelevant to the existence of a side-chamber, the contents of which (if any) could not be examined due to its collapse.

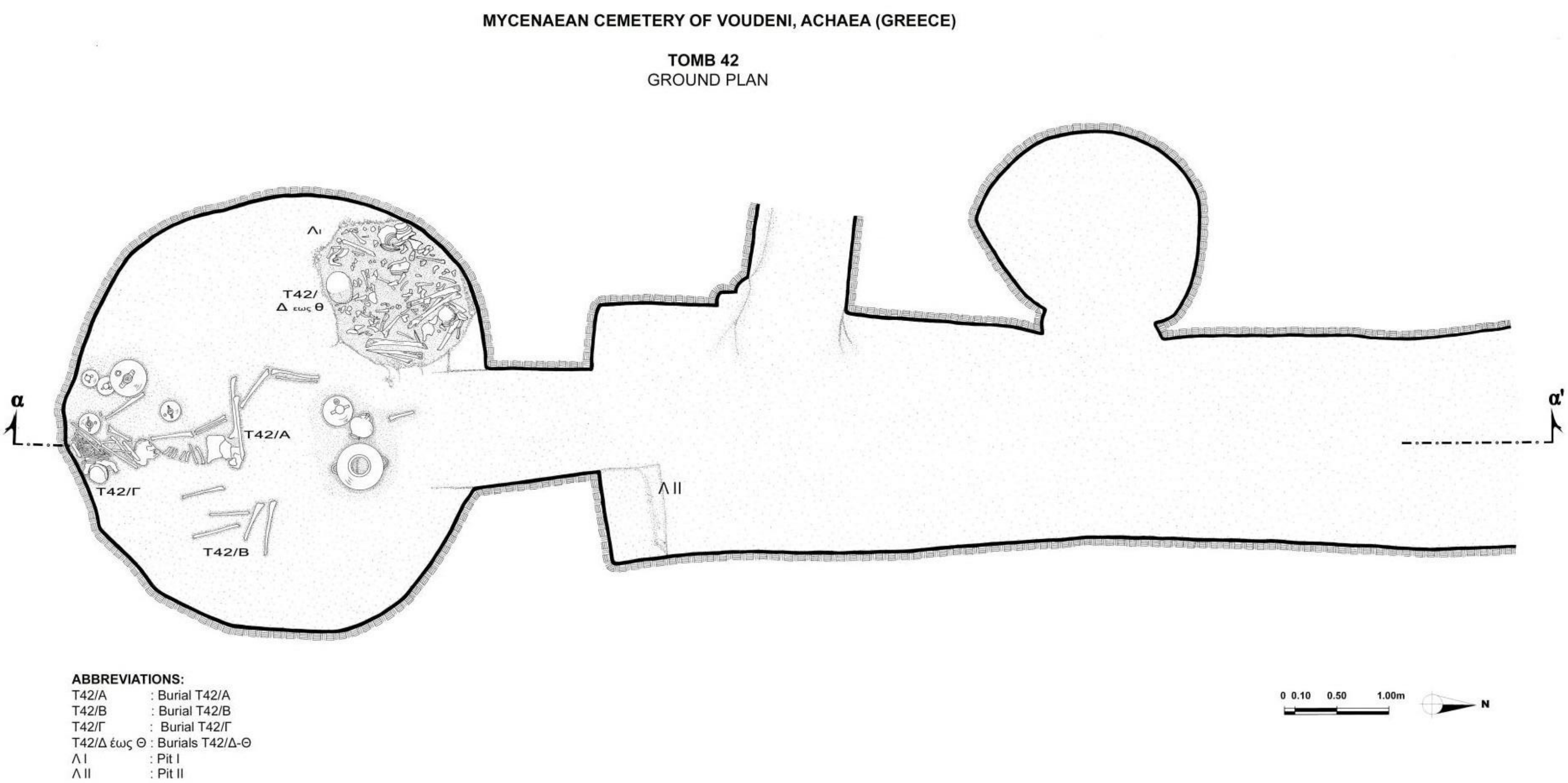
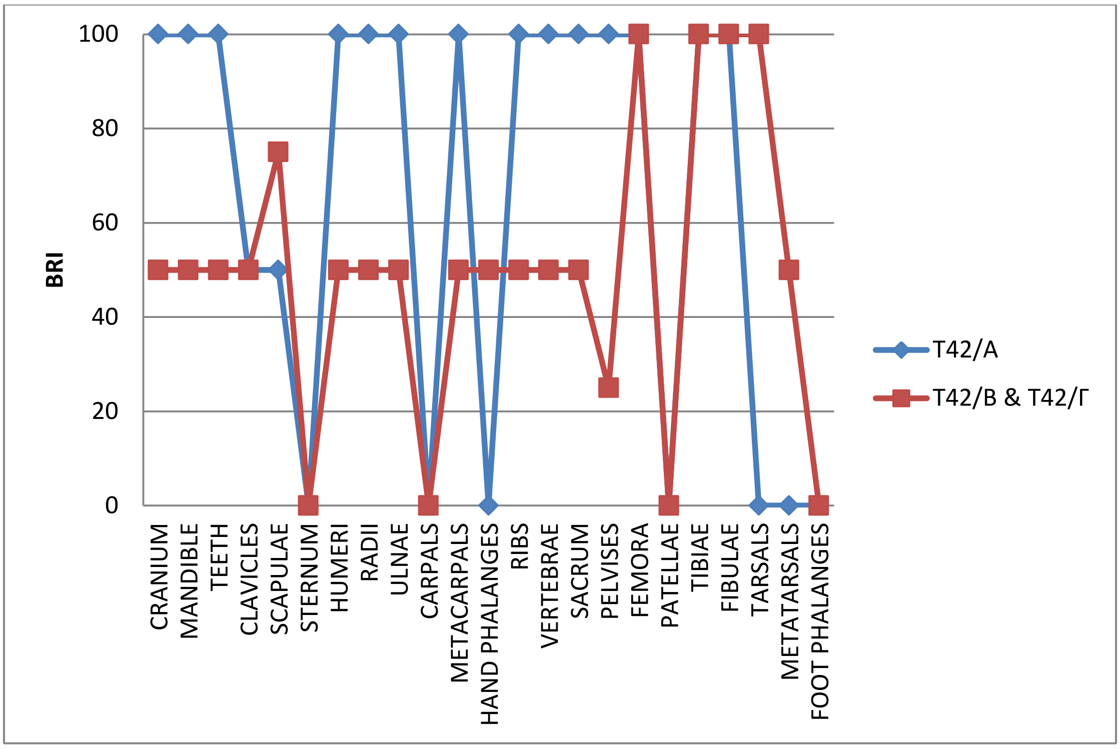


Figure 6.19.1. Tomb 42: ground plan (after Kolonas 1998, forthcoming).



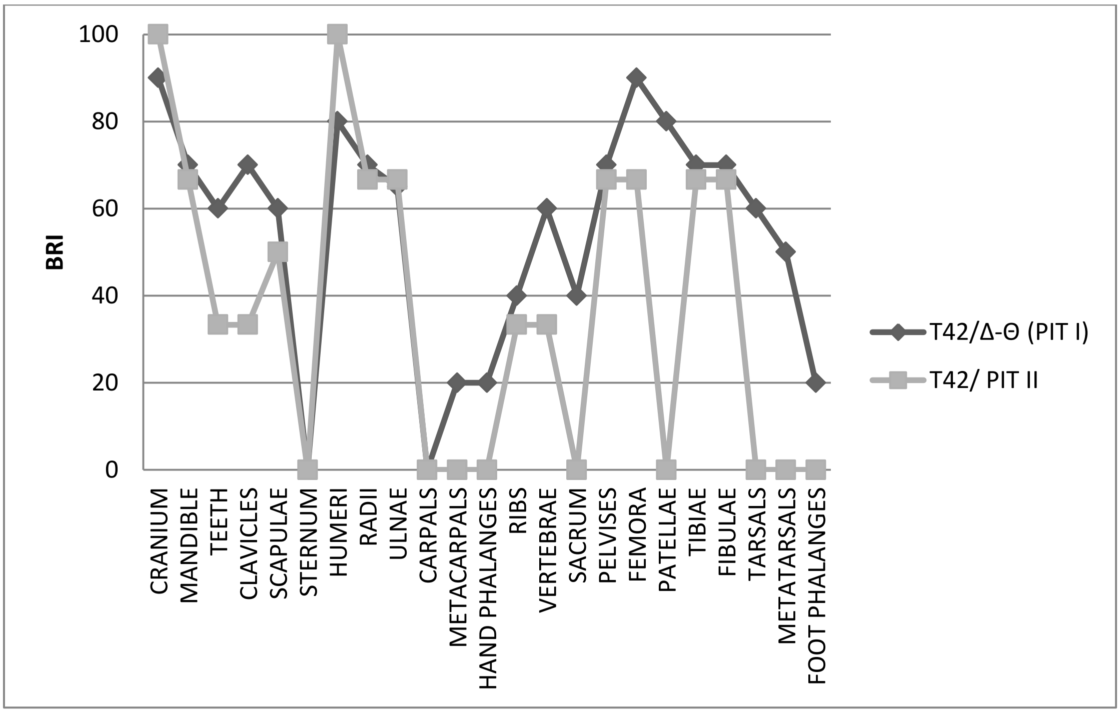


Figure 6.19.2. Tomb 42: Bone Representation Index (BRI) by tomb context.

Figure 6.19.3. T42/B & T42/Γ: Lower limb skeletal elements. From left to right: T42/Γ main individual, T42/B, and extra tibia bone from T42/Γ.

Figure 6.19.4a. T42/Δ-Θ (PIT I) IND.G: Post-cranial remains of a 3-4 year-old child.

Figure 6.19.4b. T42/Δ-Θ (PIT I) IND.H-I: Right and left femora of IND.H (left) next to unsided femur fragment of IND.I (right).

6.20 TOMB 44

6.20.1 Tomb 44: Presentation of archaeological data (after Kolonas 1998, forthcoming)

Tomb 44 is a circular tomb of medium size, situated in the eastern end of the lower hill terrace, in an uncommon E-W direction (Figures 1.4 and 6.20.1; further information: Table 7.1). Tomb 44 suffered from extensive structural problems, with its dromos completely collapsed and the chamber facing significant problems as well: part of the roof and the south wall had collapsed, resulting in a connecting gap between the SW part of the chamber and neighbouring tomb 40; consequently, a thick layer of soil and rock debris accumulated over the floor. The tomb included skeletal material in three different contexts: the primary burials T44/A and T44/B, and the commingled secondary deposit T44/Γ.[63]

Two primary burials were located in close proximity along the south wall. The body of Burial **T44/A** was placed on its left side, with skull facing the north, lower limbs contracted and arms along the sides of the body, in W-E orientation. Parts of the skeleton were noticed to have been slightly displaced and partially broken due to fallen rock debris. The body was accompanied by a LHIIIC jug; one flint flake was found underneath the skull. T44/A was inferred to post-date T44/B, since the right arm of the former superimposed the left upper body of the latter. The burial **T44/B** was lying immediately south of T44/A, adjacent to the wall, in exactly the same burial position and orientation. The skeleton was found fairly intact, except for the skull that was reported as almost completely destroyed. No ceramic material accompanied this interment, but some beads were found on thorax. On the opposite side, the secondary deposition **T44/Γ** was situated along the north wall in the form of a dense pile. The only artefact found within this assemblage was one whetstone (T44/11). In the west part of the chamber, a LHIIIA2 round alabastron was found close to a LHIIIC Middle stirrup jar and three steatite beads, in no clear association with skeletal material. Kolonas (1998) assumes that the vessel of earliest date relates to the secondary remains of T44/Γ and the LHIIIC vessel was presumably misplaced from Burial T44/B, when T44/A was interred. Finally, a LHIIIA1 piriform jar (T44/4), broken into several fragments, and a clay button (T44/5) were found close to the south wall gap within soil deposits, interpreted as intrusive material from Tomb 40 (Table 6.20.1).

[63] N.B. To avoid mistakes in future handling of excavation notebooks: The original labelling of burial contexts was as follows: T44/A=original Burial B; T44/B=original Burial Γ and T44/Γ=original Burial A.

Table 6.20.1. Tomb 44: List of artefacts by tomb context, including location, chronological and typological information.
(*FS:* Furumark shape number; *FM:* Furumark motif number)

CONTEXT	FURTHER LOCATION DETAILS	FIND NO	TYPE	DATE	FS	FM
T44/A		T44/1	JUG	LHIIIC	114	
T44/A		T44/2	FLINT FLAKE	LHIIIC		
T44/B		T44/3	3 CARNELIAN & 1 GLASS BEADS	LHIIIC		
NO BONE ASSOCIATION	INTRUSIVE DEPOSIT CLOSE TO S WALL GAP	T44/4	PIRIFORM JAR	LHIIIA1	33	
NO BONE ASSOCIATION	INTRUSIVE DEPOSIT CLOSE TO S WALL GAP	T44/5	CLAY BUTTON	LHIIIA1		
UNCLEAR BONE ASSOCIATION	W (REAR) PART OF CHAMBER	T44/6	ROUNDED ALABASTRON	LHIIIA2	84	
UNCLEAR BONE ASSOCIATION	W (REAR) PART OF CHAMBER	T44/7	STIRRUP JAR	LHIIIC MIDDLE	173	43: d
UNCLEAR BONE ASSOCIATION	W (REAR) PART OF CHAMBER	T44/8	STEATITE BUTTON	LHIIIA-C		
UNCLEAR BONE ASSOCIATION	W (REAR) PART OF CHAMBER	T44/9	STEATITE BUTTON	LHIIIA-C		
UNCLEAR BONE ASSOCIATION	W (REAR) PART OF CHAMBER	T44/10	STEATITE BUTTON	LHIIIA-C		
T44/Γ		T44/11	WHETSTONE	LHIIIA-C		

6.20.2 Tomb 44: Osteological results

The three contexts of Tomb 44 comprised a moderate quantity of skeletal material in fairly good state of preservation (Tables 6.20.2; Figure 6.20.2). MNI was 4; basic osteological information is provided in Table 6.20.3. Post-excavation photographic documentation from Tomb 44 was lacking, so confirmation of the described burial positions was not possible.

Table 6.20.2. Bone quantity, state of preservation, and MNI by tomb context.

	NO OF BONE FRAGMENTS			PRESERVATION				MNI	
TOMB CONTEXT	IDENTIFIED	TOTAL	TEETH	COMPLETENESS		SURFACE		MNI	Max. occ. skeletal element
				DETAIL	CONCISE CLASS	DETAIL	CONCISE CLASS		
T44/A	199	302	10	1-2	1	3	3	1	
T44/B	166	170	15	1	1	2	1	1	
T44/Γ	105	250	11	2-3	2	3	3	2	
TOTAL	**470**	**722**	**36**					**4**	

Burial T44/A: The skeleton of T44/A was well represented but its surface condition was only moderate (Table 6.20.2; Figures 6.20.2 and 6.20.S1-S2). The skeleton belongs to a prime adult female. In addition to the bones of the main skeleton, the bone collection included a few extra fragments from at least two different individuals, probably representing remains left more or less *in situ* from removed earlier interments. These included four upper incisors (from two different adults), a cranial fragment, one first cervical vertebra, two pelvic and a femoral fragment (Figure 6.20.S3); the latter was found to match a femoral fragment from the T44/Γ secondary assemblage.[64]

Burial T44/B: The skeleton of T44/B was well preserved in all aspects, and well-represented, missing only the most fragile or smallest elements, i.e. sternum, carpals, and foot phalanges (Table 6.20.2; Figures 6.20.2-3). The skeleton belongs to an older child, of an age at death estimated between 10 and 12 years (Table 6.20.3). In the same bone assemblage, some extra adult remains were found, including a left 4th

[64] N.B. The bones of the right upper limb and scapula of T44/A were erroneously collected with the bone group of the adjacent T44/B, obviously due to their close proximity. Similarly, a few elements from T44/B skeleton (i.e. proximal hand phalanx, distal epiphysis of metacarpal/metatarsal bone, and a fragment of a sacral segment) were collected in the T44/A assemblage. After the successful segregation of these remains, they were respectively recorded in their correct context.

metatarsal certainly not belonging to T44/A, as well as some fragments of ribs, pelvis, and a few metacarpals and metatarsals, that could either belong to T44/A or to earlier interments. Also, the right upper limb of T44/A was erroneously collected here at the time of recovery (see footnote 64).

Burial T44/Γ: The secondary deposition T44/Γ included a fair quantity of bones from at least two adults. The skeletal material was only moderately preserved (with T44/Γ-IND.A better preserved), but bone representation was fairly good, especially for all prominent bones (Table 6.20.2; Figure 6.20.2). It was possible to re-individuate to a great extent the skeleton of T44/Γ-IND.A, a mature adult male (Figures 6.20.4a-b). A second individual, the prime adult female T44-IND.B, could also be partially re-individuated (Table 6.20.3; Figure 6.20.S4). The left femur of T44/IND. B was matching a femoral fragment from the extra bones of Burial T44/A.[65]

[65] Within the bone collection of T44/Γ, a few bone elements belonging to the sub-adult of Burial T44/B were found (i.e. fragments of right ulna and distal radius and matching epiphysis, and five proximal hand phalanges). These bones were securely matched with the T44/B child, based on a joining fragment, visual pairing, and metric comparisons. After careful examination of the skeletal inventory of T44/B, of the excavation plan and of notebook information, the presence of these bones in the T44/Γ assemblage was attributed to post-recovery error and not to actual taphonomic dispersal.

Table 6.20.3. Tomb 44: Basic osteological information by case (n=4) and context.

CASE	TYPE OF DISPOSAL	SEX		AGE		STATURE		RE-INDIVIDUATED SKELETAL ELEMENTS
		SEX	BASED ON	AGE	BASED ON (including estimation)	STATURE (~ mm)	BASED ON	
T44/A	PRIMARY	F	Skull, pelvis	PA	R aur : 3-4 (30-39y); Cranial sut.clos: 2 (30.5y.)	154.5 (153-156)	Femur; fibula	
T44/B	PRIMARY	-		CH II	<u>Dental formation</u>: c.12y; <u>Diaphyseal length</u>: Humerus length: c.10.5y. Metacarpals: 8-11y; PHP: 8-9y; <u>Epiphyseal union:</u> Ulna PE fused (>8-10y); all other long bone epiphyses unfused (<12-14y); pelvic acetabulum unfused (<14y)			
T44/Γ – IND. A	COM. SEC.	M	Skull, pelvis, LB metrics	MA/OA	<u>Cranial sut.clos</u>: all observed sutures (1-3) significantly closed or obliterated (>40y)	166 (164-168)	Femur (est. length)	Cranial fragments & mandible; all pairs of long bones, scapulae, pelvises, left clavicle, ribs, vertebrae, and several hand bones
T44/Γ – IND. B	COM. SEC.	F	Femoral metrics; mandible	PA	<u>Dental wear</u>: M2: 4+; M3: 2-3 (30-34y)			R+L hum and tib; L fem; rad; fib; clavicle; and mandible

6.20.3 Tomb 44: bioarchaeological reconstruction of funerary activities

The total MNI of Tomb 44 is 4 (one male, two females, and a 10-12-year-old child). The additional adult bones found within the primary assemblages could all be part of the two earlier interments moved to T44/Γ and, thus, they do not increase the total MNI. Based on the associated ceramic evidence, these interments were dated to the LHIIIA and LHIIIC Middle/Late period.

The presumed chronology of the different tomb contexts is complicated due to their weak associations with specific artefacts. Some observations of the bioarchaeological analysis may assist, however, the reconstruction of funerary sequence. The deposition of the LHIIIC primary burial T44/A certainly post-dates that of T44/B, as inferred by the spatial relationship of the two skeletons (cf. 6.20.1); however, the bodily spatial relationship, in this case, only informs us of the sequence of placement and cannot attest to the exact time frame between the two events. Within the primary remains, additional bone fragments and small bones were found, testifying to the occupation of the same area for earlier interments. One of these fragments was, in fact, positively matched with the female of the secondary deposit (T44-IND.B), indicating that her skeleton was already disarticulated and fragmented before its transfer to the secondary pile T44/Γ. The remaining extra elements could in principle belong to one or the other of the two individuals from the secondary deposit, even though the possibility of representing remnants of other bodies, completely removed from the tomb, cannot be excluded. The presence of these earlier remnants, but in limited quantity, suggests that cleaning of the floor before the final burials had not been entirely thorough, while it is likely that more than one removal episode had already taken place. The good preservation of the primary burials indicates that the rock and soil debris from the extensive wall collapses accumulated gradually, finally protecting the remains buried underneath and not severely fragmenting them. Thus, the worse condition of the earliest extraneous elements from the same area should be understood as the result of past human activities rather than of later natural taphonomic effects.

Preservation patterns of the skeletal remains included in the secondary assemblage (T44/Γ) corroborate the possibility of more than one removal episodes in their taphonomic trajectory. The commingled bones were all far worse preserved than the primary burials, indicating increased strain due to a longer exposure in the open chamber and their subjection to multiple tomb re-openings, human movement, and other activities. Preservation discrepancies between the two, and especially the far better preservation and representation of male T44/Γ-IND.A, suggests that the female T44/Γ-IND.B was an older interment, already disturbed before her final deposition in the T44/Γ bone pile, and that parts of her skeleton had already been removed from the tomb to the outside. On the contrary, the body of T44/Γ-IND.A was fairly completely removed to its final secondary location. Even though both individuals are most likely dated to the LHIIIA period, since they comprise the oldest preserved interments of the tomb and may thus be associated with the oldest ceramic evidence, their final assembling to the pile could have occurred in the LHIIIC period. Therefore, it is conceivable that the tomb was opened on more occasions than the four times attested by the MNI. The possibility of multiple funerary acts and spatial re-arrangements is also consistent with the clustering of the two vessels dated to different periods at the rear chamber (cf. 6.20.1).

Finally, some peculiarities of the spatial arrangements of the chamber's floor should be mentioned. Even though the floor space was adequate for a loose placement of all burial contexts, it is observed that both biological and cultural material was placed along the chamber's periphery, allowing the largest central part of the floor to remain free. Moreover, T44/A was placed in immediate contact with T44/B, even though the reconstruction of funerary activities showed that at least one of the earliest burials was already removed, and thus free space further from T44/B should have been available. Therefore, these spatial choices do not appear dictated by direct practical necessities, but should be understood as intentional choices of the mourners, possibly indicating a special bond between the two individuals (cf. Chapter 8).

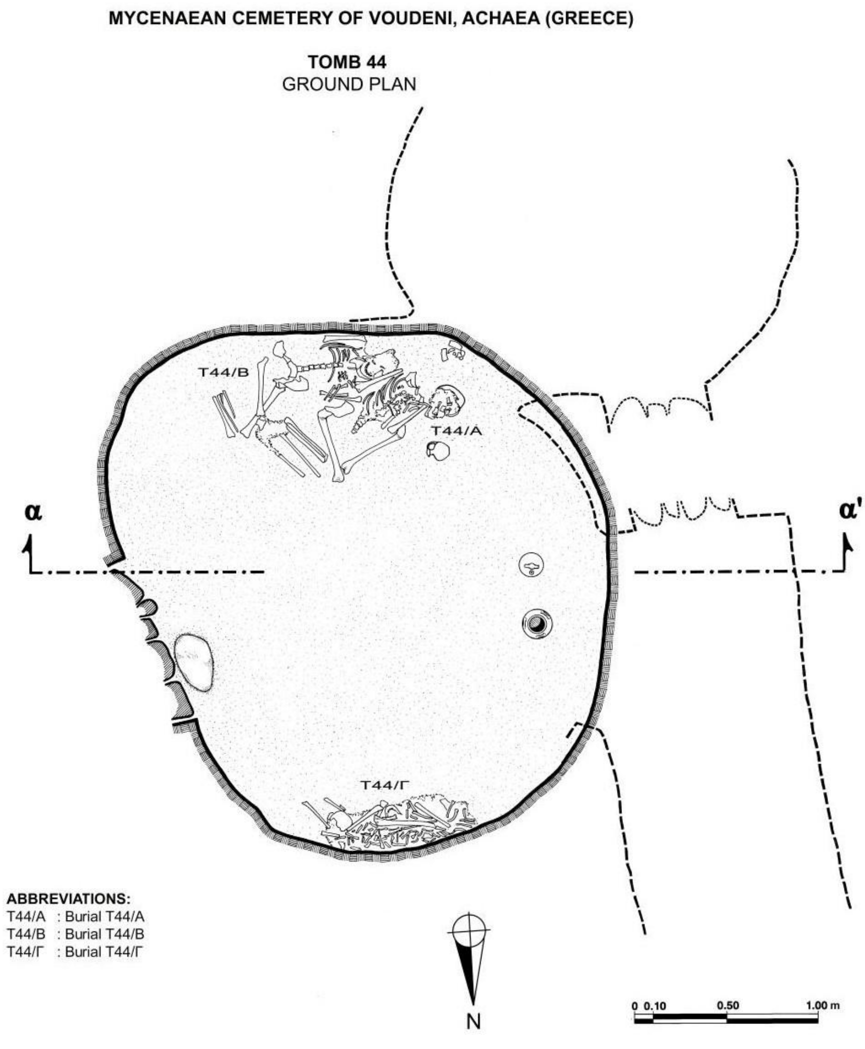
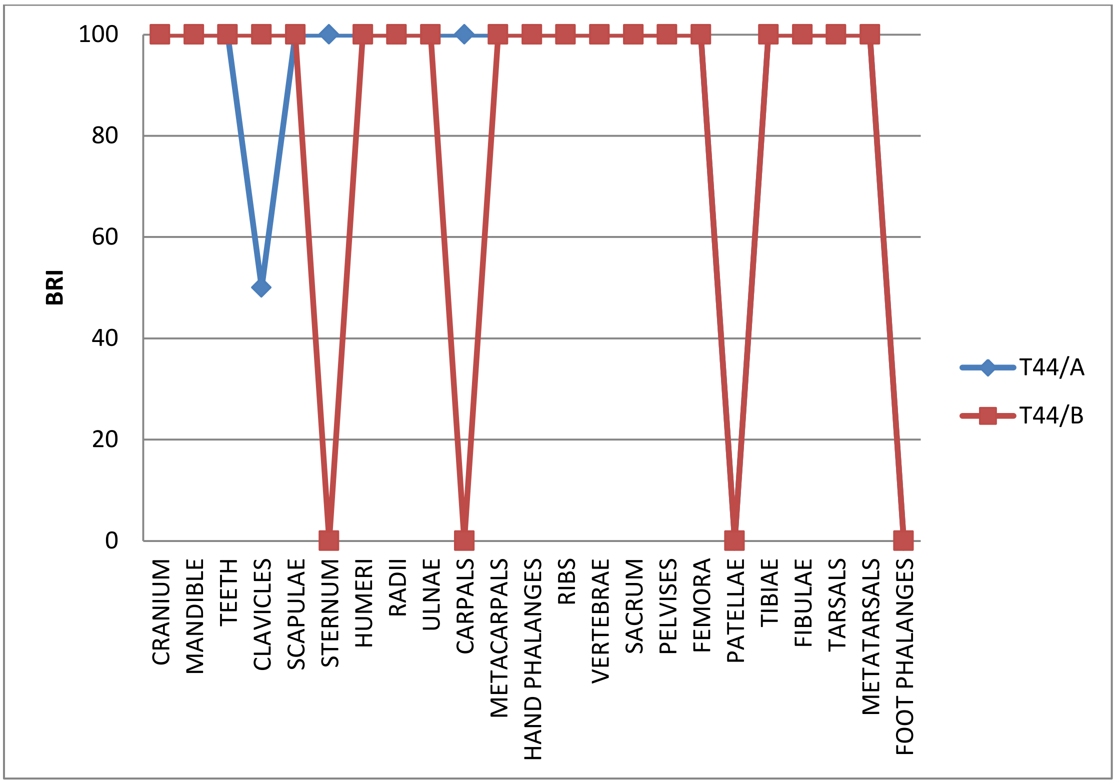


Figure 6.20.1. Tomb 44: ground plan (after Kolonas 1998, forthcoming).



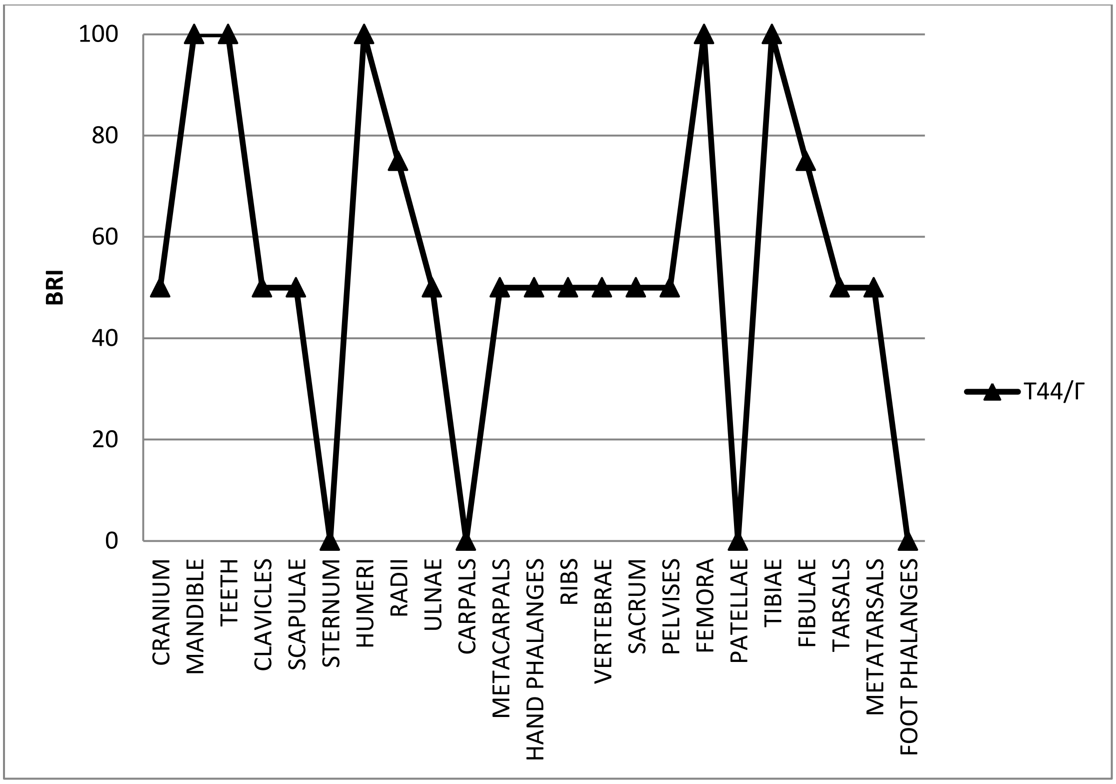


Figure 6.20.2. Tomb 44: Bone Representation Index (BRI) by tomb context.

Figure 6.20.3. Burial T44/B: Long bones.

Figures 6.20.4a-b. Burial T44/Γ: Long bones & skull.

CHAPTER 7

ANALYSIS

Chapter 7 brings together the results presented in Chapter 6 and expands on their multi-dimensional bioarchaeological analysis. All funerary contexts are classified based on their structural and chronological characteristics, and the relationships between intersecting variables are fully explored. This chapter specifically includes:

- Summary of the tombs' main characteristics and examination of their relationships (7.1).
- Basic demographic analysis of the sample as a whole and investigation of demographic differences through time and across different tomb groups (7.2).
- Classification of funerary contexts in terms of type of disposal, and of the different types in terms of inferred chronology; the examination of preservation patterns across the different types and the final assessment of ambiguous contexts; the analysis of age and sex distributions across different groupings of the funerary contexts (7.3).
- Summary of funerary practices observed in secondary and primary contexts and their further examination across the basic temporal and demographic data (7.4).

Occasionally interpretive remarks are made in this chapter, if necessary in order to explain further steps of the analysis; however, final discussion and interpretation of the observed patterns will be contextually presented in Chapter 8.

7.1 The tombs

The twenty tombs included in the current study comprise a representative sample from the eastern half of the Voudeni cemetery (see 5.1). Spatial and temporal characteristics of the studied tombs (n=20) are summarised in Table 7.1, and for comparative purposes those of the non-studied tombs (n=18) are presented in Table 7.X1. The classification of the tombs and their contents according to these parameters will allow a time-specific, multi-dimensional investigation of the funerary landscape and the choices of the people who created and inhabited it, as the latter are inferred through demographic and taphonomic patterns (summarised in sections 7.2-7.4). Sample representativeness was confirmed by comparing the distribution of all tombs (N=38) and that of the studied ones alone (n=20) across the different variables. To further confirm representativeness, all statistical tests used to investigate the relationships of basic tomb parameters were applied to both the entire 38 tombs and the studied sample alone. Since the tests results were similar, this analysis refers to statistical results and percentages only of the studied tombs, without including the cumulative tests; on the rare occasion that discrepancy was shown between the different results (suggesting that sample bias might have been the reason for a specific observation), this is clearly pointed out below.

7.1.1 Spatial variables

Tomb location was defined by the position across three natural plateaus of the hill (Figure 1.4; position specified based on chamber locus). The lower hill plateau extends below c. 222.5m, the middle between c. 222.5m-227m, and the upper above 227m. *Tomb shape* was defined after the basic outline of the chamber as either circular, irregular quadrangular/rectangular (abbreviated as 'quadrangular'), horse-shoe, or irregular (1.5; further details in Kolonas 1998, forthcoming). The *orientation* of the tombs (defined with two cardinal points, from dromos to chamber) is divided between NW-SE (55%) and NE-SW (30%), with the exceptions of the two western tombs of the sample (T17 and T20) which were oriented W-E, and Tomb 44 which was oriented E-W. The distribution of the two main orientations is consistent with the tombs' location in the central or eastern part of the hill respectively. The choice is likely due to practical reasons, dictated by the morphology of the slope, so orientation will not be considered further in the current study.

The occurrence of tombs by location and shape is summarised in Figure 7.1. Tomb frequencies across the different plateau levels are normally distributed (x^2=1.60; df=2; p=0.449). In terms of shape, circular tombs outnumber quadrangular ones but the preference is not statistically significant (x^2=2; df=1; p=0.157). The distribution of tomb shapes across the different locations appears significantly different in the studied sample because quadrangular shape is absent from the lower plateau (x^2=5.25; df=2;

p=0.07). This observation is, however, rejected as a sample bias, since the statistical analysis on all tombs (N=38) clearly shows that there is no significant difference (Fisher's exact p=0.66), as quadrangular tombs are in fact present in all locations (cf. Table 7.X1 and Figure 1.4).

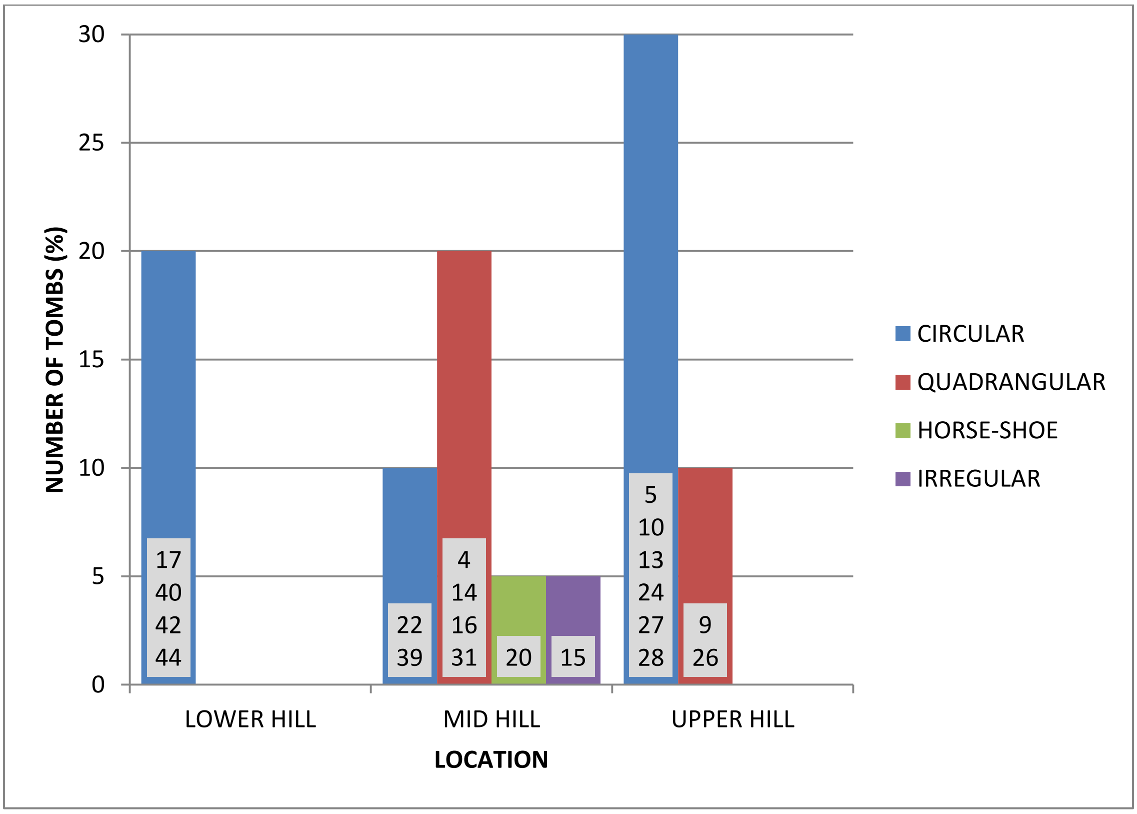


Figure 7.1. The distribution of studied tombs by location and shape (specific tombs shown inside bars).

The size of the tombs is reflected in chamber area (m^2) and dromos length (m). The two variables are significantly correlated (Pearson r=0.87; n=17; p<0.01); as chamber area size increases so does dromos length (Figure 7.2). The analysis excluded the irregular tomb 15 since its chamber was unfinished, and tombs 20 and 44 due to non-observable dromos values. The correlation remains marginally significant (p<0.07), even if outlier T4 is excluded. Since the variables are correlated and the chamber comprises the central setting of the examined funerary activities, chamber area is chosen as the preferable size parameter to be further explored. Using this approach avoids exclusion of cases due to missing dromos values. Based on chamber area, the tombs have been classified into three size categories: small (0.1-4.99m^2, 30%), medium (5-8.99m^2, 50%), and large (>9m^2, 20%). The distribution of the different tomb shapes across size groups (Figure 7.3) shows a statistically significant preference of the quadrangular shape for larger tombs (Fisher's p=0.01).This preference is also confirmed by comparing the means of chamber area between circular and quadrangular tombs (T-test: t(16)=2.52; p<0.05).

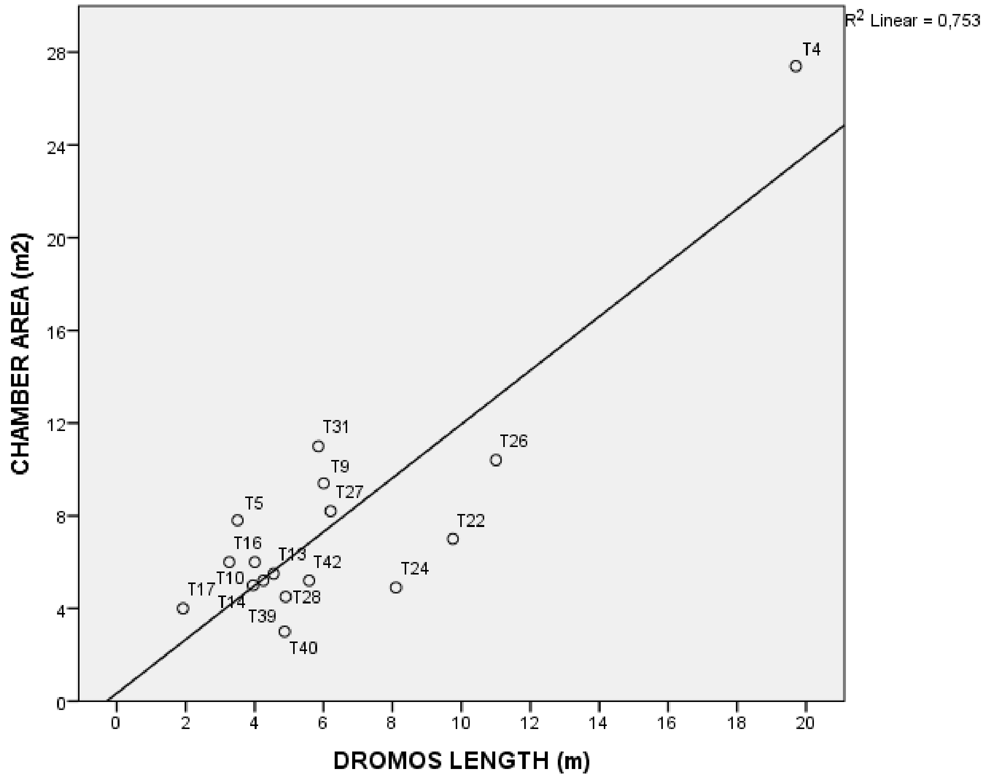


Figure 7.2. Correlation between chamber area and dromos length (n=17).

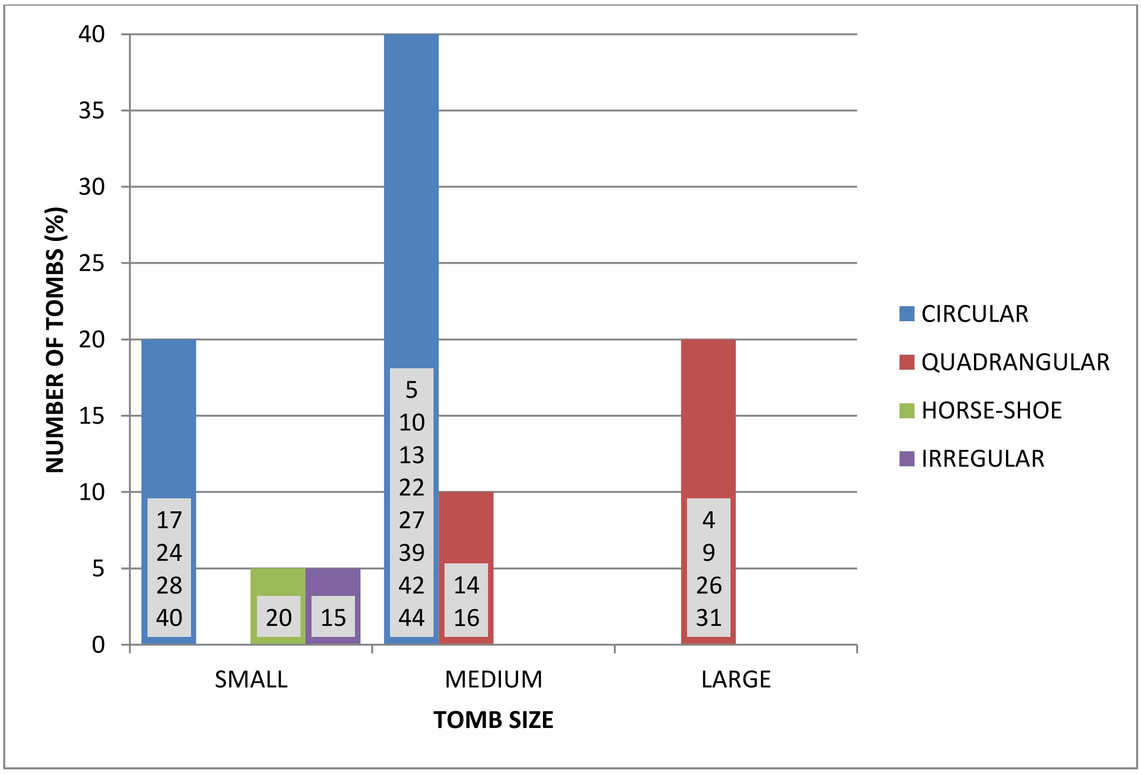


Figure 7.3. The distribution of studied tombs by size and shape (specific tombs shown inside bars).

The parameters of *location* (distance from the top of the hill) and *size* of a tomb are both potentially related to status differences (cf. 3.4.1), therefore essential in the formation of tomb groupings across which to explore other funerary evidence and demographic patterns. Thus the relationship between size and location is first explored. A cursory view suggests that larger tombs tend to be located closer to the top of the hill (Figure 1.4). To investigate whether this pattern is true, the average chamber area by tomb location is examined and shown in Figure 7.4. The two outlier tombs (T4 and T15) were excluded; Tomb 4 because of its exceptional size and Tomb 15 because of its irregular dimensions due to an unfinished chamber. Even though average chamber area increases towards the top of the hill, the distribution is not statistically significant (One-Way ANOVA test: F=2.002; df=2; p=0.170).

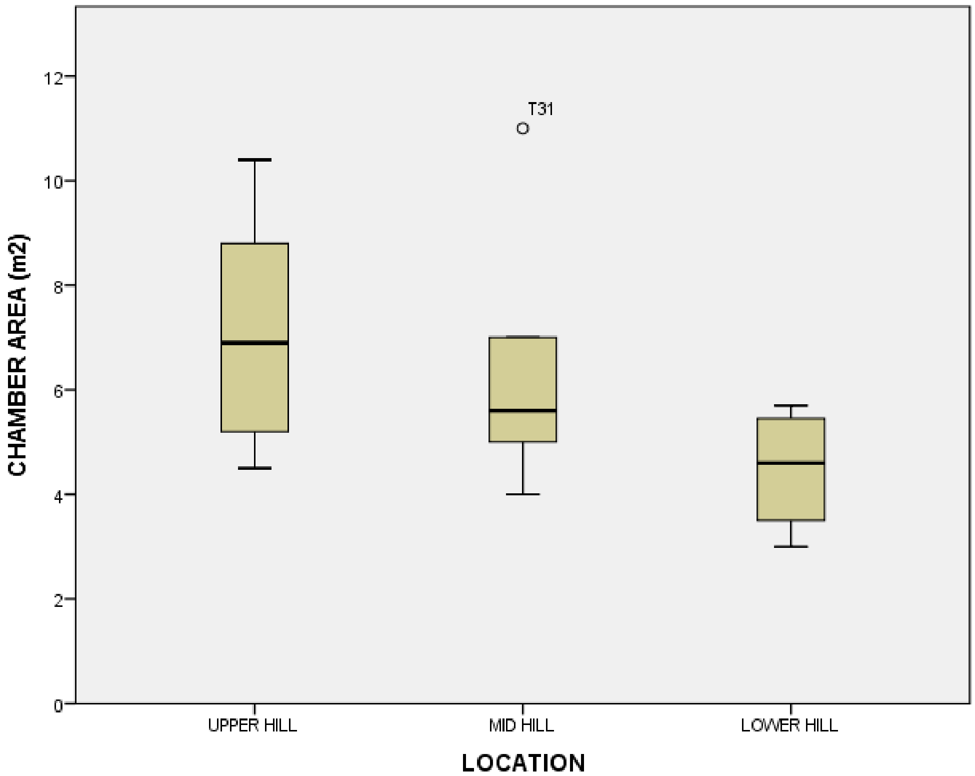


Figure 7.4. Boxplots of chamber area (m^2) categorised by tomb location (Upper hill n=8; Mid-hill n=6; Lower hill n=4).

