Caves and human lifeways in Middle Bronze Age Central Italy: a social bioarchaeology approach

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Abstract

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This thesis is about the Middle Bronze Age (MBA: 1750-1450 BC) caves of central Italy, and the faunal and plant remains found inside them using the combined approach of contextual archaeology and social bioarchaeology. I draw new inferences from these ecofactual remains, which are crucial to improving our understanding of human lifeways in the Apennine region of the Italian peninsula.

This work is much needed both in the field of cave archaeology (especially in relation to the Italian area) and in that of bioarchaeology. Here, traditional methodological issues, such as a tendency to ignore the ritual aspects of cave deposits, have produced substantial biases in the interpretations of the subsistence strategies. In addition, such traditional approaches based on Higgs' (1975) palaeoeconomy have prevented bioarchaeological disciplines such as zooarchaeology and palaeoethnobotany from being productively used in several fields of application, notably in social archaeology.

By analysing the data published over the last 35 years, as well as four archival collections and the new data from the newly excavated deposits at Mora Cavorso, Pastena and Collepardo caves, I have been able to:

1) recognise cave datasets as biased sources for the direct reconstruction of palaeoeconomy;

2) identify significant evidence pointing to the coexistence of agriculture and sheep farming even at the same sites, and to infer new information about seasonality and transhumance in the study area;

3) isolate recurrent trends in animal and plant selection in the sampled caves. This evidence points to specific ritual choices that must have been integrated into the religious framework of the communities that used these caves. This highlights both the variability of human practices undertaken at these sites, and the similarities between them, shedding more light on the nature and – in some cases – the possible significance of such rituals.

In sum, I demonstrate how complex the use of caves in MBA central Italy was, and that a strict categorisation of such uses (as domestic, ritual, burial) is misleading.

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CHAPTER 1 – INTRODUCTION

This thesis is about the Middle Bronze Age (MBA: 1750-1450 BC) caves of Central Italy, and the faunal and plant remains found inside them. More specifically, I draw new inferences from these ecofactual remains, which are crucial to improving our understanding of human lifeways in the Apennine region of the Italian peninsula. Two key questions have guided my research.

What were the human uses of caves in Central Italy during the second millennium BC? To what extent can bioarchaeology shed new light on the economic and ritual strategies of Central Italian protohistoric societies? In order to answer these questions, I analysed: three newly excavated cave sites - entirely investigated in my presence and mostly under my supervision (Chapters 5-7); four archival collections from as many caves investigated over the last century (Chapter 8); and the available literature on the topic (Chapters 2, 3, 9). On the one hand, the results of these analyses help to rectify some long-held assumptions on cave use in the study area and expand our knowledge of Central Italian subsistence systems in the MBA. On the other hand, and perhaps even more importantly, my research casts new light on aspects of the ritual practices carried out in the sampled caves, thereby improving our understanding of the Apennine people's symbolic world in later prehistory.

There has been a need for such work, both in the field of cave archaeology (especially in relation to the Italian area) and in bioarchaeology. In fact, traditional approaches, including a tendency to ignore the cultic dimensions of the cave deposits, have produced a substantial bias in interpretations of subsistence strategies. In addition, approaches based on Higgs' (1975) palaeoeconomy have prevented bioarchaeological disciplines such as zooarchaeology and palaeoethnobotany from being productively used in several other fields of application - notably social or religious archaeology.

The later prehistoric caves of the Apennine region are the most extensively investigated sites in MBA Central Italy (Guidi et al. 1993; Sestieri 2010). They are known for their multi-faceted uses, and often appear to have been characterised by a strong symbolic value that made them not only refuges and dwelling sites but also typical places for ritual practices, including funerary sites. The archaeological record of these sites usually shows very variable patterns – showing features that do not reflect a daily life like that of dwelling sites (Bergsvik & Skeates 2012; Cocchi Genick 2001; Grifoni Cremonesi 1996; Guidi 1992; Whitehouse 1992; 2007). But their interpretation has been problematic. Ecofactual data from MBA Central Italian caves have mostly been used to draw inferences about subsistence. Bioarchaeological methods used in ecofact studies have seldom been systematic; nor have the results of such analyses ever been fully published. Ecofactual remains, even when published, have usually been relegated to appendixes, rather than being integrated into a wider, contextual interpretive framework. This has often led to misleading palaeoeconomic interpretations, such as Puglisi's (1959) assumption that Apennine Protohistoric people were transhumant shepherds because of the majority of sheep/goat bones found in caves, the apparent absence of open-air settlements and the presence of tools associated with milk production. By contrast, a different perspective, more focused on the symbolic significance of plants and animals in the Italian Bronze Age, has rarely been considered.

This thesis stems from my long-term interest in caves, which has led me to work in these sites since my undergraduate years, as well as to produce a Masters' dissertation mostly focused on the zooarchaeological deposit from one of these caves (Grotta Mora Cavorso - Achino et al. 2016; Rolfo et al. 2011; 2013b; 2016; Silvestri et al. in press a; b). While I was originally trying to provide a novel understanding of the economy of MBA Apennine people, it became increasingly clear to me that caves could not provide a fully reliable and complete picture of this aspect of past human life, for the bioarchaeological deposits of these sites were strongly altered by ritual selections. On the other hand, I realised that such sites could offer much more in terms of exploring the religious world of the people I was studying. Consequently, I started to engage in the challenging task of using scientific methods to produce wider-ranging narratives about past people's lives and ritual experiences.

In view of this, the aims of my thesis are:

1) to assess the completeness and reliability of previous studies of MBA cave use in Central Italy;

2) to advocate the recently developed field of 'social bioarchaeology' (Marciniak 2005; Morehart and Morell-Hart 2015; Russell 2012) (Chapter 4) as an alternative and more productive way of approaching ecofactual studies (in cave contexts and beyond). This approach, so far only applied to a single cave site (the Croatian Nakovana Cave - Appleby and Miracle 2012 - see Chapter 2), is applied here to a group of Central Italian MBA caves. However, its relevance and applicability to cave studies in any other region and chronological period is also addressed. In this process, I also test the validity of social bioarchaeology, since this approach has sometimes been criticised as impractical;

3) to analyse as accurately and critically as possible the fresh cave deposits whose ecofacts I had the opportunity to study, in order to assess the value of a fully documented and better contextualised and fully detailed study of ecofactual deposits;

4) finally, and most importantly, to improve our understanding of the human use of caves in MBA Central Italy and, subsequently, of the lifeways of these people.

In order to achieve these goals, I initially address two key issues that have proved crucial in building the foundation for the new work produced in this thesis. First of all, I present a critical assessment of worldwide archaeological cave studies, with a special focus on the contextual approaches that relate to bioarchaeology (Chapter 2). In this chapter, therefore, I cover previous research on cave sites that has involved micromorphology, ethnoarchaeology, the environmental sciences (including zooarchaeology and palaeoethnobotany), landscape and spatial studies, and funerary archaeology. This literature review originally helped me to select the most suitable approaches to my own case-studies. Secondly, I discuss the Italian MBA from the point of view of both the history of archaeological analysis and thought (ranging from cultural history, to processualism, post-processualism, post-processualism and the now widely accepted contextual archaeology (Chapter 3). This allowed me to understand Italian caves within a methodological and interpretive framework, which has provided a starting point from which to address the main topic of my thesis.

After these two introductory chapters, I detail and clarify the theoretical and methodological framework forf my thesis (Chapter 4). I first discuss the development of social bioarchaeology. In particular, I address the processualist approach to ecofacts (e.g. Barker's key study of 1981). I then move on to relevant research done within the post-processual framework. Finally, I propose an effective compromise between the two. The second main section of this chapter describes the zooarchaeological and palaeoethnobotanical methods that I have used to analyse the different ecofactual datasets sampled for my research. As previously highlighted by Appleby and Miracle (2012), I did not need to use innovative or technologically advanced approaches. Asking different research questions and looking at the contexts from a different perspective was my main working strategy.

The following chapters (Chapters 5-7) explore the selected caves in depth (Fig. 1). The most detailed ones cover the three cave excavations that I co-supervised between 2011 and 2016: Grotta Mora Cavorso, Grotta di Pastena and Grotta di Collepardo. Grotta Mora Cavorso (Chapter 5) is an isolated mountain cave with a stratified archaeological deposit extending over 17,000 years. The deposit was discovered in the early 2000s and contained the human remains of a Bronze Age woman as well as several coeval features, which I interpret as the remains of ritual activities. Grotta di Pastena (Chapter 6) is a modern show-cave known since the nineteenth century; it was frequented by human groups from the Neolithic up to the MBA, during which time it was used for funerary and ritual purposes, which I explore in depth in this thesis. Grotta di Collepardo (Chapter 7), another show-cave with breath-taking speleothems, has been recently recognised as the most intensively used burial cave of MBA Central Italy, for which I was able to identify some interesting ritual patterns such as entrance rituals and offerings of the meaty bodys parts of domestic animals. New data are also presented in Chapter 8, where I analyse and discuss the faunal and plant assemblages from four MBA caves investigated in the early twentieth century: Grotta Misa, Grotta Nuova, Buca Tana di Maggiano and Grotta dell'Osservatorio. Grotta Misa and Grotta Nuova are similar and nearby caves in Northern Lazio, and hold the remains of unique manifestations of cult, such as an inner deposit of pottery vessels full of burnt seeds, as well as a hearth with heaps of separate crops. Buca Tana di Maggiano is a burial cave in Northern Tuscany. It was investigated in the 1910s and yielded a large burial deposit. Finally, Grotta dell'Osservatorio is an unpublished cave pertaining to the famous Bronze Age complex of Belverde di Cetona in Tuscany. The data from this cave, which I accessed at the Museum of Human Palaeontology in Florence, provide evidence of ritual frequentation thanks to the large deposit of cattle remains, usually rare in all the other analysed cave contexts (and also settlements).

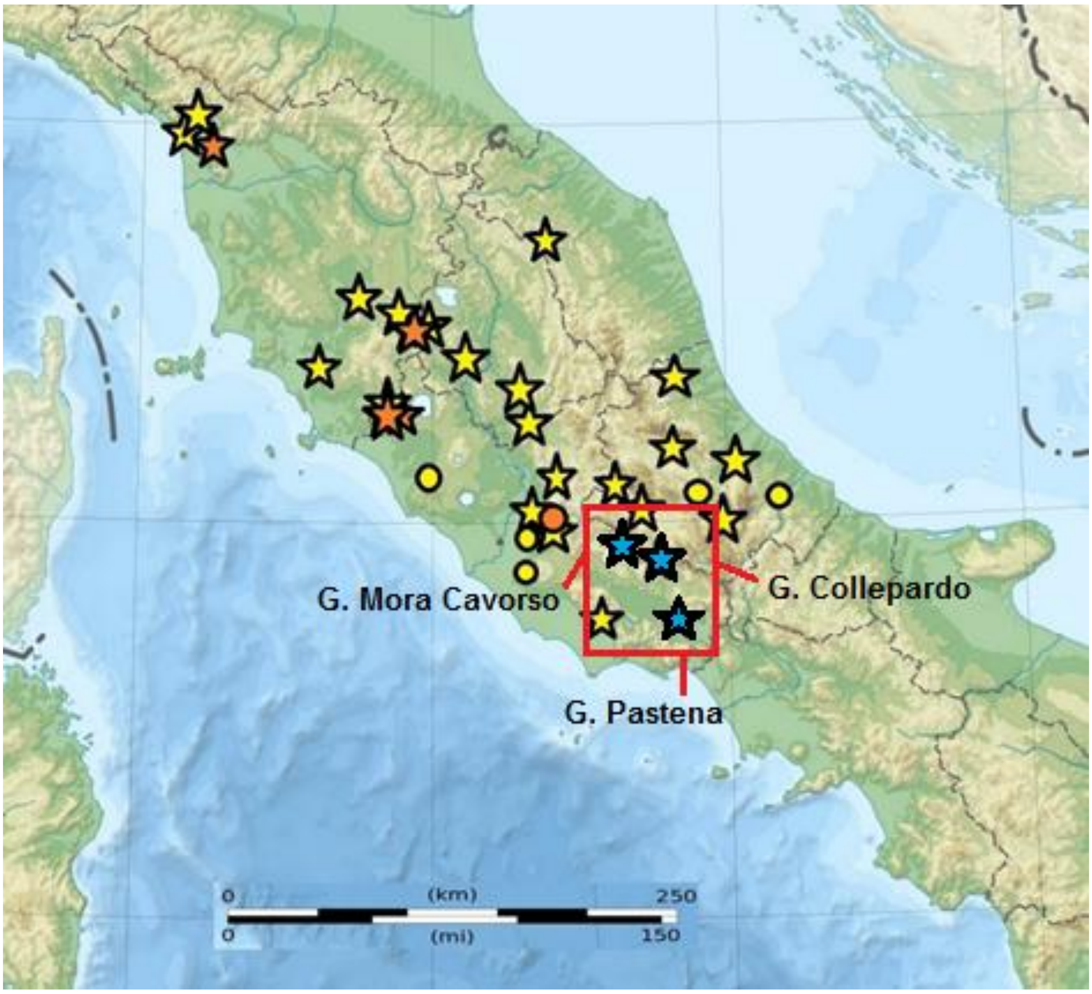


Fig. 1 All the sites investigated for this research. Stars are caves, circles are settlements. Yellow: sites from the literature; orange: sites from the archival collections; blue: sites followed since fieldwork stage.

Finally, the discussion chapter (Chapter 9) integrates the new data derived from this fieldwork and archival research with information coming from the wider literature. In doing so, it addresses several key issues concerning subsistence, religion, and funerary rituals within a social bioarchaeological perspective, while proposing some new interpretations on cave use in MBA Central Italy.

Overall, my research has produced some new insights into both the economic structure and ritual strategies of the communities under study. First, I confirm and build uponBarker's subsistence reconstruction (1981), which first recognised the existence in MBA Central Italy of a mixed economy based on both agriculture and sheep farming. By analysing a combination of the data published over the last 35 years and the new data coming from the newly excavated deposits available at Mora Cavorso, Pastena and Collepardo caves, I was then able to:

1) recognise cave datasets as biased sources for the direct reconstruction of palaeoeconomy;

2) identify significant evidence pointing to the coexistence of agriculture and sheep farming even at the same sites; and to infer new information about seasonality and transhumance in the study area.

In addition, I have identified recurrent trends of animal and plant selection in the sampled caves. This evidence points to specific ritual choices that must have been integrated into the religious life of the communities that used these caves. This highlights both the variability of the human behaviours at these sites, and certain similarities between them, which in turn sheds more light on the nature and – in some cases – the possible significance of such rituals. In sum, I demonstrate how complex the human use of caves in MBA Central Italy was, and that a strict categorisation of such uses (as domestic, ritual, burial) is misleading.

While tackling some questions that have possibly never been asked before in relation to the symbolic value of ecofacts in caves, this thesis also opens up new venues of research, especially on MBA Italian caves. Ongoing radiocarbon and isotopic analyses on these new datasets, as well as on the assemblages from archival collections, could certainly add to our understanding. Another key aspect in need of further development is the addition of comparative data from more excavated settlement sites, which would enable us to draw wider conclusions on human lifeways in Central Italy during the second millennium BC.

CHAPTER 2 - APPROACHING CAVE ARCHAEOLOGY

2.1 Introduction

Cave archaeology cannot be considered a homogenous field of study, despite its common subject matter. Both the multiplicity of cave forms and uses (Sherwood & Goldberg 2001), but also the various scholarly approaches to these sites have contributed to differences over two centuries of archaeological studies. Traditional, descriptive culture-historical archaeology (e.g., for the Italian Bronze Age, Cocchi Genick 1995; 1999; 2002), socio-economic and scientific-oriented New Archaeology (e.g. Barker 1981; Brochier et al. 1992; Maggi 1997; Treffort 2005), critical and interpretive post-processual approaches (e.g. Betts 2003; Dowd 2008; Roe 2000; Skeates 2007; 2010; Whitehouse 1992; 2001; 2007), and the unlimited shades between these schools of thought (e.g. Grifoni Cremonesi 2000; 2002; Puglisi 1959; Tomkins 2009): all of these theoretical perspectives made cave archaeology the multi-faceted reality which still attracts scholars from several disciplines. This chapter will discuss the existing literature on the possible uses of Holocene caves, with two main aims. First, to present a critical collection of data, as well as a convenient analytic synthesis, and some initial personal reflections on the state of the art. Second, to identify the approaches and methods that have previously been used in cave studies and that have turned out to be relevant to my project. The working strategies selected will then be discussed in more depth in the methods chapter (Chapter 4).

2.2. Archaeologies of caves: overstudied but misunderstood

Caves are not extraordinary sites. Not only the mundane, but also the ritual, uses of these locales have to be considered as expressions of normal human needs and thoughts. Caves are not to be overestimated, although their impressive architectural and inner features have long encouraged a particular focus on such sites at the expense of other archaeological contexts. In addition, these overwhelming characteristics have seldom stimulated the undertaking of thorough and systematic approaches; that is, until recent times, when we are seeing a revived interest in these sites and the flourishing of scholarly syntheses on the topic (e.g. Bergsvik & Skeates 2012; Bonsall & Tolan-Smith 1997; Dowd 2015; Moyes 2012). However, these volumes - with the only exception of Marion Dowd's (2015) book on the cave archaeology of Ireland - although valuable for their content and general considerations, consist of collections of different contributions and are not homogenous essays on cave archaeology.

It is also useful to remember that cave archaeology is not a 'discipline apart' (Watson 2001), even if caves have often been considered as 'places apart'. The methods applied to fieldwork at this particular category of site are often the same as those required for other archaeological sites, with only some practical adjustments related to their peculiar environmental issues.

But are caves really 'places apart' (Barnatt & Edmonds 2002)? Caves do indeed appear to be places apart, for their physical qualities. Such locales are dark, hidden places where the human sensory experience is completely different to that of open air archaeological sites (Betts 2003; Harding 2000; Manem 2012; Whitehouse 1992); not only the emotional effects of the dim light on limestone formations (Roe 2000) and the disorientating darkness (Montello & Moyes 2012), but also the echoing or suffocated sounds, the cold solidity of sharp and smooth rocks, and the underground setting, affect human perceptions deeply (Fig. 1). Thus, like all unfamiliar situations, to stay in a cave can be both wonderful and terrifying at the same time, and equally intense. Caves are amazing natural monuments, which are frequently ritualised.

It is useful to stress that caves have been used for their convenience in the first place (Straus 1997). In this sense, such sites are not really 'places apart'; on the contrary, they can be considered integral and fundamental elements of the human life.

Nor are caves to be distinguished according to the assumed predominance of domesticity or rituality in their functions; as generally stated by Bradley (2005) and Brück (1999), and more precisely by Manem (2012), caves often held simultaneously these two aspects. Yet, although the interpretations of cave functions and of their symbolic implications have been long debated, the rejection of this dichotomy has not still been unanimously accepted.

For instance, French caves of the Bronze Age are seen as mainly *bergeries* and refuges (Manem 2012; Treffort 2005), those analysed by British scholars are essentially regarded as ritual (Dowd 2008; Skeates 2010; Whitehouse 2007), Cretan caves (Tomkins 2009; 2012), as well as north-east American ones (Claassen 2012) used to be considered all domestic and lately all ritual, the Italian ones are mainly ritual if studied by post-processualists (Bergsvik & Skeates 2012; Grifoni Cremonesi 2002; Skeates 1997; Whitehouse 2001,) but *bergeries* if studied by cultural historians or environmental archaeologists (Iaconis & Boschian 2008; Puglisi 1959; Radmilli 1975).

At first sight, based on such literature, uses of karst systems seem to vary regionally. But do these caves actually have such territorial distinct natural feature? Indeed, every cave is unique (as much as any other archaeological context); yet, their principal characteristics recur on a global scale (Sherwood & Goldberg 2001). Therefore, it seems more likely that the different functional interpretations of their prehistoric human uses are more influenced by scholarly traditions than by an actual regional variability. This results in a biased perception of the general European framework of cave uses in late prehistory. One example is provided by the contrasting explanations of the uses of Greek caves given by different schools of archaeological thought. Tomkins (2009; 2012) argues that the well-established view of Neolithic and Bronze Age caves as living sites, has turned out to be rather inconsistent; in his opinion, this old-fashioned interpretation depended merely on the lack of data and of deep analyses. He has demonstrated that those caves were not suitable as dwelling places, being far from a context of regular daily life both topographically and morphologically. However, it has to be remarked that the liminality of these caves can neither be denied nor stated a priori; the main limit of Tomkins' work, in fact, is that his conclusions are only based on the re-examination of a selection of old published sites. Therefore, further fieldwork and an increased number of case-studies, as the author himself acknowledges, is necessary in order to confirm his assumptions.

The Italian context offers more promising perspectives, since research is still ongoing in the field. First of all, some rooted commonplaces have already been defeated. For example, the simplistic belief that Palaeolithic and Mesolithic societies were characterised by dwelling in caves, and that these mutated into ritual functions from the Neolithic onwords, is now outdated and rejected (Skeates 1997). But even bigger steps have been taken in the study of later prehistoric Italian caves. In fact, environmental analyses recently undertaken at a few classic cult sites (e.g Grotta dei Piccioni, Grotta Sant'Angelo) (Iaconis & Boschian 2008), have shown that these caves were certainly also used for domestic purposes: soil thin sections revealed the presence of multi-layered ovicaprine dung levels for both caves, suggesting the use of such locales as pens. Yet, the co-occurrence of symbolic elements in these caves and in most of the other Apennine ones, is unquestionable (Cocchi Genick 1999; Grifoni Cremonesi 1996; Guidi 1990; 1992; Whitehouse 2007).

This could be perceived as an obvious contradiction between the landscape/material data and the results of scientific analyses; but what if the solution to this problem lay in the admission of the fact that there is not actually a problem? The coexistence of domesticity and cult is documented ethnographically and historically for many periods, regions and social contexts (Bradley 2005). The apparent dichotomy arises when we, as archaeologists, come to forget that our modern, western perspective is not the same as that of the past societies we study: the act of splitting two naturally linked aspects of human life - symbolic thought and material practices - is the result of a positivist attempt to make archaeology a fully scientific discipline. This attitude generated two opposing tendencies in cave archaeology, both condemned to failure: on the one hand, an interpretative approach which is determinist but rarely fully justified, and that can be observed particularly in the French school; on the other hand, the subsequent post-processualist reaction of some British scholars, which showed instead a too ritual-oriented position. By the creation of a constructive dialogue between these two perspectives, it can be demonstrated that most cult caves have actually been defined as such due to the absence of clearly domestic features, and vice versa. Joanna Brück (1999) argues this, drawing upon ethnographic and archaeological British Bronze Age case-studies (e.g. in the field of the accumulation of rubbish and valuable goods), not to mention European Holocene caves.

In other words, there is no contradiction in finding proof of both penning and ritual activities, especially in two Italian caves where for the first time sedimentological, environmental and cultural analyses have been carried out all together. From this perspective, it is perhaps only a matter of time before such coexistence is clearly shown in other cult caves in the area, be it thanks to micromorphology or to a combination of environmental disciplines.

2.3. Case-studies of caves and schools of thought

The French school of cave archaeology, mainly represented today by Pierre Pétrequin (et al. 1985; 1988) and Brochier (Brochier et al. 1992; Brochier 1987; 1996; 2002; 2007), have studied attentively the southern karst systems of their country, dividing the caves into three key categories: first, dwelling places (Manem 2012; Treffort 2005), which could be permanent occupations, annexes and seasonal occupations (related to pastoral frequentation); second, sites associated with precise tasks, such as hunting stations or other temporary camps, stables, workshops, mines, water sources, stores and treasure hiding places, strongholds and refuges; finally, burial and cult sites. This last cave use turned out to be one of the least documented archaeologically.

Even if making less specific distinctions, the majority of scholars have accepted this functional division of caves, but in Europe, as well as in South Asia (Barker et al. 2005) (where scholars have added to the long list of cave uses some ethnographic examples such as witches' and artists' laboratories and military places).

Most of these claimed distinctions are reinforced with reference to both material and landscape features. However, such categorisations cannot always be demonstrated. This is particularly the case with Holocene sites that do not have any evidence of pastoral stabling occupation (no ovicaprine dung), any traces of craftworking undertaken in them, any clear burial/cult activity, nor other recognizable markers. Caves with these characteristics have been interpreted in two contrasting ways, according to the same comparative methodology: basically, if the structures and materials found in a cave did not offer an evident explanation for the occurrence of human occupation, the site tended to be included in the same functional group of the geographically closest ones: i.e., for the French school, mainly focused on French caves, these sites became temporary or permanent dwellings, depending on the nature of the materials found (Manem 2012). The difference between this approach, based on the distinction of precise functions, and the British one, mainly focused on the symbolic aspects of caves (Skeates 1994; 1997; 2007; 2010; Whitehouse 1992; 2001; 2007), is notable. Unfortunately, both of these perspectives have gradually become too self-referential.

A related issue concerns the presence of large amounts of fragmented pottery and animal waste. Traditionally, such deposits are interpreted as domestic. However, is it possible to imagine a dwelling system where people actually lived on top of their garbage (Manem 2012)? I would emphasise, following the ethnographic analyses reported by Joanna Brück's 'Ritual and Rationality' (1999), Douglas' 'Purity and Danger' (2002) and Mlekuž's 'The Materiality of Dung'(2009), that there can be huge differences in the cultural conception of pollution (Galanidou 2000). Therefore, what 'we' might categorise as rubbish could naturally have represented a cultural construct imbued of symbolic meanings and an important material memory of the past (Mlekuž 2012: 208).

Such features have previously been interpreted in different ways, according to different archaeologists' inclinations and need to support a theory. Renata Grifoni Cremonesi (1996) keeps her distance from all interpretations, emphasising the ambiguity of certain features (such as crop deposits interpreted as functional stores or ritual offerings, and hearths as domestic or ritual structures). Even if this stance exhibits a sensible critical attitude, it should have been followed by offering a constructive alternative hypothesis. The risk of an atheoretical approach, is that it can lead to research impasses, which nullify the good effects coming from scepticism. This theoretical conflict, which constantly affects archaeology, can be mitigated and even partially resolved by the integration of both scientific and more interpretive approach.

Through an experimental and social approach to material culture, Manem (2012) offers new solutions to the interpretive problem of cave dwelling and with valuable results, leading to a relatively full understanding of the objects of investigation. He presents an innovative, half-way alternative to 'objective' and 'subjective' interpretations of cave sites. On one hand, this strategy attempts to explore and identify ''processually' the material features of caves, comparable to the successful studies of Pupicina (Miracle & Forenbaher 2005) and Arene Candide

(Maggi 1997); on the other hand, his approach moves beyond 'post-processualism', trying to comprehend the deepest reasons for human choices and behaviours recorded by science in order to understand caves and their importance for humans. I uphold Skeates' position that contextual archaeology is the way forward beyond this apparent dichotomy (Bergsvik & Skeates 2012). And to reach this objective, as stated above, requires an integration of environmental, landscape, social, experimental and ethno-archaeologies.

Archaeological sciences are fundamental here - the main problem being that they have often been exploited to support a preconceived thesis (e.g. French caves) or, conversely, that they have been applied passively, without developing subsequent conclusions (e.g. Cremonesi 1968a; b; 1976). Processualism correctly brought sciences into archaeology, but one of the weaknesses and consequences of this approach is that sometimes indiscriminate, overspecialised analyses are carried out at cave sites, offering little or no interpretations. In this way, despite the careful application of scientific techniques, research questions can remain unresolved.

We know very well that it is easy to find archaeological remains in caves. The challenge is to understand the way such caves were used, for how long, why, and by whom. A first phase of this research process must involve environmental analyses and the archaeological sciences in general. Here, I want to show how these can be successfully used for interpretive purposes, and where have they failed, mainly through case-studies taken from Holocene European cave sites, with a particular emphasis on the Bronze Age.

2.4. Geology, soil sedimentology and micromorphology

Every cave is different, and archaeologists need to partially re-invent their methods according to the requirements of each site. Nonetheless, there are some major similarities between caves, which make it possible to create broad categories and to assign common working strategies to them. This section explores several geological, sedimentological and micromorphological aspects of caves that are useful in the archaeological research.

Geologists (Sherwood & Goldberg 2001) draw a first, main distinction between proper caves and rockshelters; then, with reference to the first group, they distinguish between entrances/vestibules and deep caves. These three geological classes and sub-classes are characterised by different geo-archaeological histories. The first obvious feature to be considered, apart from the presence or absence of a 'subterranean dimension', is the presence or lack of light. In contrast to other regions of the world, where the dark zones of caves have always been intensively explored by archaeologists, these used to be somewhat overlooked in Italian archaeological research, due to the physical difficulties of their systematic investigation. Nonetheless, growing attention has recently been given to these important cave sectors, especially those that are drier; the wet, non-fossilised ones, instead, still present unresolved technical problems for archaeologists.

Despite such difficulties, fossil caves hold features which are extremely useful to archaeologists: karst 'patinas', for example, are the most evident means to identify a geological stratigraphy; in fact, these veil crusts seal the sediment surface and, when not in patches, offer maximum protection to archaeological deposits from modern disturbance. Such deposits, in turn, provide sediments which can be unexpectedly revealing: those sediments can be clastic, chemical or biogenic (Gillieson 1996; Sherwood & Goldberg 2001). All of them can be endogenous (i.e. autochthonous, developed inside the site) or exogenous (i.e. developed outside and brought into the cave by natural, animal or human agents, either voluntarily or involuntarily). It is clear that cave entrances\vestibules usually contain a larger amount of exogenous sediments. Evidently, good knowledge of the surrounding ecosystem and of the cave habitat is necessary in order to understand what was already there and what was brought in. Moreover, further analyses are required to identify what was brought inside by humans or, at least, in relation to human activities. Animal dens and root growth disturb the deposits both by introducing intruders and by turning and mixing the archaeological layers. Therefore, it is important to combine intensive field observation with multiple levels of micromorphological analyses.

Between the soil/sediment techniques of study, micromorphology is able to provide relatively reliable answers to questions about past cave use. The reason for this high reliability is that undisturbed samples preserve the stratigraphy and provide detailed information on micro-layers of human (or non-human) activity: this has been confirmed also by experimental and ethno-archaeological comparisons (e.g. Brochier et al. 1992). Coprolites and ashes, with their spheruliths and phytoliths (mineral contents of herbivore faeces) are the elements that can say the most about a Holocene cave deposit and about the function of the site (Fig. 2). In fact, it has been demonstrated that both in the East Woodlands and in Europe (Brochier 1987; Mlekuž 2012), the main cause of layer formations in Holocene archaeological caves is the accumulation of ovicaprine (and cattle) manure, soil erosion having become by then an irrelevant factor for the strengthening effect of forestation.

Fig. 2 Typical soil thin sections from Grotta Caterina (a-d) and Grotta Azzurra (e-f) showing animal dung (after Boschian and Montagnari-Kokelj 2000, fig. 5).

In addition to the American caves of the East Woodlands, where soil micromorphology has been usefully established, Mediterranean cave scholars have also been applying micromorphological analyses relating to the occupation of their sites in later prehistory, with some excellent results. The pioneer of this approach is Jaques Élie Brochier (e.g. 1987; 1996; 2002; 2007; Brochier et al. 1992), who during the 1980s started to understand the importance of thin-sections in later prehistoric cave archaeology in the South of France; he also elaborated the concepts of 'grottes bergeries' and 'habitat bergeries'; the firstreferring to caves used as pens, the second to those used also as living places by shepherds. Before this, micromorphology had been only used to support palaeoclimatic reconstructions. Nowadays it has become one of the key tools in interpretations of Neolithic and Bronze Age caves. The most relevant studies in Italy have been carried out by Giovanni Boschian (1998; Angelucci et al. 2009), mainly for karst complexes in the Northern and Eastern Adriatic (Boschian and Miracle 2003; Boschian and Montagnari-Kokelj 2000), and for a few caves in Abruzzo (Iaconis & Boschian 2008). Arene Candide in Liguria (Maggi 1997) does not add further information due to the very poorly preserved Bronze Age layers.

What is revealed at these caves is the recurrence of 'layer-cake' contexts, or 'fumiers' (Figs.3-4), in contrast to homogenous layers. One type relates to heaps of droppings, accumulating especially in the entrance of caves, that were periodically burnt (after a period of drying following a non-occupation phase), this practice produced cyclically overlapping white and brown strata, sub-horizontal, and 95-97%

thinner than the original ones (and far less toxic)- They are constituted by burned ashes (white) alternating with marginal, only partially burnt, darker layers.

Fig. 3 Model of formation of 'layer cake deposits' (after Brochier 2002, fig. 9).

Fig. 4 Typical 'layer cake' profile, from Pupicina Cave (after Miracle and Forenbaher 2005, fig. 4).

The homogenous contexts, on the other hand, seem to be the result of naturally-decomposed dung, accumulated during the economically less specialised Neolithic period. It is still to be clarified whether the study of these layers could be useful in understanding the human activity in caves; nevertheless, according to the research undertaken to date, such homogenous layers are not found in the Bronze Age, but only in Neolithic levels (Miracle & Forenbaher 2005).

Micromorphology also demonstrated its value in identifying spatially separate uses of the same cave in the same period, at Kouveleiki Caves, in late Neolithic Greece (Karkanas 2006). Here, soil analyses (obviously combined with material culture studies) demonstrated that in two distinct parts of the cave, A and B, different activities were carried out: in the first one, periodical penning occurred, while in the second (the dark back chamber), habitation. This contrasts with the evidence from Neolithic caves in the Rhône Valley (Helmer et al. 2005), where an accumulation of sheep/goat coprolites in the darkest sector of the chamber showed that the flocks tended to crowd in the innermost part of the cave. These two interesting examples introduce the idea that space in caves can be segmented (Galanidou 2000). One problem I came to notice here is that, despite the accurate sedimentological analyses published, no archaeological spatial studies have been reported for these caves, resulting in an overall loss to our understanding of the human uses of the cave.

Micromorphology can uncover many aspects of cave sites' past lives; however, if it is not associated with other techniques, many gaps still remain. I cite as an example Grotta dei Piccioni di Bolognano (Cremonesi 1976) and Grotta Sant'Angelo sulla Montagna dei Fiori (Di Fraia & Grifoni Cremonesi 1996), the first Central-Italian caves where this kind of study has been carried out (Iaconis & Boschian 2008), after an interval of many decades from the excavations and publications of the archaeological data. According to the soil thin sections, the use of these caves became more intense and specialised in ovicaprine sheltering throughout Bronze Age – indicated by the increase in burnt layers of dung found, and the larger amount of coarse ware recorded. The frequentation seemed seasonal, because the combusted deposits were thought to have been cyclic. By contrast, during the Neolithic, cattle and sheep\goat dung were identified together, but less significantly in terms of quantity; even pottery was less frequent, and also finer, suggesting a different kind of utilisation.

The analysis of these two caves' soil deposits clearly shows the important complementarity between the various environmental disciplines involved in cave interpretation: in this case, for example, faunal remains could not provide much information on their own, apart from a general statement about a likely pastoral-related use; there was only a small number of animal bones, which gave the impression that the caves were seldom frequented but which did not allow any further inference. Thanks to micromorphology, we now know that this zooarchaeological feature was not due to the low intensity of use (although Di Fraia and Tiberio (2008) reject this hypothesis, assuming that the animal dung found was related to domesticates brought inside the cave to be ritually traded or sacrificed).

However, the poor faunal data available at these two sites have not been fully examined: lacunas concerning age, killing patterns and species distinctions, if filled, may actually enable us to answer some questions which sedimentology cannot solve. For instance, those related to cult issues concerning animal sacrifices but also to the economic exploitation of flock.

The fact that no open-air sites have been directly related to these two caves, as is also the case with most caves in Central Italy (only about five out of almost one hundred caves are possibly linked to open settlements – see Chapter 3), can be interpreted in various ways: the first and most obvious is that field surveys must be undertaken in a more expanded and systematic way; the second, which could be considered subsequent to the results of scientific surveys, is that proper permanent or semi-permanent dwellings never existed, since the community was fully pastoral and, therefore, nomadic. The conclusion inferred by Boschian for the Holocene caves of Trieste Karst is exactly this, but his hypothesis is supported by a much more inhospitable geomorphology in the region.

Environmental studies, though, indicate that caves were frequented mostly during the warmer seasons, so Holocene human communities (especially Bronze Age ones) must have lived somewhere else during the rest of the year (in fact, evidence of settlements in this region is constantly increasing). Caves in southern France have been the subject of some outstanding research (Bréhard et al. 2010; Helmer et al. 2005), comparing Middle Neolithic caves and open air sites, identifying an integrated system of caves and open air settlements, based primarily on zooarchaeological analyses. Pupicina Cave (Miracle and Forenbaher 2005; 2006) is another of the few cave contexts close to Italy which is certainly related to a complementary open-air settlement system (at least for Neolithic period), set in the valley and dedicated to agriculture and stock-breeding. But Bronze Age deposits in this cave are very poor, with the exception of some quite sizeable pits situated close to the entrance; this might suggest a change in the use of the cave from Neolithic to the Bronze Age.

2.5. Ethnoarchaeology and environmental sciences

Another plausible explanation for the Bronze Age of Pupicina's occupation could be the occurrence of an agricultural practice which is also known in Sicilian caves (Brochier et al. 1992) and which has been ethnologically documented in Mora Cavorso Cave (Rolfo et al. 2013a). This practice consists of periodically removing the soil at the entrance of caves, which is rich in manure after a season of stabling use, and spreading it onto the surrounding cultivated fields as fertiliser.

Fig. 5 Black patches on a cave wall caused by wool polish (after Brochier 2007, fig. 10).

This is particularly suitable for unfertile regions such as the Simbruini woodlands and Slovenian Karst, and could be the reason for the lack of the most superficial layers in caves with an overall good preservation of their stratigraphies. In Sicily, ethnoarchaeological investigations have led to the identification of a further, interesting marker indicating a continuous stabling use for ovicaprines in caves: rock polishing due to the repeated rubbing of fleeces and hooves at nine modern pastoral sites (Fig. 5).

As becomes clear, the complexity of cave contexts makes it necessary for archaeologists to cross multiple environmental, anthropological and landscape disciplines, with the aim of reaching the most complete and reliable interpretation.

2.5.1. Zooarchaeology

Zooarchaeology can reveal much about late Holocene cave use, especially if correctly applied to clarify precise issues. As already mentioned, faunal analyses have seldom been undertaken at such Italian sites, and they have never been exhaustive (see Chapters 4 and 9). Therefore, they can currently only provide a very general insight into agro-pastoral subsistence practices, without offering any deeper inferences concerning strategies, specific choices, practical differences between cave sites, and between cave and open-air sites. Outside Italy, a higher degree of experimentation in cave zooarchaeology can be noted, which has led to an improvement in data quality and, subsequently, to an increased likelihood of reliable interpretations. I cite here only a few particularly informative examples where relevant and valuable methods have been applied; for a deeper analysis of protocols and techniques that I have used in my research, together with appropriate literature comparisons, see Chapter 4).

The zooarchaeological study of Neolithic caves in Northern Urals (Borodin & Kosintsev 1997), for instance, underlines the importance of taphonomy as a prerequisite for all interpretive efforts: the authors argue that it is essential to understand the differences between animal bones coming from natural depositional processes and from an anthropogenic ones. In the first case, the bones are often characterised by gnaw marks and by an equal presence of upper and lower skeleton parts, which could be mainly related to natural death or killing by other predators, by contrast, when the assemblage presents particular breakage patterns, a majority of certain body portions over others, and the occurrence of selected species (especially domestic), it is more likely than an anthropic context to be recognised. The valuable (but seldom applied) solution offered concerns the possibility to use an undoubtedly non-anthropised layer and its faunal remains as a kind of taphonomic control.

Taphonomy also causes problems related to the spatial distribution of materials. A reliable but quite time-consuming way forward with this issue is proposed in Pupicina Cave's zooarchaeological study (Miracle & Forenbaher 2006), where, for just one layer, the authors tried to associate the bone conjoins and the articulations recovered, in order to measure the integrity of the deposit. In this context, the Palaeolithic cave site of El Miron (Arroyo 2009) can be briefly mentioned, where GIS has been successfully used to map and cross data related to animal bones spread by body part, site sector, single layer/period, and human/natural fragmentation pattern; this method has led to deeper understanding or slaughtering, butchering and consumption practices at the cave, with some species wholly introduced and processed *in situ*, but others selected outside and only partially brought inside. Further information coming from this project relates to discard strategies: waste was discarded just outside the entrance without being burned, since the seasonality of occupation allowed the natural decomposition of the remains.

Another significant aspect of what zooarchaeology can offer to the interpretation of a Holocene cave context is well explained by Helmer et al. (2005) and Bréhard (et al. 2010) in their study of the relationship between caves and open-air sites in Neolithic Southern France. Thanks to an accurate analysis of killing patterns and to the examination of the vestibular height of a given ovicaprine tooth (mandible d4), it was possible to infer different uses and seasons of use for the two complementary site types (Fig.6).

In particular, the open-air sites appear to have been used for consumption purposes, whereas the caves seemed to be related to production; in fact, the latter were rich in sub-juvenile bones from lambs and kids younger than two months.

This led to the following conclusions: 1) Sheep/goat births mostly happened in caves; 2) caves were frequented during the warm season, being the period of ovicaprine birth; 3) the major exploitation pattern of the flocks was aimed at milk production; 4) slaughtering of other species and adult sheep/goats was carried out beyond the caves (as ethnographic comparisons and common sense suggest).

Fig. 6 Diagram summarizing the pastoral functions of the different types of Chassean sites of the middle Rhône Valley and the complementarities highlighted between them (after Helmer et al. 2005, fig. 5).

The Holocene caves of the Trieste Karst also seem to present the same subsistence pattern as South France, with a predominance of lambs/kids, a corresponding prevalence of seasonal occupation during the warmer months, and an inferable intensive production of milk. Nevertheless, even some wild species (large herbivores and small carnivores) have been identified here, whose presence is explicable by a continued but decreasing practice of hunting by north-Italian prehistoric shepherds.

This whole situation is very much consistent with the two best-studied Holocene caves- Arene Candide in Liguria (Rowley-Conwy 1997) and Pupicina Cave in Slovenia (Miracle and Forenbaher 2006). Although their deposits mainly refer to the Neolithic period, with the Bronze Age layers being thinner and compromised, the majority of sheep/goat and the presence of a smaller number of domestic pigs and cattle, together with a minimal percentage of wild *taxa*, still reflects the situation in Central Italian Bronze Age caves. But the most important aspects of these key studies, in relation to the present research, are the diagnostic techniques and methodologies explained and used. These have been adapted here as guidelines for the zooarchaeological investigations on the cave sites later examined and discussed. However, none of these cases-studies has ever been considered from a non-economic perspective, which could lead to reassess the meaning of the examined remains in their context.

Appleby and Miracle (2012) are the first scholars to address the issue of social zooarchaeology (Marciniak 2005; Russell 2012) in caves. This area of study, detailed in Chapter 3, recognises and explores the symbolic and religious significance of faunal remains in archaeology. Appleby and Miracle use the case of Nakovana Cave, in southern Croatia, to draw wider conclusions on the role of animals in ritual caves. Although they do not mention the interpretive biases given by intentionally selected assemblages of ritual contexts, they point out the significant interpretive potential of these finds when considered from this perspective (Appleby & Miracle 2012: 282). They also acknowledge that neither new methods of analysis nor new technologies are needed for this purpose. Accurate taphonomic and contextual analyses to accompany traditional taxonomy, as well as well-constructed research questions, are sufficient to succeed in making the most of a neglected class of archaeological materials such as the faunal remains.

Here, I have just browsed a few revealing examples of different, well-applied techniques involving faunal remains, which are useful to understanding aspects of prehistoric lifestyles. However, I believe that Bronze Age caves (especially in Italy) do not provide adequately investigated examples. Therefore, an improved effort in establishing a research strategy prior to carrying out any analyses (in the field or, in this case, in the laboratory) is fundamental. Furthermore, this protocol should ideally be stated without preconceived opinions that could affect the final results.

2.5.2. Archaeobotany

Botanical remains are another major resource to interpret the economic and living strategies of people occupying Holocene caves, when reference is made to their quality, quantity, distribution and preservation. These are less recurrent than faunal remains but, when present, they can provide even more accurate information with regards to livestock diet, sheepfold arrangement, and certain activities carried out (e.g. they could be used as fuel for hearths or bedding for animals (Galanidou 2000) (Fig.7), the incidence of cultivated taxa in a mainly pastoral subsistence strategy, and the extent of the surrounding area exploited to collect and cultivate plants. Materials to consider here are phytoliths, digestion-resistant vegetal discards contained in herbivore dung, pollen, charcoal and macroscopic plant remains such as seeds, fibres, fruits and so forth.

Fig. 7 Concentration of wooden bedding in some ethnographically documented caves (after Galanidou 2000, fig. 18).

Archaeobotanists working at La Grande Rivoire (Delhon et al. 2008), in the South of France, have identified the different landscapes exploited by the Neolithic occupants of the site, starting from the type of shrubs and twigs brought into the cave as litter, and from the fodder chosen to feed the flocks. They also understood that, in line with the faunal data from other caves, the vegetal species recorded were attributable to the warmer season, indicating a frequentation mainly during spring and summer. Furthermore, by distinguishing between cultivated species, possibly cultivated species, collected species and accidentally intruded species, the Spanish Cueva El Mirador (Cabanes et al. 2009) has been recognised as an agro-pastoral cave, based on the forage *taxa* on one hand, and the domesticated ones, consumed by people, on the other hand. Nevertheless, it is always necessary to compare botanic data coming from cave contexts with those obtained from surrounding regions, in order to reduce the interpretive distortions related that may result from the intentional selection of plants introduced to the site (Sherwood & Goldberg 2001).

Even when the archaeobotanical finds are not related to pastoral activities, they remain very useful in clarifying site uses and related subsistence economies, although interpretations can very often be influenced by the usual preconceptions. For instance, botanical remains were used to identify two Late Bronze Age caves in Southern France, as 'refuges' according to Petrequin's (1985; 1988) assumption that dark hidden cave sites must have been used for this reason, and should therefore have precise storage features (consisting in charred crops accumulated in pots, containers and/or pits). Balme Gontran and Baume Layrou produced huge quantities of burnt seeds, which have been analysed qualitatively, quantitatively and spatially. The grains were concentrated in heaps or in delimited areas, often close to reconstructable pots, and were all burnt inside the cave (as can be inferred from their distribution, the charcoal, the residues of non-burnt material); the species were sometimes mixed, but more often they were separate. All this evidence suggests a storage arrangement of the cave. Nonetheless, the humidity level and the temperature of the site were unsuitable for a long-lasting preservation of the crops, which seldom seemed to germinate and that had often been dehusked before being left in the cave (probably to maximise the quantity and to reduce the weight during the transport), which diminishes even more the period of preservation of the cereals (Fig. 8).

Fig. 8 Proportions of the main plant taxa in the samples from Baume Layrou, based upon volumes (after Delhon et al. 2008, fig. 5).

The conclusion of the study is that these caves could actually have been used as short-term stores and refuges for people usually living in open-air sites. Despite the very accurate analysis and the reliable conclusions concerning the practical function of the caves (temporary natural barns), though, it is not clear why these locales could not simply be a ritual place of crop sacrifices. Following this second hypothesis, in fact, the distribution in heaps, the effort in bringing the larger quantity of cereals to the possible "sanctuary", the *in situ* burning, the hidden, dark and difficult position in the cavee, would all be equally explained. This issue clearly highlights the previously mentioned interpretative biases and conditioning of different academic background and positions.

2.6. Combining landscape and spatial analyses with material remains: functions and symbolism of caves

In order to frame are excavated cave in its context, preliminary environmental analyses are fundamental but not sufficient; targeted landscape analyses are also required.

The first step of a consistent landscape analysis is to deeply understand the natural environment where the caves or the karst system is set, reconstructing past palaeoclimate, palaeoenvironment and geology. The centrality of this element was not strongly considered by Graeme Barker (1981; Barker & Hodges 1981), in his still enlightening studies of Italy's Apennine communities, causing a subsequent critique to be made by Robin Skeates (1992) about the lack of knowledge of prehistoric natural settings, crucial to make reliable interpretations.

Such analyses need to be accompanied by the identification of recurrent physical features that can influence the human frequentation and use of caves: accessibility, size, shape, orientation, position, light conditions, proximity to raw material or water sources, pastures, cultivable fields. Predictive methods exist, which combine landscape features and already known archaeological sites (in this particular case, caves) to help identify recurrent patterns in site location. This approach proved very useful in relation to surveys intended to document a larger occupation strategy, and worked successfully in the Peak District project (Holderness et al. 2007). Thanks to the statistical techniques of logistic regression, discriminant function analysis and decision tree, which enabled archaeologists to critically interpret information relating to archaeological cave sites and non-sites – the study found that altitude, proximity to valleys and orientation, considerably influenced human occupational choices. In addition, the use of Principal Components Analysis (PCA) in this research revealed patterns in the different material classes in and between the various sites, allowing both a micro- and macro-scale of data examination.

Nevertheless, it cannot be stressed enough that caves have to be seen in relation to open-air sites and other archaeological evidence in their surrounding areas, in order to avoid interpretative biases and an overemphasis on the caves themselves.

French studies of Holocene caves have made some attempts in this direction, classifying key site functions according to multiple landscape and physical features and to the proximity to other sites. The identified uses and related characteristics can be divided as follows in Table 1 (Bouby et al. 2005; Manem 2012):

FUNCTION	PHYSICAL FEATURES	LANDSCAPE FEATURES	ARCHAEOLOGICAL EVIDENCES
Domestic	Easy access, presence of large chambers	Nearbyfields\pastures\sources to be exploited	Dug or built-up structures, ovens and cereal stores
Refuge	Difficulty of access and hidden entrances		Large amounts of remains with no clear evidence of cults
Annex dwelling		Proximity to open-air sites	

Table 1 Cave uses according to their features and archaeological evidence.

At a first sight, this division seems sensible. But at least three questions, accompanied by some reflections, arise from it:

1) Why are cult features and functions ignored by the authors?

This could mean that ritualised sites are quite evident and do not require further efforts to be identified; or, that only burials are recognised as belonging to a cult sphere; or, that there is no need to isolate cult from domestic occupations. The first two hypotheses are obviously unreliable; the third one could be acceptable and actually very strongly argued, but there is not evidence that the authors uphold such a position. There is also a fourth option, relating to a common reluctance to tackle this topic since it is judged subjective and unscientific. Considering the mainly processual and strongly determinist approach of French scholars towards the topic of Neolithic and Bronze Age cave studies, this seems the most likely reason for the lack of exploration of this dimension of cave archaeology.

2) Why do caves close to open-air settlements have to be considered exclusively as annex-dwellings only?

When settlements are identified close to cave sites, the former automatically come to be categorised as 'central places' at the expense of the latter, which are downgraded to secondary sites. This happens even when the caves contain a large quantity of remains; arguably, there is no justification for this forced hierarchisation, apart of a mental categorisation of caves as primitive dwelling places. This view also implies that new open sites discovered close to the caves would be considered as principal dwellings, while the caves would be switched to annexes. According to this line of thinking, then, every inhabited cave depends on a different primary site. This underestimates the significance of caves in human societies. Even if it is the cause that in mainly agricultural systems, caves have been used as secondary storage sites (with mundane or ritual dimensions), it is not clear why in a pastoral economy they have to be seen as such.

3) How reliable are the features so strictly related to defined functions?

Bronze Age caves often contain a combination of fine and coarse pottery, as well as metals, cereals, fauna (even young animals); they also often reveal hearths, which are somewhat ambiguous structures, easily interpretable as mundane or ritual (Galanidou 2000; Grifoni Cremonesi 1994) according to the researcher's disposition. Even the morphology of cave accesses can be taken in different ways, according to the archaeologist's preconception of a utilitarian or symbolic significance of the site. For instance, the concept of Late Bronze Age refuge caves, first introduced by Pierre

Petrequin (1985; 1988), has been cemented through the analyses made by French archaeologists on numerous caves; spatial, botanical, faunal, material analyses have been undertaken, and have confirmed his theory. Nonetheless, British post-processual scholars would hardly admit the reliability of this approach, themselves being more strongly linked to ritual interpretation of these contexts.

In conclusion, a reliable understanding of cave archaeology depends not only on the productive integration of multiple approaches and complementary disciplines (ranging from the archaeological sciences to anthropological approaches); it also depends on a critically aware theoretical perspective on different regional traditions of archaeology, the variable international positions are necessary, as well as an aspiration to achieve impartiality. This open-minded strategy should lead to the best possible interpretation of the wider archaeological context, within which archaeological caves and their deposits must be situated.

2.7 Funerary caves: when the easiest thing to see becomes the hardest thing to understand

At first sight, funerary caves might seem the easiest of site types to interpret, since they present obvious and unequivocal human remains. However, the uncritical recognition of human remains in a cave only provides basic information about the funerary customs of a community. The study of ritual uses might reveal some aspects of symbolic practices and thought related to the values of the officiants. But deeper understanding depends upon the identification of funerary use per se; it is therefore necessary to make sense of the many, different practices classified under the term 'cave burials'. Prerequisites to persuasive reconstruction and interpretation include taphonomic studies and spatial distribution analyses. Osteoarchaeological analyses are now being undertaken on most burials newly found in caves, and on higher-quality older excavations. Unfortunately, DNA and isotope analyses remain quite rare on Bronze Age human remains from caves. As a consequence, we can now know a fair amount about mortality patterns, diseases, age and gender; we know less about diet, provenience and social relations, and what we still know much less about the way these burials were arranged within caves, and the funerary practices carried out. Some progress has been made mainly using taphonomy, statistics, and ethnography.

Such studies appear to be reliable, and the methods used can be combined in order to obtain even more convincing results.

Archaeological evidence of mortuary practices in caves ranging from the Neolithic to the Iron Age, in areas such as the Iberian Peninsula (Weiss-Krejci 2012), British Isles (Dowd 2008), Central Europe (Orschiedt 2012), France (Boulestin & de Soto 2003), Greece (Cullen 1999) and indeed Italy (Grifoni Cremonesi 2000), show different patternings of human bones found in caves. Human individuals can be either buried in defined graves, with a good degree of skeletal connection, no skeletal selections nor cut marks, or they can be found in a commingled condition, often with evidence of post-mortem bone selection, burning and cut marks. Naturally, both situations can occur in the same site, with a wide range of intermediate possibilities between these two extremes.

Just considering bone selection, two extremes can be also identified. In the first case, presence of a majority of peripheral bones (like phalanges and carpo-tarsals), indicates that primary deposition of an entire body occurred at the site; in other words, that the body was first laid on the cave floor or buried in the cave (and in some cases later disturbed). In the second case, the discovery of a majority of central, long bones and a lack of extremities suggests that the cave was chosen as the final resting place for human remains whose body was intentionally deposited in a different place.

However, such interpretations are too simple. Boulestin and Gomez de Soto (2003: 776) show this by comparing their chaotic data from the funerary context of *Les Renardières* in Charente (France) to two necropolises with primary burials in graves. Both sites actually showed a similar low percentage of smaller bones (Fig. 9).

Fig. 9 Fundamental resemblance between the representation patterns of human bones found in a cave and a modern cemetery (after Boulestin & de Soto 2003, fig. 14).

When only a few of these bones are present in a cave, there must be a specific reason for their presence: certainly, when tiny and fragile body parts of young animals and humans are present and preserved in significant numbers.

It is difficult to identify the cultural dimensions of bone selection, especially in caves, where the post-depositional processes can strongly affect contexts (even more than at other site types). Despite this, , some valuable attempts have been made, among others, by Boulestin and de Soto (2003) in the Early Bronze Age cave of Les Renardières, and by Tracey Cullen for the Neolithic Franchthi Cave funerary complex in Greece (Cullen 1999).

In the first case, the archaeologists detected accurately the spatial distribution of all the material classes; they noticed that the human remains were dispersed in three limited areas and that they were sometimes mixed up with lagomorphs. Moreover, most bones were crowded against the wall of the inclined levels: this led them to interpret the context as a taphonomically disturbed example of surface burials. The authors then analysed the bones in greater depth, studying conjoined bones from the different and well defined areas. One of the three areas was large enough to hold whole individuals. The other two areas, far from each other and at different levels, showed several conjoinedd bones, which appeared to have been fragmented after decomposition of their related bodies. Moreover, these areas were too small to hold even a minimal number of whole individuals. Authors' reliable conclusion was that the third space could have served as a primary and temporary mortuary area, while the two others represented secondary and final burials.

A further example, coming from Franchthi Cave, concerns mainly the use of spatial and statistical methodologies. Once again, the aim of the research was to investigate the possibility that bone scattering is not simply related to taphonomic factors. Cullen, as well as Boulestin and Gomez de Soto, compared the scattered remains to discrete burials, coming in this case from the same site. Cullen did so this in order to obtain frequency coefficients - useful to understanding not only whether certain bones recurred more or less than others, but also whether these bones happened to recur just in relation to their normal quantitative presence in the skeleton (such as the phalanges) and their robustness, or for other reasons. (In fact, as criticised by the scholars which studied Les Renardières', too often the recurrence of bones is superficially judged without a systematic mathematical approach.) The result of this statistical analysis was surprising: whereas the application of traditional methods would not have led to the identification of any pattern in the assemblages, this experimental technique allowed the author to identify an unexpected majority of skull and lower bones, which would have not occurred in a naturally disturbed environment. This meant that practices of bones removal, or of secondary deposition, were carried out at Franchthi Cave during the Neolithic.

These are just two examples of how a burial context which appears to be poorly defined can offer different opportunities to be understood. What is still missing in the existing cave literature, with a few meaningful exceptions (e.g. Skeates et al. 2013, where Jessica Beckett examined taphonomically the human bones found in Sardinian caves), is a deeper insight into taphonomic and post-depositional processes and the way they can affect the archaeological evidence.

Having examined some of the contexts detectable in prehistoric funerary caves, and having highlighted some of the opportunities for interpretation that a scientific approach can offer, I will now consider a complementary, wider working perspective, developed by Estella Weiss-Krejci (2012) in relation to Holocene burial caves in the Iberian Peninsula. This drew upon a review of funerary caves' utilisation across ethnographically attested cultures from all over the world. This approach is fundamental to broadening the initial impressions obtained by excavation: it offers archaeologists an opportunity to account for their reconstructions obtained archaeologically, and to find explanations for the ritual behaviours recorded (or, at least, to open our minds in this direction).

The purpose of adopting this further approach is not, of course to find perfect analogies: this would lead, in fact, to unreliable and superficial generalisations. On the contrary, what I consider to be the most useful aspect of comparing archaeology to ethnography is the fact that this helps challenge certain prejudices (Orschiedt 2012). For example, it has often been assumed that a single inhumation, still well preserved and in skeletal connection, reflects a higher social importance than a chaotic scattering of human bones. We know from ethnographic evidence that this is not necessarily true: the most important members of a community, in fact, are often exposed to long and repeated funerary practices culminating in the final deposition of dry bones, which will eventually appear chaotic. On the other hand, a lower class members of society can just be quickly laid on the cave floor or barely buried, resulting, if not in a proper grave, at least in a better status of skeletal connection.

Caves can also be perfect temporary resting places to let a body decompose prior to being moved to a permanent burial place (Dowd 2008), or permanent burial places where bodies are carried after primary burial. If we rely on the interpretation of Les Renardières, a cave can also be the locale to carry out both of these steps. There can be multiple reasons for people to frequent a cave for funerary purposes, and multiple ways to carry out burial practices on the same social segment of a community. Moreover, some cultures can be characterised by funerary practices aimed to communicate socio-economic distinctions between the dead, while other cultures can be characterised by an appearance of equality. It is also possible to record late prehistoric phases during which caves were not used for this purpose (Holderness et al. 2007).

In conclusion, although caves are natural places that can often represent a passage to the underworld and a return to the motherly womb of Earth or Nature (Dowd 2008,among many others), especially when taking the form of narrow tunnels, it is clear that generalisations cannot be made; even more, they cannot be made in relation to the mortuary practices.

As in the breader field of funerary archaeology, only a combination of archaeological sciences, ethnographic approaches, and landscape contextualisation can provide a higher level of reliability for the interpretation of these fascinating sites.

2.8. Conclusion

To sum up, through this chapter I have considered critically the most common archaeological approaches to Holocene cave uses. My aim has been to investigate how different categories of archaeological evidence have been used to offer reliable interpretations about the human uses of caves in later prehistory. This interpretive process has led to different outcomes, on the basis of two main factors: first, the technological limits or developments of the time in which the studies were carried out; second, the school of thought followed, with regards both to the methodologies adopted and to the main interpretive interests shown. This means that cave archaeology still needs to overcome some intellectual divisions and prejudices. To my mind, contextual archaeology seems to represent the most appropriate way forward with such issues, drawing upon the most productive aspects of each school of thought and methodology and by combining them together.

Chapter 3 - The Middle Bronze Age in Central Italy

3.1 Introduction

The Bronze Age dynamics in Italy can be placed in the second millennium BC, and, more precisely, between 2300-2200 and 900 BC albeit with regional variability. Within this, a still provisional combination of radiocarbon dates and typo-chronologies places the Italian Middle Bronze Age between 1750-1700 BC and 1350 BC (Cunliffe et al. 2009), when the first Mycenaean communities started to approach the Italian coasts (Bietti Sestieri 2010).

The first aim of this chapter is to provide a critical overview of existing archaeological knowledge about the Middle Bronze Age in Central Italy. Secondly, but equally important, this chapter intends to identify some crucial gaps in past and present research in the field, including a lack of theoretical elaboration and an excessive reliance on chrono-typologies. Finally, I propose some methodological ways forward to solve such problems, including in the field of cave archaeology.

3.2 The theoretical 'pluriverse' of Italian Bronze Age archaeology

While Middle Bronze Age Northern and Southern Italy appear to have been mainly agricultural, with the presence of the so-called *Terramare* and *Palafitte* in the north, and of plateau villages in the south, the centre was first supposed by archaeologists to be mostly inhabited by nomadic communities of shepherds (Bietti Sestieri 2010; Guidi et al. 1993). This early assumption has been debated and revised several times over the past 60 years (Barker 1981; Östenberg 1967; Puglisi 1959). However, many questions remain unsolved. Bronze Age research in Central Italy has been long affected by a lack of theoretical discussion and awareness, especially amongst Italian scholars (Guidi 1988; 2000), with a significant exception being the study made by Graeme Barker (1981) whose work I will address below. This general lack of theoretical reflection led to an unsystematic and fragmented approach to fieldwork that ultimately resulted in the methodological 'pluriverse' described by Guidi (2000) (Fig.10): a pluriverse which still prevents a good understanding of the Italian Bronze Age.

Fig. 10 History of later prehistoric studies in Italy from 1860 to 2000 (after Guidi 2001, fig. 1).

Such a multiplicity of approaches does not necessarily imply heterogeneity and inconsistency; it could denote an extremely vibrant research system. A key problem in Italian Bronze Age studies is, instead, the lack of dialogue between the several academic groups operating in the field, and between such groups and the *Sovrintendenze*. This issue, combined with a deliberate disregarding of archaeological theory, has led to the main and long-lasting issues that still affect Italian Bronze Age studies: the lack of shared aims and a subsequent failure to establish key research questions, such as the understanding of site uses, of the relations between humans, landscape and environment, or of the social organisation of communities.

One major example of these methodological problems lies in the overvaluing of typo-chronology (Fig. 11); in fact, the long established Italian tradition of culture historic studies still survives in the almost exclusive attention given to the creation of relative chronologies based upon material culture, from micro- to macro-regional contexts. This may also be related to the fact that 'protohistory' has been ignored by prehistorians for many years, being tackled only by the Etruscologists and Classical archaeologists working under an historical perspective (Guidi 2001). Cazzella (1994) was the first scholar in Italy to strongly advocate a full revision of the Italian Bronze Age chronology: his intended revision was to be based mainly on dendrochronology, radiocarbon data and well-published stratigraphic sequences. Even more importantly, Cazzella admitted that typo-chronologies do not always coincide with radiometric data. Therefore, he proposed to abandon the very strict division of the Bronze Age based on pottery sequences which is currently in use: for example, he asked: what proves that the MBA 3 in the Terramare occurs at the same time as the Apennine MBA 3? Therefore, ceramic typology should only be used as a general indicator of 'cultural sets' (Petitti et al. 2012) and not as a temporal marker.

The concept of 'normative culture' – that is, the idea of artefacts expressing cultural norms and of cultural norms defining culture itself (Johnson 2010) – is now obsolete in Italy as well as in many other parts of the world. Nonetheless, the notion of 'cultural *facies*' – i.e. artefacts typologically grouped according to their shapes and decorative motifs, indicating the existence of human cultures – is deeply rooted in national research, often resulting in a still descriptive approach to most archaeological realities of the Italian Bronze Age. Moreover, analyses of pottery or metal artefacts still – and too often – represent the bulk of the publications that derive from fieldwork, at the expense of both archaeological sciences and more sophisticated interpretative analyses (e.g. Cocchi Genick 1986; 1987). In Italy, this appears to be the most common tendency also for research Masters (and sometimes PhD) theses in 'Paletnologia' and 'Protostoria', especially in the scholarly group of Rome: there, the product of research by young scholars frequently consists of catalogues of remains from old or new excavations.

Fig. 11 Example of typo-chronological overspecialisation (after Guidi et al. 1993, tav.XVI).

This approach results in the production of hundreds of drawings and typological comparisons, with only a basic contextualisation of the finds and strictly chrono-typological inferences. In addition, most of the rare syntheses focusing on the Italian Bronze Age mainly deal with accurate typologies of pottery (e.g. Cocchi Genick 2001; 2002) or metal artefacts (e.g. Bianco Peroni 1970; 1976; 1979; Carancini 1984; 1999) from the various sites known, and pay scarce attention to the interpretation of such finds. In the introduction to her new handbook '*Protostoria, teoria e pratica'* (2010), Anna Maria Bietti Sestieri notes that archaeological sciences as well as new theoretical perspectives are starting to emerge in Italian 'Protohistory' alongside a gradual abandonment of material culture approaches. Yet, her own approach remains somewhat contradictory: in fact, even though she upholds both Cazzella's assumptions (on dating) and Hodder's post-processual theories, she still dedicates a very large section of her book to ceramic and metal typologies.

3.3 The slow surrender of culture history: alternative approaches to the Italian Bronze Age

Radiocarbon and dendrochronological data from well-excavated Italian (M)BA sites are still insufficient: the scarcity of reliable dates and stratigraphies prevents scholars from applying Bayesian methodologies to most Italian contexts (Cazzella 2009). The present difficulty to combine multiple chronological data is holding back a much-needed Italian 'dating revolution'. Moreover, so far only few British prehistorians seem to have been actively concerned about such necessity, as showed by the publication of existing dates only in a thematic appendix (Barker 1981) or in a specific monograph on the topic (Barker 1981; Whitehouse & Skeates 1994). Yet, the collection of updated information is essential, especially because twenty years of further research and technological progress have made radiocarbon dating and other techniques cheaper and more easily applicable to archaeology. The urgency to re-focus and improve research in this field was demonstrated, for example, by Petitti (et al. 2012) These scholars gathered multiple radiocarbon\dendrochronological dates from a number of Tuscan sites pertaining to the passage between the Eneolithic (or Copper Age) and the Early Bronze Age, and combined them with the stylistic and stratigraphic data available: this way, they managed to revolutionise the traditional chronology of these phases, postponing the start of the Bronze Age by at least one century later than expected (from 2300 to 2200 BC).

3.4 Salvatore Puglisi and the Apennine culture: a first step towards innovation

Not every study produced in the field of Italian Protohistory has been affected by the perspective of cultural history; this somewhat narrow *modus operandi*, which was harshly criticised by the New Archaeology, started to be questioned in Italy by a pioneering, and yet still relatively simplistic, analysis by Salvatore Puglisi (1959). Puglisi was influenced in the late 1950s by Childe's school of thought and by theoretical developments at the Institute of Archaeology in London. In addition, Puglisi was a disciple of Ugo Rellini, who first identified the substantial similarity between the various BA material cultures of Central Italy and defined them as the 'Apennine culture' (Rellini 1931) (Fig. 12).

Fig. 12 Apennine material culture – some decorative patterns (after Macchiarola 1987, figs. 36-37).

Instead of merely recording the data for dating and classification purposes, Puglisi attempted to identify a cause for the uniformity of the ceramic evidence from Central Italy, therefore making a major breakthrough in the previous scholarly tradition: by combining ethno-anthropological comparisons, climatic and environmental information, material analysis and also bio-archaeological data such as faunal and botanic remains, he proposed a new socio-economic theory for the Bronze Age of the Central and Southern Apennines. According to Puglisi, the Bronze Age communities of shepherds from this area caused, through their nomadism, the spread of the Apennine pottery across the passes of the eponymous mountain chain. These warriors-shepherds, allegedly originating from an immigration of Aegean people during the Copper Age, brought to Italy new metallurgical technologies and took the place of the Neolithic farmers that had inhabited Central Italy before. The Apennine people were then supplanted by the northern communities of the *Terramare* at the end of the Bronze Age: the Terramare were understood to be a rather advanced BA civilisation located in the Po Valley, with cultural and architectural features similar to those of the northern *Palafitte*. The ethnic mixture between the *Terramare* and Appennine groups generated the agricultural-pastoral 'Subapennine culture'; after that, the most resistant Apennine shepherds finally retired in the mountainous hinterland, giving birth to a number of pre-Roman peoples (including the Latins).

Puglisi was clearly influenced by the old-fashioned idea that cultural changes depended only on external influences (either direct, with the immigration/invasion of new communities, or indirect, with the arrival of objects instead of people) and by a continued excessive confidence in ceramic typology as a means to recognise human cultures. However, he was the first Italian scholar who tried to provide a socio-economic interpretation of a prehistoric supraregional context, laying the foundations for subsequent, more sophisticated interpretive studies.

3.5 The contribution of international scholars and the 'revolution' of Graeme Barker

Ten years later, the Swedish scholar Östenberg (1967) elaborated a completely different theory, asserting that the late prehistoric communities of Central Italy where not pastoralists but agriculturalists. He supported his hypothesis through the detection of some Bronze Age long-houses at Luni sul Mignone, which he related to the presence of stable settlements. Moreover, he recorded evidence of cereal grains and stock breeding from various settlements . He also supported his hypothesis by noting that some of the third-second millennium BC sites of the region were located in the lowlands (where agriculture was more likely to be practiced); in addition, he noted that pig bones - in his opinion indicative of sedentariness - were often detected in the same area.

Both of these innovative approaches by Puglisi and Östenberg have been the subject of extensive criticism, and were challenged some decades later by the British scholar Graeme Barker.

After one final culture-historical compendium written by David Trump (1966) that didn't fundamentally challenge the previous perspectives, Graeme Barker (1981) brought a breath of fresh air to Italian archaeology during the 1980s, with his sophisticated work that paid special attention to Central Italy and later prehistory. He produced a credible, systematic study concerning the prehistory of this region, by placing Central Italy in a defined environmental context and also addressing the social and economic aspects of its early communities (see Chapter 2).

Barker's research was inspired by different factors. A first source of inspiration was Higgs'(et al. 1975) school of palaeoeconomy, which aimed to overcome the previous tendency to focus on regional typology, through the analysis of macro-environments and ecofacts from archaeological sites. Secondly, Barker was influenced by the interpretative attempts by both Puglisi and Östenberg a few years earlier. While it is undeniable that both these earlier studies were still preliminary and lacked consistency, they still offered an innovative approach to the complex relationships between landscape and community in late prehistoric Italy. Drawing upon such new perspetives, Barker made some fundamental inferences about the Central-Italian Metal Ages, which can be summarised as follows:

- the socio-economic changes of the Apennine communities (and, more generally, of Bronze Age Central Italy) were not related to invasions or other forms of external interventions;
- the subsistence economy of the BA Central Italian communities was mixed: it comprised both agriculture and livestock farming, with the two activities being variously combined from site to site;

- given the scarcity of permanent structures, and the predominance of sporadic and cave evidences, little attention was probably paid to settlement building (this doesn't mean that there were not any);
- given the scarcity of cemeteries, structures and other signs of social complexity, social stratification was still at an embryonic stage, probably because of the all-absorbing subsistence activities;

Following these premises, Barker deduced that the Italian Bronze Age was still very similar to the Neolithic in many ways, for example in its subsistence, trade patterns and social structures, as well as in terms of the limited utilisation of metals.

Despite the overall validity of these inferences, some improvements to Barker's theory are now possible in light of the last decades' discoveries. These issues will be further developed in the rest of this thesis. For now, it is important to note that the increased number of known 'dwelling settlements' in Central Italy is in partial contrast with some of Barker's preliminary ideas. In fact, even at a time when only few proper open sites had been identified (Narce, Luni, Tufariello di Buccino), he – thoughtfully - considered the possibility that the frequency of such settlements was underestimated rather than close to the real one. On the other hand, we still have to acknowledge the regional disproportion between the relatively scarce stable settlements and the much more common MBA caves and isolated finds (see Fig.23). Such a pattern cannot be simply due to methodological biases, but must also be related to the original settlement structure of the area. It seems, then, that Central Italy in the BA was characterised by regionally specific settlement patterns which were clearly distinct from those attested in Northern and Southern Italy. The analysis of ritual/burial sites confirms such a trend: in fact, it can be noted that only Central Italy does not actually provide any example of a 'necropolis' in the MBA. In fact, many burials from this area can be identified as isolated graves located both in natural and artificial caves, in rockshelters or, more rarely, in open-air locations; others come in the form of multiple chaotic cave depositions. Unfortunately, due to the frequent lack of reliable stratigraphic distinctions and dating, the contextual and chronological relations between these remains are difficult to demonstrate with certainty.

Another crucial issue with Barker's now 30 year-old theory has been noted by Robin Skeates (1992) in his doctoral thesis: he argued that the application of a very strict processual method is inappropriate when a sound knowledge of the region's palaeoenivronmental background is lacking. The site catchment technique used by Barker and the comparative inferences he made were, in fact, simply based on the present-day natural features of the Central Italian landscape (Fig.13).

The pollen studies made at different lakes in the region such as Monterosi, Baccano, Vico, Albano and Nemi (Bonatti 1963; Frank 1969; Lowe et al. 1996) can only partially overcome the problem; in fact, not only do such studies remain few, but they have not been properly combined with the analysis of archaeological data. The information coming from microfaunal, macrofaunal and botanic remains can thus provide significant help.

Fig. 13 Central Italy's division in morphological areas (mountain, plains, basins, rivers); the numbered circles represent BA sites (after Barker 1981, fig. 3).

3.6 Environmental sciences and the Italian Middle Bronze Age: pros and cons of a delayed adoption

The application of environmental sciences to the study of the Central Italian Bronze Age began after Puglisi developed his ideas about the Apennine culture. Unfortunately, systematic analyses of faunal and vegetal remains are available only for a minority of the many sites known to date. Radiocarbon dating is even rarer, and pollen, soil and molecular studies are almost completely absent. Moreover, these studies are usually undertaken on museum collections, often (several) years after the excavations. This means that only poor connections - or no connection at all - can be made between the remains and their original contexts. Such a gap leads to the loss of important information related, for example, to the chronological and spatial contexts of the finds, thus preventing a more complete understanding of the sites under study.

Nevertheless, MBA Italian zooarchaeology seems to offer a relative abundance of regional studies, especially when compared to the overall situation of Central Italian Bronze Age archaeology. In fact, several syntheses and/or interpretive analyses have been made on areas such as Abruzzi and Latium, under the supervision of Italian scholars like Jacopo De Grossi Mazzorin (e.g. Agostini et al. 1992; De Grossi Mazzorin 2003), Umberto Tagliacozzo (1992) and Barbara Wilkens 1991a; b; 1992). However, only few exhaustive faunal studies from single archaeological contexts have actually been produced: a less than ideal situation if we consider the large number of existing sites. Still, such publications claim to be valid on a multiregional level. Another crucial issue is the tendency to use data from contexts as diverse as caves and open settlements to make general inferences on subsistence strategies. Therefore, the question is: is it possible to evaluate the economy of a wide geographical area only on the basis of a few sites, regardless of whether they are open sites or caves, lowland or upland settlements? In particular, is it possible to do so regardless the inconsistency of the archaeological data in terms of quality and quantity? Clearly, this approach can only support a very general, basic interpretative perspective, which would need to be deepened through more specialised studies. In fact, the few but valuable multidisciplinary micro-regional studies (Angle et al. 1991; Barker 1991a; di Gennaro 1986; Peroni & di Gennaro 1986) have revealed the extreme variability of the environmental choices of the communities examined. Such economic and cultural heterogeneity deserves a less generic and standardising interpretative perspective.

Nonetheless, the environmental approach used by Barker detailed above was initially a positive innovation in Italian MBA research. Unfortunately, such studies had some negative consequences for the development of Middle Bronze Age Central Italian archaeology: in fact, the majority of past and current local studies, fell to varying degrees into the trap of the passive and uncritical application of processual methods. As argued by the proponents of post-processualism in their radical critic of the New Archaeology (Hodder 1982; 1991), it is not possible to apply thoroughly scientific methodologies to disciplines such as archaeology, which lies at the intersection between the environmental sciences, anthropology and the humanities. Therefore, archaeology without a certain degree of 'subjective' interpretation (Fig.14) becomes nothing more than an aimless summary of data.

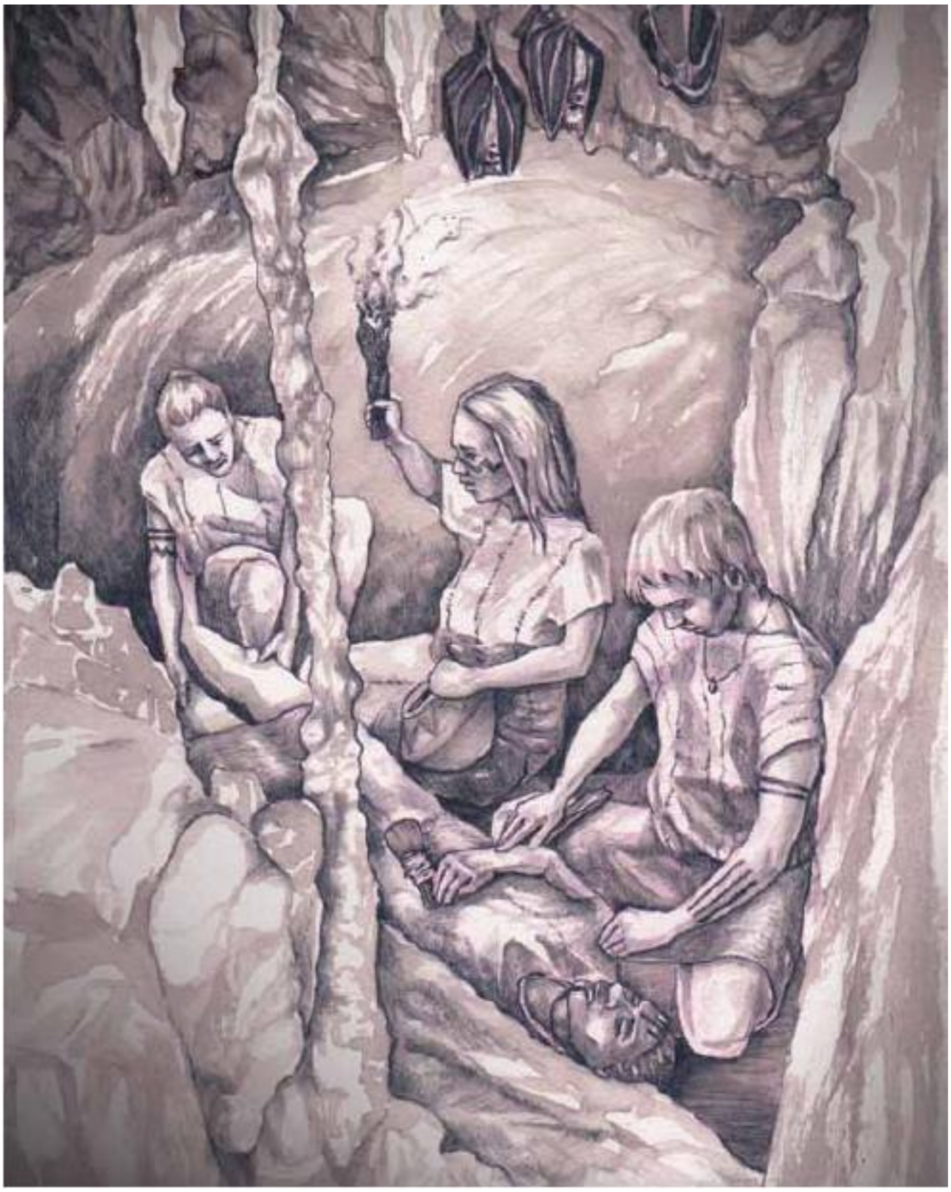


Fig. 14 An 'artistic' reinterpretation of Prehistoric funerary rituals at Mora Cavorso Cave (after Rolfo & Benetti 2012: 80).

3.7 Ethnoarchaeology, phenomenology and other post-processual approaches to Italian Protohistoric sites

Ethnoarchaeology and experimental archaeology can offer keys contributions to a better understanding of the past. Still, such comparative, but positivist approaches are limited in that their reliability cannot be proved entirely, since the subjects of the parallels drawn upon in this perspective disappeared hundreds or thousands of years ago. This is why post-processualists tried to move the attention of archaeologists to new interpretive approaches. A number of new themes can be mentioned. The most interesting – in respect to the topic of this thesis - is the exploration of the complex relationships between people and their landscape. Tilley's 'phenomenology' and the concept of 'materiality' are also relevant. All these interpretative approaches have been effectively applied to a number of Bronze Age sites in the Mediterranean, especially when focusing on the possible symbolic dimension of such contexts (as Skeates 2007; 2010; Turnbull 2002; Whitehouse 1992; 2001). Once again, this has unfortunately been done only by scholars working within a post-processual framework.

In fact, a lack of dialogue can be identified between the mainly environmental Italian school of thought – which is mildly processual - and the British one, now more focused on theoretical issues such as 'perception', 'materiality' and 'embodiment'. This intellectual discrepancy (or reciprocal indifference) is having a deep impact on most MBA studies of Central Italy. On the one hand, British academics (or Italian scholars working in the UK) (generally with significant research funding) have often been able to apply a well-balanced combination of environmental and landscape approaches, enriched by more theory-laden interpretations (e.g. Dolfini 2013). The most promising results of such multi-layered approaches have come from those field projects fully directed by them. Unfortunately, some scholars also applied these delicate interpretations to poorly investigated sites, whose excavation was carried out in the past or whose publications were nothing more than very general and superficial reports (e.g. Whitehouse 1992). The result has been some fascinating but problematic speculations.

A good compromise is provided by contextual archaeology (Bergsvik & Skeates 2012; Hodder & Hutson 2003): that is, by a holistic approach which takes into account every scientific aspect of the investigation, the value of ethnoarchaeological testimonies and the insights provided by post-processual archaeology (with a focus on the issues of past experience, the senses and perception). This integrated process of analysis and interpretation has been applied only in limited areas (e.g. in Central Sardinia). By contrast, research carried out on the MBA Central Italy still lacks the generalised adoption of such a methodology. One exception is represented by the project focusing on the site of Sorgenti della Nova, which integrates an excellent methodology of investigation, an unusual speed of publication, the most up-to-date and accurate environmental, landscape and stratigraphic analyses, and some interesting interpretive attempts (Negroni Catacchio 2008).

A praiseworthy effort to overcome the contrasts described above has been made during a recent PPE (Etruscan Prehistory and Protohistory) meeting, entitled '*Paesaggi reali e paesaggi mentali*' ('Real landscapes and mental landscapes'). On this occasion, a large number of Italian scholars (see Negroni Catacchio 2008) have dealt with the challenge of re-reading old and recent data from late prehistoric Central Italy in a contextual perspective. Importantly, the various studies presented have considered a wide range of different sites, including lake dwellings, Tuscan open settlements, mining landscapes, cult sites, etc.

Particular attention has been paid to cult contexts (e.g. Miari 1995; Negroni Catacchio et al. 1989). An active strategy of contextualisation has been experimentally elaborated and applied to the Fiora Valley of South Tuscany. The aim was to identify possible patterns in the location of cult sites. While innovative, this project has some limitations. First, the sites have been qualified as ritual according to information provided in old publications, despite the awareness that such a definition in archaeology is often arbitrary. Second, it is clear that burial and cult sites tend to stand out in the landscape more than the other site types, and that they are more likely to constitute almost the only evidence of protohistoric human activity.

Third, a range of archaeological studies have shown that it is not easy to identify a cult site as such, nor to draw a strict line between domestic and ritual contexts (Bradley 2005). This leads me to partly criticise the still valuable effort made by Romeo Pitone (2012), who also elaborated some forms used for site interpretation (Fig. 15). These have been used for the experiment carried out during the Fiora Valley project, but have not been integrated into the official cataloguing systems. An alternative and maybe more productive approach to such forms could be to use them in relation to every known context and not only in those that had been already recorded as ritual ones. This would be useful in identifying the cult elements of every kind of archaeological site and in integrating them in a more reliable interpretative framework.

Fig. 15 The proposed descriptive form for the 'ritual action'(after Pitone 2012, fig. 1), This and the 'ritual find' form (ibid. fig. 2) have not been accepted by the National Institute for Cataloguing and Documentation (ICCD).

3.8 The dangers of generalisations

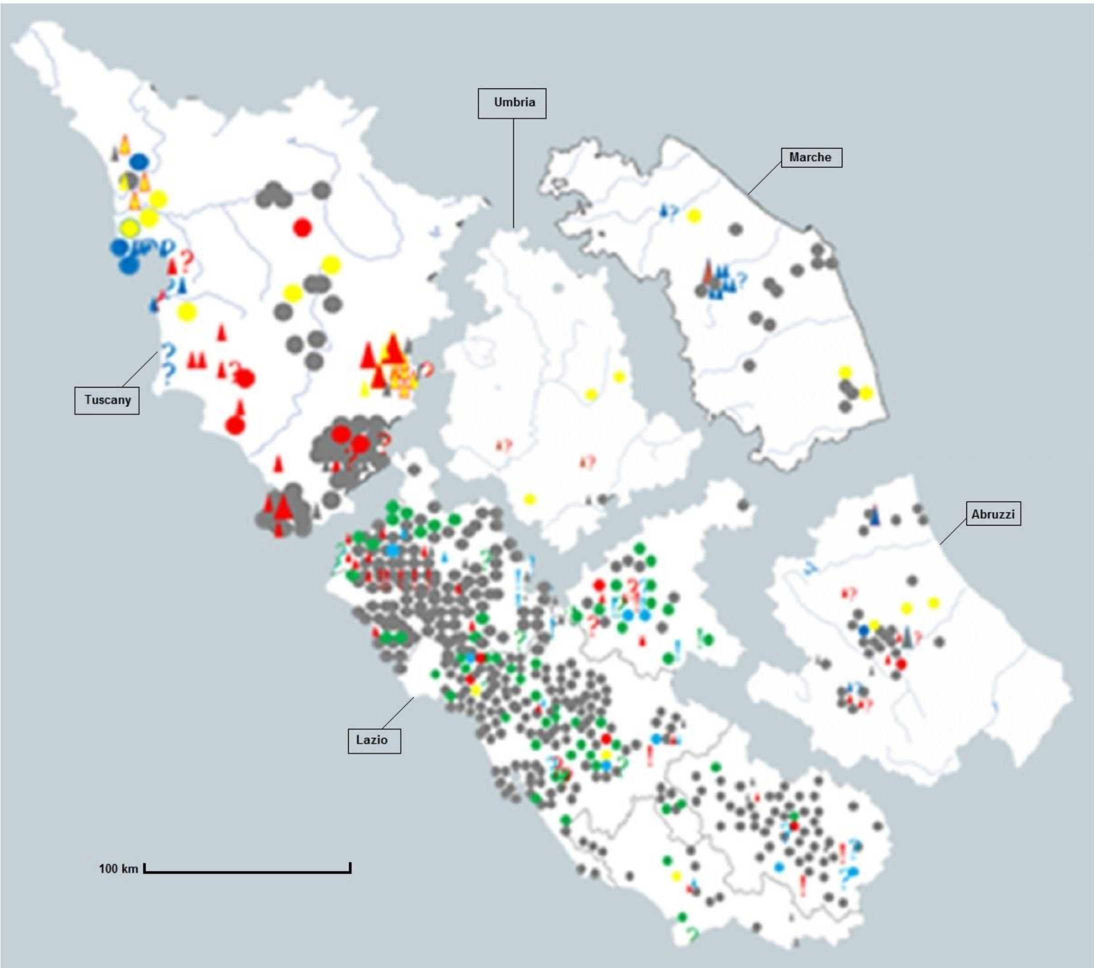
Despite the illustrated inconsistency of the available data relating to Italian protohistory, Anthony Harding and Fokkens's (2013) synthesis of the European societies of the Bronze Age includes Italy. This significant effort, although very useful in concept, suffers of the same limitations as the aforementioned zooarchaeological syntheses: all of these works are based on a limited selection of sites and data, yet assume that they can serve as a regionally representative sample. A further issue with Harding's book is that the Bronze Age is considered as a whole: yet, in Central Italy, for example, the socio-economic and cultural changes occurring between the earlier and later phases of this archaeological period are remarkable and hardly comparable; phenomena such as urbanisation, the spread of cremation, the increase in the number of open air settlements, the abandonment of caves, the emergence of a new warrior elite, the probable development of a religious concept of divinity (Guidi et al. 1993), all occur in central Italy after what is traditionally defined as the Middle Bronze Age. As already argued by Barker (1981), it can be said that the Middle Bronze Age holds archaeological features that have more in common with the Early Bronze Age, and therefore with the Eneolithic and Neolithic, than with the subsequent Final Bronze Age and Iron Age. Therefore, analysing together open settlements of the Final Bronze Age and cave sites of the Middle Bronze Age introduces a fundamental interpretative bias.

3.9. From theory to practice: a focus on existing data about the Middle Bronze Age sites in Central Italy

After a quick overview of the history of studies and state of art, coupled with an introduction to Middle Bronze Age socio-economic dynamics in Central Italy, it is necessary to go into detail. An outline of existing archaeological knowledge about open settlements, caves and other site types will be followed by a summary addressing their presumed relations; this will allow me to acknowledge the existing research and interpretive gaps, which aim to be bridged - at least in part - by my own research.

3.9.1. Open sites: a controversial topic

The study of open sites in MBA Central Italy is a problematic topic. While Northern and Southern Italy's open-air settlements have been often the subject of proper and extended investigations (Fiavè, Barche di Solferino etc.), none of those from the Central Italian regions have had the same good fortune, at least in recent times (the Luni sul Mignone and Narce excavations are now 35 to 45 years old). Moreover, careful literature review quickly reveals a certain inconsistency in the definition of the term 'settlement' ['*insediamento*']. Bietti Sestieri (2010) states that 25% of the identified MBA sites in Central Italy are caves, a percentage that contrasts with an apparent 75% of 'settlements': but in this case, as well as in many other studies on the topic, those sites considered as 'insediamenti' (i.e. permanent dwelling places) in general publications, frequently turn out to be just isolated surface finds of ceramic sherds (Fig. 16). Furthermore, too often these sites have not been fully published: instead, they are only mentioned in major collations of archaeological data (e.g. Belardelli & Pascucci 1996; Belardelli et al. 2007; Cocchi Genick et al. 1995). Therefore, studies assessing the duration of site occupation are almost absent. Rare also is the basic application of test pits to verify the extension of a presumed settlement.



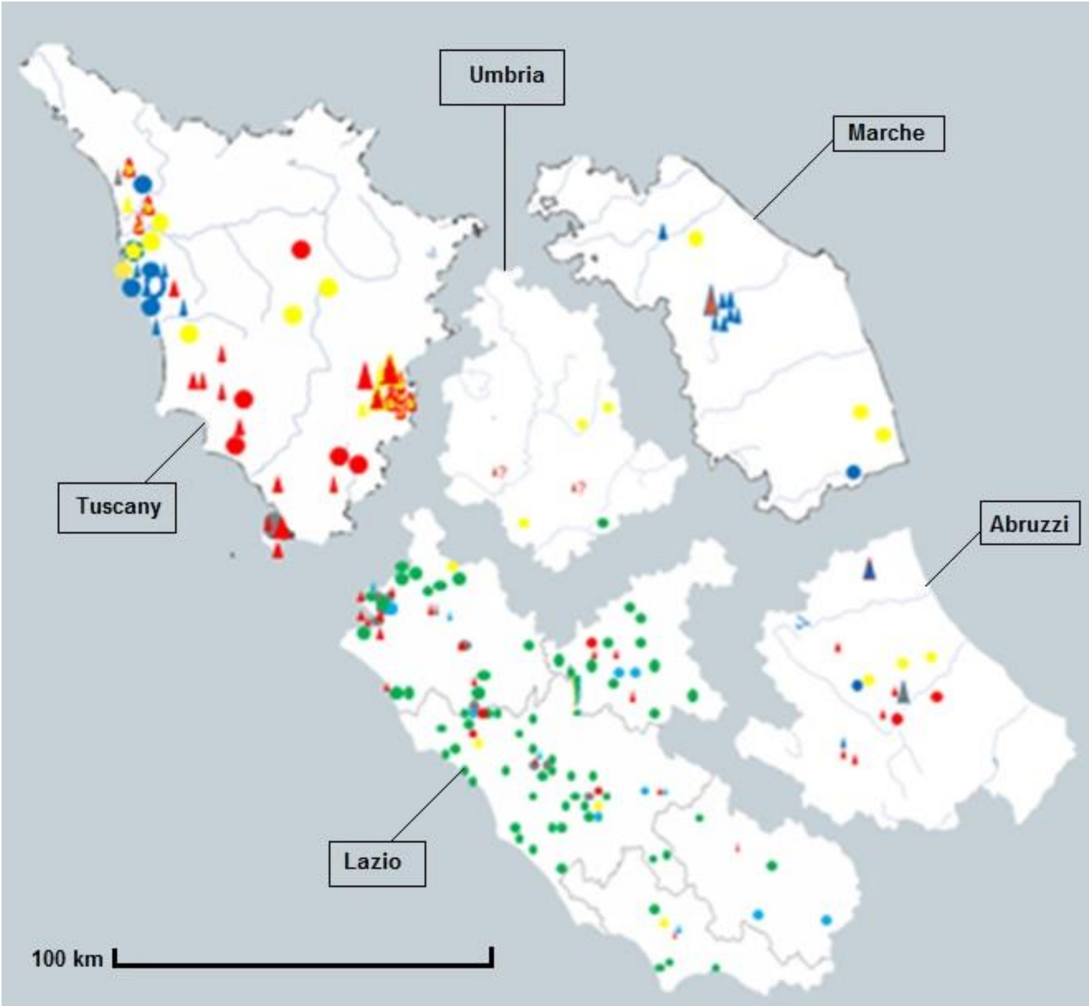


Fig. 16 Difference of site density in the central Italian regions before (top) and after (bottom) the elimination of the unidentified sites (isolate remains). Triangles: cave finds, circles: open air finds. Yellow: hoards, blue: cult sites, green: living\production sites, red: burials, grey: unidentified site use and\or isolate find (Silvestri et al. 2012).

Despite this issue, drawing some inferences about the open sites of Central Italy remains possible. First of all, it is necessary to mention the settlement pattern that is soundly attested in Southern Etruria, consisting in the widespread presence of MBA villages (Peroni & di Gennaro 1986) – e.g. Luni sul Mignone in the North (Östenberg 1967), Talamonaccio, Sovana and others in the South (Morabito & Pizziolo 2012). Such sites appear to have been located on top of naturally defended plateaux, the so-called '*castelline*' (Peroni & di Gennaro 1986) (Fig.17). The diachronicity and distribution of such settlements have been studied in detail, in contrast to other micro-regions of Central Italy. In Southern Etruria, the dwelling sites identified from the MBA seem to start a trend that becomes more evident in the following centuries, up until the end of the second millennium BC. These settlements appear in great numbers at the beginning of the MBA and they appear to have doubled in quantity by the end of this phase: their presumptive chronological development, however, is assessed once again on the basis of pottery sequences rather than radiometric and stratigraphic data. They also seem to prevent the establishment of new sites in their proximity, a trend possibly indicating a certain stability and control over the territory.

Fig. 17 Reconstruction drawings of a Castellina: the arrows in the photograph show the location of the best preserved structures (after Negroni Catacchio 2008, front cover).

The traditional interpretation of this pattern in Southern Etruria, however, shows some weaknesses, stemming from a lack of methodological clarity. For example, some scholars have stated that the dwellings dating to the MBA3 (Apennine culture) are more than doubled in number compared to those established in the MBA1-2 (Protoapennine B culture) (Peroni & di Gennaro 1986: 196) (Fig.18). It is also said (ibid: 197) that site development in the Apennine period is much more limited, implying the 'centrality' of the earlier sites, allegedly controlling about 10 km2 each. Therefore, it is suggested that there existed a polycentric settlement strategy based on the fragmentation of kin-based communities, which are supposed to have been at least partially autonomous. Unfortunately, the absence of a list and description of most of the sites considered leaves many unresolved questions, since it is not possible to verify the real number and nature of such 'stable settlements': they have not been excavated, only scarce publications are available, and most of the occurrences are documented only by field surveys.

Fig. 18 Distribution and increase of 'castelline' in Southern Etruria during the MBA (after Peroni & di Gennaro 1986, figs. 5-6).

While a pattern of '*castelline*' is detectable in Central Italy only in Southern Etruria, a much more widespread settlement trend can be identified in relation to the pile dwellings located on the lake shores. As a matter of fact, when we try to isolate the only verified cases of proper dwelling sites in the region, the incidence of 'palafitte' is preponderant (Fig.19). These can occur as a group of smaller and probably interrelated settlements, as in the case of Lacus Velinus (Carancini 1985), or as larger individual sites, as in the case of the Villaggio delle Macine (Achino et al. 2016) (Fig. 20). Lake dwellings are documented in Southern Etruria, Northern and Southern Lazio, the Marche and Abruzzi. A few different dwelling choices were recorded close to caves or across some river valleys (Mignone Valley, di Gennaro 1999). In the case of caves, however, it is difficult to verify whether these interpretations can still be considered reliable: can a MBA cave dwelling site actually be considered equivalent to an open-air one?

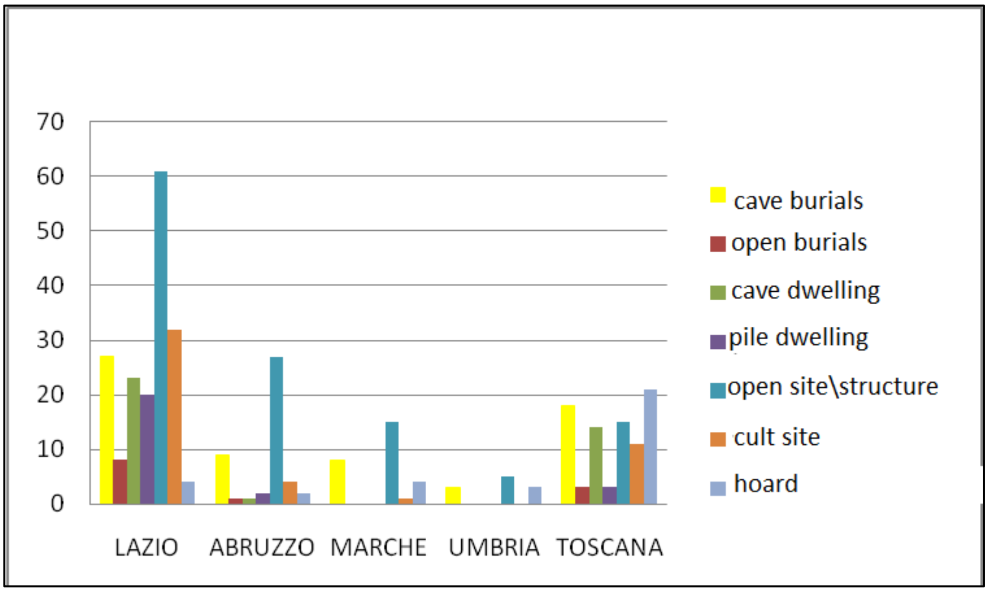


Fig. 19 Site types per region according to the archaeological literature: open sites seldom present relevant structures indicating a permanent dwelling site, with the exception of pile dwellings (after Silvestri et al. 2012).

As mentioned above, however, when compared to the relative richness of MBA findings in Central Italy, the poverty of remarkable dwelling sites in the same area raises some questions about the nature of the data presently available. Does this imbalance reflect the reality of the time, or is it a distorted impression resulting from a methodological bias? In favour of the first hypothesis, it can be argued that the identification of settlements for both previous and subsequent periods does not seem to be so rare, even if the research approach is basically the same. Moreover, the evidence of a MBA concentration of dwelling sites close to water sources is also attested in Northern Italy. Significantly, pollen analyses (Neumann 1993; Zolitschka et al. 1997) show that the first half of the second millennium BC was characterised by climatic dryness: this could explain why people preferred to settle near water sources.

However, there is also evidence to support the second hypothesis. In fact, as showed by the aforementioned example of Tuscany, many still inhabited settlements in Southern Etruria seem to have been born in the MBA. Therefore, it is very difficult

to investigate extensively such sites, and to understand whether they had already been established in the second millennium BC.

Fig. 20 Views of the submerged Villaggio delle Macine (left: after Achino 2016, front cover; right: after Achino et al 2016, fig. 1).

Another research bias may have caused the apparent disproportion of open air sites: pile dwellings by lakes are easy to detect (often by tourists and scuba divers) and are also very well preserved. By contrast, the villages close to caves are identified just because of their proximity to much more evident and 'attractive' sites. In fact, the discovery of a MBA settlement far from these prominent locations would be rather difficult: in particular, it would require complex and expensive survey projects. Therefore, poorly-funded Italian research has almost always preferred to focus on sites which could easily impress audiences, such as caves. Moreover, even when a survey has happened to bring new promising data (e.g. the Lacus Velinus Survey), initial discoveries have not been followed by systematic excavations.

Belverde di Cetona (Calzoni 1962; Martini & Sarti 1990) is a fitting example. Here, the magnificent cave complex (see also Chapter 8) discovered in the 1920s was flanked by a large open-air settlement dated to the Bronze and Iron Ages. The caves have been the subject of repeated excavations, so that now are completely empty. This led to the collection of precious data, which are particularly significant when compared with the poorer quality of the data generally gathered at the time. On the other hand, clear stratigraphic distinctions and accurate spatial data are missing, both because the excavation was carried out with the tools of the time, and because cave digging is more challenging than the excavation of an open site. It follows that, also the environmental data from the Cetona caves are not completely reliable and a rigorous chronological framework for such finds is lacking. Indeed, the excavation of the external settlement would offer much more practical and reliable information about the life and economy of this community. Moreover, a direct comparison between the cave deposits and the open settlement could aid interpretation, especially because this combination of data is still almost completely absent in MBA Central Italy. Finally, although a small area of the Cetona settlement site has been recently investigated, the data remain unpublished.

3.9.2. The role of MBA caves in Central Italy

The lack of a coordinated strategy in MBA cave archaeology has resulted in two different problems. On the one hand, the absence of long-term planning and the lack of money have not allowed excavations and systematic investigations to be carried out employing state-of-the-art research methods; in addition, such limitations have prevented the elaboration of appropriate plans of preservation and valorisation. On the other hand, the continuous undertaking of new excavations, carried out without any purpose of contextualisation, has led to a potentially aimless 'race to sites' which often does not end up in exhaustive publications. The objects of this 'race' are often caves that may look appealing to the general public, while the archaeological study of these sites, even if preponderant with respect to other site types, is often quite inconclusive. The interpretive frameworks adopted are at least 20-25 years old and have not been critically assessed and reconsidered even in the most recent publications (Bietti Sestieri 2010); furthermore, the new advances in theoretical and scientific discussions in international cave research remain largely ignored in Italian cave archaeology.

The first investigations of Central Italian cave sites were carried out between the 1950s and 1970s by Antonio Maria Radmilli (1963; 1975; 1978), who identified a large number of caves with prehistoric deposits in Central Italy (especially in the Eastern Latium and Abruzzo regions). Subsequently, the key proponents of Holocene cave archaeology in this area became Giuliano Cremonesi and Renata Grifoni Cremonesi (Cremonesi 1968a; b; 1976; Di Fraia & Grifoni Cremonesi 1996; Grifoni Cremonesi 1986). Since the second half of the 20th century, they have been carrying out several excavation campaigns in natural caves, mainly in Tuscany and Abruzzo. They distinguished themselves for the systematic methodologies adopted and for their critical approach to functional interpretations: their works constitute nowadays an essential reference point for Italian cave studies, since they were the first to apply environmental methods to this special category of archaeological sites.

Nevertheless, even such important studies are now to 20-40 years old, and what once appeared as innovation (e.g. the specific focus on soils and fauna) is now to be considered too limited to be productively used in a wider interpretive project. Even the most recent publications of some 70 MBA caves in the region (Fig.22, Table 1) do not pay enough attention to the environmental dimensions of these sites (see Chapters 4 and 9).

Furthermore, attempts at gathering information about all of these caves and making wider interpretations can be found only in two kinds of publications: on the one hand, there are typological handbooks (e.g. Cocchi Genick 2002), which basically make use of pottery to build up new chronologies or to strengthen old ones; on the other hand, we can note the presence of thematic articles and books which approach cave cults and burials in a largely descriptive way. Publications in this second category analyse the potential markers of ritual activities attested and provide basic speculations on their meaning (Grifoni Cremonesi 1996; 2000, among others). The most common and generic explanations given to such evidences include the idea of fertility cults directed towards the Mother Earth, and the possibility of rites of passage.

The possibility of reaching deeper insights into cave use in MBA Italy has been declared impossible since the beginning. This happens within both the empiricist Italian scholarship (Cocchi Genick 1995, Di Fraia & Grifoni Cremonesi 1996, Cocchi Genick 1999), and the less conservative British academic environment (Whitehouse 2001).

Other issues derive from this somewhat narrow approach. In fact, despite the fact that 'Protohistory' handbooks (e.g. Bietti Sestieri 2010; Guidi et al. 1993) usually describe the MBA caves of Central Italy as temporary shelters for transhumance, they also classify some of these sites as cult and burial places (e.g. Grotta Pila), without exploring the differences that may exist between such locales. As we have seen in the previous chapter, it is often assumed by archaeologists that a cave could have been used as both a domestic and a cult site (as the striking examples of Grotta Sant'Angelo and Grotta dei Piccioni show clearly). However, a significant problem arises when the undertaking of domestic activities, documented by the layer-cakes discovered through thin sections, overlaps with the occurrence of human bones. In fact, human remains are frequently found in ritual pits together with whole overturned vessels and animal bones pertaining to young individuals, which are normally more compatible with a contemporaneity of domestic and cult use (see Chapters 2 and 9). For these reasons, it is also necessary to pay more attention to the presumed funerary practices undertaken in those caves. In fact, while many scholars have now accepted a coexistence between domesticity and cult, it is much more difficult to assume a similar possibility for domestic and actual funerary activities, at least in the same areas of a site. It would be interesting, then, to re-analyse the human bones found in caves, in order to understand if such intermixed finds could instead be the results of secondary funerary practices. This hypothesis is well supported for some case-studies with evidence strongly pointing towards the occurrence of secondary burial practices inclding selection of bones, traces of manipulation and burning, etc. However, such material still has to be clearly put in the wider context of Italian cave studies.

This is a crucial issue for the archaeology of MBA Central Italy. In fact, almost every burial out of the some 1000 found in the area for this period (Guidi et al. 1993), come from natural or artificial caves (and are either individual or multiple burials), but have not been situated in the wider human occupation framework of the region. This strongly affects the whole understanding of MBA social dynamics, so that, for example, a key publication such as *'La Preistoria del Monte Cetona'* (Martini & Sarti 1990), while exploring the topic of MBA burial practices, avoids completely Central Italy: in fact, it moves from the North directly to the South.

Another issue involves the presence in Central Italy of chambered tombs dating to the MBA: while the Prato di Frabulino case-study had represented up until a few years ago the only evidence in this regard, burial in chambered tombs has now to be reconsidered as an additional, widespread funerary practice. In fact, not only some more examples (Fig.21) have been identified in the same area (Farnese) (Negroni Catacchio et al. 2008), but other cases have emerged also far to the south (Rocca di Papa, Colli Albani – ongoing survey by Tor Vergata University).

Fig. 21 Chambered tomb from Farnese (after Negroni Catacchio et al. 2012, fig. 8).

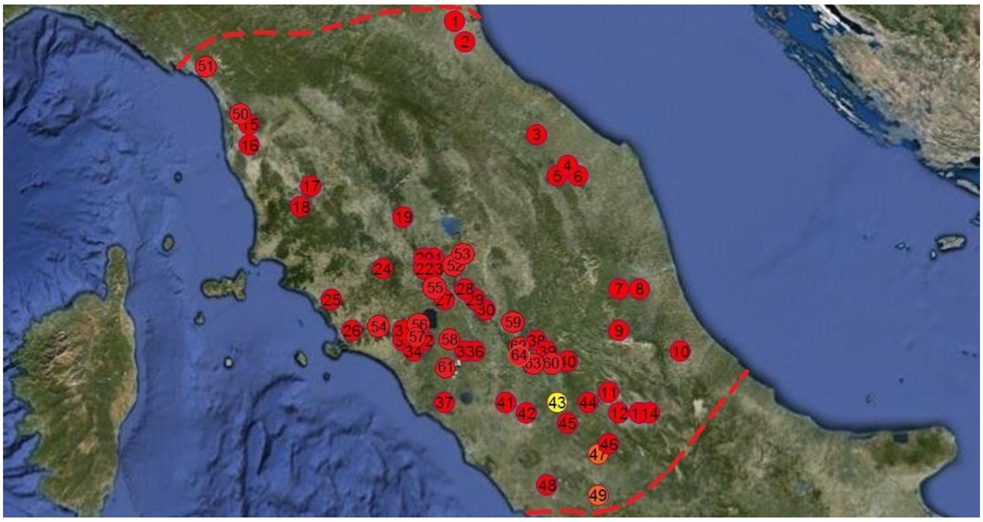


Fig. 22 Map of Central Italy with dots denoting every MBA cave known and published (the numbers match those used in the table below).