7.1.2 Tomb chronology

The tombs' chronology refers to the dating of the episodes of use of each tomb based on the presence of datable ceramic objects. The dating cannot, therefore, confirm the time of each tomb's construction, or reveal if there was a break in its use. Chronological gaps in the dating could be attributed to alternative explanations, such as complete removal or initial lack of grave goods. Keeping in mind the two possibilities, in the current study missing dates are viewed as indicative of non-use, since the frequent presence of materials from all periods makes the alternative scenario of complete removal rather improbable (except possibly for the LHIIIB period, see below). Most importantly, despite the implications of this uncertainty for the full reconstruction of the tombs' life history, the core of this analysis is not affected since the inferred chronology of the skeletal material in each *present* context is fairly secure as the bones are most frequently accompanied by datable artefacts (cf. 5.4.7; Chapter 6). Under the assumption that *all* material evidence from a certain phase of use was removed and thus completely disappeared, then it is likely that the associated skeletal remains were removed as well.

The dating of the tombs follows the categories outlined in Section 5.4.7 and is illustrated in Table 7.1 and Figures 7.5 (detailed dates) and 7.6 (concise dates). The temporal distribution is better understood through the broader chronological classification by *Concise Date* (Figure 7.6). The majority of tombs (75%) show evidence of use both in LHIIIA and LHIIIC periods, while there is only one case (Tomb 40) that is used in LHIIIA alone. It is, however, worth noticing that from the 15 tombs showing multiple periods of use (mixed group), only seven display continuous use, including evidence of the LHIIIB period. Similarly, there is no case of LHIIIB use alone or LHIIIA-B alone. Even though it is not possible to accurately estimate length of use (in years), a relative measure can be given by classifying the tombs into three ordinal categories based on how many periods they display evidence of use (Figure 7.7). The chronological distribution of tombs in different spatial groups (by shape, size, and location) showed no statistically significant patterns; this was expected since the great majority belongs to the continuous LHIIIA-LHIIIC group (for length of use across the different groups cf. 7.2.4.2).

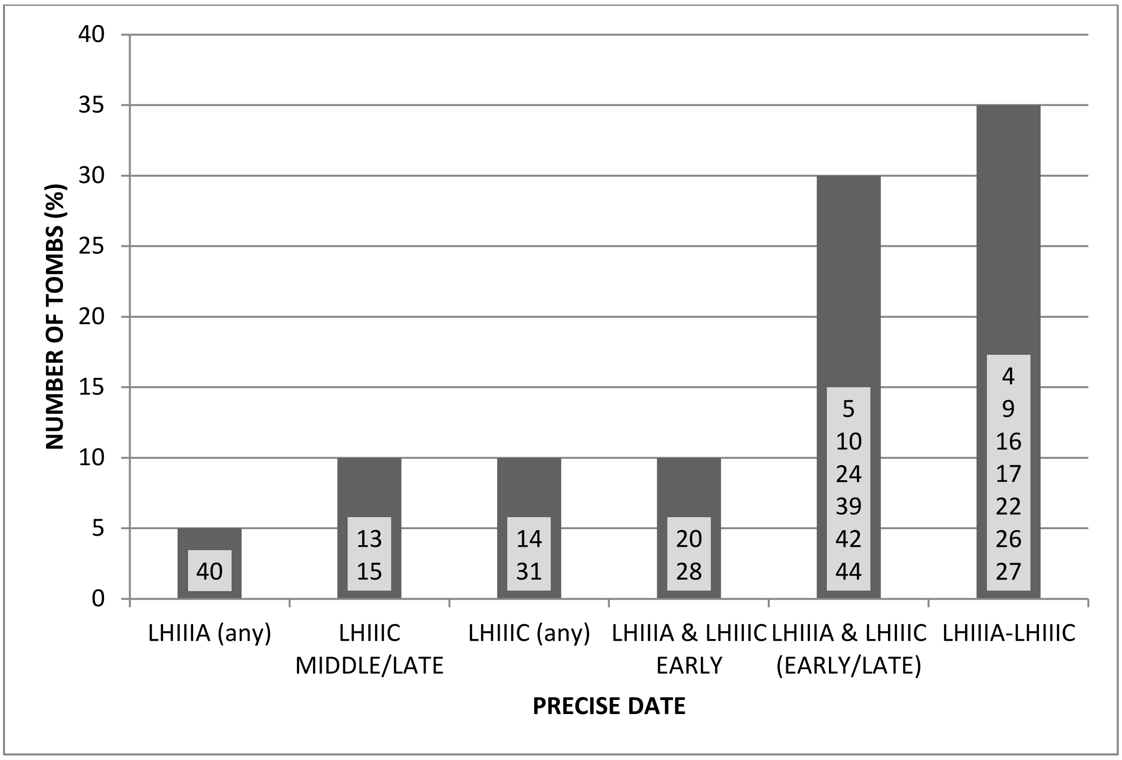


Figure 7.5. Chronological classification of tombs in *Detailed date* categories (specific tombs shown inside bars).

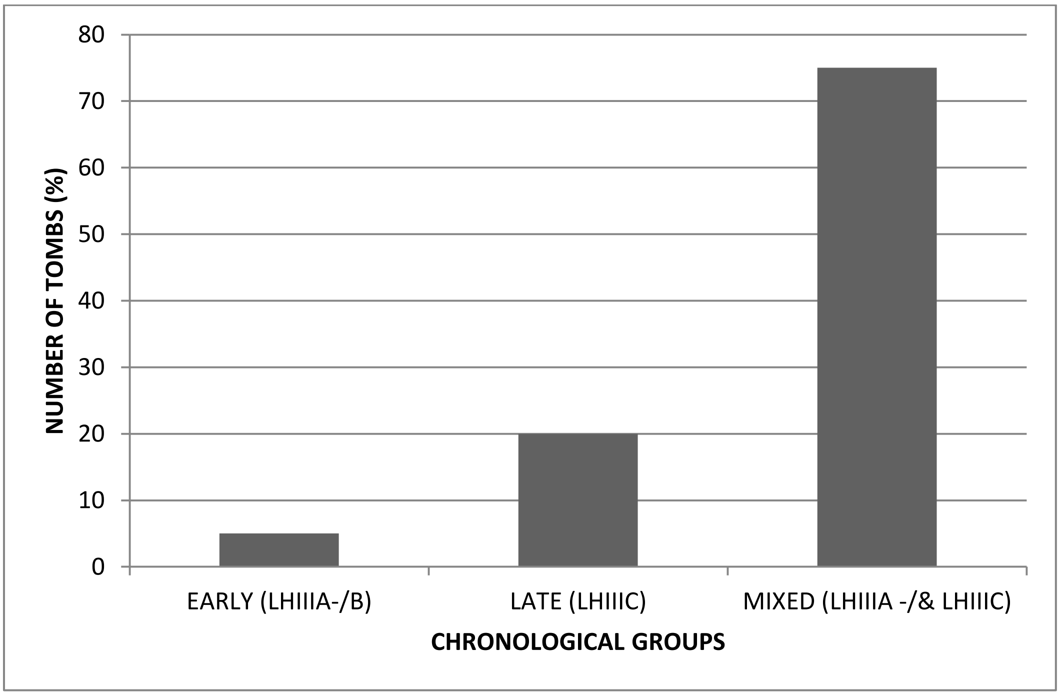


Figure 7.6. Chronological classification of tombs in *Concise date* categories.

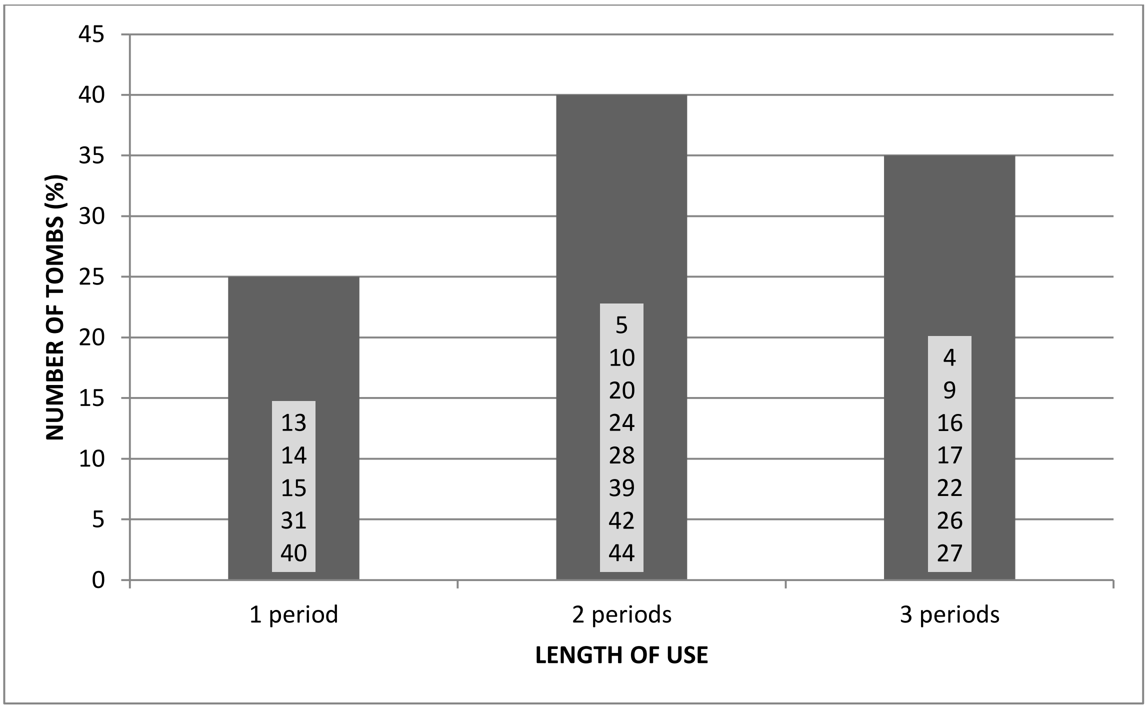


Figure 7.7. Classification of tombs based on length of use (specific tombs shown inside bars).

Table 7.1. Spatial and temporal characteristics of the studied tombs (n=20) and respective Minimum Number of Individuals.

TOMB	LOCATION	ORIENTATION	SHAPE	CHAMBER AREA (m^2)	DROMOS LENGTH (m)	SIZE CLASS	DETAILED DATE	LENGTH OF USE (in periods)	MNI
T4	MID HILL	NW-SE	QUADRANGULAR	27.4	19.7	LARGE	LHIIIA-LHIIIC	3	7
T5	UPPER HILL	NE-SW	CIRCULAR	7.8	3.5	MEDIUM	LHIIIA & LHIIIC	2	18
T9	UPPER HILL	NE-SW	QUADRANGULAR	9.4	6	LARGE	LHIIIA-LHIIIC	3	8
T10	UPPER HILL	NW-SE	CIRCULAR	6	4	MEDIUM	LHIIIA & LHIIIC	2	6
T13	UPPER HILL	NE-SW	CIRCULAR	5.5	4.55	MEDIUM	LHIIIC MIDDLE/LATE	1	6
T14	MID HILL	NE-SW	QUADRANGULAR	5	3.95	MEDIUM	LHIIIC	1	10
T15	MID HILL	NW-SE	IRREGULAR	1	7	SMALL	LHIIIC MIDDLE/LATE	1	4
T16	MID HILL	NW-SE	QUADRANGULAR	6	3.26	MEDIUM	LHIIIA-LHIIIC	3	27
T17	LOWER HILL	W-E	CIRCULAR	4	1.92	SMALL	LHIIIA-LHIIIC	3	19
T20	MID HILL	W-E	HORSE-SHOE	4	?	SMALL	LHIIIA & LHIIIC EARLY	2	10
T22	MID HILL	NW-SE	CIRCULAR	7	9.75	MEDIUM	LHIIIA-LHIIIC	3	15
T24	UPPER HILL	NW-SE	CIRCULAR	4.9	8.10	SMALL	LHIIIA & LHIIIC	2	7
T26	UPPER HILL	NW-SE	QUADRANGULAR	10.4	11	LARGE	LHIIIA-LHIIIC	3	4
T27	UPPER HILL	NW-SE	CIRCULAR	8.2	6.20	MEDIUM	LHIIIA-LHIIIC	3	6
T28	UPPER HILL	NW-SE	CIRCULAR	4.5	4.90	SMALL	LHIIIA & LHIIIC	2	13
T31	MID HILL	NW-SE	QUADRANGULAR	11	5.85	LARGE	LHIIIC	1	2
T39	MID HILL	NW-SE	CIRCULAR	5.2	4.25	MEDIUM	LHIIIA & LHIIIC	2	8
T40	LOWER HILL	NE-SW	CIRCULAR	3	4.87	SMALL	LHIIIA	1	17
T42	LOWER HILL	NE-SW	CIRCULAR	5.2	5.58	MEDIUM	LHIIIA & LHIIIC	2	15
T44	LOWER HILL	E-W	CIRCULAR	5.7	?	MEDIUM	LHIIIA & LHIIIC	2	4

7.2 Exploring demographic parameters and mortality profiles

7.2.1 Presenting basic demographic data: Minimum Number of Individuals, age and sex distributions

The overall death frequencies of the study population (N=206) are presented by tomb and date (Table 7.2 and Figure 7.8). The minimum number of individuals (MNI) was 206, originating from 75 studied contexts in the 20 tombs (for the analysis of these contexts see 7.3).

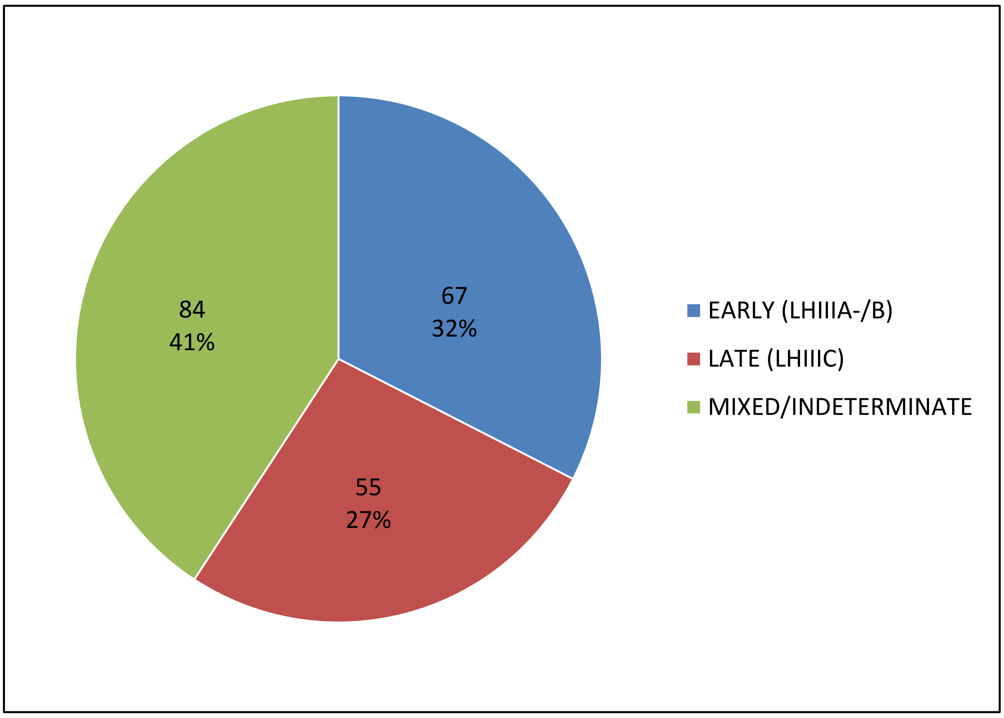


Figure 7.8. MNI frequencies in concise chronological groups (counts and percentages shown).

Age distribution by tomb is presented in Table 7.3. The cases have been classified into nine age categories spanning variable length of years, plus one additional category for indeterminate adults (details on definition of age categories: 5.3.2; detailed age information per tomb: chapter 6). The majority comprises adults (85%), although the fragmentary state of preservation of the remains restricted precise ageing in almost half of the adult skeletons (40.3% of the total population fall in the category of indeterminate adults). The most frequently encountered were the categories of prime and mature adults, while counts of older children and adolescents were even lower than infant and young children categories. The frequencies per age category will be examined analytically below (7.2.2).

Table 7.2. MNI frequencies by tomb and date.

TOMB	LHIIIA	LHIIIB	LHIIIA-B	LHIIIC EARLY	LHIIIC MIDDLE-LATE	LHIIIC	LHIIIA & LHIIIC EARLY	LHIIIA & LHIIIC	LHIIIA - LHIIIC EARLY	LHIIIA-LHIIIC	TOTAL MNI/ TOMB
T4	1	1	1	0	1	3	0	0	0	0	**7**
T5	0	0	0	0	6	0	12	0	0	0	**18**
T9	0	0	4	0	0	2	0	1	1	0	**8**
T10	0	0	0	0	0	0	0	6	0	0	**6**
T13	0	0	0	0	6	0	0	0	0	0	**6**
T14	0	0	0	10	0	0	0	0	0	0	**10**
T15	0	0	0	0	0	0	0	0	0	4	**4**
T16	3	0	0	0	3	0	0	0	21	0	**27**
T17	0	0	0	2	2	0	0	0	15	0	**19**
T20	0	9	0	1	0	0	0	0	0	0	**10**
T22	0	0	0	0	4	0	0	0	11	0	**15**
T24	0	0	0	0	0	0	0	7	0	0	**7**
T26	0	0	0	0	3	0	0	0	0	1	**4**
T27	1	0	0	0	1	1	0	3	0	0	**6**
T28	13	0	0	0	0	0	0	0	0	0	**13**
T31	0	0	0	0	2	0	0	0	0	0	**2**
T39	3	0	0	0	3	0	2	0	0	0	**8**
T40	17	0	0	0	0	0	0	0	0	0	**17**
T42	12	0	0	0	3	0	0	0	0	0	**15**
T44	2	0	0	0	2	0	0	0	0	0	**4**
TOTAL	**52**	**10**	**5**	**13**	**36**	**6**	**14**	**17**	**48**	**5**	**206**
% TOTAL	**25.2**	**4.9**	**2.4**	**6.3**	**17.5**	**2.9**	**6.8**	**8.3**	**23.3**	**2.4**	**100**

Table 7.3. Age distribution by tomb (N=206; age span in years shown in parentheses).

	SUB-ADULT AGE CATEGORIES					ADULT AGE CATEGORIES					
TOMB	INFANT I (0-1)	INFANT II (1-3)	YOUNG CHILD (3-7)	OLDER CHILD (7-12)	ADOL (12-18)	YOUNG ADULT (18-30)	PRIME ADULT (30-40)	MATURE ADULT (40-50)	OLD ADULT (50-)	ADULT (IND)	**TOTAL**
T4	0	0	0	0	0	2	1	2	0	2	**7**
T5	0	0	1	1	0	2	1	0	1	12	**18**
T9	0	0	0	0	1	1	1	0	0	5	**8**
T10	1	0	0	0	0	2	0	1	1	1	**6**
T13	1	0	0	0	1	0	0	4	0	0	**6**
T14	1	0	1	0	0	3	0	3	0	2	**10**
T15	1	0	0	0	0	0	0	1	0	2	**4**
T16	0	1	0	1	0	2	5	8	0	10	**27**
T17	0	0	0	0	0	2	7	5	1	4	**19**
T20	0	1	1	0	0	0	0	2	0	6	**10**
T22	0	0	1	0	0	2	1	4	0	7	**15**
T24	0	0	1	0	1	0	1	2	0	2	**7**
T26	0	0	0	0	0	0	0	0	0	4	**4**
T27	0	0	0	2	0	0	0	0	0	4	**6**
T28	2	1	0	1	0	0	2	2	0	5	**13**
T31	0	0	0	0	0	0	1	0	0	1	**2**
T39	0	1	0	0	1	0	1	3	0	2	**8**
T40	0	2	1	0	0	0	5	1	0	8	**17**
T42	2	0	1	0	0	3	1	3	0	5	**15**
T44	0	0	0	1	0	0	2	0	0	1	**4**
TOTAL	**8** **3.9%**	**6** **2.9%**	**7** **3.4%**	**6** **2.9%**	**4** **1.9%**	**19** **9.2%**	**29** **14.1%**	**41** **19.9%**	**3** **1.5%**	**83** **40.3%**	**206**
	31 (15%)					**175 (85%)**					

Sex distribution of adults by tomb is presented in Table 7.4. Sex determination followed the analytical categories defined in section 5.3.1. For the purposes of this analysis, the cases were aggregated in two inclusive categories: females (including females and probable females) and males (including males and probable males). Indeterminate cases (including both non-sexable and non-observable were both excluded from the investigation of sex-based funerary choices). The overall sex distribution is shown in Figure 7.9. The sample is almost equally distributed between males (42%) and females (39%), although a large portion of the individual remains fell into the indeterminate category (19%).

Table 7.4. Sex distribution of adult cases by tomb (N=175).

	FEMALE		**MALE**		**INDETERMINATE**		
TOMB	F	F?	M?	M	?	NON-OBS	**TOTAL**
T4	3	0	0	3	0	1	7
T5	2	2	1	7	2	2	16
T9	3	0	1	1	0	2	7
T10	3	0	0	1	0	1	5
T13	1	0	0	3	0	0	4
T14	2	0	2	2	2	0	8
T15	2	0	0	1	0	0	3
T16	9	3	2	7	2	2	25
T17	7	2	2	5	3	0	19
T20	2	0	0	4	0	2	8
T22	5	0	0	5	0	4	14
T24	2	0	0	2	0	1	5
T26	0	1	0	2	0	1	4
T27	1	0	0	2	0	1	4
T28	2	0	0	4	0	3	9
T31	0	0	0	2	0	0	2
T39	2	0	0	2	0	2	6
T40	7	1	1	4	0	1	14
T42	3	2	1	5	1	0	12
T44	2	0	0	1	0	0	3
TOTAL	**58**	**11**	**10**	**63**	**10**	**23**	**175**
	69		**73**		**33**		

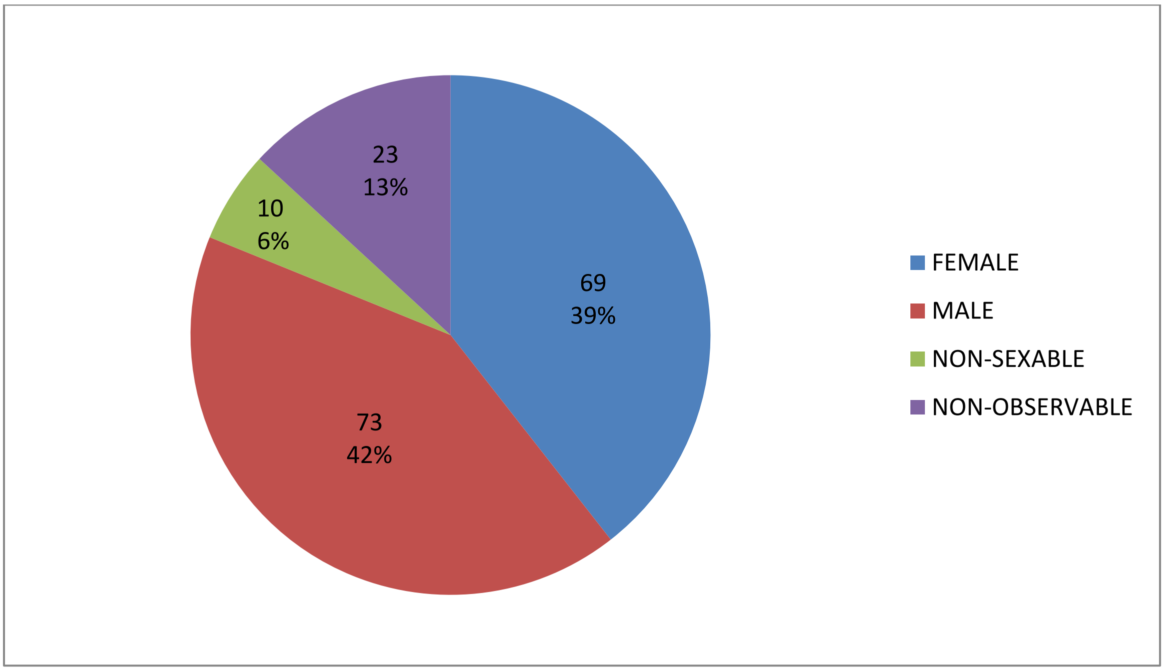


Figure 7.9. Sex distribution of overall adult cases (N=175; counts and percentages shown).

7.2.2 Exploring mortality profiles

On methodological grounds presented in 5.5, the basic principles of palaeodemographic analysis are used to investigate age and sex distribution patterns in the Voudeni population. This analysis does not aim at a complete demographic reconstruction of the original Voudeni population (restricted by several sample biases, cf. 5.5), but rather to achieve the following objectives:

- To fully outline the basic demographic characteristics of the sample, and explore age and sex distributions through time, as well as age-specific mortality by sex (7.2.2 and 7.2.3).
- To investigate the relationship between frequency of use, MNI estimates and length of use in different tomb groups (7.2.4), as well as age and sex distributions across potentially status-related tomb groupings (7.2.5), and across different types of funerary treatment (7.3.4).
- To use the patterns observed in order to assess specific questions related to social changes in Achaea, especially in the LHIIIB-LHIIIC transition, and to further illuminate the funerary practices carried out in Voudeni and their social aetiology (Chapter 8).

Age and sex distributions are explored through the comparison of sub-groups within the Voudeni population, as well as against the appropriate model life table from an analogous model population (cf. 5.5). In order to produce a rough equivalent of life tables as the basis for exploring Voudeni's mortality profiles, the values of the three basic demographic parameters are calculated following Chamberlain (2006: 25-28):

- *mortality* (d_x), which represents the proportion of the population that dies within an age-specific interval (x) based on the number of deaths (D_x) within this age interval, (calculated as D_x/total D)
- *survivorship* (l_x), which represents the probability that an individual will survive to an age-specific interval (x), (calculated as $l_{x-1} - d_{x-1}$)
- *probability of death* (q_x), which is the probability of an individual dying within an age-specific interval (x), (calculated as d_x/l_x)

Palaeodemographic analysis of archaeological remains can operate with broad age categories, not necessarily of the same length (Chamberlain 2006: 15-17), and therefore the age groups presented in Table 7.3 can be used. The detailed age divisions of unequal length in the sub-adult age category will assist a more accurate interpretation of the mortality profiles. The 83 cases of indeterminate adults were proportionately distributed across the adult age groups, producing the final number of deaths in each category (Table 7.5). The specific re-allocation of the indeterminate cases *per tomb* similarly respected as well as possible the correct proportions, in order to enable the production of accurate profiles not only for the overall sample, but also for the various sub-groups. Indeed, both in the overall sample and the chronological sub-groups, the comparison of age distribution before and after the re-allocation of the indeterminate cases shows a very similar pattern, confirming the success of the re-allocation process (Figure 7.X1 and Table 7.X2).

The main demographic values, as well as the average age at death (i.e. life expectancy at birth or E_0), are summarised in Table 7.5 for the total population and Table 7.6 for the different chronological groups defined by *Concise Date* (cf. 5.4.7). Model life table 6 (E_o=32.5) of the West Series of Coale and Demeny's (1983) life tables is used as the most appropriate baseline with which to compare Voudeni's mortality profile (Chamberlain 2006: 31-32). The mortality profile of the total Voudeni sample compared to that of the model is shown in Figure 7.10. The Voudeni sample demonstrates an under-representation of sub-adults up to the age of seven (especially prominent in the first year of life) as well as a marked under-representation of old adults, while the other adult age categories are over-represented. Differences between the observed and expected pattern are better illustrated by the comparison of the respective survivorship curves (Figure 7.11). Voudeni's curve is initially shallow, in sharp contrast to the steep decline observed in the first year of life in the model's curve (due to low survivorship levels early in life), while it quickly declines in adulthood, dropping very low in the old age category.

This pattern is quite common in the mortality profiles of archaeological populations. Since it is not found in model life tables or in historical demographic data, it is commonly attributed to the main systematic biases, i.e. preservational and/or cultural bias in the representation of infants, and methodological ones in the age estimation of older adults (Chamberlain 2006: 89-92; cf. section 5.5). To determine the most probable reason for these discrepancies, we need first to address the temporal examination of the mortality profiles, and then consider both preservation patterns and any evidence for selective cultural practices (presented in 7.3-7.4). Based on these factors, the issue will be finally addressed in section 8.2. For now, it is sufficient to note that the initial impression is that the low level of inclusion of infants and young children is to some extent related to selective cultural practices rather than preservation bias alone, because older children and adolescents appear very close to the expected values. Since preservation biases are considered rather similar between all younger sub-adults (even if taphonomic risks for neonates and infants are higher, cf. Bello et al. 2006, see further in 8.2), the good representation of younger children points to the interaction of a cultural factor in the representation of infants. In contrast, the under-representation of old adults could certainly be explained as largely due to problems of ageing techniques, since the most reliable skeletal elements (e.g., pelvis) were usually absent and ageing methods were most often limited to dental wear and cranial suture closure.

Table 7.5. Number of deaths by age category (D_x), mortality (d_x), survivorship (l_x) and probability of death (q_x) in the total Voudeni sample (N=206).

Total Voudeni sample (N=206; E_0= 33.13)				
Age (x)	**D_x**	**d_x**	**l_x**	**q_x**
Infant I (0-1)	8	3.88	100.00	0.04
Infant II (1-3)	6	2.91	96.12	0.03
Young child (3-7)	7	3.40	93.20	0.04
Older child (7-12)	6	2.91	89.81	0.03
Adolescent (12-18)	4	1.94	86.89	0.02
Young Adult (18-30)	36	17.48	84.95	0.21
Prime Adult (30-40)	55	26.70	67.48	0.40
Mature Adult (40-50)	78	37.86	40.78	0.93
Old Adult (50-)	6	2.91	2.91	1.00

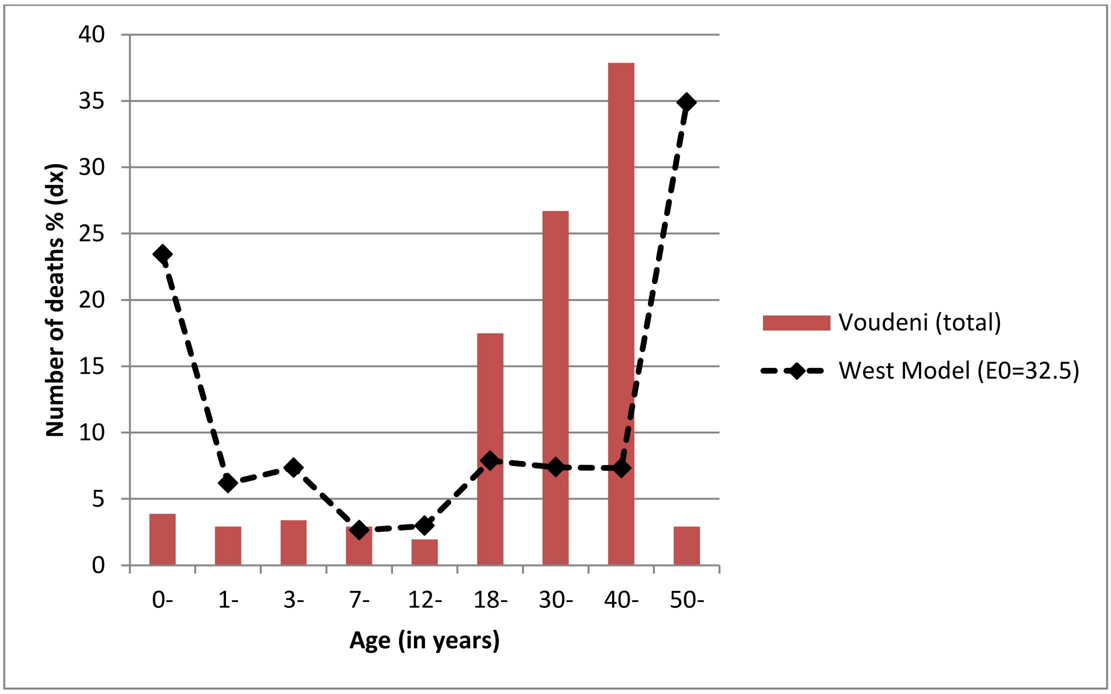


Figure 7.10. Age-specific mortality (d_x) of the total Voudeni sample compared to mortality of the West Level 6 (female) model life table (E_0=32.5).

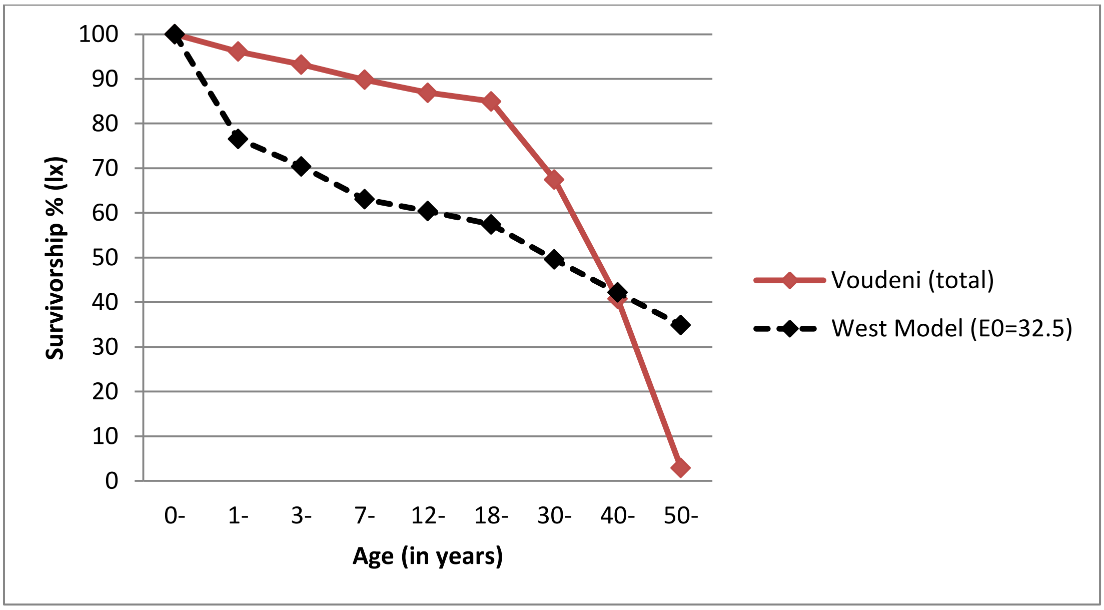


Figure 7.11. Survivorship (l_x) of the total Voudeni sample compared to survivorship of the West Level 6 (female) model life table (E_0=32.5).

Basic demographic parameters of the different chronological groups (after *Concise* date) are summarised in Table 7.6 and temporal mortality profiles are shown in Figure 7.12. The mixed LHIIIA-LHIIIC group is included in the graph, since its pattern may assist a better understanding of the differences observed between the segregated groups. It will not, however, be considered *per se*, since all meaningful differentiation may become diffused in such mixed samples.

Table 7.6. Number of deaths by age category (D_x), mortality (d_x), survivorship (l_x) and probability of death (q_x) in different chronological groups (sample size and life expectancy at birth for each group shown in parentheses).

	Early group: LHIIIA-/B (N=67; E_0= 30.22)				Late group: LHIIIC (N=55; E_0= 33.46)				Mixed group: LHIIIA-/&LHIIIC (N=84; E_0= 35.23)			
Age (x)	**D_x**	**d_x**	**l_x**	**q_x**	**D_x**	**d_x**	**l_x**	**q_x**	**D_x**	**d_x**	**l_x**	**q_x**
Infant I (0-1)	4	5.97	100	0.06	2	3.64	100	0.04	2	2.38	100	0.02
Infant II (1-3)	5	7.46	94.03	0.08	0	0.00	96.36	0.00	1	1.19	97.62	0.01
Young child (3-7)	3	4.48	86.57	0.05	1	1.82	96.36	0.02	3	3.57	96.43	0.04
Older child (7-12)	2	2.99	82.09	0.04	1	1.82	94.55	0.02	3	3.57	92.86	0.04
Adolescent (12-18)	1	1.49	79.10	0.02	2	3.64	92.73	0.04	1	1.19	89.29	0.01
Young Adult (18-30)	9	13.43	77.61	0.17	15	27.27	89.09	0.31	12	14.29	88.10	0.16
Prime Adult (30-40)	20	29.85	64.18	0.47	11	20.00	61.82	0.32	24	28.57	73.81	0.39
Mature Adult (40-50)	22	32.84	34.33	0.96	22	40.00	41.82	0.96	34	40.48	45.24	0.89
Old Adult (50-)	1	1.49	1.49	1.00	1	1.82	1.82	1.00	4	4.76	4.76	1.00

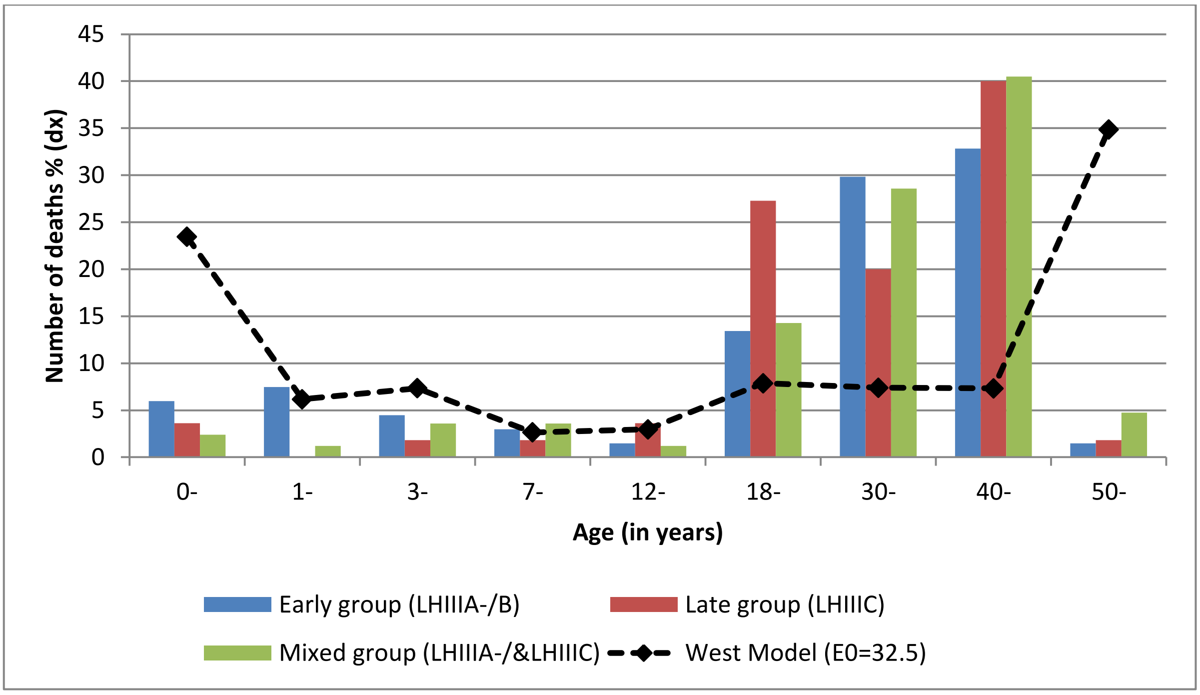


Figure 7.12. Age-specific mortality (d_x) of the main chronological groups compared to mortality of the West Level 6 (female) model life table (E_0=32.5).

The mortality profiles of all chronological groups display the same general characteristics with the pattern of the total population (i.e. under-representation of infants, young children, and older adults). Although not statistically significant, the following differences between the Early and Late Time Period groups are of interest in discussion of this analysis. First, in the Late (LHIIIC) group, sub-adults below the age of seven are markedly under-represented; as a result, average age at death or life expectancy at birth (e_0) is higher. Second, again in the Late group, the deaths of young adults show a prominent peak. Given that systematic bias related to age estimation techniques are common for the entire sample, these differences should reflect a real phenomenon.

The lack of younger sub-adults in the Late Time Period group could be attributed to a real demographic phenomenon reflecting lower fertility. Alternatively it could reflect a change in mortuary practices indicating an even more pronounced exclusion of these categories during the LHIIIC period. Assuming that the difference is not due to cultural choices (to be finally assessed in section 8.2), then the lower mean length of life and lower survivorship curve of the Early (LHIIIA-/B) group (Figure 7.13) should be the result of higher numbers of sub-adult deaths during this period. Higher average of life expectancy at birth and survivorship values are not anymore viewed as the outcome of decreased mortality rates (indicating improved life quality) but taken to be mostly related to decreased fertility (Sattenspiel and Harpending 1983; Larsen 1997: 337-340; Chamberlain 2006: 27-31). Based on this 'demographic paradox', what is observed in LHIIIC Voudeni (*if* we assume that the population is closed) is fewer births, indicating a reduction in population size (cf. Buikstra et al. 1986). An alternative way to test this observation, and to avoid the bias related to the generally problematic value of average age at death, is to compare the ratio of number of deaths in composite adult to total age categories (D_{18+}/D). Put simply, the larger the ratio the lower the presence of sub-adults. The ratios here are as follows: Early Time Period group: 0.78; Late Time Period group: 0.89 (Mixed Time Period group: 0.88). The increased ratio of the Late Time Period group would signify therefore the same decrease in birth rates as that inferred by the higher survivorship curve, *if* population is assumed closed and cultural bias excluded.

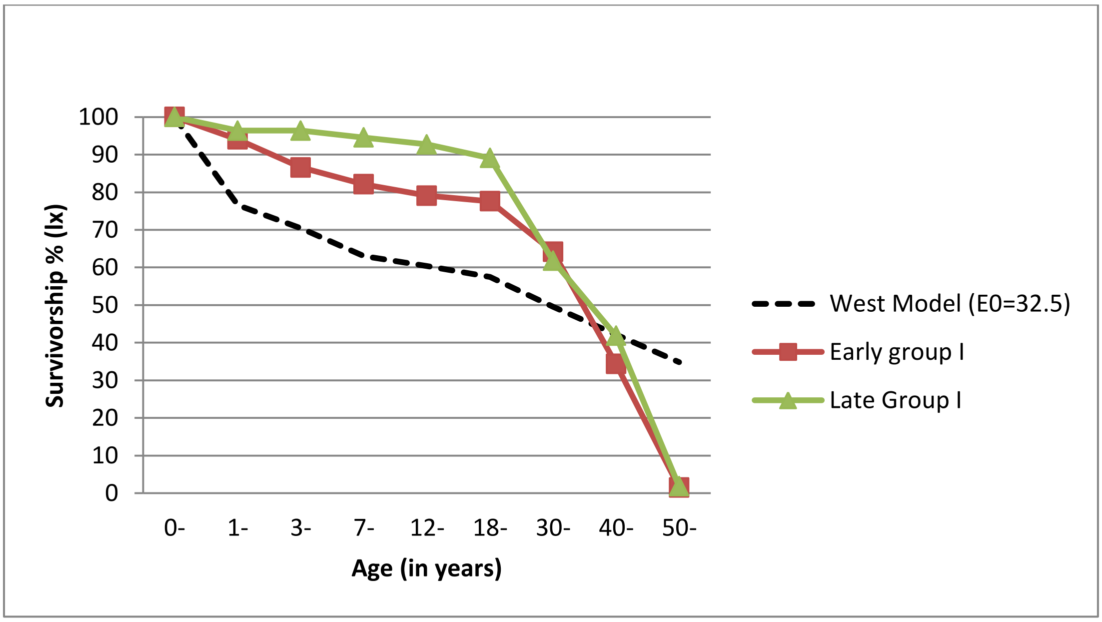


Figure 7.13. Survivorship (l_x) of the main chronological groups compared to survivorship of the West Level 6 (female) model life table (E_0=32.5).

To better understand the higher proportion of young adult deaths in the LHIIIC population, temporal changes in mortality patterns are further explored by comparing the profiles of detailed chronological groups of the LHIIIA, LHIIIB, LHIIIC Early and LHIIIC Middle/Late periods (Table 7.7 and Figure 7.14). Two observations are immediately apparent: a) the increase of young adult deaths starts in LHIIIC Early and continues into LHIIIC Middle/Late period; and b) the drop in sub-adult (especially younger) individuals starts in LHIIIC Early but reaches its lowest level in the LHIIIC Middle/Late period. The latter observation is again illuminated by looking at the temporal trend of the ratio of adult to total deaths (D_{18+}/D) which clearly follows an increasing pattern, confirming the trend towards under-representation of sub-adult age categories after the LHIIIA period: LHIIIA: 0.75; LHIIIB: 0.80; LHIIIC Early: 0.84; LHIIIC Middle/Late: 0.91. This is also evident in the contrast between the life expectancy at birth of LHIIIA group versus that of the LHIIIC Middle/Late period (Table 7.7). The difference of the age distributions is mostly highlighted between LHIIIA and LHIIIC Middle/Late periods, where it approaches statistical significance despite the small sample size (Wilcoxon Mann-Whitney: z=-1.46; p=0.07). As stated above, if the population is assumed to be stable and cultural bias excluded, this trend should be associated with decreasing fertility, but it is only the contextual investigation of these demographic shifts through time across the patterns observed in mortuary practices that may assist in the choice of the most accurate interpretation (see 8.2.2). As for the increase of young adult deaths, this is further explored regarding sex ratio differences across temporal age distributions in the next section.

Table 7.7. Number of deaths by age category (D_x), mortality (d_x), survivorship (l_x) and probability of death (q_x) in precise chronological groupings by period. Sample size and life expectancy at birth for each sub-group shown in parentheses (Total N=111).

LHIIIA (n=52; E_0= 29.13)					**LHIIIB (n=10; E_0= 32.55)**				
Age (x)	**D_X**	**d_x**	**l_x**	**q_x**	**Age (x)**	**D_X**	**d_x**	**l_x**	**q_x**
Infant I (0-1)	4	7.69	100	0.08	Infant I (0-1)	0	0.00	100	0.00
Infant II (1-3)	4	7.69	92.31	0.08	Infant II (1-3)	1	10.00	100	0.10
Young child (3-7)	2	3.85	84.62	0.05	Young child (3-7)	1	10.00	90.00	0.11
Older child (7-12)	2	3.85	80.77	0.05	Older child (7-12)	0	0.00	80.00	0.00
Adolescent (12-18)	1	1.92	76.92	0.03	Adolescent (12-18)	0	0.00	80.00	0.00
Young Adult (18-30)	7	13.46	75.00	0.18	Young Adult (18-30)	1	10.00	80.00	0.13
Prime Adult (30-40)	16	30.77	61.54	0.50	Prime Adult (30-40)	2	20.00	70.00	0.29
Mature Adult (40-50)	15	28.85	30.77	0.94	Mature Adult (40-50)	5	50.00	50.00	1.00
Old Adult (50-)	1	1.92	1.92	1.00	Old Adult (50-)	0	0.00	0.00	
LHIIIC EARLY (n=13; E_0= 31.27)					**LHIIIC MIDDLE/LATE (n=36; E_0= 34.89)**				
Age (x)	**D_X**	**d_x**	**l_x**	**q_x**	**Age (x)**	**D_X**	**d_x**	**l_x**	**q_x**
Infant I (0-1)	1	7.69	100	0.08	Infant I (0-1)	1	2.78	100	0.03
Infant II (1-3)	0	0.00	92.31	0.00	Infant II (1-3)	0	0.00	97.22	0.00
Young child (3-7)	1	7.69	92.31	0.08	Young child (3-7)	0	0.00	97.22	0.00
Older child (7-12)	0	0.00	84.62	0.00	Older child (7-12)	1	2.78	97.22	0.03
Adolescent (12-18)	0	0.00	84.62	0.00	Adolescent (12-18)	1	2.78	94.44	0.03
Young Adult (18-30)	4	30.77	84.62	0.36	Young Adult (18-30)	9	25.00	91.67	0.27
Prime Adult (30-40)	1	7.69	53.85	0.14	Prime Adult (30-40)	8	22.22	66.67	0.33
Mature Adult (40-50)	6	46.15	46.15	1.00	Mature Adult (40-50)	15	41.67	44.44	0.94
Old Adult (50-)	0	0.00	0.00		Old Adult (50-)	1	2.78	2.78	1.00

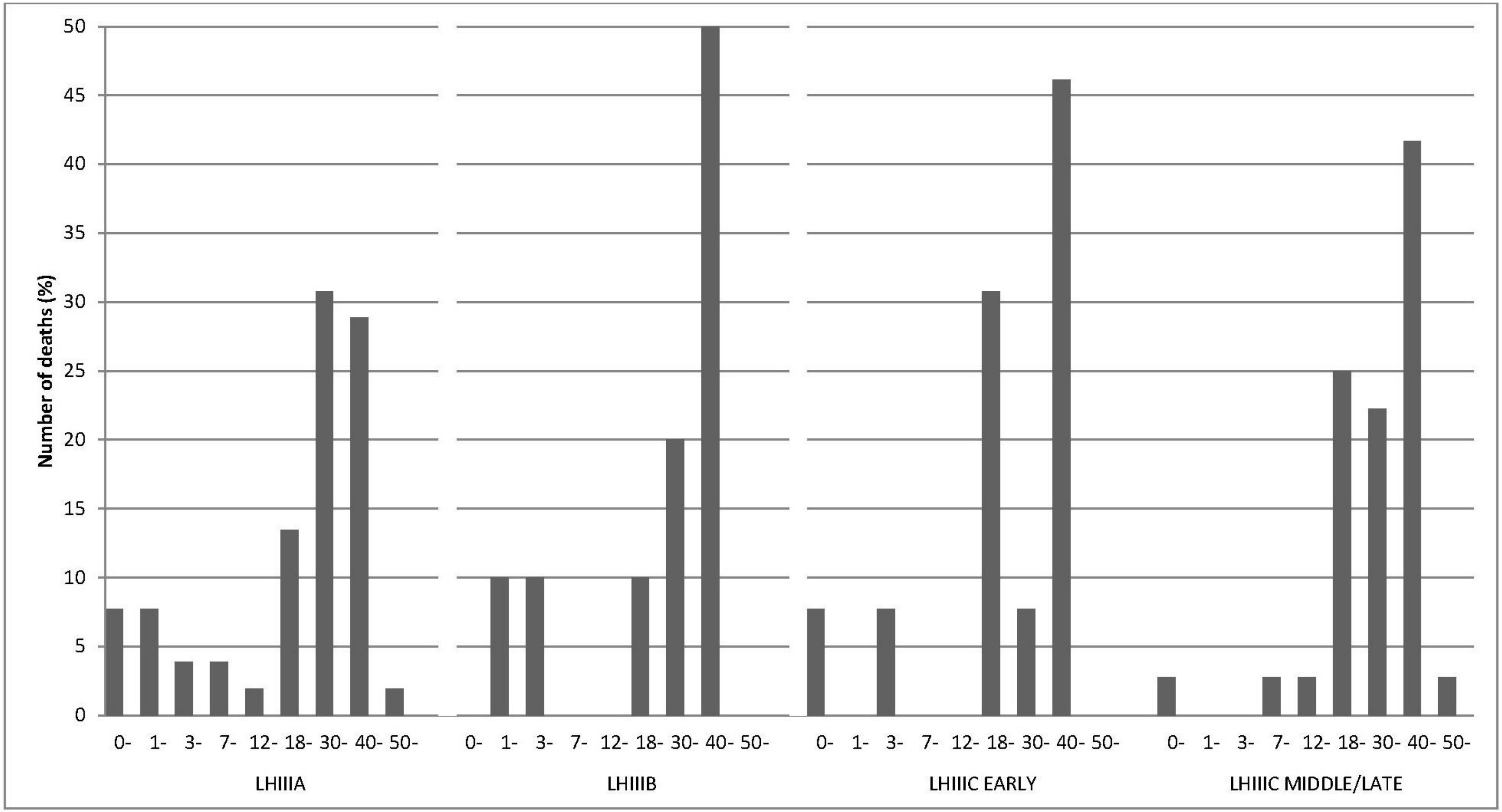


Figure 7.14. Comparison of age-specific mortality (d_x) between the different chronological periods (based on *Detailed date* variable).

7.2.3 Sex distributions and age-specific mortality by sex

The sex ratio in the total Voudeni sample is almost equal (M/F=1.06; Table 7.4, Figure 7.9). The differences of sex distributions in the concise chronological groups show that while women outnumber men in the earlier periods, the reverse is observed in LHIIIC (Figure 7.15). Comparing the distributions between the two groups (Early vs. Late, N=85), the difference appears statistically significant (x^2=4.19; df=1; p=0.041). To further explore the trend, sex distribution is compared between groups of cases precisely dated by period (N=77; Figure 7.16). Male deaths increase over time, reaching a peak in LHIIIC Middle/Late period. The difference between LHIIIA and LHIIIC Middle/Late sex distribution is highly statistically significant (x^2=5.56; df=1; p=0.018).

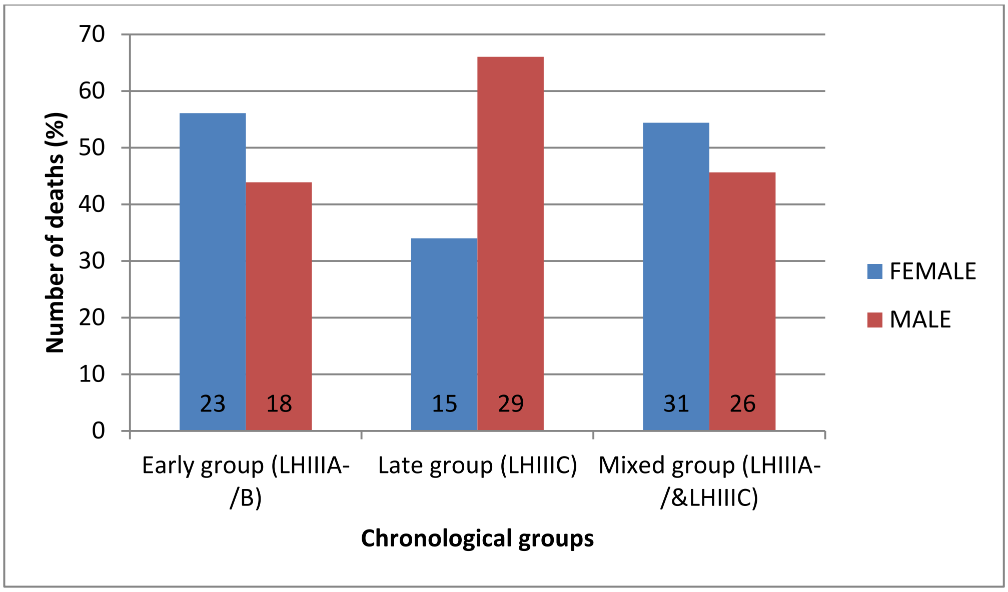


Figure 7.15. Sex distribution (counts inside bars) across concise chronological groups (N=142).

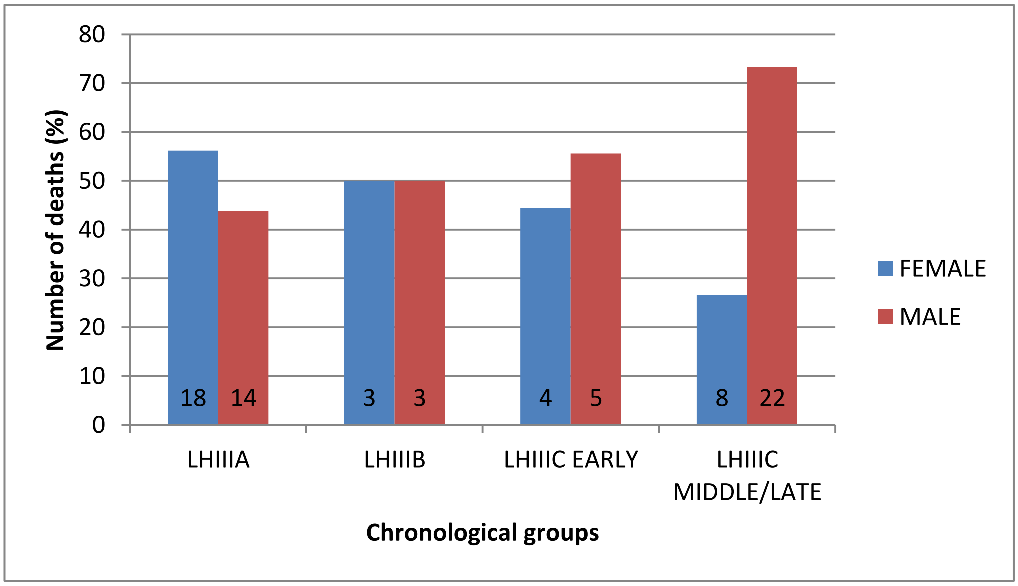


Figure 7.16. Sex distribution (counts inside bars) across detailed chronological groups (N=77).

Age-specific mortality profiles (d_x) by sex are explored in the overall sample (N=86), as well as in the different groups by concise chronology (N=52) with indeterminate sex and age as well as non-adults being excluded (Table 7.8 and Figures 7.17-7.18). The difference between the mortality profiles of the two sexes in the total sample is statistically significant (Wilcoxon Mann-Whitney z=-1.74; 1-tailed p=0.043), with females showing a higher probability of death at younger ages than men (Figure 7.19). The comparison of the mortality profiles by sex across the different chronological groups (Figure 7.18) shows that increased female deaths in the young adult age category is a constant find between the Early and Late time periods. This is not surprising since women are more susceptible to stress at young age due to pregnancy and maternity mortality risks (see Patton et al. 2009). In LHIIIC, however, male young adult deaths increase as well. Across the other age categories, sex distributions vary between the two chronological groups: even though in the LHIIIC period female probability of death is higher in all age categories, this is not the case for LHIIIA-/B (Figure 7.20). Female mortality profiles are not so different between the different chronological groups, but the male ones are more diverse. Furthermore, both sexes display more young adult deaths in the Late rather than the Early group, but in the Late, the peak of deaths is seen in mature age categories, in contrast to the peak in prime adulthood seen in the Early time period. These final observations, however, must be viewed with caution due to the small sample size of the several sub-groups, and especially of male cases in the Early group (Table 7.8). The contextual evaluation of these trends will be discussed in Chapter 8.

Table 7.8. Number of deaths by age category (D_x), mortality (d_x), survivorship (l_x) and probability of death (q_x) in the different sex groups for the total sample (N=86) and concise chronological groups (N=52).

Female cases in total Voudeni sample (n=53)					**Male cases in total Voudeni sample (n=33)**				
Age (x)	**D_x**	**d_x**	**l_x**	**q_x**	**Age (x)**	**D_x**	**d_x**	**l_x**	**q_x**
Young Adult (18-30)	13	24.53	100	0.25	Young Adult (18-30)	6	18.18	100	0.18
Prime Adult (30-40)	19	35.85	75.47	0.48	Prime Adult (30-40)	7	21.21	81.82	0.26
Mature Adult (40-50)	20	37.73	39.62	0.95	Mature Adult (40-50)	18	54.54	60.61	0.90
Old Adult (50-)	1	1.89	1.89	1.00	Old Adult (50-)	2	6.06	6.07	1.00
Female cases in Early group: LHIIIA-/B (n=17)					**Male cases in Early group: LHIIIA-/B (n=3)**				
Age (x)	**D_x**	**d_x**	**l_x**	**q_x**	**Age (x)**	**D_x**	**d_x**	**l_x**	**q_x**
Young Adult (18-30)	2	11.76	100	0.12	Young Adult (18-30)	0	0.00	100	0.00
Prime Adult (30-40)	8	47.06	88.24	0.53	Prime Adult (30-40)	2	66.67	100	0.67
Mature Adult (40-50)	7	41.18	41.18	1.00	Mature Adult (40-50)	1	33.33	33.33	1.00
Old Adult (50-)	0	0.00	0.00		Old Adult (50-)	0	0.00	0.00	
Female cases in Late Group: LHIIIC (n=13)					**Male cases in Late Group: LHIIIC (n=19)**				
Age (x)	**D_x**	**d_x**	**l_x**	**q_x**	**Age (x)**	**D_x**	**d_x**	**l_x**	**q_x**
Young Adult (18-30)	4	30.75	100	0.31	Young Adult (18-30)	5	26.30	100	0.26
Prime Adult (30-40)	4	30.75	69.25	0.44	Prime Adult (30-40)	3	15.80	73.70	0.21
Mature Adult (40-50)	5	38.50	38.50	1.00	Mature Adult (40-50)	10	52.60	57.90	0.91
Old Adult (50-)	0	0.00	0.00		Old Adult (50-)	1	5.30	5.30	1.00

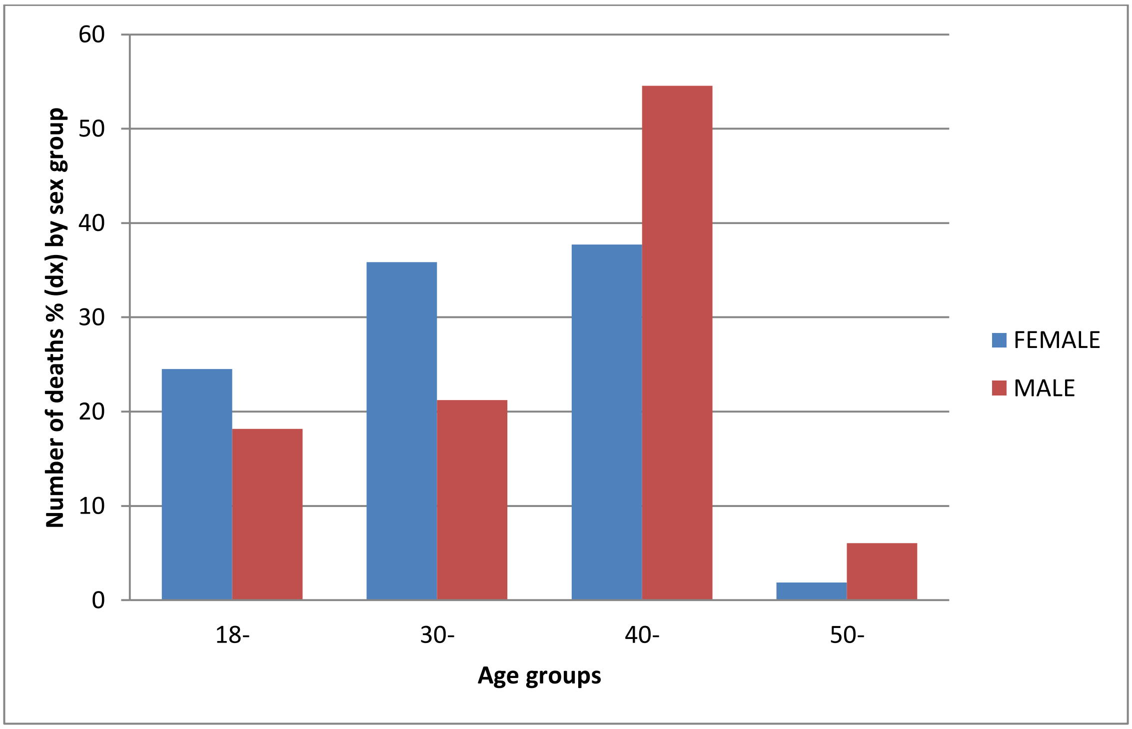


Figure 7.17. Age-specific mortality (d_x) of the two sexes in the total Voudeni sample.

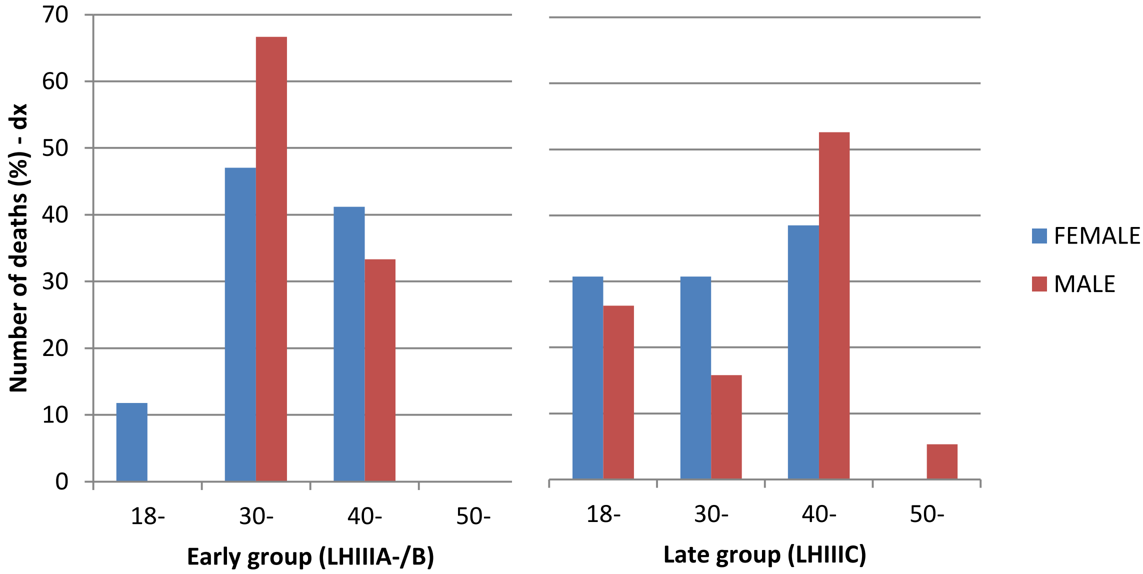


Figure 7.18. Mortality profiles of the two sexes in Early (LHIIIA-/B) and Late (LHIIIC) chronological groups.

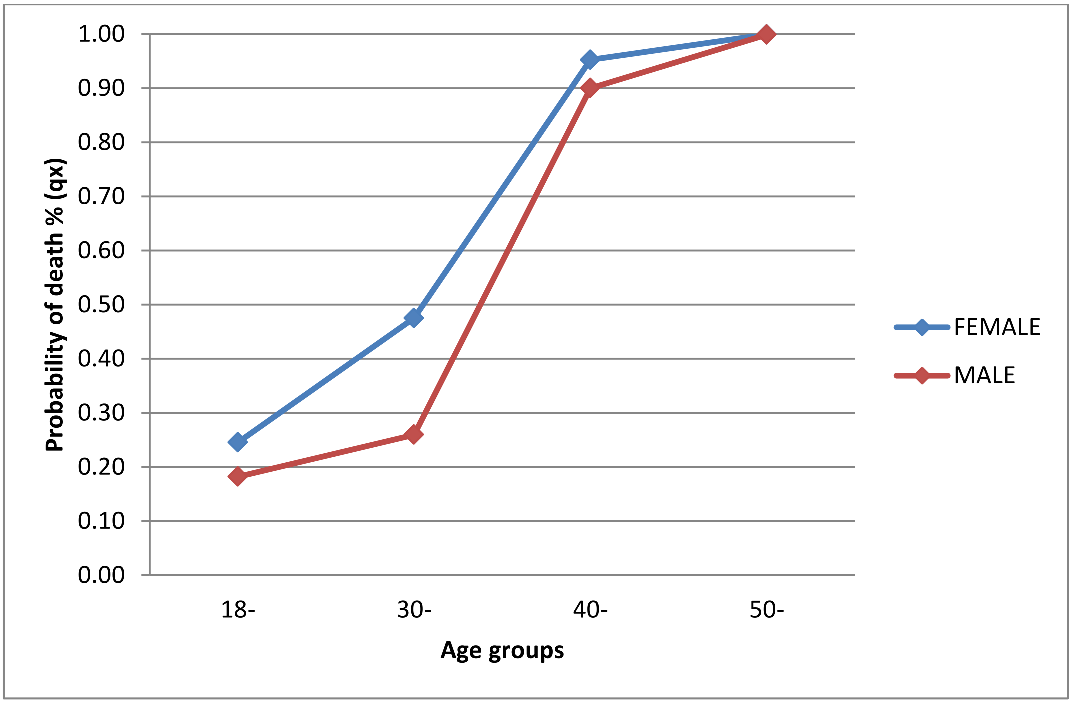


Figure 7.19. Probability of death (q_x) of the two sexes in the total Voudeni sample.

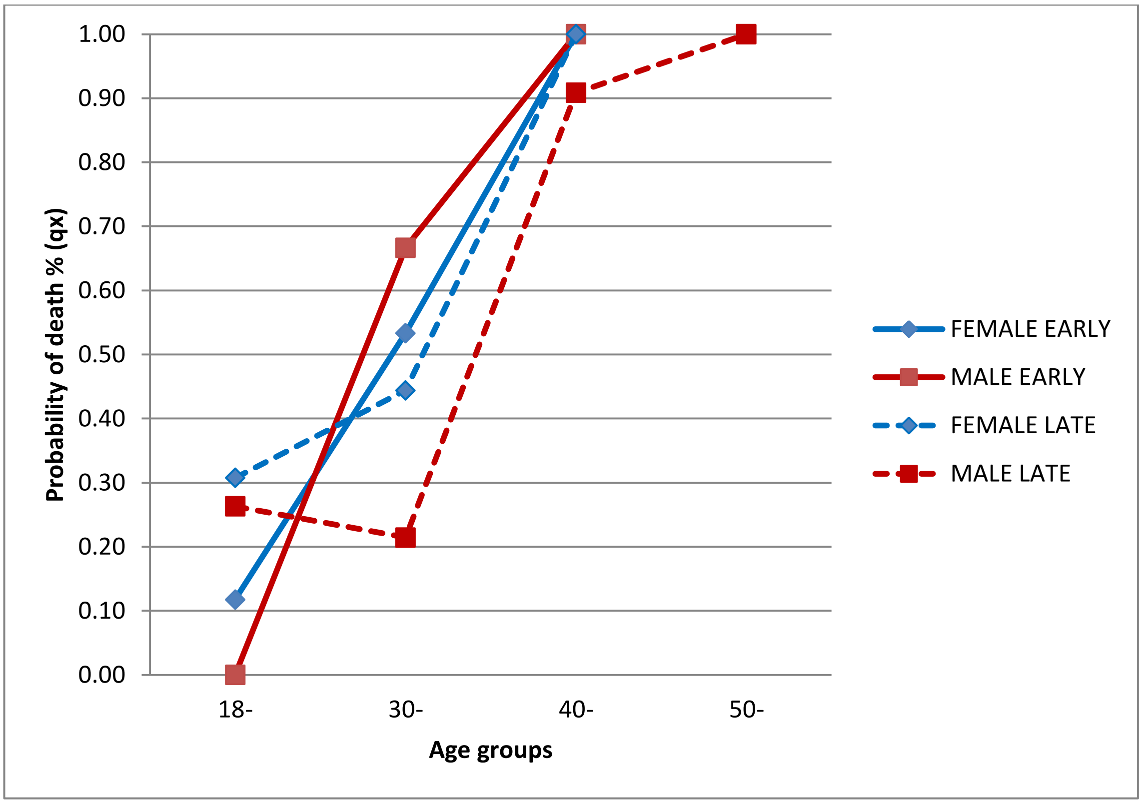


Figure 7.20. Probability of death (q_x) of the two sexes in Early (LHIIIA-/B) and Late (LHIIIC) chronological groups.

7.2.4 Exploring frequency of use in different tomb groups

Frequency and density of tomb use are important parameters for the questions raised in this study. Their examination may reveal potential differences in the funerary traditions of various tomb users, as well as illuminate the relation between the built space and the types and frequency of acts performed within it, or the actual experiences of the people involved in these acts. The different tomb groups are defined on the basis of spatial characteristics possibly related to status distinctions (i.e. location, size, and shape, see 7.1.1), while frequency and density of use are explored through MNI frequencies (Table 7.1) and length of use (Figure 7.7).

7.2.4.1 MNI in different tomb groups

The number of deaths by tomb location is shown in Figure 7.21 (N=18; the analysis excluded from the beginning tomb 4 due to pronounced preservation bias in MNI estimation, and tomb 15 because of its unusual character, possibly only as secondary locus, cf. Chapter 6). A weak tendency for increasing MNI average as distance from the top of the hill increases is discerned, especially between tombs of the upper and lower plateau, but the difference is not statistically significant (the weak trend remains, even if the new outliers, tomb 5 and 16, are excluded).

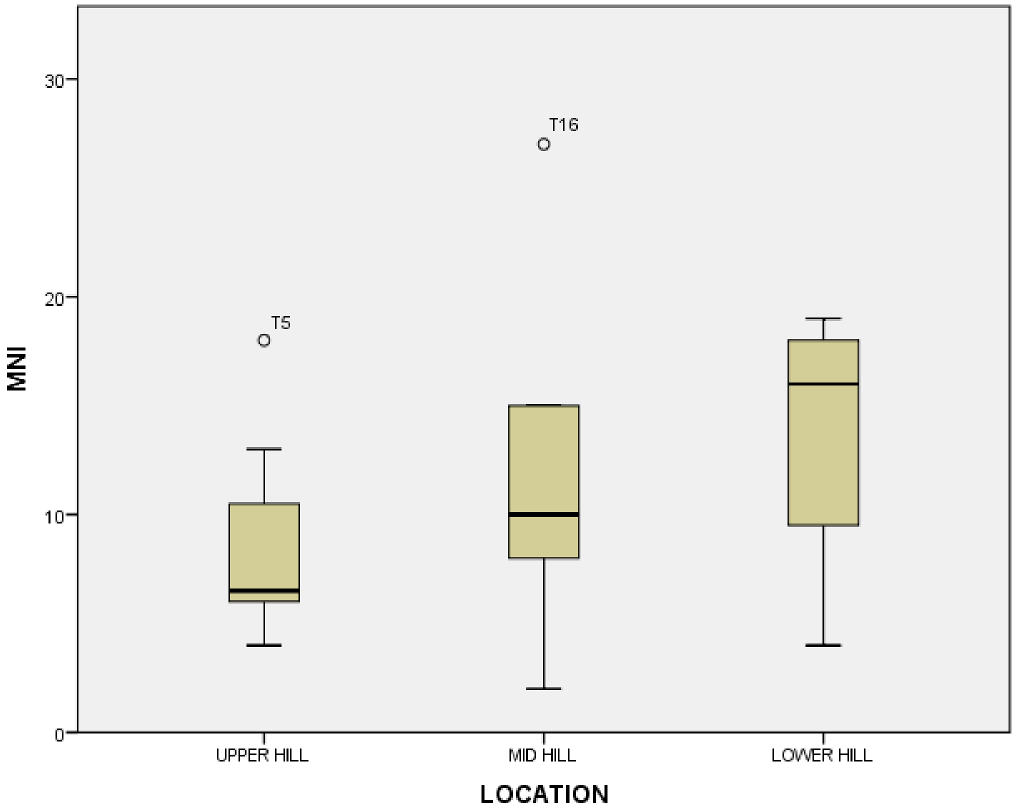


Figure 7.21. Boxplots of MNI frequencies by tomb location (N=18).

The number of deaths by tomb size is shown in Figure 7.22 (N=18, tombs 4 and 15 excluded as above). Even though not statistically significant, MNI average differentiates between larger and smaller tombs, with lower MNI in the former. To further evaluate this finding, the chamber area (m^2) of each tomb is plotted against the MNI (Figure 7.23). A negative correlation is apparent with MNI decreasing as tomb size increases, but the trend does not reach statistical significance (Pearson $r=0.419$; $n=18$; $p<0.10$).

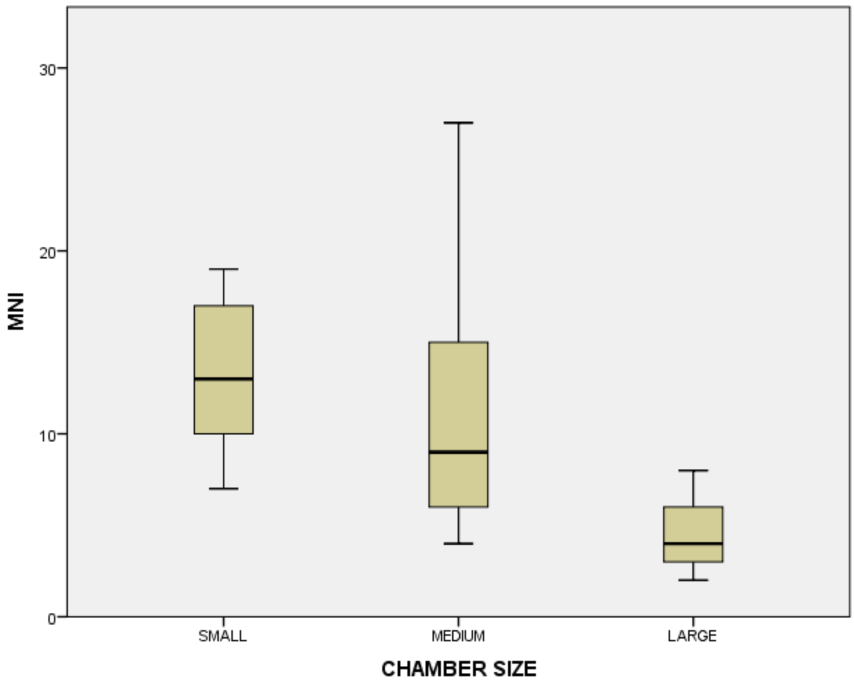


Figure 7.22. Boxplots of MNI frequencies by tomb size (N=18).

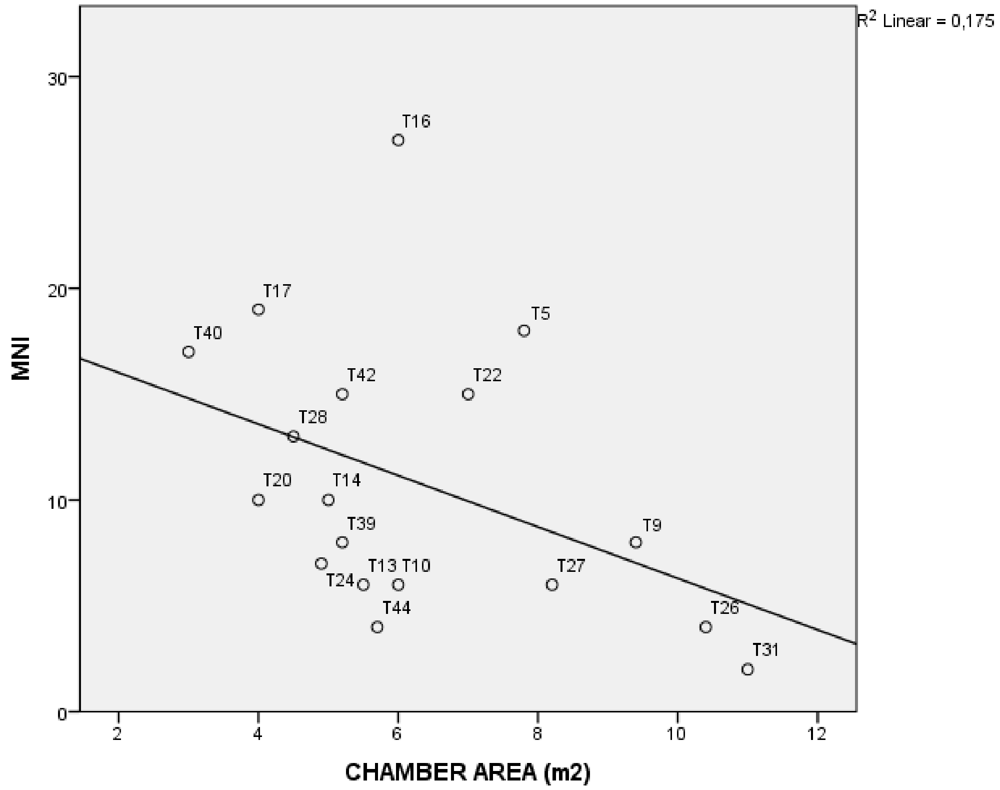


Figure 7.23. Correlation between chamber area (m^2) and MNI (N=18).

The number of deaths by tomb shape is shown in Figure 7.24 (N=18, tombs 4 and 15 excluded as above). The average MNI of the quadrangular tombs is lower than that of the circular ones, but the difference is not significant and tomb 16 violates normal distribution. After the removal of outlier T16 from the analysis, the difference becomes marginally significant, as the average MNI of the quadrangular group drops considerably (from 10.20 to 6; t=2.13; df=8.02; p<0.07).

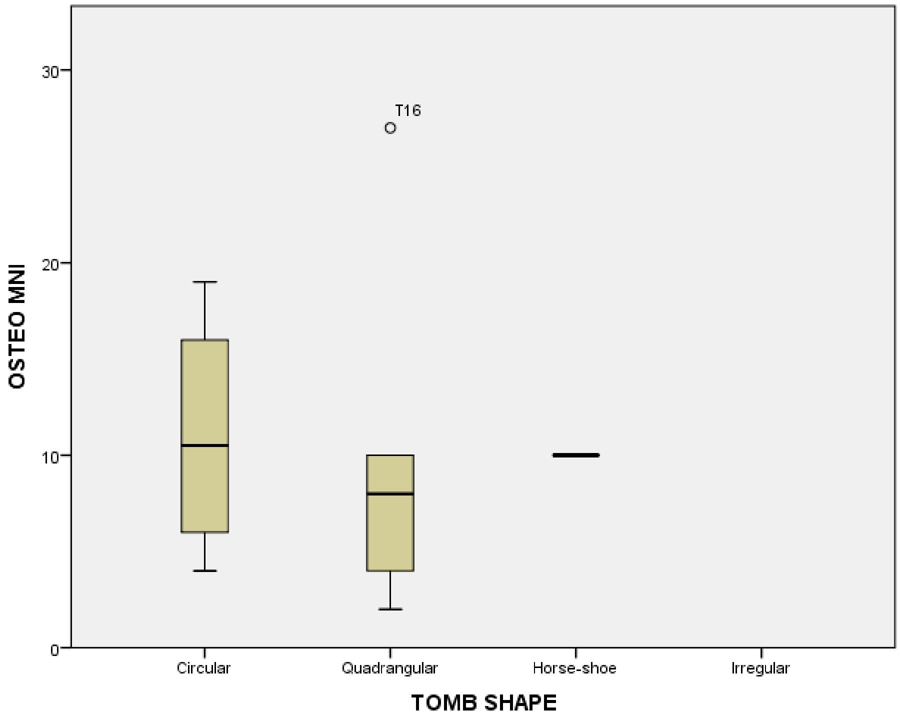


Figure 7.24. Boxplots of MNI frequencies by tomb shape (N=18).

7.2.4.2 Length of use in different tomb groups and across MNI

The number of deaths by length of use is shown in Figure 7.25 (N=18, tombs 4 and 15 excluded as above). No statistically significant difference is found in the average MNI if a tomb has been in use over longer time periods.

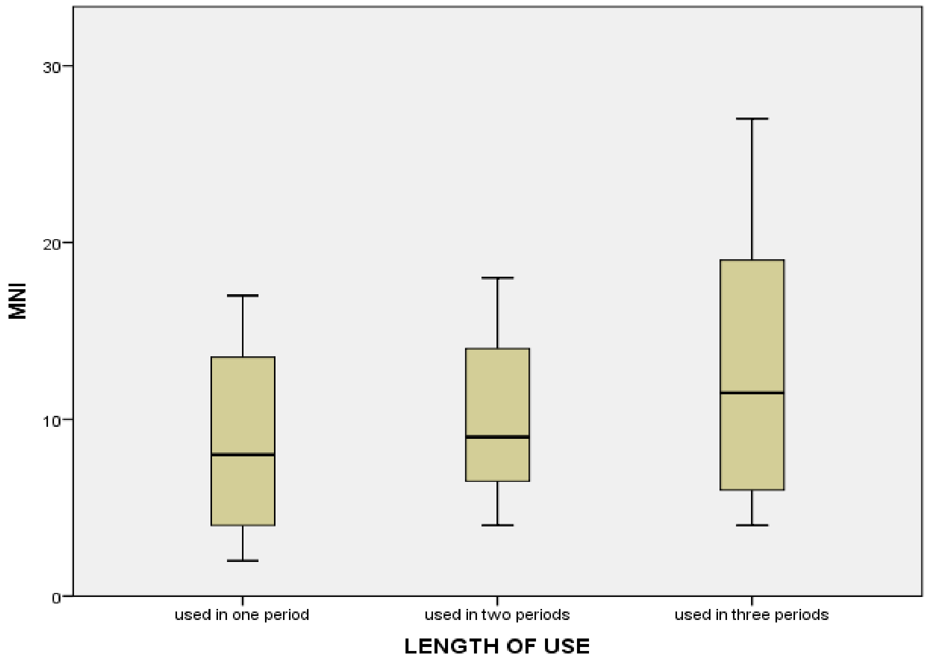


Figure 7.25. Boxplots of MNI frequencies by length of tomb use (N=18).

Tomb frequencies by shape and length of use are presented in Figure 7.26. The comparison between circular and quadrangular groups shows a marginally significant trend of the former ones to be used more often in more than one period (Fischer's exact: 5.9; df=2; $p<0.07$).

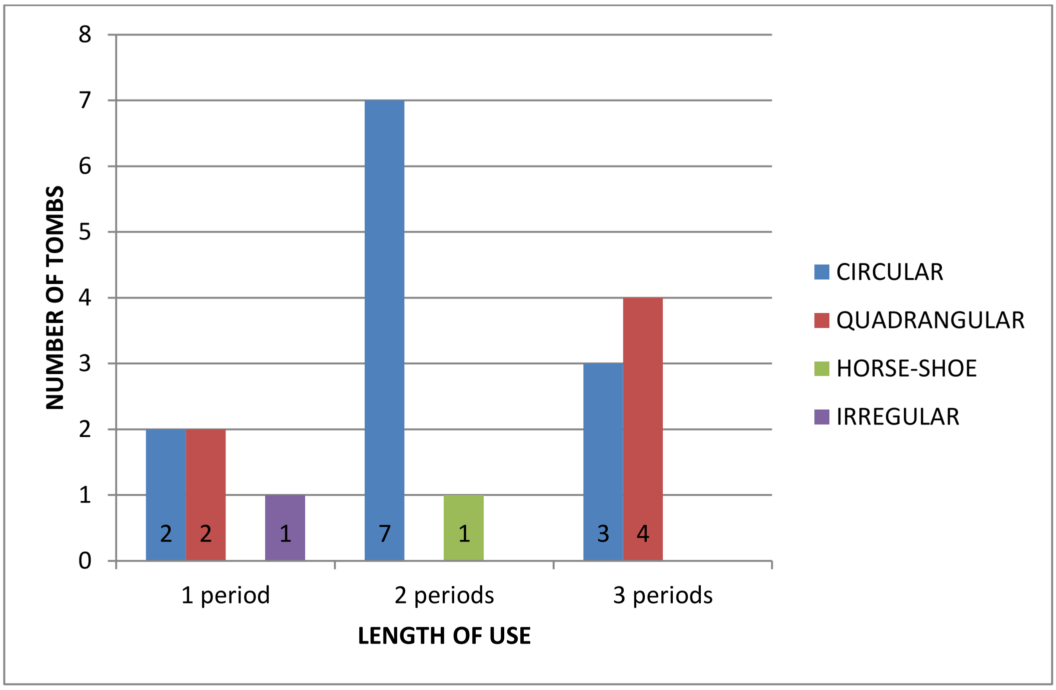


Figure 7.26. Tomb frequencies by shape and length of use (N=20).

Tomb frequencies by location and length of use are presented in Figure 7.27. No statistically significant differences are observed between the three location groups.

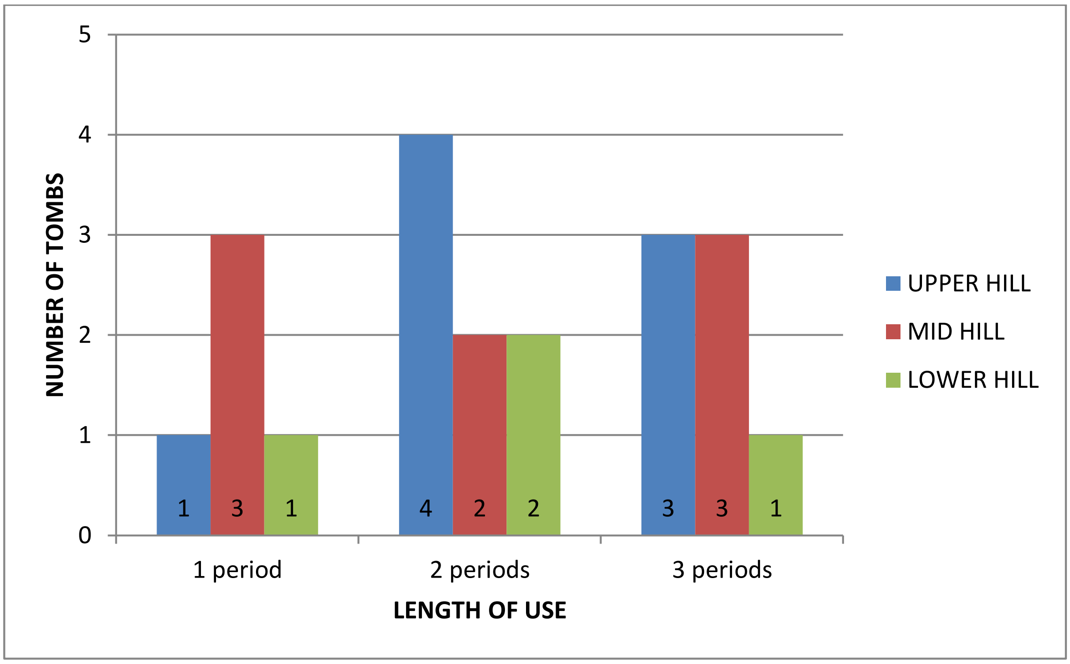


Figure 7.27. Tomb frequencies by location and length of use (N=20).

Chamber area values are plotted across length of tomb use (Figure 7.28, Tombs 4 and 15 are excluded due to exceptionally large and small dimensions respectively). Even though the average chamber area of tombs with continuous use is higher, the difference is not statistically significant.

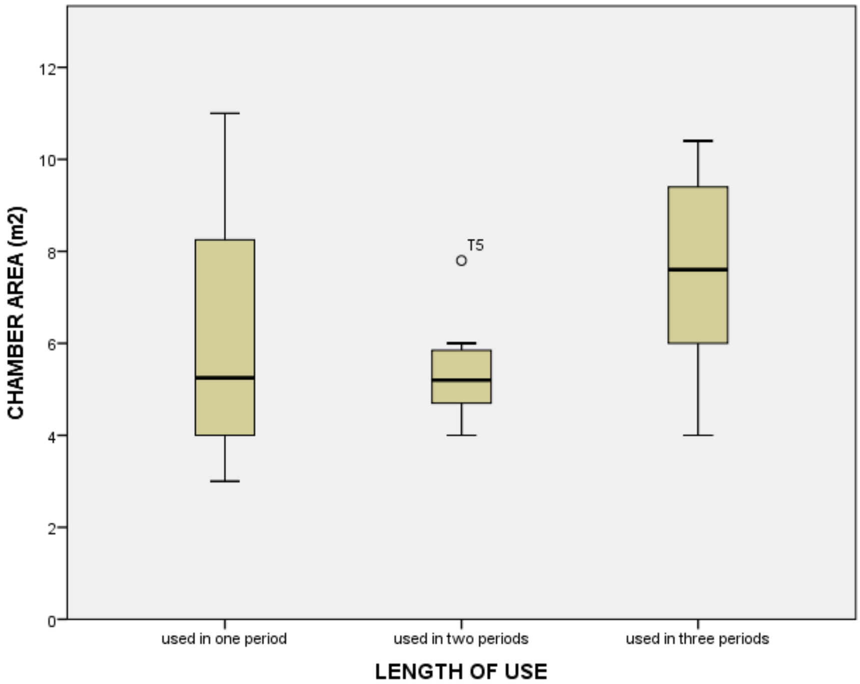


Figure 7.28. Boxplots of chamber area (m^2) by length of tomb use (N=18).

7.2.5 Exploring age and sex distributions in different tomb groups

The comparison of age and sex distributions across the different tomb groups may reveal potential differentiations in the composition of their skeletal assemblages, possibly related to different funerary choices towards age or sex based groups, and specifically different levels of inclusion into the common funerary environment. Age and sex distributions per tomb can be found in Tables 7.3 and 7.4 respectively. Analytical values of the main demographic parameters (i.e. age-specific mortality, survivorship, probability of death, average age-at-death) of the various sub-groups by tomb location, size, and shape, are presented in Table 7.X3. Since the different sub-groups do not comprise different populations, their mortality profiles are not used to explore true demographic differences but rather cultural choices (cf. 5.5 and 7.2.2).

Tomb location

Age-specific mortality by tomb location is shown in Figure 7.29. The age distribution of the different groups is very similar. A very weak tendency for more sub-adults in the upper hill tombs is observed (Adult/Total deaths ratio: Upper-hill: 0.79, Mid-hill: 0.88, Lower hill: 0.87; not statistically significant). *Sex distribution* of the adult individuals (N=142) appears very similar, showing an almost equal ratio in all groups, even though we observe men outnumbering women in the upper hill and the opposite in lower hill (Figure 7.30).