N.	NAME	LOCATION	REFERENCES
		ADRIATIC SIDE	
1	**Tanaccia di Brisighella**	Brisighella, RA, Emilia Romagna	Pacciarelli & Teegen 1997
2	**Grotta del Re Tiberio**	RioloTerme, RA, Emilia Romagna	Pacciarelli & Teegen 1997
3	Grotta del Grano	Fossombrone, PU, Marche	Ceccanti & Cocchi Genick 1978

4	**Grotte di Frasassi**	Genga, AN, Marche	Pacciarelli & Teegen 1997
5	Gola del Sentino, Grotta del Carbone	Genga, AN, Marche	Lucentini 1997
6	Grotta del Mezzogiorno, Grotta dei Baffoni	Genga, AN, Marche	Lucentini 1997
7	**Grotta Sant'Angelo di Civitella del Tronto**	Teramo, TE, Abruzzo	Di Fraia & Grifoni Cremonesi 1996
8	Grotta Salomone	Teramo, TE, Abruzzo	Guidi 1992
9	**Grotta a Male di Assergi**	Assergi, AQ, Abruzzo	Damiani et al. 2003
10	**Grotta dei Piccioni di Bolognano**	Teramo, TE, Abruzzo	Cremonesi 1976
11	Grotta di Ciccio Felice	Avezzano, AQ, Abruzzo	Guidi 1992
12	**Grotta Continenza di Trasacco**	Trasacco, AQ, Abruzzo	Barra et al. 1989
13	Grotta La Punta	Ortucchio, AQ, Abruzzo	Guidi 1992
14	**Grotta Maritza**	Ortucchio, AQ, Abruzzo	Grifoni Cremonesi & Radmilli 1964
		TYRRHENIAN SIDE	
15	Buca Tana di Maggiano	Maggiano, LU, Tuscany	Corazza, 1969
16	Grotta del Borghetto, Grotta dell'Inferno	Vecchiano, PI, Tuscany	Cocchi Genick & Grifoni Cremonesi 1985

17	**Riparo del Lauro,** Riparo Castiglioni, Riparo della Roberta	Camaiore, LU, Tuscany	Cocchi Genick 1987
18	**Riparo dell'Ambra,** Riparo delle Felci, Riparo Grande	Camaiore, LU, Tuscany	Cocchi Genick 1986
19	**Grotta del Beato Benincasa**	Pienza, SI, Tuscany	Radi 1981
20	**Grotta dell'Orso di Sarteano**	Sarteano, SI, Tuscany	Cremonesi 1968a
21	Grotta Lattaia	Cetona, SI, Tuscany	Cocchi Genick 2002
22	**Grotte di Belverde di Cetona** – Riparo del Capriolo, Antro del Poggetto, Le Tre Tombe, Antro della Noce, Grotta di San Francesco	Cetona, SI, Tuscany	Calzoni 1962
23	Grotta della Carbonaia	Cetona, SI, Tuscany	Guidi 1992
24	Poggio la Sassaiola	Santa Fiora, GR, Tuscany	Cocchi Genick 2002
25	**Grotta del Fontino**	Vallerotana, GR, Tuscany	Vigliardi & Bachechi 2002
26	**Grotta dello Scoglietto**	Grosseto, GR, Tuscany	Cavanna 2007
27	Tane del Diavolo	Parrano, PG, Umbria	Guidi 1992
28	Tana del Faggio	Parrano, PG, Umbria	Guidi 1992
29	Grotta di San Francesco di Titignano	Orvieto, TR, Umbria	Mochi 1914
30	**Grotta Bella**	Montecastrilli, TR, Umbria	Guerreschi et al. 1987

31	**Grotta Nuova**-Spaccatura del Felcetone	Ischia di Castro, VT, Latium	Cocchi Genick 2002
32	Grotta dell'Infernetto	Ischia di Castro, VT, Latium	Cocchi Genick 2002
33	Grotta Misa	Ischia di Castro, VT, Latium	Cocchi Genick & Poggiani Keller 1984
34	**Grotta del Di Carli**-Grotta di Don Simone	Ischia di Castro, VT, Latium	Cocchi Genick 2002
35	Caverna della Terra Rossa	Ischia di Castro, VT, Latium	Guidi 1992
36	Caverna dell'Acqua	Ischia di Castro, VT, Latium	Guidi 1992
37	Crepaccio di Pian Sultano	Tolfa, RM, Latium	Cocchi Genick 2002
38	Grotta Scura	Castelnuovo di Farfa, RI, Latium	Filippi & Pacciarelli 1991
39	Grotta di Battifratta, Grottone di Battifratta	Poggio Nativo, RI, Latium	Segre Naldini & Biddittu 1985
40	Grottone di Val de' Varri	Rieti, RI, Latium	Guidi 1992
41	Grotta dello Sventatoio	Sant'Angelo Romano, RM, Latium	Angle et al. 1992
42	Grotta Polesini	Tivoli, RM, Latium	Radmilli 1974
43	**Grotta di Mora Cavorso**	RM, Lazio	Rolfo et al. 2016
44	Grotta Beatrice Cenci	Cappadocia, AQ, Abruzzo	Agostini et al. 1991
45	Grotta Morritana	Subiaco, RM, Latium	Festuccia & Zabotti 1992
46	Riparo del Peschio Tornera	Frosinone, FR, Latium	Guidi 1992

47	**Grotta Regina Margherita di Collepardo**	Frosinone, FR, Latium	Angle et al. 2010b
48	Grotta Vittorio Vecchi	Latina, LT, Latium	Belardelli et al.2007
49	**Grotte di Pastena**	Pastena, FR, Latium	Angle et al. 2014
50	Grotta del Leone di Agnano	San Giuliano Terme, PI, Tuscany	Cocchi Genick 2002
51	Tecchia della Gabellaccia	Carrara, MS, Tuscany	Cocchi Genick 2002
52	Grotta Grande	Parrano, TR, Umbria	Cocchi Genick 2002
53	Tane del Diavolo	Parrano, TR, Umbria	Cocchi Genick 2002
54	Scarceta	Manciano, GR, Tuscany	Cocchi Genick 2002
55	Grotta Romealla	Castel Giorgio, TR, Umbria	Cocchi Genick 2002
56	Grotta delle Settecannelle	Ischia di Castro, VT, Latium	Cocchi Genick 2002
57	Riparo di Ponte dell'Abbadia	Canino, VT, Latium	Cocchi Genick 2002
58	Agro Falisco	Viterbo, VT, Latium	Cocchi Genick 2002
59	Grotta dei Cocci	Narni, TR, Latium	Cocchi Genick 2002
60	Riparo Liliana	Roccasinibalda, RI, Latium	Cocchi Genick 2002
61	Pontone della Noce	Blera, VT, Latium	Cocchi Genick 2002
62	Tancia	Rieti, RI, Latium	Cocchi Genick 2002

Table 2 List of the Middle Bronze Age caves of Central Italy. Those highlighted in bold have been better or fully published in national journals or monographs.

3.9.3. The open discussion of the 'other sites'

Finally, a conspicuous number of isolated remains have been recorded in Central Italy and dated to the MBA. These come from casual or systematic field surveys or from settlement sites. Apart from the single finds and the small lithic or pottery collections, some very important contexts are to be included in this class: dolmens and metal hoards. Whereas stone monuments are very rare in this region, hoards began to spread in the whole area from the beginning of the Middle Bronze Age (Giardino 2008); they are usually close to ore sources such as the Tuscany mines (especially when found in the form of ingots), and have often been considered as ritual deposits (Carancini 1999). Certainly, we can consider that 'precious' goods such as bronze ingots, daggers and axes might have come to acquire a symbolic value. However, there is no evidence to suggest that these accumulations of metals were stored as permanent votive deposits: an alternative hypothesis would see them as being deposited for preservation and subsequent re-use.

3.10. Putting the Central Italian Bronze Age in context: the real challenge

The collection of updated data about the protohistoric sites of Central Italy is rather difficult: the most recent syntheses (Bietti Sestieri 2010; Cocchi Genick 2002; Guidi et al. 1993) often refer only to the most famous and rich contexts. Therefore, to produce a reliable analysis of relations and networks remains a challenging task. A good step forward could have been the exhaustive catalogue of known Bronze Age sites in Latium, which was published in 2007 (Belardelli et al. 2007); it is also worth mentioning the minor 1996 publication comprising a list of protohistoric sites in two small Provinces of the same region (Belardelli & Pascucci 1996). Despite mainly producing uncritical lists of archaeological discoveries, comprising synthetic tables recording the various sites' main features, these projects could have become part of a very useful encyclopaedic source for future studies. Unfortunately, Latium is the only region that has undertaken such an initiative systematically; furthermore, the possibility of periodic updates was not envisaged (not even in a computerised version) (Negroni Catacchio 2008).

However, an overall – albeit preliminary - picture of MBA site patterns in of Central Italy can still be drawn (Fig.23). Whereas Tuscany appears to be mainly characterised by '*castelline*', cult sites (especially caves) and metal hoards, Lazio shows a more variable pattern of occupation, made up of hundreds of isolated finds, burial and cult caves, caves of unidentified function and pile dwelling sites around lakes. This depends, of course, on the richer amount of data available from the '*Repertorio'* of Lazio sites and, moreover, on the proximity to the research-catalyzer metropolis of Rome. Umbria and the Marche appear much less densely populated in this period. This could be related to the lack of research undertaken in these areas. In fact, all the caves randomly explored in both regions led immediately to the discovery of Bronze Age remains.

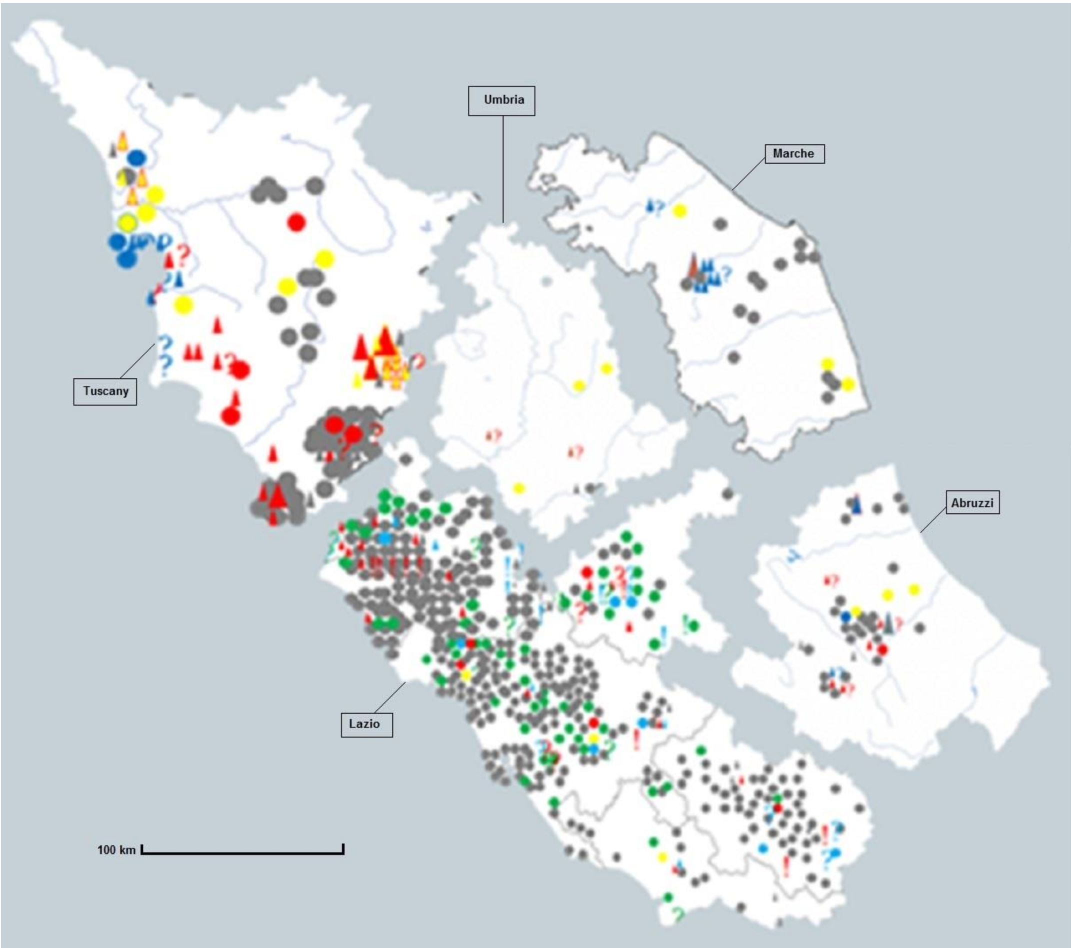


Fig. 23 Types and densities of MBA sites in Central Italy (Silvestri et al. 2012). Triangles: cave finds, circles: open air finds. Yellow: hoards, blue: cult sites, green: living\production sites, red: burials, grey: unidentified site use and\or isolate find (Silvestri et al. 2012).

Finally, MBA Abruzzo has been investigated mostly through caves, which hosted human occupations already in the Neolithic, and continued to be used until the end of the second millennium BC. Here, we can find caves with evidence of domestic, ritual and burial uses which, as mentioned above, are often overlapping categories.

The resulting reconstruction of Bronze Age Central Italy is certainly one of a region where communities were strongly linked to sheep-farming, maybe more than in other areas of the peninsula. Yet a key role was probably also played by the agricultural settlements established on the shores of the lakes. It is not clear whether these two subsistence strategies belonged to distinct human groups, or whether the same groups split during the year to carry out complementary activities (even if Guidi et al. 1993 seem to take for granted the second possibility). Of course, the truth could also lie halfway. Further investigations into the seasonality of both cave and open sites would be necessary, together with the analysis of environmental data: this would allow detecting an actual complementarity between different sites (see Chapter 9), or their independence.

As mentioned above, already in the 1980s Barker (1981) identified a mixed subsistence strategy, with regards to Etruria's landscape, noticing that remains of domestic flocks and grains were found even in territories lacking pastures and fertile fields. At the same time, he identified similar animal assemblages and more rarely vegetal ones in coastal sites, as well as in caves located halfway between the Apennines and the coasts. Therefore, he assumed that the sites in the mountains could have represented summer shelters for shepherds and flocks, with the coastal ones being their winter camps (close to the pastures and fields), while sites located halfway represented the shepherds' stops during transhumance. Indeed, the increased aridity of the period, suggested by people's interest in moving close to the lakes, might indicate that agriculture was insufficient to provide full economic autonomy to these communities. Partially as a consequence of aridity, the diffusion of pastures could have favoured the development of stock-breeding, while the necessity to reach virgin territories to feed the stock could have represented the main cause for the spread of transhumance.

What has already emerged from previous research is that human relations had started changing, with increased contacts between different areas. In fact, while the earlier phases of the Bronze Age still showed a clear cultural split between the eastern and western sides of the region, the Middle Bronze Age reveals a much greater homogeneity. Significant similarities between different areas can indeed be found in dwelling choices (pile lake settlements), cult and burial practices (mainly caves and many recurring ritual markers), and material culture (the undecorated Proto-Apennine and decorated Apennine pottery complexes). The reasons for this uniformity and standardisation are still unclear. The explanation given by Puglisi in the 1950s, however, is still fascinating and partly credible: regular transhumance from East to West, which may have started in the Middle Bronze Age, could have caused this cultural *koiné*.

3.11. The real archaeological potential of caves

In view of all the issues debated, it is clear that the archaeology of Middle Bronze Age Central Italy needs a methodological breakthrough. Indeed, caves are still fundamental for the interpretation of MBA socio-economic dynamics. Nonetheless, in order to enhance our understanding of MBA Central Italy, cave archaeology needs greater research quality and uniformity. The reasons for investigating cave sites should not lie anymore in the ease of archaeological discoveries, the appealing 'atmosphere' of cave contexts and the relative cheapness of the excavations, which would lead anyway to mediocre results. Caves need to be studied in context, by considering both the landscape and the surrounding open sites. It is important to remember that, in the presence of well-preserved open sites, cave contexts generally become far less important, while remaining a precious complementary source of information. On the one hand, cave sites can indeed provide crucial insights into both the domestic and sacred aspects of human life. On the other hand, relatively good preservation in caves allows the recovery of archaeological finds that may not survive in other contexts. In view of this, a re-analysis of the existing literature about the MBA caves in Central Italy could significantly add to our current understanding of this period and region.

My contribution to this problematic research topic will be structured on multiple levels.

There are three key means to approaching such archaeological questions: first, the re-examination of the environmental data currently available; second, their integration with landscape reconstructions and site contextualisation; third, the creation of an interpretive framework based also on the analysis of bioarchaeological remains. To succeed in this ambitious objective, I have made use of: (a) the fresh data coming from three brand new cave contexts located in Southern Lazio, (b) four archival collections deriving from four different caves in Lazio and Tuscany, and (c) the available literature. With regard to the three fresh case-studies that I present in this thesis, it must be noted that I have taken part in the whole campaigns: in view of this, I can be highly confident of the accuracy, modernity and reliability of the results, both in terms of stratigraphy and regarding the completeness of the material record.

This is a strong and fundamental base for the purposes of my study. Moreover, I have been able to access the complete documentation and the first-hand data coming from these excavations, as well as all the crucial information concerning the artefacts and ecofacts. This has allowed me to largely overcome any interpretive bias potentially deriving from a limited awareness of the original amount and type of the materials collected. In addition, I have personally examined the ecofacts, trying to make the most of the archaeobotanical and archaeozoological evidence, which is usually undervalued in Italian cave research. Finally, the results obtained have been integrated with the known data from the closest open-air settlements. This allowed me to contextualise the cave sites analysed in this work and their archaeological record, in light of an in-depth palaeo-anthropological reconstruction of human habits, lifestyles and symbolic thought attested in MBA Central Italy. The analysis of a largely overlooked area such as south-eastern Lazio could also lead to clarifying some of the most challenging questions about the relationship between eastern and western Central Italy. In fact, the cultural and subsistence strategies of the sites analysed show that there are similarities between sites on both sides of the Apennines. The multi-faceted research strategy described above ultimately constitute a micro-regional methodological experiment which, if deemed successful, could be applied to wider areas of the Italian peninsula and beyond, for the benefit of both cave archaeology and our general understanding of the Central Italian Middle Bronze Age.

CHAPTER 4 - THEORY, METHODS AND MATERIALS

4.1. Aims and purposes of the chapter

This chapter introduces the theoretical perspective underlying this research, as well as the methodology through which the research questions of this work will be answered. The first part will describe how social approaches to bioarchaeology can improve interpretations of site-uses and of human behaviours in the past. The second describes the zooarchaeological and archaeobotanical techniques used to analyse the finds from the caves discussed in this work, while also showing the variability in the interpretive potential of primary, secondary and tertiary data. This combination of anthropological theories and scientific data analysis will allow a more grounded and integrated reconstruction of the biographies of the faunal and botanical finds studied, compared to the traditional one-sided interpretations that have usually followed only one between the social and the scientific approaches. This, in turn, has the potential to lead to improved understandings of the use of the caves considered in this work and, ultimately, of the social dynamics of Bronze Age people in Central Italy.

4.2. Theoretical perspective – social zooarchaeology and social palaeobotany

4.2.1. What is social bioarchaeology?

Amber VanDerwarker (2014:230), in her review of Nerissa Russell's (2012) volume 'Social Zooarchaeology: Humans and Animals in Prehistory', presents an excellent definition of what social zooarchaeology is: 'what comes after the identification and analysis—that is, the connection between the faunal data and the humans that created the record'. In Marciniak's words (2005:238), 'social zooarchaeology is explicitly aimed at overcoming the 'economic' bias in studies of faunal remains' and at highlighting the role of animals in shaping identity, ancestry, inequalities, gender, social roles, links and social status. Likewise, Morehart and Morell-Hart (2015:2) argue that 'Paleoethnobotanists [as opposed to Archaeobotanists] seek to go beyond basic questions of subsistence and environmental adaptation and employ archaeobotanical data to elucidate as many aspects of past social life as any other form of archaeological data'. It took zooarchaeologists a long time - yet not as long as paleoethnobotanists - to acknowledge the necessity of complementing their analytical approaches with the full range of cultural information that animal bones can provide (i.e., using a holistic approach, Sykes 2013:285).

Social zooarchaeology also recognises that ritual and symbolic meanings permeate man-animal relationships (Mc Niven and Feldman 2003:189; Russell 2012:53), and so cannot be overlooked or relegated to the background of economic and environmental reconstructions. This does not only mean identifying when a site holds ritual bioarchaeological remains. Such type of identification has, in fact, been done for some time by culture historians, anthropologists and post-processual archaeologists, especially - but not only - for historical periods and in studying ethnographic cultures (Russell 2012:88). The main issue in this context was rather that archaeologists often overlooked the importance of isolating taphonomic factors in the formation of deposits before drawing conclusions (the earliest examples of this overlooking being Cauvin 1972:35; Maringer 1960).

To use a social bioarchaeological approach means, instead, to investigate the agency of animals and plants in the creation of human environments, as well as their reciprocal interaction with humans (Russell 2012:9). From this, we can then reconstruct how and why animals and plants, at all stages of their lives (including the pre-, peri- and post-mortem phases), influenced and were influenced by social and ritual aspects of human life. Building on this, two inferences can be made: one is that faunal (and plant) datasets do not necessarily reflect the full range of species living in the past, nor can they be considered secure markers for palaeoenvironmental reconstructions and human subsistence. Ethnographic literature is very wide on this unreliability (e.g. Durrenberger 1976; Gibson 1988; Luxereau 1989; Parkes 1987; Ryan et al.2000; Russell 2012:94; Simoons 1968;). There are (or recently were) communities where classic economic domesticates such as pigs (Gibson 1988) or cattle (e.g. Makamure et al. 1970, Ouma et al. 2003) represent a large part of the species kept by a community, if not the only one. However, these animals are never killed for food consumption, as they constitute a symbol of wealth and status, or they are killed in ritual contexts only, as they represent a substitute for their human owners (Gibson 1988; Kuchler 2002; Russell 2012).

The second and consequent inference is that a tradition of reading data only from palaeoeconomic and environmental perspectives not only causes interpretive biases, but also restricts the full interpretive potential of the *ecofacts* found at a site. This is how social bioarchaeology, which still uses the palaeoconomy approach as a fundamental methodology, differs substantially from palaeoeconomy while renovating zooarchaeology and paleoethnobotany.

As a consequence of this improved perspective and approach Morehart and Morell-Hart (2015:5) have contested the traditional interpretive oversimplification of these archaeological remains. They suggest eliminating the conceptual dichotomy implied by the words *ecofacts* and *artefacts* by choosing the second term to define both. This has not yet been widely adopted by the social bioarchaeology community, even though to unify the two concepts certainly represents a legitimate suggestion. Such a thought-provoking proposition, despite the little attention given it so far, best elucidates the position of social bioarchaeologists towards all those archaeological finds that represent an alleged by-product of human economy.

4.2.2. Towards a social bioarchaeology: a critical literature review

4.2.2.1. 1960-'70s: Paleoeconomy

The 'New Archaeology' called for a more scientifically-grounded approach towards the investigation of the past. In this context, Eric Higgs and his students (Graeme Barker being the main representative of this school of thought in Italian prehistory, along with Michael Jarman) at Cambridge University came to focus on the study of animal and plant remains. By doing so, they aimed to shed new light on socio-economic issues such as the domestication of wild species, the transition from hunter-gatherers to farmers, the definition of pastoralism, and so on. Despite the invaluable effort put in to developing increasingly accurate methods and techniques of retrieval and analysis of these finds (e.g. Jarman et al. 1972; Meadow 1980; Payne 1972), some limitations arose with regards to the interpretive potential of such datasets: in the 1990s, this approach was found to be affected by deterministic and positivistic bias (see below).

Paleoeconomy essentially follows the principles of Processual Archaeology, bringing the greatest possible application of 'hard' science to archaeology, in order to obtain the most objective results and interpretations. This led scholars to undervalue or even overlook the variables of human behaviour that could not be inferred with archaeological sciences. More personal and intimateaspects of past human life (such as feelings and non strictly functional behaviours) were considered impossible to investigate, according to what came to be considered the Palaeoconomy school's motto: 'the soul leaves no skeleton' (Higgs & Jarman 1975: 1). Consequently, the study of ecofacts was confined to the reconstruction of environmental and economic dynamics. Although archaeobotanist William Marquardt (1988:227), for example, acknowledged that the potential of his field as well as of zooarchaeology was not yet fully achieved, and wished for a greater involvement in the theoretical debate ('archaeobotany and zooarchaeology aren't just for the appendix anymore' - Ibid.), he failed to recognise ritual or symbolic issues as the next frontier for the field. Exceptions existed in other fields: religious historian Marcel Detienne (1979), for example, affirmed - somewhat provocatively - that in Ancient Greek culture all the meat eaten was a result of ritual killing. The complex symbology of Classical Greece was known thanks to written and artistic sources Prehistoric society could, likewise, have maintained similar models of consumption (Russell 2012: 58). However, archaeology up to the mid-eighties failed to recognise this. For example, Clutton-Brock and Grigson's (1984) edited volume about the 'contribution of faunal analysis to the study of man' (Ibid.: 1), did not contain any socially-oriented chapter. These flaws in the palaeoeconomic approach had been envisaged already at the time of its conception and maximum success (Renfrew 1977: 82). Even Graeme Barker, who used paleoeconomy to produce a ground-breaking re-writing of Central Italian Holocene archaeology, admitted the limitations of his approach a few decades after the publication of his masterpiece 'Landscape and Society' (Barker 1981), by defining that approach as:

> 'inclined to overestimate the role of 'Homo economicus', of factors such as efficiency and least effort in shaping human behaviour, and

underestimate the importance of other human aspirations and concerns such as social competitiveness and ideological structures' (Barker 1999: 24).

4.2.2.2. 1980s- '90s: Critique of paleoeconomy, rise and fall of post-processualism

In the 1980-90s, archaeological scientists refined methods of data retrieval. There was a recognition of the necessity to isolate biasing factors of deposition, both natural (e.g. Binford 1981; Gifford-Gonzalez 1991) and anthropogenic (identified through ethnographic and experimental studies, e.g. Gifford-Gonzalez 1993), in order to enhance the reliability of interpretive reconstructions. Such reconstructions, however, were still focused almost exclusively on palaeoenvironmental and economic issues, with only a certain degree of interest shown in socio-political aspects. The subject of prehistoric ritual and its interpretation, generally avoided by processualists and palaeoeconomists, came under the spotlight with the post-processualist reaction to the processual archaeological current of thought. However, as excellently synthesised by Arkadiusz Marciniak in 1999, post-processualism proved insufficient in providing reliable answers to the new questions that it posed (Wylie 1989). Although zooarchaeologists (e.g. Gifford-Gonzalez 1991; 1993; Ryan & Crabtree 1995; Wilson 1999; Zeder 1997;) were actually starting to acknowledge that the study of faunal remains could help interpretations of social relations, gender, social roles and status (Marciniak 1999: 295), inferences about those subjects ultimately tended to be speculative (ibid. 296). Upholding the observations of archaeological theorists Bruce Trigger (1991: 71), John Barrett (1995:71) and Alison Wylie (1989:2, 16), as well as Umberto Eco's (& Collini 1992) reflections on textual interpretations, Marciniak recognises that, although it is impossible to reconstruct events of prehistory from a prehistoric individual's personal perspective, information provided by material and contextual data can help narrow down the range of possible interpretations of a given context (Marciniak 1999: 298-299). In this process, ethnographic and experimental studies are crucial in providing an 'objectivity guard' (Hodder 1991: 10-11) that enables the researcher to make the contextual approach more reliable (Binford and Todd 1983: 207; Gould and Watson 1982: 367; Mac

Donald 1991: 79; Wilson 1999). In this way we can become aware that cultural constraints and preferences exist and existed, such that faunal patterns that seem to represent an average feeding, hunting or farming trend might not really do so (Marciniak 1999: 307). Any aspect of faunal datasets can be biased by social factors, from the presence/absence/proportion of species to the processing and preparation of food (Marciniak 1999: 311-312).

Spatial analysis seems to be one partial solution to this issue, for it can show inter- and intra-site differences in the proportions of *taxa*, body parts, age classes, fragmentation patterns and the like. This kind of approach can lay the foundations for identifying those cultural factors responsible for the deposits' formation, including religious ones (Marciniak 1999: 313). In fact, both ethnographic and classical written sources (Bradley 2005) show how even everyday life is permeated with ritualised actions, which therefore are agents as active as natural and subsistence-related ones in the deposit formation. This is easily seen in overtly ritual contexts, such as cemeteries or sanctuaries (e.g. offerings of vegetal products, sacrifice and offerings of animals, animal burials). On the other hand, ritualisation of practices related to human-animal-plant relations can be identified in activities related to subsistence, carried out at domestic sites. For example, animal killing can be accompanied by ritual practices that the archaeologist still has the chance to identify (e.g. looking at the repetition of a certain type of slaughtering and whether it is justifiable under a practical point of view (Bartosiewicz 2014, Research Seminar at Durham University).

Despite the constructively critical intent of Marciniak, the influence that post-processualism had in changing this scholar's own perspective, as well as that of many others, has to be acknowledged. In this respect, it should be noted how a revived and revised focus on ritual was made possible thanks to a shift towards structuralism (as opposed to functionalism) that post-processual archaeologists started to make in the development of archaeological interpretations. Such a shift was intuited by anthropologist Edmund Leach as early as 1973 (Bradley 2005: 193) but really came into life in the 1990s. As Richard Bradley explains, this new attention towards symbolic aspects of life, this time considered in a small-scale perspective and with less risks of over-generalisation, was undertaken throughout the revival of material culture studies, i.e. the 'artefacts, buildings, visual images and monuments' (Bradley 2005: 194), which are 'meaningfully constituted' (Hodder 1982:211) and which Tilley (1999) considered ‘material metaphors’. Overall, however, ecofacts were only rarely considered as meaningful material culture. Exceptions, which were still related to fauna only, are to be found exclusively in ethnoarchaeological studies such as Hodder's (1982) work on the Moro and Mesakin of Sudan. Although this intermediate step was crucial to laying the foundations of a completely new perspective in archaeology and zooarchaeology, it has to be admitted that still no interpretive efforts based on archaeological assemblages and sites were attempted.

This situation only started to change from the very late 1990s, when, for example, John Robb (1999) included in the framework of a volume on 'material symbols' a chapter on faunal remains (Russell 1999: 153-172). It was only at the turn of the millennium that zooarchaeologists and archaeologists in general started to get interested in the analysis of symbolic meanings of faunal assemblages, or Associated Bone Groups (ABGs) (Hill 1995). Such a definition, coined to mitigate a previous, somewhat misleading, one of 'special bone groups' (Grant 1984), was however still related only to the most complete animal skeletons found at a site. This was due to the difficulty of interpreting very disturbed animal assemblages and of identifying 'unusual' or unexpected patterns amongst them. However, the approach towards this kind of deposition remained rather descriptive and generalised. Moreover, the symbolic component of the environmental remains was still not fully integrated in the broader framework of bioarchaeological research. These two issues are well summarised, for example, in Reitz et al. (1996). Here, the intention of the editors was to demonstrate the extent to which environmental archaeology was able to shed light on man-environment relations (ibid.: ix). However, their volume included only one contribution focused on the links between faunal remains and society (Scott 2008: 357-374), with no attention to the symbolic meaning of those remains. In addition, no matching chapter for paleoethnobotany was provided.

4.2.2.3. 2000s-2010s - part1: First appearances of the definition and of the approach

Nerissa Russell's (2012) book "Social Zooarchaeology" was the first world synthesis of this topic, covering themes such as the hunting-farming transition, social inequality, status, ritual practices (animal sacrifice, offerings, talismans, etc.), art, medicine, pets, all considered in terms of human-animal relationships. This 'encyclopaedia' of social zooarchaeology was conceived in a period of growing interest in the role of animals (and, to a lesser extent, plants) in the social dynamics of people in the past (Campana et al. 2010; Morris 2010; Pluskowski 2012). The ritual killing of animals was until recently fairly understudied. Pluskowski's (2012) edited volume on this topic is a very useful collection of studies on animal sacrifices, offerings and taphonomy-induced interpretive biases in burial contexts. It provides useful technical suggestions as to how to recognise and distinguish taphonomic disturbance from intentional human selections in archaeological deposits (a good example is provided by Durezza Cave (Galik 2004), an Austrian vertical cave close to an Iron Age settlement, which seemed to be its discard pit.

Looking at the species ratio of the cave and the settlement, at the numerous unbutchered meaty body parts of the animals found, at the young age of most animals, and at the seasonality of deposition, it was possible to identify both actual food waste and carcass discards, and ritual depositions and sacrifices). Furthermore, Pluskowski's volume critically addresses the false dichotomy between the sacred and the profane, as well as the frequent simplistic equation drawn between selected ethnographic sources and apparent parallels in the archaeological record (Magnell 2012: 196; Pluskowski 2012: 2). Ethnoarchaeology, by showing the variability of human cultural behaviour, can certainly expand our interpretive perspectives on the way we look at the archaeological record (Marciniak 2002); still, we must not forget taphonomic implications on the one hand (e.g. Binford 1981), and the potentially infinite variability of the meanings behind human actions on the other (Campana et al. 2010; Chadwick 2012; Hodder 1982; Magnell 2012).

James Morris (2008; 2010), one of the most active young researchers in the field, has acknowledged and expanded on those and other key conceptual problems affecting past and current approaches to the blooming sub-discipline of social zooarchaeology. He comments on the frequent overlap between description and interpretation of faunal deposits that are defined as either 'functional' or 'ritual' (Morris 2010: 21). This kind of confusing and oversimplified synthesis often prevents further insights into the data by other scholars, and can instil biased ideas. Morris also highlights the inadequacy of the term 'ritual' in defining the meaning of an ABG: ritualisation of actions performed in the framework of animal killing can be present to a variable extent even in mundane contexts; and the dichotomy of 'mundane' and 'sacred' has been soundly questioned for most cultures, especially those influenced by religion (e.g. Marciniak 1999: 307). Another problem commented on by Morris is the archaeological tendency to create 'blanket interpretations' of ABGs as 'ritual' or 'functional' (Morris 2010: 20) for certain periods or regions, sometimes due to a dominant theoretical perspective rather than to the characteristics of the archaeological deposits.

Therefore, current challenges in the field of social environmental archaeology are manifold. On one hand, there is a need to develop research questions and methodologies that can enable us to overcome these issues. While this can be mostly achieved by reassessing the potential of traditional zooarchaeological analyses, there are other crucial aspects that cannot be ignored. Firstly, during archaeological excavation, taphonomy and site formation processes need to be understood for the archaeological record to be interpreted properly. This is particularly important for reconstructing the social dimensions of the site. Secondly, we need to design protocols that can shed light on the whole life-cycle of an animal, or at least on the whole ritualised set of actions that led to their death and deposition of their remains. Without detailed recording and analysis of the physical remains themselves, information on the treatment of the animal during its life until death would remain unknown. Therefore, without detailed excavation recording and post-excavation analysis, we lose valuable data which may shed light on the wider social dynamics of a particular community or culture at a certain point in time. Future research should also develop methods to detect ritual traces in contexts that are considered mundane, such as settlements (e.g. Hodder 1990; Morell-Hart 2011; Pearce 2008): Mark Pearce (2008), for example, tries to reassess the interpretation of Iron Age pits of the northern Italian site of Vhò, traditionally considered as typical later prehistoric pit-dwellings. By looking at the content of the pits, he realises that their filling did never reflect the day-to-day evidence of regular settlements (e.g. fragmented figurines, remains of fine pottery and a high concentration of faunal remains were found in these pits).

4.2.2.4. 2000s-2010s - part2: A matter of definition - ecofacts vs artefacts

Another aspect of this growing social approach is paleoethnobotany. Although plants are less interactive living things compared to animals, which make very powerful symbols in the ritual life of human communities, they are no less valuable interpretatively. Given the greater difficulty in creating a social 'paleoethnobotany' (which is not equavalent to 'archaeobotany', according to Ford (1979: 299) – the first one focusing more on the relationship between man and plants), there is much less literature and debate in this field. This is currently represented by only a few recent publications, mostly based on Meso-american case-studies (e.g. Chevalier et al. 2014; Morehart & Helmke 2008; Morehart & Morell-Hart 2015; Hansson & Heiss 2014). This is also shown by a simple Google search (conducted 17 February 2015), where the yet few 16.500 results for 'social zooarchaeology' exceed by about 40 times the 435 results for 'social archaeobotany' and 'social paleoethnobotany' combined. Despite being a fairly new field, the social study of plant use in the past has already launched a challenge to traditional approaches. After acknowledging the important place of both plants and animals in archaeology, social paleoethnobotanists Morehart and Morell-Hart (2015:4-5) advocate the re-definition of plant remains from archaeological sites (and I would argue here that the same holds true for faunal remains) as not just 'ecofacts'. They should, in fact, be treated as artefacts. Once these natural products (that, in the case of domesticated species, had already been genetically selected and modified by man) are collected, hunted or farmed by humans, and thus manipulated for various uses, they can no longer be considered as independent from man in their intrinsic nature. Levi-Strauss and other scholars led the way in this line of thinking (Leach 1964; Levi-Strauss 1963; 1987; and most of his work between the two; Seeger 1981:83), by arguing that meat changes from a natural to a cultural state after cooking, so contributing to shaping the identity of mankind. Later on, this view developed further (Ingold 1986: 243-276; Fiddes 1991: 15), by scholars acknowledging that it is not just the processing of dead animals that makes them symbols in ritual practices, but also their uses in the community during their lives.

In my opinion, social bio-archaeology is the necessary counterbalance to processual bio-archaeology. Only by merging their strengths together it can be possible to overcome their weaknesses, and to get closer to reliable reconstructions and interpretations of the past through the study of the archaeological record. In particular, successful interpretation of what happened at a certain time and in a certain place in the past can only be accomplished if we consider both the universal, collective, and largely applicable aspects of life (e.g. economy, society, landscape etc.), and those related to human inwardness (e.g. spirituality, emotions, identity), which are in fact projected also in community life. Investigating the second aspects might be deemed to be riskier and uncertain than the first, and it is more subject to be influenced by modern mindsets and prejudices. However, this danger is also valid for more pragmatic aspects of life, especially since these are certainly interrelated and influenced by the individual or collective feelings of humans. We, as archaeologists, have two choices: the first is to surrender and admit that we will never be able to grasp that intimate part of past life, nor, consequently, the rest (to believe that economy and society can be understood without considering those more intangible facets of prehistory is an outdated utopia). The second option is to acknowledge the growing results obtained by archaeological sciences and social archaeology, and to keep challenging those disciplines and ourselves to find new ways of integration and improvement of the existing methodologies of study. This thesis is aimed at pursuing the second possibility.

4.3. Bioarchaeological methodologies: zooarchaeology and palaeobotany

4.3.1. *Aims of the analyses*

The analyses carried out on the faunal and plant assemblages selected for this study had three distinct aims. Firstly, given the lack of pollen analyses for these areas, to allow the best possible palaeoenvironmental reconstruction of the sites considered, by integrating this study with those on microfaunal assemblages from some of the sites analysed (Salari 2014; Salari et al. in press a; b; Salari & Silvestri in press). Secondly, to reassess subsistence practices, paying careful attention to the possible taphonomic and cultural biases occurring in the caves analysed, particularly in the absence of equivalent studies of open settlement sites.

Site number	Cave Name	Method of analysis	Faunal remains	Plant remains
1	Grotta Mora Cavorso	Fieldwork (2006-2011)	X	
2	Grotta di Pastena	Archival (2008) + Fieldwork (2012-2015)	X	X
3	Grotta di Collepardo	Archival (2008) + Fieldwork (2014-2016)	X	X
4	Grotta Nuova	Archival + Literature	X	X
5	Grotta Misa	Archival + Literature	X	
6	Buca Tana di Maggiano	Archival + Literature	X	
7	Grotta dell’Osservatorio	Archival	X	
8	Grotta del Beato Benincasa	Literature	X	
9	Grotta dell’Orso di Sarteano	Literature	X	X
10	Riparo del Lauro	Literature	X	X

11	Riparo dell'Ambra	Literature	X	
12	Grotta del Fontino	Literature	X	
13	Grotte di Belverde	Literature	X	X (3)
14	Grotta del Mezzogiorno	Literature	X	X
15	Tane del Diavolo	Literature		X
16	Grotta Bella	Literature	X	
17	Grotta dei Cocci	Literature	X	
18	Grottone Val de' Varri	Literature	X	X
19	Grotta del Costone di Battifratta	Literature	X	
20	Grotta di Carli	Literature	X	
21	Grotta dello Sventatoio	Literature	X	X
22	Grotta Polesini	Literature	X	
23	Grotta Vittorio Vecchi	Literature		X
24	Grotta Sant'Angelo sulla Montagna dei Fiori	Literature	X	
25	Grotta dei Piccioni	Literature	X	
26	Grotta a Male	Literature	X	
27	Grotta Beatrice Cenci	Literature	X	X
28	Grotta La Punta	Literature	X	

Table 3 List of E-MBA caves of Central Italy with certified ecofacts, and type of study applied on the datasets.

Thirdly and most importantly, to focus on the potential symbolic and ritual significance of the bioarchaeological deposits of the sites considered. Table 3, above, shows the sites taken into account in this study, the typology of approach applied and the type of ecofacts identified and analysed.

4.3.2. Zooarchaeological analyses

The analyses of the animal bones were carried out following different procedures, which varied slightly (as described below) depending on whether the assemblages were from recent excavations or from archival collections. Both the on-going excavations and the archival collections that are object of this study produced faunal remains. When the bones came from excavations where the author was directly involved (i.e. Mora Cavorso, Pastena and Collepardo caves), they were initially treated during excavation as follows:

1) Identified as animal bone;
2) Horizontally plotted by hand or recorded using Total Station, noting the occurrence of skeletal articulation;
3) Vertically plotted by taking levels;
4) Photographed (if thought to be particularly significant – see Fig. 24);
5) Numbered;
6) Removed and bagged;
7) All the soil dug was sieved through 0.5 cm to 0.2 cm meshes, collecting all the bone fragments but numbering only the diagnostic ones or those carrying clear marks;
8) Once transported to the laboratory, they were washed and dried, 9) Marked with an abbreviated catalogue number.

Fig. 24 Disarticulation cut marks on wild boar metapodials from BA Mora Cavorso.

Ribs, cranial bones and vertebrae were classified by size (small: belonging, for example, to martens; medium, belonging, for example, to sheep; large: to cattle; and intermediate classes between the above mentioned, e.g. medium-small, which could belong to pig), and only when very evident by species. Of the vertebrae, only atlas and epistrophaeus were classified by species/taxon according to Schmidt (1972).

Microfaunal remains were not considered in this study, being the object of Leonardo Salari's and my separate research (Salari & Silvestri 2015; in press a; b;). However, these finds were still taken into account, especially with regards to the bats, to improve the data about the seasonality of the human occupation in the Bronze

Age: frequentation of bats and small rodents in caves are usually inter-related with human frequentation. The former leave the sites when humans arrive, or - as in the present-time example of Grotta di Collepardo, they move in more secluded rooms, whereas the latter are commensal animals. Therefore the stratigraphic analysis of deposits with microfauna can help determine the intensity and relative timespan of occupation and abandonment of the sites by humans.

All the finds, including those coming from museum collections, were analysed and recorded in a simple Excel database according to the following criteria:

1) Their spatial and stratigraphic contextualisation (Find #, Bag # - if coming from a group of finds, Site, Year, Area, Square – if present, Context, Spit – if present, Sieve – if coming from the sieve);

2) Their morphological and morphometric features:

- **Preservation** (intact, sub-intact, variable portion of proximal or distal end, fragment + epyphysis/diaphysis): allowing taphonomic interpretations and inferences about natural and anthropic fragmentation patterns; also helping the calculation of MNI and clarifies the bias of estimates made on the dataset;
- **Body part**: allowing inferences about differential fragmentation and cultural selections (based on Schmidt (1972) and reference laboratory collections);
- **Species/Taxon**: allowing the reconstruction of environment, subsistence, cultural animal-human relationships (based on atlases such as Wilkens (2003), Barone (1980), Schmidt (1972); articles such as Payne (1969), Prummel & Frisch (1986); comparative collections);
- **Side** (right/left): allowing the identification of any possible cultural selection.
- **Fusion** (fused/not fused/just fused): allowing inferences to be made about seasonality, exploitation of primary or secondary products, cultural selections for specific purposes. Based on Payne (1973), Bull & Payne (1982), Grant (1982) and Prummel (1988).
- **Age** (fetus/newborn; very young; young; young-adult; adult; senile): see Fusion;

- **Teeth & Alveoli** (type, state of eruption and wear): see Fusion;
- **Taphonomy** (i.e. post-depositional traces such as root action or gnaw marks, as well as particular concretion or erosion features): allowing clarification of the formation processes of the deposit and of the faunal/plant assemblage (Micozzi 1991; Lyman 1994).
- **Cultural marks** (e.g. any kind of anthropic intervention on the bone or seed: fragmentation for marrow, disarticulation, butchery, cut marks, different types of exposure to fire); (based on Guilday et al. (1962); Higgins 1999; McCutcheon 1992; Nicholson 1995; Noe-Nygaard 1989; Shipman 1981);
- **Palaeopathology** (traces of disease or trauma): allowing reconstruction of animal and plant health and care conditions; (based on Baker & Brothwell 1980; Davies et al. 2005; O'Connor 2000);
- **Measurements**: Helping sorting of foetal and neonatal bones and estimating the stage of pregnancy as accurately as possible. Allowing size estimation and, in certain cases, distinguishing of similar taxa (e.g. *Canis familiaris* and *Canis lupus*) and identification of sexual dimorphism (e.g. metapodials and distal humeri in *Bos taurus*). (Based on Von Den Driesch (1976) and Prummel (1988) (Tables 5, 6, 7, 12, 15, 22, 30, 33).

The Minimum Number of Individuals (MNI) was calculated according to the combined consideration of size, bone fusion and shape of every item or affine couple of left/right items, and on each type of bone. This allowed me to obtain a slightly higher (but still reliable) MNI compared to the most traditional, minimising protocol that takes into account only wide age class intervals and the most numerous set of bones of the same side (White 1953: 397).

4.3.3. Palaeobotanical analyses

Seeds were not considered in the early stages of this PhD research. However, after the 2012 field campaign at Pastena Cave, this class of material turned out to be so preponderant that it was impossible not to take account of it in a social bioarchaeological approach. Plant remains became a crucial aspect of my analysis, in the context of reconsidering the interpretive value of ecofacts found in ritual caves. Seeds had been found already during the 2008 investigations at the site. Unfortunately, although the finds were sent to the Laboratory of Palinology and Palaeobotany of Modena University for botanical analyses, records of them got lost and no results are available from that study, except for a general description of the species recognised: barley and wheats (unofficial personal communication by Dr. Letizia Carra). In addition to the thousand seeds from Pastena Cave, three seeds were also found during the 2014 and 2015 fieldwork at Regina Margherita Cave. Finally, a few hundred more came out of the Florence museum collection of Grotta Nuova (Lazio) – included in this study for broader comparative purposes.

The study of Pastena Cave's plant remains was conducted by myself on soil samples and already sieved samples of seeds. A statistically significant quantity of finds to analyse was established with the help of Prof. Peter Rowley-Conwy as follows: wherever possible, a soil sample of 100 g was taken from each previously sampled context. This quantity was fixed based on the observed average potential of the contexts, following Morehart and Morell-Hart (2015: 16). Context samples had been sub-divided into $1m^2$ units at the time of collection. To minimise spatial confusion, soil samples from the same contexts but different squares were kept separate. In the case of contexts with a lower concentration of seeds, this prevented me from reaching the established 100 g of soil. This was, however, a good indicator of concentration and did not prevent me from obtaining quantitatively comparable samples. As for the Grotta Nuova collection and the three seeds from Grotta Regina Margherita, all the items were analysed. Below is the summarised description of the methods used for analysing the plant remains:

- Collection of the entire soil deposit from each context;
- Sampling of 100 g soil (if possible);
- Water-sieving in the lab. with 0.5 mm meshes;
- Sorting by context, area and square of provenience;
- Sorting by species (first by legumes, cereals and fruits; secondly, cereals, barley and wheats; finally, wheats of different types. Each of these sub-analyses included the identification of indeterminate specimens);

- Count and weight by species in each context;
- Search for anomalies, evidence of processing techniques and diseases.

The study of the first samples was carried out at the Environmental Archaeology Laboratory of Durham University, under the supervision of Prof. Peter Rowley-Conwy and Dr. Mike Church. The identification was carried out using a microscope and with the help of modern comparative collections and illustrated atlases (Jacomet 2006; Neef et al. 2012).

4.3.4. Contextual analyses of other material classes

The different landscape features of the caves analysed, as well as the other categories of archaeological remains found apart from ecofacts, were taken into account to put the fauna and plants in context and allow integrated interpretations.

Central Italy counts hundreds of natural caves, rockshelters and shafts, most of which were utilised in prehistory. At least a hundred caves in the area have been found to contain Middle Bronze Age remains, and many of these were used for ritual practices including burial.

Knowledge of the archaeology of such caves is in most cases limited to the discovery or recording of chronologically diagnostic pottery (e.g. Cocchi Genick et al. 1995; Cocchi Genick 2001), often made by speleologists and local enthusiasts. Therefore, the majority of these sites remain just dots on a map (sometimes imprecise) with little or no information about their stratigraphy, degree of preservation, spatial distribution of the remains, features and material classes other than ceramics and in a few cases outstanding artefacts.

4.3.5. Study of published sources

I undertook a critical literature review of the published cave sites. I immediately removed from the analysis those that have been only surveyed and/or whose results have been only briefly published, as in these cases pottery is the only material class to be mentioned, mostly for dating reasons. I examined more closely publications on caves that had not just been surveyed, but that had also been the object of at least preliminary excavations. I then focused on the parts of the reports relevant to bioarchaeology, systematically gathering information under the following headings, in order to produce accurate and comparable datasets:

1) Report of the identification and recovery of zooarchaeological finds;

2) Methodology of description of the finds, from the least to the most detailed aspects:

- Stratigraphy
- Species/ Taxon
- Number of Identified Specimens (NISP)
- Age classes/ Kill-off patterns
- Minimum Number of Individuals (MNI)
- Body portions (and sides)
- Butchery/Cut/Fire/Processing marks
- Taphonomy/Fragmentation
- Palaeopathology
- DNA/Isotope and other molecular analyses - radiocarbon dating;
- Levels of interpretation (environmental, economic, symbolic);
- Possible incorporation in the wider discussion (contextualisation).

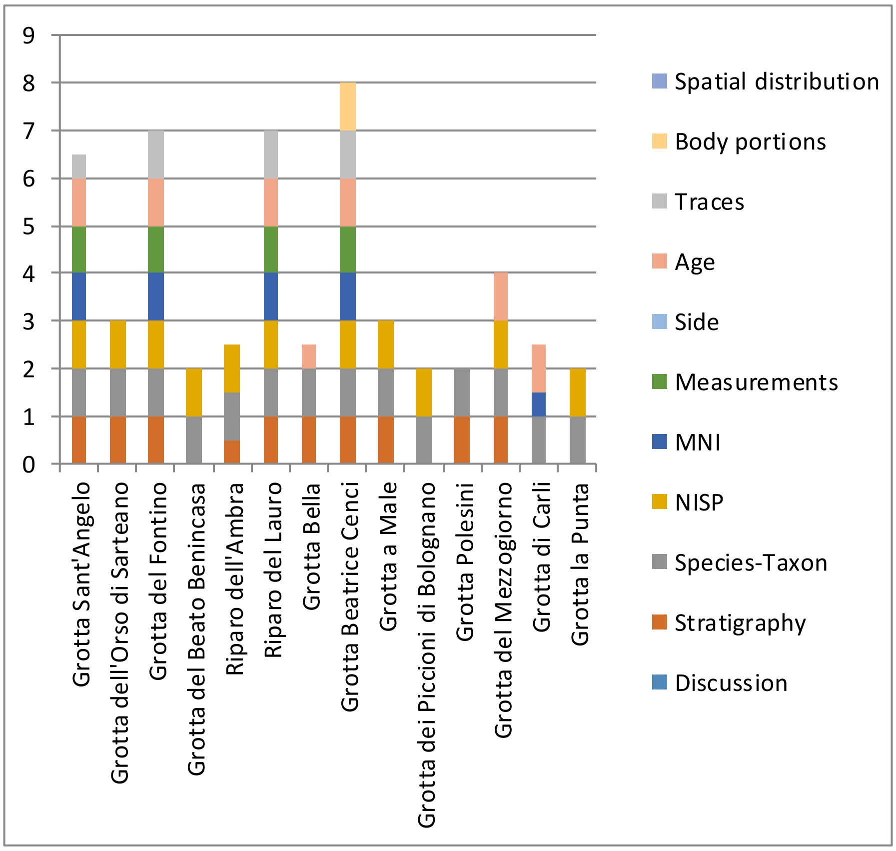


Fig. 25 Features of faunal remains from caves from publications with zooarchaeological analyses, identified at least once.

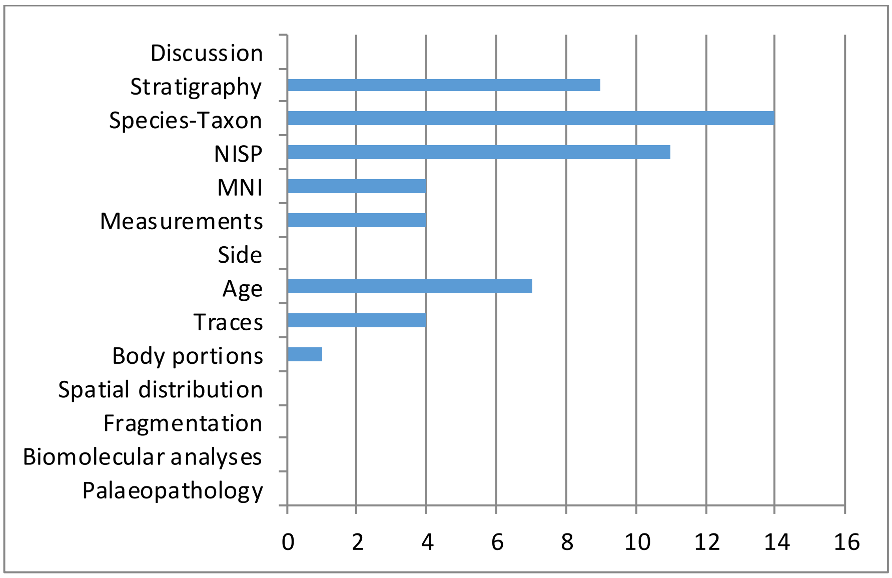


Fig. 26 Total of the features identified from the caves with zooarchaeological analyses.

Only 24 caves out of the selected 42 with more accurate publications were reported to have produced faunal remains (Figs. 26-27), whereas 16 produced plant remains. Given the constant presence of animal bones in cave sites that I have personally investigated both in archives and in the field, re-analysed from old stores or surveyed, it is very unlikely that the other sites did not actually hold any animal bones: therefore, a significant loss of data is to be acknowledged, as well as a remarkable initial bias. This holds true even more for the plant remains, which are much more perishable.

Of the 28 examined datasets, excluding those from sites whose publications were co-authored by myself, 14 went beyond the mere citation of the identified species (14 specify the NISP and only 9 maintain a stratigraphic division in multi-phase sites for the fauna; 2 were treated in this same way for plant remains). Only 7 recorded at least partially the age classes, thus enabling the construction of mortality curves; MNI was calculated in 6 cases, allowing the reader to get a complementary idea - if not a more realistic one - of the composition ratio of the living animal group. Even in these cases, the method used was rarely specified, making the various samples hardly comparable. Butchery, cut and fire marks were recorded in only 4 cases. Other aspects such as sides and body portions, spatial distribution, marks and fragmentation rates, as well as palaeopathology and bio-chemical analyses, were covered only once - if at all. As far as data patterns and interpretations are concerned, a predominance of sheep and other domesticates is noted for all the sites. The only other outstanding feature is the presence of perinatal animals, reported for one fourth of the caves. More specifically, Grotta del Di Carli (Cerilli 2000) and Grotta Sant'Angelo (Wilkens 1996) held lambs/kids and Grotta dei Cocci (Salari 1991; Salari et al. 2014) lambs/kids and piglets. However, the reports' authors have considered this occurrence in isolation, as an act of sacrifice and fertility, scarcely or not combined with the other indicators of ritual present in the caves (Wilkens 1996). For those caves that did not contain unusual faunal deposits, zooarchaeology was not considered when it came to interpreting the symbolic significance and ritual use of the sites.

Given the absence of a shared method for studying the faunal and plant remains from these caves and the subsequent heterogeneity of the sample, to combine the available data together here is very difficult. The only identifiable pattern is the species ratio, which reflects very closely that from coeval domestic sites (e.g. Villaggio delle Macine (Castelgandolfo, Province of Rome) (Tagliacozzo et al. 2012), Luni sul Mignone (Blera, Province of Viterbo) (Minniti 2012: 21), Castiglione (Province of

Rome) (Minniti 2012: 59-60), Coccioli (Province of Chieti) (Minniti 2012: 69) and Cerchio La Ripa (Minniti 2012: 88). As a consequence, Italian zooarchaeologists have focused mainly or only on the most basic economic aspects that could be inferred by the study of fauna from these caves. It is ironic that these sites have unanimously been interpreted as mainly sacred onescharacterised by ritual deposits. Surely, then, straight-forward economic-oriented interpretation is misleading, given the possibility that the assemblages were affected by intentional ritual selections occurred on the assemblages. Unfortunately, reinterpretation of the published assemblages is limited by the lack of kill-off patterns and of other in-depth studies practice. These problems are compounded because the interpretation of the zooarchaeological results is never integrated in the wider discussion of each site, even when the finds are from very well studied and/or very recent excavations and the anomaly of the composition of the faunal or plant assemblage is evident and clearly identified.

4.4. Bioarchaeology in context

Another important aspect of my study is the attempt to place zooarchaeological and palaeoethnobotanical data in the context of their sites of provenance, integrating them with other material classes, structures, speleothems and geo-morphological features related to the sites. As a consequence, the following three chapters will integrate my original analyses of bioarchaeological remains with syntheses of the archaeology of three selected caves. The following chapter will then focus on the museum collections I re-analysed. My discussion chapter then integrates all these data, in order to make broader observations and conclusions. In this way, I have sought to overcome the “appendix syndrome” that is typical of bioarchaeological studies and that has always limited its interpretive potential.

CHAPTER 5 - THE BRONZE AGE CONTEXTS OF GROTTA MORA CAVORSO

5.1. Introduction and aims of the chapter

The aim of this chapter, which illustrates the first of three case-studies, is to show the interpretive potential of a freshly-excavated cave site. To analyse some recently investigated archaeological sites, in fact, provides some crucial working advantages. Firstly, the full awareness of all the phases oinvestigation of the site, including any related methodological problems and possible biases; secondly, the easy access to the whole set of documentation and materials coming from the digs and the surface collections.