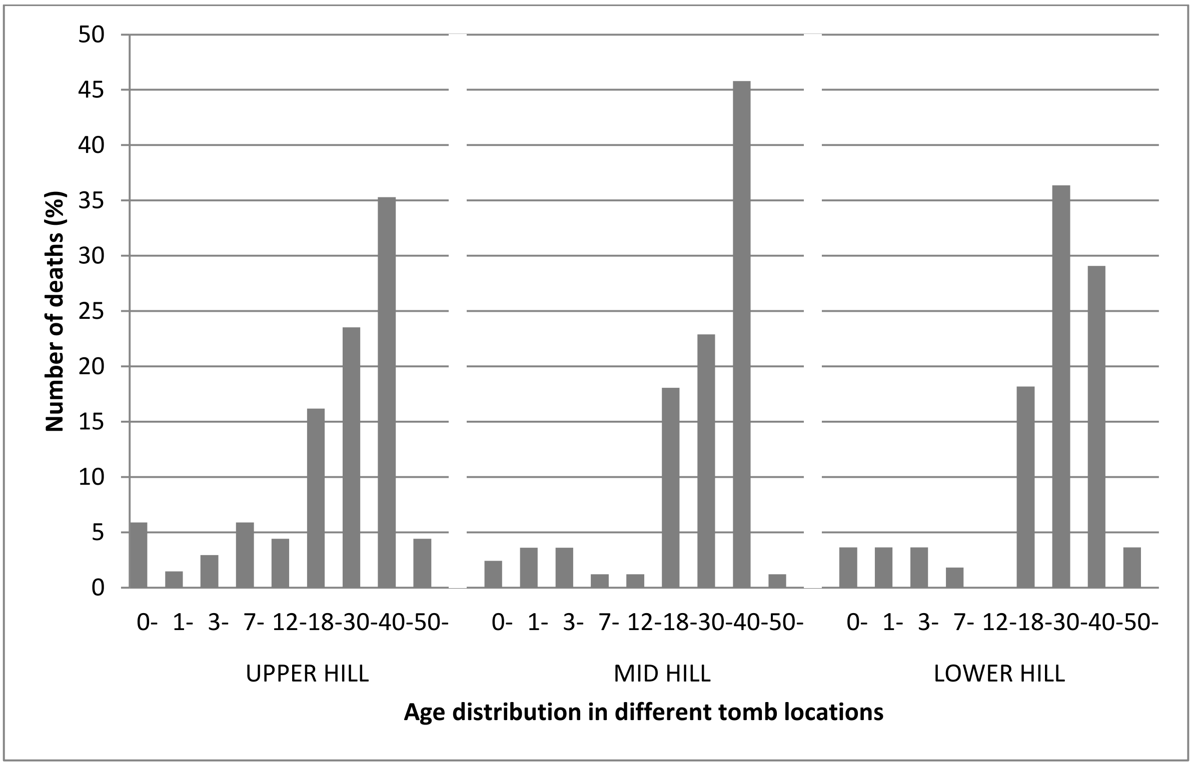


Figure 7.29. Age-specific mortality (d_x) by tomb location (N=206).

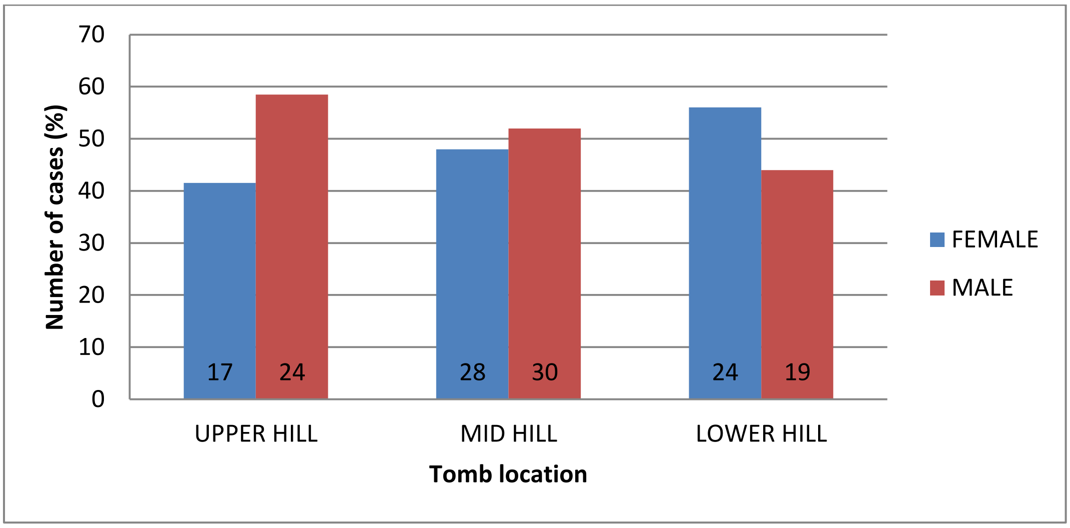


Figure 7.30. Sex distribution (counts shown inside bars) across tomb location groups (N=142).

Tomb size

Age-specific mortality by tomb size is shown in Figure 7.31. The age distribution pattern based on tomb size shows some interesting differences. Of special interest is the under-representation of sub-adults in the larger tombs (Adult/Total deaths ratio from smaller to larger tombs: 0.83, 0.84, and 0.95 respectively). The difference, however, is not statistically significant, probably due to pronounced sample size differences. *Sex distribution* is again very similar between the different groups, on an almost equal ratio; the difference in favour of males in larger and medium tombs is not significant (Figure 7.32).

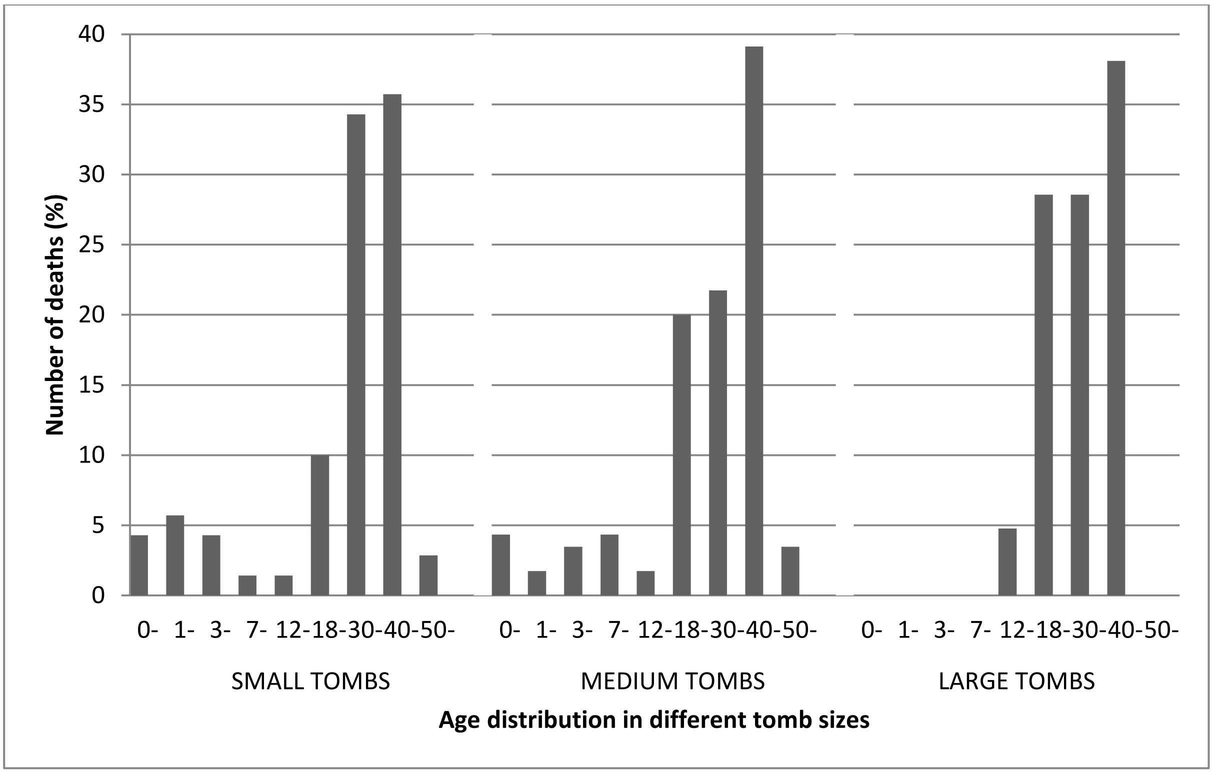


Figure 7.31. Age-specific mortality (d_x) by tomb size (N=206).

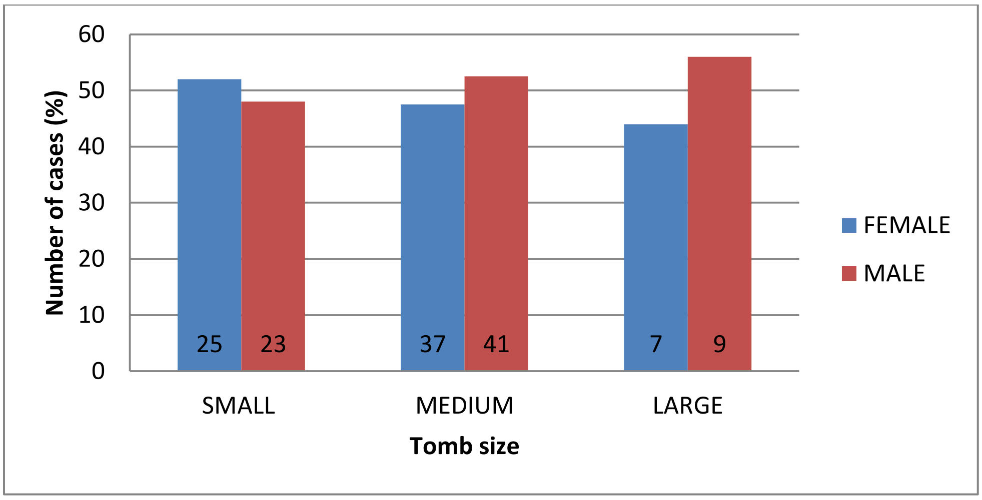


Figure 7.32. Sex distribution (counts inside bars) across groups of different tomb size (N=142).

Tomb shape

Age-specific mortality by tomb shape is shown in Figure 7.33 (the analysis only applied to the two main shapes, N=192). Sub-adult mortality is slightly lower in quadrangular tombs (Adult/Total deaths ratio: 0.91 versus 0.83 in circular ones), but the difference is not significant. *Sex distribution* is almost identical between the two groups, showing an almost equal ratio of females and males (Figure 7.34).

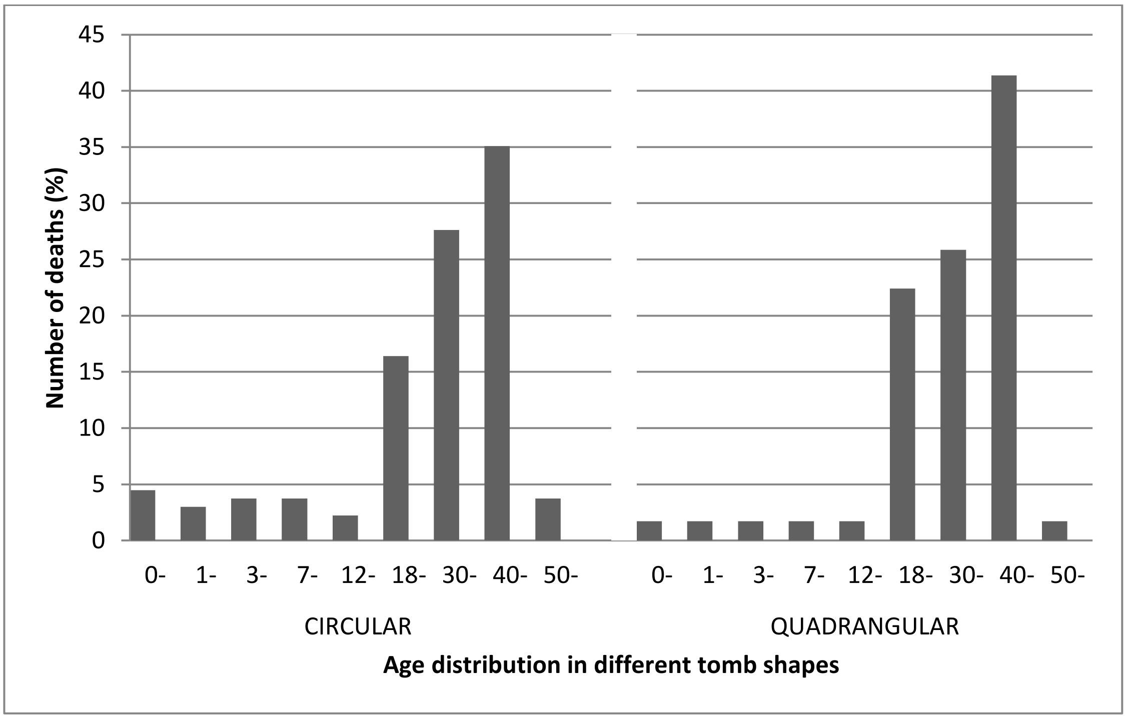


Figure 7.33. Age-specific mortality (d_x) by tomb shape (N=192).

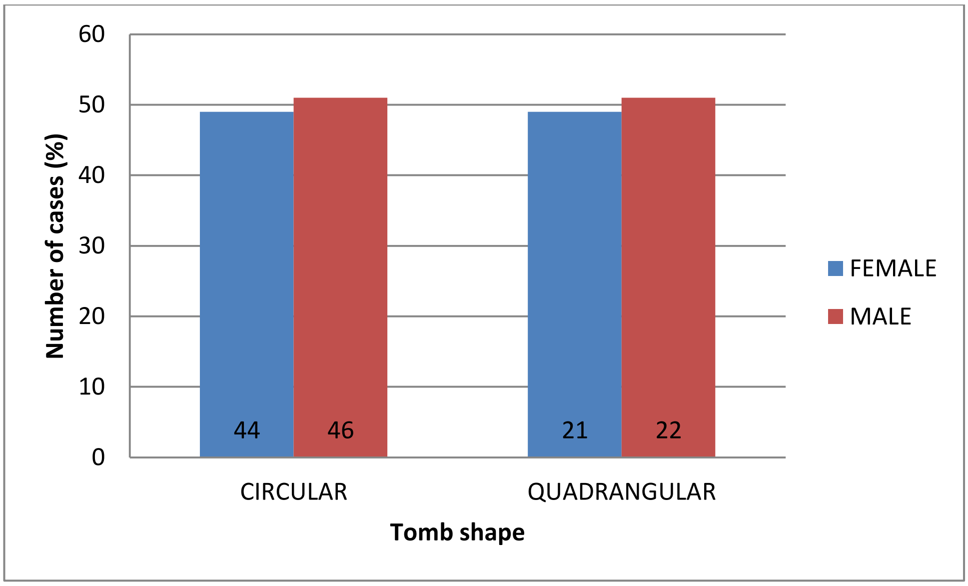


Figure 7.34. Sex distribution (counts shown inside bars) across groups of different tomb shape (N=133).

7.3 Types of funerary disposal and preservation patterns

7.3.1 Characteristics of Voudeni's tomb contexts

7.3.1.1 Classification of tomb contexts in different types of disposal

Human remains in Voudeni tombs were found in five different disposal types: 1) primary (intact) burials, 2) disturbed primary burials, 3) single secondary bone deposits, 4) commingled secondary bone deposits, and 5) scattered/isolated remains (for definitions of disposal types: Table 5.8). This broad classification corresponds to general type of disposal as assessed by contextual taphonomic analysis; further details on the formation and structure of the assemblages are presented below. The human remains from these contexts are essentially separated in two groups: those that received no secondary human treatment either intentionally or accidentally, found as intact primary burials; and all others that resulted from some form of human interference. *Disturbed primary burials* are considered an intermediate category which will be explored both among the primary and the secondary contexts, depending on the research focus (i.e. secondary acts or burial position, 7.4.1 and 7.4.2 respectively).

The classification of all contexts by disposal type and a detailed summary of chronological and basic demographic information by context are presented in Tables 7.X4 and 7.X5 respectively. The current study focuses on the 75 studied tomb contexts with preserved human remains; all subsequent analysis refers only to these. The contexts under study are representative of the total distribution which includes 11 more contexts without surviving skeletal elements (labelled *MISS* in Table 7.X4). Frequencies of the disposal types are shown in Figure 7.35, and their associated MNI frequencies in Table 7.9 and Figure 7.36. The majority of burials received some sort of secondary treatment, with three out of four individuals ending up in commingled secondary assemblages.

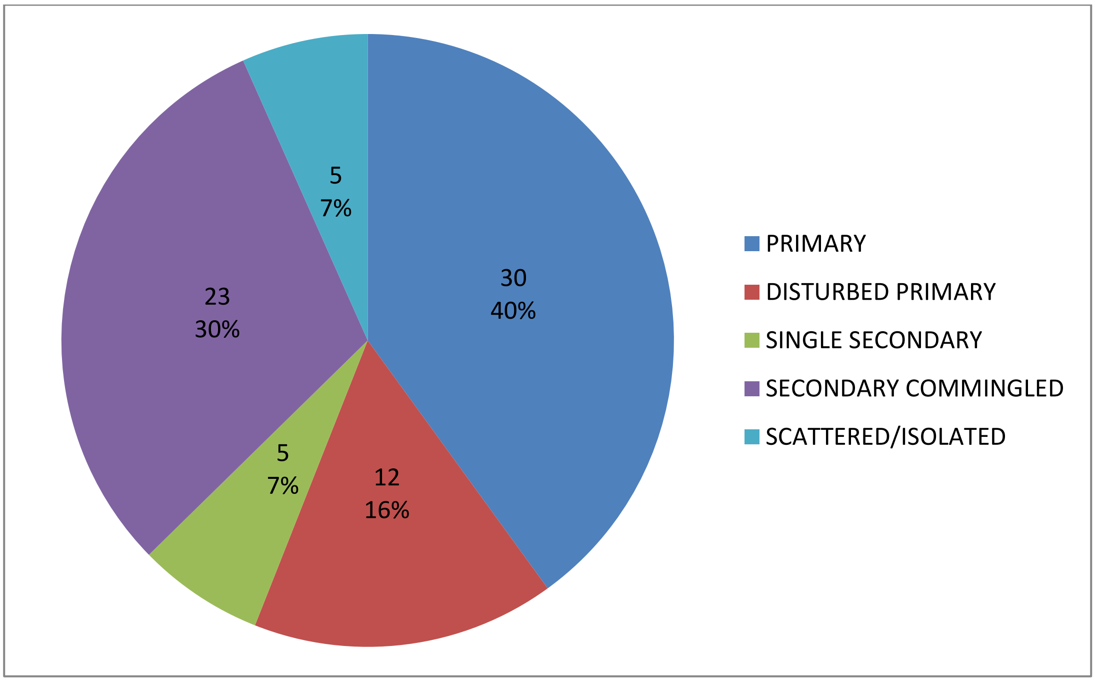


Figure 7.35. Frequencies of tomb contexts by disposal type (N=75; counts and percentages shown).

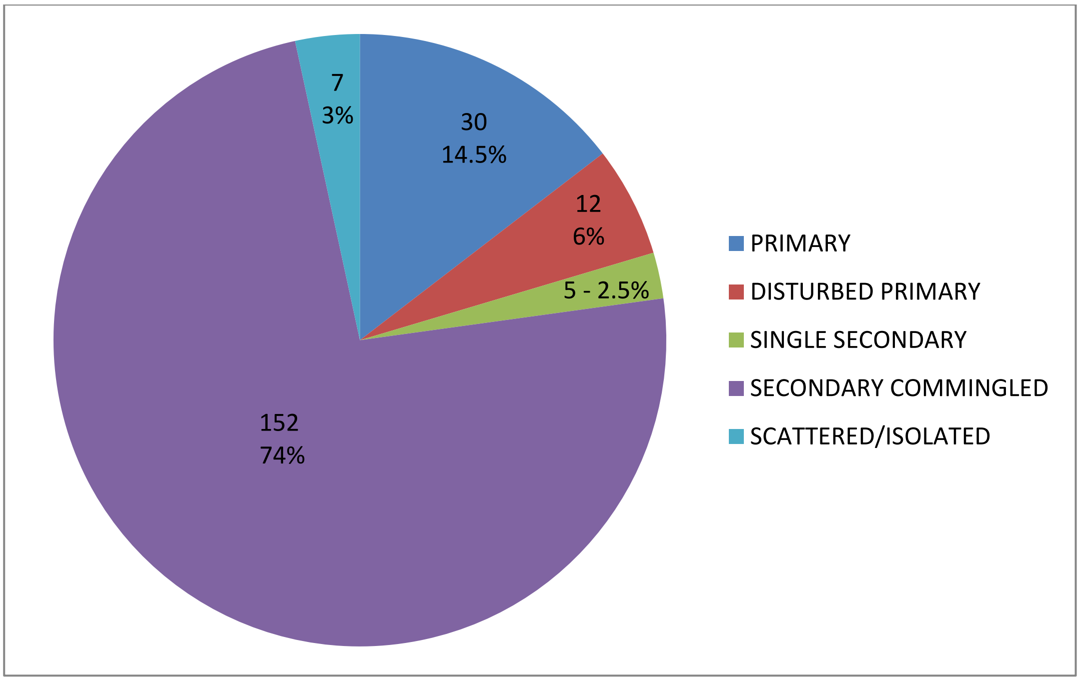


Figure 7.36. Frequencies of individual cases (MNI=206) by disposal type (N=75; counts and percentages shown).

Table 7.9. Frequencies of tomb contexts and their respective MNI by tomb and type of disposal (N=number of contexts per category).

TOMB	PRIMARY		DISTURBED PRIMARY		SINGLE SECONDARY		COMMINGLED SECONDARY		SCATTERED /ISOLATED		TOTAL	
	N	MNI	N	MNI	N	MNI	N	MNI	N	MNI	N	MNI
4	3	3	1	1	1	1	1	1	1	1	**7**	**7**
5	6	6					1	12			**7**	**18**
9			2	2			1	6			**3**	**8**
10							1	6			**1**	**6**
13	2	2					1	4			**3**	**6**
14							1	10			**1**	**10**
15							1	4			**1**	**4**
16	1	1	1	1	1	1	3	20	2	4	**8**	**27**
17	3	3	1	1			1	15			**5**	**19**
20	1	1					1	9			**2**	**10**
22	4	4					1	11			**5**	**15**
24					1	1	1	6			**2**	**7**
26	2	2	1	1					1	1	**4**	**4**
27			2	2	1	1	2	3			**5**	**6**
28							1	13			**1**	**13**
31			2	2							**2**	**2**
39	3	3					2	4	1	1	**6**	**8**
40	2	2	1	1			1	14			**4**	**17**
42	1	1	1	1	1	1	2	12			**5**	**15**
44	2	2					1	2			**3**	**4**
TOTAL	**30**	**30**	**12**	**12**	**5**	**5**	**23**	**152**	**5**	**7**	**75**	**206**

The different types of disposal varied in terms of spatial location, with bones placed either on the chamber's floor or in pits in the chamber or dromos. Cross-tabulation of the burial contexts and MNI across the different locations is shown in Table 7.10. The prevailing pattern is that of placement on the floor, with the difference being statistically significant both for number of contexts and MNI counts (Fisher's exact=18.75; df=8; $p<0.05$; and x^2=39.7; df=8; $p<0.01$ respectively). The observed pattern, however, is greatly influenced by the spatial attributes of primary and single secondary depositions, of which very few are placed in pits (10% of the primary burials, and only one single secondary deposit). It should be noted that the commingled secondary assemblages are almost equally distributed between floor and pits, with higher (albeit not statistically significant) MNI in the latter (12 floor deposits with MNI: 67 versus 11 pits with MNI: 85).

Table 7.10. Frequencies of burial contexts and their respective MNI by location and type of disposal (N=number of contexts per category; abbreviations: *Dist prim:* disturbed primary; *Single sec:* single secondary; *Comm sec:* commingled secondary).

LOCATION	PRIMARY		DISTURBED PRIM		SINGLE SEC		COMM SEC		SCATTERED /ISOLATED		TOTAL	
	N	MNI	N	MNI	N	MNI	N	MNI	N	MNI	N	MNI
CHAMBER FLOOR	27	27	12	12	4	4	12	67	5	7	**60**	**117**
CHAMBER PIT	3	3	0	0	1	1	8	57	0	0	**12**	**61**
DROMOS PIT	0	0	0	0	0	0	3	28	0	0	**3**	**28**
TOTAL	**30**	**30**	**12**	**12**	**5**	**5**	**23**	**152**	**5**	**7**	**75**	**206**

7.3.1.2 Chronology of different tomb contexts

The examination of temporal patterns in the occurrence of various disposal types is essential for the final interpretation of funerary choices. Even though the strong bias imposed by the masking effect of the final act(s) over the earlier ones (cf. 5.4.7) prohibits statistical analysis, it is, nonetheless, necessary to consider whether the same forms of funerary disposal appear in both periods. The disposal types are classified by concise date based on the time of the act which produced each context (e.g., time of secondary removal if the context is secondary, see 5.4.7), while the MNI count of each group follows the date of the actual skeleton(s) (see detailed dates in Table 7.X5). As seen in Table 7.11, all disposal types appear in both early and late periods, although the majority is of a late or multiple date, as expected due to the cumulative effect of chamber tomb burials. The same applies to the MNI of primary (and disturbed primary) burials, but the opposite trend is observed in the MNI of commingled and scattered assemblages, where far more interments are of early date (60 early versus 16 late), even if their secondary treatment occurred later.

Table 7.11. Tomb contexts (N) and MNI frequencies by type of disposal and concise date.

TYPE OF DISPOSAL	EARLY (LHIIIA-/B)		LATE (LHIIIC)		MIXED/INDETERMINATE (LHIIIA-/&LHIIIC)		TOTAL	
	N	MNI	N	MNI	N	MNI	N	MNI
PRIMARY	2	2	28	28	0	0	**30**	**30**
DISTURBED PRIMARY	1	1	11	9	0	2	**12**	**12**
SINGLE SECONDARY	1	2	2	2	2	1	**5**	**5**
COMM. SECONDARY	6	60	9	16	8	76	**23**	**152**
SCATTERED/ISOLATED	0	2	2	0	3	5	**5**	**7**
TOTAL	**10**	**67**	**52**	**55**	**13**	**84**	**75**	**206**

Since many of the secondary contexts dated to the LHIIIC period contained earlier material, it is important to investigate if secondary treatment (or a particular form of it) was only applied to earlier and not interments belonging to the same ceramic phase. By comparing the dates of the skeletal material and their associated funerary context (i.e. *date of bones* and *date of time of act*, Table 7.X5), it appears that this is not the case. Secondary treatment could involve a variety of previous interments, either of the same phase or earlier, regardless of temporal proximity.

With regard to the specific location of commingled secondary assemblages (in pits or piles on the floor, Tables 7.10, 7.17), the frequencies of the different location groups by concise date are shown in Figure 7.37. Primary pit deposits are all dated to the LHIIIC period (cf. 7.4.2), while secondary pits are evenly distributed in both periods. The only exception are the pits found in dromoi, which only date to the LHIIIC. The prevalence of floor deposits in the category of indeterminate/mixed date reflects the higher chances of commingling and sequential accumulations of funerary material in the open environment of the chamber's floor.

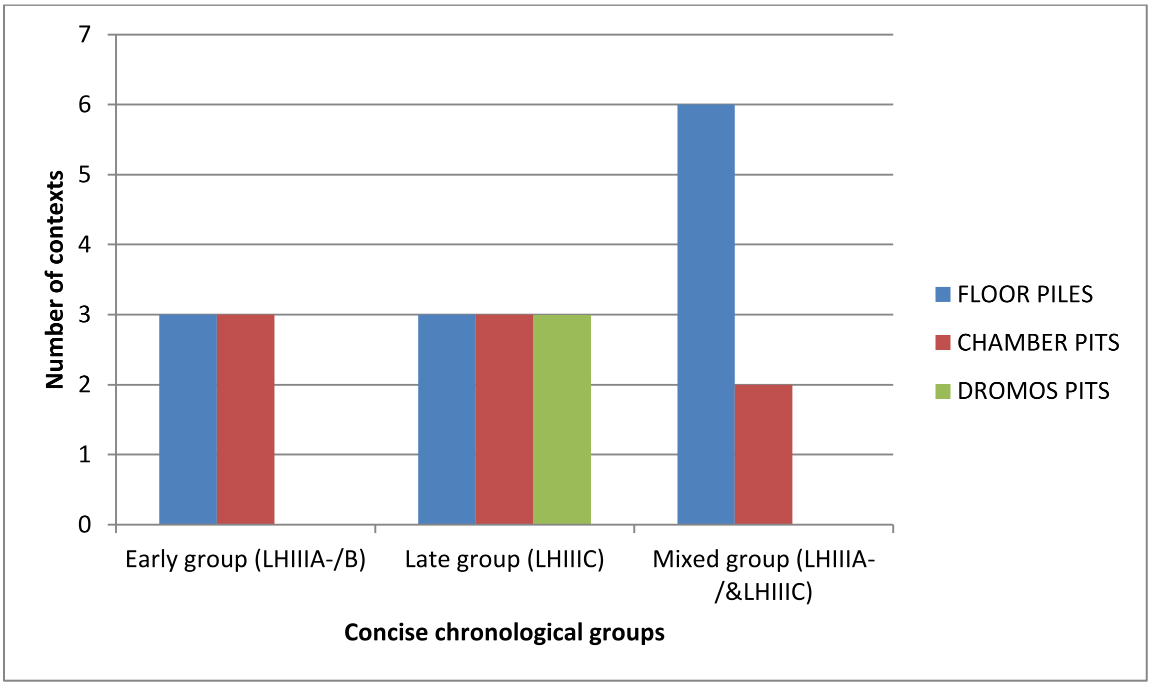


Figure 7.37. Classification of commingled secondary assemblages by location and concise date (N=23).

7.3.2 Preservation patterns

The study of preservation patterns is critical in the assessment of the formation process of the skeletal assemblages, allowing a better understanding of the exact character of each case and the identification of natural and/or cultural forces that produced them (cf. 5.4.3). The strength of this analysis lies in the consideration of the entire spectrum of preservation aspects and their variability (i.e. bone representation, completeness, and surface condition). Quantitative analysis, which would be based on average or modal preservation scores by type of disposal, is not applicable in the present study as it would mask the most informative aspects of the observed variation. It is rather preferred to present a qualitative description of the observed preservation tendencies in each type of disposal, in order to form an inference basis for the funerary practices that will be examined in the next section (7.4).

The preservation scores for all contexts were given per tomb in Chapter 6 (definitions and classification criteria in 5.4.3). Here four new combined categories were created for each preservation aspect, in order to better reflect preservation variability of each context:

- *Good preservation* (well and fairly-well preserved; i.e. standard classes 1 and 2, or 1 to 2)
- *Good/moderate preservation* (fairly well and moderately preserved remains, when there was not a clear prevalence of one or the other in the assemblage, i.e. class 2 to 3 or diverse 1-3)
- *Moderate preservation* (i.e. prevalence of class 3)
- *Moderate/poor preservation* (any level of preservation that includes a significant amount of poorly preserved remains, i.e. class 3 to 4, or 4)

The distribution of burial contexts by disposal type across surface preservation and bone completeness is shown in Figure 7.38 and analytically quantified in Table 7.X6. Bone representation index (BRI) values for all contexts are listed in Chapter 6.

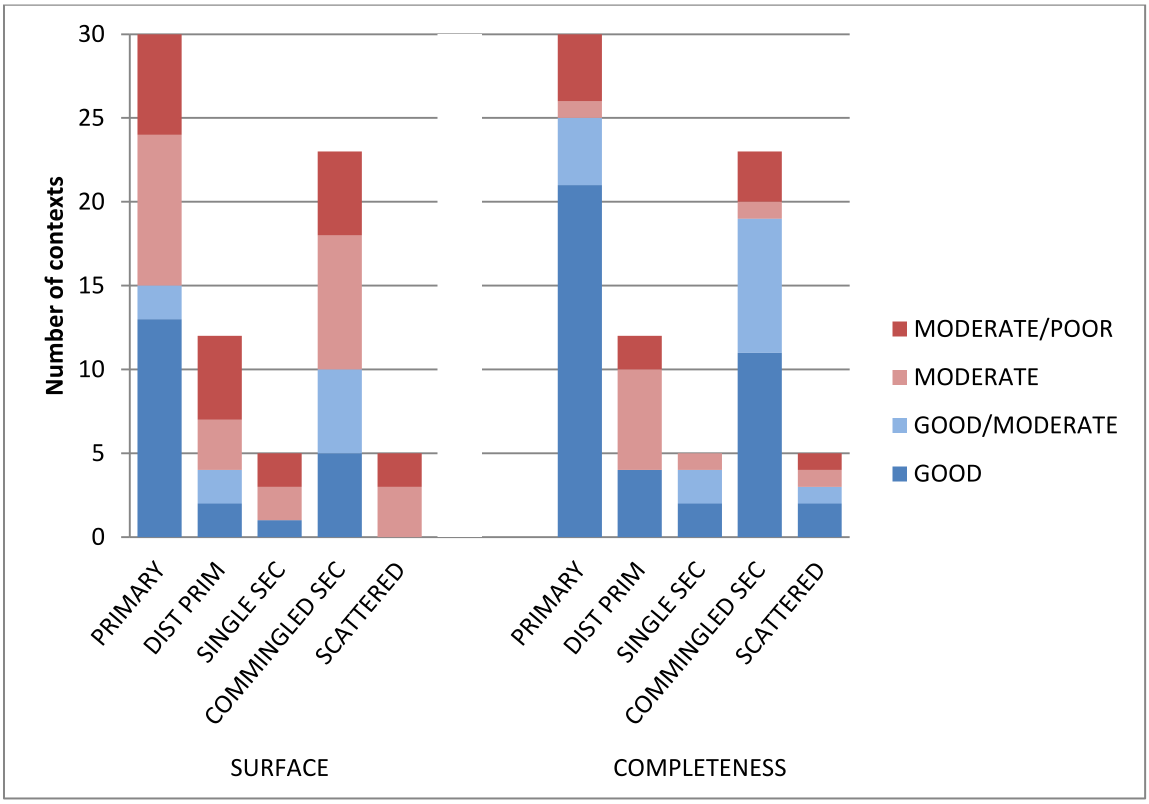


Figure 7.38. Frequencies of tomb contexts by level of surface preservation and bone completeness in different types of disposal (N=75; abbreviations: *Dist prim:* disturbed primary; *Single sec:* single secondary; *Commingled sec:* commingled secondary).

Primary burials comprise the most well-preserved group. The majority are well preserved both in terms of bone completeness and representation (with most skeletal elements showing high BRI values), although surface preservation varies equally between high and low levels, similar to the pattern observed in secondary commingled remains. Commingled and single secondary assemblages are also well preserved in terms of completeness, but show a diverse pattern of bone representation, which varies considerably among the different contexts suggesting different formation processes (see 7.3.3). Disturbed primary burials and scattered remains are the less well preserved groups both in terms of completeness and surface preservation as well as of bone representation (which usually appears low and inconsistent, with only specific elements preserved, see below).

In terms of preservation in different locations, it is observed that human remains in pits tend to be more well-preserved than those exposed on the floor (Figure 7.39). The three primary burials found in pits are characterised by the highest preservation and bone representation levels. The unique single secondary deposition placed in a pit (T27/ΣT) is also characterised by high bone representation and preservation levels except for surface preservation. The commingled secondary assemblages in pits are also better preserved than most of their on-floor counterparts, although preservation and bone representation patterns are more diverse than in primary pit contexts and some poorly preserved cases are encountered in this category.

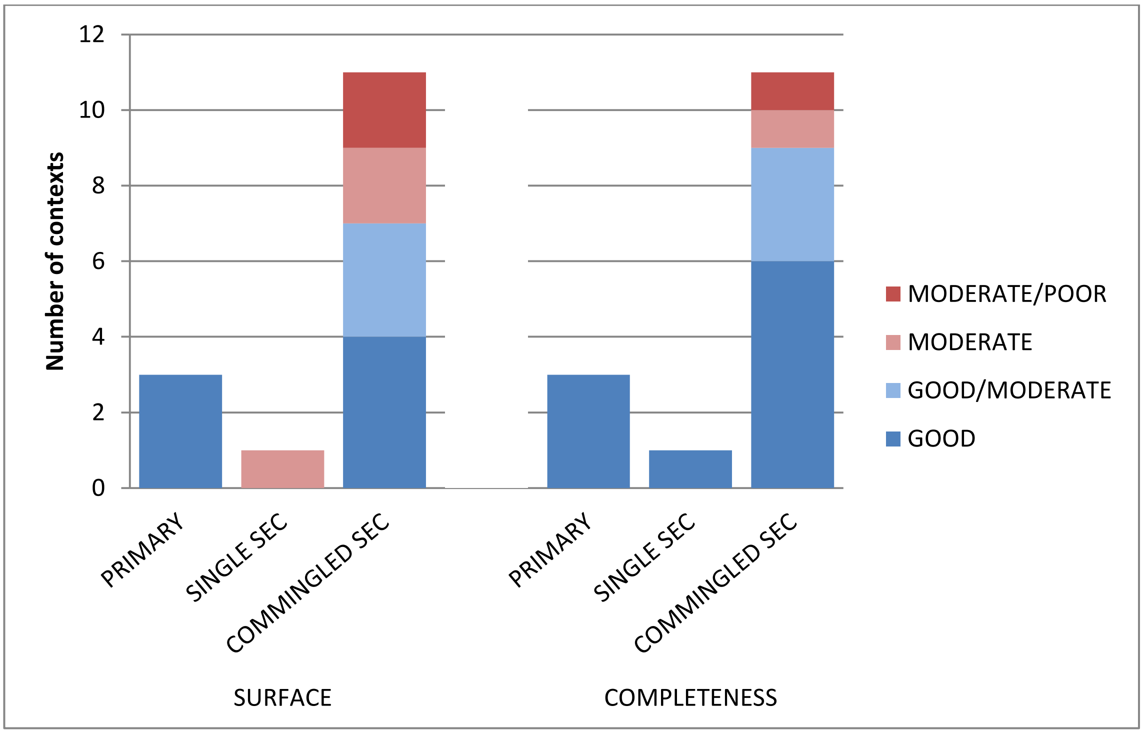


Figure 7.39. Frequencies of pit burial contexts by levels of surface preservation and bone completeness (N=15; abbreviations: *Single sec:* single secondary; *Commingled sec:* commingled secondary).

7.3.3 Distinguishing the character of ambiguous tomb contexts

Several criteria, especially preservation patterns, anatomical relationships and spatial considerations, were employed to assess the type of each bone assemblage and illuminate, when possible, specific issues such as the intentional or accidental character of certain actions (definitions and criteria: 5.4.5; assessment per tomb: Chapter 6). Prior to proceeding to the analysis of the specific funerary practices performed in Voudeni and their further discussion, it is important to clarify, as much as possible, the character of the most ambiguous contexts. The cases assigned to the types of primary burials and commingled secondary deposits are evidently interpreted as products of intentional action (but to further distinguish between a 'ritualised' action and one dictated by practical necessities is a much more complex and not always feasible task, see 8.1.1). In the case, however, of scattered remains, single secondary deposits, and disturbed primary burials, the distinction between natural and cultural causes of their formation and the question of intentionality are often ambiguous.

Scattered/isolated remains represent the most ambiguous category, which in fact encompasses diverse cases. Most of them are characterised by minimal bone representation, usually of small-sized elements, suggesting that they represent remains accidentally left behind during an act of secondary removal of earlier interments. This is the case for three out of the five such contexts included in this study, plus a few more cases of single extraneous bones found mixed with primary burials (but not enlisted as separate contexts; cf. chapter 6). However, two other cases (T16/N-Ξ, T26/Δ; 40% of total scattered contexts) involve isolated crania located at an otherwise empty point on the floor, suggesting that an intentional purpose for that act cannot be ruled out.

Single secondary deposits are assemblages of skeletal re-deposition of a single individual. The vast majority of these contexts (4 out of 5) were characterised by good or good/moderate representation (at least of major elements) and bone completeness (Figure 7.38), attesting to intentionality in the act of their relocation. T24/B is the only exception as it demonstrates only moderate preservation levels and an unusual BRI pattern (cf. 6.12), which could allow the alternative interpretation that this assemblage comprises accidental remains from an earlier removed burial (same as scattered/isolated elements).

Disturbed primary burials included skeletons partially preserved *in situ*, whose disturbance could not be securely attributed simply to natural causes. The cases where poor preservation patterns suggested that the under-representation of certain elements, bone fragmentation, and/or obliteration of the original position was evidently due to natural causes (e.g., a raw clay floor which facilitated bone decay) and not to post-depositional human intervention were not included here, but classified in the category of intact primary burials. However, the ambiguous cases were included in the group of disturbed burials, if the possibility of natural causes or human–induced but purely accidental disturbance (e.g., trampling, possibly unintentional) could not be ruled out. These include cases when only few and sporadic skeletal elements are missing (otherwise high BRI values, class 1) while completeness and surface condition vary, often being moderate or poor (Figure 7.38). Specifically, three out the twelve contexts (T4/B, T16/B, and T27/Γ) display these characteristics. Two more contexts remain questionable (T31/B and T31/Γ) mainly because they lacked precise recording at the time of recovery. The majority (60%), however, of the cases assigned as '*disturbed primary burials*' are securely characterised by some sort of intentional human action. This can take different forms: re-alignment of parts of the skeleton (T17/M), selective removal of prominent skeletal elements (e.g., skull in T9/A), or extensive removal of specific parts of the skeleton (especially of the upper body, burials preserving lower body only, i.e. T9/B, T26/Γ, T27/A, T42/B, and possibly also dubious cases T31/B and T31/Γ). These practices are further explored in section 7.4 and finally discussed in Chapter 8.

7.3.4 Exploring age and sex distributions in tomb contexts of different type of disposal, date, and location

The comparison of age and sex distribution by type of disposal is essential for investigating potential differences in the basic funerary treatment of adults versus sub-adults, and females versus males. Analytical demographic data by tomb context is presented in Table 7.X5. Cases of indeterminate age are excluded from the current analysis, since their proportionate re-attribution as applied per tomb cannot work accurately across the various context types. *Age distribution* in all types of disposal (N=123) is shown in Table 7.12. The difference in the cumulative age distribution between primary and secondary contexts approaches statistical significance (Wilcoxon Mann-Whitney, $z=-1.9$; $p<0.07$), due to the pronounced under-representation of sub-adults in the primary group (Figure 7.40). This trend mostly reflects the LHIIIC under-representation of sub-adults, since primary contexts are predominantly dated to that period (cf. 7.2 and 7.4.2). Exploring exclusively the age distribution of the commingled secondary assemblages by date (Figure 7.41), we see that the Adult/Total ratio is 0.55 (Early group, LHIIIA-/B) vs. 0.64 (Late group, LHIIIC), reflecting lower numbers of sub-adults in the latter case, but not total absence (cf. demographic analysis in 7.2; for final discussion: Chapter 8).

Table 7.12. Age distribution by type of skeletal disposal (N=123, excluding cases of indeterminate age).

TYPE OF DISPOSAL	INF I (0-1)	INF II (1-3)	CH I (3-7)	CH II (7-12)	ADOL (12-18)	YA (18-30)	PA (30-40)	MA (40-50)	OA (50-)	TOTAL
PRIMARY	0	0	0	1	0	4	6	10	1	**22**
DISTURBED PRIMARY	0	0	0	0	0	2	3	0	0	**5**
SINGLE SECONDARY	0	0	0	1	0	1	0	3	0	**5**
COMMINGLED SECONDARY	8	6	7	4	4	11	20	27	2	**89**
SCATTERED/ ISOLATED	0	0	0	0	0	1	0	1	0	**2**
TOTAL	**8**	**6**	**7**	**6**	**4**	**19**	**29**	**41**	**3**	**123**

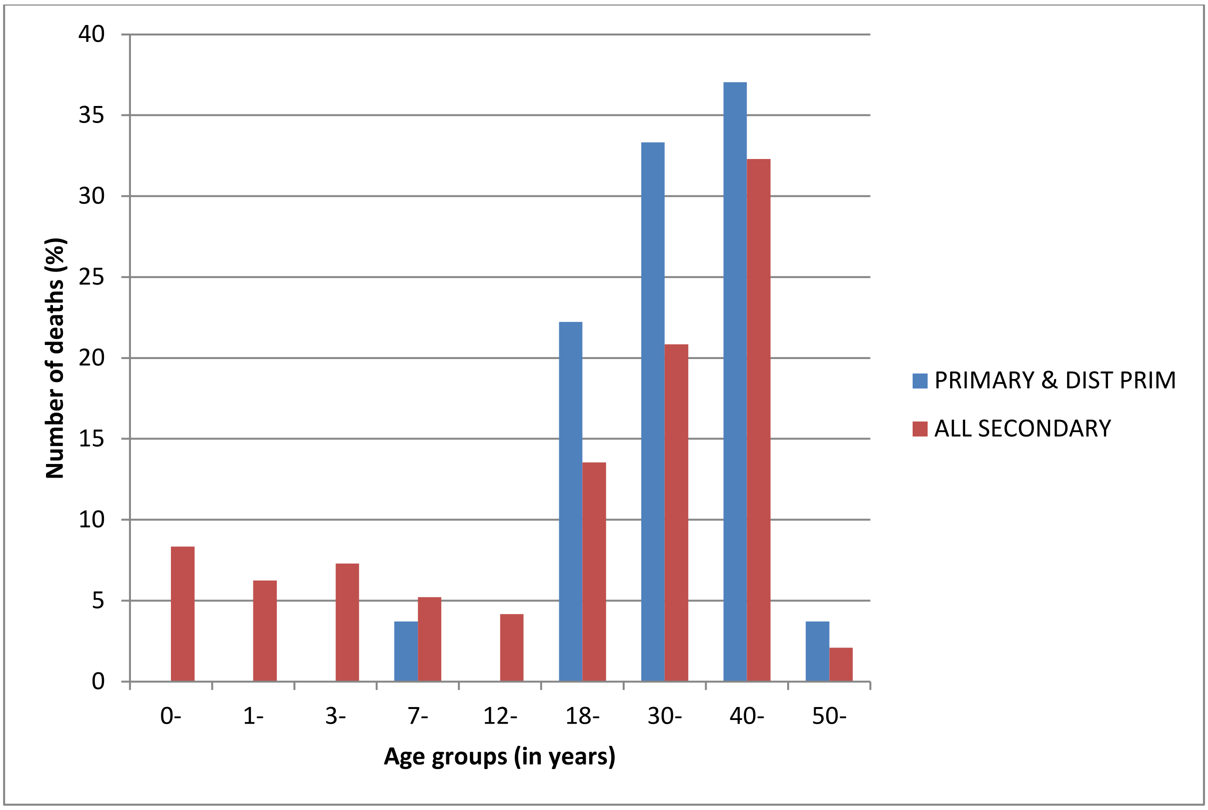


Figure 7.40. Comparison of age distribution (%) between primary (including disturbed primary=*dist prim*) and all secondary tomb contexts (N=123).