By comparing the results of the contexts analysed one to each other, as well as to several published case-studies, I intend to answer some key questions regarding the relationship between caves and communities in Central Italy during the Middle Bronze Age. In order to do so, I will use first-hand thorough data, mostly – but not only - of environmental nature. In the case of Mora Cavorso Cave, the faunal remains have been the major subject of my analyses, botanical finds being completely absent from the assemblages of Middle Bronze Age layers.

Traditional methods have often overlooked such material classes, as well as the contextualisation in the archaeological landscape. I aim to demonstrate that a more over-arching approach can allow a much wider understanding of the site-uses and of people's everyday lives, even within sites which are often the result of intentional selections and occasional, special frequentations. Therefore, my research is not only directed to solve some gaps in the knowledge of the period and area examined here: it aims in the first place at elaborating a methodology that can be diachronically and multi-regionally applicable.

To sum up, the objectives of this chapter are:

- To show the systematic analyses undertaken on the animal bones from the freshly excavated BA deposits of a Southern Lazio archaeological cave (Mora Cavorso);
- To obtain environmental, economic and cultural information from the thorough analyses of such ecofacts;
- To combine the economic data obtained with the information about

the archaeological landscape, in order to explore the subsistence and mobility strategies of Southern Lazio's BA communities;

- To identify and define more in detail the ritual uses (and the symbolic significance) of the cave, by utilising the cultural information obtained;

This chapter will constitute the first of three experimental and interpretive sources for the discussion and conclusion of my thesis.

5.2. History of the discovery

In 2001, the speleological group Shaka Zulu of Subiaco (Rome) entered the cave of *Mora ju Caorso* (dialectal for Mora Cavorso) on the slopes of the Simbruini Mountains, in the Upper Aniene River Valley (Fig. 27). The site is located 715 m above sea level and about 2 km from the village of Jenne. This cave had been known by locals for centuries: they used it as a shelter for flocks of sheep, goats and even cows because of its big and large entrance, which was apparently the only room of the natural structure (Rolfo et al. 2013a). What the speleologists found out that day was a secondary tunnel, obstructed by soil and stones, in the bottom of the first room. Clearing it, they realised that the narrow passage led to another big space, after which a further, even narrower passage, ended in two chambers. On the floor of the smaller one, a clearly human skull was lying down together with a pile of other bones.

The report made by Shaka Zulus to the Soprintendenza per i Beni Archeologici del Lazio and to the chair of Prehistory of Tor Vergata University (Rome) allowed these institutions to start official archaeological investigations in 2006. Test pits carried out in every area of the cave testified
to the presence of important anthropic deposits which were worth excavating systematically.

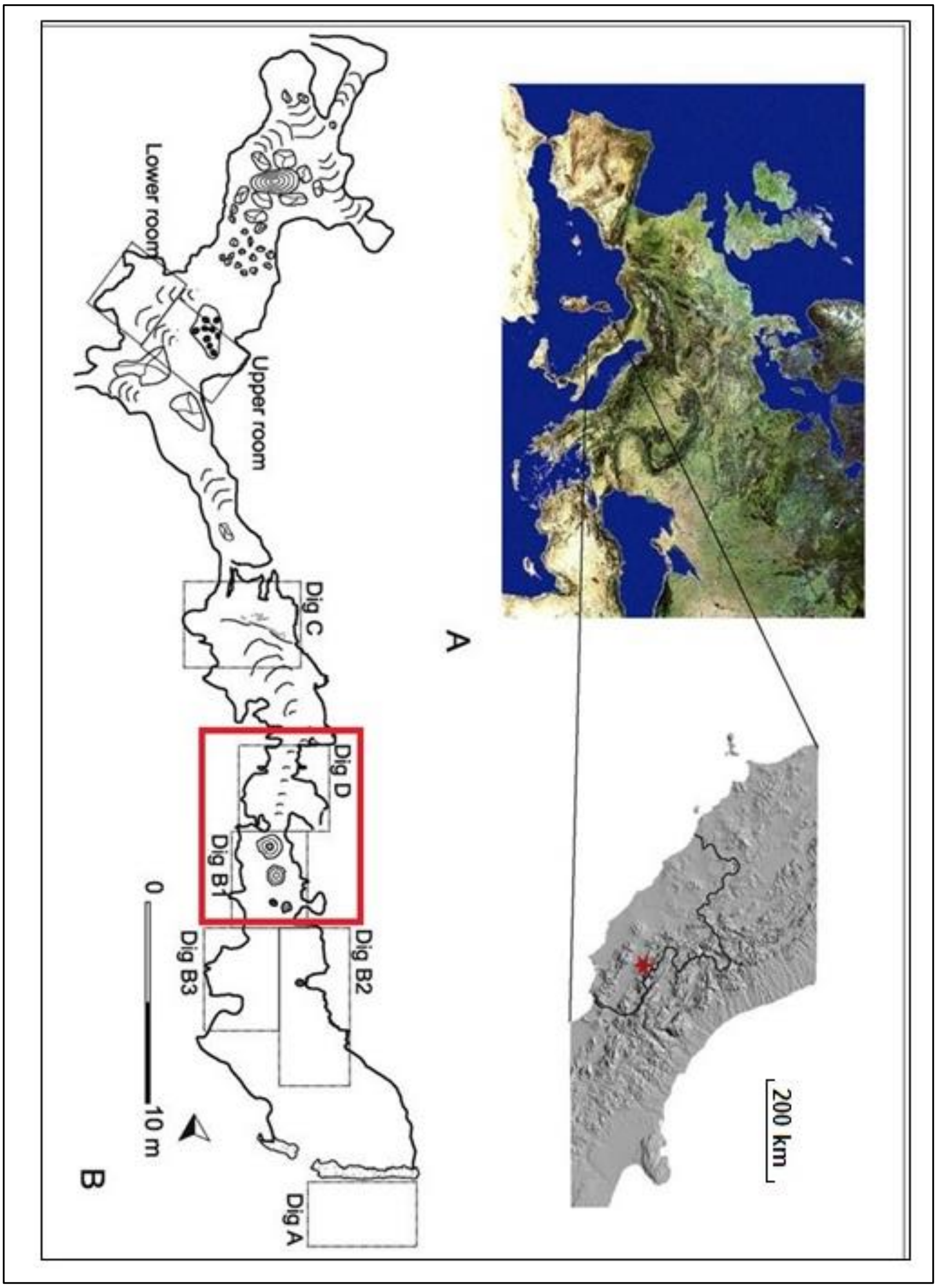


Fig. 27 Location (A) and plan (B) of Grotta Mora Cavorso. The BA area is highlighted by the red square (after Rolfo et al. 2016, fig. 1)

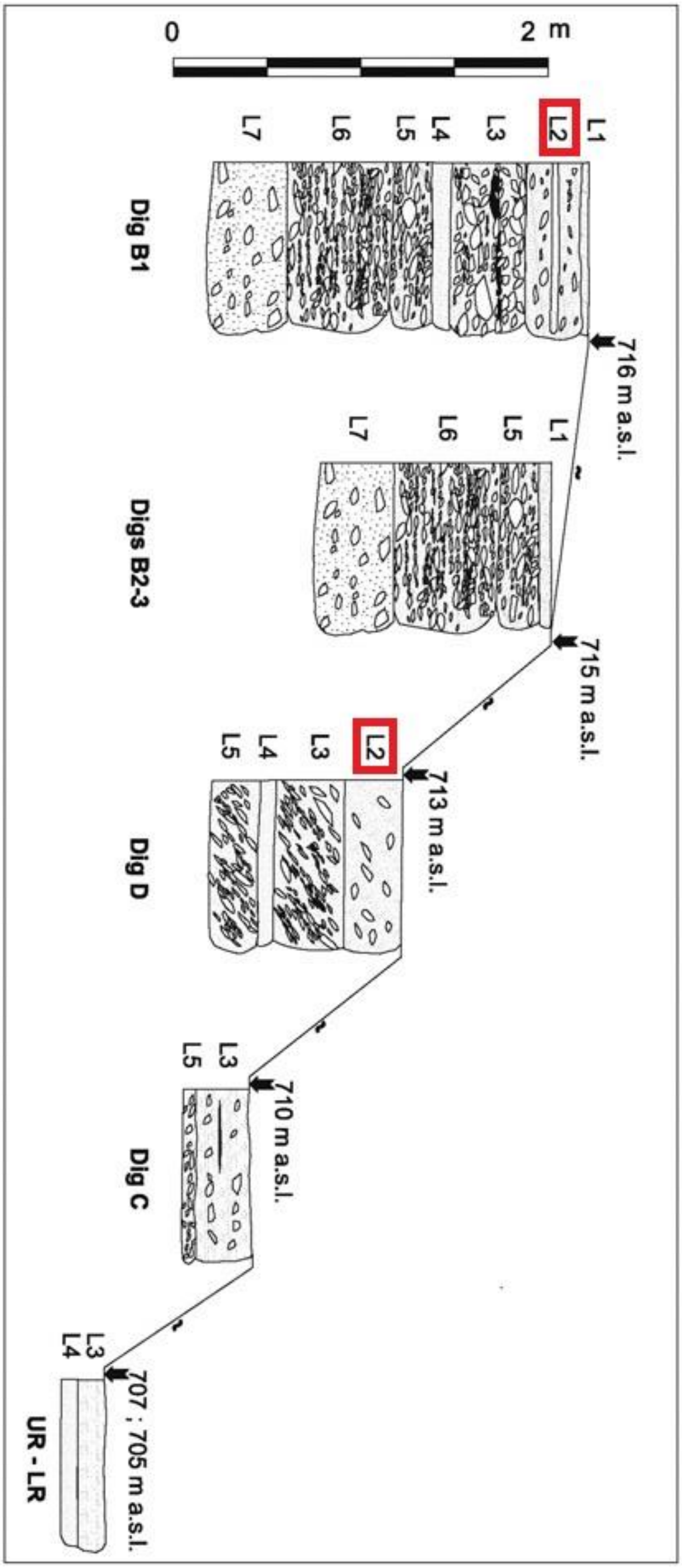


Fig. 28 Stratigraphy of the deposit ranging between the Palaeolithic (L7) and historical times (L1). L2 is dated to the Early-Middle Bronze Age (after Rolfo et al. 2016, fig. 2).

Since 2006, carrying out field research every summer for one month, and lab analyses during the rest of the year, a huge amount of information has been collected (Rolfo et al. 2016 and references therein). The cave appears to have been variously and discontinuously frequented at least since the Upper Palaeolithic (the excavation of the earlier layers is still in progress) up to the present, with the clearest evidence of human presence during the Early Neolithic, the Middle Bronze Age, Late Antiquity, the 18th century and the 2nd World War (Fig. 28).

5.3. Detailed description of the cave

The cave (Fig. 27) opens on the western slopes of the Simbruini Mountains, about 50 m above the Aniene River. The entrance is 5 m high, and the ceiling decreases strongly towards the bottom. This first space, which measures about 90 m², is divided in two parts, according to the access of light. The sector close to the entrance was used for several centuries as a domestic animal shelter. Such continued use produced a more disturbed stratigraphy, which in fact passes from the modern ages directly to the Pleistocene. Conversely, the innermost, darker and thus less exposed portion of the entrance chamber still held a well preserved stratigraphic sequence, yet chaotic on the surface levels. This included contexts of VII-VIII century AD, Middle Bronze Age deposits (with still identifiable structures), Neolithic layers and then Upper Palaeolithic ones. A first tunnel, which has at least 4 small entrances, starts there and is characterised by the same stratigraphic sequence of the first room's bottom.

The tunnel continues for about 6 m, with a gradient of 20°, leading to the first inner room which measures 30 m². This room is characterised by layers of calcite concretion alternating with various charcoal layers, some of them being probably proper hearths, dated to the Neolithic and Copper Age. A further passage, 15 meters long, terminates in a fork, from which it is possible to reach two parallel rooms, the eastern one being bigger and on a slightly upper level than the western. These two rooms held the most relevant finds in terms of the wider archaeological framework: in fact, the scattered remains of 23 individuals of both sexes and every age class were recovered here, dated to the Early Neolithic (Rolfo et al.2009). Prior to such discovery, the area of Upper Aniene's Valley was considered peripheral; moreover, Neolithic burial deposits this consistent are very rare in general, making Mora Cavorso a key archaeological site for late prehistoric Central Italy.

Another narrow tunnel, 7 m long, leads to the last and most fascinating known room.

In addition to the beautiful stalactites, stalagmites and columns of the whole cave, this lspace also contains a natural chimney: the speleologists named this astonishing structure '*the Ghosts' Room'* after its bizarre karst. Moreover, a seasonal pond is located in this chamber, where the crystal clear water is almost invisible even when the level is high. The cave does not end with this room, but a massive collapse of the vault blocks other passages, preventing from further explorations.

5.4. History of studies

The investigations carried out at the cave did not simply consist of archaeological excavations. Parallel to such digs, a number of multi-disciplinary analyses and approaches have been employed.

First of all, contrary to the standard Italian habits, pottery\lithic typo-chronology has not been the only object of thorough material studies: in fact, the faunal and bio-archaeological assemblages were also taken in great consideration. In particular, not only did the zooarchaeological analyses contribute to contextualise the human frequentation under an economic point of view, but they also helped clarify the ritual aspects of MBA communities of Cavorso. Moreover, in absence of palinological analyses and palaeobotanical sources, the animal finds – particularly the microfaunal ones - allowed a first reconstruction of palaeoclimate and palaeoenvironment. Macrofauna only allows a very general reconstruction of palaeoclimate. However, the comparisons between Pleistocene and Holocene assemblages from Mora Cavorso Cave (e.g. the disappearance of ibexes and marmots from the upper contexts) provided information about the transition corresponding to the end of the last Glaciation (ongoing study by Tor Vergata University team). The study of more sensitive species of microfauna such as bats and mice, instead, provided sounder data (Salari 2014; Salari & Silvestri 2015; Salari et al. in press b). In addition, geological investigations were undertaken to understand the dynamics of formation of the cave and their relations with the anthropic frequentation (Zanchetta et al. 2012).

Furthermore, DNA and isotopic analyses on Neolithic human bones have been made, the results of which are almost ready to be interpreted (Scorrano 2012). They show a mixed genetic provenance of the community members of Mora Cavorso (partly indigenous, partly with Near Eastern genetic marks) and a diet mainly made of on meat. At the same time, molecular studies were carried out on the DNA of volunteers from the village of Jenne and other communities of the micro-region (Messina 2012). This experiment was aimed at testing the degree of isolation and external influences occurred amongst these mountain human groups throughout the centuries. No connections were found with the ancient anthropic remains.

Finally, ethno-archaeological methodologies have been employed (Rolfo et al. 2013a), through video-recorded interviews of the eldest members of the local community with memories of the cave. This led to detailed information about the 20th century use of the cave, especially during the 2nd World War, but also to light being shed on some interpretive incongruences in the archaeological deposit, which were problematic for the specialists. For example, the archaeological stratigraphy of the first room appeared hardly understandable before the dialogue with the old shepherds. Unexpectedly, two of them were able to explain the anomalous surface exposure of the Palaeolithic layers at the entrance of the cave: they revealed that an annual dung removal used to be carried out at site after each sheltering season, to fertilise the almost sterile soils of the surroundings. Thanks to the acquisition of this information, the absence of a complex stratigraphy at the entrance of the cave eventually came to make sense, as well as the lack of modern remains and discards in an area of the site which was strongly used until 50 years ago.

Archival research was also carried out, mainly using the valuable source of the close Santa Scolastica's monastery of Subiaco (Rome): this ecclesiastic structure holds the most ancient library of Europe and several manuscripts, codes, monographs, diaries, reports, journals and papers related to the history of the region. Nevertheless, a thorough analysis of such resources revealed a lack of awareness in (or of interest for) the cave, which is never cited in those documents. If, on one hand, this absence of written information is discouraging, on the other hand it indicates the relatively intact nature of the site, which has not caught the attention of amateurs and clandestine diggers up until now. Apparently, apart from the stabling use made of the entrance, all the inner tunnels and rooms of Mora Cavorso Cave seem to have stayed sealed at least since late antiquity. Undoubtedly, the second tunnel leading to the Neolithic burials has been no longer walked from the IV millennium BC onwards.

Apart from the continuation of the excavations, which will focus on the Pleistocene deposits, geo-radar techniques are expected to be next undertaken, as well as high-quality spatial analyses. The application of these methodologies will contribute to clarify the function of the different sectors of the cave throughout the centuries and millennia. In addition, a systematic survey of the surrounding areas (woodlands and caves) and a focus on the human perception of the landscape will be carried out in the future, in order to understand the use of the cave in its wider context and to identify its role in the human networks of prehistoric Central Italy.

5.5. Mora Cavorso Cave in the Bronze Age

5.5.1. Radiometric dates and stratigraphy

The stratigraphy of Mora Cavorso Cave varies according to the different sectors. Multiple soundings have been carried out in the different rooms, but the only spaces to have revealed the presence of a Bronze Age deposit are located in the innermost part of the entrance chamber and in the duct leading to the first inner room. The MBA layers of the second area, especially in the final and most sloping part of the tunnel, are most likely to be the result of a slow landslope from the upper sectors. This said, MBA contexts have been identified in the soundings digs called B1 and D (Fig.27), and can be divided in two main formation periods: the upper one was more superficial and mixed with later pottery and fauna on top, and called 'horizon 1'. The lower one ('horizon 2') was partly sealed by a series of karst veils in patches: these discontinuous karstic formations were the only guidance to identify a stratigraphic change in those areas during the excavation. In fact the consistency, colour and composition of the contexts were hardly distinguishable from one another. Moreover, the additional difficulty of working in a dark space, illuminated artificially, did not help the research. Finally, the persistently humid conditions of the space contributed to homogenise the appearance of the layers (Figs. 28-29).

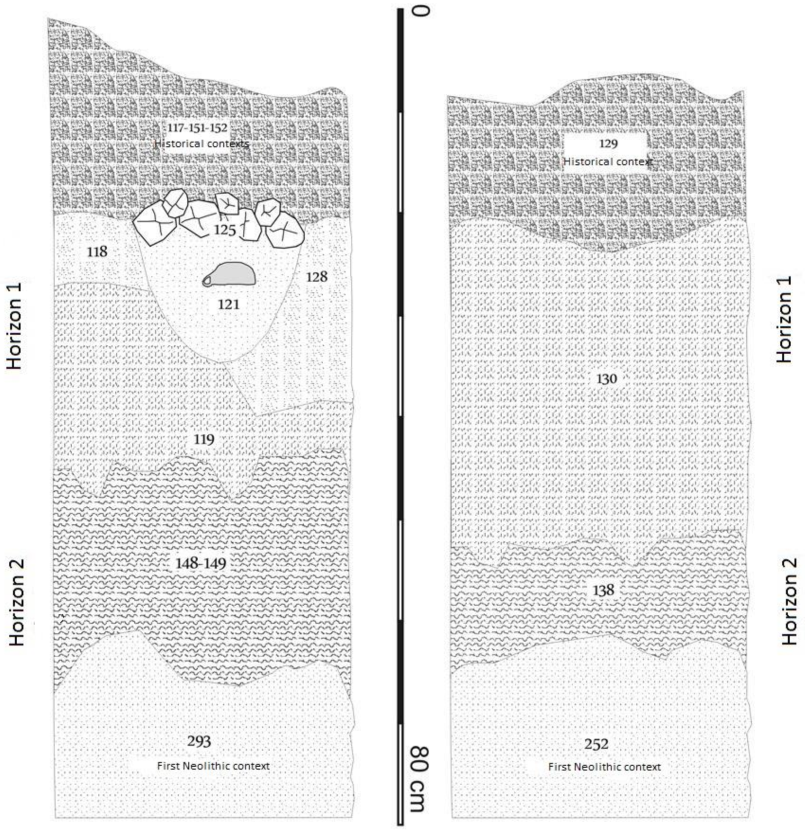


Fig. 29 The stratigraphy of the Bronze Age of Mora Cavorso, divided in "Horizon 1" and "Horizon 2".

A thorough and critical re-analysis of the field journals and of the material assemblages classified for my Masters' dissertation (Silvestri 2011) led to clarify some interpretive issues. Such process was also helped by the acquisition of the most recent stratigraphic and material information coming from the underlying Neolithic layers. These have been excavated in the two years following the completion of my thesis. However, radiometric information is also available for the protohistoric deposit: these come from a ^{230}U-^{234}Th dating of a human patella (3762±340 BP), which would span from a late phase of the Early Bronze Age (2200-2100 BC) to an early phase of the Middle Bronze Age (1600-1500 BC). Despite the width of the dating, it fits in the reconstruction based on stratigraphy and pottery. Indeed, more radiocarbon dating would help clarify the reliability of the chrono-stratigraphic sequence as understood so far, and hopefully this will be carried out in the next few years.

5.5.2. Structures - Pits

Two pits have been identified in the Bronze Age deposit: the first one ('A') had been dug in a sub-circular, rather isolated space at the end of the entrance, which was surrounded by stalagmitic columns (Fig. 30). This pit was about 60 cm wide and 15 cm deep and was covered by a circular paving of stones. It held the only intact vase found in the MBA layers, which, in addition, had been deposed in an overturned position.

The pit 'A' also contained a spindle whorl and a lithic blade (more specifically, a *crête*). Significantly, the only two arrowheads coming from the BA deposit were found lying in the surroundings of such structure (from sieving), about 20-30 cm NE from it (Fig. 33). There are no records of similar contents in the other known cave pits, but the recovery of those possible grave goods and gender indicators (spindle whorls for female, arrow heads for male individuals) is well documented in most burial contexts from the Neolithic to the Archaic period. A classic example is that of the Late Bronze age\Archaic cemetery of Osteria dell'Osa (Bietti Sestieri 2002), at the south of Rome, with hundreds of graves holding such gender-related grave goods.

The second pit ('B'), instead, was located at the entrance of the slope, in the sounding D (Fig. 31). It had an oblong shape and its irregular perimeter measured about 60x80 cm. It was only about 10 cm deep and the filling soil appeared to be almost sterile, excluding some possible disturbances or casual intrusions. However, its proximity to the majority of the human remains and perinatal animal bones allows one to hypothesise a simultaneity with those depositions and a symbolic relation with them.

Fig. 30 The Pit 'A', marked on the general map with a red dot, with the upside-down bowl and the lithic crête at its SW side. Red: pottery; yellow: fauna; green: lithic industry; light green dotted circle: area from which the two flint arrowheads came from; grey: stalagmites/stalactites; white: stones.

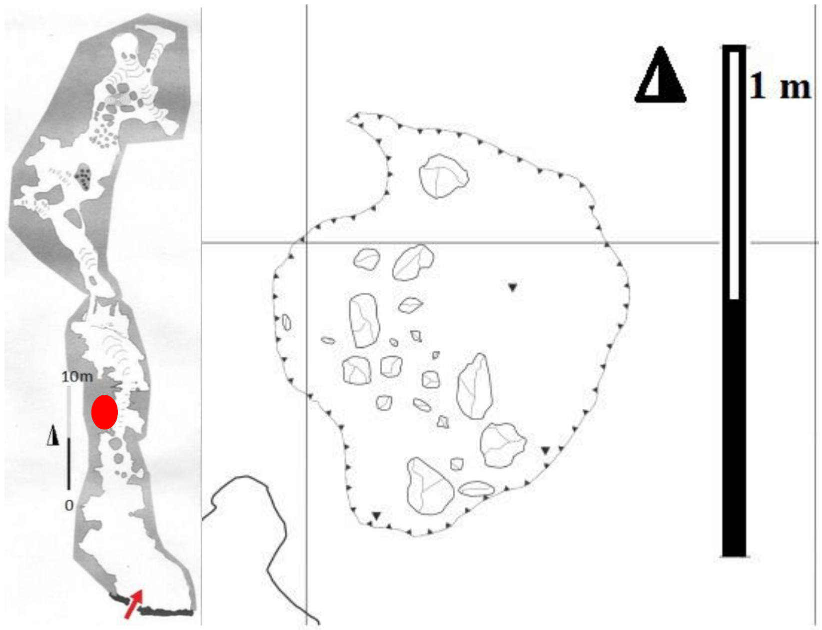


Fig. 31 Pit 'B', marked on the general map with a red dot.

Such structures, sometimes associated with or containing overturned pots, are rather typical in the archaeological record of Central Italian caves, from the Neolithic to the late Bronze Age. Upside-down pots have been recovered at Grotta Nuova (Cocchi Genick 2002), Grotta del Pertuso di Pastena (Angle et al. 2014), Tanaccia di Brisighella

(Pacciarelli & Sassatelli 1997), all dated to the MBA. Instead, pits are more recurrent in Neolithic, with few antecedents identified already for Palaeolithic (e.g. Grotta delle Marmitte (Grifoni Cremonesi 1969): several Abruzzi caves held this feature, e.g. GrottaContinenza (Barra et al. 1989), Grotta Sant'Angelo sulla Montagna dei Fiori (Di Fraia & Grifoni Cremonesi 1996) and Grotta dei Piccioni di Bolognano (Cremonesi 1976), only to mention the most famous.

The last two examples also have pits that are dated also to MBA phases. The circles of stone are typical of Abruzzi caves as well, e.g. in the Grotta dei Piccioni di Bolognano (Grifoni Cremonesi 1996). Most of the Abruzzi's cave sites hold pits, Grotta dei Piccioni di Bolognano e Grotta Sant'Angelo sulla Montagna dei Fiori being the most relevant examples. These features have been also identified on a wider scale: for instance, Pupicina Cave in Slovenia (Miracle & Forenbaher 2006) has similar structures at its entrance, which –according to their filling - could be dated to the Bronze Age. Nonetheless, the interpretation of such pits is still very problematic: they can appear empty or hold artefacts of different symbolic relevance; they may have been used for domestic purposes, even if probably in few cases, or for ritual ones. When ritual, they can be related to burial practices and cults of different nature.

At Mora Cavorso Cave we have two different cases of pits that seem to have a ritual nature. This can be argued because of their association with key markers such an overturned pot and other potentially symbolically meaningful objects on one hand (i.e. spindle whorls and arrowheads), and of human bones and animal sacrifices on the other. Moreover, the absence of any kind of discards in the filling of the pits, as well as their location in dark sectors of the cave, corroborate the exclusion of a more mundane use. What is the real function of such pits? Was the upside-down pot overturned to pour some liquid, food or substance towards the depths of the earth, maybe towards a subterranean deity? Was it put in such a peculiar position in order to de-functionalise the object, which belonged to the dead and now was no longer to be used by any human being? Was this a practice related to the funerary activities carried out for the dead, or was it independent from them? Was that the act of an individual or of a community? These questions are probably going to be never solved, but it is crucial to bear always in mind that the interpretations of a certain phenomenon or marker are multiple and variable, and that they have not to be directly catalogued as ‘fertility rituals’, ‘burial offerings’ and so forth.

5.5.3. Artefacts

5.5.3.1. Pottery

Mora Cavorso’s Bronze Age deposit did not hold a consistent presence of pottery, which led indirectly to a precise methodological consequence: a greater attention to material classes, such as bones, or aspects, such as ceramic fragments’ features, that are usually taken into lesser consideration. I carried out most of the existing analyses on the pottery for my Master’s dissertation (Silvestri 2011).

The ceramic remains consisted of about 600 fragments, the intact bowl and three spindle whorls. The sherds relevant to reconstruct the main shapes were 53, of which only a dozen resulted to be suitable to date the layers more precisely. However, the remaining fragments were mostly consistent under the aspects of their clay and cooking, contributing to confirm the dates suggested by the diagnostic sherds (i.e. rims and walls with typical plastic motifs or shapes). In fact, the four thickness and clay classes identified for the non-diagnostic pottery (i.e. wall fragments) were identical to those observed in the diagnostic ones. Those can be divided in raw, medium, semi-refined and refined, according to the density and dimension of the inclusions, the clay, the cooking temperature (and subsequent colour) and the thickness of the fragments. Usually, the refinement of the surfaces was not related to the quality of productions: in fact, when the preservation status allowed to identify the polishing technique used, at least some kind of smoothing appeared evident on both sides of the sherds. The only exception is related to the class of the refined pottery, which was extremely polished externally.

As for the reconstruction of the forms, it can be certainly stated that jars of various type constituted the majority of the assemblage (the abundance of non-diagnostic fragments with clay features similar to the jars confirms this trend), followed at a long distance by cups and bowls (Fig. 32).

Other shapes were rather rare or absent. This could suggest a preponderant storage use of pottery in the cave during the Middle Bronze Age. Such utilisation of vases appears to be in contrast with the most accepted interpretation of the site as a burial and ritual one. Daniela Cocchi Genick (2002), an authoritative expert of the Italian Bronze Age material cultures, gathered together the data about pottery forms from cult caves - mainly of Tuscany - and deduced that the most likely pottery to be found in these sites is related to the drinking sphere (cups and bowls).

In effect, the upside-down vessel found into one of the pits is a bowl. Not only is it the sole intact pot recovered at the site, but it has also been deposed in a prominent location (the pit) and in a particular position (upside-down). The evidence that a drinking-pouring form had been treated in a different way from the others (mainly non-drinking ones) could corroborate the hypothesis of a specific role of such forms in ritual practices.

However, the unusual presence of jars should be explored as well, in order to identify either a new cultic custom or a more mundane function.

Spatial studies have been recently undertaken (Rolfo et al. 2013b), in order to understand whether the distribution of the sherds could be related to the original deposition of the vessels, but the results have not been really significant. The dispersion appears rather chaotic, with a concentration in the sub-circolar area where the pit 'A' is located, and in the slope. Conversely, the principal area of the entrance chamber's end held only scarce fragments, interestingly seldom of jars. This could suggest that the jars were deposed in the small locale holding the pit and that then slipped down the slope, while the bowls and cups were originally located across the human and animal deposits.

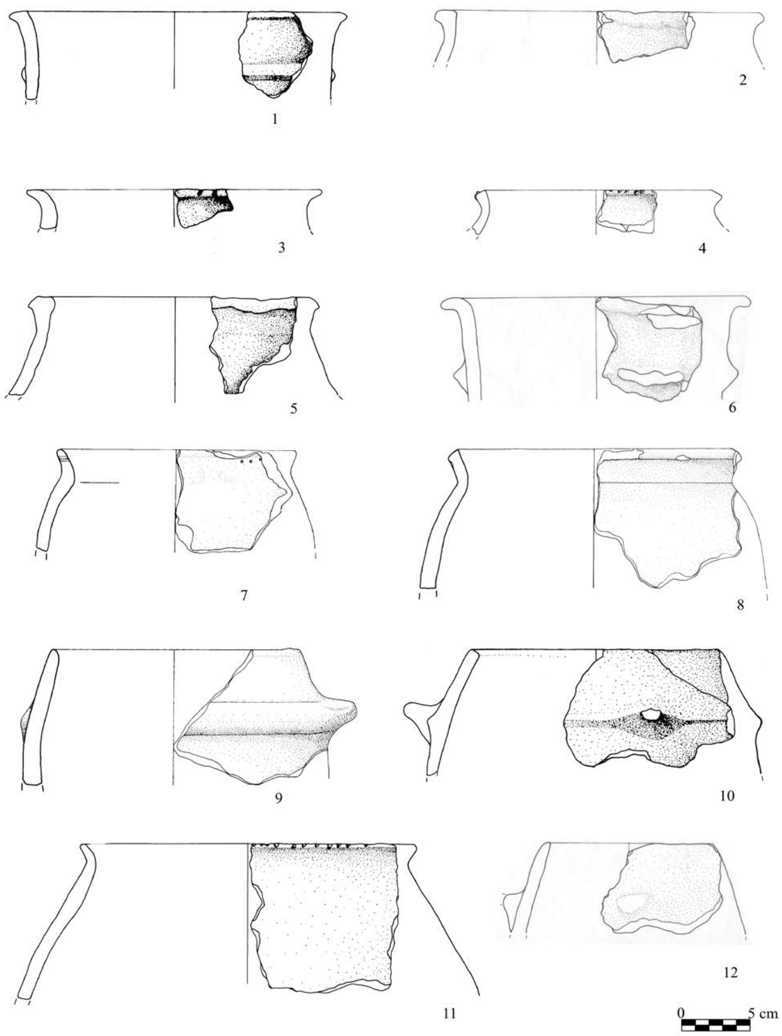


Fig. 32 Vessel forms from Mora Cavorso Cave (after Rolfo et al. 2013b, fig. 4).

The intact bowl and few dozens of sherds, helped date the deposit to the Middle Bronze Age. The cultural facies to which these ceramic remains are attributable is the so-called Grotta Nuova style. This is typical of 18th -16th centuries BC sites of Lazio and of the surrounding regions, and is part of the wider typological class of Proto-Apennine. The recurrence of typological features in pottery at different sites is not to be related with an alleged cultural unity of the communities who made and/or used the pots (Cocchi Genick 2002). Such communities could have differed in social structures and behaviours, subsistence strategies, symbolic thought. The identification of such 'facies' in an extended region can thus only suggest the existence of indirect or direct contacts between the various groups. Therefore, the recovery of Proto-Apennine artefacts at Mora Cavorso Cave testifies only that Upper Aniene Valley's inhabitants communicated, and possibly traded, with both the

Tyrrhenian and the Adriatic areas. Indeed, such evidence does not even exclude that those people originated from one of the two surrounding regions, or that they came from there. This topic will be explored later on, with reference to the long-debated issue of the proto-historic transhumance.

5.5.3.2. Bone artefacts

The Bronze Age layers of Mora Cavorso held only 5 bone artefacts (Fig. 33); all of them consisted of awls carved mainly in sheep metapodials, and two were not completely refined. They were sporadic finds from the soundings D (slope) sections or coming from the final, disturbed portion of it. Already before the excavation of the underlying Neolithic layers, the most accredited hypothesis was that such artefacts were earlier residues or infiltrations from the emerging Neolithic contexts. This assumption has been recently confirmed by the systematic investigation of the layers of IV millennium, which in fact held many identical objects (Palladino 2013). Usually, tools such as those awls can be most likely related to a domestic use of the site, where daily productive activities are carried out. This assumption is corroborated by the additional evidence of unfinished objects.

The overall interpretation of Mora Cavorso as a mainly ritual and burial site, supported by many elements, slightly contrasted with the presence of such artefacts: the fact that many more items were found in the Neolithic deposit of the digs, supports the exclusion of those bone tools from the Bronze Age assemblage.

Fig. 33 Some of the bone awls, probably residues of the earlier layers.

5.5.3.3. Lithic artefacts

Similarly to the bone artefacts, also the lithic tools are very rare and often likely to be unrelated to the context where they were found. In fact, out of a total amount of 9 items, the only 3 found in primary deposition are the *crête* blade placed in the pit 'A' and the two flint arrowheads identified in the surroundings (Fig. 34). Those two artefacts, differently from all the others, are of good lithotecnic and lithomechanic quality, and fit perfectly in the Bronze Age chrono-typology. Many arrowheads have been found in other cult\burial caves of Central Italy, often in groups of dozens or hundreds (e.g. Grotta dello Scoglietto (Ceccanti & Cocchi Genick 1978), Buca Tana di Maggiano (Corazza 1969), Buca di Spaccasasso (Cavanna & Pellegrini 2006), but never in direct connection with male burials. Despite their likely value of grave goods and gender indicators (Bietti Sestieri 2002), the post-depositional events typical of caves prevented them from the preservation of their possible original association with the body. However, no male individual has been identified at Mora Cavorso, meaning that these weapons were perhaps deposed there by (male?) members of the community for ritual purposes. The location of the objects right outside the area of the Pit "A" corroborates this hypothesis.

The remaining six flint finds came from the most disturbed sectors of the slope, sometimes showing features typical of Neolithic technology and even of Palaeolithic. Therefore, it is possible to consider them as residues rather than as objects used in Middle Bronze Age, contributing to the interpretation of the site as a non-domestic one.

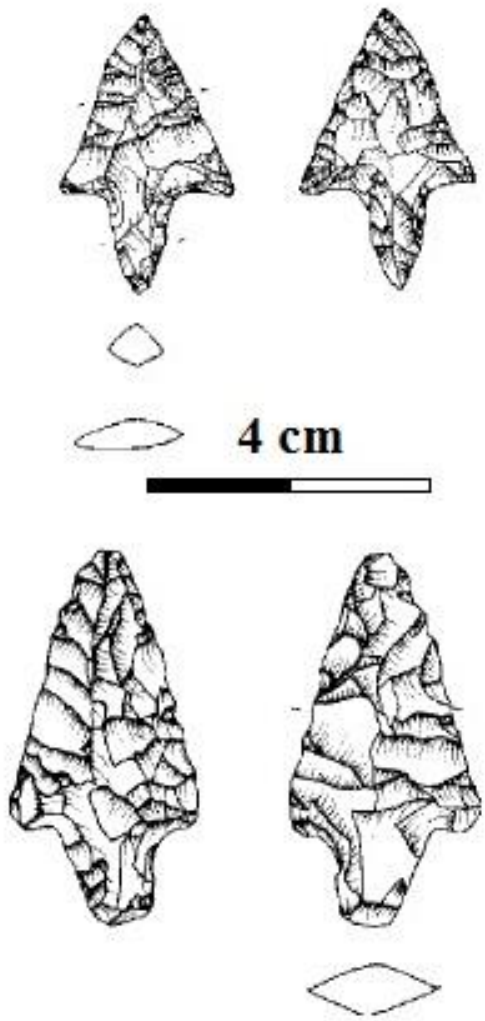


Fig. 34 The two arrowheads found in the surroundings of Pit 'A'.

5.5.4. Human bones

The study of the human bones dated to the Bronze Age and recovered from the soundings B1 and D has been carried out by Miss Daria Passacantando and Miss Ivana Fusco (Rolfo et al. 2016). I have taken part to the excavations, contributed to contextualise and to catalogue the finds, and assisted during the analysis of the remains.

The 70 human bones were found in the relatively circumscribed area between the bottom of the entrance and the western side of the slope, all disarticulated and apparently in chaotic order. They seem to be related to one individual, a mature female of about 35 years, whose body was placed at site with the head oriented towards north-east (the innermost and darkest part of the cave) and the feet towards south-west. In fact, a spatial observation of the bones revealed that, despite the disordered distribution of the finds, they appeared to be still roughly grouped by body macro-portions. All body parts and both sides were recognised, including phalanges, so that it is not possible to suspect any kind of secondary selection. Regardless of the chaotic dispersion of the remains, this can be considered an overall well-preserved burial context, compared to other BA caves of the region. Even in the caves with no evidence of skeletal selections like Mora Cavorso, it is rarely possible to reconstruct a whole individual or to trace back his\her original position. Good examples of this occurrence can be, on one hand, the Grotta del Borghetto (Cocchi Genick & Grifoni Cremonesi 1985), with only one male adult, completely disturbed, partial and with no skeletal connections at all. On the other hand, a different case-study with the same feature is the Grotta del Fontino (Vigliardi & Bachechi 2002), holding only one out of 200 ca. burials still in place; this was probably the last one to be buried –and it stayed thus undisturbed by any following deposition.

Due to the same post-depositional events affecting the spatial dispersion of the bones, also the grave goods are seldom found in direct correlation with the buried. However, a spindle whorl was found in the same area of the human remains. This leads to hypothesise that the object represented a grave good, especially given that the buried was a woman and the spindle whorl is a typical feminine gender marker (Bietti Sestieri 2002). Pit 'B' was located near the deceased. It is likely that a pit dug after the deposition would have presented osteological intrusions. The fact that its deposit is almost sterile suggests a contemporaneity with the burial operations or, at most, the antecedence of the structure.

It is not clear whether the initial deposition of this woman, generated a rituality which would be perpetuated for a much longer time (it is unlikely, for economic reasons, that a minimum number of 18 piglets and 23 lambs\kids were sacrificed on the same occasion). However, it is possible to argue that the funerary practice was here related to the cultic one. A hypothesis is that the cult had a propitiatory purpose, direct to assure the prosperity of the flocks through the homage to a special ancestor.

5.5.5. *Animal bones: environmental, economic and ritual information*

Zooarchaeology has probably provided the richest and most unexpected contribution to the interpretation of the Bronze Age context of Mora Cavorso Cave. Supervised by Mr. Leonardo Salari and making the most of the recent suggestions of Prof. Peter Rowley-Conwy, I have analysed almost 1200 faunal remains, of which 650 resulted to be diagnostic by species and anatomic portion. I examined few further hundreds of animal bones, which I was eventually able to exclude from the record because of their inconsistent size (cattle remains too big compared to the average of the period), species (e.g. donkey and domestic cat, which were still absent in this region during the Bronze Age), crystallisation degree/patinas (e.g. fossilised bones). A certain quantity of intruders and residues have to be expected in the results illustrated below: this derives from the anticipated problems related to stratigraphy and to the disturbance of the Bronze Age layers, more superficial and exposed than the Neolithic ones. Despite such methodological issues and biases, the analyses of faunal remains have come to be extremely useful and revealing at Mora Cavorso Cave, under three equally relevant aspects of the archaeological interpretation's process: the reconstruction of palaeoenvironment, that of the subsistence strategies and that of the ritual practices[1].

With regard to the palaeoenvironmental reconstruction, it is to be acknowledged that faunal datasets cannot be fully exhaustive and very specific. However, they can provide a general idea of sound reliability, especially when combined with by the study of microfaunal remains.

Bats, mice and rodents are rather sensitive to climate changings and can provide much more accurate information[2].

[1] For more detailed data and tables see Rolfo et al. 2013b; Silvestri et al. in press a; b.

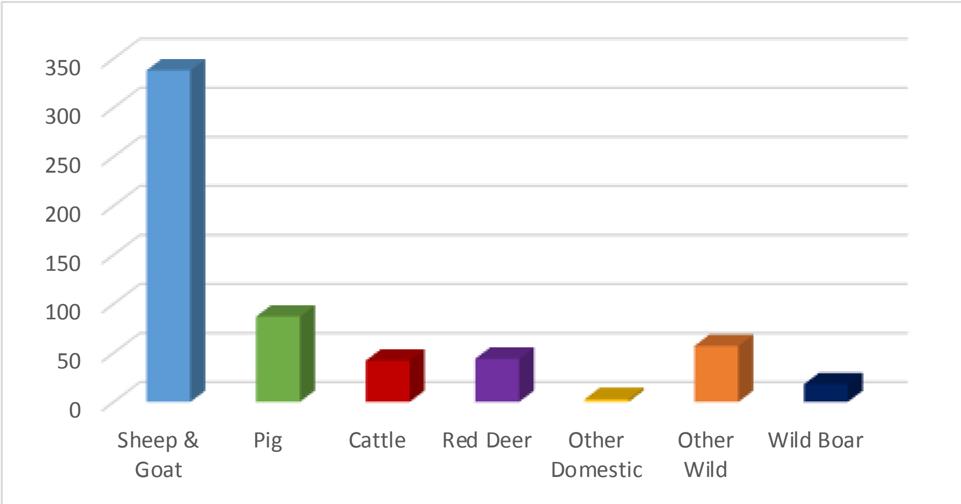


Fig. 35 Ratio of the remains of the main domestic and wild species by NISP (Number of Identified SPecimens).

	Sheep/Goat	Pig	Cattle
horn	1		
cranium			1
maxillary	4		
upper teeth	9	1	1
mandible	26	2	
lower teeth	15	3	5
undet.teeth	8	4	1
atlas	1	3	
axis			
sacrum			
hyoid			1
scapula	8		
humerus	19	9	
radius	25	7	1
ulna	14	5	
carpus	8	3	
metacarpus	13		
coxal	32		1
femur	21		
patella	3	9	2
tibia	22		1
astragalus	8	9	2
calcaneus	8	1	
tarsus		12	1
metatarsus	16		
metapodial	18		
sesamoids		5	2
phalanx I	34		7
phalanx II	10	6	5
phalanx III	15	4	7

Total	338	4	3

Table 4 List of body parts of faunal remains from Mora Cavorso.

This said, it can be observed that the situation reflected by the faunal assemblage is almost identical to that of the Neolithic, but rather different from Palaeolithic phases. In fact, the predominance of ovicaprines (Fig. 35) indicates the close abundance of pastures already in the II millennium BC; that of pigs and wild boars testifies the existence of humid woodlands suitable to the life necessities of swine. Moreover, the relatively consistent presence of hares suggests that grassy clearings alternated the dense woodlands, also documented by the recovery of red and roe deer. Finally, the finding of a humerus of an otter, now extinct in this region, has to be related with the proximity to the Aniene River. In other words, according to the faunal assemblage, the environment of Simbruini Mountains during IV-II millennium were pretty similar to the present ones.

5.5.5.1. Ovicaprine

As for the economic aspect, faunal remains can tell much, even if it has to be never forgotten that a ritual context holds biased – i.e., more or less intentionally selected – items. However, some information can be inferred anyway: for example, the crucial relevance of sheep farming for the communities who frequented the cave during the Bronze Age. Arguing the existence of transhumance at this stage is risky. Sherratt (1981; 1983) in theory, and Greenfield (1988; Arnold & Greenfield 2006) in practice, have tried to demonstrate the appearance of such practice in the Post-Neolithic period. Other scholars, such as Graeme Barker (1991) and Preston Miracle (Miracle & Forenbaher 2006), have hypothesised an earlier development of transhumance, while Halstead (1991; 1996) and Lewthwaite (1981; 1984) amongst the others upheld a later adoption of it during the Iron Age or even during the Classical/Medieval period. Several approaches (Arnold & Greenfield 2006) have been used to test and prove these assumptions, including ethnographic comparisons, GIS and other landscape studies on ancient and modern routes, faunal analyses. An interesting, extensive zooarchaeological study was undertaken (Arnold & Greenfield 2006) on the samples coming from 11 multi-phase prehistoric sites (located both in the lowlands and in the highlands) in Greece. This study allowed the scholar to deduce sound conclusions on the validity (at least for this temperate region) of his first hypothesis. In fact, examining the tooth cementum and eruption stages of the main domestic species (sheep/goat, pigs and cattle), he detected a seasonal complementarity of the different sites. Such research was carried out on an initial sample of several sites, but the strict requirements of the experiment excluded those that lacked statistically valid assemblages in all their layers. Subsequently, it is not possible to compare those results with the MBA Central Italian situation: in fact, we do not presently hold a relevant number of multi-phase sites with thoroughly excavated and preserved faunal datasets.

However, according to those I had the opportunity to work with (even indirectly, as for the Villaggio delle Macine's assemblage), I can preliminary assess that I noticed an evident difference in the age classes from the domestic species of the highland sites (all caves) and those from the lowlands (one cave and one open settlement). Indeed, this could be related with the intentional ritual selection made at certain cave sites in the highlands. However, Pastena Cave, which is ritual but located in the lowlands, does not show evidence of age selections, nor does the Villaggio delle Macine, which was a proper village. Overall, it is arguable that Mora Cavorso Cave might have constituted a temporary camp during the already existing small-scale transhumance through the Apennines. Regardless of the possibly ritual connotation of the sub-juvenile sheep bones recovered, which represent the majority of the assemblage, it is evident that the resource of milk was fundamental in the exploitation strategies of the flocks. In fact, the slaughtering of newborns and very young individuals allowed – or maybe implied - an intensive dairy production (including the possibility to produce cheese) (Fig. 36).

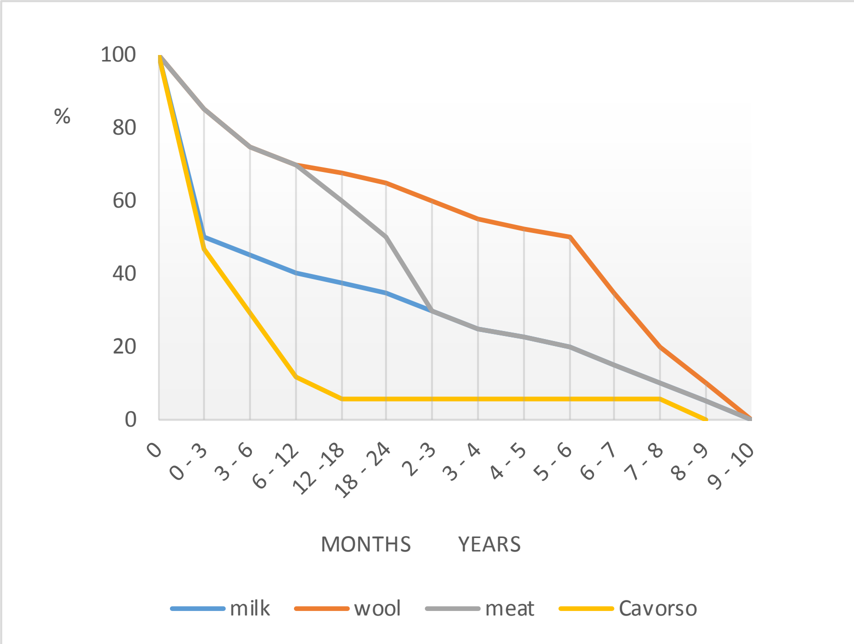


Fig. 36 Payne (1973)'s graph of the kill-off patterns of ovicaprines and exploitation of the flock, with the addition of Cavorso's pattern.

The 'secondary products revolution' theory, in fact, closely relates the exploitation of dairy products to the development of transhumance (Greenfield 1988; Sherratt 1981; 1983). Mortality patterns showing a high incidence of sub-juvenile killing support this hypothesis: lambs and kids are the natural competitors of man in this context. This theory places the beginning of dairying – or at least its intensification, too, between the late Neolithic and the Bronze Age. It has been argued (Bogucki 1984; Rowley Conwy 2000) that kill-off patterns from earlier sites such as Arene Candide (Rowley Conwy 2000) are compatible with a dairy-based economy; however, the frequency of such patterns appears much higher in post-Neolithic phases, indicating that an increasingly specialised subsistence system was developed more homogenously during the 3rd millennium rather than before. Only the combination of faunal and pottery information with the chemical analyses of milk lipid residues could give a more precise answer to this question. Unfortunately, this is currently not possible due to the prohibitive costs of such analyses, which cannot thus be undertaken systematically on a large number of sites and ceramic remains (Craig 2002).

As for further observations related to the ovicaprines, it has been possible to record an almost even proportion of sheep and goats in the herd (Fig. 37). In economic terms, the presence of goats would confirm the attention to maximise the milk production (goats produce more milk than sheep), but this choice could also relate to the steepness of the environment where the flock was herded. Unfortunately, only one bone amongst the relatively few adult ones (10%) was diagnostic by sex (a horn), belonging to a male goat, and thus not giving any further subsistence-related information.

Body Part	**Taxon**	**GL-GLl**	**GLm**	**Dl**	**Bd**	**Bp**	**SD**	**Dd**	**Gb**
astragalus	*Capra*	GLl 2,70	2,45	1,44	1,79				
astragalus	*Capra*	GLl 2,78	2,61	1,41	1,7				
astragalus	*Capra*	GLl 2,74	2,51	1,47	1,78				
I phalanx	*Capra*	GL 3,66			1,12	1,14	0,94		
I phalanx	*Capra*	GL 3,64			1,23	1,29	1,05		
I phalanx	*Capra*	GL 3,45			1,11	1,18	0,98		
I phalanx	*Capra*	GL 3,21			1,14	1,34	1,05		
I phalanx	*Capra*	GL 3,30			1,09	1,16	0,89		
I phalanx	*Capra*	GL 3,67			1,22		0,99		1,2
I phalanx	*Capra*	GL 3,55			1,2	1,21	1,08		
II phalanx	*Capra*	GL 3,25			0,88	1,08	0,81		
II phalanx	*Capra*	GL 2,07			0,89	1,11	0,86		
II phalanx	*Capra*	GL 2,27			0,93	1,15	0,93		
II phalanx	*Capra*	GL 2,41			0,88	1,06	0,8		
metatarsal	*Capra*	GL 10,98			2,57	2,12	1,27	1,07	
astragalus	*Ovis*	GLl 2,67	2,51	1,64	1,73				
calcaneus	*Ovis*	GL 5,83							1,91
calcaneus	*Ovis*	GL 6,54							2,01
calcaneus	*Ovis*	GL 4,63							1,84
femur	*Ovis*	GL 16,42			3,65	4,12	1,53		
I phalanx	*Ovis*	GL 3,38			0,97	1,1	0,84		
I phalanx	*Ovis*	GL 3,84			1,03	1,15	0,92		
I phalanx	*Ovis*	GL 4,01			1,05	1,21	0,84		
I phalanx	*Ovis*	GL 3,30			1,01	1,11	0,88		

I phalanx	*Ovis*	GL 3,46			0,99	1,14	0,88		
I phalanx	*Ovis*	GL 3,62			1,07	B 1,07	0,86		
II phalanx	*Ovis*	GL 2,59			0,78	1,13	0,82		
II phalanx	*Ovis*	GL 2,1			0,81	1,01	1,74		
radius	*Ovis*				3,05		1,7		
radius	*Ovis*				2,68				
I phalanx	*Ovis\Capra*	GL 3,64			1,23	1,29	1,05		
I phalanx	*Ovis\Capra*	GL 3,58			1,25		1,1		1,16

Table 5 List of measurements following Von Den Driesch 1976.

5.5.5.2. Pigs

Following sheep and goats, pigs are the most common species found in the Bronze Age deposits of the cave. Whilst the former were represented also by a minor percentage of sub-adult and adult individuals, the domestic swine's remains recovered belonged almost totally to foetuses, newborns and sub-juvenile animals (Fig. 38). Even if exemples aged between 1-3 months could be suitable for meat consumption (although the most common kill-off pattern for pigs is slightly before the first year), the same cannot be said for the younger ones. This occurrence is not explainable in an economic perspective (apart from considering sacrifice as a symbolic 'investment'– i.e. the offer of a minimum part in exchange of a bigger reward in the future), but the relevant minimum number of individuals recorded (18) suggests an important role of the pigs in the subsistence strategy of the herders of Mora Cavorso.

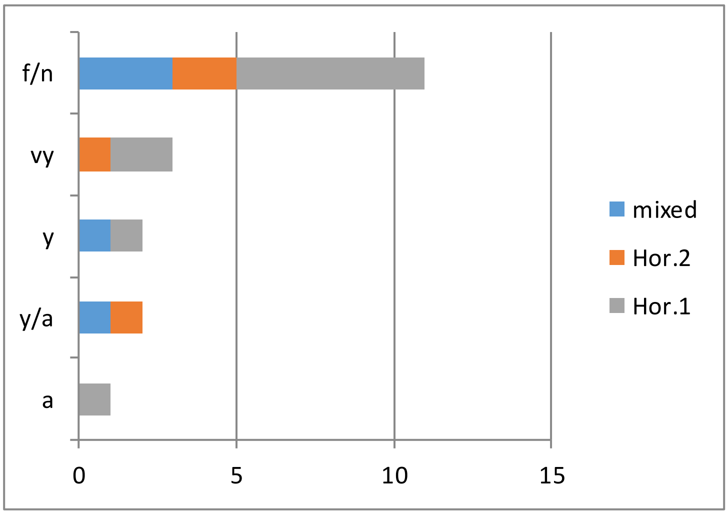


Fig. 37 Sheep vs Goat and non-distinct ovicaprine bones from the different BA horizons of the soundings B and D. The y axis indicates the NISP (Number of Identified SPecimens); Horizon 1 (Hor.1) is the uppermost (and therefore, the supposedly most recent one); Horizon 2 (Hor. 2) is the lower one, often divided from the Horizon 1 by a karst veil. Context 286 was part of a niche with BA content which could not be divided in horizons.

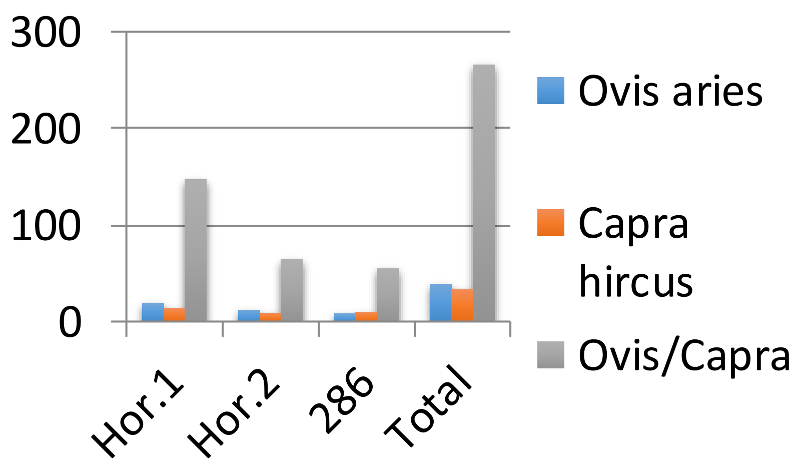


Fig. 38 Age classes of the domestic pig found in the Bronze Age layers, divided by MNI (Minimum Number of Individuals). Hor.1= Horizon 1, the uppermost BA set of contexts of the soundings B and D, therefore the allegedly most recent one; Hor.2 = Horizon 2, the lower set of contexts dated to the BA and therefore the allegedly earliest one; mixed, the context 286 where a more specific division was not duable because of the difficult digging conditions. Age classes: F\n= foetus or newborn; vy= very young; y= young; y\a= young adult; a= adult.