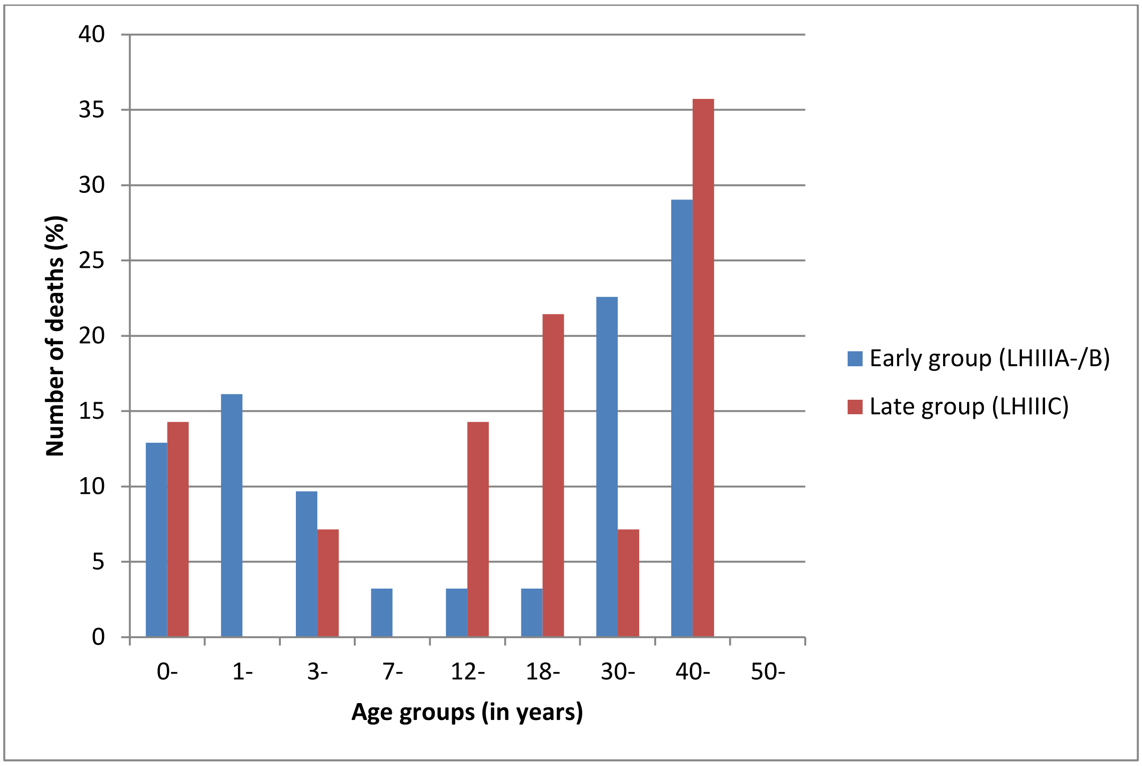


Figure 7.41. Age distribution (%) of the main chronological groups in commingled secondary assemblages (N=45, excluding cases of mixed/indeterminate date and of indeterminate adult age).

Sex distribution across the different types of disposal is characterised by fairly equal ratios in the secondary contexts but a (not significant) prevalence of males in the primary group (Table 7.13). Cumulative comparison between primary and secondary contexts is shown in Figure 7.42, with statistical analysis confirming a trend of preferential male inclusion in primary contexts, albeit not significant (x^2=2.87; df=1; p=0.09). This male prevalence should be related to the LHIIIC trend of increased male numbers (cf. 7.2.3), since primary burials are almost exclusively dated to that period.

Table 7.13. Sex distribution of adult cases by type of disposal (N=175).

	FEMALE		MALE		INDETERMINATE		
TYPE OF DISPOSAL	F	F?	M?	M	?	NON-OBS	**TOTAL**
PRIMARY	8	2	1	16	0	2	**29**
DISTURBED PRIMARY	3	1	3	4	0	1	**12**
SINGLE SECONDARY	2	0	0	2	0	0	**4**
COMMINGLED SECONDARY	43	7	6	40	10	17	**123**
SCATTERED/ISOLATED	2	1	0	1	0	3	**7**
TOTAL	**58**	**11**	**10**	**63**	**10**	**23**	**175**
	69		**73**		**33**		

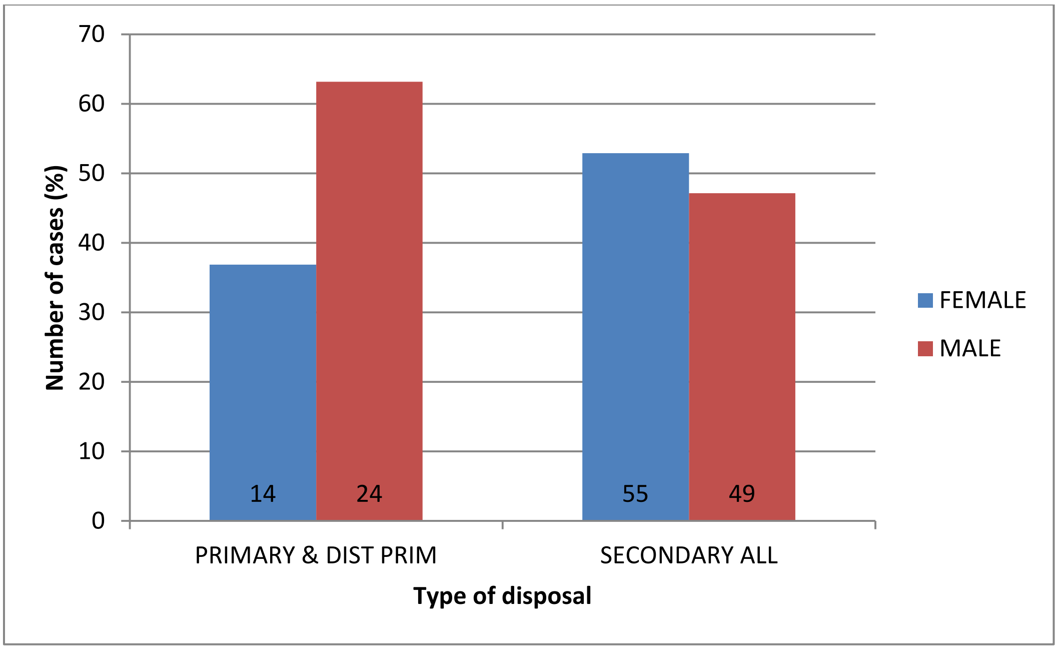


Figure 7.42. Sex distribution (%, counts shown inside bars) across primary versus secondary (combined) tomb contexts (N=142, excluding indeterminate cases).

Pits versus floor piles (commingled secondary deposits)

No significant differences were observed either between the number of commingled secondary contexts in floor piles and pit deposits, or in the number of skeletons they contained (7.3.1). The same is true for sex and age distributions between the different locations. In terms of sex, female-male ratio is almost equal in all categories (Table 7.14). *Age distribution* across the different locations shows generally similar patterns of age-specific mortality, despite slight (and not statistically significant) differentiations in peaks at different age intervals. The pattern seen in dromos pits is the only one which displays more marked discrepancies (especially due to pronounced under-representation of sub-adults), but sample size is not large enough for a significant comparison (Figure 7.43; Table 7.X7). Looking at the cumulative values of all pits versus the floor deposits, an almost equal ratio of Adult/Total number of deaths is shown between the two groups (Floor piles: 0.69 vs. pits: 0.66).

Table 7.14. Sex distribution of adult cases in commingled secondary assemblages by context location (N=96, excluding indeterminate/non-observable sex).

	FEMALE	MALE	TOTAL
FLOOR PILES	24	22	**46**
CHAMBER PITS	14	16	**30**
DROMOS PITS	11	9	**20**
TOTAL	**49**	**47**	**96**

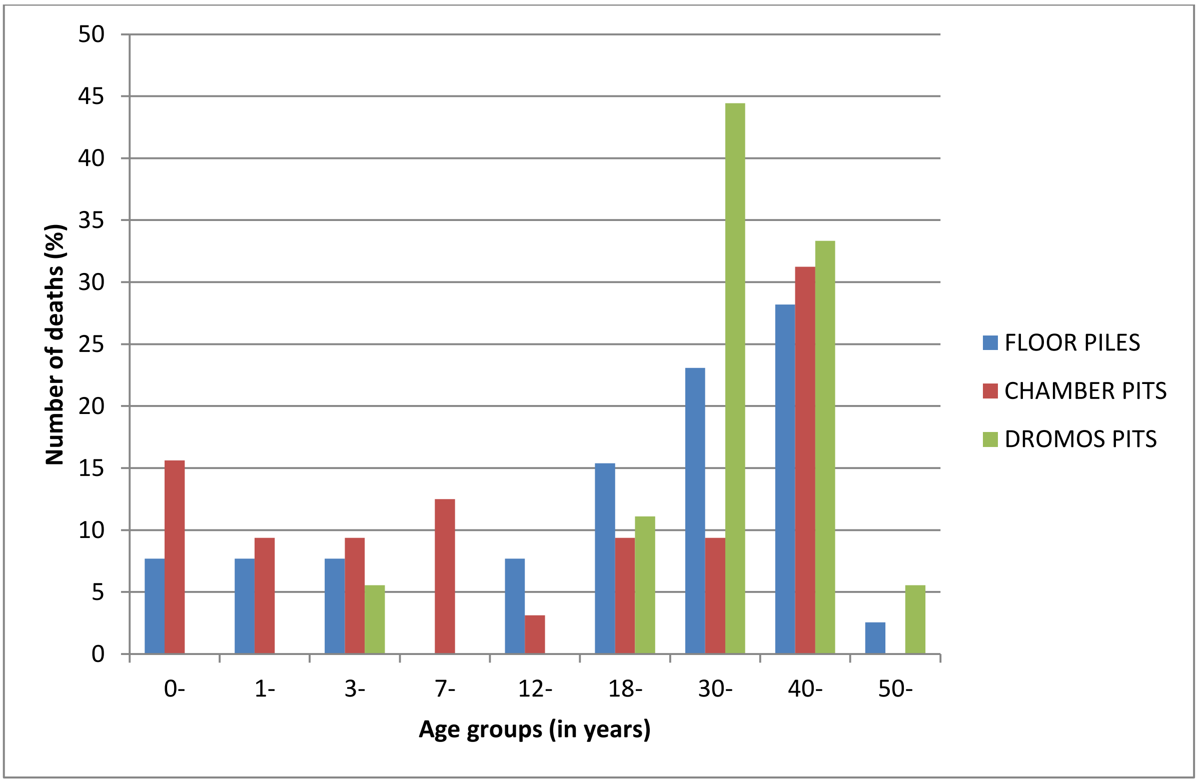


Figure 7.43. Age distribution (%) of commingled secondary remains by context location (N=89, excluding cases of indeterminate adult age).

7.4 The funerary practices

7.4.1 The assessment of specific secondary acts: choices of bone removal to outside the tomb and differential bone retention

In addition to the main choices involved in the secondary treatment of the dead (type of disposal and location), a variety of specific secondary acts were defined and assessed based on the criteria outlined in 5.4.6. These acts include the general or selective bone removal to outside the tomb, and the selective retention of specific bone elements or fairly complete re-deposition of individual skeletons into secondary deposits. Evidence for or against these acts was evaluated in all secondary and disturbed primary contexts (summarised in Table 7.15 by context and type of disposal and Table 7.16 by tomb and date). The assessment of these acts is affected by inherent problems of the archaeological record. Even though positive evidence is fairly secure due to the application of strict criteria, negative evidence is often harder to ascertain, and a substantial number of cases remain indeterminate, even if weak evidence for the acts in question was present (see below). A further issue concerns the obliteration of earlier practices by later ones, which prevents accurate chronological comparisons. Finally, the statistical investigation of the occurrence of these acts in different disposal types is not valid, since evidence for each practice is not always independent between the different funerary contexts (e.g., selective cranial removal from one context might result in prominent bone retention in another within the same tomb). For these reasons, no statistical analysis is attempted. Rather the results are explored on the basis of both type of disposal and tomb, in order to enable a qualitative discussion of the different funerary practices, even if precise evaluation of the frequency of their occurrence is impossible.

Table 7.15. Evidence for specific secondary acts (i.e. bone removal to outside the tomb; selective cranial removal; retention of fairly complete individual skeletons; selective retention of prominent bones) in different types of disposal by tomb context. (Y=evidence for; N=evidence against; ?=indeterminate evidence; L.B.=retention of lower body only).

TYPE OF DISPOSAL	CONTEXT	REMOVAL TO OUTSIDE	SKULL REMOVAL	INDIVIDUAL RETENTION	PROMINENT BONES RETENTION
DISTURBED PRIMARY BURIALS	T4/B	N	N	Y	N
	T9/A	Y	Y	Y	N
	T9/B	Y	?	Y	N (L.B.)
	T16/B	N	N	Y	N
	T17/M	N	N	Y	N
	T26/Γ	Y	?	Y	N (L.B.)
	T27/A	?	?	Y	N (L.B.)
	T27/Γ	?	N	Y	N
	T31/B	Y	?	Y	N (L.B.)
	T31/Γ	Y	?	Y	N (L.B.)
	T40/Γ	N	N	Y(?)	N
	T42/B	Y	?	Y	N (L.B.)
SINGLE SECONDARY BURIALS	T4/Γ	?	N	Y	Y
	T16/Γ	N	N	Y	N
	T24/B	?	?	Y	N
	T27/ΣT (PIT I)	N	N	Y	N
	T42/Γ	?	N	Y	Y
COMMINGLED SECONDARY	T4/H & WEST CHAMBER	?	?	N	?
	T5/Θ-IΓ (PIT I)	Y	N	Y	N
	T9/SEC.DEP. & T9/Γ	Y	Y	Y	N
	T10/SEC.DEP.	Y	Y	N	N
	T13/A-B (PIT I)	N	N	Y	N
	T14/A-H	Y	N	N	Y
	T15	Y	Y	N	Y
	T16/ΣT-M	Y	N	N	Y
	16/O (PIT I)	?	N	Y	Y
	T16/Π-Y (PIT II)	?	N	N	Y
	T17/A-K (PIT I)	?	N	Y	Y
	T20/B-Δ (PIT I)	Y	N	Y	N
	T22/A-B (PIT I)	Y	N	N	Y
	T24/A	Y	Y	N	N
	T27/Δ-E	?	?	N	N
	T27/Z (upper PIT II)	?	?	N	N
	T28/B-Z (PIT I)	Y	N	Y	N
	T39/Δ	Y	N	N	N
	T39/E	Y	N	Y	N
	T40/Δ-I	N	N	N	N
	T42/Δ-Θ (PIT I)	N	N	Y	N
	T42/PIT II	Y	N	Y	Y
	T44/Γ	Y	N	Y	N
SCATTERED ISOLATED	T4/ EAST CHAMBER	?	?	N	?
	T16/A (extra scattered)	?	N	N	N
	T16/N-Ξ	?	N	N	Y
	T26/Δ	Y	?	N	Y
	T39/Γ (extra scattered)	?	N	N	N

Table 7.16. Evidence for specific secondary acts in Voudeni's tombs by concise date (*Y*=evidence for; *N*=evidence against; *?*=possible but indeterminate evidence; *L.B.*=lower body retention; *for some*=for some specimens only; *incl. SUB-AD*=including sub-adults).

	BONE REMOVAL TO OUTSIDE			SKULL REMOVAL			INDIVIDUAL RETENTION			PROMINENT BONES RETENTION		
TOMB	**LHIIIA-B**	**LHIIIC**	**IND. DATE**	**LHIIIA-B**	**LATE**	**IND. DATE**	**LHIIIA-B**	**LHIIIC**	**IND. DATE**	**LHIII A-B**	**LHIIIC**	**IND. DATE**
T4	?	N		?	N	N			Y (T4/Γ, possibly of Late date)			Y (T4/Γ, possibly of Late date)
T5	Y	Y		N	N		N	N		N	N	
T9	Y	Y		Y	Y		N	Y		N	N (L.B.)	
T10			Y			Y		?		N	N	
T13		N (or minimal)			N			Y			N	
T14		Y			N			N			Y	
T15		Y (inferred for the initial tomb)			Y (inferred for the initial tomb)			N			Y	
T16	Y	N		N	N		Y (SUB-AD)	Y		Y	N	
T17		? (possibly for small bones)						Y			Y	
T20	Y	N		N	N			Y (for some)		N	N	
T22	Y	N		N	N				N			Y
T24			Y			Y			Y (for 1 skeleton)			N
T26	?	Y				N		N			N (L.B.)	Y
T27			? (probable)			? (possible)	Y (SUB-AD)	N			? (possible in lower Pit II & L.B. in 27/A)	
T28	Y (for some)	Y		N	N		Y (for some, incl. SUB-AD)	N			N	
T31		?						?			N (L.B)	
T39	Y	N				?	N		Y (mostly SUB-AD)			N
T40	N			N			N			N		
T42	Y (for some)	?		N	N		Y	Y		N	Y (&L.B.)	
T44	Y	N			N			Y			N	

7.4.1.1 The occurrence of bone removal and retention practices in different types of disposal

Removal of skeletal material (randomly or selectively), not only within the tomb but also from the tomb to the outside, appears to have been a common practice. The majority of commingled secondary deposits and disturbed primary burials display evidence for some level of bone removal (Figure 7.44, Tables 7.15-7.16). Preservation patterns suggest that the practice was carried out to varying extents, often only partially applied to some of the skeletons and not to the entire assemblage (Chapter 6 and Table 7.16). The practice may also have been applied to many of the indeterminate contexts. It was often impossible to securely distinguish an act of removal to the outside from that to another secondary context inside the tomb or even identify it at all, if only very few elements were removed, not sufficient to provide a visible signal. Finally, bone removal to outside the tomb cannot be determined if it was carried out on the entirety of a skeleton, with no trace left behind.

Selective removal of crania[66] was evident in some cases, but it does not appear as a widely applied custom. The act was positively attested only in one disturbed primary burial and four commingled secondary assemblages (Figure 7.44, Tables 7.15-7.16). It needs, however, to be stressed that the definition of this practice concerns a strictly *selective* removal practice, applied entirely or at least predominantly to cranial remains alone. If some tomb contexts have been subjected to non-exclusive skull removal (e.g., disturbed primary burials that preserve only the lower limbs), these are classified as indeterminate with regard to this specific act.

Retention of fairly complete individual skeletons (*individual retention*) is evident in the totality of disturbed primary and single secondary depositions. The only possible exception consists of the disturbed primary burial T40/Γ. The semi-articulated skeleton was found mixed with commingled secondary remains, with no sign of care for retention of the body as a segregated individual skeleton (6.18). In contrast, scattered/isolated contexts obviously do not satisfy the criteria of retention of fairly complete skeletons. The investigation of evidence for this act focuses, therefore, on secondary commingled deposits and is based on the extent to which we can identify the presence of a significant quantity of bones from the same skeleton within the

[66] N.B. abbreviated as *skull removal* although mandibles not always included.

commingled remains (see specific criteria in 5.4.6). Negative evidence does not necessarily imply that complete skeletons were not re-assembled. This is true especially in contexts that do not show evidence of bone removal, suggesting that entire skeletons were in fact dispersed in the commingled assemblage (e.g., T40/Δ-I). Negative evidence signifies that if commingling and disturbance were so profound that the process of re-individuation was prevented in the current analysis, then it is highly unlikely that special care was taken in preserving the individual identity of particular skeletons.

Close to 50% of secondary commingled assemblages show some evidence for retention of individuals (Figure 7.44, Tables 7.15-7.16). In most cases this applies only to some individuals within an assemblage. Occasionally however the act appears to have been carried out in the majority of the secondarily re-deposited skeletons (in contexts T13/A-B, T39/E, T42/Δ-Θ, and T42/Pit II). Methodological limitations of skeletal individuation during lab analysis and the lack of field recording on exact bone provenance often prevented the assessment both of the extent of secondary re-assembling (i.e. as of prominent bones only or of complete skeletons) and the placement of the re-assembled individuals within the secondary assemblage (i.e. as clustered bones or dispersed).

Selective retention of prominent bones, with special emphasis on skulls and larger long bones, commonly occurs in all secondary contexts except for disturbed primary burials (Figure 7.44). The practice was inferred based on patterns of skeletal representation and it may have been applied to the entire assemblage or some of its cases (Tables 7.15-7.16). Occasionally the attention towards specific bones was reflected in their clustered placement within the commingled remains (e.g., in T14/A-H and T16/ΣT-M). The complete absence of evidence for selective retention in the category of disturbed primary burials may be viewed as biased to some extent due to the strict application of the methodological criterion of '*prominent*' bones selection. Otherwise, the selective retention of articulated lower limbs (occasionally with articulating foot bones) in half of the cases of disturbed primary burials is a choice ideologically similar to selective retention (cf. chapter 8).

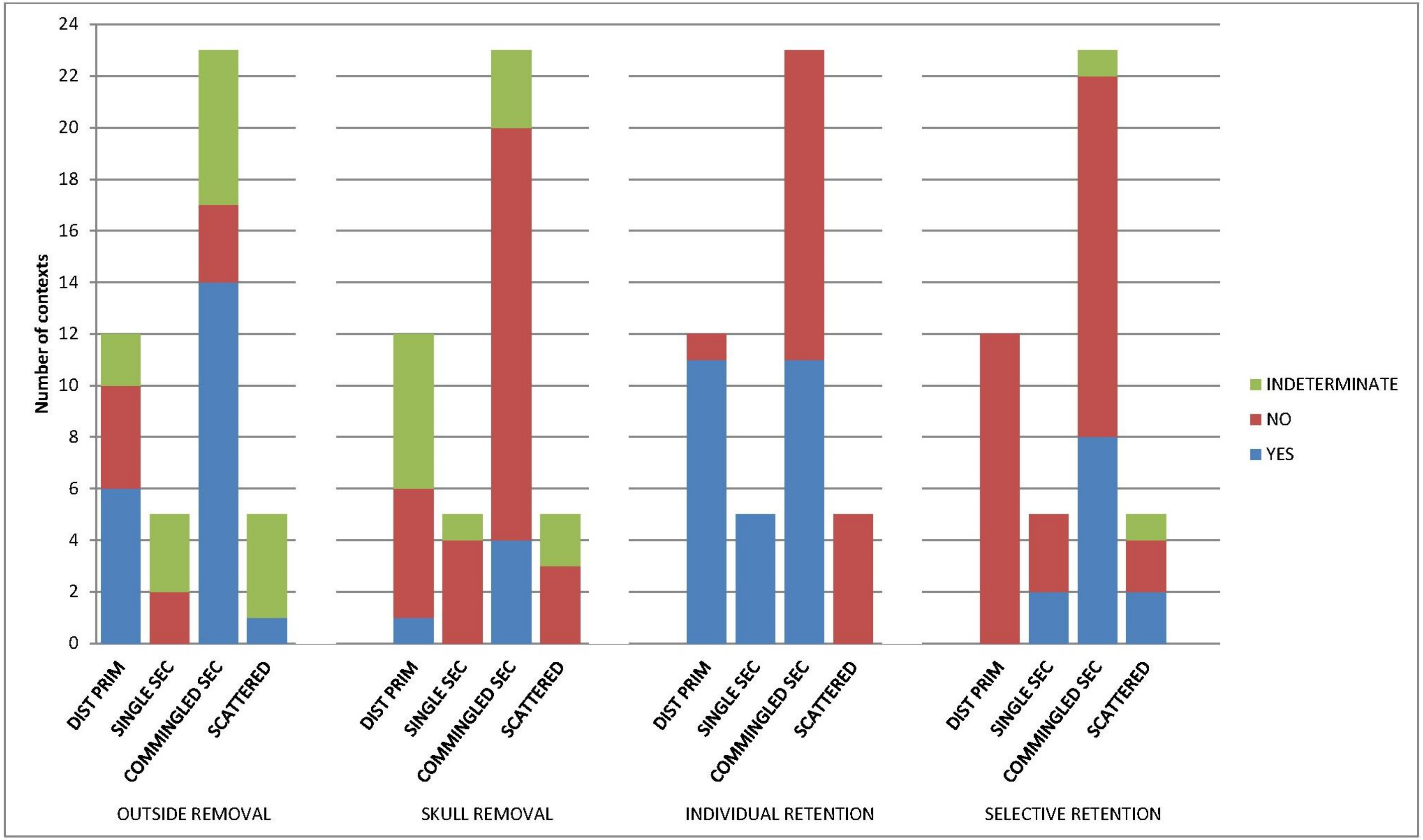


Figure 7.44. Evidence of specific secondary acts (i.e. bone removal to outside the tomb; selective cranial removal; retention of fairly complete individual skeletons; selective retention of prominent bones) in different types of funerary disposal (N=45).

7.4.1.2 Chronological determination of specific secondary acts

Despite the limitations imposed in chronological comparisons of funerary choices by the masking effect of the last activities in the tomb over earlier ones, it was occasionally possible to assess chronological differences in the occurrence of secondary acts. An effort was made to detect possible differences between the skeletal material and the act that produced its final context (Table 7.X5). Some contexts provided evidence for more than one episode of re-deposition. In these cases, even if the general dating fell into a broader (continuous or mixed) category, certain bones and/or specific acts could sometimes be associated with a specific time period, by careful examination of the internal funerary sequence (cf. 5.4.7). Nonetheless, due to the inability of a more precise dating of all skeletal cases per context, a meaningful investigation of temporal patterns in secondary funerary acts is better accomplished by looking at them on the basis of tomb rather than context.

The evidence for specific secondary practices by time period as observed per tomb is shown in Table 7.16. Positive indications of *bone removal to outside the tomb* dated to the LHIIIA-B period were found in nine tombs (T5, T9, T16, T20, T22, T28, T39, T42, T44), and to the LHIIIC in six (T5, T9, T14, T15, T26, T28), while two more cases (T10, T24) were of an indeterminate date. Another two LHIIIC cases (T31 and T17) display probable evidence of the practice. *Selective cranial removal* is only attested in Tomb 9 in both LHIIIA-B and LHIIIC. In Tomb 15 this practice occurred in sub-Mycenaean times, and in Tombs 10 and 24, it cannot be dated precisely. *Retention of fairly complete skeletons* dated to the LHIIIA-B period is attested in four tombs (T16, T27, T28, T42), and dated to the LHIIIC in seven (T9, T13, T16, T17, T20, T42, T44, including all ages). Evidence of the practice was also present in three cases of indeterminate date (T4, T24 and T39). *Selective retention of prominent bones* is shown only in one LHIIIA-B case (T16), in four of LHIIIC date (T14, T15, T17, T42), and three indeterminate (T4, T22, T26). Similarly, the selective retention of the lower body in disturbed primary burials is attested only in LHIIIC cases (T5, T9, T14, T26, T31, T42).

7.4.1.3 Further analysis of the occurrence of specific secondary acts and their inter-relations

The co-occurrence of specific secondary acts in individual tombs is summarised in Table 7.17, allowing a quick visual representation of the extent of variation in secondary practices observed within the same tomb, and their inter-relations. Bone transfer within the tomb (in piles or pits), and/or removal to outside the tomb, is obviously the prerequisite for any other secondary act, and thus the most commonly attested practice. Therefore, those tombs which show evidence of at least two additional specific secondary acts (e.g., cranial removal, retention of individual skeletons, prominent bones' retention) are considered the most rich in terms of diversity of secondary practices. These are tombs T9, T16, T17, T42, and possibly T27 (T15 is excluded from this analysis, since it only offers indirect evidence for the occurrence of these practices at the original place of burial, before the final transfer of the remains there). Tombs 40 and 31 demonstrate the least variation (although related evidence in the latter might have been obscured due to post-depositional problems, cf. 6.16). In terms of preference between the use of floor piles and pits, we can see that, except for Tomb 13, in all other cases pits co-exist with piles on the floor. Finally, no consistent correlation of the specific secondary acts is observed.

Table 7.17. The occurrence of specific secondary acts per tomb (*X*: present; *X?* possibly present; *(X)*: inferred for other initial location; *DR*: in dromos).

TOMB	OUTSIDE BONE REMOVAL	SKULL REMOVAL	INDIVIDUAL RETENTION	PROMINENT BONES RETENTION	USE OF PILES ON FLOOR	USE OF PITS FOR SECONDARY BURIALS	USE OF PITS FOR PRIMARY BURIALS
T4			X	X	X		
T5	X				X	X	
T9	X	X	X		X		
T10	X	X			X		
T13			X			X	X
T14				X	X		
T15	(X)	(X)		(X)	X		
T16	X		X	X	X	X	
T17			X	X	X	X (DR)	X
T20	X		X		X	X	
T22	X			X	X	X (DR)	
T24	X	X	X		X		
T26	X			X			
T27	X?	X?	X	X?	X	X	
T28	X		X		X	X	
T31	X?			X?			
T39	X		X		X		
T40					X		
T42	X		X	X	X	X (&DR)	
T44	X		X		X		

Some hypotheses worth examining include the relationship between the duration and frequency of use of a tomb and the extent of diversity in funerary acts, as well as differentiating patterns in funerary diversity between different tomb groupings (based on location, size, and shape). The former is investigated through time span in use and MNI numbers. Indeed, the most increased levels of diversity in secondary acts are attested in tombs used in more than one time period, with the vast majority belonging to the group in continuous LHIIIA-LHIIIC use (cf. Figure 7.7). However, the hypothesis that an increase in MNI may result in more episodes of secondary removals and thus increased variability of the specific choices involved in these acts cannot be confirmed by current evidence. For example, the four tombs with the highest MNI are (in descending order) T16, T17, T5 and T40 (Table 7.1), and are all different in the extent and type of diversity in funerary practices, lacking any consistent pattern. Similarly, neither the level of diversity nor the patterns of co-occurrence of specific acts appears to correlate with any defining variable of the main tomb groupings (i.e. location, size, shape of tombs). The only exception is seen in the act of selective cranial removal which appears to have occurred exclusively in tombs of the upper plateau of the hill (T9, T10, T24, T27). With specific regard to the use of pits across the different tomb groupings, it is observed that pits of secondary burials in the chamber are only absent from large tombs, and otherwise appear in tombs of all locations, both circular and quadrangular, of medium and small sizes. The pits in the dromos are absent from tombs of the upper hill, while they are encountered only in tombs of medium and small size and circular shape. Finally, primary burial pits are encountered in small and medium circular tombs, both in the upper and lower hill.

The possibility of differential application of these practices in specific sex or age groups is explored (act occurrence by tomb context in Tables 7.15-7.16, sex and age information by context summarised in Table 7.X5). Since the qualitative evidence for these acts is not always individually attested but inferred from the general bone representation in each context, it was not usually possible to provide a precise estimation of sex or age of the subjects. For this reason, the question of gender or age-based differences in the application of specific acts is only approached through a general assessment of the main observed patterns and is not statistically explored. In terms of sex, all specific secondary acts of removal and retention have been applied both to females and males. In the case of removal to the outside, it is of course impossible to examine the removed material, but the fairly equal sex ratio of the recovered bones (cf. 7.2.3) suggests an equal level of removal as well. In the case of cranial removal, the skeletons from which skulls were taken included both sexes. The same is true for choices of retention of individual skeletons, both in single secondary deposits and the re-individualised cases of commingled assemblages. The practice of prominent bone retention is also equally applied to both sexes, with one exception: in the category of disturbed primary burials, five out of six (83.5%) of those that preserved only the lower body were males, a percentage far greater than the male frequency in the total group of primary and disturbed primary burials (cf. 7.4.2). In terms of age, it is observed that bone removal to outside the tomb, retention of individuals, and retention of prominent bones were all applied both to adults and sub-adult individuals, but to different extents (chapter 6). Even though there is a general under-representation of sub-adults, there is evidence of at least a few sub-adult skeletons suggesting their inclusion in all the discussed secondary acts, except for selective cranial removal, of which there is no evidence so far. The act of retention of individual skeletons, in particular, appears frequently applied to sub-adults, especially in the Early (LHIIIA-/B) period, where the majority of evidence for this act concerns, often exclusively, sub-adults (Table 7.16).

7.4.2 The burial attributes of primary and disturbed primary contexts

The main burial attributes of the 30 intact primary and 12 disturbed primary cases are presented in Tables 7.18-7.19 and summarised by sex in Figures 7.45-7.49 (for classification and terminology: 5.4.5). In terms of location within tomb, all interments were placed on the chamber floors, except for three LHIIIC cases (T13/Γ, T13/Δ, and T17/Ξ) which were placed in pits. The group of primary and disturbed primary burials comprised 41 adult individuals (23 males, 15 females, and three of indeterminate sex) and one child. Three cases are dated to the LHIIIA period (7%), 37 to the LHIIIC (88%), and two are of an indeterminate LHIIIA/LHIIIC date (5%). Since the observed customs predominantly reflect the burial of adults during the LHIIIC period (and mostly its later phases), neither chronological nor basic age distinctions (i.e. adult versus sub-adult) can be statistically explored. Similarly, the sample size is too small to statistically explore possible differentiation of the burial attributes between the different adult age categories; in any case, no such differentiations are suggested by the age distribution across the different burial attributes (Tables 7.18-7.19). It is possible, however, to: a) contextually explore different choices in each burial attribute and the possibility of differential preferences across different tomb groupings (based on tomb location, size, and shape); b) statistically examine the sex distribution across different burial attributes; and c) explore the extent of variability seen in primary burial attributes in individual tombs.

The most common *body orientation* (cranium to pelvis) is S-N followed by E-W (Figure 7.45). It should be noted that SE-NW and NE-SW comprise slight variations of the E-W category. Body orientation appears usually parallel or perpendicular to axis of dromos (cf. 7.1). The most common placement is in parallel with the tomb's dromos, with the head of the deceased placed towards the rear of the chamber and the limbs closer to the entrance (i.e. S-N; single exception: T16/A, oriented N-S). The second alternative is dominated by the E-W (and SE-NW) orientation; the cases of opposite (W-E) orientation are far fewer and are explained either by space concerns (T5/H) or uncommon tomb orientation (T17/Λ and T17/Ξ; T44/A and T44/B); the only exception is T4/Δ, in which the choice does not relate to these factors. No differentiation in these patterns was found with regard to the different tomb groupings (cf. Tables 7.1, 7.18-19). Sex distribution does not display any significant differences across the different orientations. It is, though, noted that the two most unusual cases are both males (T16/A and T4/Δ).

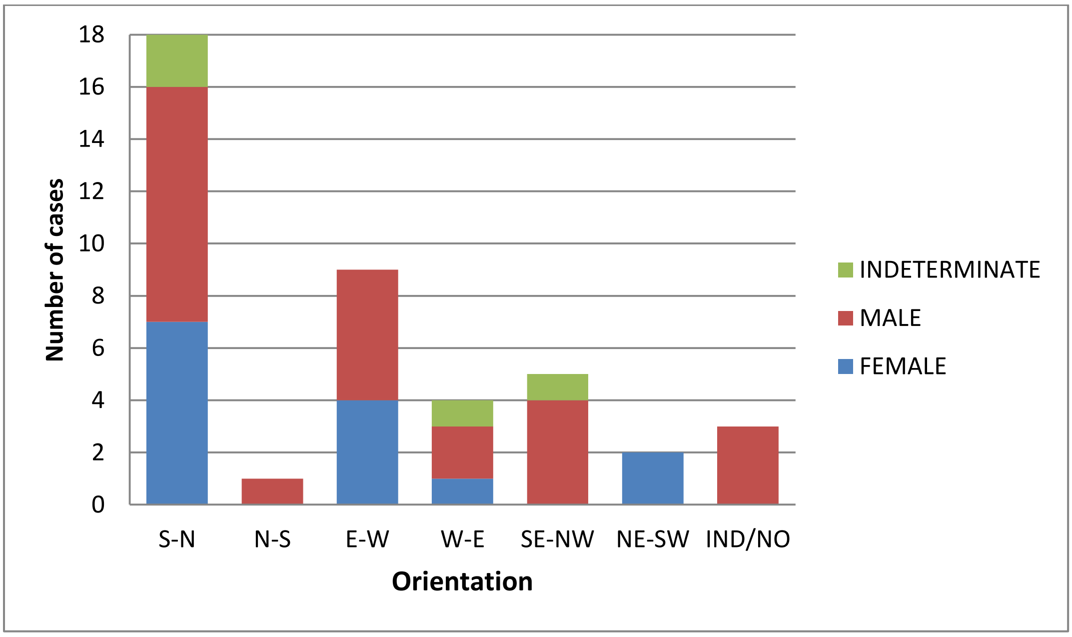


Figure 7.45. Frequencies of primary and disturbed primary burials (N=42) across body orientations by sex.

Table 7.18. Primary burials (intact, N=30): main characteristics.

CONTEXT	SEX	AGE	DATE	ORIENTATION	SKULL FACING	LOWER LIMBS POSITION	SIDE OF PLACEMENT	UPPER LIMBS POSITION
T4/A	M	MA	LHIIIC	E-W	N	CONTRACTED	R	FOLDED ON CHEST
T4/Δ	M	YA	LHIIIC	W-E	SE	CONTRACTED	R	R EXTENDED, L ON PELVIS
T4/E	NO	AD	LHIIIC MIDDLE/LATE	SE-NW	NW	EXTENDED		?
T5/Γ	F?	PA	LHIIIC MIDDLE/LATE	S-N	W	CONTRACTED	L	R ON PELVIS, L EXTENDED
T5/Δ	M	OA	LHIIIC MIDDLE/LATE	S-N	E	CONTRACTED	R	R EXTENDED, L ON PELVIS
T5/E	M	AD	LHIIIC MIDDLE/LATE	S-N	N	KNEES-UP		UNUSUAL
T5/ΣΤ	F?	YA	LHIIIC MIDDLE/LATE	S-N	W	CONTRACTED	L	R EXTENDED, L ON PELVIS
T5/Z	M	AD	LHIIIC MIDDLE/LATE	S-N	E	FLEXED	R	PARALLEL
T5/H	M	YA/PA	LHIIIC MIDDLE/LATE	W-E	SE	FLEXED	R	R EXTENDED, L ON PELVIS
T13/Γ (PIT II)	M	MA	LHIIIC MIDDLE/LATE	S-N	E	FLEXED	R	R ON PELVIS AND L ON CHEST
T13/Δ (PIT III)	M	MA	LHIIIC MIDDLE/LATE	S-N	W	CONTRACTED	L	R ON CHEST, L EXTENDED
T16/A	M	PA	LHIIIC MIDDLE/LATE	N-S	W	FLEXED	R	BOTH ON PELVIS
T17/Λ	F	YA	LHIIIC EARLY	NE-SW	S	FLEXED	L	FOLDED ON CHEST
T17/N	M	PA	LHIIIC MIDDLE/LATE	E-W	N	FLEXED	R	R ON CHEST, L ON PELVIS
T17/Ξ (PIT II)	F	MA	LHIIIC EARLY	NE-SW	S	UNUSUAL	L	R PARALLEL, L ON CHEST
T20/A	M	MA	LHIIIC EARLY	E-W	S	FLEXED	L	BOTH ON PELVIS
T22/Γ	F	YA/PA	LHIIIC MIDDLE/LATE	S-N	N	EXTENDED		?
T22/Δ	F	MA	LHIIIC MIDDLE/LATE	S-N	E	CONTRACTED	R	EXTENDED
T22/E	M	MA	LHIIIC MIDDLE/LATE	SE-NW	NW	EXTENDED		BOTH ON PELVIS
T22/ΣΤ	M	MA/OA	LHIIIC MIDDLE/LATE	SE-NW	NW	EXTENDED		EXTENDED
T26/A	M	AD	LHIIIC MIDDLE/LATE	SE-NW	NW	EXTENDED		?
T26/B	NO	AD	LHIIIC MIDDLE/LATE	S-N	?	?	?	?
T39/A	F	MA	LHIIIC MIDDLE/LATE	E-W	S	FLEXED	L	R ON CHEST, L EXTENDED
T39/B	M	MA	LHIIIC MIDDLE/LATE	E-W	W	EXTENDED		HANDS TO SHOULDERS
T39/Γ	M	MA	LHIIIC MIDDLE/LATE	E-W	N	CONTRACTED	R	BOTH ON PELVIS
T40/A	F	PA	LHIIIA	S-N	W	FLEXED	L	?
T40/B	F	PA	LHIIIA	S-N	E	FLEXED	R	?
T42/A	M?	YA	LHIIIC MIDDLE/LATE	S-N	W	FLEXED	L	R ON PELVIS, L EXTENDED
T44/A	F	PA	LHIIIC MIDDLE/LATE	W-E	N	CONTRACTED	L	EXTENDED
T44/B		CH2	LHIIIC MIDDLE/LATE	W-E	N	CONTRACTED	L	EXTENDED

Table 7.19. Disturbed primary burials (N=12): main characteristics.

CONTEXT	SEX	AGE	DATE	ORIENTATION	SKULL FACING	LOWER LIMBS POSITION	SIDE OF PLACEMENT
T4/B	F	PA	LHIIIC	E-W	N	CONTRACTED	R
T9/A	F	YA	LHIIIA/LHIIIC	S-N	W	FLEXED	L
T9/B	M?	AD	LHIIIA/LHIIIC EARLY	S-N	W	CONTRACTED	L
T16/B	M?	YA/PA	LHIIIC MIDDLE/LATE	S-N	E	FLEXED	R
T17/M	M?	YA	LHIIIC MIDDLE/LATE	SE-NW	?	?	?
T26/Γ	M	AD	LHIIIC MIDDLE/LATE	?	?	?	?
T27/A	F	AD	LHIIIC	E-W	?	?	?
T27/Γ	NO	AD	LHIIIC MIDDLE/LATE	S-N	E	?	R
T31/B	M	AD	LHIIIC MIDDLE/LATE	?	?	FLEXED	?
T31/Γ	M	PA	LHIIIC MIDDLE/LATE	?	?	?	?
T40/Γ	F?	PA	LHIIIA	E-W	?	?	?
T42/B	M	AD	LHIIIC MIDDLE/LATE	S-N	E	FLEXED	R

The direction towards which the skull was facing (Figure 7.46) varies equally between N, E, and W (NW and SE are variations of the N and S variants). The S (or SE) direction, which in most tombs coincides with the rear of the chamber, is not a common choice, and appears mostly related to space issues or uncommon tomb orientation (e.g., T5/H, T17/Λ, T17/Ξ, T20/A, T39/A), except for T4/Δ. Direction of skull facing does not significantly differ between sex groups, and the variability of this attribute did not differ between different tomb groups either.

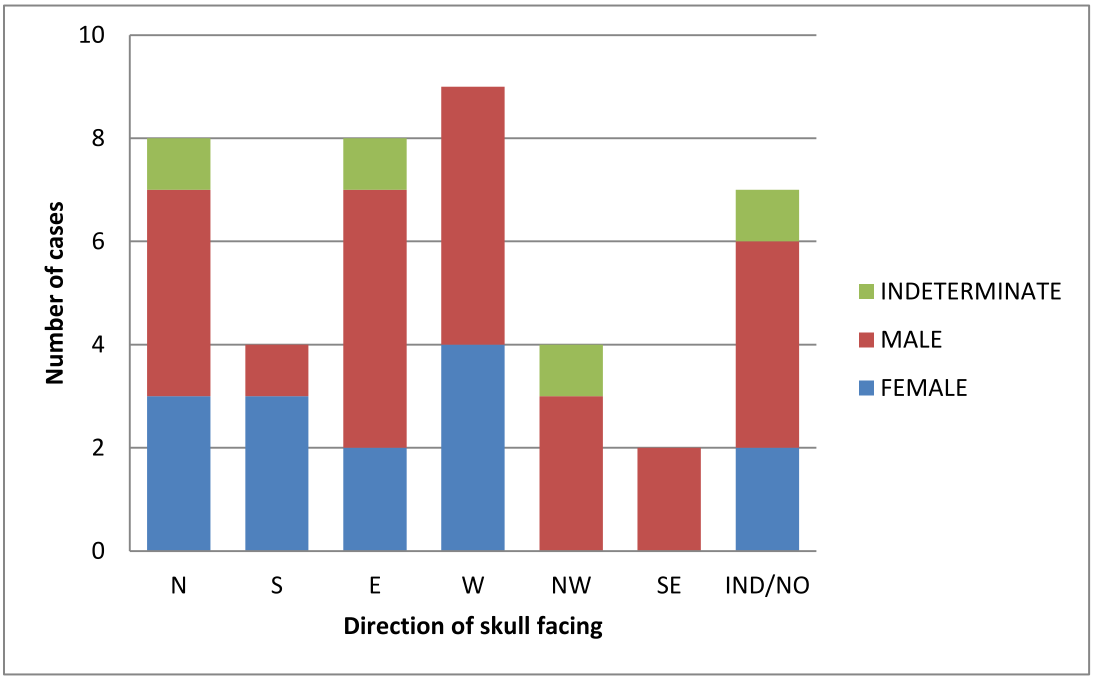


Figure 7.46. Frequencies of primary and disturbed primary burials (N=42) across skull facing categories by sex.

Body deposition relates to *lower limb position*: burials with extended legs or in the 'knees-up' position were placed supine, while flexed and contracted bodies were placed on their side. Frequencies of lower limb positions by sex are shown in Figure 7.47. Flexed and contracted categories comprise variations of a very similar position which is by far the prevalent choice (statistically significant when compared combined against the extended variant: x^2=13.36; df=1; p<0.01). The extended position occurs only in LHIIIC Middle/Late cases, but the chronological bias in favour of the LHIIIC period does not allow a significant comparison. In terms of sex, even though there is only one female extended case, the difference is not statistically significant. Lower limb positions did not significantly differ in different tomb groups, but the following trends were noticed: a) The extended position was attested only once in the upper hill tombs

(16.7%), while all other extended cases (83.3%) were found in tombs located in mid-hill; b) Small tombs did not include extended or contracted burials.

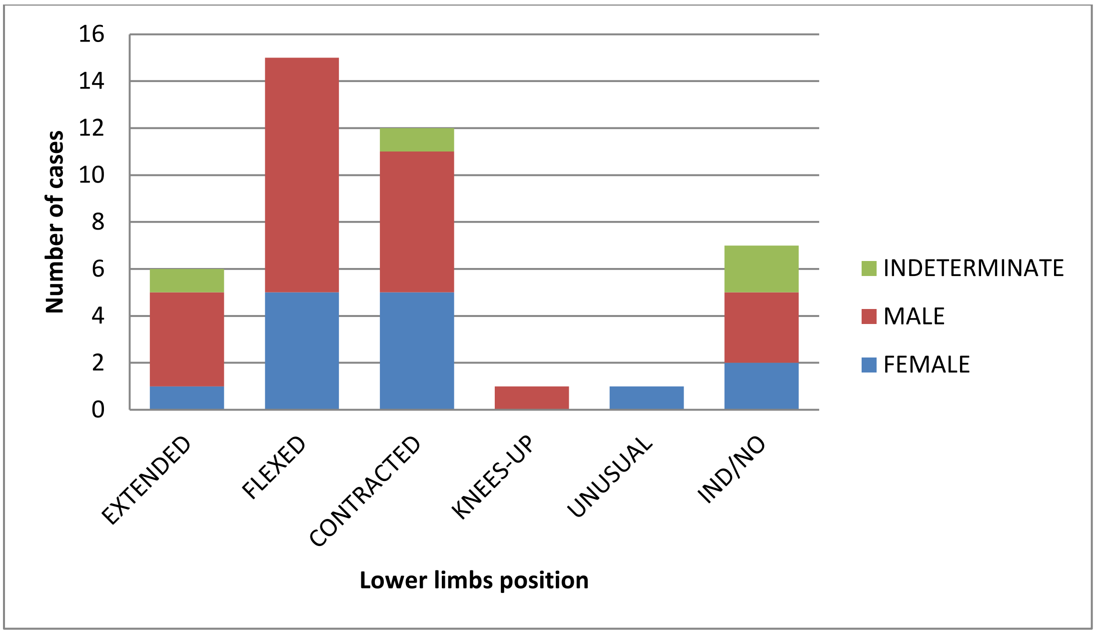


Figure 7.47. Frequencies of primary and disturbed primary burials (N=42) across lower limb positions by sex.

Side of placement as a variable applies only to the cases of body deposition on the side (i.e. flexed and contracted burials, N=27); side frequencies by sex groups are shown in Figure 7.48. The cases are almost equally divided between right and left sides, with no preference observed either in flexed or contracted lower limb position (Tables 7.18-7.19). Sex distribution appears different between the two choices, with females placed predominantly on their left side and males on the right. The difference is statistically significant, despite the small sample size (N=25, excluding indeterminate cases; x^2=4.6; df=1; Fischer's exact p (2-sided)=0.049). The variation in side of placement was similar between the different tomb groups (cf. Tables 7.1, 7.18-19).