Body Part	**Taxon**	**GL**	**Bd**	**Bp**	**SD**	**Dp**	**LA**	**LA R**	**MB S**	**DL S**	**LEP**	**LD**
II phalanx	sus domesticus	3,68		1,8 8		1,5 4						
II phalanx	sus domesticus			1,6 4								
III phalanx	sus domesticus									3,72		3,5 9
III phalanx	sus domesticus									3,27		2,9 8

pelvis	sus scrofa						4,48	3,72				
II phalanx	sus scrofa		2,16		1,91							
III phalanx	sus scrofa								1,69			4,26
III phalanx	sus scrofa									4,18		3,93
III metatarsal	sus scrofa	10,28	2,11	2,06							9,98	
IV metatarsal	sus scrofa	11,2	2,04	1,37							10,32	
metatarsal	sus scrofa		1,9									
radius	sus scrofa			3,7								

Table 6 List of measurements of pig remains (following Von Den Driesch.

5.5.5.3. Cattle, dog and wild taxa

A further domestic species, cow, and some of the main wild taxa which were the object of hunting still in the second millennium BC, such as red deer, wild boar and roe deer, complimented the diet and subsistence economy of Mora Cavorso's BA people. Also hare and other small mammals had the same function, while for the martens, badgers, foxes and wild cat the cause of their presence could be variously explained (and include complementary reasons): firstly, a casual, non-anthropic introduction of the scarce remains. Secondly, the occurrence of defensive hunting activities (documented also by the presence of at least two dogs). In fact, the herders must have had to protect the flocks from the assault of wild carnivores. Another reason for the recovery of minor species is the exploitation of fur. Finally, this kind of non-specialised hunting could have been related to the extreme need of meat in conditions of emergency or could have simply been of opportunistic nature.

Contrary to the most common opinion, the presence of cattle does not directly imply a sedentary or agricultural component in the subsistence economy. However, in this particular case, the identification of at least one individual of senile age leads to hypothesise its exploitation for ploughing activities in the few cultivable areas of the vicinity. This animal could have also been used post-mortem for meat consumption and the production of leather. Not many cut marks have been identified amongst the few adult animal bones, and these logically result to be more frequent between the wild species, which reach more often the adult age. The most typical traces have been found on several boar metapodials (Fig.24), indicating that the disarticulation related to the process of skinning (Lyman 1987) might have happened inside the cave. As for the cattle, for example, almost only a circumscribed group of toes and some jaws have been found, leading to think that the butchering operations were carried out outside the cave, and that maybe the skin with the attached phalanges and mandibles was then brought inside. These bones were recovered in the area of the maximum concentration of human remains, which leads me to hypothesise that the skin might have constituted the blanket or the bed of the dead.

Body Part	**Taxon**	**GL**	**Dl**	**Bd**	**Bp**	**SD**	**Dp**	**BFp**	**SD**	**CD**	9	11	15b	15c
femur	*bos taurus*					2,42								
femur	*bos taurus*			7,1										
I phalanx	*bos taurus*			2,86										
I phalanx	*bos taurus*				3,54	2,83	3,7	3,26						
I phalanx	*bos taurus*	6,16			3,9	3,24	4,16	3,57						
II phalanx	*bos taurus*	4,14		3,09	3,51	2,9								
II phalanx	*bos taurus*	4,22		2,66	3,1	2,65								
II phalanx	*bos taurus*	4,15		2,85	3,38	2,95								
II phalanx	*bos taurus*	4,08		2,85	3,38	2,81								
II phalanx	*bos taurus*	4,03		2,91	3,32	3								
III phalanx	*bos taurus*		6,72						9,22					
III phalanx	*bos taurus*		7,1						S9,36					
mandible	*bos taurus*										45,1 mm	32,8 mm	35 mm	30,9 mm
tibia	*bos taurus*			5,5		4,44				2,97				

Body Part	**Taxon**	**SD**	**GL**	**MBS**	**Bp**	**Bd**	**LD**	**LDS**	**Gb**	**L**	**B**

I phalanx	*capreolus capreolus*	0,83	4,05		1,21	1,03					
II phalanx	*capreolus capreolus*	0,91	2,79		1,16	0,75					
II phalanx	*capreolus capreolus*	0,94	2,73		1,01	0,81					
III phalanx	*capreolus capreolus*						2,45	2,51			
I phalanx	*cervus elaphus*	1,6				1,78					
I phalanx	*cervus elaphus*	1,58	5,56		1,95	1,85					
II phalanx	*cervus elaphus*	1,53	4,5		2,14	1,73					
II phalanx	*cervus elaphus*	1,46	4,35		2,06	1,52					
III phalanx	*cervus elaphus*			MB 1,455			4,66	4,77			
lowe m3 sx	*cervus elaphus*									2,96	1,32
patella	*cervus elaphus*		4,67						3,16		
patella	*cervus elaphus*		5,2						3,72		

Body Part	**Taxon**	**GL**	**Bd**	**Bt**	**Bp**	**SD**	**SDO**	**LO**	**DPA**	**Gb**
metapodial	*felis silvestris*	5,67	0,58		0,75	0,41				
humerus	*felis silvestris*		1,32	1,72		0,71				
radius	*felis silvestris*	8,83	1,28		0,68	0,58				
ulna	*felis silvestris*						0,96		1,28	
Humerus	*lutra lutra*					0,5				
humerus	*martes sp.*	7,09	1,28	1,23	1,23	0,46				
Ulna	*martes sp.*	6,97					0,78	0,75	1,12	
calcaneus	*vulpes vulpes*									1,12
Femur	*vulpes vulpes*				2,1	0,9				

Table 7 List of measurements of cattle (top), cervids (middle) and carnivores (bottom), (Von Den Driesch 1976.)

5.5.5.4. Ritual aspects

However, the most relevant information coming from the analysis of the faunal assemblage are related to the ritual sphere. As already mentioned, the most evident feature of the zooarchaeological record consists of the exceptionally high percentage of sub-juvenile domestic individuals, especially ovicaprines and swine (see Fig. 38; Table 8).

		F/N	YY	Y	Y/A	A	TOT
Sheep/Goat	Lay.1	5	3	4	2	3	**17**
Sheep/Goat	Lay.2	4	3	2		1	**10**
Sheep/Goat	Mixed	3	3	2	1	1	**10**
Sheep/Goat	**MBA**	**12**	**9**	**8**	**3**	**5**	**37**
Pig	Lay.1	6	2	1		1	**10**
Pig	Lay.2	2	1		1		**4**
Pig	Mixed	3		1	1		**5**
Pig	**MBA**	**11**	**3**	**2**	**2**	**1**	**19**
Cattle	Lay.1		1	1		1	**3**
Cattle	Lay.2		1		1	1	**3**
Cattle	mixed					1	**1**
Cattle	**MBA**		**2**	**1**	**1**	**3**	**7**

Table 8 Minimum Number of Individuals (MNI) of the main domestic species, divided by context and age class.

These bones have been found in a specific area, between the innermost part of the entrance and the beginning of the slope, along the W side of the sounding D, in the same location of the human remains and also next to the pit 'B'. These elements would already lead to interpret the deposit as ritual. By adding the fact that an early slaughtering of both lamb\kids and piglets is not economically profitable, the conclusion is that the ritual nature of the deposition cannot be denied. Moreover, both in other burial cave contexts and in non-burial cult caves, the deposition of domestic newborns is a known practice (e.g. at Grotta Sant'Angelo sulla Montagna dei Fiori, Grotta dei Cocci, Grotticella XIII di Sorgenti della Nova) (Silvestri et al. in press b). Such offerings might testify the occurrence of rituals undertaken either in the occasion of the death of a member of the community, or independently from this. It is difficult to establish if these ritual actions had been undertaken contemporaneously or separately. In fact, even if we often identify a combination of such practices in the same site, it is not rare to find cases of caves with no trace of burial rituals, but with clear examples of perinatal animal sacrifices (e.g. Grotta Bella, Grotta 10 di Sorgenti della Nova) and vice versa (Silvestri et al. in press b). If a re-analysis of the age classes of the faunal assemblages from all the burial caves excavated between 1940 and 1980 was possible, maybe this cult marker would emerge even more frequently in funerary contexts.

5.5.5.5. *Spatial patterns and chronological sequence*

Analysing the density and quality of the finds in the two horizons, as well as re-examining the distribution of the crust which determined their division, it emerged that only the sub-horizontal levels of the sounding B1, in the innermost part of the entrance chamber, and the south-western portion of the sounding D in the tunnel, were to be considered as undisturbed primary deposits. Or better still, they were in a rather disordered situation which, however, originated already during the Bronze Age. In fact, despite the presence of two preserved pits in these areas, the distribution of the archaeological finds (both artefacts and ecofacts) appeared to be chaotic; moreover, the remains consisted mostly in scattered fragments and discards

It is now clear that the karst veils were homogenously present only at the beginning of the slope (sounding D), whilst they became more and more sporadic towards the end. Therefore, the relative chronology built up in relation to this marker, not being confirmed by any relevant typological difference in the two horizons or by any radiometric date, is to be kept as valid only for the southern, upper part of the MBA deposit. The northern side, located at a lower level (about 5 m below the sounding B1 and the beginning of the sounding D), seems to represent only a confused accumulation of remains coming from the upper sequence of horizons.

The quantity of finds coming from the second horizon has thus been reconsidered in the light of the last inferences. Eventually, only a very scarce presence of pottery and faunal remains, and probably a complete absence of human bones, has been recognised. Conversely, the majority of finds have been attributed or re-attributed to the first horizon: this should be contemporary to the pits, to the deposition of the dead and to the animal offerings. In conclusion, the second horizon results to be a problematic context which probably held the most ancient testimonies of a sporadic human frequentation during the Bronze Age. Such frequentation became much more intense after an undetermined period of time, corresponding to the formation of the crust, and left the most of its testimonies in the more superficial and recent 'Horizon 1'.

5.5.6. *What were the most likely uses of this cave?*

Mora Cavorso has provided much information suitable to contribute to its interpretation for the middle Bronze Age. Unfortunately, those related to the more domestic component might have been removed for good with the flock's dung in recent times (Rolfo et al. 2013a). Therefore, we do not know for sure if the entrance of the cave, so spacious, comfortable and bright, could have served as a proper stable, shelter, refuge, and working area already in the 2nd millennium BC. This kind of use is testified for the 19th and 20th centuries, and can be hypothesised also for the more extensively preserved contexts of the Neolithic, which held a greater number of adult animal bones, no human remains (excluding those in the inner rooms), more lithic and bone tools and some hearths, and whose evidence reached also the area of the entrance where the light has still access. Guidi (1992) states that the main activities carried out by BA communities must have occurred at the cave entrances, and that what we often find in the narrower bottoms and in the tunnels is only the result of discards and landslides. I partially agree with this assumption, first of all because I do believe that some traces would have necessarily been left by those communities in the most liveable area of the cave; secondly, because I uphold Bradley's (2005) ideas that domesticity and cult cannot be fully separated, both under a conceptual and a practical point of view. However, the only material elements that we still have at our disposal to interpret the BA context of Mora Cavorso, lie in the darkest area of the site. Moreover, the scarce quantity of ceramic sherds, from a peripheral area of the cave, does not seem to suit a domestic use of the locale. The few lithic and bone tools confirm this impression, which is nevertheless distorted by the serious gap of the stratigraphy at the entrance. One good last chance to shed light on the domestic use of the cave, however, could be provided by soil thin sections, which will be carried out in the near future. Micromorphology of the last existing stratigraphic profiles (along the chamber's walls) might be able to answer this controversial question.

With regards to the currently interpretable elements of the deposit, these seem to be related, on the one hand, to a funerary use, testified - more clearly in this cave than in many others - by a primary burial; on the other hand, the archaeological evidence suggests a related cult utilisation of the site, which given the closeness to the human remains, could be somehow associated to the funeral or to the commemoration of the dead. However, the fertility-related nature of such rituals is arguable. Maybe the fact that the bones belonged to an adult woman is a coincidence or a pretext: but the sacrifice of numerous newborns and the potential deposition of storage vases with a lost content, as well as the act of digging pits in the earth, are likely to be aimed at propitiating the nature.

5.5.7. What was the frequency and intensity of occupation?

According to the combination of zooarchaeological information, artefacts' density/types and stratigraphic data, the cave does not seem to have been frequented for long periods. The ceramic finds, a good marker to identify the intensity of anthropic occupation on proto-historical sites, are only 600 (considering also the over 400 fragments less than 5 cm wide); the same figure applies to the animal bones, which are nevertheless represented by a high minimum number of individuals (74). Conversely, the relatively numerous human bones found belong to one individual only. Finally, in the limited space of 35m² and a 70 cm thick-stratigraphy, two pit structures were recovered. Therefore, it seems that the overall degree of anthropisation was low at Mora Cavorso, because of the low absolute figure of remains found; on the other hand, it can be assumed that these sporadic frequentations implied intense activities of a specialised nature (i.e. animal sacrifices, scarce use of pottery, pits digging and depositions). Excluding that a single community could afford a simultaneous sacrifice of several dozens of flock's components, it is likely that the cave had been the object of a repeated frequentation. This is also supported by the existence of a karst veil, which separated two different moments of the Middle Bronze Age occupation in the sounding D and thus cannot have been formed during a single episode of use. This view is in line with the interpretation of the site as a stop of the small scale transhumance (Barker 1991; Greenfield 2006) along the Apennines' passes. The analysis of the ages of death, related not only to the domestic species but also, significantly, to the wild ones, revealed a large number of young individuals in the zooarchaeological record. This evidence, assuming that most of the births occurred between spring and summer, suggests that the cave was used by BA communities during the warm season. Such inference, again, suits perfectly with the transhumance theory. This implies that the communities and their flocks move from the uplands to the lowlands according to the succession of seasons; in the process, they usually stop throughout the way in predetermined and recurring sites (often caves and rock shelters) to find rest and to carry out other activities, which can be more or less mundane.

5.6. The cave in the archaeological landscape

5.6.1. The Upper Aniene Valley and the Simbruini Mountains

The Simbruini Mountains around the Upper Aniene Valley are characterised by the presence of an extensive karst complex, which counts at least 40 caves. Such caves are rather hidden in the woodland environment, which is still predominant and is now officially protected by the institution of a Regional Park. The ecosystem is still basically unspoilt, wild fauna is abundant and the forests are extensive. Only small villages of few hundred people are present in the territory, most of which still were shepherds until four-five decades ago (Rolfo et al. 2012b). This bucolic picture is completed by the Aniene River, which runs through the valley giving birth to rapids and waterfalls. A cave located in such a relatively isolated landscape, with easy access to water and a strategic position along a possible transhumance path, was certainly suitable to different kinds of human occupation. Mora Cavorso Cave was chosen as a cult and burial site at least since the Neolithic age, but it is also likely that this site was not the only one used for the purpose. Therefore, surveys of the other caves should be undertaken, in order to contextualise the site of Mora Cavorso.

5.6.2. Relation with other sites

Field surveys in the surrounding caves have started to be undertaken, even if only informally. However, a more systematic attempt has been recently carried out by Mr. Emanuele Cappa (one of the spelaeologists who found Mora Cavorso Cave) for his BA dissertation (Cappa 2012). He discovered interesting deposits of prehistoric pottery (generic coarse ware dated to the Bronze Age) and bones in at least two of these caves, Grotta ai Piedi di Monte Porcaro and Grotta Grande ai Balzi dello Sportellone, which now are waiting to be extensively investigated (Fig. 41). It is true that the geomorphological features of the micro-region make very difficult the process of surveying: a steep and densely forested territory does not offer many chances to find prehistoric remains, especially if one is looking for open-air settlements. In fact, the only known evidences of pre-protohistoric human presence in the area apart from the caves, consist of a sporadic MBA bronze sword (now lost) found during some building operations in Jenne and a possible Late Bronze Age settlement on top of the Monte Altuino hill (Fig. 39) (Belardelli et al. 2007).

Some systematic surveys were carried out in the close Middle Aniene Valley (about 30-70 km from Jenne) (Fig. 40) during the 1980s and 90s (Festuccia & Zabotti 1992), revealing the existence of human frequentations or open sites and caves during the Middle Bronze Age (e.g. at Forma Foce Reale, Il Barco, Grotta Morritana, close to the village of Rocca Canterano) (Belardelli et al. 2007). Except for the material assemblage of Grotta Morritana, a cave which held 7 bronze axes and an intact bowl, the other deposits are scarce and difficult to interpret. However, they allow to produce a starting archaeological cartography aimed at tracing the human presence in the Aniene Valley during the Bronze Age. In order to improve our knowledge of the landscape of Upper Aniene Valley, a GIS predictive model will be soon produced, aimed to identify target sites in the surroundings that could have been occupied by prehistoric communities.

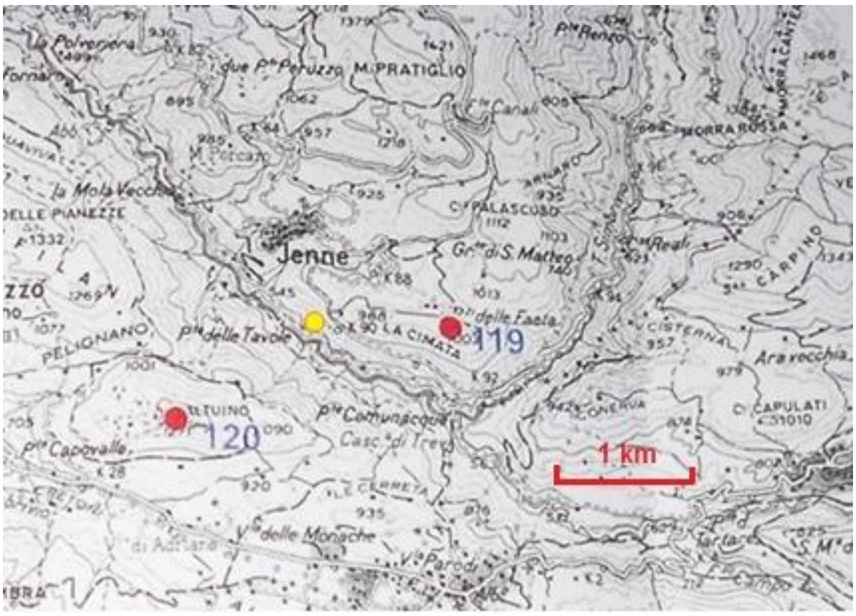


Fig. 39 Site of provenience of the MBA sword found in locality Monte Sant'Antonio (red dot, n. 119) and location of the possible Late Bronze Age settlement on top of Monte Altuino (red dot, n. 120) (after Belardelli et al. 2007, attached map). The yellow dot indicates the location of Mora Cavorso Cave. Scale: 1:50000.

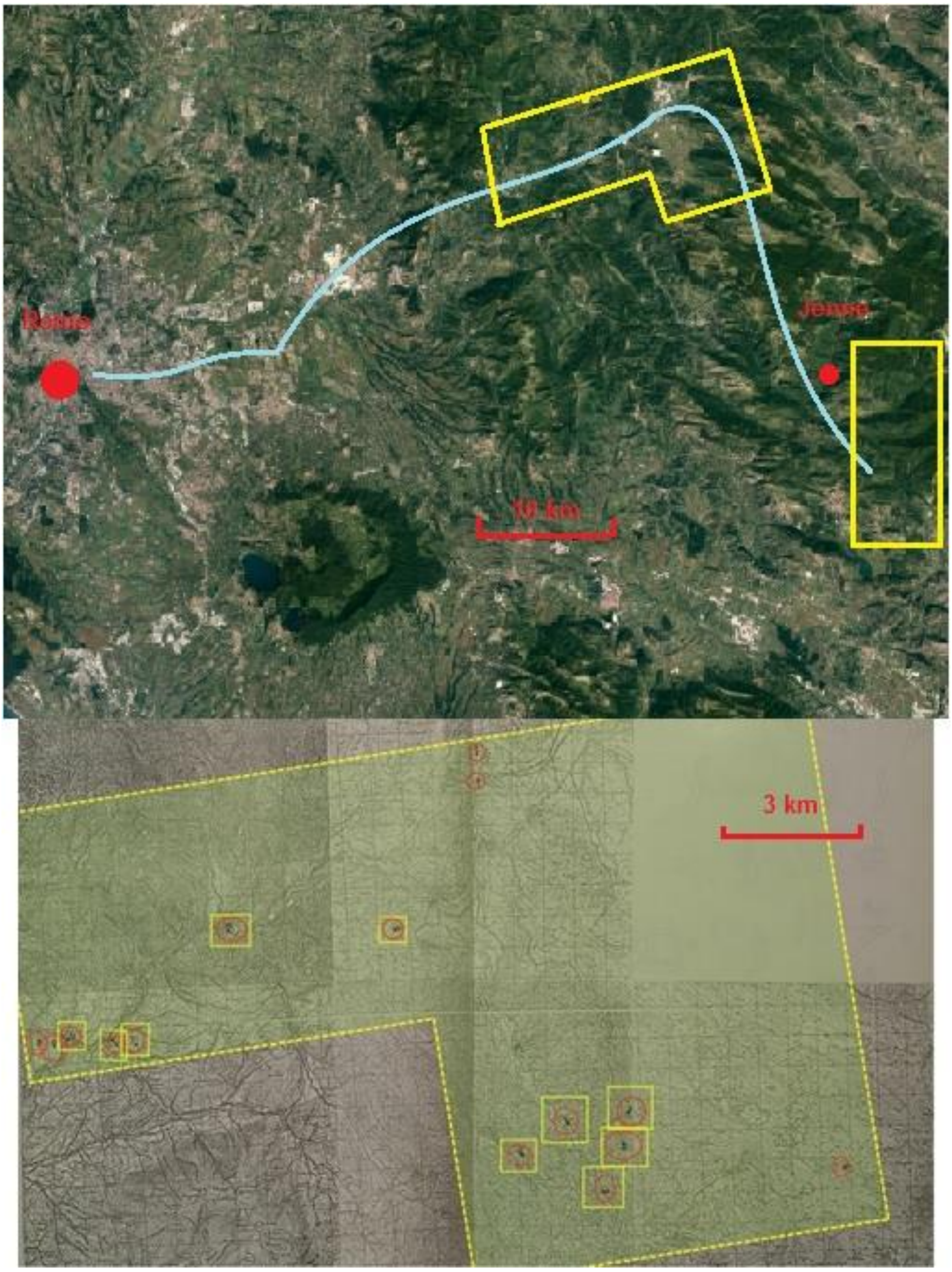


Fig. 40 Area of the survey in the Middle Aniene Valley by Festuccia and Zabotti (1992, tav. XXIV-b, slightly modified); in the lower figure, the red circles represent the prehistoric remains found; the areas surrounded also by a yellow square are dated to the Bronze Age.

5.7. Experiences

Caves are often considered as liminal places, bearing symbolic values, because of the immediate sense of "otherworld" that one experiences when entering them (Whitehouse 1992). However, every cave is different. Their shape, location, inner and externals feature influence the emotions and perceptions that man can feel into caves. Furthermore, these sensations are emphasised or mitigated on the basis of one's personal fears and sensitivity, knowledge of the site and psycho-physical state.

If, as the majority of scholarship agrees, at least a very general commonality of emotional perception is to be attributed to mankind (Tarlow 2000), some tentative inferences can be made about the past perception and subsequent use of Mora Cavorso Cave.

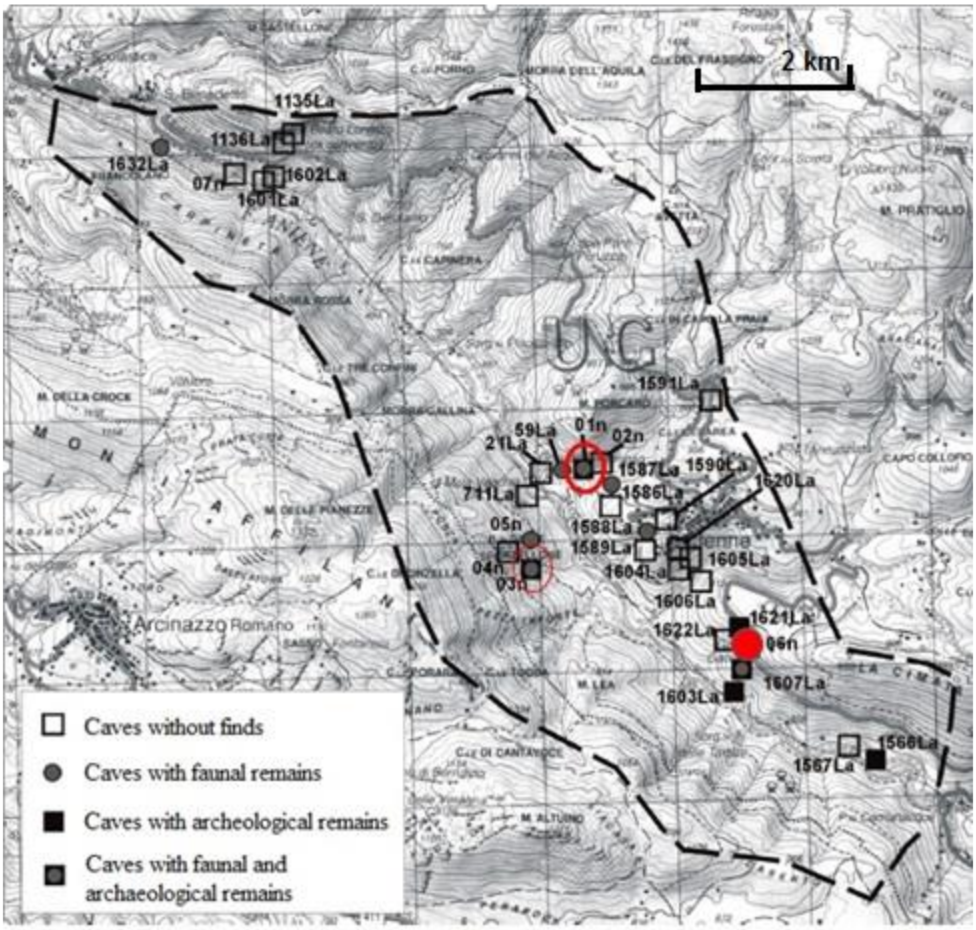


Fig. 41 The caves and shelters surveyed by Emanuele Cappa (slightly modified after Cappa 2012, cartina 2). The red circles indicate the caves which contained Bronze Age pottery (Grotta ai Piedi di Monte Porcaro, NE, and Grotta Grande ai Balzi dello Sportellone, SW). The full red dot indicates the location of Mora Cavorso. (IGM series 50, F°376, Subiaco).

Much could be said about the sensorial experience, perception and use of the site during the Neolithic. In this period, some members of the community chose to carry 23 dead corpses along a narrow, dark and painful 30-meter-long tunnel. Such a hard task was undertaken for a precise reason, which is well summarised by the liberating exclamation of a visitor of the cave: “This really seemed a *reversed childbirth* to me”[3]. In this case it is worth daring to assume that those bodies were really intended to be

[3] Dr. Robin Skeates, August 2013

given back to the Earth's motherly womb (Fig. 42). This way, in addition, the mourners could symbolically overcome their grief, passing backwards through a proper liminal place and therefore living a metaphorical re-birth.

Fig. 42 Reconstruction of the burial activities undertaken at Mora Cavorso during the Neolithic (after Rolfo & Benetti 2012: 78).

This is not the case of Bronze Age Mora Cavorso. Only one burial was found in the cave, and it is very likely that the memory of the inner tunnels and chambers had been already lost. The passage to the second room was probably already blocked, since not even a single proto-historical object has been found there. The dead woman was located, however, in a very specific part of the cave, i.e. in the innermost part of the entrance.

This area was certainly not so difficult to access as the Neolithic burial area, but still it was already narrow, partly surrounded by a tunnel and mostly dark (Fig. 43). Once again, this cannot be considered a casual choice or a coincidence. In recent times, a shepherd who lived in the cave for three years and sheltered his flocks in it for about 30 years, admitted that he never dared approach the innermost part of the cave. Despite his long-lasting knowledge and experience of the site, he was still unwilling to explore what was the darkest part of a well illuminated entrance, ignoring completely the existence of further ducts over the bottom of it. Therefore, even if much more exposed than the inner rooms, the innermost part of the entrance chamber might still have conveyed an idea of liminality, representing the passage to the dark, the unknown and thus to the “Netherworld”.

Fig. 43 The passage between light and darkness, in the innermost part of the entrance chamber of Mora Cavorso. This particular area was used as a cult and burial location during the Middle Bronze Age.

Micromorphological analyses of the surviving profiles might be able to reveal more details about the possible domestic use of the cave, as a pen or a dwelling (like it was recently done for Grotta Sant’Angelo and Grotta dei Piccioni (Iaconis & Boschian 2008), in what was and still is the best-lighted and most comfortable sector of the site. Generally speaking, the appearance of Mora Cavorso’s entrance does not impact significantly on one’s emotions, because of the lack of impressive natural formations and the relatively small size of the room. However, a woman was buried - and significant rituals were performed - in it. This implies that the site was not perceived – or not entirely perceived – as a domestic one. In particular, the innermost part of it, where the light is replaced by the dark, was chosen as the place for a grave and for other ritual depositions. Despite the current impossibility to demonstrate whether the very entrance of the cave had been the object of non-domestic activities, it is possible to hypothesise that it was not. Mora Cavorso is located along a transhumance route (still used up until recent times), and it is likely to have been primarily used as a shelter for flocks. It might have been chosen as a ritual and burial site precisely because of its domestic role (Bradley 2005), but this secondary feature is unfortunately the only one that survived until the present present day.

In conclusion, not only did the analysis of ecofacts from Mora Cavorso help identify the (predictable) mainly pastoral economy of the BA community who frequented the cave. It casted light on aspects that overcome such general inferences: on a more mundane perspective, it allowed to identify the frequency and intensity of the human occupation at the site, where artefacts and stratigraphy could not be much useful. The zooarchaeological study (in particular, the analysis of the age classes of wild species rather than of the domesticates) also helped understand that this irregular frequentation was most likely seasonal and possibly related to a short\medium distance transhumance, involving the site during the warm part of the year. Under a more interpretive perspective, the analyses of the faunal assemblage led to improve the understanding of the cave use. Mora Cavorso could have appeared just as a minor burial site, holding a single inhumation with no particular characteristics and nothing more than a few artefacts. The site could have seemed as a fortuitous but convenient place to deposit a deceased member of the community, during the journey to the Tyrrhenian plains. The peculiar pattern showed by the animal bones, instead, indicated a reiteration of the cult – perhaps even unrelated to the burial - which testifies to the cave being a predetermined destination with a strong symbolic value. The specific nature of this value, together with that of the other case studies, will be explored in context in the discussion chapter.

CHAPTER 6 - THE MIDDLE BRONZE AGE OF GROTTA DI PASTENA

6.1. Introduction: aims and methodology

This chapter takes into consideration the second of three case studies, the Grotta del Pertuso di Pastena, i.e. another cave located in the Southern Lazio micro-region. I will highlight the peculiarities of this archaeological site according to its location in the landscape, physical features and mode of human occupation. This will demonstrate the distinctiveness of the cave in the wider context of the Bronze Age cave sites of Central Italy. Such archaeological sites have often been simplistically unified under the generic definition of "cult/burial caves" (Guidi 1992, Cocchi Genick 1999; 2002), without considering the specificities of each site. By analysing the results of 3 recent excavation campaigns that I helped to organise and undertake, I aim to describe the features of this cave site in the most exhaustive way. This, and the combination with previous data from older investigations, will allow me to shed light on the specific uses of the site during the Bronze Age. In particular, I intend to:

- clarify the intensity, duration and periodicity of human occupation at the cave;
- contextualise the frequentation of the cave in the wider landscape;
- identify the types of activities that the BA communities carried out at the site.

My main tool to achieve these goals will be the analysis of the ecofacts (especially animal bones and botanical finds), combined with a general overview of the artefacts, structures, stratigraphy, speleothems and natural\cultural landscape of Pastena Cave. Drawing on the preliminary conclusions of this and the other case-study chapters, I will then reconstruct, analyse and discuss the human behaviours and cultural processes lying behind the material remains found at the sites.

6.2. Background

6.2.1. Description of the cave and the archeological chambers

The "Il Pertuso", "Chiavica dell'Acqua" or "San Cataldo" Cave, now best known as "Pastena Cave", opens in the Cretacean limestones of the Monte Lamia-San Cataldo, which is part of the karst valley (*polje*) of Pastena, at 196 m. above the sea level. The mountain rises up between two main depressions, one of which was occupied by a lake basin up until the 18th century (Seuterio 1730) and is located 4.5 kilometres from the village of Pastena. The entrance of the cave, discovered for the first time in 1926 by Baron Carlo Franchetti, is 20 metres ca. high and 25 ca. wide, with a magnificent 80-metre-long entrance chamber (Angle et al. 2014; 2010; Biddittu et al. 2006; 2007) (Fig. 44).

During the rainiest periods, the Rio Mastro seasonal creek goes through the entrance chamber after running 5 km from its springs, penetrates in the subsoil and emerges again at the locality of Obbuco at Falvaterra.

Fig. 44 Entrance of Grotta di Pastena.

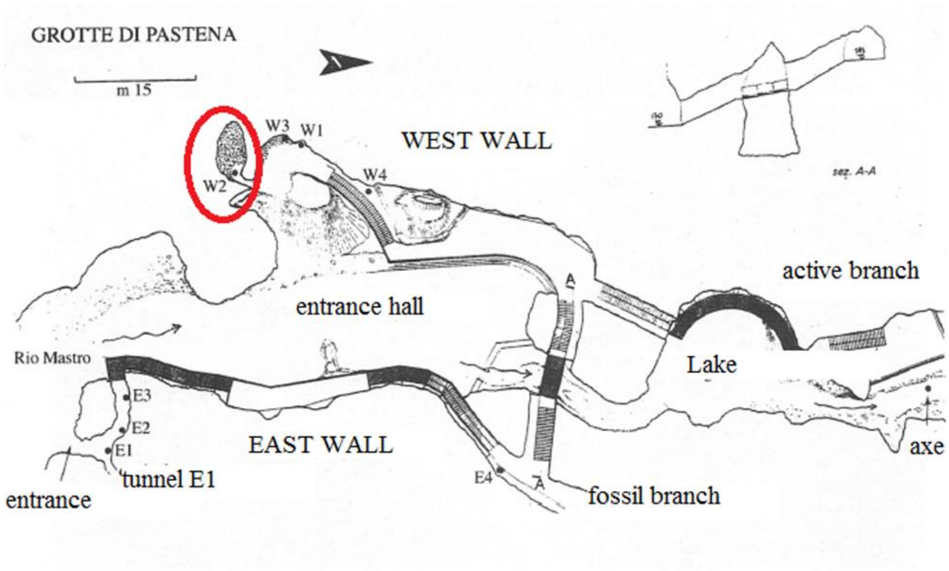


Fig. 45 Plan of Grotta di Pastena. The red dot highlights the Grotticella W2 (after Angle et al. 2014, fig. 2).

The morphology of the cave, structured in two different levels, shows that the creek once had to go through a higher path for at least 880 metres (Fig. 45). This fossil branch today constitutes a tourist route (the cave has been a tourist site since 1927) and is characterised by the presence of different, fascinating limestone formations such as stalactites and stalagmites of various types. One of the widest chambers, inaccessible until an artificial opening was made in the 20th century, holds a basin formed by the waters of the Rio Mastro. Local archaeology enthusiasts recovered a MBA bronze axe and a MBA bronze dagger from this lake. They assumed that those weapons were deposited there for ritual purposes, by warrior males of the community (Biddittu 1987). Although an intentional deposition in the waters of the creek (not in the underground basin) cannot be excluded, the hypothesis of Biddittu is no longer to be upheld: the thick limestone wall, that divided the chamber of the lake from the entrance, was only breached few decades ago for touristic purposes.

6.2.2. History of studies

After some sporadic gatherings of material remains, started in the 1940s (Guareschi & Morandini 1943; Segre 1946; 1948;), the survey undertaken in the 1980s by Biddittu and Guidi (Biddittu 1987) was the first scientific attempt to identify the archaeological use of the cave. It became clear that the waters of the Rio Mastro, on the one hand, and the construction of the tourist route on the other, had destroyed the majority of the archaeological deposits at the site. Therefore, a systematic research plan was felt necessary, in order to rescue the few still intact sectors of the site and to clarify the archaeological relevance of the cave. This resulted in a first excavation campaign, led by the University of Perugia and directed by Carancini in 2001 (Biddittu et al. 2006; 2007). Several areas with traces of prehistoric human frequentation were identified, ranging from the Neolithic to the Bronze Age. Subsequently, new scientific fieldwork was undertaken in 2008 (Angle et al. 2010a) by the Soprintendenza per i Beni Archeologici del Lazio, on the occasion of maintenance works that needed archaeological surveillance. During this excavation campaign no further areas of human occupation were uncovered, and the archaeologists continued the investigation of the sectors highlighted by the group of Carancini. The trends identified in the early 2000s were confirmed: the cave was mainly used for human burials during the Neolithic period, whereas the Bronze Age seemed to have seen a more complex type of frequentation, combining different kinds of cult and burial practices. One of the tunnels located on the east side of the entrance chamber, for example, revealed the presence of a partial but articulated human skeleton (Fig.46), dated to the MBA (according to the ceramic remains found in the area); a small sector in the W wall, instead, held heaps of burnt crops, a spindle whorl and a possible overturned vessel, again dated to the MBA, which suggested a specific agricultural ritual; finally, the lake had two MBA bronze weapons lying in it (Fig. 47), very preliminarily interpreted as evidence of a possible male\war-related cult by Biddittu (1987). However, the areas investigated were limited in space and likely to have been affected by several post-depositional events of human and non-human nature. Therefore, such partial yet thorough analyses could provide only very general information about the anthropisation of the cave during the later prehistory.

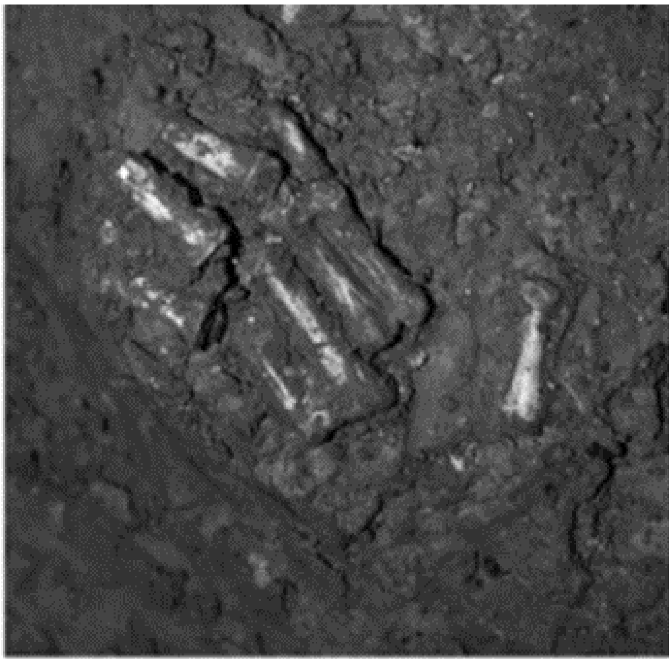


Fig. 46 Human hand in skeletal connection from area E1, possibly dated between Neolithic and Middle Bronze Age (after Angle et al. 2010, fig. 5).

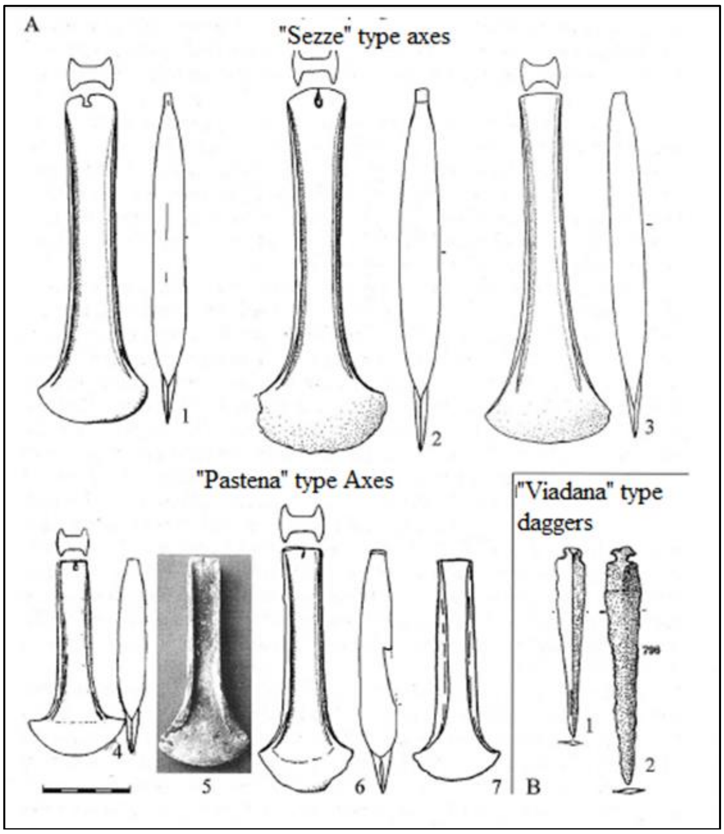


Fig. 47 Drawings and typological comparisons of the bronze axe (A4) and dagger (B1) found in the lake at Pastena Cave (after Biddittu et al. 2007, fig. 2).

For this reason, in the context of a renewed interest in the archaeological caves of Southern Lazio - stimulated also by the start of my PhD- the Soprintendenza decided to resume the investigations at Pastena Cave (Angle et al. 2014). This third research project was designed to be more long-term and systematic, and to involve also the planning of landscape surveys and the exploration\excavation of other caves. The scientific direction of the research was entrusted to the University of Rome-Tor Vergata (represented by Prof. Mario F. Rolfo) and included Durham University through my direct involvement. The investigations started in the summer 2012 and fieldwork has taken place every summer since then. The main area for the research was never excavated before: it is a small chamber located at about 20 m. above the base of the cave, within the west wall of the entrance chamber, 20 m² ca. wide. This chamber is known as "Grotticella W2". Preliminary soundings of an adjacent area were undertaken in 2001 and 2008, but this room was left untouched. This was because the Soprintendenza felt that such an undisturbed and relatively wide archaeological area needed to be investigated on the occasion of a longer-term research project.

6.3. Pastena Cave in the Bronze Age

6.3.1. Description of the chamber and stratigraphy

The archaeological deposit of the Grotticella W2 is distributed on two levels (Fig. 48). The first one consists of the current floor level, sloping with three natural drops from west to east, towards the entrance, and about 5x5 m wide. The second level of the deposit lies on two natural terraces about 2 m higher than the floor, located on the north-east side of it and divided by a thick stalagmitic column (Fig. 49). A small natural window through the western terrace overlooks the entrance chamber. It is likely, even if not proved, that these terraces were more extensive in the BA. There are traces of rock collapses in the area below the present borders of the terraces, and some residues of thin crusts can still be seen along the entire perimeter of the Grotticella, at the same level of those natural structures. Such locales are now accessible through mobile ladders and scaffoldings only. Therefore, it could be hypothesised that a different entrance, or that a more comfortable path, was once available to the BA occupants of the cave. However, no traces of severe rock collapses were found to testify to this argument. Conversely, there is plenty of evidence that this area was sacred and that therefore particular efforts might have been put in building ladders or other structures to connect the two levels.

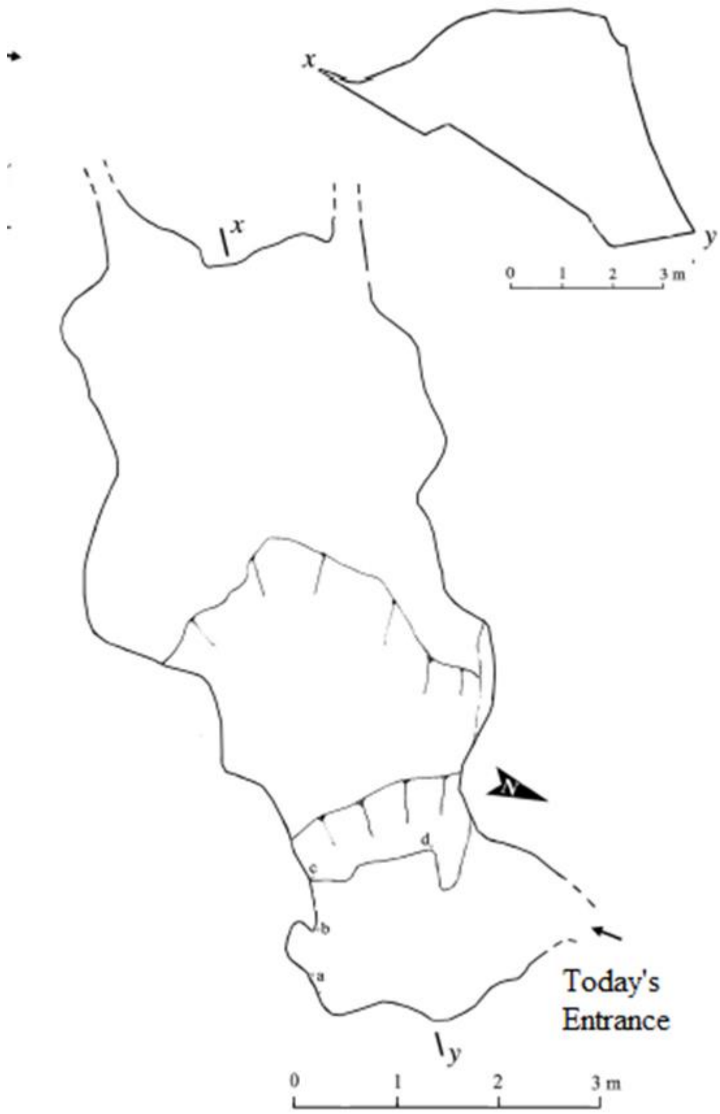


Fig. 48 Plan of the Grotticella W2.

The Grotticella W2 did not suffer from as many post-depositional processes as most of the other areas investigated. Its location at a high level prevented the chamber from getting cyclically and severely flooded by the waters of the Rio Mastro, so that the palaeosol appeared extraordinarily well preserved at the time of its discovery. However, it was covered by a thick layer (about 1 metre) of sterile or almost sterile fluvial silts: this means that the chamber still did not escape some episodes of flooding, but these must not have been too violent and frequent at that altitude, as many features and remains have been found here in primary contexts. Unfortunately, further information about the geomorphology and pedology of the chamber is still missing, which prevents a full understanding of the processes of formation (and occupation) of the site. However, much can be detected from the stratigraphic and artefactual data coming from the excavation.

Before the start of the systematic investigations, the chamber had become a nest for pigeons, which covered the whole area with thick heaps of their feathers, dung, eggs, residues of nests and bones of the dead individuals. Even after having reclaimed the area, however, the incidence of avifaunal remains stayed very high in the most superficial contexts identified. Following this, a few World War II remains were recovered (a button and a shoe sole): during the Retreat of Cassino (1944) the Pastena Cave was used as a command centre by the Germans and a shelter by the local villagers, and that chamber would have made an ideal refuge. Next comes the already mentioned thick layer of sterile soil. Subsequently, thin layers (5 cm) of mixed wheel-made pottery of the Archaic period (7^{th}–6^{th} century BC) and Bronze Age pottery were recorded. Traces of combustion (mainly charcoals) were already identifiable in these contexts. Although this is a peculiar feature of the deeper proto-historic layers, it cannot be excluded that these charcoals resulted from an episodic Archaic frequentation: the access to the Grotticella always needed the use of artificial lights. After these mixed layers, however, the proper BA frequentation level became evident, with no further residues from later periods. The BA occupation of the chamber did not appear stratigraphically impressive in terms of thickness (so far, a maximum 25 cm-deep deposit has been identified), but very complex and interesting from various points of view.

The MBA contexts of this chamber are currently dated only on a typological basis, mainly through the pottery found, and have not been fully investigated. However, the preservation of the deposit seems to be ensured by the sealing silt layers on its top and by the limestone veils on the basis, making the dating sufficiently reliable. Overall, the stratigraphic integrity of the deposit seems good, except for the most sloping part of the chamber's basal level, which is irremediably affected by the gradient (Fig. 48). This slope is due to a limestone crust, which emerges at the top west side of the chamber and drops almost vertically twice, forming three virtual south-north belts in the area. The deposit is thicker in correspondence to the most sub-horizontal parts of the floor. Here, the contexts show an evident pattern, i.e. the recurrence of alternating burnt and paved layers (Fig.49). This succession is more manifest in the intermediate and best preserved belt of the area, which is the most horizontal one, but it can also be traced in the more disturbed zone next to the entrance slope. So far, at least four main contexts of this nature have been detected in a regular sequence. They consist of wide areas of thin but clearly visible layers of burnt crops and charcoals, covering pavements made of small-medium sized stones. These, in turn, cover other thin burnt layers, under which we found further stone pavings. Areas of reddish soil and proper hearths have also been identified, as well as a small pit and, possibly, the remains of a standing stone structure, that will all be described more in detail in paragraph 6.4.1.

The terrace level presents a similar but less complex situation. On the western part, we only saw a 10 cm deep succession of thin layers of burnt seeds and charcoals with thin layers of sterile soil. These terminated on the karst surface of the terrace, which itself appeared burnt. The eastern terrace presented the same succession, but terminated instead on a proper stone pavement, made of thin pieces of crust and flat stones. The soil deposit lying under this has not been excavated for safety reasons.

6.4 Structures

6.4.1. Stone floors and structures

As already mentioned, one of the most remarkable archaeological features of this chamber consists of the stone floors which can be found in it. This is not a typical element of BA caves and so far it seems to be the only example recorded. Three different types of pavements at different stages of preservation have been identified. On the floor level, two small-sized (5 to 10 cm diameter) stone pavings, separated by thin layers of burnt plant material, have been identified covering the whole surface of the sub-horizontal part of the chamber (Fig. 50). The sloping sector closest to the entrance still has traces of such structures, which unfortunately have been affected by landslide events and are less recognizable.

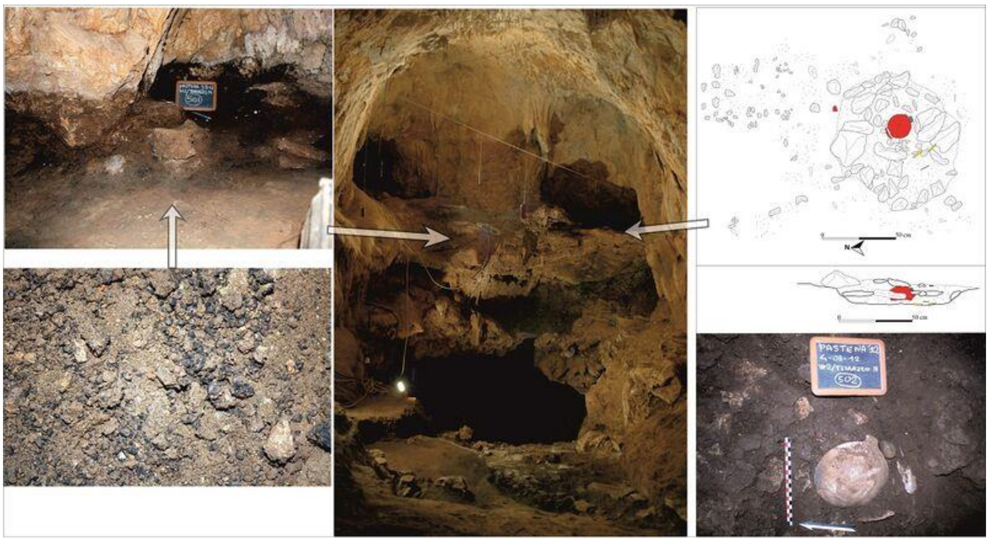


Fig. 49 The Grotticella W2 with its terraces; top left: the terrace; bottom left: detail of the burnt seeds; right: drawing (top) and photo (bottom) of the stone pavement with the overturned bowl (after Silvestri et al. in press c).

In the southern part of the sub-horizontal level, the floor is made of bigger flat stones (10 to 30 cm diameter) and is apparently built up on two layers, meaning that this could have possibly constituted a raised structure. More importantly, the biggest stones of this structure seem to continue south-east, in the shape of a semicircle, unfortunately extending in the unexcavated border profiles of the chambers. These were spared from excavation in order to enable future micromorphological analyses. However, the 2014 fieldwork campaign will deal with the expansion of the investigated area, to shed light on this interesting situation. The majority of the human bones found at this site came from this area, hence the hypothesis of a dedicated burial sector is not to be excluded.

The last stone structure found in the Grotticella 2 was located on the eastern terrace. This consisted of thin fragments of crust and flat stones laid out to cover an overturned pot, some human bones and a bronze pin. Such a feature is common in cult caves since the Neolithic, and cannot be conceptually separated from that of the pits (Grifoni Cremonesi 1996: 332). Slight variations in structures of the same type have been found at Grotta dei Piccioni di Bolognano (Cremonesi 1976; Radmilli et al. 1978), Grotta Sant'Angelo sulla Montagna dei Fiori (Di Fraia & Grifoni Cremonesi 1996), Grotta Mora Cavorso (Rolfo et al. 2013b; 2016).

6.4.2. Hearths

The peculiar layers of burnt seeds and charcoals spread all over the Grotticella W2 certainly could not be natural intrusions, given their homogeneous and considerable presence in the. Therefore, the finding of at least three hearths at the site was not surprising, two lying on the basal level and one on the western terrace. The first one of the floor level, located on the westernmost edge of the sub-horizontal zone, was typically delimited by burnt or blackened stones; it was also sided by a very compact reddish context, which lay on top of a natural, dried pond filled with soil (Fig. 50A). This context probably functioned as a cooking slab. Several remains of different materials (ceramic, faunal, bronze, faïence) were recovered within or immediately outside the area of these two structures, suggesting an intense utilisation – maybe a period re-utilisation.

The second hearth, located on the south border of the excavated area, presents a number of notable features, the main of them being a relatively wide (20x10 cm) primary deposit of ashes. This hearth leans partially against a big natural stalagmite (or collapsed and concretioned rock) and is surrounded on the remaining sides by stones, which also protect the structure from collapsing towards the entrance. The upper half of a skull of a small-sized or very young mammal was found lying on the surface of the hearth, together with an almost intact handled jug, which lay on its side (Fig. 51). Other faunal and ceramic remains were recovered in the same area, and a pile of burnt crops, maybe related to one of the burnt layers, was identified. Unfortunately, this discovery was due to the accidental collapse of soil from the non-excavated border profiles of the chamber. Therefore, the reconstruction of the stratigraphic connections with the other contexts is not entirely reliable.

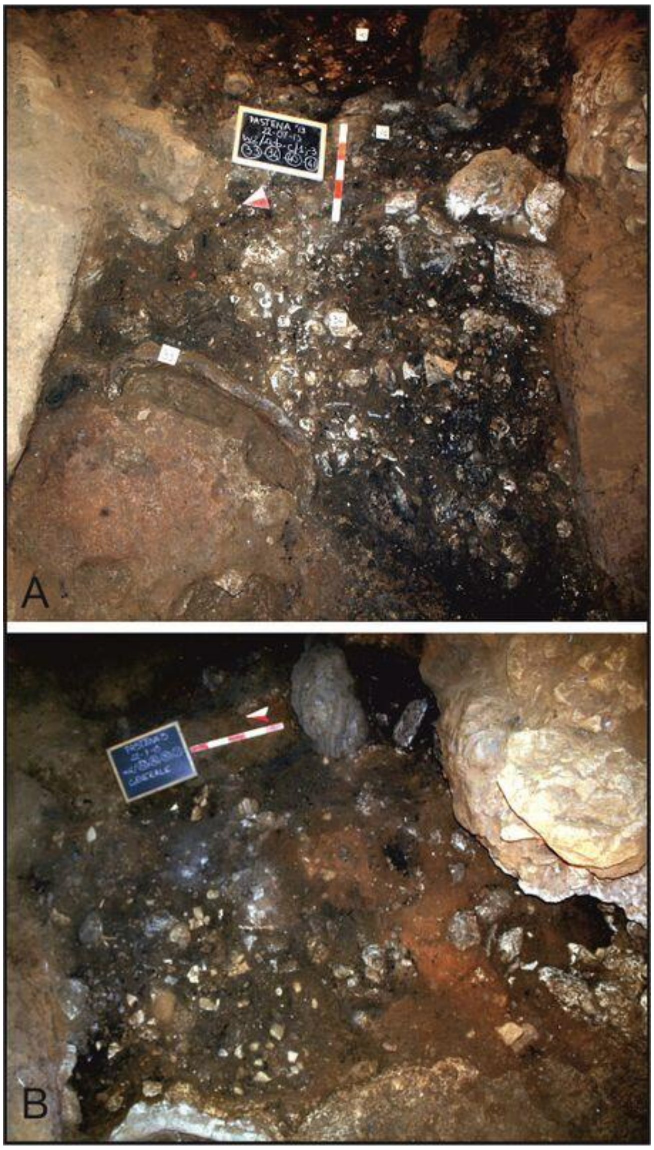


Fig. 50 Hearths and reddened areas in the Grotticella W2 (after Silvestri et al. in press c).

The last burnt area was identified on the western terrace. This sector appeared strongly compromised by the intense nesting activity of the pigeons. Nonetheless, the presence of blackened stones, burnt soil and crop remains and the remnants of a semicircular stone structure do not leave much doubt about the interpretation of the area. The homogenous distribution of the charcoal and burnt seeds on the western and eastern terraces leads to the hypothesis that the two areas were once better connected, the stalagmitic column being perhaps less invasive than today.

Fig. 51 The best preserved hearth with the ash area and the almost intact jug.

6.4.3. Pits

Only one pit, located in the middle of the basal level, was identified with certainty. It was deep and large enough to contain an overturned bowl (found in a fragmented state), measuring 20 cm in diameter and no more than 10 deep (Fig. 52). No other relevant features were recorded, but still this structure can be compared, as for the eastern terrace one, to several examples from the aforementioned caves, but also to sites of Northern and Southern Italy (especially in Puglia), Slovenia (Miracle & Forenbaher 2006), France and Central Europe, although not in caves (Grifoni Cremonesi 1996: 316-320). The discovery of this pit, added to the structure on the terrace and all the other ones found at the site, concurs with the interpretation of the cave as a cult site. These structures, whose functionality is neither related to production or storing, nor - apparently – to deposition of domestic waste, seem to be the resulting evidence of actions linked to the deposition of human remains, special animal assemblages (Associated Bone Groups –ABG, Pluskowski 2012) and peculiar artefacts. These features, however, are not "special" in themselves. They rather come to assume just one of their possible intrinsic meanings, as they are found in a distinct context (archaeologist's perspective), and as they are part - and only the final result - of a purposeful process (performer's perspective).

6.4.4. *Limestone pools*

The other structure used by MBA communities in the Grotticella W2 of Pastena is a small dry pond (60 cm diameter ca.), which was filled with anthropic deposit. This natural limestone formation is common in many karst caves, and similar ones are present elsewhere in Pastena Cave itself, most of which are still active and filled with dripping water. The microstratigraphy of the pool is very interesting, because it indicates the alternation of non anthropised, anthropised, wet and dry layers in it. Indeed, the pool was already permanently dry when it came to function as the base for a cooking slab. However, in 10-12 cm of filling, there is a succession of 6 layers, 2 of them consisting of sterile clay, 2 of very thin karst veils and 2 of clay with charcoals and burnt crops. Moreover, at the bottom of the pool, lying on top of the karst surface, we found some MBA pottery fragments. This means that the pool, and as a consequence the Grotticella, was used cyclically over up to a maximum of 3 centuries during the MBA, possibly with the same occupation pattern throughout the whole period.

6.5. Artefacts

6.5.1. *Pottery*

The amount of pottery found at the site consists of about 300 fragments and 4 intact or reconstructible vessels from the Grotticella W2, and about 1000 sherds gathered from the slope between the entrance and the footpath at the level of the Rio Mastro. Considering the limited width of the area investigated and the relatively small depth of the archaeological deposit, these figures appear remarkable and suggest an intense frequentation of the site. All the significant fragments (mostly rims, handles and plastic decorations on the walls) and intact forms can be attributed to the cultural facies of *Protoappenninico/Grotta Nuova* (Cocchi Genick 2002), indicating a single-phase frequentation of the site during the early MBA (but not necessarily a single episode of frequentation). The forms recognised span from open jars to closed jugs, cups and bowls. Although specialist analysis of the pottery is still to be undertaken, the prominence of bowls and cups seems undeniable: these are the forms which were deposed upside-down and left intact (one in the terrace, two or three on the floor level) (Figs. 52- 53), in some cases deposed within a dedicated structure.

Fig. 52 One of the upside-down bowls found in the basal level.

This is in line with the trend identified by Cocchi Genick (2002), which highlights the importance of pouring and drinking pots in the cult caves of Bronze Age Central Italy. This feature can be even better explained by taking into account the proximity with the Rio Mastro's water source, as well as the possibility that the natural pool in the Grotticella was still active, at least for limited time periods. Water must have had a special role in ritual performances at the site, maybe even in the choice of the site itself (Bradley 1990; Grifoni Cremonesi 1999). In this context, it is worth noting that a fluvial pebble was present next to every intact pot recovered, which does not seem to be a coincidence, although no comparisons have been found in the existing literature.

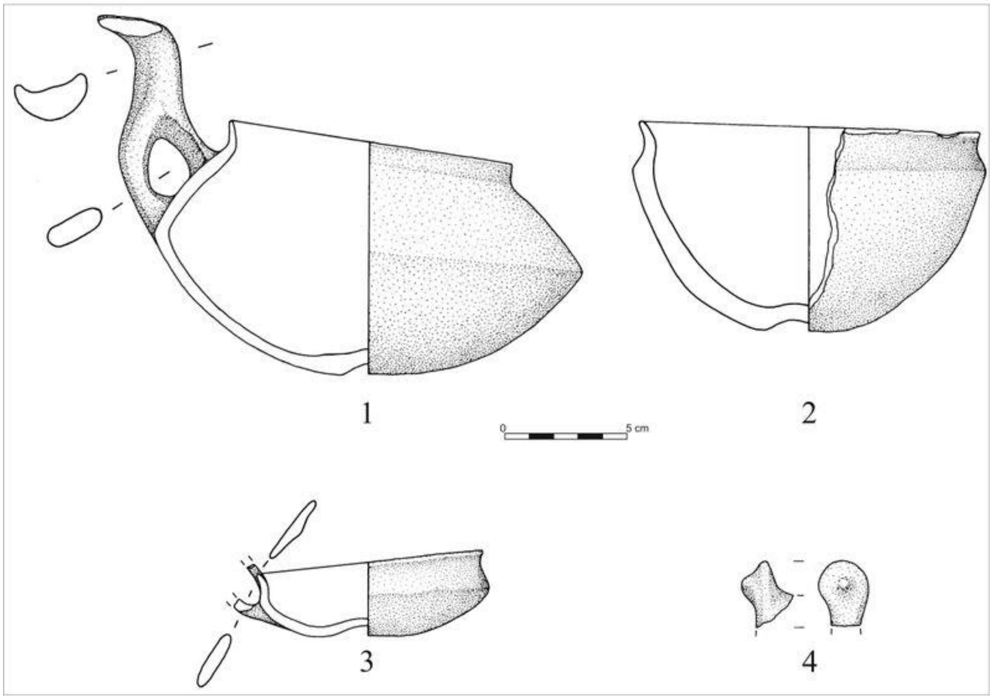


Fig. 53 Some of the intact or significant ceramic remains, typologically dated to the Protoapennine B facies of the MBA (after Angle et al. 2014, fig. 10).

The technical quality of the pots is fair. The type of clay and inclusions suggests a local production (although there is no knowledge of a BA dwelling site or workshop in the surroundings). Some of the sherds show traces of fire, but it is not possible, at least currently, to state whether these burnings were made before or after the transportation to the cave, and before or after their deposition. Given the massive amount of burnt crops present and the existence of several hearths, it is likely that part of the pots (especially the jars) were used to toast the seeds on site.

Finally, the recovery of 5 spindlewhorls in the chamber should be mentioned: given the context of the discovery (steep access, uncomfortable space, lack of natural light), it is hardly possible that spinning activities were undertaken in the cave. If this was the case, the performance would have been most likely undertaken there for a specific reason, arguably a ritual one. Therefore, such artefacts are rather to be related to the cult sphere. Objects such as spindlewhorls are traditionally considered as feminine gender markers (Sørensen 2000; Whitehouse 1998), for this activity is universally recognised as undertaken by women only (ethnography, historical sources, burial associations with female individuals, iconography all testify to this view). It is thus possible to hypothesise a number of scenarios occurred in the cave. All of these would have been aimed at constructing, reinforcing or symbolising the feminine identity of selected members of the human group enacting the ritual performance. The deposition of spindlewhorls could have been carried out by females (and possibly by quantitatively and qualitatively selected categories of them) to signify their participation to the ritual. Alternatively, non gender-selected members of the community could have deposited the objects to celebrate female ancestors, deceased females, young women in their passage to the adult life, weddings, births, and possibly even for fertility propitiation. Another possibility is that of a combination of the previous two, with females only performing this wide range of rites. Finally, a more traditional interpretation would assume that the spindlewhorls were deposed as feminine grave goods. This is not to be excluded as the scattered remains of a woman were found in the chamber.

6.5.2. Bronze

Another infrequent occurrence recorded at the Grotticella W2 of Pastena is the presence of some bronze objects. In this case, they seem to be randomly distributed, like most of the other finds, but perhaps focused in delimited areas. Two small bronze rings, one of 1.5 cm in diameter (a braid-fastener or a finger ring), the other of 5 cm in diameter (possibly a child's bracelet) were found in the area of the first hearth. A broken pin, 10 cm long in total, was found below the stone structure of the eastern terrace, in the same area as the overturned pot and a few scattered human and faunal bones (Fig. 54). The presence of bronze artefacts is not common in the majority of caves of Central Italy, although in Southern Lazio we can cite Grotta Morritana (Belardelli et al. 2007: 111), where a hoard of at least 7 MBA bronze axes was found, and Grotta Vittorio Vecchi (Belardelli & Pascucci 1996:53), no more than 30 km from Pastena, with artefacts such as two rings, a pin, a chisel, a dagger and an arrowhead. Unfortunately, the spatial data of this interesting comparative site are not published. The bronze remains of the Grotticella W2 cannot be dated on a chrono-typological basis due to their very generic shapes, but the context of discovery is sufficiently reliable. Furthermore, such finds are in line with the MBA dagger and axe recovered in the inner lake during the 1980s (Carancini 1984; Biddittu 1987) and confirm the assumption that bronze artefacts were deliberately introduced into the cave.

Fig. 54 The bronze artefacts found in the Grotticella W2.

However, the deposition of the two ornaments and the tool differs from that of the dagger and the axe. According to Bradley (1990: 5), "The fundamental distinction [between metal depositions] is between the deposition of artefacts which could have been recovered and those which would have been difficult or impossible to retrieve. In general, that distinction corresponds to the contrast between finds which were deposited on dry land and those which were placed in water". There are several explanations to the presence of the two weapons in the lake, keeping in mind that any kind of intentional or unintentional deposition occurred in the creek and only afterwards ended up in the lake. It has been often argued that single objects recovered in wet locations are to be considered as accidental losses or flooding products (Bradley 1998: 24). This is hardly the case of Pastena's weapons, for multiple reasons: first of all, the creek was never suitable to navigation and the loss of fine artefacts was very unlikely. Moreover, the presence of only two prehistoric artefacts in the lake indicates that the basin was not a usual collector of flooded objects, despite the repeated floods documented by the sediments in the cave and by oral tradition. Finally, the only two artefacts found in the lake are bronze weapons, dated to the MBA. This is a further evidence of the non-casualty of the finds in time and space, of their selection and of the choice of deposition. However, this does not imply that the two weapons were deposited on the same occasion, even though it is likely that they were object of similar ritual processes, within the same symbolic context. Assuming, for all these reasons, that the deposition of the metals in the creek was intentional, it is possible to make some preliminary assumptions with regards to the symbolic dimension of the weapons in context. Metal deposits in wet and dry locations have been subject to three key regional interpretive models, identified and summarised by Richard Bradley (1990): a first one, with political implications, focused on the possible external factors that stimulated the hoarding phenomenon; the second one tended to identify this phenomenon as votive without connecting it to the wider metallurgic framework; the last one preferred an utilitarian interpretation and focused on the relations between hoards and the wider archaeology of metals, disregarding the symbolic aspect of the depositions (Bradley 1990:14). In the case of Pastena Cave, the occurrence of metal wet depositions and that of dry archaeological deposits –including further metal artefacts- in the same site, will offer a meaningful contextual resource, useful to combine the most valuable aspects of the three approaches and to obtain wider anthropological interpretations

The first aspect of the depositions in the water concerns them being weapons. Indeed - from a utilitarian viewpoint - axes and daggers were used for different purposes, and this might have had a reflection also in the possible different meanings assumed by the objects within the ritual performance. Nonetheless, both the artefact classes have a male gender connotation. Similarly to the spindlewhorls of the Grotticella, the deposition of such objects in the water seem to be related to ritual performances aimed at defining, constructing or strengthening aspects of gender/status/role identity, in this case related to male individuals. If, on the one hand, the underground place of the deposition is shared by the weapons and the spindlewhorls, and by the weapons and the metal objects found in the Grotticella, the choice of the dry/watery location indicates a different ritual process and different meanings conveyed through it (Bradley 1998). Therefore, spatial information, as well as stratigraphic and taphonomic data, is key to the elaboration of reliable interpretations regarding cultural processes and behaviours. Generalisations on cave uses in the past should be avoided, as several variables scientifically recorded can change the meaning of similar objects and structures.

6.5.3. Faïence

This is also valid for the three glassy faïence artefacts found in the Grotticella and its surroundings: two small biconical beads and a big conical button (Fig. 56). Unfortunately, only one of the beads came from a primary deposition in the

Grotticella W2, while the other two were collected from the landslide below the chamber. These objects, in particular the conical button, are typologically dated to the MBA (Bellintani 2000) and are consistent with the other contemporary examples of Central Italy. Less than a dozen of such artefacts have been discovered, always singularly, in other caves of Central Italy, most of which from southern Lazio (Grotta dello Sventatoio (Angle et al. 1992), Grotta Vittorio Vecchi) (Fig. 55).

This type seems to appear in the region during the first phases of MBA, after a slightly earlier occurrence in Northern Italy. The buttons' chemical composition, revealing a typically high percentage of sodium (Bellintani et al. 2005:227), testifies to the original Barfield's (1978) hypothesis of a local production. The morphology of the buttons reflects the earlier Northern Italian ones, but shows a recurring local feature in the v-section central hole (Bellintani 2005: 225).

Fig. 55 Distribution map of the conical buttons in E-MBA (Bellintani et al. 2007, fig. 1).

Given the scarce quantity of such objects (less than 100) (ibid.) it is not possible to make detailed inferences about the local producers of glassy faïence ornaments. Nevertheless, the poverty of numbers itself could provide a few working hypotheses, along with the chemical evidence of high metal content of the buttons and of their production processes. These elements would suggest that it might have been the metallurgists, and not other hyper-specialised craftsmen, to fabricate these objects (ibid).

Fig. 56 Fine artefacts from the Grotticella W2; top level: clay spindle-whorls; intermediate level: stone artefacts (from left to right: a drilled stone pendant, an almost drilled polished miniature stone axe, two small arrowheads; bottom level: faïence beads and buttons (after Silvestri et al. in press c).

However, the incidence of post-depositional events would need to be explored more in depth in all the contexts where such small artefacts were found. By identifying the taphonomic impact on these objects'rarefaction, we could move forward to understand whether the low amount of known glassy faïence beads (but also amber, stone and metal) has cultural causes rather than natural. The fact that the sealed context of the EBA chamber grave of Prato di Frabulino is the only case where several beads were recovered, would lead to infer that this scarcity is to be imputed mainly to poor preserved contexts of discovery. If this issue can be proved to be untrue, we could formulate new hypotheses in relation to the cave finds: e.g., that the exceptional preciousness of the material and the subsequent association with high status made their finding so rare, and/or that intentional symbolic selections were undertaken in ritual or burial contexts.

6.5.4. Stone

The BA stone finds identified in Pastena Cave are not numerous, but varied and remarkable (Fig. 56). Unfortunately, the majority of them have been recovered in secondary deposition from the landslide below the Grotticella W2, which has generated doubts over the chronological and stratigraphic attribution of the artefacts. As for the flint objects, a tool was found which could be either a prehistoric scraper (earlier than the Bronze Age) or a modern element of a 16^{th}-18^{th} century's rifle. Two very small –almost miniature- BA arrowheads were also recovered (2 cm long, 1,2 cm wide) (Fig. 56, n.134-602). This could have been associated with a male burial, whose existence in the chamber has not yet been confirmed. Alternatively, it could have been object of the deposition at the end of a ritual performance. Such ritual process would have been linked to the construction or reinforcement of gender and/or role identities, direct to and performed by one or more individuals, possibly males. A few flint flakes come from the Grotticella, but their significance is unclear: it is unlikely that "everyday" working activities were performed inside the chamber, given its aforementioned uncomfortable conditions (darkness, cramped space, gradient). Therefore, these discards must be either related to –unlikely- emergency needs occurred in the cave; to the ritual reproduction of everyday working activities, characterised in that location by additional symbolic values; to the unintentional loss or intentional deposition of the discards in the chamber.

Two interesting finds are the miniature axe in polished green stone (with traces of a failed piercing attempt) and the skittle-shaped pendent in soapy grey stone (with the traces of wear – a string? – around the neck). Both of these artefacts cannot be dated with certainty. The first one fits well in the cultural and symbolic contextualisation drawn by Skeates (1995), who first produced a synthesis of Mediterranean perforated axe-amulets from the Neolithic to the Iron Age. He identifies the occurrence of such artefacts, similar in shape, material and contexts of discovery over several millennia (hence the difficulty of an exact dating). With regards to the regional focus of this work, he noticed the recurrence of these objects from sites located along "a band running across Central Italy" (Skeates 1995: 281) from Tuscany and Northern Lazio to Marche, Northern Puglia and Campania. The Pastena's discovery adds Southern Lazio to the band and confirms the frequent association of axe-pendants with caves, 20% according to Skeates (1995: 283), and in general with ritual sites (an additional 62%). Pastena's axe, however, cannot be defined as "pendant", for the drill is unfinished.

The most likely life-history of miniature perforated axes starts with an everyday stone axe (wear and use traces are often found on these artefacts). Following that phase, the axes are likely to go through a process of partial re-shaping, possible re-polishing, and final perforation of the butt. This change in their use corresponds to a change of people's perception of them. According to the different theoretical streams, axe-pendants have been interpreted as status markers, as healing/protection/apotropaic amulets (especially those made of green stone, even as gender indicators (of both sexes!) (Skeates 1995: 283-5 for a history of the studies). However, the most important interpretive aspect first highlighted by Skeates for the Mediterranean region concerns the circulation of these objects over time and space and its implications in human relationships. The raw material of these artefacts does not seem to reflect qualitative preferences or specific relations with local quarries (Skeates 1995: 285). Therefore, their distribution has to be related to other factors, most likely to social dynamics. If the axes, once transformed, were kept by the owners and their family for generations, these artefacts would eventually come to be somehow identified with the owners themselves. Their apparent random dispersal in the territory might mean that the stone objects were given to other people as tokens of alliance, friendship or other relations, implying that, by doing this, a part of the donor was transferred to the recipient. The value of such objects would also relate to the original use of their utilitarian "antecedents", as symbols of strength. In this sense, the traditional view of the miniature axes as amulets can be also upheld (Skeates 1995: 290). In the framework of a biographical approach, finally, comes the only archaeologically detectable phase: that of the final deposition. After a symbolically meaningful life-history, possibly lasted for years or centuries, these objects were too valued to be disposed of in a "normal" way (for example, after the dead of the owner, the breaking of the object etc.). This led to the specific choice of deposing them in ritual sites such as caves (e.g Grotta dello Scoglietto in Tuscany (Capasso and Piccardi 1980), Grotta Scaloria in Puglia (Tinè and Isetti 1982), Grotta Pila in Lazio – unpublished) or sanctuaries.

Despite the aforementioned difficulty in dating the find, it can be observed that very few axe-amulets were found in burial sites during the Neolithic. Conversely, during the Copper Age and the early stages of the Bronze Age, over 75% of the finds belong to funerary contexts, most of which consisting of underground sites (caves and rock-cut hypogea) (Skeates 1995: 295). Further than indicating a specific change of use and perception of stone axes in the BA, this evidence can be combined with the dates of most Pastena Cave's artefacts found in the landslide and testify to a BA chronology of the object. Unfortunately, the skittle-shaped pendant discovered in the same area does not have precise comparative examples and therefore its consistency with the rest of MBA remains can only be hypothesised. The symbolic value of the object is certainly as strong as that of the stone axe, given that the shape might even remind that of a schematic human figure.

Finally, some blocks of steatite have been recovered right outside the entrance of the Grotticella W2 certainly slipped from it. This is very unusual for a cave context of the BA, where even steatite objects have rarely been found. Not a finished artefact, but various small (maximum 4-5 cm diameter) blocks of this prestigious raw material were found in a pile, and no trace of working activities around. This could suggest the existence of a sort of hoard voluntarily placed in the chamber. It is unclear if this deposit was created to be later retrieved and used, or to be abandoned for ritual reasons. For the sake of completeness, the find of an incised steatite object coming from the landslide has to be also mentioned. This is a small pebble (2 cm long and 0.8 cm thick) with what appears to be the schematic representation of a buxom woman figure: such artefact is being currently studied, but the most likely dating of it, according to typology, is the Upper Palaeolithic.

6.6. Ecofacts

6.6.1. Human bones

Fifteen human bones have been found during the 2-year field campaigns of Pastena Cave. These have to be added to the 6 recovered from the surrounding areas (area "W1" and section of the Grotticella W2) during the 2008s excavations (Angle et al. 2010a). Another small area, the Niche E10, located at the East side of the entrance chamber, held 23 human remains. This sector of the cave did not present any dating materials, but the funerary deposit was sealed by a concreted layer of Bronze Age ceramic sherds. Therefore, the minimum of three individuals (the two adults and a 4-5-year-old child) identified cannot be dated to the Bronze Age with certainty; they could belong to the late Neolithic period like those coming from the Cunicolo E (other tunnel on the East side of the entrance chamber). Only radiocarbon dating will manage to solve this issue. The anthropological data related to the area of the Grotticella W2, however, are fairly informative. The minimum number of individuals found in this sector is three: an adult (probably a woman), a 4-5-year-old child and a perinatal (about 38 weeks old). The bones belong to all the skeletal portions (long bones, i.e. a radius and a humerus; back bones, i.e. vertebrae and ribs; skull, i.e. various teeth; and extremities, i.e. several phalanges), but it is very unlikely that the deceased were primarily deposed in the Grotticella W2. Given the overall good degree of preservation of the other material classes, burials, similarly, should not have been strongly disturbed. But the human bones were found scattered over the floor level, outside the entrance and in the landslide, as well as in the eastern terrace. Only in one case is there the very doubtful possibility of a primary deposition, on the southern edge of the floor level's investigated area. Here, a semicircular stone structure continues into the unexcavated external profile; three bones from two individuals came from this area, hence it will be interesting to expand the sounding to clarify the nature of the deposit. There are no traces of burning or post-mortem manipulation on any of the bones. Therefore, the most likely interpretation of the context is that the deceased had been inhumated elsewhere (possibly in one of the other tunnels of the cave itself – such as the Niche E10's with its similarity in the age classes). After the completion of a natural decay process, some of the remains (including body ornaments and grave goods) might have been collected and moved to the Grotticella W2, where more specific rituals were performed.

6.6.2. Animal bones

6.6.2.1. Methodological premise

The faunal remains of the Grotticella W2, coming from the excavations of 2012-2014), have been analysed by me. The overall number of these finds is limited (about

550, including the undetermined fragments and the numerous vertebrae and ribs), but still very informative. I carried out the identification of species, body part, preservation state, bone fusion\teeth eruption and wear, age, cut marks, fire traces and taphonomical marks on about 100 bones. Afterwards, I calculated the minimum number of individuals by species, looked at the body part representation and the bones'spatial distribution, in order to elaborate an interpretive hypothesis. All the other remains (vertebrae, ribs, cranials and undetermined) have been classified by size, looking at the type of fragmentation and any kind of anthropic or natural mark present on the bones. This allowed me to make environmental, economic and anthropological inferences about the human frequentation of the cave during the MBA.

Taxon		
	NISP	MNI
Ovis vel *Capra* (Sheep/Goat)	54	6
Sus domesticus (Pig)	29	4
Bos taurus (Cattle)	4	2
Lepus sp. (Hare)	13	1
Wild carnivores	2	2
Total	95	15

Table 9 Number of Identified Specimens (NISP) and Minimum Number of Individuals (MNI) in the faunal deposit of Pastena Cave.

	Sheep/Goat	Pig	Cattle
F/N			
VY		1	
Y	2	1	1
Y/A	1		
A	2	1	1
Undet.	1	1	
Total	6	4	2

Table 10 Age classes of the main domesticates from Pastena Cave by MNI.

	Sheep/Goat	Pig	Cattle

horn			
cranium			
maxillary	2		
upper teeth	7		
mandible	1	7	
lower teeth	1	2	1
undet.teeth	5	3	2
atlas	2		
axis			
sacrum			
hyoid			
scapula	2	3	
humerus	2	6	1
radius	5		
ulna	3		
carpus			
metacarpus	3		
coxal	3		
femur	4	1	
patella	1		
tibia	4	1	
astragalus	3		
calcaneus		3	
tarsus	1		
metatarsus	1		
metapodial	1	3	
sesamoids			
phalanx I	1		
phalanx II	1		
phalanx III	1		
Total	54	29	4

Table 11 List of body parts from the main domesticates of Pastena Cave.

	GLl	GLm	Dl	Dm	Bd	Bp	SD	LO	Gb	GL
Ovis vel Capra										
astragalus	25,3	22,6	14,1	14,5	16,1					
astragalus	24,4	23,1	13,8	14,5	15,8					
astragalus	31,3	30,1	17,3	18,1	20,1					
femur					32,2					
femur					32,3					
metacarpal	106,2					27,3	18,2			
metacarpal	110,7				21,4	19,9	11,3			
metapodial					23,7					
tibia							13,9			
tibia					24,9					
ulna								34,5		
Lepus sp.										
calcaneus									10,8	32,4
astragalus										16,1

Table 12 List of animal bone measurements from Pastena Cave (Von Den Driesch 1976).

6.6.2.2. Domestic species

Ovis aries vel Capra hircus

As in most BA contexts in Central Italy (not only caves) (Wilkens 1991a; b; 1992), at Pastena ovicaprines make up the majority of the animal record. The 47 bones belonging to this species make up 49% NISP – 38% MNI of the total identified assemblage, and 57% NISP – 50% MNI of the domestic species. We have a minimum of 6 individuals, three of which are adults, one a young adult and two young (between 6 month and 1 year old, closer to the second one). There is a remarkable difference between the sizes of the various animals, indicating the diversity of breeds or, more probably, a strong sexual dimorphism. The skeletal elements of the body are almost equally represented and the only cut marks recorded were identified on two radii. However, most of the ribs and vertebrae found at site are morphologically and dimensionally compatible with those of sheep and goats, and many of them present cut marks (ribs) or have been sawed lengthwise (vertebrae). In addition, some of the identified bones were blackened by fire or concreted to charcoal, indicating that ovicaprine meat consumption occurred at site.

Sus domesticus

Pigs are normally the second most recurrent domestic species in BA sites, Pastena not being an exception to the trend. 29 bones have been attributed to these animals, which represent 30% NISP – 25% MNI of the total assemblage and 35% NISP – 34% MNI amongst the domestic species. A minimum number of four individuals has been identified, only one being adult, two young and one very young. All the different parts of the skeleton are present, despite being strongly fragmented. A humerus of a young individual and a possible pig scapula present deep cut marks, while 20% of the bones have been partly or fully blackened by the action of fire or are concreted to charcoal. Even in this case, the consumption of meat at site of the meat is evident.

Bos taurus

Cattle is present at the site with only 1 bone and 3 teeth, making 4% of the total assemblage (both NISP and MNI) and 8% of the domestic species (both NISP and MNI. In addition, at least two large ribs can be attributed to this species. The individuals recognised are 2: one adult and a young. None of the remains have traces of cut marks or burning, but their presence at the site has hardly a different reason from that of the other domesticates.

6.6.2.3. Wild species – Lepus sp., Felis sylvestris, Martes sp.

The wild species comprise a minor percentage of BA Pastena's faunal assemblage, making altogether 15% of the total dataset by NISP and MNI. Each species (hare, wild cat and marten) is represented by one adult individual, and except for the hare by a single bone. In the case of the hare, in fact, 13 bones (13% of the NISP total) have been recovered, all belonging to the right lower limb. If the presence of the other two wild species is likely to be accidental, that of hare appears to be less casual. Three of the hare bones have been found in the eastern terrace, nine on the floor level and one in the landslide. If all the bones belong to the same individual (which cannot to be excluded), their distribution could suggest a primary, intentional deposition of the limb on the terrace and a subsequent slip on the lower levels. Several fascinating myths of the Boscimani, Khoikhoi, Egyptian and Greek cultures tell about the fertility and rebirth symbolism of the hare, and of hare-related idea of nobility and legitimation of a high social status (Brelich 2007). Moreover, among the Boscimani, sacrificed hare's thigh was a taboo food (Brelich 2007: 14), probably because it represented the human part of the animal. Several implications of the thigh symbolisms impact also in classical cultures, especially in the concept of social status legitimation (see, for example, Ulysses). Therefore, it cannot be excluded that the Pastena hare's bones had a specific symbolic significance, notwithstanding that every mythological and taboo manifestation/interpretation remains strictly related to its cultural context.

Microfauna/Birds

As already mentioned in the introduction, several bird bones were recovered during the cleaning of the surface layers of the Grotticella W2. These and a few bat bones can be considered very recent, since the deeper contexts investigated did not produce any relevant traces of microfaunal remains (Salari 2014; Salari & Silvestri 2015; Salari et al. in press a; b). Only one bone, a phalanx of a big bird, has archaeozoological interest: it shows a clear cut-mark which indicates the occurrence of human action on the volatile.

6.6.2.4. Preliminary palaeoecological, economic and ritual observations

Despite being limited in number, the macromammal bones from the Grotticella W2 of Pastena Cave can provide useful information about the environment, the use of the site, the economy of the cave's human occupants. Microfauna can usually provide a more specific palaeoenvironmental framework, but such bones were almost absent from the archaeological deposit. However, general information can be obtained by the observation of the macrofaunal remains: pastures had to be present in the surrounding area, in order to allow sheep and cattle farming; while the finding of the hare indicates the presence of wide clearances alternated with woodlands. This environmental context reflects basically that of present day: a dry plain land surrounded by the mountains, but very fertile and suitable to agriculture and grazing

From a wide economic point of view, it can be seen that the MBA communities that frequented Pastena Cave had an ordinary and predictable subsistence strategy (Barker 1981; Tagliacozzo 1992; Wilkens 1991a; b; 1992). The most exploited species were the ovicaprines (Table 9). The low number of individuals identified does not allow us to define a specific kill-off pattern. Even though the sample found at the site is likely to represent the result of a selection, a mortality curve oriented towards the maximum meat yield emerges (Table 10) . The same happens for the pigs, whose kill-off trend – albeit statistically very limited- indicates that the most productive age classes (from six months onwards) were consumed at the site. This is not surprising, considering that the most likely use made of the domestic animals at the cave was for ritual feasts. The presence of cattle is so scarce that it is not possible to make specific inferences about that. However, their occurrence testifies to the utilisation of this animal for alimentary purposes, perhaps for ploughing and agricultural ones, and in any case to the relevance of the species in the community's economic framework. The absence of wild species could be related to ritual avoidance and\or the to human groups' lack of interest in this resource, considering the abundance of pastures (and the possibility of breeding large flocks) and the commitment to agriculture (which can be inferred from the copious botanical remains).

Finally, it is important to highlight the symbolic relevance of the faunal remains found in the area of the Grotticella W2. The fragmentation patterns, fire traces, cut marks, age classes and body part distribution (Table 11) of the animal bones indicate with few doubts the occurrence of one or more meaty meals at site (Russell 2012). Given the uncomfortable location and dark nature of the small cave, however, there are two main hypotheses that can be formulated in this respect. The first one is that the chamber was a refuge, as argued by Pétrequin (1985), where people hid and lived for long or short periods, carrying out daily activities such as the preparation of meals. The second one is that one or more ritual\funerary feasts were undertaken. This alternative option appears more suitable in this case, given the several cultural markers of cult activities identified in the chamber (Pluskowski 2012, Russell 2012: 44; 66-68, 126).

6.6.3. Botanical remains

6.6.3.1. Methodological premise

The Grotticella W2 of Pastena Cave held a large deposit of burnt crops - extraordinary in quantity and degree of preservation (Fig. 57). Such botanical remains, consisting of domesticated and wild species, were found lying homogenously all over the floor and the terraces of the chamber. They made proper layers, alternating with layers of stone paving, and were not particularly concentrated in heaps or circles. The gathering, sampling and classification of these remains were as accurate as possible, with the application of wet sieving on site and in the laboratory (where entire contexts were sampled to be sieved afterwards). Tens of thousands of burnt crop seeds were collected, which have been the object of palaeobotanical analysis undertaken by myself. Such analyses were carried out on a statistic sample of almost 5000 items, from different areas and contexts of the chamber and its surroundings. Species and treatment have been identified where possible, as well as the preservation state. The aim of this study was to clarify the nature of the crops and the pattern of distribution of them. This would lead to a deeper understanding of some palaeoenvironmental aspects, of the MBA Pastena community's subsistence strategies and of their ritual activities.

Fig. 57 (Top) The thousands of burnt pulses and cereals found in the Grotticella W2; (bottom left) the fiber block discovered at the Grotticella W2; (bottom right) a possible comparison from Grotta Vittorio Vecchi (Costantini and Costantini Biasini 2007, fig. 2.5).

Resulting from the preliminary palaeobotanical analyses (Table 13), the species ratio in the various contexts appears quite constant, with 90% of the total made of broad beans (*Vicia faba*). Distant seconds are the cereals, which included glume wheat (*Triticum monococcum/dicoccum*), free-threshing wheat *(Triticum aestivum/durum*) and barley (*Hordeum vulgare*). The isolated case of three grape seeds (*Vitis vinifera*) was recognised on the terrace, alongside other peculiar remains listed above.

Vicia faba (Broad bean)	**3700**
Indetermined cereals	**230**
Glume wheat	**147**
Free-threshing wheat	**7**
Hordeum vulgare (Barley)	**91**
Vitis vinifera (Grapes)	**3**
Cornus mas/Olea europaea (Cornel/Olive)	**1**
Total identified	**4179**

Table 13 Quantitative values of the plant remains analysed at the Grotticella W2 (after Silvestri et al. in press c).

Given the extraordinary amount of seeds, their carbonised state and their spatial distribution, the palaeobotanical dataset of the Grotticella W2 cannot be considered as the evidence of accidental over-cooking. It looks instead like those crops were intentionally burnt and spread on the ground and on the terrace, around multiple combustion areas, for a specific purpose and in a repeated manner (for at least three times).

6.6.3.2. Preliminary palaeoecological, economic and ritual observations

According to the first analyses carried out on the botanical samples, a trend already identified in the closest cave and settlement sites emerges. Pulses (fava beans in particular) make about 2/3 of the assemblage, followed by cereals (spelt, bread wheat and very rare barley) and lastly by fruits (2 grape seeds and a possible dry apple). This ratio reflects that of the samples uncovered and preliminarly analysed from the close Grotta Vittorio Vecchi (Costantini & Costantini Biasini 2007: 797, Table III), and has looser affinities with Grotta dello Sventatoio (Costantini & Costantini Biasini 2007: 790, Table II) in South-Western Lazio and also, amongst others, with Grotta Misa (Costantini & Costantini Biasini 2007: 797, Table V) in Tuscany. The strongest similarity lies in the high percentage of fava beans, the recurrence of two or three types of wheat and the low yet constant presence of barley. Conversely, it is unclear whether fruits such as grapes were already being intentionally cultivated. They could have been collected from their wild forms, as in the more easily interpretable case of cornel and acorn (Costantini & Costantini Biasini 2007: 798).

6.7. Discussion

6.7.1. Combined data

The Grotticella W2 and its surroundings revealed much interesting data on the human frequentation of MBA Pastena Cave. Despite its limited dimensions, its uncomfortable location and all the natural and artificial disturbances that have occurred over the course of millennia, this chamber contained an outstanding archaeological deposit rich with informative features. The exceptional preservation of the contexts allowed us to identify structures, artefacts and ecofacts - some rare or even unique in the context of Central Italy’s Bronze Age caves. Combining all these elements, it has been possible to attempt an accurate reconstruction of the cave’s use, as well as that of some socio-economic characteristics of the human groups that frequented the site.

First of all, two successive stone floors were identified, alternating with thin layers of burnt crops that covered the whole area. Another stone structure, once maybe an elevated construction, completed the first two ones and, given the proximity to most human bones found, it might have held a burial within it. A last paving, made of flat stones, was located on one of the two terraces, hiding an overturned intact vessel, the leg of a hare, a human finger and a bronze pin. Two, or perhaps even three further upside-down pots (all cups and bowls) lay on the floor level, one of them deposited in a small pit. This has to be connected with the presence of three hearths in the space of 30 m² (including the terraces), with the recovery of several fine artefacts in bronze, faïence, polished stone and flint, of spindlewhorls, of scattered human bones, and of the left-overs of some meals based on meat. These elements, combined together and with the peculiar location of the site, indicate an unquestionable use of the cave for non-domestic purposes. This said, Bradley's (2005) well accepted theory of the constant coexistence of domesticity and cult remains valid, although not as evident and immediately applicable as in other archaeological sites. Examples of this lack of conceptual dichotomy can be seen in several aspects of the archaeological record at Pastena Cave (especially in the systematically investigated Chamber W2): first of all, in the pots found at site, whose unrefined manufacturing resembles the productions from settlements. On the one hand, it can be seen that these were used or even re-used in activities that could appear similar to mundane ones (e.g. storing and cooking), but certainly differed in meaning. On the other hand, "everyday" pots were also employed in non-everyday performances (e.g. upside-down depositions, possible crashing and intentional fragmentation). Other examples of this coexistence can be identified in the ritual feasts and repeated deposition of crops: in this case, the inspiration comes in part from the related, very mundane subsistence activities aimed at survival (processing and consumption of meals). These activities, however, embody also a social component, that of identity legitimation within the group, and in this important aspect lies the link between mundane and non-mundane. In this sense, the personal ornaments found in the chamber, whose symbolic meaning has been explored earlier, have similar characteristics to the ritual meals and plant depositions. As identity markers, they belong to the domestic dimension, where a defined social identity is equally necessary to the survival of the individual and to that of the group. On the other hand, however, they belong also to the cult dimension, where social identity is constructed and confirmed, in order to be actively used in the everyday life (Robb 1994).

6.7.2. Experiences and human perception

In this chamber the basic human needs cannot be satisfied, due to the claustrophobic spaces, its inaccessible position, and a condition of perpetual darkness. Climbing to the entrance, even with the modern help of a concrete staircase, represents a tiring physical activity. Moreover, the air becomes unbreathable when three-four people stay in it for more than a week (considering the working hours only), for a gradual decrease of the oxygen levels. It would be interesting to explore the liveability of the chamber after at least one of the hearths was lighted.

6.7.3. What were the most likely uses of this cave?

Therefore, the hypothesis of this cave as a living place, a refuge or just a place where even basic domestic activities took place is difficult to sustain. The Grotticella W2 at least – if not all of the cave - was exclusively a cultic one. More complex is the interpretation of the type of ritual practices undertaken at the site. The primary burial function of the small room can be provisionally excluded, due to the limited amount of human bones found, compared to the other remains. However, traces of secondary burials are present, whereas other –not dated- tunnels and niches of the cave held the residues of possible primary depositions. It can be hypothesised, then, that the deceased of the community, or maybe only some selected members, were primarily inhumated in other areas of the cave itself or elsewhere. Only selected parts of their bodies were transported to the Grotticella W2, in order to be honoured again and/or to serve as propitiatory for the rituals performed in it. According especially to the impressive amount of crops cyclically deposited, and to the evidence of one or more feasts performed, such rituals can be put in relation with the seeking of fertility. On the other hand, they can also be linked to a social process of strengthening the community's bonds, perhaps under a leader (chief?), and perhaps on the occasion of the last salutation to deceased members of the community (Parker-Pearson 1999; Tarlow & Stutz 2013). In caves, more than elsewhere, the earthly cycle of the seasons and the life-death cycle of human existence appear strongly correlated, and the rites dedicated to each of these aspects often happen to overlap.

6.7.4. What was the frequency and intensity of occupation?

The morphological analysis of faunal remains, which can be useful in understanding the seasonality of a site when certain age classes are represented (i.e. the very young individuals), do not offer here such a possibility. DNA and other molecular analyses can be helpful in this sense, but have not been applied yet due to lack of funding. Plant remains can provide at least partial information: both legumes and wheats' harvesting most likely occurred between mid-spring and mid-summer (pulses first, cereal later), like today. Since it appears that they were processed directly into the chamber, it can be assumed that this activity was carried out not much after the harvesting. This means that the cave was frequented at least during the warm season.

However, despite the difficulty to determine the period of the year when the site used to be visited, it is possible to formulate hypotheses on the frequency and intensity of its occupation. It has already been demonstrated that the Grotticella, as well as the whole cave, could not be frequented for an extended timespan, because of its limited conditions of liveability. However, it is important to deal with the issue of continuity of use. Several stratigraphic data suggest that the site was used over a protracted period of time, all included within an early phase of the Middle Bronze Age (1750-1500 BC) according to the pottery chrono-typology. First of all, the micro-stratigraphy of the natural pond. At least three different moments of site-use can be traced back thanks to this structure, due to thin anthropised layers alternating with sterile clay layers or even proper karst veils. The stone pavements, alternated at least twice with the burnt-crop deposits, indicate again the same trend. Finally, the presence of three different hearths in such a small space could suggest the re-occupation of the Grotticella on three different occasions. Not to mention that the consumption of 6 sheep and 4 pigs (even if already butchered and selectively introduced in the chamber) is not likely to have occurred during the same event, not only for economic reasons but also for logistic ones: the area is so narrow that a maximum number of 10-15 people might fit inside it, not including the space for the food and other features. Therefore, it is likely that the cave was used for a long time span of at least some years or decades, but for short periods and, apparently, always following the same pattern (as can be expected in the case of ritual performances).

6.7.5. The cave in the archaeological landscape

The area of the Pastena plain has never been the object of systematic surveys. This is an issue to deal with soon, because the relevance of the Pastena Cave site is remarkable. Considering that most of the original deposit has been destroyed by human action and the Rio Mastro, what is still preserved denotes a very good potential. Therefore, it is necessary to seek for contextualisation. In particular, traces of dwelling sites close to the area would complete the partial framework provided by the study of the cave. A lake occupied at least one of the two depressions of the Pastena Polje until the 17th century: this makes highly probable the existence of one or more pile-dwelling sites along the shores of the basin.

On a wider scale, Pastena Cave is part of a little investigated region of South-Western Lazio, which includes a good number of other caves and fewer possible settlements (Fig. 58). Grotta Vittorio Vecchi of Sezze (Belardelli & Pascucci 1996:53) (ca. 30 km from Pastena) is certainly the most important of these, although not yet fully published. This more coastal site shares with Pastena Cave the presence of copious botanical remains, but holds in addition dozens of human chaotic inhumations and is the only cave site of the region to be located in proximity of a presumed open settlement (Belardelli & Pascucci 1996: 53). Two other BA caves, only recently discovered (surveys of the author and the spelaeo-archaeologists Dr. Luca Alessandri and Mr. Paolo Dalmiglio), are worth to mention: Grotta La Sassa and Grotta Testaceum (Sonnino, LT). The second of them shows evidence of a cult perpetuated up to the Roman period. The conclusions of this work will be addressed at contextualising these sites not only by reconstructing the cultural bonds between the occupiers, which seem already evident, but also by exploring the possible existence of transhumance and trading routes, and the non-dichotomizable mundane/symbolic role of these caves within their framework.

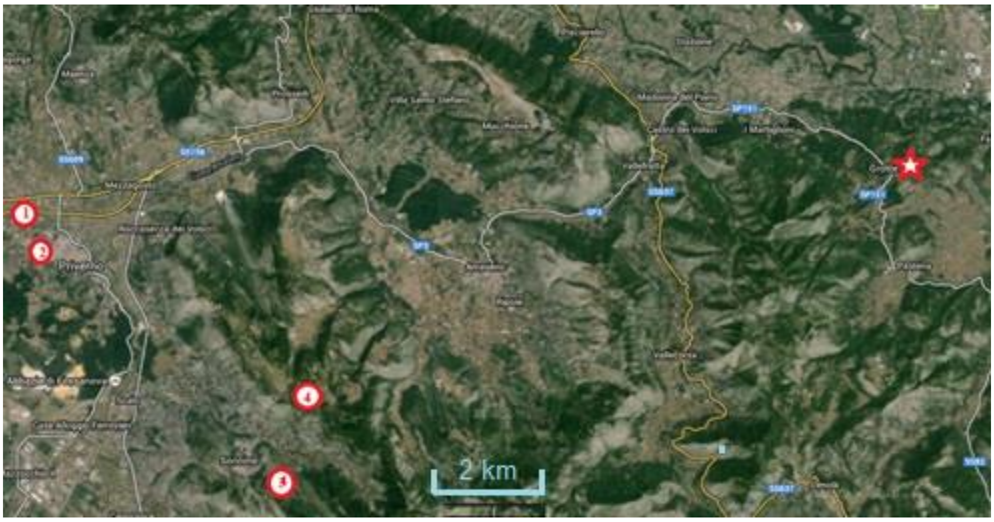


Fig. 58. Pastena Cave in the MBA archaeological landscape. 1 Grotta Vittorio Vecchi, 2 Possible settlement, 3 Grotta Testaceum, 4 Grotta la Sassa. Star: Grotta di Pastena.

6.7.6. Preliminary conclusions

Overall, it seems that Pastena Cave was frequented by people with a flourishing subsistence economy, consisting mostly of the raising the standard species (ovicaprines, pigs, cattle) and of crops and pulses. The toponym "Pastena" itself comes from the dialectal verb "pastinare" which means "to make the soil cultivable" (Biddittu et al. 2006; 2007). This suggests that the area was long suitable to the attainment of a prosperous economy. Even in the absence of pollen palaeoenvironmental reconstructions, this seems to have been the case already during the Bronze Age. It is possible that Pastena's BA peoples were also active traders, according to the discovery of the three blocks of raw steatite. The finding of valuable artefacts in bronze and faïence, instead, rather testify to the existence of specific symbologies of status and, more in general, of personal identity. However, it is likely that only few members of the group had access to these precious artefacts, probably those who were in charge of organising and regulate the distribution of meat during the feasts. The absence of settlement systems and of more intact burials does not allow to explore the degree of social complexity of the cave's frequenters.

As for their religious dimension, it can be said that these people still had an earthly perception of the spiritual world, choosing the cave as a place to undertake funerary cults and to perform other types of rituals, maybe related with the fertility and propitiation sphere, but also with the construction of social identity.

Chapter 7 - The Bronze Age of Grotta Regina Margherita di Collepardo

7.1. Introduction and aims of the chapter

Grotta Regina Margherita is the last of the three case-studies analysed in this thesis. Almost 40.000 human bone fragments, associated with artefacts and ecofacts, have been recovered in this evocative site over the last decades (and especially over the last two years), making it the quantitatively richest Bronze Age cave in Central Italy. In her review of the recent volume on European cave archaeology "Caves in Context" (Bergsvik & Skeates 2012), Marion Dowd (2014: 357) points out that "*A criticism not unique to this book (e.g. Moyes 2012) is use of the term 'burial cave' by several authors. […] In truth, the occurrence of human bones in caves can reflect a much wider variety of funerary practices*". The analyses of the archaeological assemblage from this third case-study will aim especially at re-addressing the original interpretation of the use of a site as a burial one. A deeper insight into the use of space, the intensity and duration of frequentation, and the natural and cultural formation processes occurring in the site, could provide answers to more specific questions about the utilisation of the cave. In particular, the analysis of ecofacts in context will allow us to shed new light on both the economic and ritual behaviours of the prehistoric occupants of the site, overcoming the traditional focus of 'burial cave' studies which usually rely on artefacts and human osteology.

7.2. The archaeological background

7.2.1. The cave in the natural landscape

The Grotta Regina Margherita di Collepardo, previously known as Grotta dei Bambocci (after the complex stalagmites and stalactites which remind visitors of human figures – "bambocci" in the local dialect), is located on the south-east slopes of the Monti Ernici, in the Comune of Collepardo and Province of Frosinone in southern Lazio. The cave opens south, 30 m above the Fiume Creek, is 90 m long and its width varies between 30 and 60 metres. It consists of a single large chamber divided into three main sectors by complex limestone formations (Figs. 59-69) - and a further oblong chamber, 25 m^2 wide. This is located south-east of the entrance hall and is presently inhabited by a colony of protected bats. Thus, not only is this chamber filled with a widespread, thick deposit of guano, which would make systematic research very difficult, but it is also under legal constraint and cannot be archaeologically investigated. The karst activity of the cave is still intense, with seasonal increasing of water dripping according to precipitation. Limestone veils have formed on the modern concrete structures over only a few years and active stalactites, stalagmites and columns occupy the whole area. The spectacular speleothems of the cave have made it a famous tourist attraction for almost two centuries.

7.2.3. History of studies

The archaeological importance of the cave was discovered in the 19th century, with Ponzi (1849) first undertaking soundings. Later, in the 20th century, local scholars identified and collected Pleistocene fauna and, after few decades, Bronze Age remains as well (Biddittu & Segre 1977; Guidi 1981; Segre 1948). However, systematic excavations were not carried out until 2008, when the Soprintendenza per i Beni Archeologici del Lazio intervened in the renovation operations of the site's tourist route.

Fig. 59 External and internal views of the cave (Ph. Prof. Robin Skeates).

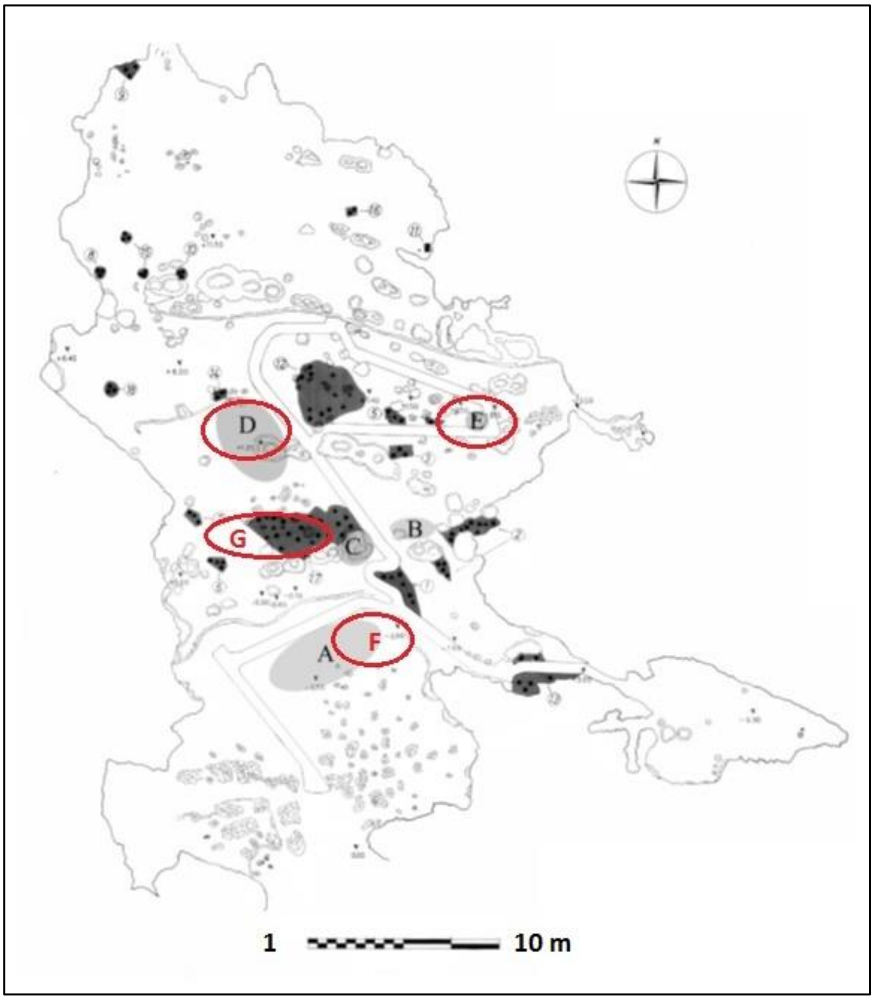


Fig. 60 Map of Grotta Regina Margherita with indication of archaeological finds and the 2008 test-pits (updated after Angle et al. 2010b, fig. 2). The red circles indicate the areas investigated between 2014 and 2016. The red letters indicate the areas first opened between 2014 and 2016.

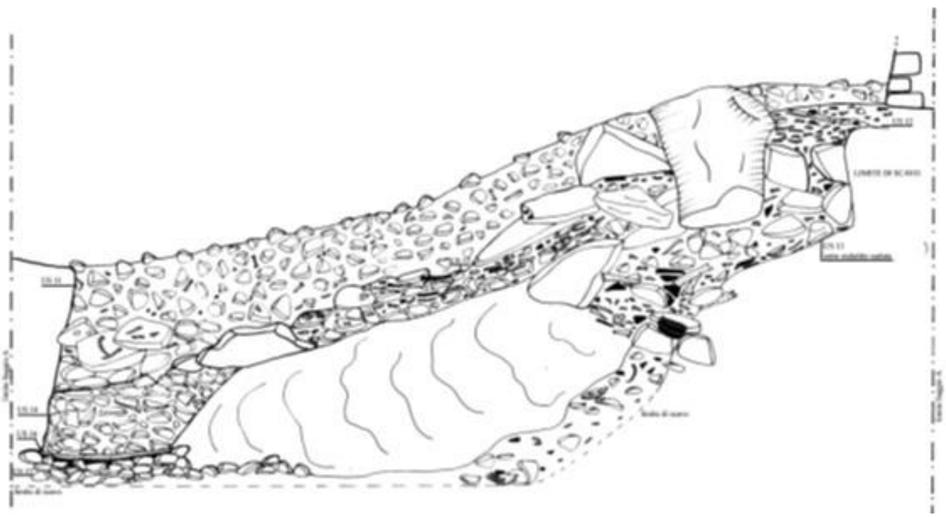
On this occasion, five soundings were opened (Fig. 60), close to the walkway. A joint International project involving Durham University, Rome 'Tor Vergata' University and the Soprintendenza Archeologia per il Lazio e l'Etruria Meridionale, funded by Durham University and the British Academy, allowed to design a long-term, systematic working plan and resume the excavations at the site since 2014.

7.3. The stratigraphy

Seven excavation areas were subject to stratigraphic excavation, five of which were selected in 2008, with the last two areas having been opened between 2014 and 2015 (Fig. 60).

1. Area A (Fig.61): This sounding, 8 m wide and located in the southern part of the cave, is the closest to the entrance. It has a 7 m SN gradient and has suffered from a severe rock collapse of the cave roof. Below this recent rockfall (SU 10) was a layer of archaeological interest, containing mainly MBA remains, although affected by modern disturbance (SU 11). The underlying context, a brown clay horizontal palaeosol (SU12) rich in charcoal and ashes, contained several ceramic, faunal and human remains and lay on a surface made of rock debris (SU 13).