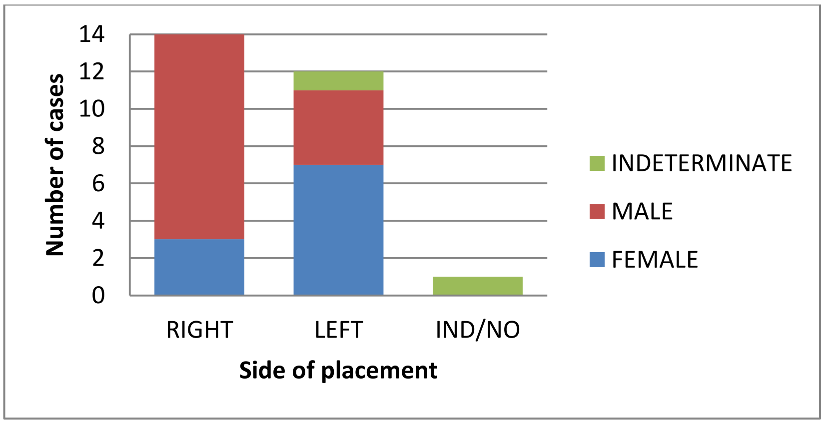


Figure 7.48. Frequencies of flexed and contracted burials (N=27) across sides of placement by sex.

The *upper limb position* is only explored in intact primary burials (N=30), because it was either non-observable or indeterminate in all disturbed primary cases. The original scoring of this variable included several sub-categories of the *on pelvis* or *on chest* variants (cf. Table 5.9). Their cross-examination against side of placement of the bodies shows that the two variables are related: the upper limb of the side on which the body was placed was extended and the opposite folded either on the pelvis or chest, probably for practical reasons in order to stabilise the burial position. T5/ΣΤ and T17/Ξ were the only exceptions; in both these cases, however, the placement was affected by restrained space. Therefore, it is sufficient to explore only the concise categories of upper limb position, as shown in Figure 7.49. The prevalent position, though statistically non-significant, is with at least one hand placed on the pelvis. The cross-tabulation of upper and lower limb positions showed that *on chest* and *mixed* upper limb positions do not appear in extended burials (Table 7.18). As for the single case of unusual upper limb position, this coincides with the single occurrence of the 'knees-up' position (T5/E) and was probably an outcome of this choice (the collapse of the femora after soft tissue decomposition may have caused a slight displacement of the right arm, which was found below and not on top of the pelvis, cf. 6.2). Even though a preference for *on pelvis* and unusual or mixed upper limb positions is shown in male cases, sex distribution across the different categories does not present statistically significant differences. The variation in upper limb position does not differentiate between the different tomb groups (cf. Tables 7.1, 7.18-19).

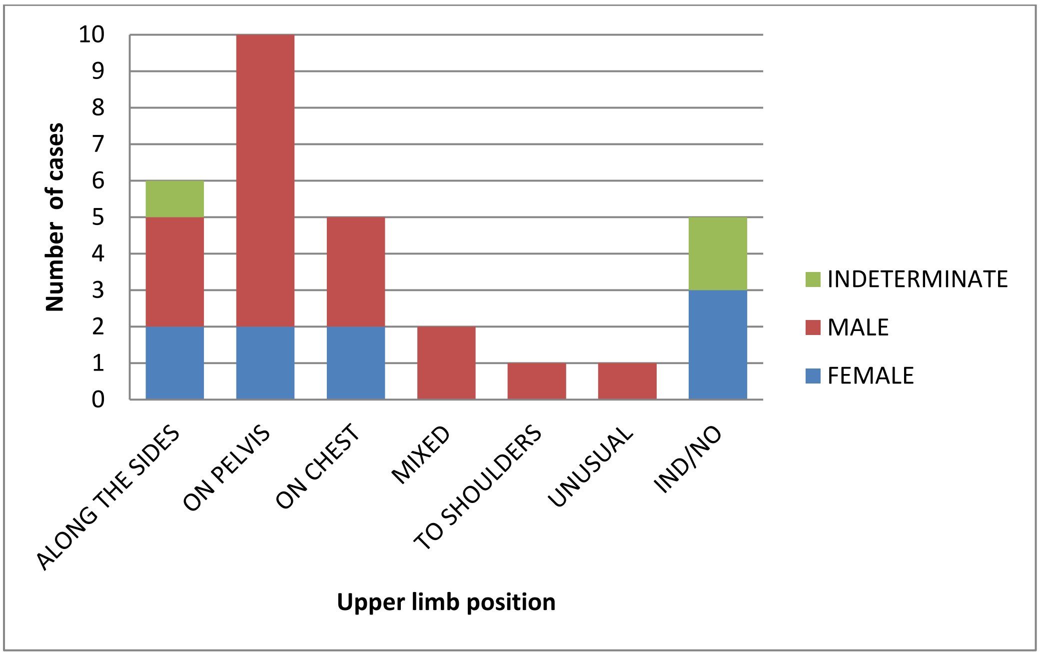


Figure 7.49. Frequencies of primary burials (N=30) across upper limb positions by sex.

Finally, it is of interest to observe the extent of variation seen in primary burial attributes within each tomb (presented in Tables 7.18-7.19). The diversity in different choices is summarised in Table 7.20, considering as variable any attribute that manifests more than one expression within the same tomb. It is, thus, observed that orientation is the least diverse aspect, while all other primary burial attributes do indeed vary in the majority of the observable cases. Furthermore, most tombs including more than one primary or disturbed primary burial demonstrate diversity in at least a few of their burial attributes. The extent of diversity in primary funerary treatment did not differ between the various tomb groups.

Table 7.20: Diversity in primary burial attributes within a tomb (***Y**:* present; different choices per burial attribute are attested; ***MIN**:* only slight differentiation between similar choices; ***N**:* absent; only one choice attested per burial attribute; ***?**:* non-observable; **-**: tomb without two or more primary and/or disturbed primary burials).

TOMB	ORIENTATION	SKULL FACING	UPPER LIMB POSITION	SIDE OF PLACEMENT	LOWER LIMB POSITION
T4	Y	Y	Y	N	Y
T5	MIN	Y	Y	Y	N
T9	N	N	MIN	N	?
T10	-	-	-	-	-
T13	N	Y	MIN	Y	Y
T14	-	-	-	-	-
T15	-	-	-	-	-
T16	Y	Y	N	N	?
T17	MIN	Y	N	Y	Y
T20	-	-	-	-	-
T22	MIN	Y	N	Y	Y
T24	-	-	-	-	-
T26	MIN	?	?	?	?
T27	Y	?	?	?	?
T28	-	-	-	-	-
T31	?	?	?	?	?
T39	N	Y	Y	Y	Y
T40	N	Y	N	Y	?
T42	N	Y	?	?	?
T44	N	N	N	N	N

CHAPTER 8

DISCUSSION

8.1 Bioarchaeological reconstruction of funerary practices in LHIII Voudeni

8.1.1 Taphonomic interpretation of diverse skeletal assemblages: assessing the process and causes of their formation

To determine the formation processes relevant to each skeletal assemblage and thus determine the nature of each specific disposal type was one of the initial aims of this study, as the prerequisite for further illumination of the performed human acts. Inhumation was the only burial process used at Voudeni. The human remains were manipulated through various acts that resulted in the formation of five basic groups of bone assemblages (i.e. disposal types): a) intact or b) disturbed primary burials; c) single or d) commingled secondary bone deposits; and e) scattered/isolated bones. Through the study of preservation patterns (of surface condition, bone completeness, and bone representation), of anatomical articulations and spatial bone relationships, and of further contextual taphonomic observations regarding each tomb's stratigraphy, it was possible to distinguish between natural and cultural formation processes. In the latter case, further distinction between intentional secondary treatment and accidental disturbance enabled the correct classification of each skeletal assemblage.

The vast majority of human remains (approximately 85% of MNI) were not found intact, suggesting the application of some form of secondary treatment (Figure 7.36). Stratigraphic evidence and taphonomic analysis demonstrated that the prime factor in skeletal damage and dispersal was usually human action and not natural causes. Nonetheless, human remains had occasionally suffered increased natural taphonomic damage, including the crushing effects of roof collapses, and advanced bone decay due to increased moisture (either caused by flooding or the use of raw clay in direct contact with the bones), while the effects of root activity and animal gnawing were fairly limited. In general, the bones were moderately well preserved in terms of surface condition, displayed diverse levels of completeness and fragmentation. Preservation differences between various disposal types and locations (7.3.2; Figures

7.38-7.39) support that deduction that the damage was mostly caused by human action, related to the cumulative strain imposed on bones during successive re-openings and interior re-arrangements of the tomb. Primary burials were better preserved across all preservation variables, while the condition of secondary remains was more diverse, often reflecting different taphonomic trajectories prior to the final deposition of each skeleton. This pattern was even more pronounced in pit burials, where all deposits were generally more well-preserved than those exposed on the floor. Preservation diversity was, however, observed in commingled secondary pit deposits (in contrast to the good/excellent condition of primary pit interments), suggesting differences in the prior taphonomic history of each skeleton (providing important evidence for sequential reconstruction of different events, cf. 8.1.3).

Intentional human manipulation was the prime formation factor for all commingled and single secondary assemblages, but intentionality could not always be confirmed in the case of disturbed primary burials and scattered/isolated remains. The study of bone completeness and representation demonstrated that at least in 60% of the disturbed primary burials, evidence for some selective practice was present (cf. 8.1.2), confirming intentionality; the remaining cases are ambiguous, with some of them most probably resulting from accidental disturbance. Single secondary deposits were differentiated from scattered/isolated remains based on criteria of bone representation and completeness that confirmed intentionality in the retention act (Table 5.8, section 7.3.3). The category of scattered/isolated bones in most cases comprised accidental remains from earlier removed burials; however, the probability of intentional cranial retention was attested in two of these cases (7.3.3; cf. 8.3.2).

Even more challenging than to access intentionality is to distinguish the reason of these intentional actions, either as a) purely practical in the sense of *body reduction,* i.e. the re-arrangement of skeletal material for making space within a grave for a new interment (Duday 2006: 47, 2009: 72-76); or b) ideological, i.e. involved in some form of secondary ritual or initiated by other conceptual motivation. Even though I view the clear distinction between the two types of intentionality as an epistemological fallacy (cf. 8.1.3), it is meaningful to detect all instances that clearly lack any practical necessity for secondary interference with the primary burial(s). Details of specific choices in secondary treatment further illuminate the issue (cf. 8.1.2, 8.3.1), but the main evidence is provided by examining the relationship between funerary sequence and spatial restrictions, or the lack thereof. Tombs with no intact final burial(s) *in situ* imply the existence of a secondary ritual (as an integrative part of the funerary cycle, irrespective of the need for a next interment), which motivates the act of removal (see further in 8.3.1). The same is true for cases when the disturbance of a primary burial through partial bone removal cannot be associated with space concerns for the interment of another one in close proximity (e.g., tombs T9/A, T42/B, and possibly T31/B & T31/Γ). The taphonomic analysis of the formation processes permitted the exclusion of ambiguous cases (where the disturbance could have been attributed to natural damage or unintentional human activity), and the identification of those instances where primary burials were unambiguously removed in parts or as a whole without a following interment. This practice was positively attested in 35% of the studied tombs (T5, T9, T10, T13, T14, T24, T28), and possibly in another 15% (T16, T31 and T44). The nature of these observations unfortunately prevents chronological comparisons of the custom, since it can only be examined in the final episode of tomb use.

8.1.2 The diversity of funerary practices: specific acts of primary and secondary treatment of bodies and bones

The diversity of funerary treatment, first marked by different disposal types, is further expressed in a variety of specific choices in both primary and secondary acts. These include choices of location, placement, removal and retention, reflecting varying forms and extent of interference with the past remains, in a constant remaking of the funerary context. This section summarises the main patterns characterising this diversity, the meaning of which is further discussed in sections 8.3-8.4.

Primary funerary treatment

The vast majority (88%) of fully or partially preserved primary burials of the Voudeni sample are dated to the LHIIIC period, therefore the observed choices refer predominantly to this date (7.4.2). Only three of the studied burials were placed in pits, while the rest were lying on the chamber's floor. As Kolonas notices (1998: 473), the LHIIIC custom of pit use for primary burials, although widespread in Achaea during this time, never became too popular in Voudeni (cf. 1.4-1.5). Most burials were placed straight on the floor's bedrock, but in six tombs there was evidence for the use of a thin raw clay layer below some of the bodies. This was positively observed in four primary burials (partially: T20/A, fully applied: T22/Γ, T26/A, T26/B), suspected in six more (T4/E, T4/Σ, T4/Z, and T16/A, 16/B, 16/Γ), and inferred, based on the presence of clay fragments and bone condition from a secondary assemblage (T13/A-B). Raw clay negatively affected all aspects of bone preservation, and appears to have accelerated the process of decomposition, resulting in extreme decay and advanced bone loss in all these cases (cf. chapter 6). All cases were LHIIIC (and the majority in its later phase), and it is possible that the custom was introduced in that period (cf. 8.4.1). The analysis of body orientation confirmed Kolonas' (1998: 472-473) observations. The body was usually placed parallel to the axis of the dromos, with the skull towards the back of the chamber; it was seldom placed perpendicular to the dromos axis, and only in very rare circumstances was another orientation chosen, mostly as a result of space concerns (7.4.2, Figure 7.45). The direction towards which the skull faced was very diverse (Figure 7.46), but it was noticed that usually it faced towards the entrance or the chamber's central space, and less frequently the rear or the walls. Based on these instances, and also considering that even burials placed in close proximity usually did not show signs of disturbance, we could assume that the body was carried head first into the chamber, and care was taken to minimise unnecessary movement inside the chamber. Primary (and secondary) burials were usually placed off-centre, near the chamber's wall, probably as a precaution to allow free space for the movement of mourners, the performance of rites, and the introduction of new interments (cf. Vlachopoulos 2012: 47, with other parallels).

The spatial proximity of the interments varied, but it was not found necessarily related to space concerns, since burials placed closely as well as far apart were found in spacious chambers. The most common type of body deposition was on the side with the lower limbs flexed or contracted (Figure 7.47). In these cases, the upper body was usually found supine; however, the observations of bone relationships in excavation photos suggested that the original placement was on the side, either partially or entirely. In the current sample, the knees-up position was only observed in a single male case, while the supine extended choice was also seen predominantly in males and exclusively in LHIIIC Middle/Late cases (see further in 8.2.3, 8.4). Upper limb position was particularly diverse, and it was only the *on pelvis* placement that was found consistent with extended lower limb position (Figure 7.49). Finally, the side of placement in flexed/contracted burials varied almost equally between right and left, showing, though, a statistically significant correlation to sex, with females placed preferably on their left side and males on the right (Figure 7.48; cf. 8.2.3). It needs to be noticed that all placement choices appeared quite diverse even within the same tomb (cf. 8.1.5), while no patterns of preference were observed among specific tomb groups, with the only possible exception the complete lack of extended burials in smaller tombs. The above choices do not appear related to space concerns, thus their relationship to spiritual and traditional beliefs is further discussed below (8.2.3).

Secondary funerary treatment

The secondary manipulation of human remains involves: a) retention within the tomb, through relocation on the chamber's floor or in pits either in the chamber or dromos; and b) removal of skeletal material to another location outside the tomb. Both aspects vary in the extent and type of bone selection, in terms of random or specific and complete or partial application to individual cases. Even though removal and retention were separately classified for the facilitation of the current analysis (7.4.1), there is a conceptual link between both practices. The duality of their distinction is largely superficial, as essentially the two concepts are fluid. Removal from one context may manifest as retention in another, while the ideological implications of both may often be quite similar (further discussion in 8.3).

Skeletal retention in secondary assemblages within the tomb, most usually expressed in random commingling, was the most frequent secondary act, either alone or in combination with some removal practice. Specific acts within this practice are, though, particularly important for understanding subtle ideological differences between diverse expressions (see 8.3). The criteria set for attesting *(individual) retention of fairly complete skeletons* (5.4.6) were evidently satisfied in disturbed primary burials and single secondary deposits, but the practice was also inferred in several commingled deposits, if significant re-assembling of an individual skeleton was possible (Figure 7.44). It needs, however, to be noticed that due to the lack of field anthropological observations the recognition of this act faces certain methodological compromises. Absent the recording of spatial bone arrangements, the assessment of *individual retention* is only linked to the extent of skeletal re-individuation, implying an etic relationship between our methodological ability for re-individuation and the emic intention of the mourners to preserve individuality by avoiding extensive commingling or dispersal. Nonetheless, it is possible to accept that the reassembling of fairly complete skeleton(s) in a secondary deposit signifies at least some care for individual preservation. This was mostly evident in pit deposits (where fairly complete inclusion was often carried out on several skeletons), indicating the advantage of pit disposal for ensuring better preservation and segregation for human remains (7.3.2, Figure 7.39; cf. 8.3.2). *Selective retention of prominent bones* (especially crania, mandibles, and long bones) was also often attested in commingled secondary deposits (Figure 7.44), applied either to the majority or only to some of the cases. This practice was occasionally coupled with evidence for order and clustering in placement (T14/A-H, T16/ΣT-M), or other alignments (T17/M), further discussed in 8.3.2.

Removal to outside the tomb is by definition problematic to detect, as it can only be observed if some material traces are left (Voutsaki 1993: 85). However, in contrast to the removal of material culture which requires fragmentation to be observed, skeletal removal, *if not* carried out on the entirety of a skeleton, can be deduced through contextual taphonomic analysis of bone frequencies. To avoid any potential for misinterpretation, the application of strict criteria left several contexts in the indeterminate category. Still, the custom of bone removal to outside the tomb was shown to have been quite common at Voudeni, inferred in the majority of commingled secondary deposits and several disturbed primary burials (Figure 7.44). Evidence for the practice in a context does not necessarily mean that the act was carried out on all individuals of the bone assemblage; in fact, it was most often applied only to some, and with different selection patterns. The removed elements sometimes appeared completely random, while at other times were dominated either by prominent bones (i.e. long bones, pelves, crania) or by small bones, such as those of the hand and foot. The latter, inferred when the reverse (i.e. prominent bone retention) was attested in the tomb's assemblages, indicates a practice of 'sweeping' in the process of re-arranging the tomb's interior. Indeed, in some cases a sweeping practice was suggested by Kolonas (1998: 475), based on wide dispersal of joining sherds and small objects, such as beads of the same necklace. Contextual –including bone- evidence suggesting sweeping act(s) was attested in tombs T13, T20, T27, T28 and T44. Regarding the removal of prominent bones, the exclusive choice of crania was separately noticed in this study, due to the special meaning of the skull in discussions of personhood representations. Exclusive cranial removal was attested in a few cases, but it did not appear as a widely applied custom at Voudeni (Figure 7.44; see further discussion in 8.3.2).

8.1.3 Assessing frequency and sequence of funerary events

Information on the frequency and sequence of funerary events inside the tomb is essential before approaching demographic and conceptual aspects of the mortuary evidence. The confirmation of frequent bone removal to outside the tomb –the extent of which cannot be precisely estimated– indicates that all estimates should be treated as the absolute *minimum* of the funerary episodes that may have taken place in each case.[67] Frequency and density of tomb use was assessed through the estimation of MNI and chronological length of use (7.2.4). A range of two to 27 MNI per tomb was attested, with an average of 10.3 (Tables 7.1-7.2). These values are quite close to archaeological estimations of burial numbers in Achaean LH tombs (with an average of eight burials, ranging from three to 27, cf. 1.4), but considerably higher than the range suggested for Voudeni based on archaeological observations alone (one to 14, cf. 1.5). No significant differences in frequency of use as expressed either by MNI or chronological length were found between tomb groupings. Nevertheless, there was a, rather unexpected, trend for lower MNI in the larger tombs (as well as in quadrangular ones and those of the upper hill plateau) that may be suggestive of differential practices on the basis of vertical status (see 8.3.3). Furthermore, no correlation was found between MNI and length of tomb use (7.2.4.2, cf. 8.1.5), indicating significant effects of the bone removal practice on MNI estimates.[68]

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[67] For this reason, population reconstruction estimates based on funerary evidence from Mycenaean collective tombs, as attempted in past (e.g., Alden 1980) but also recent studies (e.g., Triantaphyllou in press a), should be viewed with extreme caution.

[68] The criteria for using the alternative MLNI method, capable of approaching the original population that contributed to the final tomb assemblage, were not met in the Voudeni sample. Even though it is not safe to apply MLNI estimation *per se*, future work will undertake the comparison of the MNI estimates to those of the MLNI method, in order to assess the extent of cultural bias and achieve a better estimate of the deviation between the MNI of recovered specimens and that of the original population (cf. 5.4.2).

In order to respect the historicity of the funerary events, it was crucial to shed as much light as possible on the sequence of various stages in the post-mortem biography of the interments. Special caution was taken in inferring the relative chronology of the funerary contexts –and when possible even of separate skeletons within– based on the artefacts they contained and other contextual evidence (cf. 5.4.7). In ambiguous contexts, the indeterminate classification was chosen as the safest option, but different possibilities of formation sequence were, if possible, discussed. Most of the cases of multiple (or indeterminate) date suggested that bone transfer of a skeleton within the tomb often occurred in consecutive instances, and, thus, secondary assemblages comprised the cumulative product of multiple re-depositions.[69] The same was sometimes noticed in accumulations of the same time period as well: strongly differentiated bone preservation between cases of the same assemblage indicated diverse post-mortem osteobiographies before the final depositional event, more often noticed in pit deposits (cf. the same conclusion reached by Triantaphyllou, in press a for similar preservation discrepancies at Ayia Sotira). Another clue for discriminating between instantaneous and cumulative formation was the simple observation of such a high MNI in the secondary assemblage that could not have corresponded to primary burials lying collectively on the available floor space (assuming the need for at least c.0.5m^2 for each body, if placed contracted).[70] Based on all the above and evidence for lack of *in situ* interments, it was often possible to reconstruct the basic sequence of certain acts and estimate a minimum number of funerary episodes, or tomb re-openings, which surpassed the MNI. Such inferences would be greatly advanced by interdisciplinary excavation projects, combining field anthropology and micromorphological analysis (cf. Karkanas et al. 2012).

It is very difficult, if not impossible, to precisely determine the temporal distance between disposal stages. A broad time estimation between the primary and final disposal act could often be determined based on datable artefacts of the secondary assemblage. In some of these cases, it could be determined that a long time

[69] This observation underlines the problem of terminological validity of the term 'secondary', which may, sometimes, be erroneously used with reference to later disposal stages. In that sense, it may be more accurate to opt for the alternative term 'compound disposal', advocated by Sprague (2005: 59).
[70] N.B. General evidence from Mycenaean primary burials indicates horizontal placement side by side as the only choice of placing multiple burials (and not one on top of the other, unless a new floor was constructed above).

elapsed between the primary event and the final one, often centuries; but it was not possible to determine the timing of inferred intermediate events, that is, when some of the cases were first displaced from their original location. Even though more precise evidence on the time span between primary and secondary deposition was scarce, the study of anatomical articulations and spatial bone relationships in conjunction with forensic studies on decomposition rates (cf. 5.4.4) allow some further inferences. It was concluded that in the vast majority of secondary assemblages, no articulation was observed at the time of recovery, neither was it later reconstructed during lab analysis. This observation is particularly meaningful in assemblages of fixed, one-phase date, when there is no reason to suggest that other acts intervened between the primary event and the secondary transfer. The lack of articulation in these cases implies that skeletal remains were removed when completely defleshed, that is, at least 1-2 years after their original placement.[71] The use of raw clay as a sub-stratum on which the body was often placed in the LHIIIC period (cf. 8.1.2) may have significantly accelerated the process, although inter-disciplinary geoarchaeological work is necessary to confirm this hypothesis. A few exceptions to the pattern of complete disarticulation before removal, were, nevertheless, noticed: In the case of a disturbed primary burial (T40/Γ) and a single secondary deposition (T27/ΣΤ), bodies were transferred still semi-articulated (cf. 6.18 and 6.14 respectively). These observations suggest that no absolute strict ritual prescript was imposed in the distinction between fleshed and defleshed bodies or the timing of secondary removal (cf. 8.3.1). It is possible that more instances of semi-articulation did not get identified, albeit present, due to the lack of precise field recording of bone location (only assessable here if detailed photographic documentation could assist lab observations).

[71] The time needed for complete skeletonisation in a closed environment, protected from animal scavenging, is estimated at a minimum of one year and usually up to three (Bass 1997; Rodriguez 1997; see further discussion in Moutafi, in press). The peculiarity of Mycenaean chamber tombs, with the body not buried in soil but exposed in a closed subterranean structure, may somewhat accelerate the process.

8.1.4 Diversity in funerary practices across time

To determine the chronology of specific funerary acts is also essential to approach their social significance. In collective tombs, however, this process gets obstructed by the masking effect of later acts over earlier ones, precluding a full understanding of temporal differentiations in funerary practices or any statistical comparisons. Nevertheless, the special attention given to discriminating between the estimated date of skeletal material in a context and that of the formation act of the context permitted a fairly accurate examination of funerary diversity (and demographic data) across time, at least in qualitative terms (cf. 5.4.7, 7.3.1.2, Table 7.X5).

The diversity of funerary ritual was, in general, quite similar between the LHIIIA-B and LHIIIC period, in the sense that almost the entire range of choices in secondary treatment were attested in both phases.[72] However, the following details reveal a temporal shift in preferences, frequency, and inclusion aspects of certain funerary acts. All disposal types are encountered in both the LHIIIA-B and LHIIIC phases (7.3.1.2, Table 7.11), but location choices are different. Pits for primary burials are only used in the LHIIIC period, as well as pits for secondary deposits in the dromos; pits for secondary deposits in the chamber are encountered in both periods (Figure 7.37). Concerning specific secondary acts (7.4.1.2, Tables 7.16 and 7.X5), the practice of bone removal to outside the tomb is attested throughout LHIII, but somewhat less frequently in the LHIIIC period. In contrast, selective retention of prominent bones is almost exclusively attested in LHIIIC cases. The same applies for the act of cranial removal, and the instances of special attention shown towards cranial retention and placement (cf. 8.3.2). Similarly, the selective retention of the lower body in disturbed primary burials is exclusively observed in the LHIIIC period. Finally, the retention of fairly complete skeletons within a secondary assemblage is more frequently observed in the LHIIIC period, while the LHIIIA cases involve almost exclusively sub-adult individuals (the meaning of these shifts discussed in 8.3-8.4).

[72] The burial attributes of primary interments cannot be temporally compared, since the vast majority of this type date exclusively to the LHIIIC period.

8.1.5 Tomb characteristics and funerary practices

Tombs are the principal components of the funerary landscape, critical in the experience of the participants in the funerary acts. In this study, the tombs' main structural and spatial characteristics (i.e. location, size, shape) have been examined across other funerary choices in order to investigate: a) the relationship between tomb specifics and the type, magnitude, and experience of acts performed within; b) the extent to which tomb specifics may relate to social distinctions; and c) if and how funerary practices may differentiate across groups of possibly different social status (8.3.3).

The patterns observed in the main characteristics of Voudeni tombs parallel those of most of Achaea's Mycenaean cemeteries (Kolonas 1998; cf. 1.4-1.5). The statistical analysis of this study (7.1) confirmed that tomb orientation and location follow the natural geomorphology. No significant preference was observed between circular and quadrangular shape, even though the latter was encountered less frequently. Quadrangular tombs correlate with increased chamber size. Whether this is conceptually explained, with the choice reflecting a desire of the 'richer' groups for the less common shape, or practically, since larger size may be easier to achieve in rectangular rather than circular chambers, remains to be further explored. No correlation was found between location and size, suggesting that no specific location was the single prerogative of higher status groups/families (cf. 8.3.3).

Tomb re-use in more than one period is evident in the majority of Voudeni's tombs (7.1.2, 7.2.4.2). Eighty percent were certainly built in LHIIIA, while it is quite possible that even those that are exclusively dated to LHIIIC may have been built earlier and consequently undergone some thorough cleaning. Length of use does not significantly differentiate across tomb groupings, but it is noteworthy that all but one upper hill tombs were used in more than one period (Figure 7.27). The latter observation, together with the higher density of tombs in the upper plateau, may suggest that the core cemetery started from the top of the hill (but not exclusively, cf. Tomb 4 location: 8.3.3). Frequency of burial episodes as reflected through MNI does not correlate with length of tomb use (Figure 7.25), neither does it demonstrate any significant relationship with location, size or shape. However, there is a reverse trend – even if not statistically significant– between MNI and tomb size as well as distance from the hill top (7.2.4.1). The lower MNI reflects either fewer funerary episodes, or wider application of removal practices, or both. In any case, this indicates that frequency of burials and/or extent of skeletal removal was not related to practical space concerns neither was increased accumulation due to length of use (further discussed in 8.3).

Diversity in forms of disposal and specific choices of primary and secondary treatment of the dead is invariably encountered in all tomb groupings, irrelevant to size, shape, or location. The following patterns are, though, worth noticing. All cases lacking *in situ* primary burials (providing thus evidence for extensive removal and the possibility of a secondary ritual, see 8.3.1) are circular, medium and small sized, upper hill tombs (Table 7.X4). Disturbed primary burials, however, appear only in large and medium tombs. The practice of selective cranial removal is also only attested in tombs of the upper hill (table 7.17). Finally, chamber pits are encountered in various, but not large, tombs of all locations, while dromos pits are not used in large or in upper tombs (7.4.1.3). The pit absence from the larger tombs may reflect a practical cause for their choice in cases of more restricted space (Kolonas 1998: 474), but stronger traditional links of this group may be an alternative explanation (cf. 8.3.3). Neither the diversity of primary burials attributes (7.4.2) nor the complexity of specific secondary acts (7.4.1.3) demonstrate any repeated patterns within tomb or tomb groupings, that could reflect a common tradition. Furthermore, diversity of funerary acts did not increase with frequency of tomb use.

8.2 Demographic aspects of funerary diversity

On methodological grounds outlined in section 5.5, this study advocates that, despite several palaeodemographic biases, the main analytical tools of palaeodemography can effectively assist the investigation of age and sex distributions across various parameters. Through their use, we can address the discrimination between natural and cultural formation processes, the distinction of real demographic changes from the effects of funerary practices, the differential inclusion based on sex and age through time, and, ultimately assist the understanding of the LHIIIC change in Achaea. This section includes a) a summary and palaeodemographic interpretation of Voudeni sex and age profiles, and a brief comparison to other Mycenaean parallels from recent bioarchaeological studies (8.2.1); b) a further discussion of temporal shifts in mortality profiles (8.2.2); and c) a summary of age and sex differentiations across specific funerary choices (8.2.3). The interpretation of these patterns is further explored in the following sections (8.3.3.-8.4).

8.2.1 Understanding Voudeni's mortality profiles

The Voudeni sample (MNI: 206) includes both sexes and all age categories (7.2.1). An equal M/F ratio (1.06) characterises the entire sample, fluctuating only slightly in different sub-groups; in general, both sexes share a fairly equal inclusion in all forms of funerary treatment (cf. 8.2.3). A significantly different sex distribution is only encountered between the LHIIIA and LHIIIC Middle-Late period, with slight female prevalence in the former and male predominance in the latter (M/F ratio: 0.78 and 2.75 respectively, Figures 7.15-7.16). These finds contradict older views about lower female inclusion in Mycenaean tombs (e.g., Angel 1973; Blegen et al. 1973, cf. 3.4.3.1) and are more in agreement with the results of recent bioarchaeological studies. The latter have demonstrated fairly equal sex ratios in several LBA cemeteries all over Greece; less frequently, any of the two sexes may predominate (Table 8.1, with references).

The % adult:sub-adult frequency in the Voudeni sample is 85:15, close to parallels from other Mycenaean cemeteries (Table 8.1). Even though Voudeni falls into the low range of sub-adult representation, it is important to notice that the presence of young children, infants and neonates in particular, far exceeds comparative data (as seen in Table 8.1, youngest categories are often absent; even if present, most cases include only a few bones). At Voudeni, infants below the age of three comprised 45% of the sub-adult population (and those below one year 26%), while the cumulative percentage below the age of seven reaches 68% (Table 7.3). Therefore, the relationship between infants/young children and older children/adolescents in the Voudeni sample is closer to model age-specific mortality (Figure 7.10). Still, however, the youngest age categories are significantly underrepresented in relation to expected rates in a normal population.

Table 8.1. Demographic parallels from other Mycenaean collective tomb cemeteries. (*Y*= present, *one* noticed for single cases, *N*=absent)

SITE	REFERENCE	MNI	ADULTS	SUB-ADULTS	< 5 years	< 1 year	M	F
Klauss, Achaea	**Paschalidis and McGeorge 2009**	62	44 71%	18 29%	Y	Y	29*	26*
Kallithea, Achaea	**Graff 2011**	38	33 87%	5 13%	Y	Y	10	17
Spaliareika, Achaea	**Papathanasiou 2005**	25	21 84%	4 16%	Y (one)	N	8	7
Agora, Attica	**Smith 1998**	118	80 68%	38 32%	Y	N	40	39
Pylos, ** Messenia	**Schepartz et al. 2009, 2014**	76	62 82%	14 18%	N	N	25	20
Ayia Sotira, Argolid	**Triantaphyllou *in press* a**	34	26 76%	8 24%	Y	Y (one)	13	5
East Lokris	**Iezzi 2005, 2009**	186	143 77%	43 23%	Y	Y	62	61
Velestino, Magnesia	**Papathanasiou et al. 2012**	31	20 65%	11 35%	Y	Y	4	7
Kazanaki, Magnesia	**Papathanasiou 2009**	9	6 67%	3 33%	N	N	2	2
Spathes,* Western Macedonia**	**Triantaphyllou 2001**	27	21 78%	6 22%	Y (one)	N	5	14

* Unclear in Paschalidis and McGeorge (2009) why sexed individuals surpass the adult total

** Only chamber tomb data from Schepartz et al. (2009) are here included

*** Only Spathes cemetery from Triantaphyllou (2001) is here included, since it is the single case dated exclusively to LBA.

For an accurate interpretation of palaeodemographic results, it is important to reflect upon the sample's quality and representativeness through the assessment of bone condition and preservation patterns (cf. Walker 1995). As analysed in 7.2.2 (cf. 5.5), this pattern of sub-adult under-representation is common in the mortality profiles of archaeological populations, attributed to natural and/or cultural taphonomic bias. The degree of bone mineralisation has been considered correlated with taphonomic strength (Henderson 1987), suggesting worse preservation for sub-adult remains. Guy et al. (1997) showed that the age of five years is a significant threshold, below which skeletal elements have increased propensity for taphonomic damage, while Bello et al. (2006) confirmed that intrinsic bias in bone preservation is proportionate to age. The exact relationship, however, is not so simple, as the interaction between taphonomic environment, mineral bone density, and specific age can be rather complicated.[73] Therefore, the comparisons between different samples should be viewed with great caution, as several different factors (such as different taphonomic conditions, burial environment, funerary practices, sample size, recovery standards, specialist's expertise in sub-adult bone recognition) may produce similar results. Furthermore, to accurately understand sub-adult representation levels, these should not be discussed solely on the basis of raw counts, frequencies, or adult:sub-adult ratios, but mostly on the evidence provided by comparing the observed mortality curve to the expected rates of a model population.

In the case of Voudeni, the fact that the representation of sub-adults above the age of seven is very close to expected values suggests that younger children and infants, and especially those below one year, were possibly being subjected to greater taphonomic risks. However, the lack of considerable under-representation of older children in combination with similarities of preservation patterns between adult and sub-adult remains point to generally limited preservation bias due to natural taphonomic factors (cf. 8.1.1)[74]. Furthermore, at Voudeni, burial environment and

[73] For example, Rauch and Schoenau (2001) identified phases with rapidly increasing mineral bone density during the second and third year of life; and Andrews and Armour-Chelu (1996) remarked that the adult bones, as more mineralised, can be worse affected in very acid conditions.

[74] This is only a qualitative observation, since, due to a limited number of primary burials in my sample, this study did not statistically explored preservation differences across age and sex (cf. Bello et al. 2006). A future study could attempt to explore this further with modifications of preservation scoring on individual basis.

funerary treatment were common for all age categories, applying similar taphonomic pressures to adult and sub-adult remains alike. Another -usually neglected- point is the fact that, despite greater damage risk of fragile and smaller infant bones under the stress of successive tomb re-openings and material rearrangements, even lower levels of bone representation do not necessarily result in MNI under-representation. Sub-adult MNI estimations are balanced by the easiest recognition and re-individuation of sub-adult bones. Finally, similarly unfavourable conditions to sub-adult bone preservation are met in in other Aegean contexts, which still offered large numbers of infant remains (e.g., in Minoan cases: Triantaphyllou, in press b; cf. an Early Cycladic example in Moutafi, in press). As a conclusion, Voudeni's under-representation of youngest sub-adults is probably affected to some extent by natural taphonomic damage, but is mostly due to a cultural choice of differential inclusion. Most importantly, since the same natural taphonomy applies to the entire sample (except for notable exceptions, specifically described in chapter 6), most *within* sample demographic differentiations should be attributed to cultural factors.

The second basic characteristic of Voudeni's mortality profiles is the under-representation of old adults (>50 years), evident both in the total sample and in different temporal groups (7.2.2, Figures 7.10, 7.12). In contrast to sub-adult under-representation that was interpreted as considerably affected by cultural factors, that of old adults is more likely to reflect a real demographic phenomenon, a pattern possibly enhanced by methodological (rather than cultural) bias. The pronounced over-representation of all adult age categories below fifty years signifies a pattern of dying earlier, rather than missing the older individuals due to cultural exclusion. It is also quite probable that the observed rates have been skewed to some extent by methodological and preservation bias. Such biases include methodological problems of ageing techniques (often associated with the common archaeological pattern of old adults underrepresentation, cf. 5.5), as well as the possibility of reduced preservation for skeletons of older ages (Walker 1995).

8.2.2 Demographic differences between the LHIIIA-B and LHIIIC periods

The examination of temporal shifts in demographic data is necessary in order to shed further light on the observed patterns. MNI numbers are in balance between the LHIIIA-B and LHIIIC period, with the latter only slightly lower (67 vs. 55, Table 7.2; Figures 7.6-7.7).[75] The fairly equal numbers between the two periods facilitates comparisons of age and sex distributions, providing easily comparable samples. However, a simple direct comparison of MNI numbers is not scientifically meaningful and cannot address by itself questions of changes in population size, since it does not account for the effects of changing funerary practices (suggested by e.g., Paschalidis and McGeorge 2009: 101-102). To assess the meaning of temporal demographic differences, the contextual consideration of palaeodemographic analysis and funerary practices is required.

The LHIIIC mortality profile differs from that in LHIIIA-B in two main points: first, sub-adults below the age of seven are far more underrepresented than before; and second, deaths of young adults are markedly increased (Table 7.6, Figure 7.12). The difference in age distributions is more pronounced between the LHIIIA and LHIIIC Middle/Late period, approaching statistical significance (Table 7.7, Figure 7.14). Natural taphonomic bias is not different between the two periods, as funerary locus and disposal practices remain the same. Therefore, the discrepancies should be attributed either to cultural factors (differential inclusion) or real change in population structure and size. As explained in 7.2.2, if cultural bias were excluded and population viewed as stable and stationary, the LHIIIC mortality profile should be interpreted as signifying a decrease in birth rates and population reduction. However, this assumption is not valid. As already discussed regarding the general trend of sub-adult underrepresentation, evidence for differential inclusion is clearly present to some extent (8.2.1). In LHIIIC, in particular, it is observed that only very young children and infants are lacking, while the presence of children over 7 years is close to the expected rates, inconsistent therefore with a pattern of decreased births. Since it is only the youngest age categories that appear different, we can alternatively test the methodological assumptions by excluding them from the comparison of the two

[75] Only the LHIIIB period appears severely under-represented, as elsewhere in Achaea. Whether this phenomenon reflects a real demographic change, cultural bias related to funerary inclusion and material consumption, or dating bias in the chronology of LHIIIB material culture remains an open question.

mortality profiles. If instead of the composite Adult:Total Deaths ratio (D_{18+}/D) we use Adult:Total Deaths excluding ages below 7 (D_{18+}/D_{7+}), we see that instead of ratio increase (that could potentially indicate population reduction), an identical value (0.94) is obtained for both samples. As a conclusion, the assumptions are more likely violated, confirming the existence of cultural bias.

To investigate the second characteristic difference of the LHIIIC mortality profile, the increase in young adult deaths, we should first look at how mortality profiles differentiate by sex. Looking at the total Voudeni sample, a trend of females dying earlier than males is observed, albeit not statistically significant (expressed as average age at death for females: 35.9 years, males: 41.2 years; cf. 7.2.3; Table 7.8, Figures 7.17, 7.19). This pattern has been common in several studies of LHIII samples (e.g., Angel 1947: 20; Triantaphyllou, in press a; for an Achaean parallel: Paschalidis and McGeorge 2009), although it is certainly not ubiquitous (cf. reverse ratios shown between inland and coastal populations from East Lokris: Iezzi 2009). The increased female to male mortality in younger ages should be related to maternal mortality, a common death risk for reproductive females (Patton et al. 2009; death risk is also suggested to increase with parity levels: Friedlander 1996). The fact that the majority of female, as well as male, deaths fall into the same, mature adult, age category corroborate this explanation rather than an alternative of age-based sex bias in funerary inclusion.

The LHIIIC increase in young adult deaths is attested in both sexes, but the discrepancy from the LHIIIA-B pattern is more striking in males (Figures 7.18, 7.20; N.B. possible bias due to very small LHIIIA-B male sample, Table 7.8). Looking at age-specific mortality by chronological phase (Figure 7.14), the highest peak in young adult deaths is seen in the LHIIIC Early period, continuing into LHIIIC Middle/Late. Such an increase - often in combination with a drop in sub-adult deaths– is often observed in catastrophic events (Margerison and Knüsel 2002). Even though the sub-adult sample in LHIIIC Voudeni was shown more probably to have been affected by selective inclusion, the peak of young adult deaths, and especially young males, may nonetheless suggest some increase in violence (and/or some movements), characteristic of a turbulent period (cf. 8.4). Future work on palaeopathological analysis, and especially the study of trauma and stress indicators, will assist the examination of this hypothesis.

8.2.3 Differential funerary treatment across sex and age

Most aspects of funerary treatment did not differentiate much between the sexes. Both were equally included in all forms of secondary disposal. A statistically significant male prevalence in primary and disturbed primary contexts is possibly correlated to the general LHIIIC male prevalence, since primary contexts are almost exclusively dated to that period (7.3.4, Figure 7.42). No sex differentiation was noticed in the use of pits or floor piles (Table 7.14). Similarly, the various forms of removal and retention practices were all applied to both sexes. The only exception is seen in the custom of selective retention of the lower body, almost exclusively attested (five out of six cases) in males (7.4.1.3, cf. Tables 7.15-7.16). The attributes of primary burials are not much different between sexes, even though few aspects are considerably differentiated in body deposition. First, the extended lower limb position is only shown in males except for one case (albeit not statistically significant); second, side of placement in flexed/contracted burials differs between sexes, with females mostly placed on their left side and males on the right (statistically significant, 7.4.2). The same differential trend in side of placement has been discussed as part of the MH and Early Mycenaean tradition (Ruppenstein 2010; cf. 3.4.3.1). Finally, sex distribution is relatively equal between size and shape tomb groups; a reverse relationship, but not statistically significant, was only observed between upper and lower hill tombs, with men outnumbering women in the former and vice versa (7.2.5; Figures 7.30-7.34).

No age differentiations in funerary treatment were noticed between the adult categories, and the main funerary aspects were shared by both adults and sub-adults. Nevertheless, some distinctions were noticed in the secondary treatment of sub-adults. Even though neither the composition of the sample nor the nature of the secondary acts permitted a valid statistical comparison (cf. 7.4.1), these observations are important in order to further approach age identity in Mycenaean Voudeni (8.3.4). Sub-adults were included in commingled secondary assemblages, both in floor piles and chamber pits, albeit almost absent in dromos pits (7.3.4, Tables 7.12, 7.X7, Figures 7.40, 7.43). Except for one case, no primary sub-adult burial survived, either intact or disturbed. This could be simply related to sample bias due to the LHIIIC sub-adult under-representation, but it could alternatively suggest increased frequency and speed of their removal. This observation is not consistent with considerable frequencies of sub-adult primary burials in other Achaean cemeteries (e.g., the Klauss sub-adult frequencies, Table 8.1, are all of primary burials) but is not unusual either as it is encountered elsewhere (e.g., Ayia Sotira, Argolid: Triantaphyllou, in press a). In terms of specific secondary acts, it appears that retention practices within the tomb rather than removal to the outside was mostly selected for sub-adults (7.4.1.3, Tables 7.15-7.16). There is no evidence for selective cranial removal or for selective retention of lower body in disturbed primary burials. On the contrary, retention of fairly complete individual skeletons in commingled deposits is frequently seen in sub-adult individuals, and in some cases exclusively so (especially in the LHIIIA-B period). A similar interest for individual retention is shown in the unique case of a single secondary deposition of a child (T27/ΣT: 6.14; cf. 8.3.4). Finally, age distribution was similar across the different tomb groups, except for a pronounced under-representation of sub-adults –and total absence of their youngest categories– in large tombs (7.2.5, Figure 7.31).

8.3 Seeking meaning in funerary practice

8.3.1 The motivation for interference with past remains: surpassing the ritual-practical dichotomy

The discussion of motivation for interference with earlier interments in Mycenaean collective tombs revolves mostly around the dichotomy between practical and ideological causes. This distinction was taken to hold significant implications for the existence of a typical secondary burial ritual in Mycenaean times (3.3.3.2). Motivation, rather than mere intentionality, has also been suggested as a defining parameter for choosing the most appropriate terminology to characterise a secondary assemblage as deposit, reduction, or 'burial' (Duday's 2009: 72-92; cf. 5.4.5, 8.1.1). In contrast to sharp distinctions, however, the evidence from Voudeni suggests that ritual and practical aspects are not necessarily mutually exclusive; therefore, it is unproductive to force a clear distinction and assign far-reaching differential implications between the two.

As summarised in 8.1.1, in several Voudeni cases the removal of earlier interments did not relate to space concerns, while some tombs lacked completely *in situ* primary interments. Both observations have also been noticed in Mycenaean tombs of different regions and times, with the latter most often interpreted as an indication for the existence of a secondary ritual (see discussion in 3.3.3.2, with some possible alternatives, such as cenotaphs, preparation for burials that did not happen, and ancient looting or legitimate removal). In Voudeni, thirty-five percent of the studied tombs lacked *in situ* bodies. This frequency is too high to attribute it to other causes, most of them also overruled by contextual evidence; therefore, an intentional act of secondary displacement, driven by some ideological rationale, is considered the most parsimonious explanation.[76] At the same time, practical triggers for secondary bone displacement were evident in several instances as well. These include the identification of successive episodes in the formation of secondary assemblages, inferences of earlier exposure in floor piles before the final re-assembling of bones in a pit (see 8.1.3), or alternative solutions to confront the lack of space, such as the construction of a new, upper floor (e.g., T5, T9). All these cases are more consistent

[76] To this tomb frequency, another fifteen percent could be possibly added; this consists of ambiguous cases, whereas the possibility of poor preservation and extreme levels of disturbance as the cause of primary burial absence could not be firmly excluded (cf. 8.1.1).

with a mixture of factors initiating the constant manipulation of tomb contexts, rather than a strict ritual order alone.

The issue of 'respect', or lack thereof, shown towards bones has also been invested with far reaching ideological implications (3.3.3.2). Older views tended to perceive the 'disorder' seen in secondary skeletal assemblages or disturbed primary burials as evidence for indifference towards the dead after completion of soft tissue decomposition (e.g., Mylonas 1966: 113). Even though this view is now largely rejected, several connotations are still encountered in archaeological descriptions, often reflecting similarly unjustifiable extrapolations to those they attempt to reject. An arbitrary implication of evidence for respect or ritualised action in any practice that indicates care or effort, such as order in placement or construction of pits, falls into this category. In Voudeni, the bones in secondary assemblages were usually found disorderly, lacking evidence of specific depositional patterns, clustering, or orientation (see Tomb 40 for an extreme example of bone disorder). Nevertheless, there were cases where alignments, order, and selective bone clustering were observed (for a summary: 8.1.2; further discussion: 8.3.2). Even though the latter clearly suggest a special care involved in the process of bone removal, these acts cannot reveal by themselves the exact motives behind them. Together with the examples indicating care and hand-picking, Voudeni also provides evidence for 'sweeping' involved in the process of bone removal (see 8.1.2), which of course should not be immediately assumed to implicate some lack of respect towards the dead. In conclusion, to suppose a direct link between evidence for care in the handling of bones with beliefs and feelings of reverence towards the dead is as much a conceptual leap as the reverse. Once again, dualities such as the inferred respect and disrespect or care and indifference, do not assist the understanding of these acts. Voudeni data suggest that a variety of acts and causes were jointly operating in the formation of secondary assemblages, even if superficially contradictory. Another duality, that of the fleshed/defleshed contrast, does not appear as solid as commonly suggested. Even though bone displacement normally occurred only after soft tissue decomposition, certain exceptions suggest that, neither did a strict timing for the performance of secondary acts apply (cf. 8.1.3), nor were the mourners stopped, by fear or repulsion, from performing bone displacements even before complete skeletonisation (and even showing intensive care in the act, cf. the case of T27/ΣΤ: 6.14, 8.3.4).

In conclusion, the secondary treatment of past remains at Voudeni, involving acts of bone displacement either within the tomb or to its outside, was found to have been initiated by a mixture of factors, often irrespective of practical necessities. The secondary funerary acts were characterised by some extent of regularity and persistence of certain choices for the entire LHIII period, despite their diversity. As further discussed in the following sections, differentiations in these practices do occur but are subtle, operating within a well-established funerary set. Therefore, the existence of a secondary burial ritual, firmly grounded in tradition, may well be suggested. However, the specifics of these acts, including the how, where to, and when, do not appear dictated by strict institutionalised norms. This allows different patterns to emerge, which, subtle as they may be, still embody conceptual shifts in mutual rapport with the shifting social conditions.

8.3.2 Bodily fragmentation and enchainment practices

Specific details of secondary treatment, and especially aspects of bodily fragmentation and dispersal, are of special significance for social inferences. Fragmentation of the dead body is closely associated with notions of personhood, and the diverse forms that it can take function in various ways within social enchainment practices. Human bones can be manipulated in the same way as material culture in order to materialise conceptual social links between contexts separated in time and space.[77] Through their mobility, bones do not merely symbolise kinship but actually constitute it (Chapman 2000: 6-7), playing a central role in the creation and experience of collective social identity. As discussed in 3.3.3.2, current Mycenaean mortuary research views the manipulation of collective funerary contexts as central in such enchainment practices, which aim to create or maintain links of lineage and descent in a collective Mycenaean identity, embodied through the constant interaction with a shared ancestral group. Delving deeper into details of the observed acts, it is possible to move further than this general notion. Even though all forms of secondary

[77] The relationship between material culture and dead persons is similarly conceptualised: the links of *object fragment* to *complete object* to *set of objects* parallels *human bone* to *body* to *set of bodies* (i.e. tomb/cemetery population), as discussed in Chapman (2000: 6-7).

treatment involve some degree of bodily fragmentation, the exact form and extent of it, as well as dispersal choices, may reflect nuanced shifts of emphasis between individual and dividual notions of personhood and reveal diverse foci in the associations enabled by these acts (cf. Chapman 2000: 145; Budja 2010).

In Voudeni, secondary bone dispersal took two distinct, but not necessarily contradictory, forms: bone removal for retention in a new context within the tomb and removal to outside the tomb. The analysis of these practices suggested that both were permeable and often complementary (8.1.2); similar choices were encountered in both, while in most tombs both practices were attested, albeit possibly taking place in different times. The fluidity between the two choices does not mean that they express no conceptual distinctions. The retention of secondary bone removal within the limits of the tomb (either inside the chamber alone or in the dromos, which may be understood as an intermediate between the two activities) appears to emphasise a more delineated, bounded group identity, restricting possible associations between the users of the tomb. In contrast, the act of removing bones outside the tomb could possibly reflect more permeable notions, a wider sense of 'belonging', allowing further re-associations between various groups and their members, as well as between spaces, funerary or otherwise.

Where these bones were transferred to is, however, unknown, preventing us from further illumination of these wider associations. The identification of the act of removal to the outside confirms, nonetheless, that some *interspaces* are missing from our current knowledge of Mycenaean funerary landscapes. In earlier periods and places, from the Neolithic Greek mainland (e.g., Papathanasiou 2001) to the Early Bronze mainland and Cyclades (e.g., Moutafi, in press) or Minoan Crete (e.g., Crevecoeur and Schmitt 2009; Triantaphyllou, in press b), transfer of bones between primary locations and different secondary places has been bioarchaeologically attested. In the Mycenaean period, however, secondary depositions are basically encountered within the tomb (including the chamber and dromos, and, more rarely, special places such as niches or side-chambers: cf. 3.3.2.1), while separate ossuary-like structures have not been positively located.[78] The possibility of material, including

[78] A notable exception is a chamber tomb discovered in association with the tholos tomb of Tzanata (Poros) Kephallonia, reported to contain only the secondary remains of 72 individuals, presumably

bones, being transferred from one tomb to another has been suggested (Boyd 2002: 85), but it is not confirmed so far by actual evidence. This study found no clear evidence for such a practice, except for one exception: the unfinished tomb 15 has secondarily received the remains of bodies originally placed elsewhere. This tomb, however, was possibly never used as a primary funerary place (see 6.7). It is, thus, unclear to what extent the motivation of this transfer may be linked to ideological associations. In conclusion, the frequent evidence of bone removal to outside the tomb without the discovery of ossuaries or bone dumps leaves open the question of where to these bones were transferred and what associations they may have enabled.

Bodily fragmentation and dispersal within the tomb displayed a variety of different forms and extents, often encountered within the same tomb but not necessarily in the same period (cf. 7.4, 8.1.2). These include: a) partial fragmentation, seen in spatially segregated deposits, i.e. disturbed primary burials (especially those preserving *in situ* only the lower body) and single secondary deposits; and b) different degrees of more extensive fragmentation, seen in commingled deposits; these include extensive commingling of random body parts, skeletal preservation of fairly complete individual skeletons, and selective retention of certain bone elements either disorderly mixed up, or placed in prominence, or singled out (see below). Looking closer at details of these diverse choices will help to approach conceptual distinctions.

The extent of body dispersal between several different contexts within the tomb was not pronounced in Voudeni. Despite special care given to re-individuation analysis, instances of re-individualised bones or joining fragments between different contexts were very rare; when present, they basically occurred between primary and secondary locations on the chamber's floor, and extremely rarely with material in pits either inside or outside the chamber. This implies some level of care for the transfer of skeletal remains to a specific secondary context fairly undivided, in contrast to other Mycenaean cases where conjoining skeletal fragments have been found between pit and floor deposits (e.g., Papathanasiou et al. 2012), or even between various pits in one tomb (Papathanasiou 2009; Galanakis, in press). The frequent application of bone

originally buried in the tholos (Kolonas, *personal communication*). However, this interpretation is not yet confirmed by taphonomic analysis of the skeletal material; even if confirmed, it remains very difficult to determine whether the chamber itself had been also used for primary burials, or was built as an ossuary in the first place.

removal to outside the tomb demonstrates that extensive fragmentation was not avoided, but took the form of wider dispersal, directed to some place outside the tomb rather than within. Within the tomb, separate contexts remained fairly segregated, even though exceptional cases of extensive commingling were attested, especially of LHIIIA-B date; in the latter, there was extensive fragmentation and dispersal of all accumulated skeletons in one large assemblage instead of smaller contexts (e.g., tomb T40). The retention of fairly complete individual skeletons within secondary deposits is another act that possibly reflects some increased desire for segregation and preservation of 'individuality' (cf. 8.1.2). In smaller and spatially restricted deposits, such as pits, these bones were clearly collectively re-assembled. In larger deposits, however, the lack of field anthropological recording did not allow confirmation of spatial clustering along with the retention of fairly complete skeletons, which, if present, may have enhanced further the notion of 'individual' preservation for the mourners.

Selective retention of prominent bones was often manifested, but only in a few cases was accompanied by special attention given to their placement (cf. 8.1.2). Selected elements mostly included crania and various long bones, among which femora often predominated without however comprising an exclusive choice. The evidence for bone removal to the outside, inferred from pronounced absence of certain bones from tomb contexts, reflects the reverse side of similar preferences. No exclusive preference for any specific long bone was attested in bone removal to the outside, except for the special preference for crania in a few cases (7.4.1.1).[79] The special importance sometimes attached to the cranium at Voudeni (either without the mandible or as complete skull) is, thus, expressed both in cases of removal and retention. In the latter, it was often accompanied by special placement, such as in a predominant position on top of a pile (T14/A-H: 6.6), re-assembled as a group in pits (T27: 6.14), or singled out and placed in isolation on the chamber's floor (T16/N-Ξ: 6.8). Cranial selection involved only adults of both sexes (cf. 7.4.1.3, 8.1.3). The secondary segregation of skulls and special care given in their display within secondary

[79] There is not enough published data with which to compare these choices. A few examples from recent Mycenaean bioarchaeological studies have shown, however, that bones other than crania and femora were also sometimes exclusively preferred: e.g., Triantaphyllou (in press a) notices a significant lack of fibulae in one of Ayia Sotira tombs; Moutafi and Voutsaki (forthcoming) report the selective removal of lower limb bones in a multiple Early Mycenaean cist tomb in Ayios Vasilios.

bone assemblages finds other Mycenaean parallels in the Peloponnese and Central Greece (see examples in Cavanagh and Mee 1998: 74; Gallou 2005: 118-119). Specifically in Achaea, a few such cases have also been noticed outside Voudeni (e.g., Papazoglou-Manioudaki 1994: 176; Vasilogamvrou 2000: 47).

The conceptual prominence of the head, as 'pars pro toto' for a person, is a phenomenon universally encountered, although the specific or abstract character of this notion may vary. An explanation of this universal interest should be sought in the fact that the head is conceived as the locus of several of our capacities and senses, the basic medium through which we experience the world (cf. Talalay 2004: 157). The post-funerary emphasis on cranial remains, assumed to be in direct relationship to ancestor cults, is encountered as early as the Late Natufian in the Near East (cf. Parker Pearson 1999: 159-161). Evidence from prehistoric, especially Neolithic, Anatolia and Greece illustrates a diachronically encountered prominence of the skull -either as a real bone or in artistic representations- in enchainment practices that aim at the creation of social links to the past (Talalay 2004; Kuijt 2009). Several examples have also been noticed in Minoan funerary contexts, including cases of skull transfer from the funerary into the domestic sphere (Driessen 2010). Current consensus views skull removal not as an act of 'violence' or disrespect but as an essential part of cohesive social strategies stressing lineage and ancestorhood. Notwithstanding, the rationale for its selection may certainly shift between times and places, as Kuijt (2009: 117) stresses, and why not even between different people in the same time and place. Taking this further, it is equally possible that in each specific instance the rationale is multi-faceted, reflecting a variety of meanings attached to this choice, which most probably we cannot assess in their entirety.

The detailed study of secondary bone treatment at Voudeni demonstrates the significance of these acts for the actors, which exceeds by far any practical necessity. During the continuous use of Voudeni tombs, we see the bones of past interments being constantly re-used in diverse ways of fragmentation and dispersal in the creation and re-creation of new contexts, forming associations within the tomb locus but also outside of it. The stressing of collective identity is evident in all aspects of these practices, as past and present users of the tomb are linked through these activities.[80] The key actors in this enchainment are the bones of earlier interments which co-participate –as ancestors?– in shared experiences, ensuring the legitimation of some form of lineage, with everything else that this may afford. Through this linking process, wider collective social links are maintained, reminded of, or re-created (cf. 3.3.3.2). As stated at the beginning of this section, the diversity of specific choices in these acts and the shifting emphasis between dividual and individual aspects of personhood may hold the key for understanding the interplay of these acts with their specific historical context. As Chapman (2010: 43) discusses, any deliberate deviation from normal complete individuality in funerary practice is underpinned, to some extent, by the concept of dividuality. Obviously, the notion of dividual aspects of personhood at death dominates collective secondary funerary practices. The question, however, is to what extent we can discern subtle deviations, points at which 'individual' aspects are also evident, possibly revealing not only personal, exceptional, departures from tradition but indications of wider social shifts.

The dominant aspect of secondary funerary treatment at Voudeni (through the entire LHIII) was random commingling and bone removal within the tomb and to the outside; these practices evidently stress collective identity and dividual aspects of personhood. Nevertheless, a tendency to preserve some degree of 'individual', or at least more 'specific' rather than entirely generalised, notions is discerned in the practice of retention of fairly complete skeletons in commingled or single secondary assemblages, as well as in the selective removal, retention and segregated placement of prominent bones and particularly the cranium. Of special interest in the category of acts 'preserving individual notions' are disturbed primary burials for which intentional and not accidental disturbance was confirmed (7.3.3; cf. burials termed 'deviant' by Chapman 2010). These burials fall immediately between the categories of complete intact primary burials and secondarily treated remains. In half of these cases, a special practice was noticed: only the lower body was retained *in situ*, while the upper was completely missing (7.4.1, Table 7.15). The missing bones of the upper body (including the cranium) were probably removed to outside the tomb, since no matching skeletal

[80] As Chapman (2010: 44) put it "all types of deviant burial –but especially fragmentation and removal- can be interpreted largely in terms of the enchainment of human body parts from the world of the dead to the world of the living, or indeed another part of the world of the dead".

elements or at least BRI correlations were identified between these interments and secondary assemblages from the same tombs. To my knowledge, there is so far no parallel for the identification of this particular pattern of partial disturbance in Mycenaean contexts. Triantaphyllou (in press a) reports a similar case of a partially removed body in Ayia Sotira (Argolid), preserved, however, in the reverse manner: only skull and clavicles were left in situ, while the remaining skeleton was absent.

The distinction between these two broad choices (i.e. practices that stress the complete denial of 'individual' identity versus those that preserve some degree of it) does not correlate with sex differentiation, except for the selective removal of the upper body in disturbed primary burials that was almost exclusively (83.5%) applied to males. As for age, inclusion of sub-adults was attested in both, even though not in all types of treatment denoting individuality: sub-adults were often retained fairly complete but were rarely included in selective practices, and cranial removal was not found applied to them (7.4.1.3, 8.2.3; this distinction possibly reveals another conceptual nuance on the meaning of 'individual' retention: cf. 8.3.4). Finally, the temporal differentiation (summarised in 8.1.3; details in 7.4.1.2) of which aspect is mostly stressed is of the most interest: the LHIIIA-B period is clearly dominated by practices of extensive fragmentation and commingling, as well as wider associations of far-reaching enchainment to outside the tomb. On the contrary, segregation in the tomb, and even in bounded places within it (i.e. pits), as well as all other acts showing more interest in individual notions are shown predominantly, and some exclusively (i.e. selective retention of lower body), in LHIIIC. The relationship between these temporal shifts and social change in its historical context will be addressed finally in 8.4, after we first look at the perception of other identities, such as status, age, and sex, in the funerary acts (8.3.3-8.3.4).

8.3.3 Associations between tomb attributes and vertical status differentiation

For reasons discussed in 3.4.1, the archaeological mortuary record of the Mycenaean period is not viewed as the most promising source for investigating direct expressions of vertical status. In Voudeni, in particular, the use of a single basic tomb type and the limited differentiation in material offerings do not obviously reveal distinct social differences (cf. 1.5; Kolonas 1998). In the future, as proposed in 4.2, a next step of this bioarchaeological analysis may address the question of social status by combining the current results with a contextual analysis of biological status across tomb offerings.[81] For the moment, the current study examined the relationship of potentially status-related tomb characteristics (i.e. location, size, shape) with funerary diversity, in order to explore whether any distinctions were actually detectable. Even though tomb characteristics should not be viewed as direct status indicators, some of them may certainly be linked to complex strategies of social identification (cf. 3.3.1, 3.4.1), and also reflect the ability of their first owners to afford their construction. However, it should be borne in mind that, despite the advantage of architectural characteristics thanks to their stability as opposed to removal bias of other material evidence, their social inferences also face limitations imposed by continuous use. The choices pertaining to the tomb's construction are of the first person(s) involved, while the reconstructed funerary acts pertain to several generations, often predominantly reflecting those of the later users. Over time, not only the social status of the group using the tomb may significantly change, as well as their intentions and preferences, but also the actual experiences of the participants can change (think of the contrast between movement, senses, and feelings in a brand new, large, empty tomb and the experience in the same locus after decades or centuries of use, with the tomb full with dozens of burials that restrict movement and access but enhance its ancestral value).

As summed up in 8.1.5, in general, the variety and complexity of funerary practices was fairly similar between the different tomb groups. This could be explained either because the tomb groups based on the above characteristics do not reflect significant social differentiations of their users (at least as accumulated over time), or because the funerary customs, at least as concerns the practices examined in this study, did not significantly differentiate between different status groups (cf. Boyd, in press a, advocating the latter for Mycenaean funerary rites in general). Even if not statistically significant, however, certain discriminating trends in specific funerary choices were noticed.

Most differentiations were noticed across the tomb size variable. These include the reverse correlation of MNI with size, the under-representation of sub-adults with

[81] N.B. The results of this study underlined, however, the limitations of scoring systems for measuring tomb wealth (cf. 3.4.1), by confirming beyond doubt a frequent practice of removal to outside the tomb, which we could reasonably assume that would have been also applied to material other than bones.

complete absence of the youngest age categories in large tombs, as well as the complete lack of dromos pits in large tombs and of disturbed primary burials from the small ones (8.1.4, 8.2.3). The trend for lower MNI is also seen in quadrangular tombs, and also in tombs of the upper hill. This trend can be interpreted in a two-fold manner: the lower MNI may truly reflect a restricted number of funerary interments, indicating stricter inclusion in these tombs, or, alternatively, it may be indicative of a more intense, and possibly more thorough, application of secondary funerary practices involving removal to outside the tomb; or a combination of both. The ability for a thorough and consistent performance of secondary rites that would require tomb re-opening has been discussed as potentially related to economic status based on ethnographic evidence (Cavanagh and Mee 1998: 124; cf. 3.4.1). At the same time, the possibility of stricter inclusion is supported by the find of increased segregation of age categories in the larger tombs, as reflected in child under-representation. If we assume a combination of both factors, it should be noted that the increased bone removal to the outside indicates increased participation of bones from these tombs in enchainment practices through their association with the place to which they have been transferred. In that case, it appears that larger tombs were more frequently used as a source of legitimation for the maintenance or construction of social links. The fact that disturbed primary burials (including the special category of those preserving only the lower body) are only present in large and medium-sized tombs may indicate a similar rationale, driven into more individual notions through the conceptual shift of the LHIIIC period (cf. 8.4). Finally, the complete absence of dromos pits in large tombs (that is, of a custom seemingly introduced at Voudeni in the LHIIIC period) may suggest a persistence of more 'traditional' choices in this group, or can simply reflect the lack of practical necessity for the feature, due to larger space, lower MNI numbers, and increased removal practices (cf. Kolonas 1998: 474 on practical needs for pit construction; 1.5).

Location appeared not to correlate with tomb size, leading to rejecting the hypothesis of spatial clustering on this basis. Density and length of use predominate in tombs on the upper plateau, suggesting that this was perhaps the initial focus of the cemetery, which subsequently expanded away from the hill top (cf. 8.1.4). This does not mean that early tombs were not founded at lower levels as well. One of the oldest, the exceptionally large Tomb 4, is located on the lower hill (see also the location of the equally large Tomb 75, not included in this study, Figure 1.4). The choice of lower location in these cases possibly reflects dual concerns: both practical, ensuring sufficient space, and ideological, claiming a special landmark of distinct visibility and access in the route between the cemetery and settlement. A trend for increased bone removal to the outside can also be suggested for the tombs of the upper hill based on their lower MNI numbers in spite of their longest duration of use; in addition, the custom of selective cranial removal was exclusively attested in the upper hill group. Based on all the above, the rationale for increased involvement of these tombs in enchainment practices (as attested by increased bone removal) should be mostly related to their old age and long period of use rather than to their special social status. If indeed they are the oldest, tombs of the upper hill would be ideal for providing links of ancestral descent, even without higher status connotations.

In conclusion, from the examined tomb grouping factors potentially related to status, only size correlated with funerary preferences that could be explained on the basis of a distinct social position of the group using the larger tombs. This distinction, and/or the later perception of the status of the original group in larger tombs as distinct had probably triggered the specific funerary choices. Shape differentiation was not found much correlated with distinct choices, even though it was found associated with larger size. The correlation, however, could be equally attributed to structural concerns rather than preferential choice of the most uncommon shape for a certain group (cf. 8.1.4). Finally, location was also found related with increased occurrence of acts denoting wider enchainment, but the lack of other status-related correlations (e.g., clustering of larger tombs) corroborates that the role of upper hill tombs in these acts was mostly related to their old age. Therefore, the perception of both social distinction and old age are suggested as carrying special social value for preferential inclusion of certain groups in enchainment practices, representing two parallel sources of legitimation.

8.3.4 The place of children in mortuary practices at Voudeni

The discussion of age identity through Voudeni's mortuary record is focussed on the inclusion and treatment of sub-adults. Even though the simple binary opposition of adults versus sub-adults is not the most productive way to look at age (cf. Gowland 2006), the composition of this sample, characterised by the predominance of collective secondary assemblages, impedes the accuracy of a more nuanced examination of differentiating treatment between specific age categories. In any case, speaking in broad terms, no differentiations between adult age groups in inclusion and funerary treatment were discerned (7.4.2). In terms of the sub-adults, the growing interest in the perception of childhood in Mycenaean times and the appreciation of the social significance of their funerary treatment (3.4.3.2) necessitates a detailed look at the available evidence. Unfortunately, the almost complete lack of primary sub-adult burials (except for a single case: T44/B) restricts this discussion to evidence from secondary treatment.

The contextual consideration of taphonomic and palaeodemographic analysis demonstrated that the underrepresentation of children at Voudeni is not as pronounced as is commonly suggested for LH cemeteries lacking bioarchaeological evidence; the adult:sub-adult ratio is close to those reported in other bioarchaeological studies (8.2.1, cf. 3.4.3.2). The rejection of extensive sub-adult exclusion at Voudeni suggests that this view should also be questioned at least in all cases lacking an osteological analysis, since it is largely influenced by recovery, taphonomy, and interpretive bias. Nonetheless, underrepresentation of infants and young children below the age of seven was evident, particularly in the LHIIIC period (8.2.2). The analysis suggests that this phenomenon is mostly due to cultural factors, and less to natural taphonomy or real demographic change. It is, thus, inferred that alternative forms or places of burial were occasionally used for certain age categories. It should be noted, however, that at Voudeni, the inclusion of these youngest age categories, and particularly infants, was considerably increased in comparison to current information from other Mycenaean cemeteries.

Distinctive notions, thus, in the extent of funerary inclusion between adults, older children, and younger children or infants were expressed, but not strictly and consistently applied. The fact that differential inclusion was mostly applied to the youngest age categories corroborates the possibility of specific age thresholds in a scaled process of socially constructed age in Mycenaean times (Lebegyev 2009, Haas-Lebegyev 2012; see further in 3.4.3.2). The LHIII Voudeni evidence confirms increased funerary inclusion above the age of 6-7 years, but does not identify other distinctions below this limit (such as the lower, 1-2 years, age mark proposed by Lebegyev 2009). As we will see below (8.4), the temporal LHIIIC shift in sub-adult inclusion period is central for interpreting the meaning of these age distinctions in the case of Voudeni. Therefore, special caution is required with reference to generalisations made upon possibly skewed samples, either methodologically or spatiotemporally.

A closer look at details of juvenile funerary treatment will shed more light on the perception of child identity. As summarised in 8.2.3, sub-adults shared the same basic forms of funerary disposal with adults, included in both primary and secondary treatment. In terms of context location within the tomb, no age differentiations were observed except for the absence of sub-adults in dromos pits. The latter, however, may be due simply to sample issues, since dromos pits are only dated to the LHIIIC period and the sub-adult sample of that period is too small to allow significant observations between sub-samples of even smaller size. Thus at Voudeni, a pattern of special placement of children in distinct places, such as pits, benches, or niches, discussed as customary in Mycenaean collective tombs (e.g., Polychronakou-Sgouritsa 1987; Cavanagh and Mee 1998: 128; cf. 3.4.3.2), is not supported. It should be stressed, though, that except for one case (T44/B) all current observations concern the secondary and not the primary placement of sub-adult remains. In terms of primary location, there are a few cases of side-chambers and niches (with minimal skeletal evidence in some of them) that Kolonas (1998) interpreted as potentially used for child burials (cf. 1.5). Unfortunately, no skeletal remains were recovered from these spaces; therefore, the current study could not investigate this possibility.[82] Even if true, however, this separate primary placement may have been applied only to very few

[82] To attribute the absence of skeletal evidence to the fragility of infant remains is a common interpretation, but probably biased; Smith and Dabney 2012, and Triantaphyllou, in press a propose an alternative interpretation for similar examples in the Ayia Sotira cemetery, relating such distinct places (with associated possibly age-related material evidence but no bones) to a conceptual notion of children which did not require their physical presence. Which –if any– of these interpretations is more valid in each particular case remains an open question for future studies, only accessible through elaborated recovery and cross-disciplinary taphonomic analysis.

cases of the current sample (i.e. sub-adults of T22 and T39), since no such places were found in any other tomb analysed in this study.

Despite the lack of distinct spatial segregation, other details of secondary treatment do suggest subtler distinguishing notions. As noted (cf. 8.2.3 and 8.3.2), children received a complex secondary treatment, almost as diverse as that of the adults. Nonetheless, even though children were fully included in collective assemblages, the specific details of their treatment suggest that their role in enchainment practices was probably limited. Even though their participation in removal outside the tomb was occasionally suggested, there is no evidence of selective cranial removal or other partial body removal (e.g., disturbed primary burial preserving only the lower body). On the contrary, their inclusion in retention practices inside the tomb was often characterised by special care shown for the fairly complete preservation of the entire skeleton, especially in the LHIIIA-B period, when this practice was almost exclusively attested in sub-adults (cf. 7.4.1.3, 8.3.2). Furthermore, there were specific tomb assemblages that contained more than one sub-adult, either collectively with adult remains (T16/O and T28/B-Z), or by themselves (T39/E), indicating clustering in the secondary placement of juvenile remains. The most notable case showing focused, individualised, interest for the handling of a child's body after its primary burial was attested in the secondary burial T27/ΣT. This LHIIIA-B case consists of the single secondary deposition of a 7-9 year old child; taphonomic analysis suggested that his/her body was removed soon after initial deposition (before complete soft tissue decay, possibly wrapped in a cloth) and was singly placed carefully in a pit, accompanied by a mastoid cup and a broken bronze dagger (6.14). The haste with which this secondary burial took place and at the same time the effort required to create the pit despite space abundance on the chamber's floor imply a special interest for avoiding commingling and preserving the individuality of this person. This case is unique, as no adult single secondary deposition was found interred in a pit. Burial T27/ΣT is a rare case where the strong emotions surrounding the loss of a child can be so vividly approached. Child burials reflect –par excellence- the active role and agency of the mourners (Gallou 2004: 369; cf. Gowland 2006: 152, for the implications of the relationship between the role of the primary mourner and the age of the deceased). Indeed, not only this particular case but also the other choices of juvenile funerary treatment (as discussed above) show a rather direct concern for 'individual' rather than dividual or generic aspects of juvenile personhood, lacking a strong interest in incorporating children to enchainment acts aimed to the tomb's exterior. The embodiment of moving personal experiences involved in the loss and mourning of a child seems essential in these choices (cf. Meskell 1997).

Mycenaean child burials have often been associated with simultaneous adult interments, especially of females assumed to be their mothers, with whom they were placed in close contact (for a list of examples: Polychronakou-Sgouritsa 1987: 21,27; Gallou 2004:367; Paschalidis 2014:807; cf. the association of young children with their mothers up to a certain age in Linear B tablets, Olsen 1998, 2014). The implicit notion in this suggestion is that children were only accepted in the collective tombs if they happened to die around the same time as an adult for whom the tomb was worth opening (cf. Iakovidis 1970). Nonetheless, emotive and spiritual motifs were also suggested, implying the protection of the sub-adult by an older presence (Polychronakou-Sgouritsa 1987). Whether this protective adult was indeed the mother (or father, since male adults have also been identified in such cases: e.g., in the LHIIIC Klauss cemetery, Paschalidis 2014), or any adult of the tomb group who died soon before or after the child, remains an open question. Certainly, the assumption of death simultaneity as a pattern to explain all such cases is extremely doubtful. Even with detailed analysis of skeletal spatial relationships, let alone without, the distinction between simultaneous burials and those placed at short intervals that are found in contact is often impossible (cf. Duday 2009: 72-76). At Voudeni, the lack of primary child burials restricts observations on this issue. Nevertheless, the single observed case of an older child's primary burial (T44/B) is indeed placed adjacent and in bodily contact with a female prime adult (T44/A), favouring the possibility that the high prevalence of such cases in the Klauss cemetery (Paschalidis 2014) reflects a wider local custom of LHIIIC Achaea. The example of Tomb 44 suggests that the child was buried before the adult, even though the precise time interval between the two placements cannot be firmly established. Contextual evidence confirmed that the close placement was intentional and irrelevant to spatial concerns (cf. 6.20). The evidence from secondary burials, however, indicates that adult company is certainly not necessarily required, at least after the initial placement.

In conclusion, children at Voudeni appear to be considered as members of the community, included in secondary funerary practices stressing the collective identity of a closely related kin group. Nevertheless, precise details of their treatment suggest that more personal relationships with the mourners were stressed, and reflected in increased preservation of children's individuality even after decomposition.[83] Children, although involved, did not play an equally central role with adults in enchainment practices favouring the creation of, possibly 'ancestral', links between several places and people through selective and partial skeletal spread. In Voudeni, age distinctions were not as strong as elsewhere suggested, and a significant number even of neonates and infants was included in chamber tombs. Nevertheless, the youngest age categories (below the age of 7) were indeed underrepresented to some extent in all LHIII phases, and especially in the LHIIIC. Possible reasons for the temporal shift in child inclusion will be illuminated in the final discussion of changing social conditions in LHIIIC Achaea (8.4).

[83] Cf. Cavanagh and Mee (1998: 111) suggesting that, in contrast to the MH funerary practices favouring more generalised perceptions of children, a shift to the 'individual' child occurs in the LBA.

8.4 Mortuary practice in its historical context: the relationship between shifts in mortuary practice at Voudeni and social developments in LHIIIC Achaea

Looking closely at temporal shifts in Voudeni funerary customs finally permits us to examine how funerary change relates to the shifting social conditions of the post-palatial Mycenaean era in Achaea and, ultimately, to address the social developments of the LHIIIC period in the region. The socio-political (also possibly demographic) change following the palatial collapse is a central issue in current research about Mycenaean Achaea (1.3-1.4). Specific questions include a) the extent of cultural and social continuity between the two periods; b) population increase and the possibility of refugee influx from the palatial centres; and c) the rise and character of new local elite. These questions are addressed on the basis that funerary shifts reflect, to some extent, social shifts in everyday life that can be approached through the treatment of the dead, if we focus on how personhood and living identities are understood, manipulated, and emphasised at the time of death (chapters 2 & 4). Due to the rather traditional nature of funerary rituals, changes in everyday social reality may be only partially reflected in the mortuary sphere or take a long time to fully unfold. Therefore, in transitional periods such as the LHIIIC, changing ideological notions are expected to be initially detected in subtle differentiations of mortuary practice, rather than blatant radical changes (cf. 8.3).

8.4.1 Continuity and change: the main distinctions between the LHIIIA-B and LHIIIC mortuary practices at Voudeni

The bioarchaeological study of Voudeni confirms the view that continuity of the typical Mycenaean funerary customs is evident in Achaea until the very end of the Mycenaean era (cf. 1.3-1.4). The main characteristics of the funerary practice in both palatial and post-palatial periods (i.e. collective chamber tomb burials involving secondary bone removal to commingled assemblages) are part of the typical Mycenaean funerary tradition as already defined during the Early Mycenaean period (cf. 3.3.3.2). Continuity of the same tradition in LHIIIC Voudeni is evident in the persistent use of the same funerary ground and pre-existing tombs (8.1.5), the same basic forms for disposing the dead, and a very similar range of specific funerary choices (8.1.4, 8.3.1). However, the absence of a strict ritual order in the occurrence or sequence of specific acts (e.g., secondary removal), the possibility of differential choices instead of specific prerequisites (e.g., level of disarticulation, cf. 8.1.3) and of various responses to the same practical concerns (e.g., space issues, cf. 8.3.1), as well as the rarity of repetitive patterns within the same tomb or tomb groups (cf. 8.1.5) indicate that the traditional funerary set applied at Voudeni was fairly flexible in its details, dictated neither by strict institutionalised norms nor fixed family (or other small group) traditions. Therefore, differential choices could easily fit within the well-established general outline of the Mycenaean funerary set, offering us the chance to investigate subtle –yet distinct– temporal alterations in specific funerary activities.

This study showed that the LHIIIA-B funerary choices in Voudeni were characterised by the typical Mycenaean notions of collective identity and broad social enchainment (8.3.2). Relational and dividual aspects of personhood were stressed in random commingling, increased fragmentation, and frequent bone removal both inside and to outside the tomb, allowing the possibility of broad enchainment through renewed associations with other places, people, and times. Secondary practices that entail some degree of preservation of individual identity were limited during this period, as observed by the rare retention of fairly complete skeletons in secondary assemblages (restricted to sub-adults) and low occurrence of specific bone selection. Furthermore, almost complete absence of sex and age-based segregation in funerary practices was noticed (8.2, 8.3.4).

In the LHIIIC period, subtle –yet distinct– changes are observed in funerary practices. They include: a) a shift towards more 'individual' and bounded notions of personhood and identity, variously expressed (8.3.2); b) increased exclusion of the youngest age categories (8.2, 8.3.4); c) appearance of some –albeit limited– sex-based differentiations in certain funerary choices (e.g., selective retention of lower body applied only in male disturbed primary burials, 8.2.3); and d) introduction of occasional novelties, such as raw clay sub-floor for primary burials (8.1.2), pits for primary interments accompanied by increased pit use for secondary deposits (8.1.4), and few examples of new burial floor created above the original chamber floor (8.1.2). Even though the basic outline of funerary practice remained the same, the shift towards more 'individual' and bounded notions is evident in all these changes. Secondary removal towards the tomb's exterior was decreased, surpassed by more bounded and ‘individualised’ removal within the tomb. This is indicated by extending the retention of fairly complete skeletons in secondary deposits to include adult individuals, as well as by increased evidence for selective retention of prominent bones. The latter possibly comprised a strategy to reconcile the need for space with the wish to preserve past burials inside the tomb (by limiting the exterior removal to smaller insignificant bones, while keeping inside the ones that could be considered as more representative of individuals). Of special interest is the case of disturbed primary burials from which only the upper body was removed (probably to outside the tomb), while the lower body was kept *in situ* intact. These individuals appear to hold a special place in fragmentation and enchainment practice, representing an intermediary in the tension between individual and dividual facets of personhood; the fact that they are all males may also be of significance (see below). Finally, the same notions are observed in spatial choices and material novelties. The increase in pit use similarly emphasises more bounded units in contrast to wide dispersal and extensive commingling. Even more clearly, pits for primary interments represent individual mortuary contexts, while the use of raw clay as a sub-floor may also be understood as means to markedly delineate the ‘personal’ space of a burial. At the same time, the construction of new floors -instead of wiping out past remains and then re-using the original floor- is also indicative of a wish to keep the link to a certain past but also distinguish the identity of the current tomb users. In terms of demography and funerary inclusion, the two main changes include a significant decrease in the representation of the youngest sub-adults and a marked increase in deaths of young adults, and especially males (8.2.2). Finally, a shift in female/male ratio, favouring male representation as we get further into the LHIIIC period is also evident (8.2.1).

8.4.2 The LHIIIC conceptual shift in mortuary practice at Voudeni

8.4.2.1 The question of population influx

The identification of patterned temporal differentiation in Voudeni’s mortuary customs confirms that the social transition that followed the palatial collapse was reflected in the funerary sphere. Even though the Achaean LHIIIC funerary practices did not demonstrate radical changes as observed elsewhere (cf. 1.3-1.4), the multi-dimensional reconstruction of Voudeni’s funerary activities revealed a distinct temporal shift, both in inclusion and specific characteristics of the funerary acts. The hypothesis of some refugee influx from the main palatial centres into Achaea has been suggested as the reason for the LHIIIC developments in the area, i.e. economic and possibly population stability or even growth. Most current researchers, however, reject population influx as the main factor of change, stressing the evidence for local continuity (e.g., Papadopoulos 1979; Kolonas 1998; Giannopoulos 2008; see 1.4). In agreement with the latter, the results of this study do not support population change as the main cause of the LHIIIC funerary shifts in Voudeni.

As discussed in Chapter 2, diffusionist arguments are inherently problematic by directly equating cultural change to presumed population movements, underplaying responses to internal social change. Looking carefully at the Voudeni data, we saw that all observed changes are underpinned by similar conceptual notions, which, in contrast to the former period, favour more bounded and individualised distinctions within the collective group. Furthermore, these shifts are mostly expressed in ways not completely innovative but already encountered within the earlier tradition. Such a patterned conceptual shift within an already familiar range of funerary choices implies rather a response to changing social needs than a sudden influx of outsiders with different customs. Even more, the distinctive notions of this period are more reminiscent of the transformation in Early Mycenaean mortuary attitudes rather than of the typical LHIIIA-B customs of the palatial centres (see 8.4.3); however, the latter would have been expected if the change was due to refugees from these places bringing their own traditions. This does not rule out the possibility of some influx, and even more likely of increased contact with other areas that could have allowed the introduction of some distinct novelties (e.g., the use of raw clay or pits for primary burials).[84] Still, it appears that even the novelties were used on a selective basis, inasmuch as they fitted well with the conceptual notions that the LHIIIC (or *some* LHIIIC) people wanted to stress. It would be tempting to connect the facilitation of these adaptations to a loosening of ritual norms after the collapse of palatial control; however, even during the palatial times the particulars of Voudeni funerary tradition

[84] Interestingly, these 'novelties' appear in some cases clustered in the same tomb: e.g., two out of three primary burials in pits were encountered in Tomb 13; repeated interest for the specific secondary act of individual retention in pits was shown in T42 and T28; two out of the six cases probably intentionally preserving *in situ* only the lower body were encountered in T31.

were not too rigid (cf. 8.3.1), facilitating, thus, the funerary expression of ideological shifts when social transformation was set in motion.

Voudeni's palaeodemographic data cannot directly assist the question of population influx, for several reasons. Most importantly, evidence from the associated settlement is lacking (if Voudeni is indeed associated with a single and not multiple settlements), while funerary inclusion appears to some extent affected by cultural choices. Even more, as discussed in relevant sections (cf. 7.2, 8.1.3, 8.2), changes in the frequency of tomb use and the number of burials should not be directly linked to changes in population numbers, as alternative explanations may apply (e.g., the use of another funerary locus). In any case, the question of changes in Achaea's population size can only be approached on the basis of regional, and not site-specific, evidence. What is, nonetheless, observed is stability in Voudeni's tomb population, without marked indications of either size reduction or increase (despite the possibility of *some* movement, indicated by LHIIIC increase of young adult male deaths).

8.4.2.2 The question of a new elite

Achaea's prosperity during the LHIIIC period is currently understood as due to her taking advantage of the palatial demise in order to further expand its already established trading links between the West and the Greek mainland (1.4). During the re-organisation of social life in this period, the potential for gradual establishment of a -new?- elite class, advertising its social prestige through military representations, is suggested by the appearance of the distinct 'warrior burials', which stressed the prominence of specific individuals, probably top members of local elites (Deger-Jalkotzy 2006; Giannopoulos 2008, forthcoming; cf. 1.4). In Voudeni, there are only three examples of typical 'warrior burials' (i.e. satisfying the criterion of possessing a Naue II sword), but none from the tombs analysed in this study. Nonetheless, burials accompanied by some sort of weaponry are included in the current sample. The extent of actual involvement in warfare of these individuals is under discussion,[85] but the palaeodemographic data of this study raise the possibility of an increase in violent encounters during the LHIIIC period, suggested by the increase of young adult deaths, particularly males, which reaches its peak in the LHIIIC Early but also continues into the LHIIIC Middle-Late period (cf. 8.2.2). The future palaeopathological analysis of the

[85] These cases will be separately dealt with in a future paper (in collaboration with Dr. Kolonas), integrating demographic, palaeopathological, and cultural evidence.

Voudeni population will illuminate this issue. Even though such burials are rare in Voudeni, other forms of differentiated funerary treatment were encountered, likely to imply alternative modes of funerary and status distinction (see below).

8.4.2.3 Changing notions in the LHIIIC mortuary sphere at Voudeni: the interplay of collective and individual identities, integration and differentiation

In order to finally assess the multiple meanings of the conceptual shift in Voudeni's LHIIIC funerary practice, it is important to first sum up the basic points outlined so far. A strong continuation of earlier collective tradition is evident, but at the same time, the emphasis moves from the broad collective to more specific and bounded notions. The collective identity of the group within the tomb is maintained but increased segregation of the funerary contexts within is also attested, while the enchainment with people and places outside the tomb diminishes. Relational aspects may still remain the dominant parameter of the funerary rite, but attempts to preserve or stress individual personhood within the collective unit are now evident. The increased exclusion of the youngest sub-adults from the collective group may be viewed as consistent with the shift towards individual notions, possibly reflecting a re-definition of the ideal collective group that prioritises individual characteristics (cf. achieved status) rather than simple descent as prerequisites for participation. Both sexes are almost equally included in almost all funerary aspects, at least in terms of general inclusion and treatment of the body (gender-based differentiation of funerary offerings will be examined in a future study). Nevertheless, an increase in the importance of male identity is implied by the following: a) the gradual reverse of the sex ratio, favouring males, from the LHIIIA to the LHIIIC Middle-Late period (8.2.1); and b) the suggestion of sex-based preference in the case of disturbed primary burials preserving *in situ* only the lower body. The fact that this special form of secondary body treatment was preserved only for males suggests that gender identity may have been important in some funerary expressions, not so much concerning the collective inclusion but expressions of differentiation. It should be noticed, however, that except for this case, females were included in all other specific choices stressing individuality (e.g., primary burials in pits etc).

The LHIIIC disturbed primary burials preserving *in situ* only the lower body represent a special form of secondary funerary treatment, which not only stresses the notion of individual preservation even after soft tissue decomposition but offers these individuals a distinct place in the enchainment process by removing their upper body to another assemblage, outside the tomb (8.3.2). These individuals, all males in the current sample, appear thus to enjoy a dual identity, representing a third, special category between the two main forms that Boyd (in press a) described as the 'two kinds of dead' in Mycenaean collective tombs: the primary burials of recently deceased and the ones transferred into the corporate group after decomposition, having acquired the status of ancestor. In the special treatment of these LHIIIC males, both the individual and relational aspects of personhood operate at the same time. These persons maintain their distinct individual social position within the common tomb but also participate in a wider social mixing, incorporated in secondary assemblages either within or even outside the bounded tomb group. Cross-cultural evidence suggests that it is not unusual for certain individuals to be singled out within cults otherwise emphasising collective ancestral identity, and for their remains to receive special treatment (cf. Boutin 2012: 111). This singling out may reflect the maintenance of the specific, named, memory of a person whose social presence remains strong even in the absence of its fleshed body, but could also be used simply to stress the importance of individual status through the link to a more palpable specific ancestor, even if his name was forgotten (cf. Driessen 2010, who suggests similar concepts operating in Early Minoan Myrtos, Crete, on the basis of isolated skulls found in the settlement area). Except for these disturbed primary burials, similar concepts were probably expressed by the practice of selective cranial removal, also only attested –albeit rarely– in the LHIIIC period.

The combination of the collective and the individual, of integration and differentiation, characterises the changing notions of the LHIIIC funerary practice, and this combination is more vividly expressed in the peculiar distinction of these individuals. We see here that even if this sample does not include 'warrior burials', other forms of burial treatment may indicate distinct roles for certain individuals. The use of these persons as special links between the past, the present, and the future, perhaps as special ancestors within a wider ancestral group, appears to have replaced the wider, anonymous enchainment seen more frequently in the earlier period. In the LHIIIC, the links become specified. The social processes behind these conceptual dualities should be understood as attempts to legitimacy; the link of certain people and their group to a well-established collective ancestral power is a process of legitimation. The significance of specific lineage (rather than abstract descent) together with individual importance seem to underpin this process.

To better understand which legitimation sources were preferred and whether we are dealing with actual or fictitious continuity, it is helpful to consider in which tombs the acts that most vividly express the dual concept (i.e. the special use of selected individuals in the enchainment process) are more frequently observed. As discussed in 8.3.3, the occupants of both the larger and upper hill tombs appear more frequently involved in activities of wider enchainment, both in the LHIIIA-B and the LHIIIC period; higher rates of bone removal to outside the tomb were continuously attested in these groups. In the LHIIIC, this custom is much less generally observed but persists in some tombs, often in a more selective form. The special category of disturbed primary burials preserving *in situ* only the lower body is only attested in large and medium-sized tombs, while selective cranial removal is exclusively attested in the upper hill tombs. The prominent role of these tombs in enchainment practices suggests that both the memory of ancient high status as well as plainly old age were perceived as suitable sources of legitimation in the LHIIIC period (see 8.3.3). Whether these links reflect actual lineage continuity cannot be determined without the study of biological affinities of the Voudeni population. It is probably not coincidental that the new trends often cluster in the same tombs (see above) and that the larger tombs appear to remain close to traditional choices (e.g., lacking dromos pits or chamber pits for primary burials), only rarely including some of the novelties (e.g., raw clay burial floor in T4). However, as discussed above, these choices may simply relate to differential social responses of the various small (kin?) groups in order to stress their identity, and cannot be directly related to degrees of lineage continuity.[86] In any case, the lack of radical gaps and the abundant evidence of the past maintaining a strong social value permit us to assume at least some extent of actual continuity, even if the creation of fictitious links was also employed.