Fig. 61 The NS section of Area A (after Angle et al.2010b, fig. 5).



Thanks to the empty spaces of its irregular structure, SU 13 retained the best preserved and most intact finds of the site, some of them fully concreted. In the southern sector of the area, underneath SU 13 and another thin layer of debris (SU 14), two hearths (SU 15 and SU 16), respectively 1.50 m and 40 cm wide, were uncovered. However, the second one only was undisturbed.

2. Area B: this area, located slightly north-east of A, was 3 m wide but did not allow extensive investigations because of the thick concretions. However, it showed the presence of ceramic, faunal and human remains.
3. Area C: partially disturbed area, 1 m wide, with a thin layer rich in fragmented faunal and human remains and few ceramic sherds.
4. Area D: located in the so-called "Chamber of the Throne", th a was investigated in its sub-horizontal sector (SU 32), revealing the presence of several ceramic, faunal and human remains.
5. Area E: this sector of the cave held many highly concreted human bones which were the only finds recovered from this area.
6. Area F: this area, adjacent to area A, is 4 m wide and 7 m long, but a rock collapse already noticeable in area A resulted to have severely compromised its deposit. This, however, contained several human and animal bones and some of the finest artefacts found in the cave.
7. Area G: a narrow and long secluded area 2 m wide and 7 m long, which despite having been opened only in 2015, has returned the largest amount of well-preserved human bones, pottery and dozens of fine artefacts such as faïence, amber and bronze beads.

7.4. The human bones

At least five Bronze Age individuals, chaotically distributed and partial, were identified in the cave in the 1980s' surveys. In 2008, at least 31 more added to the original figure, from all five areas opened in the cave. The preliminary taphonomical observations of the finds indicate preservation of skeletal connections only in one case (Area E, ulna-humerus association), whereas in most cases the remains seem to have been disturbed by a range of post-depositional factors, such as: displacement of the bones undertaken by people already during the Bronze Age, to create more space for new depositions; animal scavenging; natural landslides and rock collapses;

reutilisation of the site during the Roman and Medieval periods; modern modifications of the site for touristic purposes.

However, some general inferences could still be made. First, all age classes are represented in a natural proportion. The mortality pattern is very similar to that of Grotta Vittorio Vecchi (Rubini et al. 1990), the closest context in terms of location and archaeological affinities (Fig. 62).

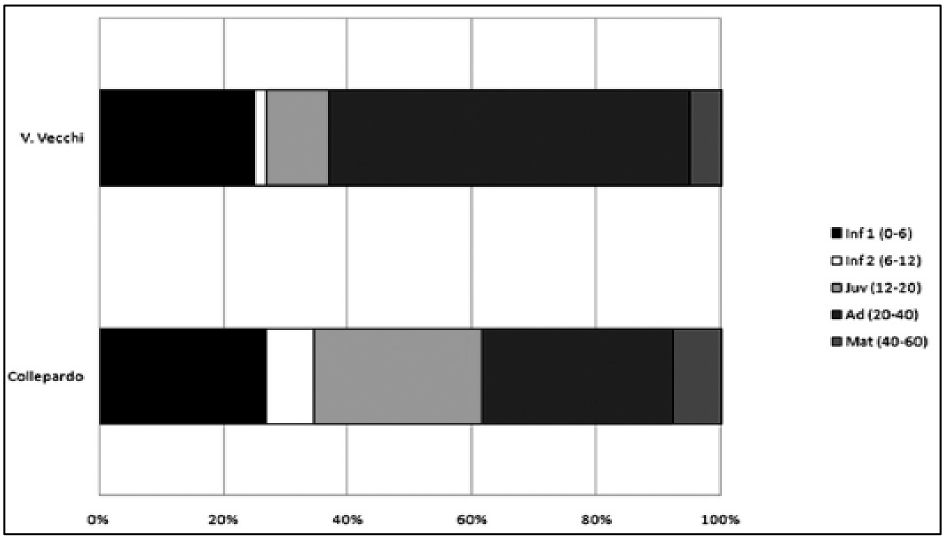


Fig. 62 Comparison of age classes from Grotta Regina Margherita and Grotta Vittorio Vecchi (after Angle et al. 2010b, fig. 13).

Each excavated area of Grotta Regina Margherita produced human remains of all age classes and sexes. This led to the hypothesis that spatial divisions existed in the burial site according to family/lineage groups (Angle et al. 2010b: 290). This preliminary inference, even if plausible, is probably affected by a methodological bias: the excavation areas were selected according to the constraints imposed by the touristic renovation project. This possibly led to the excavators to perceive the groups of human bones as distinct from one another, even though an extensive investigation of the entire chamber is lacking. Thus, it is not yet possible to confirm whether such topographical distinctions existed in the Bronze Age or if the bones were homogenously and randomly distributed in the cave. Moreover, the MNI is estimated by taking into account such spatial differentiations, whereas the possibility of severe post-depositional dispersion cannot be excluded. Re-considering this element in the calculation of the MNI, such a number would decrease considerably, although remaining remarkable even when compared to the caves of the region containing the greatest amount of human remains (Angle et al. 2010b; Cremonesi 1976; Di Fraia & Grifoni Cremonesi 1996; Rolfo et al. 2013b).

Fig. 63 Human bones concentration in Area G.

Excavations undertaken between 2014 and 2016, focusing on Area D-E (opened in 2008) and F-G (opened in 2014 and 2015 respectively) revealed the existence of almost 37.000 more human bone fragments. An estimation based on a comparison between the 2008 database, the 2014-16 material and the previously published data (Guidi 1981) led osteoarchaeologist Jessica Beckett to calculate a MNI of 95 individuals. Even taking into account the above mentioned bias, according to which the final numbers could undergo a reduction (because bones found in different areas and collections from different excavations might pertain to the same individuals), the individuals identified between 2014 and 2016 only amount to at least 60. There is no evidence for family groups, having become more and more clear that the human remains were widespread almost everywhere in the cave, where the calcite concretion allowed a survey. It is more likely, then, that the groups identified by Cavazzuti in 2008 (Angle et al. 2010b) depended only on the excavatability of the soil. A further evidence of this is to be seen in the deposit of Area G, the only one which suffered little concretioning and that, alone, returned much more material than all the other areas together (Fig. 63). In this area, Beckett was able to identify a statistically significant concentration of long bones along the rock wall (Fig. 64), stuck in an unnatural oblique position. On the other hand, skull bones were missing from the total assemblage of the area. This suggests the existence of secondary burial manipulations, similar to those recorded in Grotta della Carbonaia in the Belverde complex (Cocchi Genick 2002). In addition, taphonomic analyses demonstrated the reiterated cracking of bones in the past (which presented mineralised fractures), implying that, as is clearly shown by the high number of buried individuals, people returned to the site both to bury new deceased, but also to carry out secondary rituals on the existing skeletised bodies. Animal burrowing had little impact on the commingling of the bones, as no evident trace of gnawing was identified.

Human bones, which are the most important archaeological material of this cave, provided also crucial data related to the ecofactual interpretation. Ten right anklebones from area D, belonging to males, females and a child, were brought to Durham to undertake radiocarbon, isotope and DNA analyses. Preliminary results of the isotope study are already available (Crowder 2016) and show interesting palaeodietary patterns of a main cereal-based diet.

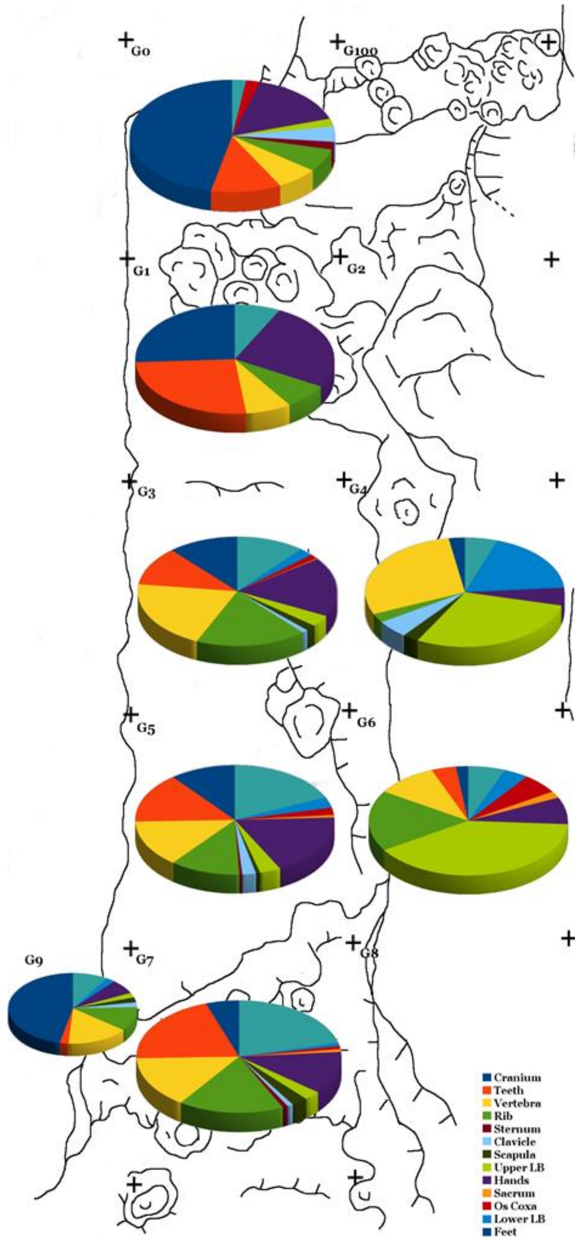


Fig. 64 Plan of Area G with percentages of the human bones distribution (Beckett 2016).

7.5. The artefacts

Grotta Regina Margherita's artefacts have not been fully studied. However, generic information about pottery and other material classes are available (Angle et al. 2010b), along with basic spatial references. Most of the excavation areas produced a mixture of human and ceramic fragments, often accompanied by fine artefacts. Larger sherds or almost intact vases come exclusively from areas with minor post-depositional damage, such as part of Area A that was protected by a rock collapse, and the secluded area G. Other objects were found less frequently, such as a ceramic spindlewhorl and a biconical faïence bead (Fig. 66) from Area C, a discoid mother-of-pearl bead and a possible sandstone spacer from Area D, two ceramic spindlewhorls, an obsidian bladelet and a cylindrical faïence bead from Area A. The 2014, 2015 and 2016 campaigns brought also to light a fragment of animal bone with lozenge incisions (Area F), a few faiënce beads (Area D) and the first bronze finds of the cave (i.e. some little bronze spirals and tubes from Area G). Area G, which still needs further investigations, has recently returned over 50 faïence and amber beads (Fig. 65). This incredible abundance of such artefacts would suggest the existence of one or more necklaces or other pieces of jewellery in the area, most likely worn by one or more of the deceased. Greenish marks left on several neck, wrist and finger bones would confirm that the jewels were worn by the individuals buried in the cave.

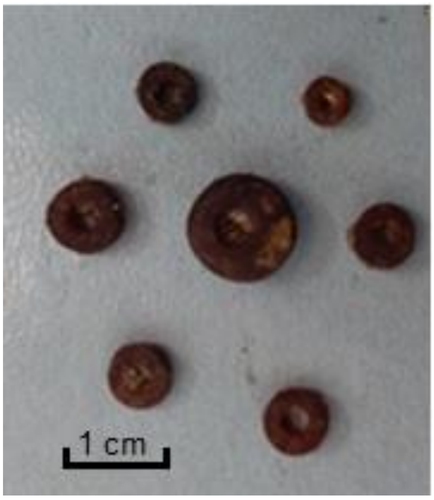


Fig. 65 Some of the amber beads found especially in Area G.

As for the pottery, all the ceramic vessels can be typologically dated to an initial phase of the Middle Bronze Age.

It is interesting to highlight that, unlike many other known Middle Bronze Age caves of Central Italy (e.g. the other two case-studies of this thesis and the main Abruzzo and Tuscany sites (Cremonesi 1976; Di Fraia & Grifoni Cremonesi 1996; Radi 1981), this site contains only one flint flake. Flint is usually found in small quantities in these caves, but it is a constant presence. On the contrary, materials such as obsidian and mother-of-pearl are quite rare: Borrello & Dalmeri (2004) and Mangani (2008) report cases of mother-of-pearl beads from the Early and possibly Middle Bronze Age of Northern Italy's palafitte (Lavagnone, Polpenazze, Bande di Cavriana), but evidences further south are unknown. No other obsidian remains have been found in unquestionable Bronze Age contexts (Macchia et al. 2012), except for more distant regions such as Sardinia (Tykot 1996). Glassy faïence and amber beads, of which Area G contained half a hundred pieces, are present in most sites, although often as sporadic finds.

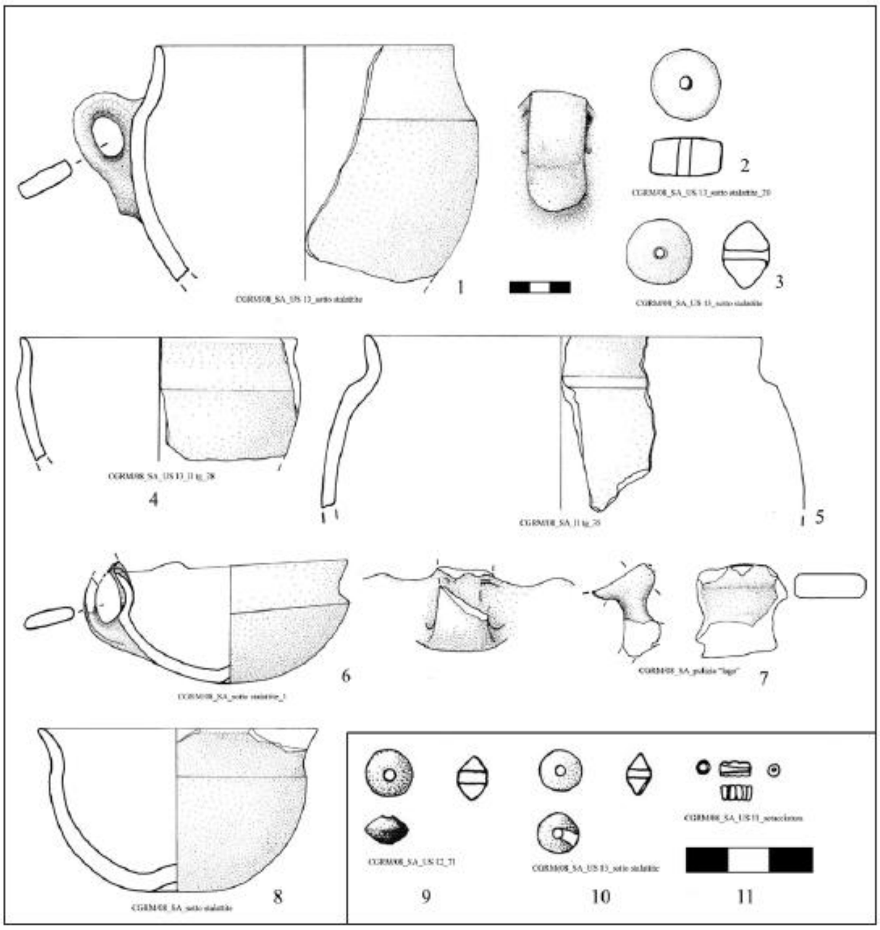


Fig. 66 Artefacts found in the 2008 fieldwork campaign (after Angle et al. 2010b, fig. 8).

7.6. The faunal remains: re-analysis of the 2008 faunal remains and analysis of the 2014-2015 ones

7.6.1. Methodology

Preliminary analyses on Grotta Regina Margherita's 2008 fauna were undertaken by Paola Celletti (Angle et al. 2010b). Taxonomy and very basic information about age were the focus of this study, which unfortunately was not deepened due to lack of funding. I re-examined these remains. After presenting the results of this reanalysis, I shall discuss their interpretive significance in the following paragraphs and chapters. All the remains are from contexts dated to the Middle Bronze Age, according to the pottery and faïence typology. The scarcity of evident earlier and recent intrusions (only a few possibly Pleistocene horse remains a no other earlier or later artefacts), as well as the meticulous methods of excavation, indicates a good degree of contextual reliability for the animal bones. However, some of the bones lack stratigraphic references, these having been unfortunately lost during/after excavation.

The bones were first marked with a unique number and catalogued on a database. Afterwards, they were identified by body part and species/taxon. If this was not possible, as in the case of ribs and most of vertebrae, they were grouped by size (small, medium-small, medium-large, large). The bone fusion state was recorded where possible, in order to determine the age and the subsequent kill-off patterns. Sides were identified for the calculation of the minimum number of individuals. Preservation and any macroscopic trace of natural, animal or human action were registered with the aim of clarifying the pre and post-depositional events impacting on the bones. The minimum number of individuals was calculated by keeping the distinction of the areas, but merging the remains from the different contexts of each excavation area. This choice allowed me to maximise the quantitative relevance of the samples and to minimise the problems related to the loss of stratigraphic information. It has to be noted that a further reduction of the estimated numbers could be hypothesised, similarly to the human bones, if we admit that animal bones from different areas could have belonged to the same individual.

For the 2014-2016 faunal remains, when a bone fragment was found in situ, this was numbered, levelled and drawn on the plan. It was then removed and accurately washed in the laboratory, similarly to those found in the sieve. The following steps adopted for their analyses were the same as those belonging to the 2008 dataset.

	Sheep/Goat	Pig	Cattle
horn			
cranium			
maxillary			
upper teeth	15		1
mandible	9		2
lower teeth	18		1
undet.teeth	23	1	1
atlas			
axis	1		
sacrum			
hyoid	2		
scapula	3		
humerus	14		1
radius	14		
ulna	4		
carpus	3		
metacarpus	1		
coxal	4		
femur	12		
patella			
tibia	6		
astragalus	1		1
calcaneus	1	1	1
tarsus			1
metatarsus	3		1
metapodial	6	1	1
sesamoids			2
phalanx I	7		1
phalanx II	1		
phalanx III	1	1	

Total	149	4	14

Table 14 List of body parts of the main domesticates from Collepardo Cave

Ovis vel Capra	**L**	**Ll**	**Lm**	**l**	**m**	**d**	**p**	**D**	**PA**	**C**	**p**	**b**
Humerus						3,9						
Humerus						7,6		3,9				
Humerus						5,4		0,1				
Humerus						9,6						
humerus											7,3	
humerus											4,4	
humerus											6,5	
humerus						0,5						
humerus											0,3	
ulna									4,8			
ulna									9,1			
radius							3,6	9,4				
radius							1,8					
radius							2,2					
femur										1,5		
astragalus		0,5	8,6	5,8	7,9							
Capreolus capreolus												

Metacarp al							6,6	,4				
Canis familiaris												
e Metapodi al	9,7						,9					
C Calcaneus	9,1											5,4
Equus sp.												
Metatarsa l	00, 9					2,5	5,5	2,6			7,8	

Table 15 List of measurements from the animal bones of Collepardo Cave (Von Den Driesch 1976)

7.6.2. Faunal analysis results

7.6.2.1. Ovis aries vel Capra hircus

Sheep and goat are undoubtedly the most highly represented taxon of the assemblage, both considering the NISP (Number of Identified Specimens), the MNI (Minimum Number of Individuals, see Table 16). However, only Area A and the adjacent Area F provided an assemblage suitable to infer more detailed information. Ovicaprines from the other areas do not appear significantly more frequent than other species, except for their slightly more abundant NISP.

	NISP		MNI	
	Value	%	Value	%
Area A	91	78	9	50
Area B	-	-	-	-
Area C	5	46	1	25
Area D	5	42	1	25
Area E	-	-	-	-
Area F	63	90	3	60
Area G	2	100	1	100
Total NISP	166		16	

Table 16 Presence of ovicaprine bones in the different areas, according to the corresponding Number of Identified Specimens (NISP) and the Minimum Number of Individuals (MNI), as a raw value and as a percentage of the total assemblage for each area.

Kill-off patterns (Fig. 67) indicate a specific interest in culling individuals between 6 months and 1 year, which according to Payne (1973) is the preferred slaughtering age for meat exploitation.

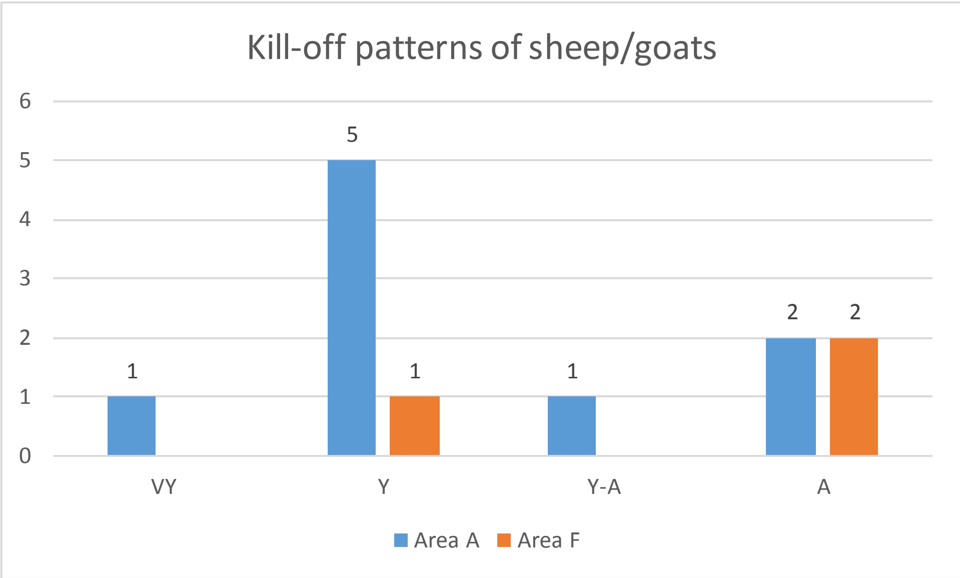


Fig. 67 Age class distribution of the ovicaprines from Dig A and F. (Legend: VY= very young: <6 months; Y= young: between 6 months and 1 year; Y-A= young-adult: between 1 and 2 years; A: >2 years).

This pattern is confirmed by the type of bones found. The scarcity at Collepardo Cave of phalanges and teeth, which are the most numerous bones of the skeleton and often quantitatively relevant in zooarchaeological assemblages, seems meaningful particularly since taphonomic and methodological biases can be ruled out (sieving operations were very accurate and these small bones are very strong, compact and well-preserved in archaeological contexts). The assemblage consists mostly of the skeleton's meatiest parts (long bones of the forelimb and hindlimb, ribs and vertebrae), whereas body portions of little or no meat yield (skull and extremities) are less frequent. This indicates that meat bones were preferably deposited in the entrance area. Given the underrepresentation of very young individuals (only 2 teeth representing 1 individual), intensive exploitment of milk and milk derivatives can be excluded for this site.

7.6.2.2. *Bos taurus*

Cattle (Table 17) is the second most common species, both among the domesticated and the wild animals, and it appears almost in equal percentages in all the areas with zooarchaeological evidence. However, the number of bones attributed to this species is small and the MNI never exceeds 1. The body parts found in every area do not closely repeat and the age, where identified, is mostly young, therefore it is possible that the total MNI of 3 could be reduced to 2 or even 1.

Compared to the ovicaprines, the body parts of cattle appear to be more equally distributed, with a slight predominance of teeth and extremities over long bones, ribs and vertebrae. It is hard to believe that butchery of this large herbivore occurred within the site, given the complexity of the butchering process and the uncomfortable context of the cave. Therefore it can be assumed that also non-meaty parts of the carcass were transported in the cave after butchering.

Human use of this animal might have been for meat consumption, compared to ploughing, for example, which would be reflected in the occurrence of older age classes.

	NISP		MNI	
	Value	%	Value	%
Area A	7	6	1	5
Area B	-	-	-	-
Area C	1	9	1	25
Area D	1	8	1	25
Area E	-	-	-	-
Area F	2	3	1	20
Total	11		4	

Table 17 Presence of cattle bones in the different areas, according to the Number of Identified Specimens (NISP) and the Minimum Number of Individuals (MNI), expressed as a raw value and as a percentage of the total assemblage for each area.

7.6.2.3. *Sus domesticus*

According to the 2008 analysis carried out by Paola Celletti (Angle et al.2010b), pig was absent from Collepardo Cave. However, the presence of scattered pig bones is unmistakable in most areas of the cave (Table 18). In particular, Area C produced a tooth of a subjuvenile individual, while Areas A and D revealed the presence of fragmentary extremities that belonged to young individuals (when estimable). Occurrence of pig is certainly less significant than in most Middle Bronze Age cave contexts of the region. Nonetheless, the age of death enables us to recognise a standard meat consumption pattern.

	NISP		MNI	
	Value	%	Value	%
Area A	2	2	1	5
Area B	-	-	-	-
Area C	1	9	1	25
Area D	1	8	1	25
Area E	-	-	-	-
Total	4		3	

Table 18 Presence of pig bones in the different areas, according to the Number of Identified Specimens (NISP) and the Minimum Number of Individuals (MNI), expressed as a raw value and as a percentage of the total assemblage for each area.

7.6.2.4. Sus scrofa, Cervus elaphus, Capreolus capreolus

Wild boar and deer do not appear regularly in the faunal assemblage at Grotta Regina Margherita. Only one fragment of a boar's phalanx was recovered from Area A, but it could as well belong to a very big domestic pig. Boar might have inhabited the surroundings of Collepardo, as the dense and humid woodlands would have made an ideal habitat. In this case, however, the evidence is too little to draw any kind of general conclusion. We can only acknowledge the possible occurrence of hunted boar and the transportation of extremities to the cave. The same holds true for red deer (a III phalanx) and roe deer (a fragment of metapodial), which live in forested environments.

7.6.2.5. Equus caballus

Horse is the most unexpected species found at this site, given that it is not recorded in any other Middle Bronze Age cave of Central Italy. All 4 horse bones recovered are from Area A. Although they make up 3 per cent of the NISP total and 6 per cent of the MNI total, they are likely to belong to a single individual, an adult of about 9 years (3 specimens out of 4 were teeth, allowing very specific age estimation). One of the bones, a metatarsal, was clearly fossilised, which raises the possibility of an earlier dating of the bones (considering that Segre (1948) had signaled the presence of Pleistocene fauna in the cave). Further excavations in the Area A, along with radiocarbon dating, would solve this problem. Unless new bones are uncovered from the area, we might assume that only discards of the carcass (represented by teeth and extremities) were transported to Area A, with butchering of the animal undertaken elsewhere.

Horse is not present at any other Middle Bronze Age caves of the Central Apennines However, settlements have produced a few remains of horse (for example in Etruria, De Grossi Mazzorin et al. 2006; and Abruzzo, Wilkens 1991b). This might indicate some kind of intentional selection in terms of those animals deposited in caves.

7.6.2.6. Vulpes vulpes

Fox remains are usually found in small percentages in Bronze Age cave contexts in Central Italy. At Grotta Regina Margherita, 5 left bones from most skeletal portions (hindlimbs, forelimbs, skull and extremities) were recovered from Area A and one tooth from the adjacent Area F, very likely belonging to the same adult individual. No cut marks were identified. Therefore, it is not certain that these fox remains were introduced into the cave by people.

7.6.2.7. Sea shells

Two marine shell fragments were retrieved at Grotta Regina Margherita, one bivalve and one gastropod. The occurrence of sea shells is not very common in Bronze Age cave contexts in Central Italy, but rare examples are known for Grotta Polesini (Radmilli 1978), Grotta di Carli (Casi & Mieli 1998) and Grotta di Pastena (unpublished, from the 2014 campaign) in Lazio, Grotta dei Cocci in Umbria (Salari 1991; Salari et al. 2014) and Grotta del Mezzogiorno (Puglisi 1956) in Marche. Further analyses are required to clarify the provenance of these shells, but their use as everyday food can probably be excluded given the distance from the sea.

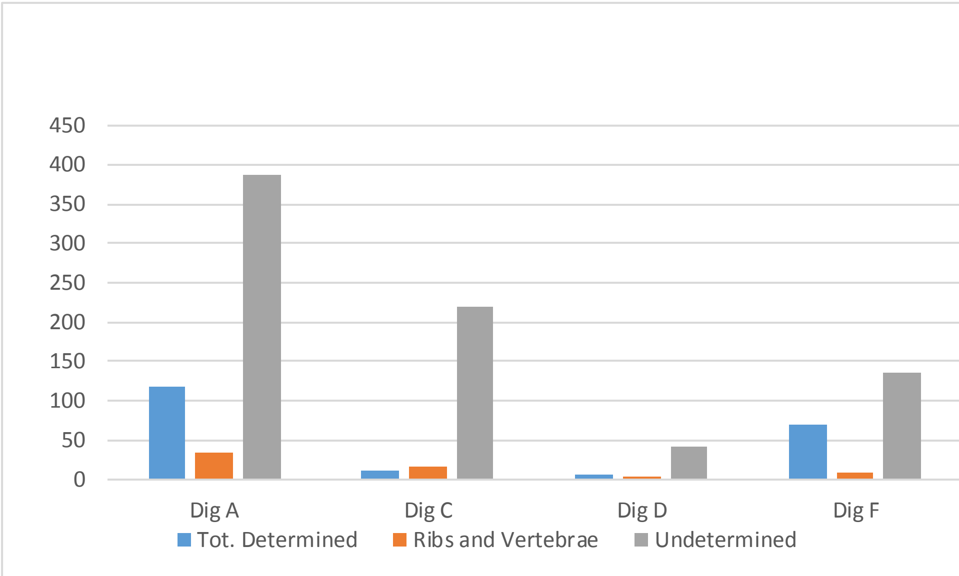
7.6.3. Preliminary taphonomic observations

Faunal remains from the various soundings seem to have specific patterns of distribution (Fig. 68). Area A and F, located at the basis of the slope of the cave, produced the majority of finds (90% of the total) and the widest variety of identified species (10). The data-rich Area G, conversely, contained only two faunal remains.

This can be only partially linked to the dimensions and gradient of the excavation areas, as other finds such as human bones and artefacts where indeed found. At the same time, an indication of possible post-depositional accumulation or intentional displacement is provided by the correspondence of species and age classes recognised in the Areas C and D and those found in A Indeed, stratigraphy was so compact that it was not possible to identify layers of secondary deposit and distinguish them from the primary ones of the palaeosol and the hearths. However, refitting tests as those performed on fauna by Forenbaher (Miracle & Forenbaer 2006) in the study of Pupicina Cave, were performed on the pottery and showed correspondence between contexts.

The fragmentation degree is high: several hundreds of very small, unidentifiable bone fragments were recovered through careful water sieving, while most of the remains identified by body part and species are not well preserved and even fewer are intact. However, evident traces of butchery marks and cut marks are not frequent, whereas burnt and calcinated bones are more common but were not always located next to the areas of the hearths. This would corroborate the hypothesis of post-depositional or intentional displacement of the bones (or of the meat portions, if this happened during the active utilisation of the cave).

Fig. 68 A comparison between the faunal remains identified by species/taxon, the ribs and vertebrae and the undetermined fragments.



7.6.4. *Preliminary economic observations*

The presence of all the main domestic species is documented at Collepardo Cave. Sheep and goat appear to be, as expected, the most represented taxon. Cattle and pig follow with few bones and only one individual per excavation area. Other key domesticates such as dog and, significantly, horse, as well as wild herbivore species such as reed deer, roe deer and possibly boar are present only in Area A, whereas small carnivores were found both in Area A-F and Area D. This would apparently suggest that the subsistence strategies of the Collepardo occupants relied mostly on sheep farming and stock breeding, and only secondarily on hunting. Mortality curves do not reveal specific kill-off patterns, especially due to the small quantity of identifiable remains (jaws) suitable to this calculation. However, it is still possible to identify a trend of meat and non-dairy products exploitation: individuals younger than 6 months are extremely rare, while young and adults are more common. Only in one case is there evidence of a pig under the age of 6 months, which does not contradict the general likelihood of a meat exploitation pattern. The two sea shells found are more likely to have served as ornaments or symbolic objects than as food resources, given both the distance of the site from the sea and the small amount of such malacofaunal species recovered from the excavation. Horse, if not an intrusion, would probably be related to status and power aspects of socio-economic life rather than subsistence. The scarcity of wild game in the cave would not seem to reflect a specific choice in the MBA subsistence strategies, as fragments of single extremities of wild boar, red deer and roe deer were found at the site. The environment was suitable to deer and boar. Their lack in the cave may testify, instead, to an intentional cultural selection of the meat type to be introduced to the site. However, this cave was clearly subject to a non-domestic (or non-exclusively domestic) use during the Middle Bronze Age. Therefore, the faunal assemblage analysed in this thesis should not necessarily reflect the actual subsistence strategies of the human occupants of the cave. This has been partly confirmed by the isotope analyses undertaken on the ten human anklebones, from which a mainly agricultural economy was deduced (nitrogen, typical of protein-based diet, is present in small quantities). The retrieval of the six burnt seeds (four broad beans and two emmer/spelt seeds), compared for example to the hundreds of thousands collected in the Grotta di Pastena (see Chapter 6) could not have pointed to this evidence.

7.6.5. Preliminary cultural observations

Mortality curves of the domesticates found at Grotta Regina Margherita do not show anomalous trends. The average age class of ovicaprines, the only statistically significant species identified, is that of mature young individuals (between 0.5 and 1 year). This is confirmed by the few data we have about pigs, which are average young (and one very young, i.e. of less than 6 months). The young age of the cattle, too, corroborates the hypothesis of a specific meat consumption pattern occurring at or close to the cave. If, on the one hand, the dominant presence of long bones, ribs and vertebrae of ovicaprines suggests the validity of this assumption, very few or no meat parts of other animals were identified at site. Moreover, although bearing rare cut marks and fire traces, these bones do not entirely reflect the standard waste evidence for meat consumption.

Preliminary inferences about these evidences might be that sheep and goat were treated differently from the other species, not just in terms of on-site butchery and/or consumption, but also in terms of the symbolic meaning behind this choice. It seems possible that especially non-ovicaprine meat was consumed outside the cave or elsewhere, but some parts of the carcass were kept or transported in to the cave. The reasons of this might be linked to ritual aspects of the meals themselves, probably dependent on the mortuary practices occurring at the site (Further and more focused spatial and stratigraphical analyses of the animal bones, pottery and human remains in context will provide new details to explore this possibility).

The most important evidence inferred from the faunal dataset concerns the location of the animal remains inside the cave: considerable quantities of this material class are only found in Areas A and F, i.e. those located in the entrance hall. The inner sector of the cave, including those areas which contained high numbers of human bones and artefacts (e.g. Area D and Area G) returned between 0 and 5 animal bone fragments each, suggesting the existence of a precise intentional choice. It is then possible to hypothesise that rituals involving the offering of (mainly meaty) ovicaprine bones were carried out at the entrance of the cave as a preparatory step before entering the darkest part of the site, which was dedicated mostly to the burial of the deceased.

7.7. Discussion

7.7.1. Grotta Regina Margherita in the prehistoric landscape

Grotta Regina Margherita is one of the largest examples of karst cave in the complex of the Ernici Mounts. Pozzo D'Antullo, a natural doline, 80 m deep and with a diameter of 300 m, is probably the most impressive product of karst activity in this area. However, this has never been investigated archaeologically, due to its inaccessibility and to the existence of dense vegetation at the bottom of the shaft. However, being such an evident feature, it is likely to have been understood as a significant element of the cultural landscape in prehistory. On the other hand, three further BA caves or rockshelters are known in the area, all within a few km^2: Grotta Rossa, Grotta della Madonna delle Cese, and Riparo del Peschio di Tornera (Belardelli et al. 2007). Some of these cave sites were unfortunately violated by clandestines. However, they return some interpretive value. First of all, it is still possible to observe that the size of these caves/rockshelters is much more modest than that of Grotta

Regina Margherita, which also has the widest viewshed af all the surrounding sites (Fig. 69). So far, only ceramic finds have been noted at these caves, perhaps enabling us to exclude burial use as an interpretive possibility. However, faunal and other environmental data are missing, as only pottery was selected and collected. Obviously, new surveys and/or test pits are necessary to retrieve a representative sample of all the remains present at these sites.

To sum up, it is evident that the karst system of the Ernici Mounts in the area of Collepardo was subject to occupation during the earlier stages of the Bronze Age but also during its later phases (Riparo del Peschio di Tornera and Grotta della Madonna delle Cese). Cultural affinities can be seen with the Simbruini Mounts, with particular regard to pottery typology, although the specific uses of the caves (beyond the overly general interpretation of cult/burial cave) are different. Greater similarities can be found with a cave located farther south, in the coastal area, Grotta Vittorio Vecchi.

Here, Rubini (et al. 1990) calculated a MNI of 35 people, the highest figure from the region along with Grotta Regina Margherita. However, the frequentation of Grotta Vittorio Vecchi lasted for a longer period of time (until MBA 3), whereas Grotta Regina Margherita seems to have been abandoned during MBA 2.

Open air settlements are not known for the area, which even in historic times has not been particularly suited to the development of villages, given the strongly mountainous and forested environment. Nonetheless, further surveys in the surroundings might reveal the existence of settlement sites, and consequently testify against the main traditional interpretation of the frequentation of this area as related to transhumance.

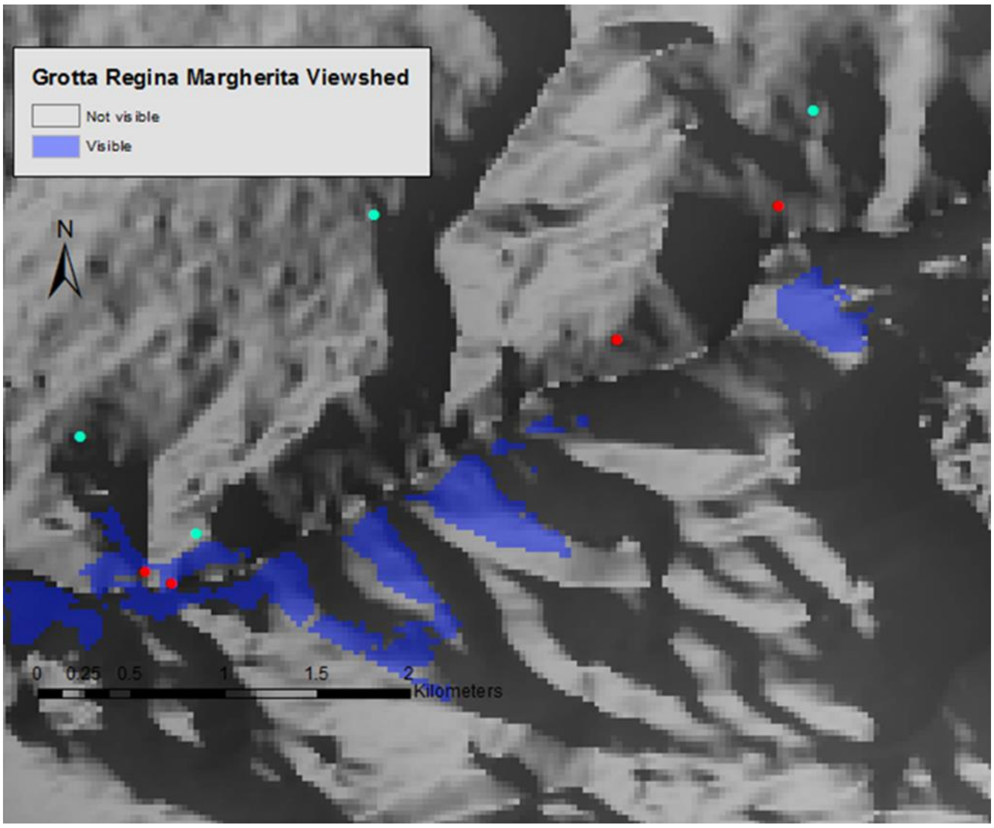


Fig. 69 Viewshed from the cave. Courtesy of Prof. Robin Skeates.

7.7.2. Senses and perception

Grotta Regina Margherita offers great potential for archaeological phenomenology. Located on top of a steep hill, the unexpected big opening of the cave offers a breathtaking spectacle to those arriving from below. Until recently, the cave was called 'Puppets Cave'. The complex stalactite and stalagmite formations resemble human and animal figures, landscapes (one of the sub-sectors of the site is still called the 'Petrified Forest'), fine architectures (arcs, stairs, even a 'throne'). Therefore, human imagination finds here a great deal of inspiration. Moreover, the dark atmosphere of the inner part of the cave, the sudden change of temperature and humidity, the slippery floors and stalagmites, the abundant water dripping make a visit to the cave uncomfortable but also evocative. Sensory perception of the place is intensified (touch and sight especially), but awareness of the outside reality (time, space, light) is attenuated – although not as much as in a really dark cave. The hearths lighted at the base of the slope (Area A) would make the atmosphere even more spiritual, while the related practices, probably linked to ritual actions and to the buried, would contribute to give a proper sense of marginality, "otherness" to the cave. In this case, Grotta Regina Margherita seems a good example of a liminal site, used to connect the living world to the Netherworld, a place of death and darkness, but also of living natural manifestations (water dripping, strong karst activity and stalagmites in constant stage of formation).

7.7.3. The uses of the cave

According to typological observations on pottery, the site seems to have been used during the latest phase of the Early Bronze Age and the first two phases of the Middle Bronze Age, but not in later phases of prehistory (we only have traces of sporadic roman, medieval and modern frequentations). Faunal and other material features support this hypothesis, whilst radiocarbon dates are still to be obtained. As for the interpretation of the use of the cave, the funerary function is more evident than in most other caves of the region. Indeed, almost 100 individuals is a considerable figure especially for this period, when the problem of the 'invisible dead' is prominent elsewhere. However, the high number of human remains retrieved does not give a full and satisfying answer to the many questions that can be asked about these sites: Did this cave hold specific segments of the population, and were these people actually divided by family kin groups? What are its social implications? Why was this site selected for such a specific role, perhaps comparable only to Grotta Vittorio Vecchi in the region? Over what area were the dead brought to the cave from? These questions can be answered only by looking more closely at the human remains, and at the same time by examining them more contextually.

7.8. Preliminary conclusions

The fact that traces of ritual meals or animal sacrifice are not as obvious here as in Mora Cavorso Cave or Pastena Cave does not make the presence of faunal remains in this cave less meaningful, only less easily readable. The use of this site as a collective burial place, so intense that only in Tuscany's earlier stages of the Bronze Age we can find comparable examples, highlights the ritual significance of this site, and of its faunal assemblage. The specific location of the animal remains, probably related to an intentional ritual choice, provides a novel and important information about the range of ritual practices involving ecofacts in Middle Bronze Age Central Italy. Micromorphological analyses at this site could clarify whether the cave might have served as a shelter for herds. Although the answer to this question is most likely to be negative, given the high number of people buried in the site over about 300 years.

Contextual analysis of the archaeological landscape, combined with integrated study of ecofacts, artefacts, human remains and speleothems from the cave(s), should allow reconstruction of the occupation patterns, subsistence strategies, social and economic dynamics occurring in the MBA in this area. Indeed, the interpretative potential of this area is greater than its neighboring regions. The Abruzzo territory, for example, is problematic as boundaries between the Neolithic and Bronze Age are often blurred, much as those between the Eneolithic and Bronze Age in Tuscany. Finding evidence of nearby settlements or other sites related to Grotta di Collepardo would certainly shed more light on the key role of this cave in the region.

CHAPTER 8 - THE ARCHIVAL ANALYSIS OF FOUR EARLY-MIDDLE BRONZE AGE BIOARCHAEOLOGICAL CAVE DATASETS.

8.1. Introduction and research strategy

In autumn and winter 2014, two short stays at the Department of Anthropology of Florence University, authorised by Prof. Jacopo Moggi Cecchi, allowed me to explore the archival materials stored in the basement of the National Institute of Palaeoanthropology. I could therefore access little or never before analysed bioarchaeological remains from sites located between Tuscany and Northern Lazio.

By examining the archival catalogue of the sites with archaeological remains stored in the basement, I was able to recognise and select material from four cave sites roughly dated to the Early-Middle Bronze Age (Fig. 70). Three of these sites are fairly well known in the literature and the other one is scarcely known. The first three sites are Grotta Nuova (Cocchi Genick 1995; Rittatore 1951), Grotta Misa (Cardini & Rittatore 1948; Cocchi Genick 1995; Rittatore 1951) and Buca Tana di Maggiano (Minto & Puccioni 1914; Puccioni 1914). The fourth one is Grotta dell'Osservatorio di Belverde (Calzoni 1954: 38; Martini & Sarti 1990), one of several unpublished caves among the approximately 20 investigated in the context of Calzoni's excavations at Belverde di Cetona.

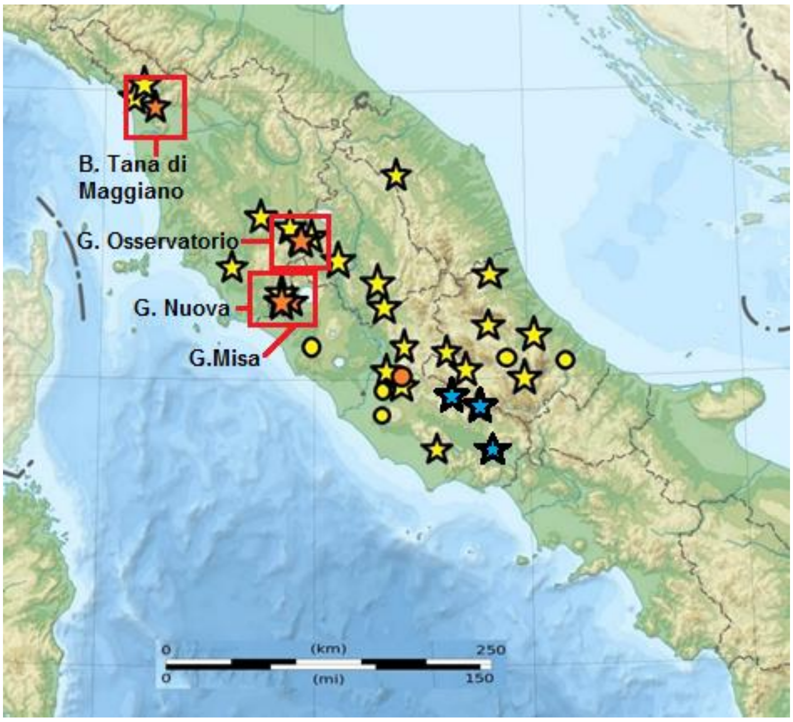


Fig. 70 Caves with ecofactual deposits from the archival collections studied in Florence.

As mentioned in Chapter 4, the bioarchaeological materials were all cleaned and then catalogued on an Excel spreadsheet with the greatest detail (preservation, taxonomy and observable taphonomical and/or anthropic traces for the faunal and botanical remains; body parts and age estimation for the faunal and human bones; measurements for the animal bones). Any kind of available note, stratigraphical or additional indication was also accurately recorded in the spreadsheet. Finally, preliminary photographic documentation of the most significant finds was produced.

It is important to acknowledge that the assemblages from these caves are not complete, and in some cases do not reflect the -yet poor- information known in the literature. Only in the case of Grotta dell'Osservatorio can this incompleteness possibly be related to a post-excavation selection: whilst the record sheet of the site mentions the presence of other species in the assemblage, I could only identify cattle, meaning that other species might have been stored elsewhere and eventually got lost. Therefore, it is crucial to acknowledge the bias in this analysis, which derives from the already biased composition of the datasets.

In this chapter, I present each of the four case studies separately. In each case, I first provide the key information about location, state of research and published results of the archaeological analysis. Secondly, I show the results of my new research on ecofacts. In the final section, I compare and contrast the evidence from these caves, trying to identify both the methodological biases of the results and some possibly unbiased features.

8.2. Grotta Nuova

8.2.1. Background and existing literature

Grotta Nuova (Rittatore 1951) is located halfway up the right side of the Fiora River valley, at 134 m asl, close to the village of Ponte S. Pietro (VT), in the area of Chiusa Del Vescovo. It is constituted of two large chambers (Figs. 71-72) through which a partially underground stream runs. In 1949, when the cave was first explored and named ("Nuova" means "new") by Cardini and Rittatore (1948; Rittatore 1951), the first and larger chamber still held a significant deposit, which was explored through survey and a trench excavation. The second and darker room, with more difficult access, was explored more quickly and superficially. It yielded similar materials of the first one, yet in a smaller amount. The excavation of the trench, measuring 2.50x1.30 m and 2.50m deep, was forced to end when a level made of travertine boulders was exposed. The archaeological deposit seemed to be more abundant in the first two metres, whereas the find became more and more sporadic in the last 50 centimetres. The dig was conducted carrying out 50 cm-deep spits, although no significant differences in the layers' composition were recognised. The same affinity was noticed among the archaeological finds, as pottery, and also faunal and plant remains, did not show any relevant typological variations throughout the stratigraphic sequence.

The use of this cave appeared to be cultic. Six vessels, most intact and overturned, were found lying along the shores of the above-mentioned inner stream, often containing animal bones or carbonised plant remains (Negroni Catacchio et al. 1990: 587).

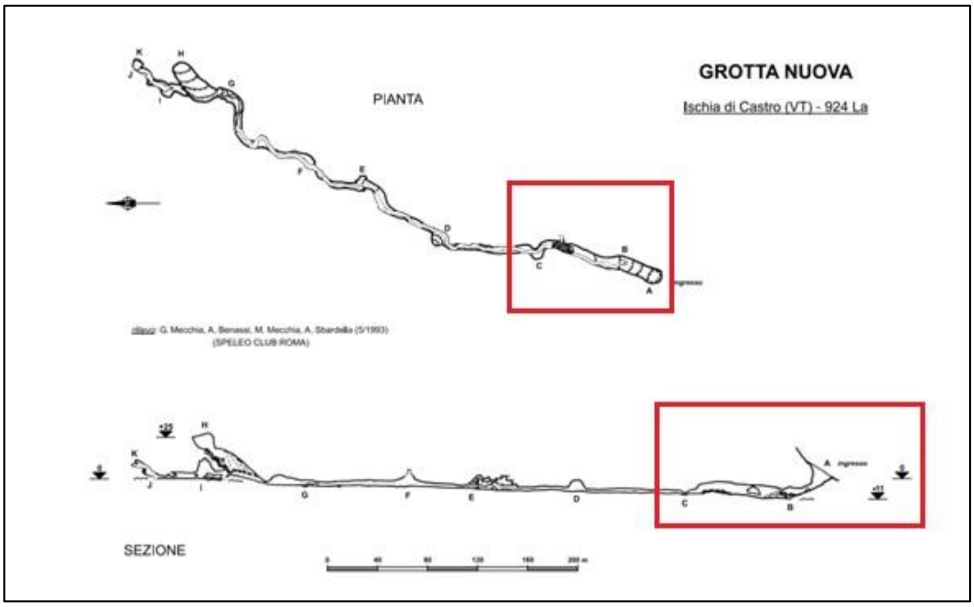


Fig. 71 Map of Grotta Nuova (after Mecchia et al. 2003: 93). The first 80 metres (in the red square) were frequented during the Middle Bronze Age.

What is striking in the history of research on this cave is that it became the eponym of one of the most peculiar typological ceramic facies of the Early Middle Bronze Age in Central Italy, the “Grotta Nuova” facies (Cocchi Genick 2002). The peculiar features of the pottery retrieved at this site, which were later found to be extremely widespread in the Central Italian area, caused the celebrity of the cave and the hyper-specialised study of its ceramics, while condemning the rest of the archaeological record to be overlooked and long forgotten. Still, in 2002, the cave was reported as an exclusively ritual place and was used as an example of a site that can have a cult use without necessarily having human burials in it (Cocchi Genick 2002: 140).

Fig. 72 The entrance of Grotta Nuova (Ph. Garofoli 2010).

8.2.2. New research from archival collections

According to the first-hand notes available, the material examined for this research was all collected between 30 April and 15 July 1950 through excavation. This corresponds to the information provided in the report published by Rittatore in the same year, which specifies the undertaking of archaeological excavations during the spring of 1950.

The materials, consisting of ca. 90 faunal remains, ca. 200 plant remains, ca. 10 human bones, as well as a small number of pottery fragments and charcoals, were all wrapped in newspaper and other second-hand wrapping dating to earlier than 1950. These packages were accompanied by some hand-written notes with the indication of the date of excavation (sometimes the full date, others only the year), the trench and/or the spit-layer, and in some cases of the type of archaeological materials contained. A possible sketch of the cave profile was identified in one of these notes. All these elements testify to the authenticity of the material, which appears to have never been published nor analysed after its recovery.

All the materials seem to have been found in Trench A, in some cases divided by spits or layers called A, B, C, D, E, F (it is unclear whether these two terms can be considered as synonyms in this context). The original documentation was not tracked down. For this reason, and also because of the small quantity of available remains, I decided to leave out the stratigraphic data at my disposal in analysing the datasets[4]. This choice can be considered methodologically acceptable, since pottery typology indicates a mono-phase frequentation of the site.

From previous publications, the presence of the bones of unquantified domestic and wild animal species, charcoal and carbonised seeds (especially broad beans) were recorded. The analysis of this archival assemblage, could shed light on three aspects of the archaeological record yielded in Grotta Nuova: the faunal remains, the palaeobotanical remains, and the previously unknown human remains.

8.2.2.1. Faunal remains

Of the 84 animal remains analysed (Table 19), 45 were identified by species and 4 (the bivalve shells) by *phylum*. Unexpectedly, the most represented species, both as NISP and MNI, is red deer (*Cervus elaphus*), followed by ovicaprines and wild boar (defined as such because of the unequivocally large dimensions of the bones). Other

[4] I have, however, recorded these data, which have not been included because they were not used for the interpretations.

domesticates such as cattle, dog and possibly pig are rarer, whilst carnivores such as wild cat and bear can be considered sporadic in representation (Table 21).

	NISP	NISP% - Total	NISP% - Total determined	**MNI**	MNI% - Total
Ovis aries vel Capra hircus	10	11,9%	22,2%	2	16,7%
Bos taurus	5	6,0%	11,1%	1	8,3%
Canis familiaris	2	2,4%	4,4%	2	16,7%
Cervus elaphus	13	15,5%	28,9%	3	25,0%
Sus scrofa	8	9,5%	17,8%	2	16,7%
Felis silvestris	1	1,2%	2,2%	1	8,3%
Sus sp.	4	4,8%	8,9%		
Ursus sp.	1	1,2%	2,2%		
Small mammals	1	1,2%	2,2%	1	8,3%
Total determined	**45**			**12**	
Malacofauna	4	4,8%			
Undet	35	41,7%			
Total	**84**	**100%**	**100%**	**12**	**100%**

Table 19 List of NISP and MNI from Grotta Nuova and related percentages of occurrence (archival collection).

	F/N	**VY**	**Y**	**Y-A**	**A**	**Tot.by species**
Ovis aries vel Capra hircus			1		1	2
Bos taurus					1	1
Canis familiaris			1		1	2
Cervus elaphus					3	3
Sus scrofa			1		1	2
Felis silvestris					1	1
Total determined			**3**		**8**	**11**

Table 20 Age classes of the animal species identified at Grotta Nuova (archival collection) by MNI. F/N: Foetus/Newborn; VY: Very Young; Y: Young; Y-A: Young Adult; A: Adult.

Most individuals fall in the adult category, with only 30% belonging to the young age class (Table 20). The large-sized bones, especially vertebrae, present cut or butchery marks. A small mammal metapodial showed traces of exposure to fire.

	Ovi/Capra	*Bos taur.*	*Canis fa.*	*Sus scrofa*	*Cervus el.*	*Sus sp.*	*Felis sil.*	*Ursus sp.*
Cranial	1							
Mandible		1			1			
Undet. Teeth				1				
Ribs		1						
Scapula	1				1			
Humerus	2	2	1	1	2		1	
Radius	1					1		
Ulna	1							
Carpal		1						
Sesamoid	1							
Metacarpal				1	1	1		1
1 Phalanx	1			3	1			
2 Phalanx				2				
Pelvis					4			
Femur	2							
Tibia	1			1	1			
Calcaneus					3			
Astragalus					1			
Metatarsal			1		1			
Undet. Metapodial	1	1						1

Table 21 List of body elements identified at Grotta Nuova by species/taxon.