[86] The pronounced under-representation of LHIIIB cultural evidence (absent in 40% of the tombs, cf. 7.1, Figure 7.5) is potentially significant in the discussion of lineage continuity. At the moment, however, it cannot be taken into further consideration, since it comprises a problematic archaeological issue commonly encountered in Achaea, the interpretation of which remains largely inconclusive (cf. 8.2.2).

8.4.3 Concluding remarks

To conclude, the bioarchaeological analysis of Voudeni's funerary practices[87] suggests an important social shift in the LHIIIC period. Funerary practice remained closely linked with the LHIIIA-B Mycenaean tradition, which emphasised the collective identity of the corporate group; at the same time, within this collective outline, a subtle –yet distinct– shift towards more bounded and individual notions was observed in both primary and secondary treatment of the body. The shifted emphasis manifested in increased preservation of individuality before or even after soft tissue decomposition, both spatially (e.g., increase in pit use) and symbolically (e.g., differential treatment of prominent bones). Moreover, some individuals appeared to gain an even more special –truly individualised– role in enchainment practices (e.g., disturbed primary burials preserving *in situ* only the lower body). Segregation of age categories increased as the youngest sub-adults –already only partially included– were finally represented even less. A statistically significant trend towards increased male funerary inclusion was detected, even though both sexes largely continued to share the same funerary rites. However, the exclusive male participation in the special category of disturbed primary burials preserving *in situ* only the lower body implies a marking out of male identity.

The post-depositional treatment of the dead body, through fragmentation, dispersal and re-incorporation, plays a central role in enchainment practices aimed at social reproduction and re-organisation (2.2.2). Agency and personhood underpin all funerary choices and often reflect negotiations, or even tension, between different concerns, manifested in the shifting emphasis between individual and dividual facets (cf. LiPuma 1998; Fowler 2004). During the transitional LHIIIC period, the mortuary activities of Voudeni's people express such 'opposing' concerns by demonstrating a subtle but clear shift of emphasis towards individual notions alongside their well-established tradition of collective social identity. Interestingly, the concurrent operation of both principles in this final phase of Achaea's Mycenaean era appears conceptually similar to the funerary practices of the formative Early Mycenaean period (cf. Deger-Jalkotzy 2006 on the similarities between Early Mycenaean funerary

[87] That is, the treatment of the dead body in particular. A future contextual study of offerings, osteobiographies, and body treatment will complement the current discussion, illuminating other aspects of mortuary practice.

ideology and LHIIIC warrior burials). The early stages of collective Mycenaean funerary customs are characterised by a dual concern for integration and differentiation: the emphasis is placed both on continuity and unity of the corporate group but also on individual (and especially male) accomplishments, with gender and age-based segregation far more apparent than in the later typical form of the LHIII funerary rites (Voutsaki 2010). Whether these notions are generally applicable to Early Mycenaean funerary practices or rather idiosyncratic to specific regions and elite Shaft Graves will be further illuminated by the gradual accumulation of regional bioarchaeological data (e.g., Moutafi and Voutsaki forthcoming; Lagia et al. forthcoming).

In any case, the integral characteristics of the chamber tomb form allowed from the beginning strategies of both association and differentiation to operate within its collective framework (Boyd in press a; cf. 3.3-3.4). The conceptual similarity between the Early Mycenaean mortuary practices and those of LHIIIC Voudeni should be attributed to similar responses to similar triggers: that is, the changing social conditions of a transformative period when radical social re-organisation is set in motion. The specific path of these changes, however, is quite the reverse. In the Early Mycenaean times, the direction was from bounded association to the broad collective, and from the Middle Helladic emphasis on lineage to a broader idea of common descent. In Voudeni's LHIIIC practices, small groups (probably kin-based) are shown to be re-defining their individual identity, and even stressing the specific 'power' of certain individuals, within a common ancestral group. The value of the ancestral group is still considered important and the LHIIIC people appear to consolidate their power through past tradition, but the decreased evidence of broader enchainment (e.g., removal to outside the tomb, wide commingling etc.) that is gradually replaced by the stressing of bounded units within the common tomb (e.g., increase in the use of pits) suggests a gradual shift of importance from the general descent to specific lineage.

The social tendencies discerned in Voudeni's LHIIIC funerary practices parallel what Maran (2006) identified elsewhere and in other forms of archaeological evidence as the two conflicting principles of LHIIIC ideology: individual accomplishments and proof of descent from the former elites. Focussing on contextual archaeological evidence from Argolid settlements, and especially Tiryns, Maran (2006) concludes that certain families used both strategies for power legitimation; in these cases, he views the reference to the past not as actual continuity but rather as attempts to gain legitimacy. The results of my study suggest that, in Voudeni, the need for continuity and reference to the past was crucial, drawing though not only on elite descent but mostly on old lineage. This inference is based on where the funerary activities mostly concerned with both broad enchainment and individual distinction were principally observed (8.4.2). In this study, only the tomb size parameter was taken into account as a potential indicator of former high status, while comparisons of material wealth will be considered in the future (cf. 8.3.3). Kolonas (1998), however, in some cases observed a marked change of status (in terms of material wealth) between the former and the LHIIIC group tomb users (e.g., Tomb 4). Whether this implies change in the socioeconomic status of the kin group, or changed strategies about conspicuous consumption, or tomb use replacement by a different group, remains to be further examined. In any case, even if actual lineage continuity is possible but cannot be confirmed on current evidence alone, we can see that both the memory of former socioeconomic status and of simply old lineage were believed to offer the appropriate background for groups trying to distinguish themselves both through the valuable ancestral stock and the pre-eminent power of one (or some) of their recent members. Therefore, funerary evidence suggests that kin groups trying to gain or maintain social distinction in LHIIIC Voudeni could equally be associated or not with past elites. Giannopoulos (2008, forthcoming) comes to a similar conclusion about the LHIIIC Achaean elites represented by 'warrior burials', as he notes that they are often encountered in collective tombs that did not display evidence of former distinct status.

Recent studies have identified the wider development of a gradual shift in LHIIIC funerary practices towards the distinction of individual identity, both in the centres and the periphery of the Mycenaean world, cumulatively leading into the funerary patterns of the Early Iron Age (a general review in Dickinson 2006: 174-195; for a more specific discussion on the Argolid and the Methana peniscula: Lantzas 2012: 42-74). The shift is inferred on the basis of a) increase in single mortuary contexts (e.g., pits, cists); b) in bounded burial loci within a collective tomb (e.g., vessels); and c) the introduction of cremation (Dickinson 2006: 178-183; Lantzas 2012: 64). Rejecting past interpretations of the changes as a revival of MH mortuary practices (e.g., Desborough 1972: 266) or indication of Greek continuity from the MH to the EIA (Snodgrass 1971:

196), currently scholars tend to agree that this shift represents a response to changing social conditions. However, the significance placed on the move to single burial is debatable. Dickinson (2006: 183) does not view it as directly related to important social change *contra* Lantzas 2012, who interprets the increased individual notions as very meaningful signs for the post-palatial social processes, variously expressed in both funerary and everyday practices. It has also been noticed that in peripheral areas of the Mycenaean world the collective Mycenaean funerary tradition persists much longer (cf. Thessaly: Georganas 2000, and Western Greece: Eder 2006; Deger-Jalkotzy 2006), probably explained by the fact that distance from the palatial centres ensured the lack of negative connotations of palatial ideology, permitting thus for longer the propagandistic use of the past and even of similar strategies as those of the former palatial elite (Giannopoulos 2008: 245-252; Lantzas 2012: 67; cf. 1.4).

The results of the present study suggest that, indeed, changes in funerary practices, no matter how subtle, represent meaningful social acts. The transformation of people's funerary activities not only reflects the experience but also participates in the creation of the transforming social conditions. The interplay between individual and collective notions observed in the LHIIIC Voudeni is closely linked both to the general social changes of the LHIIIC period and the particular circumstances of Mycenaean Achaea. It is interesting to notice how the shift towards the individual appears to be a broader trend but at the same time the forms and intensity through which it manifests itself may be quite different due to the specific regional conditions of each case. In Voudeni, it is evident that there is no post-palatial clash with the past and its well-established funerary tradition, which, in Achaea, appears to have been formed along the lines of the typical Mycenaean LHIIIA-B rites, but not conforming to a strict institutionalised norm or a typical package of activities that were likely more stylised in the palatial centres.[88] In LHIIIC, several indications suggest that Voudeni's life was affected, but not radically altered, by the post-palatial social change. Renegotiations of social power were probably in play, as inferred by a turn towards stressing the individual, and to some extent male, identity in the funerary treatment; this was also corroborated by demographic observations (i.e. increased male funerary

[88] Cf. regional characteristics of Achaean pottery repertoire that seem to imply a lack of interest in feasting activities, and the very low quantity of figurines, particularly at Voudeni (Papadopoulos 1979; Kolonas 1998; see 1.4-1.5).

inclusion and rise of young adult male deaths). However, this shift is expressed in fairly subtle forms within the traditional framework and not radically new customs (e.g., single burials or cremations), while the most exceptional LHIIIC warrior burials are not that frequent in Voudeni (and absent in my sample). Voudeni's LHIIIC social place in Achaea can, thus, be viewed as one of modest prosperity (in agreement with Kolonas' 1998 conclusion), rather than one of regional supremacy, as it probably enjoyed during its former phase. This question can only be fully addressed by future intra-regional archaeological studies and the bioarchaeological cross-examination of Voudeni's LHIIIC funerary customs in comparison with those of other Achaean centres. Nevertheless, the ultimate conclusion of this study is that in-depth bioarchaeological analysis of funerary practice, and especially of body treatment, is able to detect changes that, no matter how subtle, are of significance in terms of understanding ongoing social processes. Especially in transitional periods, social meanings are most often not to be found in blatant and radical transformations, but in much subtler notions, and particularly in the shift of emphasis between the collective and individual identity, in the constant play between dividual and individual facets of personhood.

CHAPTER 9
CONCLUDING SUMMARY

With the present study, I sought to start a journey towards a social bioarchaeology of the Mycenaean period. Within a wider existential framework, driven by theories of practice, agency, and phenomenology, I proposed that the *only* way to address mortuary data in order to explore past social conditions is through an emic understanding of past actions and experiences, both of the living actors, the mourners, and the dead themselves. The key to this path was the formation of a holistic bioarchaeological model, advocating an equal understanding of cultural and biological evidence within an explicit theoretical framework, which underlined the importance of historical specificity for understanding human acts. In this light, a single specific case, the cemetery of Mycenaean Voudeni in Achaea, was selected. Through the multi-disciplinary analysis of Voudeni's funerary remains, the relationship between changing social conditions and Mycenaean mortuary practice was explored at many different levels.

The human skeletal remains comprise the primary strand of evidence, ideally examined contextually with as many other aspects of biological and material evidence as possible. The strength of the holistic bioarchaeological approach I propose lies in its dual scope. The bones of the dead are examined both as the active object of the practices of the living, but also as the subject of their own lived experiences. Looking closely at the interplay of both, it is possible to discern shifting notions of personhood and social identity at the time of death and beyond, thus getting closer to the multiple meanings of funerary practice. The present study focussed mostly on the first aspect, the reconstruction of the post-mortem treatment of the dead, while the next stage of this research will comprise a full reconstruction of osteobiographies and biological status, to be examined across funerary treatment and material offerings.

For my approach to work, it was necessary to cross disciplinary divides and attempt to reconcile abstract theoretical advances with empirical bio-cultural data, clearly outlining a synthetic methodology for its analysis. The fragmentary character of the available data and the fluid nature of the phenomena we are trying to understand demand that we leave room for ambiguity in our interpretations; exactly because of that, however, it is imperative that the selected methodology ensures clarity, scientific rigor, and the production of comparable results. Therefore, special care was given to the compilation of an up-to-date but also time-efficient methodological package, especially addressed to the analysis of commingled human remains and the reconstruction of funerary activities, drawing mostly from forensic commingling analysis, archaeozoology, and field anthropology. The analysis of bone frequencies, preservation patterns, and spatial skeletal relationships permitted the successful grouping of the skeletal remains and the reconstruction of specific funerary activities, their classification in well-outlined categories based on explicit criteria, and a reliable elucidation of their chronology. Based on these, the skeletal data were arranged in a solid but flexible database that could operate on multiple levels of analysis, allowing further exploration across demographic, cultural, and temporal parameters, both on quantitative and qualitative bases.

Through this bioarchaeological approach, the treatment of the dead in Voudeni chamber tombs was illuminated to an unprecedented level of detail. This allowed the detection of patterns meaningful in social terms; these were not necessarily expressed in blatant radical changes but rather in much subtler notions, in shifts of emphasis between aspects of social identity, dividual and individual facets of personhood. The detailed discussion of analytical results (Chapter 8) can be summarised under the following points:

- ***Formation of skeletal assemblages and types of disposal*** (8.1.1-2). The human remains were manipulated through multiple and diverse acts that resulted in a variety of primary and secondary contexts. Excluding the effects of natural taphonomic damage, it was shown that eighty-five percent of skeletal cases were subjected to some form of secondary treatment, most frequently confirmed as intentionally applied. The secondary manipulation involved: a) retention within the tomb, through relocation on the chamber's floor or in pits either in the chamber or dromos; and b) removal of skeletal material to another location outside the tomb. Both aspects comprise a variety of specific acts in terms of random or specific bone selection and complete or partial application to individual skeletons. Attributes of primary burials (mostly those dated entirely within the LHIIIC period) also varied in terms of burial location and position.

- ***Frequency and sequence of funerary events*** (8.1.3). Frequency and density of tomb use was assessed through the estimation of MNI and chronological length of use, with most tombs showing evidence of use in more than one chronological period. A range of two to 27 MNI per tomb was attested, with an average of 10.3. The significant impact of bone removal practices and/or differential inclusion was evident in the unexpected negative correlation of MNI with tomb size, and the lack of correlation between MNI and length of tomb use. The contextual discussion of skeletal and material evidence illuminated the sequence of funerary events far more than archaeological evidence alone; still, to precisely determine the temporal distance between disposal stages was difficult. Nonetheless, the time interval between various disposal stages proved variable and inconsistent, suggesting that no rigid distinction between fleshed and defleshed bodies or strict ritual prescripts dictated the timing of secondary removal.

- ***General demographic characteristics*** (8.2.1). Both sexes and all age categories were included in the sampled Voudeni mortuary population. The sex ratio is almost equal in the entire sample, although there was a statistically significant preference for male inclusion in the LHIIIC period. In terms of age, Voudeni's mortality profiles were characterised by an under-representation of the youngest sub-adult categories (<7 years) in relation to expected rates in a normal population, particularly in the LHIIIC period; however, in comparison with similar Mycenaean data, more infants and young children were identified in Voudeni, often based on scarce skeletal evidence. Considering the taphonomic condition and sample representativeness, palaeodemographic analysis showed that the under-representation of young children and infants are most likely attributed, at least to some extent, to cultural factors. On the contrary, the second basic characteristic of Voudeni's mortality profiles, the under-representation of old adults (>50 years), was shown most likely to reflect a real demographic phenomenon, possibly somewhat enhanced by methodological rather than cultural bias.

- ***Temporal shifts in demographic data*** (8.2.2). The LHIIIC mortality profile differs from that of LHIIIA-B in two ways: the youngest sub-adults were more underrepresented while the deaths of young adults were markedly increased, especially for males. The evaluation of these findings suggest that the first characteristic should be attributed to cultural factors related to differential inclusion and not real changes in population structure and size. As for the increase in young adult deaths, it is possible they reflect some increase in violent encounters in the LHIIIC period (to be further explored along with palaeopathological evidence in future analysis).

- ***Differential funerary treatment across sex and age*** (8.2.3). Most aspects of funerary treatment did not show much differentiation between the sexes. Both were equally included in all forms of secondary disposal, and were subjected to the same specific acts. The only exception is seen in the unusual custom of selective retention of the lower body *in situ*, almost exclusively attested in male cases. In terms of primary burial attributes, only side of placement demonstrated statistically significant differentiation, with females mostly placed on their left side and males on the right. The extended lower limb position was used almost exclusively in males, although the difference is not statistically significant. In terms of age, all adult categories shared the same funerary treatment; sub-adults were included in all basic types of disposal, but their secondary treatment displayed subtle differentiations. Sub-adults were more involved in secondary retention within the tomb rather than removal to the outside, and often received individual (fairly complete) retention, while they were apparently excluded from selective practices indicating wider enchainment (e.g., cranial removal, partially removed primary burials etc.). The specific characteristics of child inclusion in Voudeni's mortuary record revealed their distinct place in social relationships beyond death, suggesting the importance of their membership in the collective group but possibly on a more 'personal' individualised basis (8.3.4).

- ***Motivation for interference with past remains*** (8.3.1). The secondary treatment of past remains at Voudeni was found to be initiated by a mixture of factors, often irrespective of practical necessities. The secondary funerary acts were characterised to some extent by regularity and persistence of certain choices for the entire LHIII period, despite their diversity. Differentiations in these practices were subtle, operating within a well-established funerary set, implying thus the existence of a secondary burial ritual, firmly grounded in tradition. However, the specifics of these acts do not appear to have been dictated by strict institutionalised norms. This allowed different patterns to emerge, which, subtle as they may have been, still embodied conceptual shifts in mutual rapport with the shifting social conditions.

- ***Bodily fragmentation and enchainment practices*** (8.3.2). The diverse forms that fragmentation of the dead body took at Voudeni followed two distinct, yet permeable and complementary, forms: bone removal for retention in a new context within the tomb and removal to outside the tomb. Despite the fluidity between the two aspects, a conceptual distinction in terms of enchainment is evident in these choices; the former may be perceived to emphasise a more delineated, bounded group identity, restricting possible associations between the users of the tomb, while the latter reflects more permeable notions, a wider sense of 'belonging', allowing broader re-associations between people, spaces, and times. Based on the confirmed act of removal to outside the tomb, the existence of other, funerary or otherwise, spaces that received human remains may be securely inferred, even if these places are not yet discovered. Both aspects of fragmentation, within and beyond the tomb, were variously associated with notions of personhood. The specific details of secondary mortuary treatment and skeletal dispersal (random or selective, complete or partial, removal and retention) preserved or denied 'individuality' of the dead body to different extents. The bones of the dead thus held a central role in the constant recreation of contexts that linked past and present users of the tomb (or even people outside it) through these activities. Some form of lineage and wider collective social links were maintained, reminded of, or re-created in that way. The stressing of collective identity may represent the pillar of Mycenaean funerary tradition, but it is in subtle differentiations of funerary treatment along these lines, in the shifting emphasis between dividual and individual aspects of personhood, that we may come closer to appreciating human agency and seeing how funerary activities relate to their historical context. Activities that largely denied individuality (i.e. wide commingling, random bone removal) and those which preserved it to some extent (i.e. single secondary depositions, disturbed primary burials, retention of fairly complete skeletons, selective attention to prominent bones such as crania) did not show sex-related preferences in their application, except for the special category of disturbed primary burials preserving only the lower body *in situ*; these were exclusively males and probably held a special role in enchainment process during the LHIIIC period (8.4.1). Sub-adult treatment was also distinct; children were treated 'individually' but appeared less included in activities of wide enchainment to outside the tomb. The differentiating conceptual notions mostly showed a temporal distinction: activities stressing broader enchainment and dividual personhood were much more prominent in the LHIIIA-B period, while 'individual' aspects and bounded notions were more markedly expressed in the LHIIIC.

- ***Funerary diversity across tomb attributes and potential links to vertical status differentiation*** (8.3.3). The variety and complexity of funerary practices was fairly similar between the different tomb groups; however, certain discriminating trends were noticed, especially across the tomb size variable. These include the reverse correlation of MNI with size, the under-representation of sub-adults with complete absence of the youngest age categories in large tombs, the lack of dromos pits in large tombs, and the absence of disturbed primary burials from small tombs. These trends imply a combination of stricter inclusion, stronger tradition, and increased practices of skeletal removal to outside the tomb. Evidence for the latter was also found in upper hill tombs, the ones that possibly represent the oldest core of Voudeni's cemetery. Therefore, it is suggested that both these tomb categories were selected as appropriate sources for enabling wider social links through continuous practices of increased bone removal. Both social distinction (large tombs) and old age (upper hill tombs) can be conceived as carrying special social value for preferential inclusion of certain groups in social enchainment, representing two parallel sources of legitimation.

The contextual examination of temporal shifts in all the above characteristics finally reveals how funerary change relates to the social developments in LHIIIC Mycenaean Achaea, after the collapse of the Mycenaean palaces. This issue was fully discussed in 8.4 and concluding points summarised in 8.4.3; as a brief summary, the following points can be repeated:

- *Continuity and change.* Funerary practice remained closely linked with the LHIIIA-B Mycenaean tradition, which emphasised the collective identity of the corporate group; at the same time, within this collective outline, a subtle –yet distinct– shift towards more bounded and individual notions was observed in both primary and secondary treatment of the body. The shifted emphasis manifested in: a) increased preservation of individuality before and after soft tissue decomposition, both spatially (e.g., increase in pit use) and symbolically (e.g., differential treatment of prominent bones); b) a prominent role of *some* individuals in enchainment practices (e.g., disturbed primary burials preserving *in situ* only the lower body); c) increased segregation of age categories with less representation of youngest sub-adults; d) increased emphasis placed on male identity (preferential inclusion in specific burial treatment).
- *Population influx.* Even though some extent of population influx cannot be rejected, there was no evidence supporting that it had any great impact. The patterned conceptual shift in funerary change within the traditional framework implies a response to changing social needs rather than an influx of outsiders with different customs.
- *Changing notions.* Remaining close to the collective tradition, strategies of differentiation are now also in play, while individual pre-eminence (related to some extent to adult male identity) becomes increasingly important. The traditional ways to achieve collective links are still in use, displaying, however, an introvert shift into more bounded notions. The collective is now more often combined with the individual, integration with differentiation. Certain persons seem to operate as special and specific links between the past and the present. These processes, probably not accidentally mostly encountered in the larger and oldest tombs, may be viewed as attempts at legitimacy and consolidation of power for certain groups. The significance of specific lineage rather than abstract descent seems to underpin this process. A conceptual similarity to Early Mycenaean funerary changes is evident, which I view as a

response to similar social triggers, rather than a resurgence of MH tradition. Interestingly, the specific path of the changes is however quite the reverse: from the broad collective to bounded association, from descent to lineage.

The results of the present study show that changes in funerary practices, no matter how subtle, represent meaningful social acts. The transformation of people's funerary activities in LHIIIC Voudeni not only reflected their social experience but participated in the creation of the transforming social conditions.

Beyond the contribution to our understanding of Mycenaean funerary customs in LHIII Achaea and the specific place of Voudeni, I hope that my study has managed to demonstrate how a bioarchaeological approach integrating current advances in method and theory of mortuary archaeology and physical anthropology is the most promising path to addressing the questions of Mycenaean mortuary research. This framework should be complemented by a full appreciation of osteobiographies (palaeopathology, palaeodiet, biological status) and their examination across all aspects of cultural data, and ideally incorporate scientific advances in our field (isotope analyses, biodistance, a-DNA) and integrated data of other research fields (e.g., environmental studies, geoarchaeology). The only way to fully respect the particular historical conditions of each case is to apply in-depth analyses in specific places and times and only then, by accumulating comparable data, attempt to approach the greater picture. The Voudeni results have shown that the variation in body treatment is of great significance in terms of understanding ongoing social processes. Social meanings are often not to be found in blatant and radical transformations, but in much subtler notions. To discern them, we need as detailed as possible emic approaches to the past human experience and mortuary practice. The journey towards a social bioarchaeology of the Mycenaean period has just begun.

APPENDIX

Table 5.X1. Selection of sites of entheseal changes recorded in this study (selected from Hawkey and Merbs 1995; Robb 1998; Capasso et al. 1999).

BONE	BONE LANDMARK	SITE
Humerus	Bicipital groove	Pectoralis major insertion Latis.dorsi/teres insertion
Humerus	Deltoid tuberosity	Deltoid insertion
Humerus	Lateral epicondyle	Common extensors origin
Humerus	Medial epicondyle	Common flexors origin
Humerus	Greater tubercle	Infraspinatus
Radius	Bicipital tuberosity	Biceps insertion
Radius	Mid-shaft	Pronator teres origin
Ulna	Ulnar tuberosity	Brachialis origin
Ulna	Coronoid process	Flexor digitorum superficialis origin
Ulna	Top of olecranon	Triceps brachii
Ulna	Posterior proximal shaft	Anconeus
Ulna	Supinator crest	Supinator
Femur	Proximal shaft	Gluteus maximus insertion
Femur	Midshaft	Linea aspera
Tibia	Tibial tuberosity	Patellar ligament
Tibia	Soleal crest	Soleus

Table 7.X1. Spatial and temporal characteristics of non-studied tombs (n=18).

TOMB	LOCATION	ORIENTATION	SHAPE	CHAMBER AREA (m^2)	DROMOS LENGTH (m)	SIZE CLASS	DETAILED DATE	LENGTH OF USE (in periods)
T1	LOWER HILL	NW-SE	QUADRANGULAR	8	4.40	MEDIUM	LHIIIA-LHIIIC EARLY	3
T2	LOWER HILL	NE-SW	QUADRANGULAR	9	3.30	MEDIUM	LHIIIA & LHIIIC	2
T3	LOWER HILL	NE-SW	HORSE-SHOE	1.45	3.94	SMALL	?	?
T6	UPPER HILL	NE-SW	CIRCULAR	4	5.30	SMALL	LHIIIA	1
T7	UPPER HILL	NE-SW	IRREGULAR	3.2	11.85	SMALL	LHIIIB & LHIIIC	2
T8	UPPER HILL	NW-SE	CIRCULAR	6.15	5.75	MEDIUM	LHIIIC	1
T11	UPPER HILL	NW-SE	CIRCULAR	3	3	SMALL	LHIIIA & LHIIIC EARLY	2
T12	UPPER HILL	NW-SE	IRREGULAR	?	?	?	LHIIIC MIDDLE/LATE	1
T18	MID HILL	NE-SW	CIRCULAR	2.1	4.76	SMALL	?	?
T19	MID HILL	NE-SW	CIRCULAR	4.8	6.65	SMALL	LHIIIA	1
T21	MID HILL	NE-SW	QUADRANGULAR	14.25	8.40	LARGE	LHIIIB	1
T23	MID HILL	NW-SE	CIRCULAR	4.15	5.74	SMALL	LHIIIA & LHIIIC EARLY	2
T25	UPPER HILL	NW-SE	QUADRANGULAR	19.6	11.57	LARGE	LHIIIA & LHIIIC	2
T29	UPPER HILL	NW-SE	QUADRANGULAR	18.5	9.07	LARGE	LHIIIA-LHIIIC	3
T32	MID HILL	NW-SE	IRREGULAR	0.5	1.45	SMALL	?	?
T34	MID HILL	NW-SE	CIRCULAR	6.3	8.64	MEDIUM	LHIIIA-LHIIIC	3
T36	MID HILL	NE-SW	QUADRANGULAR	11.4	6.7	LARGE	LHIIIA & LHIIIC EARLY	2
T43	LOWER HILL	NE-SW	QUADRANGULAR	7.7	8.34	MEDIUM	LHIIIA-LHIIIC	3

Table 7.X2. Age distribution by tomb, including the proportionate re-allocation of 83 cases of indeterminate adult age per tomb. (In total the indeterminate cases were re-distributed as follows: YA: 17; PA: 26; MA: 37; OA: 3).

	SUB-ADULT AGE CATEGORIES					**ADULT AGE CATEGORIES**				
TOMB	INFANT I (0-1)	INFANT II (1-3)	YOUNG CHILD (3-7)	OLDER CHILD (7-12)	ADOL (12-18)	YOUNG ADULT (18-30)	PRIME ADULT (30-40)	MATURE ADULT (40-50)	OLD ADULT (50-)	**TOTAL**
T4	0	0	0	0	0	3	1	3	0	**7**
T5	0	0	1	1	0	4	5	5	2	**18**
T9	0	0	0	0	1	2	3	2	0	**8**
T10	1	0	0	0	0	2	0	2	1	**6**
T13	1	0	0	0	1	0	0	4	0	**6**
T14	1	0	1	0	0	3	1	4	0	**10**
T15	1	0	0	0	0	0	1	2	0	**4**
T16	0	1	0	1	0	4	8	12	1	**27**
T17	0	0	0	0	0	3	8	7	1	**19**
T20	0	1	1	0	0	1	2	5	0	**10**
T22	0	0	1	0	0	3	4	7	0	**15**
T24	0	0	1	0	1	0	2	3	0	**7**
T26	0	0	0	0	0	1	1	2	0	**4**
T27	0	0	0	2	0	1	1	2	0	**6**
T28	2	1	0	1	0	1	4	4	0	**13**
T31	0	0	0	0	0	0	1	1	0	**2**
T39	0	1	0	0	1	1	1	4	0	**8**
T40	0	2	1	0	0	2	7	4	1	**17**
T42	2	0	1	0	0	5	2	5	0	**15**
T44	0	0	0	1	0	0	3	0	0	**4**
TOTAL	**8 3.9%**	**6 2.9%**	**7 3.4%**	**6 2.9%**	**4 1.9%**	**36 17.5%**	**55 26.7%**	**78 37.9%**	**6 2.9%**	**206**
	31 (15%)					**175 (85%)**				

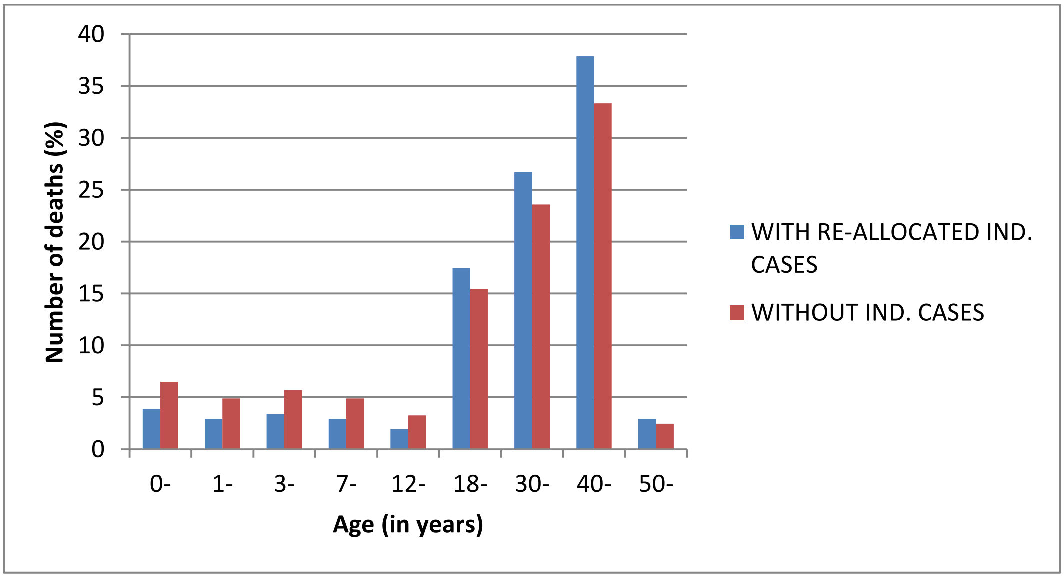

Figure 7.X1. Comparison of age distribution before and after the re-allocation of indeterminate age cases.

Table 7.X3. Number of deaths by age category (D_x), mortality (d_x), survivorship (l_x) and probability of death (q_x) in different sample sub-groups by *tomb location* (N=206), *size* (N=206), and *shape* (N=192, excluding horse-shoe and unusual shape). Sample size and life expectancy at birth for each sub-group shown in parentheses.

	Upper hill (N=68; E_0= 32.07)				**Mid hill (N=83; E_0= 34.22)**				**Lower hill (N=55; E_0= 32.79)**			
Age (x)	**D_x**	**d_x**	**l_x**	**q_x**	**D_x**	**d_x**	**l_x**	**q_x**	**D_x**	**d_x**	**l_x**	**q_x**
Infant I (0-1)	4	5.88	100	0.06	2	2.41	100	0.02	2	3.64	100	0.04
Infant II (1-3)	1	1.47	94.12	0.02	3	3.61	97.59	0.04	2	3.64	96.36	0.04
Young child (3-7)	2	2.94	92.65	0.03	3	3.61	93.98	0.04	2	3.64	92.73	0.04
Older child (7-12)	4	5.88	89.71	0.07	1	1.20	90.36	0.01	1	1.82	89.09	0.02
Adolescent (12-18)	3	4.41	83.82	0.05	1	1.20	89.16	0.01	0	0.00	87.27	0.00
Young Adult (18-30)	11	16.18	79.41	0.20	15	18.07	87.95	0.21	10	18.18	87.27	0.21
Prime Adult (30-40)	16	23.53	63.24	0.37	19	22.89	69.88	0.33	20	36.36	69.09	0.53
Mature Adult (40-50)	24	35.29	39.71	0.89	38	45.78	46.99	0.97	16	29.09	32.73	0.89
Old Adult (50-)	3	4.41	4.41	1.00	1	1.20	1.20	1.00	2	3.64	3.64	1.00

	Small tombs (N=70; E_0= 32.86)				**Medium tombs (N=115; E_0= 33)**				**Large tombs (N=21; E_0= 34.71)**			
Age (x)	**D_x**	**d_x**	**l_x**	**q_x**	**D_x**	**d_x**	**l_x**	**q_x**	**D_x**	**d_x**	**l_x**	**q_x**
Infant I (0-1)	3	4.29	100	0.04	5	4.35	100	0.04	0	0.00	100	0.00
Infant II (1-3)	4	5.71	95.71	0.06	2	1.74	95.65	0.02	0	0.00	100.00	0.00
Young child (3-7)	3	4.29	90.00	0.05	4	3.48	93.91	0.04	0	0.00	100.00	0.00
Older child (7-12)	1	1.43	85.71	0.02	5	4.35	90.43	0.05	0	0.00	100.00	0.00
Adolescent (12-18)	1	1.43	84.29	0.02	2	1.74	86.09	0.02	1	4.76	100.00	0.05
Young Adult (18-30)	7	10.00	82.86	0.12	23	20.00	84.35	0.24	6	28.57	95.24	0.30
Prime Adult (30-40)	24	34.29	72.86	0.47	25	21.74	64.35	0.34	6	28.57	66.67	0.43
Mature Adult (40-50)	25	35.71	38.57	0.93	45	39.13	42.61	0.92	8	38.10	38.10	1.00
Old Adult (50-)	2	2.86	2.86	1.00	4	3.48	3.48	1.00	0	0.00	0.00	

	Circular tombs (N=134; E_0= 32.58)				**Quadrangular tombs (N=58; E_0= 34.63)**			
Age (x)	**D_x**	**d_x**	**l_x**	**q_x**	**D_x**	**d_x**	**l_x**	**q_x**
Infant I (0-1)	6	4.48	100	0.04	1	1.72	100	0.02
Infant II (1-3)	4	2.99	95.52	0.03	1	1.72	98.28	0.02
Young child (3-7)	5	3.73	92.54	0.04	1	1.72	96.55	0.02
Older child (7-12)	5	3.73	88.81	0.04	1	1.72	94.83	0.02
Adolescent (12-18)	3	2.24	85.07	0.03	1	1.72	93.10	0.02
Young Adult (18-30)	22	16.42	82.84	0.20	13	22.41	91.38	0.25
Prime Adult (30-40)	37	27.61	66.42	0.42	15	25.86	68.97	0.38
Mature Adult (40-50)	47	35.07	38.81	0.90	24	41.38	43.10	0.96
Old Adult (50-)	5	3.73	3.73	1.00	1	1.72	1.72	1.00

Table 7.X4. Distribution of tomb contexts in different types of skeletal disposal (N=86; MISS: without recovered human remains, not included in current study).

	PRIMARY	DISTURBED PRIMARY	SINGLE SECONDARY	COMMINGLED SECONDARY	SCATTERED/ ISOLATED
T4	T4/A – T4/Δ – T4/E MISS: T4/ΣΤ & T4/Z	T4/B	T4/Γ	T4/H & WEST CHAMBER	T4/EAST CHAMBER
T5	T5/Γ – T5/Δ – T5/E T5/ΣΤ – T5/Z –T5/H	MISS: T5/NE upper layer		T5/Θ-ΙΓ (PIT I)	MISS: T5/A & T5/B
T9		T9/A - T9/B		T9/SEC.DEP. & T9/Γ	
T10				T10/SEC.DEP.	
T13	T13/Γ (PIT I) T13/Δ (PIT II)			T13/A-B (PIT I)	
T14		MISS: T14/Λ		T14/A-H	MISS: T14/Θ-K
T15				T15	
T16	T16/A	T16/B	T16/Γ	T16/ΣΤ-M T16/O (PIT I) T16/Π-Y (PIT II)	T16/A (extra scattered) T16/N-Ξ
T17	T17/Λ – T17/N – T17/Ξ (PIT II)	T17/M		T17/A-K (PIT I)	
T20	T20/A			T20/B-Δ (PIT I)	
T22	T22/Γ – T22/Δ T22/E – T22/ΣΤ			T22/A-B (PIT I)	
T24			T24/B	T24/A	
T26	T26/A – T26/B	T26/Γ			T26/Δ
T27		T27/A T27/Γ MISS: T27/B	T27/ΣΤ (PIT I)	T27/Δ-E T27/Z (upper PIT II) MISS: T27/H-Θ (lower PIT II)	
T28				T28/B-Z (PIT I)	MISS: T28/A
T31		T31/B – T31/Γ			MISS: T31/A
T39	T39/A –T39/B – T39/Γ			T39/Δ – T39/E	T39/Γ (extra scattered)
T40	T40/A – T40/B	T40/Γ		T40/Δ-I	
T42	T42/A	T42/B	T42/Γ	T42/Δ-Θ (PIT I) T42/ PIT II	
T44	T44/A – T44/B			T44/Γ	
STUDIED	**30**	**12**	**5**	**23**	**5**
TOTAL	**32**	**15**	**5**	**24**	**10**

Table 7.X5. Summary of tomb context type, date, and basic demographic info (N=75).

TOMB	CONTEXT	TYPE OF DISPOSAL	DETAILED DATE OF BONES	DETAILED DATE OF TIME OF ACT	SEX						SUB-ADULT	MNI
					F	F?	?	M?	M	N-O		
T4	**T4/A**	PRIMARY	LHIIIC	LHIIIC					1			1
	T4/B	DISTURBED PRIMARY	LHIIIC	LHIIIC	1							1
	T4/Γ	SINGLE SECONDARY	LHIIIB	LHIIIA-LHIIIC	1							1
	T4/Δ	PRIMARY	LHIIIC	LHIIIC					1			1
	T4/E	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE						1		1
	T4/H & WEST CHAMBER	SEC.COMMINGLED	LHIIIA	LHIIIA-B					1			1
	T4/ EAST CHAMBER	SCATTERED/ISOLATED	LHIIIA-B	LHIIIA-LHIIIC	1							1
T5	**T5/Γ**	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE		1						1
	T5/Δ	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T5/E	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T5/ΣT	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE		1						1
	T5/Z	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T5/H	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T5/Θ-IΓ (PIT I)	SEC.COMMINGLED	LHIIIA & LHIIIC EARLY	LHIIIC EARLY	2		2	1	3	2	2	10
T9	**T9/A**	DISTURBED PRIMARY	LHIIIA & LHIIIC	LHIIIC MIDDLE-/LATE	1							1
	T9/B	DISTURBED PRIMARY	LHIIIA-LHIIIC EARLY	LHIIIC MIDDLE-/LATE				1				1
	T9/SEC.DEP. & T9/Γ	SEC.COMMINGLED	LHIIIA-LHIIIC	LHIIIA-LHIIIC	2				1	2	1	6
T10	**T10/SEC.DEP.**	SEC.COMMINGLED	LHIIIA & LHIIIC	LHIIIA & LHIIIC	3				1	1	1	6
T13	**T13/A-B (PIT I)**	SEC.COMMINGLED	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE	1				1		2	4
	T13/Γ (PIT II)	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T13/Δ (PIT III)	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
T14	**T14/A-H**	SEC.COMMINGLED	LHIIIC EARLY	LHIIIC MIDDLE-/LATE	2		2	2	2		2	10
T15	**T15**	SEC.COMMINGLED	LHIIIA-LHIIIC	LHIIIC MIDDLE-/LATE	2				1		1	4
T16	**T16/A**	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T16/A (extra scattered)	SCATTERED/ISOLATED	LHIIIA-LHIIIC EARLY	LHIIIC EARLY						1		1
	T16/B	DISTURBED PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE				1				1
	T16/Γ	SINGLE SECONDARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE	1							1
	T16/ΣT-M	SEC.COMMINGLED	LHIIIA-LHIIIC EARLY	LHIIIC EARLY	3	3	1	1	4			12
	T16/N-Ξ	SCATTERED/ISOLATED	LHIIIA-LHIIIC EARLY	LHIIIC EARLY	1				1	1		3
	16/O (PIT I)	SEC.COMMINGLED	LHIIIA-LHIIIC EARLY	LHIIIB-/LHIIIC EARLY	2				1		2	5
	T16/Π-Y (PIT II)	SEC.COMMINGLED	LHIIIA	LHIIIB	2		1					3
T17	**T17/Λ**	PRIMARY	LHIIIC EARLY	LHIIIC EARLY	1							1
	T17/M	DISTURBED PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE				1				1
	T17/N	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T17/Ξ (PIT II)	PRIMARY	LHIIIC EARLY	LHIIIC EARLY	1							1
	T17/A-K (PIT I)	SEC.COMMINGLED	LHIIIA-LHIIIC EARLY	LHIIIC EARLY	5	2	3	1	4			15
T20	**T20/A**	PRIMARY	LHIIIC EARLY	LHIIIC EARLY					1			1
	T20/B-Δ (PIT I)	SEC.COMMINGLED	LHIIIB	LHIIIA-LHIIIC EARLY	2				3	2	2	9

TOMB	CONTEXT	TYPE OF DISPOSAL	DETAILED DATE OF BONES	DETAILED DATE OF TIME OF ACT	SEX						SUB-ADULT	MNI
					F	F?	?	M?	M	N-O		
T22	**T22/Γ**	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE	1							1
	T22/Δ	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE	1							1
	T22/E	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T22/ΣT	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T22/A-B (PIT I)	SEC.COMMINGLED	LHIIIA-LHIIIC EARLY	LHIIIC	3				3	4	1	11
T24	**T24/A**	SEC.COMMINGLED	LHIIIA & LHIIIC	LHIIIA & LHIIIC	2				1	1	2	6
	T24/B	SINGLE SECONDARY (?)	LHIIIA & LHIIIC	LHIIIA & LHIIIC					1			1
T26	**T26/A**	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T26/B	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE						1		1
	T26/Γ	DISTURBED PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T26/Δ	SCATTERED/ISOLATED	LHIIIA-LHIIIC	LHIIIA-LHIIIC		1						1
T27	**T27/A**	DISTURBED PRIMARY	LHIIIC	LHIIIC MIDDLE-/LATE	1							1
	T27/Γ	DISTURBED PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE						1		1
	T27/Δ-E	SEC.COMMINGLED	LHIIIA & LHIIIC	LHIIIA-LHIIIC					2			2
	T27/ΣT (PIT I)	SINGLE SECONDARY	LHIIIA	LHIIIA-B							1	1
	T27/Z (upper PIT II)	SEC.COMMINGLED	LHIIIA & LHIIIC	LHIIIC MIDDLE-/LATE							1	1
T28	**T28/B-Z (PIT I)**	SEC.COMMINGLED	LHIIIA	LHIIIA & LHIIIC EARLY	2				4	3	4	13
T31	**T31/B**	DISTURBED PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T31/Γ	DISTURBED PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
T39	**T39/A**	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE	1							1
	T39/B	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T39/Γ	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T39/Γ (extra scattered)	SCATTERED/ISOLATED	LHIIIA	LHIIIA & LHIIIC EARLY						1		1
	T39/Δ	SEC.COMMINGLED	LHIIIA & LHIIIC EARLY	LHIIIA & LHIIIC EARLY	1					1		2
	T39/E	SEC.COMMINGLED	LHIIIA	LHIIIA & LHIIIC EARLY							2	2
T40	**T40/A**	PRIMARY	LHIIIA	LHIIIA	1							1
	T40/B	PRIMARY	LHIIIA	LHIIIA	1							1
	T40/Γ	DISTURBED PRIMARY	LHIIIA	LHIIIA		1						1
	T40/Δ-I	SEC.COMMINGLED	LHIIIA	LHIIIA	5			1	4	1	3	14
T42	**T42/A**	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE				1				1
	T42/B	DISTURBED PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T42/Γ	SINGLE SECONDARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE					1			1
	T42/Δ-Θ (PIT I)	SEC.COMMINGLED	LHIIIA	LHIIIA	2	2	1		2		3	10
	T42/ PIT II	SEC.COMMINGLED	LHIIIA	LHIIIC MIDDLE-/LATE	1				1			2
T44	**T44/A**	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE	1							1
	T44/B	PRIMARY	LHIIIC MIDDLE-/LATE	LHIIIC MIDDLE-/LATE							1	1
	T44/Γ	SEC.COMMINGLED	LHIIIA	LHIIIA & LHIIIC	1				1			2

Table 7.X6. Frequencies of tomb contexts by type of disposal and level of surface preservation and bone completeness (SURF=surface preservation; COMPL=bone completeness; percentages per preservation aspect for each type of disposal shown by row).

	VERY GOOD/GOOD		**GOOD/MODERATE**		**MODERATE**		**MODERATE/ POOR**	
	SURF	**COMPL**	**SURF**	**COMPL**	**SURF**	**COMPL**	**SURF**	**COMPL**
PRIMARY	13/30 43%	21/30 70%	2/30 7%	4/30 13.5%	9/30 30%	1/30 3%	6/30 20%	4/30 13.5%
DISTURBED PRIMARY	2/12 33%	4/12 33%	2/12 33%	0	3/12 25%	6/12 50%	5/12 42%	2/12 17%
SINGLE SECONDARY	1/5 20%	2/5 40%	0	2/5 40%	2/5 40%	1/5 20%	2/5 40%	0
COMMINGLED SECONDARY	5/23 22%	11/23 48%	5/23 22%	8/23 35%	8/23 34%	1/23 4%	5/23 22%	3/23 13%
SCATTERED	0	2/5 40%	0	1/5 20%	3/5 60%	1/5 20%	2/5 40%	1/5 20%
TOTAL	**21/75 28%**	**40/75 53%**	**9/75 12%**	**15/75 20%**	**25/75 33%**	**10/75 13.5%**	**20/75 27%**	**10/75 13.5%**

Table 7.X7. Age distribution of commingled secondary remains by context location (N=89, excluding cases of indeterminate age).

TOMB CONTEXTS BY LOCATION	INF I (0-1)	INF II (1-3)	CH I (3-7)	CH II (7-12)	ADOL (12-18)	YA (18-30)	PA (30-40)	MA (40-50)	OA (50-)	**TOTAL**
CHAMBER FLOOR	3	3	3	0	3	6	9	11	1	**39**
CHAMBER PIT	5	3	3	4	1	3	3	10	0	**32**
DROMOS PIT	0	0	1	0	0	2	8	6	1	**18**
TOTAL	**8**	**6**	**7**	**4**	**4**	**11**	**20**	**27**	**2**	**89**

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