Ovis aries vel Capra hircus	
Tibia	Bp: 37.2; Sd: 13.9; Dc: 19.9
Humerus	Bd: 29.3; Bt: 26.3
Sus domesticus	

Humerus	Sd: 11.9
Bos taurus	
Humerus	Bp: 69.2
Mandible	8: 87.8
Metapodial	Bd:45.9
Canis familiaris	
Humerus	Bd: 39.1; Bt:32.4
Sus sp.	
Metacarpal	Gl: 85.9; Bp: 20.1
Cervus elaphus	
Humerus	Bd: 54.4; BT: 51.1
Calcaneus	Gl: 110.2
Metatarsal	Gl: 258.2; Bp: 33.5; Sd: 20.5; Bd: 37.1
Coxal	La: 53.4
Coxal	La: 65.4
Coxal	La: 52.1
Scapula	Glp: 55.2
Tibia	Bd: 50.8
Astragalus	Gli: 54.7; Glm: 50.4; Bd: 34.8; DI: 30.1; Dm: 32.2
Sus scrofa	
Humerus	Bd: 58.9; Bt: 43.8
Felis silvestris	
Humerus	Bd: 19.3

Table 22 List of measurements from animal bones of Grotta Nuova (following Von Den Driesch 1976)

8.2.2.2. Plant remains

Published reports only explicitly mentioned an abundance of carbonised seeds, with the predominance of broad beans, often found inside or in the vicinity of intact, sometimes overturned pots. The analysis of several of these plant remains from archival collections allowed a more detailed picture of the archaeobotanical composition at Grotta Nuova to be constructed.

Triticum dicoccum	*Triticum sp.*	*Hordeum vulgare*	Undet. Cereals	*Vicia faba*	Undet. Legumes	*Cornus mas*	Undet.	Total
6	1	8	1	360		1	1	378

Table 23 List of plant species from Grotta Nuova (archival collection).

Of just under 400 seeds, broad beans constitute 95% (Table 23). This figure agrees with the qualitative information present in the literature (Rittatore 1951: 25). The rest of the assemblage consists of emmer/spelt, barley and two fruit stones, one most likely of cornel whilst the other, larger one remains unidentified. All the pulses, seeds and stones were fully carbonised but overall were well preserved, given that almost the entirety of the dataset was identified to the taxon level. The groups of plant remains, although in some cases maintaining the record of their original trench/spit location, were never recorded as belonging to the content of one the above-mentioned pots. However, it is apparent that the groups of seeds were not separated by species, which might mean (assuming that at least some of these assemblages came from those vessels) that the content of the pots could also have been mixed. This would constitute a different pattern from, for instance, Grotta Misa (see below), where plant remains were found accurately distributed in separate groups according to species.

8.2.2.3. Human remains

Among the most important aspects of this archival analysis was the identification of a group of 4 human bones, indirectly indicated by one of the old notes on other finds which described them as “close to the child bones”. These consisted of a tibia, a humerus, a clavicle and a large fragment of maxilla still bearing several teeth. All the bones showed the young age of the most likely singular individual, being either unfused or, in the case of the teeth, deciduous. This preliminary conclusion was confirmed through direct observation by Dr. Irene Dori who was a PhD student in palaeoanthropology at Florence University at the time.

This still unpublished information allows for improved interpretation of the use of the cave in an even more significant way than the ecofacts' analysis.

Fig. 73 Map and section of Grotta Misa (Mecchia et al. 2003:94).

8.3. Grotta Misa

8.3.1. Background and existing literature

Grotta Misa is located at 138 m asl, in the territory of the village of Montalto di Castro (VT), on the travertine banks of the Fiora River Valley. In the context of the survey of several prehistoric and protohistoric sites in this area (Rittatore 1951), the archaeological importance of Grotta Misa was first recognised in 1946 by Cardini and Rittatore (1948; Rittatore 1951), followed by a proper excavation in 1947. The cave (Fig. 73) is characterised by a wide entrance and a smaller appendix to the right side of it. A stream runs through the main chamber, which has probably increased its flow in recent times and has therefore destroyed most of the archaeological deposit originally contained in the room. Conversely, the smaller chamber showed a better-preserved archaeological sequence of 2.5 metres, where 5 layers were identified, always appearing similar in their typological content. Large amounts of pottery, along with some copper arrowheads (not uncommon in Tuscany caves – see Cocchi Genick 2002), an amber bead and a millstone were identified. Moreover, human bones related to at least 5 individuals were also retrieved, some of them bearing possible defleshing marks. Skulls are completely missing from the dataset. A hearth structure was certainly the most interesting feature observed in the cave: the original combustion area, situated in the middle of the stratigraphic sequence, appeared as it had been accurately cleaned off, with the ashes distributed in a ring shape and the interior filled with separate heaps of seeds and one of flour. Tongiorgi (1947) produced a detailed analysis of the plant remains of Grotta Misa, identifying *Vicia* *faba* (broad bean), *Pisum arvense* (wild pea), *Panicum miliaceum* (millet), *Triticum aestivum* (bread wheat), *Triticum dicoccum* (emmer/spelt), *Triticum turgidum* (durum wheat), *Quercus sp.* (acorn) and *Cornus mas* (cornel). Millet, emmer/spelt, broad beans and the flour composed the groups of products distributed in heaps in the ash circle described above, in portions measuring 2-3 dm^2 each. According to the distribution observed by Tongiorgi, the offers were laid on the ground from different pots. He also managed to identify the damage caused by *bruchus* on the broad beans, suggesting that the pulses had been harvested at least a few weeks or months before their deposition in the cave.

In contrast to the plant remains, the faunal finds were not extensively published. Only the species were reported in publications, which are the domestic *Bos taurus* (cattle), *Sus domesticus* (pig), *Ovis aries vel Capra hircus* (ovicaprines), *Canis familiaris* (dog) and the wild *Sus scrofa* (wild boar), *Cervus elaphus* (red deer) and *Lepus europaeus* (hare). Bat and amphibian remains were also recorded.

8.3.2. New research from archival collections

The material from Grotta Misa analysed in this work, divided into groups of finds that were summarily wrapped in old newspapers, belongs to preliminary surveys and a sounding carried out by L. Cardini in 1946-7. This is testified by hand-written notes identified on two paper cards which accompanied the groups of finds. Therefore, the dataset does not belong to the materials reported by Rittatore in the 1950s but to earlier ones, only briefly documented in the literature (Cardini & Rittatore 1948). However, considering that Rittatore's report on faunal and botanical remains was very generic and did not provide quantitative data, this small assemblage does provide useful additional information.

8.3.2.1. Faunal remains

A dozen finds were analysed (Tables 24-26), mostly belonging to red deer (*Cervus elaphus*) and secondarily to cattle (*Bos taurus*). One adult individual for each taxon was identified, whereas some of the unidentified bones were unfused and also bore cut marks. This does not reflect the whole range of species mentioned in Rittatore's (1951) report, but can offer some additional information to the existing ones in terms of age and body parts representation (assuming that the dataset available constitutes a representative sample).

	NISP	NISP% - Total	NISP% - Total determined	**MNI**	MNI% - Total
Bos taurus	1	9,1%	33,3%	1	50,0%
Cervus elaphus	2	18,2%	66,7%	1	50,0%
Total determined	**3**			**2**	
Undet	8	72,7%			
Total	**11**			**2**	

Table 24 List of NISP and MNI from Grotta Misa and related percentages of occurrence.

	A	**Tot.by species**
Bos taurus	1	1
Cervus elaphus	1	1
Total determined	**2**	**2**

Table 25 Age classes of the animal species identified at Grotta Misa (archival collection) by MNI. F/N: Foetus/Newborn; VY: Very Young; Y: Young; Y-A: Young Adult; A: Adult.

	Bos taurus	*Cervus elaphus*
1 Phalanx		1
Calcaneus	1	
Astragalus		1

Table 26 List of body elements identified at Grotta Misa by species/taxon.

8.3.2.2. Human remains

Only one fragmented human ulna of a young individual was recovered. This confirms the existing published data, while providing the (previously unspecified) element of the age of at least one of the buried individuals.

8.4. Buca Tana di Maggiano

8.4.1. Background and existing literature

This cave is located 70 m asl, on the first uplands of the Apuane Alps, in the territory of Maggiano (LU) in Northern Tuscany. The small entrance of the cave was discovered in 1867 by Regnoli and Minto, at the rocky bottom of a mountain gorge (Minto & Puccioni 1914: 1). In 1912 Puccioni undertook the first mapping and excavations of the cave (Fig. 74), which were only resumed in 1966. After a 15 m-deep shaft, the cave presents a wide chamber where the archaeological remains were found. These consisted of bone tools, grindstones, flint, pendants and buttons of various materials including steatite, shell, and amber, as well as possible rock art, and abundant pottery which typologically dates the context to the Eneolithic and, secondarily, to the Early-Middle Bronze Age and Iron Age. Faunal remains were apparently abundant. They belonged to domestic dog (Puccioni 1914: 27-28), badger and weasel among the carnivores; cattle, sheep, goat, red deer and domestic and wild boar among the ungulates; rodents including dormouse; insectivores, bats, molluscs and two different turtle species. Apparently, dormouse and turtle remains were so abundant that the author and Prof. Forsyth Major thought these animals had been used as a food source for humans at the site. Bones of all the main domesticated species carried some cut and butchery marks and/or traces of burning.

Human remains had already been identified in these early excavations. A later excavation, conducted in 1966, revealed at least 39 individuals comprising men, women and children. The cave was also frequented in the Central phase of the Middle Ages for monastic use, as documented by Ciampoltrini (2000), showing the evidence of modern anthropic modifications in the inner room.

Fig. 74 Plan (a) and profile (b) of the Buca Tana di Maggiano (after Minto & Puccioni 1914: 2-3); scale is 1:420 (a) and 1:500 (b).

8.4.2. New research from archival collections

The analysed faunal remains from Buca Tana di Maggiano were all wrapped in newspaper sheets dated earlier than 1997, meaning that the survey or excavations had to have been carried out after this date or that the finds underwent some kind of re-organisation. Therefore, it is unknown whether the finds here examined belong to the 1912-3 or the 1966 digs. Almost 100 bone fragments were analysed and 50% of them were identified by species/taxon. They all seem to come from a trench, layer or area called "A" (although some present a note reading "B" that was howeve r deleted by the same writer).

Of the around 150 bone fragments analysed, 50 were identified by species (Tables 27, 29). 50 % of these belong to ovicaprines, including at least one foetus or very young individual and one more mature one (Table 28). It is interesting to note that 80% of these remains consist of teeth, whereas 80% of the remaining ones belonged to the subjuvenile specimen). A notable coincidence is that the entire swine dataset identified (16% of the total) also consisted of teeth, most likely from one individual. 13% of the identified assemblage belong to hare, which is present with 2 individuals: one young and one adult. Red deer and 2 small mammals complete the range of animal species recognised in Buca Tana di Maggiano's archival collection, along with birds, bats and microfauna. It is worth mentioning that a small mammal metapodial was the only bone to exhibit cut marks.

	NISP	NISP% - Total	NISP% - Total determined	**MNI**	MNI% - Total
Ovis aries vel Capra hircus	25	16,7%	50,0%	2	25,0%
Bos taurus					
Cervus elaphus	3	2,0%	6,0%	1	12,5%
Lepus sp.	6	4,0%	12,0%	2	25,0%

Sus sp.	8	5,3%	16,0%	1	12,5%
Small mammals	8	5,3%	16,0%	2	25,0%
Total determined	**50**			**8**	
Rodents	X				
Chiroptera	X				
Birds	X				
Undet	100	66,7%			
Total	**150**			**8**	

Table 27 List of NISP and MNI from Buca Tana di Maggiano and related percentages of occurrence.

	VY	Y	Y-A	A	Tot.by species
Ovis aries vel Capra hircus	1		1		2
Lepus sp.		1		1	2
Small mammals		1		1	2
Total determined	**1**	**2**	**1**	**2**	**6**

Table 28 Age classes of the animal species identified at Buca Tana di Maggiano (archival collection) by MNI. F/N: Foetus/Newborn; VY: Very Young; Y: Young; Y-A: Young Adult; A: Adult.

	Ovis aries vel Capra hircus	*Cervus elaphus*	*Sus sp.*	*Lepus sp.*	Small mammal
Cranial		2			
Mandible			1	1	
Upper teeth	7				
Lower teeth	6		4		
Undet. Teeth	7		4		8
Scapula	1				
Humerus	1				1
1 Phalanx	1				1
Femur				2	1
Patella					1

Tibia				1	
Fibula					2
Metatarsal				2	
Undet. Metapodial	3	1			

Table 29 List of body elements identified at Buca Tana di Maggiano by species/taxon.

Lepus sp.	
Tibia	Bp: 19.4; Sd: 8.5

Table 30 Measurements taken from the only intact animal bone from Buca Tana di Maggiano (Von Den Driesch 1976).

8.5. Grotta dell'Osservatorio di Cetona

8.5.1. Background and existing literature

The discovery of the archaeological complex of Belverde at Mount Cetona (Siena, North Tuscany) (Fig. 75) in the 1920s by Prof. Ugo Calzoni demonstrated that this region had been as important in the Copper and Bronze Age as it was during the Etruscan period (Calzoni 1962). Almost 20 archaeological caves were identified by the scholar, along with other structures that were later found to be much more recent (Martini & Sarti 1990). These caves are different from most of the others known in Central Italy, as they are not karstic ones but are formed as a result of the collapse of local travertine rock formations. All the caves, of different dimensions and aspects, held important testimonies of protohistoric human frequentation. Some of the sites (such as the Grotta di San Francesco, Grotta del Poggetto and Grotta dell'Antro della Noce, Grotta della Carbonaia and Grotta delle Tre Tombe) held human remains. Some held also faunal and plant remains, flat bready cakes, as well as peculiar artefacts such as millstones, stone axes, bronze daggers, spindle whorls, and an impressive amount of pottery. Hearths or reddened areas were also often identified, as well as several copper or bronze daggers and swords, which are rare in most other coeval caves in Central Italy. A. Oliva (1939) listed a very wide range of palaeobotanical remains identified in these caves, including bread wheat, millet, barley, broad bean, wild pea, acorn, berries, cornel, wild grape seeds, and sorb. Below is a short description of the main archaeological caves investigated by Calzoni, which also shows the limited importance given to the analysis of faunal remains compared to artefacts and even plant remains, with the exception of very unusual depositions such as a whole cattle skeleton and several dog skulls close to the human burials.

- *Grotta di San Francesco* (Calzoni 1954; Cocchi Genick 2002): this cave has a wide and well-lit entrance chamber, followed by a second, still illuminated, chamber. Both of them were used during the historic period as a Catholic chapel. The Bronze Age deposit was 1 metre below the surface and had the considerable depth of 4 metres. One side of the first chamber featured a hearth with ashes and reddened soil. Here, artefacts such as a stone sharpener, a small polished green stone axe, decorated pottery sherds and spindle-whorls were found, along with two bone awls, a copper dagger and a human skull. In a darker and deeper part of the cave an apparently man-made tunnel, made of rocks set in a hut-like manner (i.e., according to the author's description, creating two oblique stone walls that joined together on the top forming a sort of triangularly-shaped tunnel), held a concentration of burnt cereal (bread wheat, millet, broad bean and acorn) and pottery sherds of large vases (maybe originally containing the grains), decorated sherds and millstone fragments.

- *Grotta (*or *Antro) della Noce* (Calzoni 1962; Cocchi Genick 2002): this cave has a wide entrance with a short tunnel leading to another small chamber and a final small duct to the right side. In the entrance chamber was a large hearth with pot sherds and many human bones. Towards the left side was a sort of stone wall with a soil fill containing a human skeleton (lacking the mandible) and few human bones. Pot sherds, spindle whorls, stone smootheners, faunal remains including wild boar teeth were also identified. A layer especially rich in ash yielded a copper dagger, remains of hearths and some blocks of uncooked clay. Below that was a human skull, pot sherds and more ash. The skull was lying in an overturned position, similar to others later found in the same cave. Not far away was the mandible and a bone awl. Close to this group of finds were two more upside-down human skulls and one of dog. Dog remains were often found close to the human bones in the Belverde complex. Four bone awls, a bone dagger, a possible ceramic lamp, spindle whorls, pot sherds and an amber bead were also recovered. Even more importantly, in a 4m-deep shaft, human bones, a bronze sword and a whole cattle skeleton with several butchery marks were found, leading Calzoni to hypothesise that the animal had been slaughtered and transported to the place to be eaten, but after a rock collapse it was abandoned there and fell in the crevice after decomposition. To the other side of the cave was yet another copper dagger. In the tunnel of the cave, several archaeological features were also identified, such as ash, a bronze pin, pot sherds and a drilled grey stone mallet lying on the surface. About 1 metre below this layer, at the beginning of the duct, a chaotic pile of human bones was found. 5 more metres below, a travertine slab was found covering two bronze swords with crossed points, a few bones of a child and a heap of burnt bread wheat.

-*Antro del Poggetto* (Calzoni 1933; Cocchi Genick 2002): this cave is located next to the Antro della Noce. An archaeological layer was identified at a depth of 1.5 m in the entrance chamber. Fifty centimetres below this, a heap of burnt acorn and a green stone axe were identified. A tunnel leading to another chamber yielded a hearth, pot sherds and a bone awl with a burnished point. Below this, two more hearths, one lying on a slab, were found. Towards the left, a bronze axe was retrieved below a 3 m-deep rock collapse, along with the largest concentration of pots in the Belverde complex; bone awls, spindle whorls, fragments of grindstones, blocks of pumice, stone smootheners, a few human remains including two tibiae and three skulls, and some dog remains were recovered. Another part of the cave held millstones and grindstones and a quandrangular white stone smoothener. In the darkest inner room, a very accurate stratigraphic investigation was conducted. Upon a conical shaped pile of debris, remains were found up to 3 metres high. The Bronze Age layer was 1-metre-deep on average and was homogenously distributed, with ash and charcoal identified everywhere throughout the chamber. Similar remains to the other caves in Belverde were found, including pottery, a copper dagger, a bronze bracelet, a spatula, drilled shells, stone smootheners and two decorated antler pinheads. A tunnel was found at the end of the cave, communicating with the Grotta della Noce, and an overturned skull, lying below a boulder, two human upper long bones, and a bronze stick were found here. The interpretation by Calzoni was that the two caves constituted the home of a tribal chief.

- *Grotta della Carbonaia* (Calzoni 1962; Cocchi Genick 2002): This cave appeared to Calzoni as a sort of midden. Several remains of lesser value were found here, along with human bones. Only one overturned skull was identified, accompanied by long bones stuck vertically along the wall (Cfr. Grotta di Collepardo, Chapter 7).

- *Le Tre Tombe* (Calzoni 1962; Cocchi Genick 2002): This cave held pot fragments including a so called "boiler", awls, a drilled shell, a ceramic and some antler pinheads, spindle whorls, and a stone polisher. A hearth and the remains of a male child were also identified.

Despite the accurate (for that time) investigations undertaken in these caves, most of the non-artefactual material and of the stratigraphic indications have been lost to time. Therefore, inferences about this important complex are not easy to formulate. However, excluding archaic hypotheses such as the "home to a tribal chief" and the cattle meat-based feast interrupted by a rock collapse, Calzoni identified such complexes as a Central cult place serving the Middle Bronze Age people of Tuscany (and maybe a wider part of Central Italy). This group of sites allow us to identify the most complex and diversified ritual and burial patterns for this region and period, clarifying that the religious and symbolic world of these communities was far less simple than expected in the 1930-50s. The overturned skulls, often accompanied by dog remains; the hearths and heaps of burnt crops, often differentiated by species in the various caves; the deposition of swords; and even the burial of a butchered and uneaten cattle all constitute fascinating food for thought and comparative material for a more up-to-date analysis and interpretation of the other known ritual contexts of Bronze Age Central Italy.

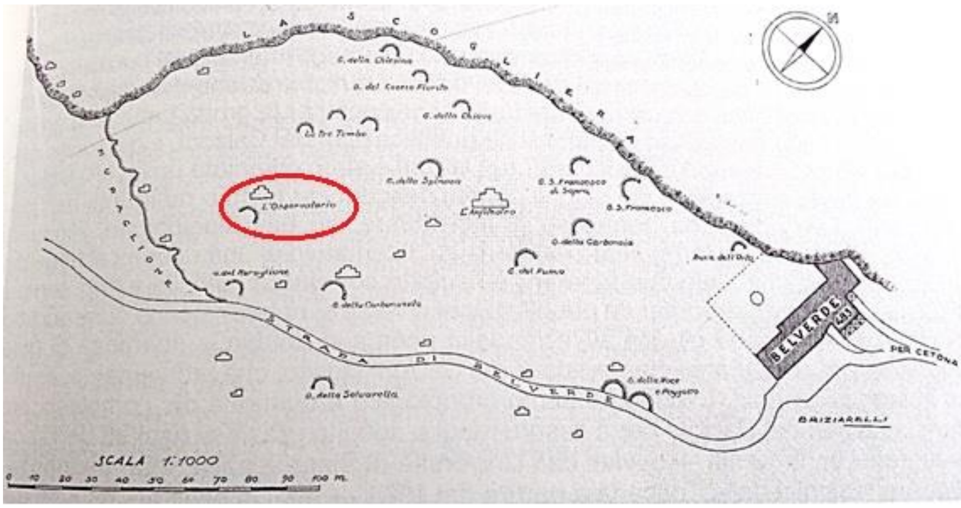


Fig. 75 Calzoni's plan of the sites (mostly caves) identified at the Belverde di Cetona Mount (Martini & Sarti 1990: 71). The semi-circles correspond to the archaeological caves, while the pyramidal symbols represent supposed cult structures that have been now revised and dated to historical periods (Calzoni 1962). In the red circle: Grotta dell'Osservatorio.

8.5.2. New research from archival collections

The faunal material from Grotta dell'Osservatorio was the most controversial in terms of reliability and methodological acceptability. Although being quantitatively the largest (417 bones) and best preserved (75% identified) assemblage, it lacked almost any trace of documentation and clearly appeared to be the result of an intentional selection. The archival catalogue, which mentions the additional presence of sheep and red deer, confirms this assumption.

All the bones (Fig. 76) were stored in two wooden boxes with hand-written notes reading "Grotta dell'Osservatorio di Belverde" which contained only cattle remains (Table 32). Some of the remains were marked with painted dots of different colours, but the meaning of this symbology is now unknown. The dots did not show any pattern related to body parts, preservation degree or species; therefore, they might have served to distinguish different areas of provenience of the bones. However, lacking any reference in literature for the cave itself, it was deemed safer to analyse the assemblage without consideration of these symbols.

Fig. 76 Animal bones from Grotta dell'Osservatorio.

The cattle bones were all fairly well preserved; the long bones displayed consistent breakage patterns. The estimated MNI is 5 (Table 31), with at least 1 young individual at an advanced age, 1 young-adult and at least 3 adults. The very young age classes appear completely absent. One of the adult individuals was of a much larger size than the other, but the number of undamaged bones were still too limited to draw a plot for sex determination based on the measurements. Some of the unidentified bones showed fire blackening and cut or butchery marks.

	Y	Y-A	A
Bos taurus	1	1	3

Table 31 Age classes of the animal species identified at Grotta dell'Osservatorio (archival collection) by MNI. F/N: Foetus/Newborn; VY: Very Young; Y: Young; Y-A: Young Adult; A: Adult.

Cranial	Maxilla	Mandible	Upper teeth
6	3	10	40
Lower teeth	Undet. Teeth	Atlas	Axis
11	12	2	1
Vertebrae	Scapula	Humerus	Radius
2	3	4	7
Ulna	Carpal	Sesamoid	Metacarpal
4	10	1	13
1 Phalanx	2 Phalanx	3 Phalanx	Pelvis
52	35	30	6
Femur	Patella	Tibia	Calcaneus
7	6	9	8
Astragalus	Metatarsal	Tarsal	
14	7	11	

Table 32 List of cattle body elements identified at Grotta dell'Osservatorio di Belverde.

Bos taurus	
Radius	Gl: 255.6; Bfp: 67.2; Sd: 33.6; Bdd: 64.9
Radius	Gl: 247.7; Bp: 67.5; Bfp: 60.6; Sd: 32.6; Bd: 61.2
Radius	Gl: 284.2; Bp: 79.9; Bfp: 71.5; Sd: 33.6; Bd: 63.5
Radius	Bp: 69.9; Bfp: 64.4
Radius	Bd: 58.8
Ulna	Gl: 303.2; Lo: 77.9; Sdo: 44.3
Ulna	Bpc: 40.7; Lo: 79.9; Dpa: 54.3
Ulna	Bpc: 42.6; Lo: 85.3; Sdo: 46.9
Ulna	Dpa: 53.4
Tibia	Sd: 31.6; Bd: 51.8
Tibia	Sd: 30.5; Bd: 51.6

Tibia	Bd: 52.7
Tibia	Bp: 86.7
Tibia	Bp: 79.9
Tibia	Bp: 82.1
Tibia	Bp: 74.1
Tibia	Sd: 35.4; Bd: 58.1
Tibia	Sd: 48.4; Bd: 77.2
Femur	Bd: 83.9
Femur	Bd: 81.8
Femur	Bd: 84.9
Femur	Bp: 104.7
Femur	Bp: 101.7
Femur	Bp: 98.3
Humerus	Bp: 107.5
Humerus	Glc: 252.3; Bp: 73.6; Sd: 29.1; Bd: 69.5; Bt: 61.2; Ht: 28.2
Humerus	Glc: 248.6; Bp: 74.6; Sd: 27.5; Bt: 64.7; Ht: 28.4
Metacarpal	Bp: 48.5; Sd: 25.8
Metacarpal	Bp: 52.8; Sd: 27.1
Metacarpal	Bp: 58.2
Metacarpal	Bd: 55.9
Metacarpal	Gl: 176.7; Bp: 48.1; Sd: 23.8; Bd: 46.7
Metacarpal	Sd: 36.3; Bd: 70.5 (without bone growth) or 77.3 (with bone growth)
Metacarpal	Sd:27.7; Bd: 46.1
Metacarpal	Bd: 58.3
Metacarpal	Bp: 53.5; Sd: 27.9

Metacarpal	Gl: 178.2; Bp: 47.3; Sd: 26.9; Bd: 50.1
Metatarsal	Bp: 49.7; Sd: 23.9
Metatarsal	Bp: 44.9; Sd: 25.9
Metatarsal	Bd: 50.1
Calcaneus	Gl: 118
Calcaneus	Gl:138.2
Calcaneus	Gl: 130.1
Calcaneus	Gl: 110.5
Calcaneus	Gl: 134.9
Calcaneus	Gl: 112.9
Calcaneus	Gl: 109.2
Astragalus	Gli: 65.3; Glm: 57.4; Bd: 38.7; Di: 35.3; Dm: 34.8
Astragalus	Gli: 53.9; Glm: 50.8; Bd: 33.5; Di: 31.2; Dm: 30.1
Astragalus	Gli: 55.7; Glm: 53.1; Bd: 35.1; Di: 31.9; Dm: 32.7
Astragalus	Gli: 52.4; Glm: 46.1; Bd: 32.2; Di: 30.8; Dm: 28.1
Astragalus	Gli: 60.9; Glm: 53.7; Bd: 39.1; Di: 33.3; Dm: 35.8
Astragalus	Gli: 50.6; Glm: 47.1; Bd: 31.4; Di: 28.1; Dm: 30.5
Astragalus	Gli: 65.3; Glm: 59.1; Bd: 38.7; Di: 35.3; Dm: 34.9
Astragalus	Gli: 60.5; Glm: 55.9; Bd: 38.6; Di: 33.1; Dm: 33.3
Astragalus	Gli: 58.8; Glm: 55.4; Bd: 37.3; Di: 31.8; Dm: 32.6
Astragalus	Gli: 60.8; Glm: 53.4; Bd: 38.1; Di: 35.7; Dm: 32.6
Astragalus	Gli: 59.8; Glm: 55.5; Bd: 36.6; Di: 34.5; Dm: 35.3
Astragalus	Gli: 64.9; Glm: 58.3; Bd: 40.5; Di: 38.4; Dm: 37.3
Astragalus	Gli: 64.5; Glm: 58.9; Bd: 36.9; Di: 35.5; Dm: 34.3
Astragalus	Gli: 54.6; Glm: 50.8; Bd: 33.3; Di: 33.3; Dm: 29.9

Patella	Gl: 50.7
Patella	Gl: 57.2; Gb: 44.1
Patella	Gl: 56.5; Gb: 45.1
Patella	Gl: 57.6; Gb: 43.1
Patella	Gl: 57.1; Gb: 44.4
Patella	Gl: 69.1
M3	L: 34.8; B: 12.2
Mandible	9: 65.5; 15c:29; 15b: 40.5
Mandible	Lm3: 37.2; Bm3: 15.8
Mandible	8: 72.1; 15b: 46.9; 15a: 62.3
Mandible	8: 78.7; 15a: 64.7; 15b: 41.8; 15c: 30.4
Mandible	B: 11.8
M3	L: 35.3; B: 12.8
M3	L: 34.9; B: 12.9
M3	L: 32.7; B: 12.9
Scapula	Dha: 299.9; Glp: 69.1; Lg: 59.9; Bg: 52.4; Slc: 54.6
Scapula	Lg: 51.5; Bg: 42.2
Scapula	Lg: 58.1; Bg: 45.8
Coxal	La: 64.4
Coxal	La: 64.8
Coxal	La: 62.7
Axis	Lcde: 97.8; Lapa: 74.6; Bfcr: 77.8; Sbv: 39.9
Horn	46: 32.7
Horn	47: 14.1

Table 33 List of measurements from the animal bones of the Grotta dell'Osservatorio (Von Den Driesch 1976)

8.6. Preliminary interpretations

These caves all are located in the region of Tuscany (Buca Tana di Maggiano, Grotta dell'Osservatorio di Belverde) or North-Western Lazio, close to the Tuscany border (Grotta Nuova, Grotta Misa). However, most are widely separated. The distance between Buca Tana di Maggiano and Grotta dell'Osservatorio di Belverde is almost 250km, and between Cetona (SI) and Ischia di Castro (VT) almost 70 km. Only the last two caves, Grotta Nuova and Grotta Misa, can be considered as close as these two caves are separated by only a few kilometres within the same area. In addition, Grotta Nuova and Grotta Misa share a strong typological affinity in the pottery retrieved from the sites, which is also extremely similar to that found at the Belverde Complex (Cocchi Genick 2002). Moreover, the geomorphology of these two sites, with two chambers and a stream running through them, the consistent depth of the two archaeological deposits (2.5 m) and the higher intensity of remains in the first two meters make these sites even more similar to one another.

All the caves have in common a cult and funerary use by humans during the Middle Bronze Age (in most cases, with an earlier start between the Neolithic and the Copper Age/Early Bronze Age), although we should not rule out entirely the possibility of other human uses. This is now also confirmed for Grotta Nuova, where the remains of a child were recognised on the occasion of the archival re-analysis reported above. Another aspect that recurs in all caves except the Buca Tana di Maggiano, and which is also found at Grotta Mora Cavorso (see Chapter 5) and in other published caves in Central Italy (e.g. Grotta Sant'Angelo, Di Fraia & Grifoni Cremonesi 1996) is the flint typology, which appears atypical and hardly ascribable to any technological category (see, for a general discussion of the topic, Rolfo et al. 2013b). It could perhaps be the case that such flint flakes or blades were deposed intentionally and with a specific meaning related to their material nature and ancestral use, rather than forgotten or accidentally left at the sites. This would be supported by the *cran* identified in one of the pits at Mora Cavorso Cave (see Chapters 5 and 9).

With regard to the plant remains, the Belverde Complex, Grotta Misa and Grotta Nuova all showed significant signs that these ecofacts were deposited during ritual performances. They were found at sites where human remains were also located, although detailed published information on these is only available in the case of the Northern Lazio caves. Here, the range of plant types recovered seem to coincide (similarly to those from Grotte di Belverde), but the ritual practices appear completely different and very specific. Grotta Misa (Tongiorgi 1947) had an interesting case of a hearth modified in a ring-shape that contained several heaps of cereals, legumes and flour distributed on the floor according to a specific plan. At Grotta Nuova, instead, the ecological deposits were located close to overturned pots, one decorated with a cruciform motif, or still inside intact ones. This demonstrates again the variability of ritual practices that were performed by similar human groups. It also hints at the complex significance of such practices.

Despite their geographical distance, a similarity can be also spotted in the faunal dataset of Grotta Nuova and Buca Tana di Maggiano, as both assemblage contain a metapodial of a small mammal (most likely a marten) with traces of anthropic modification: in the first case, the bone is fully burnt, in the other it bears several small cut marks. This might suggest the existence of specific ritual practices conducted on species that were less economically important for humans (see, for example, the case of the squirrel at the Arene Candide – Tagliacozzo et al. in press).

Any absence of ovicaprine bones can unfortunately be attributed to research bias: the literature mentions the presence of this species both for Grotta Misa and for the Belverde complex (see Chapter 9). New aspects to be highlighted are the high incidence of red deer, especially at Grotta Nuova and Grotta Misa, and of the bones of sub-juvenile ovicaprine identified for the Buca Tana di Maggiano, which adds a new case to the list of the already known case-studies widespread in Central and southern Italy. This could certainly be attributed to a forested environment and a subsequent convenience of hunting practices, but symbolic implications cannot be excluded (see, for example, Whitehouse 2007; Harris 2015).

A comparison with nearby settlements would have been useful to highlight more unusual patterns within the cave deposits described above. Unfortunately, literature on the archaeology of this areas has mainly focused on the caves, and scarce information is available on open-air dwellings (Cuda 1996; Negroni Catacchio

& Miari 1992). Hopefully, the future resumption of excavations at the settlement of S. Maria in Belverde, in the Cetona complex, will provide new insights into this topic.

CHAPTER 9 - DISCUSSION: MIDDLE BRONZE AGE CAVE USES IN CENTRAL ITALY FROM A SOCIAL BIOARCHAEOLOGY PERSPECTIVE

9.1. Aims

This chapter discusses the results of my research into the human use of caves in Middle Bronze Age Central Italy. This research has been carried out on three different levels: through an analysis of the available literature (see Chapter 2 and 3), in the field (Chapters 5, 6, 7) and in archives (Chapter 8). A particular focus has been put on the ecofacts found in the sampled sites. The theoretical approach of social bioarchaeology detailed in Chapter 4 is integrated with the new data uncovered for this project, with an emphasis on contexts of discovery. Crucially, this approach has led to an improved understanding of the social significance of ecofacts found in archaeological caves (Sivestri et al. in press b). Along with a main focus on zooarchaeology and, secondarily, on palaeoethnobotany, I have closely considered all available information from the analysed landscapes and sites, in order to offer new contextual reflections. Despite the quite specific geographical and chronological boundaries chosen for this thesis, this work also aims to stimulate new research on the application of the proposed socio-bioarchaeological approach to other periods, regions, and types of sites. Three main sections compose this chapter. First, I will propose a critical assessment of the changing interpretations of cave uses (section 9.2) from a wider to a narrower historical and geographical perspective, i.e. from the Palaeolithic to historical times and from a world-wide overview to a more focused regional one). In the following sections, I will focus on the ecofacts retrieved in MBA Central Italian caves according to the literature-based (9.4), archival (9.5) and field (9.6) research I have undertaken for this thesis. Section 9.7 will explore the methodological and interpretive problems of previous subsistence-related research on cave contexts. In particular, I will re-evaluate, contrast or reinforce the results of previous work. In an attempt to propose a different and improved use of such data I will detail all the archaeological features identified in the course of previous as well as this research. This is done by looking at the old and new ecofacts retrieved from the sampled contexts, an analysis that will help lay the ground for improved inferences on the ritual use of animals and plants in the Protohistoric caves of Central

Italy. Such ecofactual information is merged with other available data on the Central Italian landscape, and the structures and artefacts identified in this area. This analysis will contribute to build a sound contextual framework to draw new inferences on cave use in MBA Central Italy, or confirm the results of previous research on the topic. Finally, section 9.8 will propose an interpretation of the ritual performances identified in the sampled caves. In addition to summarising the main results of this research, the conclusion of this chapter will stress the importance of involving ecofacts also in the analysis of non-exclusively domestic contexts. In addition, I will suggest some future directions for research and discuss the potential challenges of the proposed approach.

The results of my thesis, extensively discussed in this chapter, are manifold. On one hand, this discussion provides a new, needed proof of the validity of social bioarchaeology as a theory *and* a practice. This type of approach to ecofacts (discussed in Chapter 4) has often been claimed to be potentially useful, but has rarely found direct applications in archaeology, which is one of the main criticisms it has attracted from scholars (Russell 2012). The use of a perspective so different from the traditional, subsistence-focused one, has allowed me to identify new ritual features confirming the important symbolic significance of caves in Central Italy. These features are, for example, the selection of animal body parts or age classes; the recurrent presence of certain animal or plant species; their association with burial practices or their separation from them; and several other anomalous characteristics of bioarchaeological assemblages found in caves, which never follow the trends of dwelling sites (see Chapter 3.9.1). In addition, comparisons with ethnographical and historical sources have offered some interpretive stimuli to a deeper understanding of the symbolism of certain identified selections (e.g. the role of pigs in caves or that of hare – and even more importantly – of broad bean in funerary practices). Finally, issues related to deriving palaeoconomical inferences from these selected ecofactual assemblages have been addressed (Chapters 2-3-4). This allowed me to identify those features that are less likely to have been affected by ritual manipulations, and that can therefore be used for reliable subsistence interpretations (e.g. seasonality, economic variability, secondary products).

9.2. Cave uses

9.2.1. Interpretation of cave uses in Mediterranean later prehistory

As discussed in Chapter 3, the interpretation of the human use of caves is strongly influenced by the intellectual (if not also socio-political and economic) context in which research is produced. This issue is certainly relevant to the Italian Neolithic and Bronze Age caves that are the focus of this thesis. In relation to these contexts, we can note a clear interpretive divergence depending on the geographic provenience of the scholars involved in cave studies. The Italian scholars (e.g. Puglisi, Radmilli, Cremonesi) who first investigated caves in the early second half of last century, tended towards a mundane interpretation of the sites. The more recent interpretations by British archaeologists (such as Whitehouse and Skeates) have been influenced by post-processualism, and are usually ritual-oriented. Another striking case of such an interpretive discrepancy is provided by research on the Bronze Age caves in Crete. While these sites were traditionally considered domestic sites (Tomkins 2009), more recent research by Peter Tomkins has claimed them to be cult places. This discrepancy leads us not only to question the methodologies used to interpret such caves, but also to reflect on the validity of interpretations - so strict and one-sided of their uses.

Colin Renfrew was the first scholar (Renfrew et al. 1985: 11-26) to try to identify suitable criteria to distinguish a cult from a non-cult site. However, his approach presents some notable shortcomings, such as his unconscious belief that a site that looks “unusual” is undoubtedly cultic, which led to the use of circular arguments. Such a dichotomy between a non-ritual and a ritual place may be in fact unrealistic, as we cannot take for granted that ritual is disconnected from everyday life. With the new approach first proposed by Bradley (2005), the interpretive dichotomy between “ritual” and “mundane” has started to be reconsidered and overcome. Through a wide range of trans-regional and trans-temporal examples, Bradley managed to demonstrate that the ritual and the domestic sphere are not separate and independent aspects of human life, especially in simpler civilisations such as the prehistoric ones. For example, Bradley notes that a Christian cross on a Galician modern barn (Bradley 2005: 21) might make the latter easily mistaken for a shrine. The intent of the cross, however, is to protect the harvest, whilst (also) symbolising death and rebirth. Domesticity and cult, therefore, coexist in an osmotic way. Such an interpretation, referred to a well-known cross symbology, may appear obvious to us, as the features that we observe are not too culturally distant from our modern world. Naturally, such an interpretive attempt cannot be that easily successful with prehistoric cultures in which we do not belong. Therefore, Bradley (2005: 6) admits that it is far easier to identify the traces of ritual in the archaeological record rather than being able to interpret their meaning. In the light of this, we can acknowledge that archaeological sites, including caves, are unlikely to reflect a dichotomised conceptual reality, even when they were frequented on special occasions. It has to be emphasised that trying to separate religious and domestic activities in past societies can lead to misleading interpretations of the evidence. That said, it is evident from the observation of several specific archaeological features (see Chapter 3), that most Bronze Age caves in the Old and New World have hosted practices of strong ritual value (Bergsvik & Skeates 2012; Dowd 2015; Moyes 2012; Tolan-Smith 1997). These practices might have originated from or been merged with everyday life- as religion and death are in fact part of human life, but in many occasions they have remained quite isolated from regular domestic life, particularly - but not always- when accompanying funerary practices.

9.2.2. The changing uses of caves from the Neolithic to the Bronze Age in and around Central Italy: a critical assessment

Starting in the Upper Palaeolithic, caves in Central Italy have recurrently hosted ritual performances. In some cases, especially from the Early Neolithic, these natural structures were also chosen as burial places. This is the case of the well-known caves of Grotta Sant'Angelo (Di Fraia & Grifoni Cremonesi 1996) and Grotta Continenza (Barra et al. 1989) in Abruzzi, as well as the more recently discovered Grotta Mora Cavorso (Rolfo et al. 2016) in South-Eastern Lazio. During the Copper Age, natural and artificial caves became the most common burial places in Europe, from the Iberian Peninsula (Weiss-Krejci 2011) to Crete (Whitehouse & Renfrew 1974). Notably, caves represent the only archaeologically known funerary sites in Copper Age Central Italy, especially in Tuscany, with collective (or, at least, multiple) burials identified in most of them (e.g. Grotta dello Scoglietto, Grotta del Fontino, Cavanna 2007).

Ruth Whitehouse (1992; 2007) has sought to identify the most common forms of cult performed in a number of caves from Central, Southern and insular Italy. Her work on Central Italy has focused on 9 caves [5], the majority of which continued to be ritually used in the Bronze Age.

The ritual markers identified by Whitehouse consisted of the burial itself, cave/portable/body art, a cult of water and rock-cut tombs/hypogea (summarised in Whitehouse 2007: 102). Renata Grifoni Cremonesi - the most prominent Italian expert in the subject - recognised that the recurrence of certain markers might indeed have indicated that caves were used as cult sites. However, she criticised the simplistic attribution of this 'function' to so many sites (in Whitehouse's sample). Given the biases Grifoni Cremonesi highlighted in the data from most of the caves, she proclaimed the impossibility of gaining a reliable understanding of their uses (Grifoni Cremonesi 1996: 309). Following widespread criticism of Whitehouses' position (D'Arragon 1996; Grifoni Cremonesi 1994; Skeates 1994; Morter & Robb 1998; Pluciennik 1998), Whitehouse (2007) has made a strong effort to assess the cult use of cave sites by contrasting them with open settlements. Her determination to draw a strict line between cult and domestic sites probably constitutes the main weakness of her theory. In particular, her work has overlooked the ground-breaking conceptual revolution brought about by Richard Bradley in 2005. Moreover, Skeates' (1994) specific critique of an excessive interpretive generalisation of these practices still seems valid. In this work, therefore, I aim to show the variability of cave rituals more than stressing the affinities between them.

9.2.3. Cave uses in Middle Bronze Age Central Italy

The Middle Bronze Age, especially its early stages (1-2), seems to have constituted the last phase of a long-term period of intense frequentation for Central Italian caves

[5] Grotta del Beato Benincasa, Grotta dell'Orso di Sarteano, Grotta Lattaia, Pozzi della Piana, Grotta Patrizi, Grotta Sant'Angelo sulla Montagna dei Fiori, Grotta delle Marmitte, Grotta dei Piccioni, Grotta Continenza.

(Grifoni Cremonesi 1999). Over 300 years (1750-1350 BC), human occupation of these sites appears to have developed in an increasingly tangible ritual direction, frequently with a mortuary dimension. Although a distinction between non-funerary ritual caves and funerary ones has been accepted (Cocchi Genick 1995; Guidi 1992), some sites that yielded only a few fragments of human bone are considered to fall in the first category. For example, at Grotta Beatrice Cenci (Agostini et al. 1991), for which an interpretation of use has never been attempted in the literature due to the insufficient contextual information available, the presence of human skull fragments (in a footnote of the only extensive article on this site) has not been considered. Prior to the systematic investigation of Grotticella W2 in 2012, Pastena Cave's Bronze Age frequentation was only considered as possibly ritual. This hypothesis drew on the fact that only one human knee bone had been retrieved, while more numerous human remains were present in the Neolithic layers (see Chapter 6). Finally, my archival re-analysis of bioarchaeological finds from Grotta Nuova (Chapter 8) has revealed the presence of several bones of a child in the assemblage. This evidence has shed new light on the utilisation of this famous cave, for which the claimed lack of human remains had been explicitly mentioned by Daniela Cocchi Genick (1995).

The presence of human bones in most of these caves suggests that they all played a role in funerary rituals. Enormous variability in funerary practice is nevertheless attested from site to site. The number of individuals retrieved to date from each cave may range between one and some dozens. Caves could have hosted either primary, depositions with the bodies initially buried in the same place where they were later found) or secondary burial depositions, with infinite types of practices that can fall in one or the other category, or sometimes in between them (Haglund & Sorg 2001: 109-110), and that need careful taphonomical and contextual analysis in order to be identified and studied. In addition, there is a debate as to whether caves were also used for domestic purposes. This is denied by Guidi, except for some specific cases (Guidi 1990). The domestic hypothesis is considered very hard to demonstrate by Grifoni Cremonesi (1996) yet very likely by Casi and di Gennaro (1992) in the case of caves located close to settlements. All these positions reflect different views but have one feature in common – namely unnecessary categorisation. Bradley's (2005) perspective, which denies the existence of an absolute dichotomy between past ritual and domestic activities, has yet to permeate Italian scholarship. New support for his position is, however, provided by archaeological science (Iaconis & Boschian 2008). In particular, the analysis of soil thin sections from some well-known cult and burial caves such as Grotta Sant'Angelo and Grotta dei Piccioni, has revealed that these sites were also used for stock penning activities.

In light of the available data, it is possible to conclude that cave sites in MBA Central Italy constituted key places for human activity. Their frequentation was certainly connected to subsistence activities and mobility patterns across the Apennines (Barker 1981; Mancini 2012; Van Rossenberg 2012). However, their symbolic value was also very strong (Cocchi Genick 1999; Grifoni Cremonesi 1996; 1999; 2002; Whitehouse 1992; 2007) – to such an extent that many or all of them became not only cult places, but also the loci of mortuary practices.

The Middle Bronze Age can also be considered as a culminative phase in the socio-cultural importance of prehistoric caves, with all the relevant social and cultural implications (Harding & Fokkens 2013; Guidi et al. 1993; Sestieri 2010). After this phase, caves became increasingly less frequented, if not often abandoned. The religious framework of Bronze Age people, influenced by the spread of metallurgy, increase of trade and development of transhumance, switched from a chtonic dimension to a celestial one (Guidi et al. 1993). This was to end a long-lasting tradition, which had evolved in multiple ways throughout prehistory, and had seen caves as key places for the religious life of human groups.

9.3. Relations between caves and other human sites in Middle Bronze Age Central Italy

Settlement sites close to cult caves are hardly known in MBA Central Italy, as well as in the North and South of the peninsula. The only proven associations can be found for two of the sites examined in this work: Grotte di Belverde and Grotta Misa. In the first case, a large open-air site, namely Santa Maria di Belverde, has been identified and started being excavated in the 1980s (Martini & Sarti 1990). However, investigations stopped due to a lack of funding[6]. In the case of Grotta Misa, some archaeological materials were discovered by Rittatore (1951) in the 1940s. The finds were distributed across the plateau surrounding the cave in Località Le Colle. The assemblage mainly consisted of ceramic remains, which have been dated to the early MBA and were therefore coeval to the cave. Their pertinence to only a small settlement was later confirmed by Casi & di Gennaro (1992: 690) due to their dispersion covering just half a hectare. Finally, the presence of settlements has been reported around the area of Grotta Sant'Angelo, although not in the immediate vicinity of the cave (e.g. the settlement of Fontana degli Amanti-Civitella del Tronto, Arancio et al. 1992). Recent surface surveys in the surroundings of Grotta di Collepardo has led to the identification of a megalithic wall and sporadic coarse ware fragments.

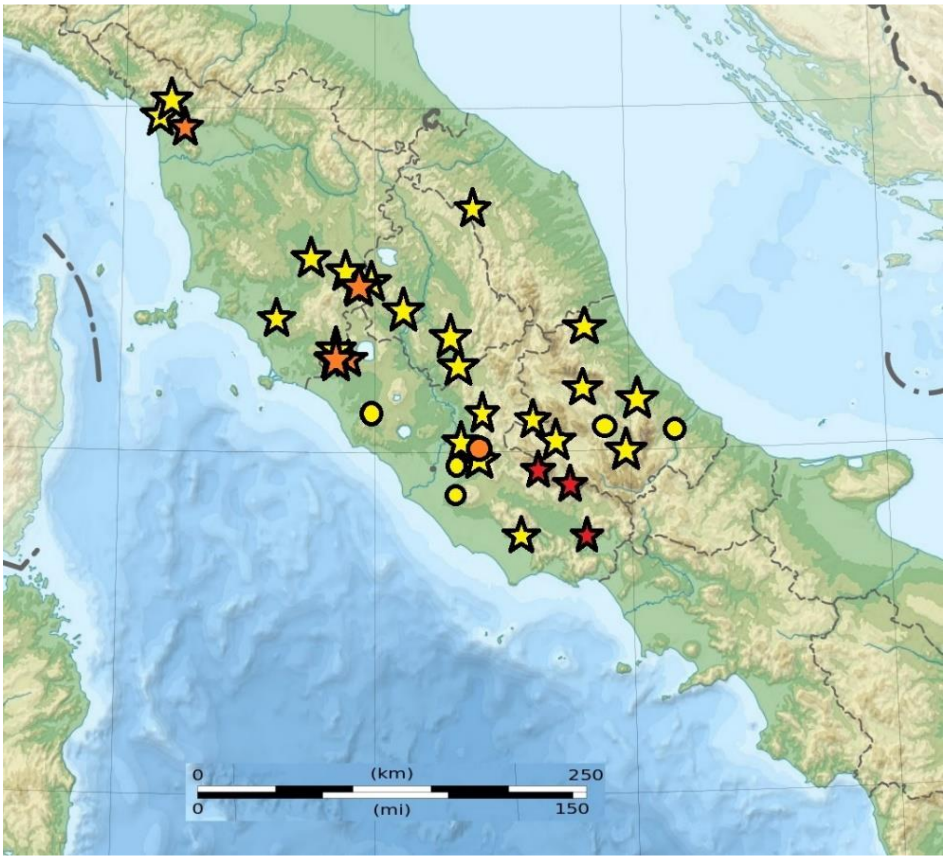


Fig. 77 Central Italy and the MBA sites discussed in this thesis: stars are caves; circles are settlements. Red is for the sites that I have analysed since fieldwork stage; orange for the archival collections; yellow for the literature.

[6] Personal communication by Valerio Modesti, assistant of Maria Teresa Cuda, director of the Museum of Cetona.

The wall is typical of slightly later prehistoric phases such as the Late Bronze Age (Scarano 2012). This might indicate that the top of the Collepardo plateau, just above the gorge with the cave, may have hosted a Bronze Age settlement now lying below the modern village. Casi & di Gennaro (1992) claim that such occurrences indicate a possible integration of ritual and domestic activities in caves close to settlements. By contrast, they claim that the more isolated caves would have been used exclusively for cult purposes. This strict distinction between domestic and cult cave sites seems unfounded and implausible, as domestic activities have been identified even in caves with these characteristics (Iaconis & Boschian 2008). More extensive micromorphological studies such as those undertaken in the Abruzzi caves should be carried out in order to clarify this issue. However, domestic activities in cult caves could be excluded, for example, where geomorphological impediments would have prevented easy access to the site of human activity.

9.4. Looking into ecofacts and caves of Early-Middle Bronze Age Central Italy

In this section I will illustrate the current interpretive framework for ecofacts from E-MBA Central Italy. By looking at the uneven methods used to study or publish animal and plant assemblages, I will demonstrate the shortcomings of current research on the topic. At the same time, I will propose alternative types of analyses, by combining the use of new datasets and new approaches. My analysis will be based on integrating the information from three new case-studies of excavated caves and four archival collections, as detailed in the previous chapters. These sites (see Chapter 7) have not been published in detail, but limited bioarchaeological data are occasionally available. Where possible, published data has been integrated with the new material I analysed in order to compare the data available from different sites and enhance our understanding of the caves already published (Fig. 77).

I analysed the freshly-excavated assemblages from sites 1-3 (2 and 3 yielding both faunal and botanical material, 3 just faunal remains) and the archival collections from sites 2-7, (2 and 3 being complete and belonging to earlier excavations carried out in the same caves of my new assemblages; 4-7 being instead certainly incomplete – see Chapter 4, Table 3; of these 6 datasets, 5 consisted in faunal material only, while cave n.7 has also yielded botanical material). For sites 4-28 I analysed the existing literature, which has constituted my only source for sites 8-28. Overall, 16 out of 28 caves appeared to contain palaeobotanical remains, whilst 24 yielded animal remains.

9.4.1. Literature

9.4.1.1. Zooarchaeology

As mentioned in Chapter 4, a number of descriptive features have been selected to clarify the depth of the analyses carried out on the ecofacts (both from the literature and from my own new research). The information currently available on faunal remains is summarised in Table 34.

Cave Name	**Latest Publication**	**Stratigraphy**	**Species/Taxon**	**NISP**	**Age Classes**	**MNI**	**Measurements**	**Body portions**	**Sides**	**Marks**	**Taphonomy/ Fragmentation**	**Palaeopathology**	**Discussion**
Grotta dell'Orso di Sarteano	Cremonesi 1968	X	X	X									
Grotta del Beato Benincasa	Bigini 1981	X	X	X									
Grotta del Fontino	Corridi 2002	X	X	X	X	X	X			X			
Riparo dell'Ambra	Bigini 1986	X	X	X									
Riparo del Lauro	Bigini 1987	X	X	X	X	X	X			X			
Grotta del Mezzogiorno	Tongiorgi 1956	X	X	X									
Grotta Bella	Curci et al. 2014	X	X										

Grotta dei Cocci	Salari et al. 2014	X	X	X	X	X	X	X		X			
Grotta di Carli	Cerilli 2000		X		X	X							
Grotta Polesini	Radmilli 1974	X	X										
Grotta Mora Cavorso	Silvestri et al. 2016	X	X	X	X	X	X	X	X	X	X	X	X
Grotta di Pastena	Silvestri et al. in press	X	X	X	X	X	X	X	X	X	X	X	X
Grotta Regina Margherita	Silvestri et al. in press	X	X	X	X	X	X	X	X	X	X	X	X
Grotta dello Sventatoio	Angle et al. 1991				X								
Grotta S.Angelo sulla Montagna dei Fiori	Wilkens 1996	X	X	X	X	X	X			X			
Grotta La Punta	Cremonesi 1968		X	X									
Grotta Beatrice Cenci	Agostini et al. 1991	X	X	X	X	X	X	X		X			
Grotta a Male	Pannuti & Peroni 1969	X	X	X									
Grotta dei Piccioni di Bolognano	Cremonesi 1976		X	X									

Grottone di Val de' Varri	Güller & Segre 1948		X		X								
Grotta del Costone di Battifratta	Segre Naldini & Bidditt u 1985		X										
Grotta Misa	Rittator e 1951		X										
Grotta Nuova	Rittator e 1951		X										
Buca Tana di Maggiano	Minto & Puccio ni 1914		X										
Grotta dell'Osserva torio	Unpubl ish.												

Table 34 List of E-MBA caves in Central Italy with published zooarchaeological remains, unpublished ones from archival collections and from new excavations.

Most of the sampled caves lack sufficient data for drawing interpretations by examining them individually. The current total of 28 cases (among the over 100 sites of this type published) reaches barely 25 per cent of the published cave sites, clearly showing the extent to which bioarchaeological remains have been overlooked in previous archaeological cave studies. Seven out of 28 have been made partly or fully available only through this thesis. The limited number of caves with reported animal remains hardly reflects the original composition of most Central Italy BA cave deposits. Firstly, the latest discoveries and publications always mention the presence of animal bones. Second, my own archival research in museum stores (on collections from Grotta Misa, Grotta Nuova, Buca Tana di Maggiano, Grotta dell'Osservatorio), oral testimonies of local archaeologists (e.g. for Grotta dello Scoglietto, GR, Alberto Agresti's personal communication), and the new surveys I have carried out at both known (e.g. Grotta Pila, RI) and new sites (e.g. Grotta Jannara, RI, Grotta Mora Gallina and Grotta Camaldoli, RM), confirmed the existence of faunal remains in every cave examined more closely. Bias has therefore to be acknowledged in both the general inferences and the analysis of single datasets presented below.

Some of the data provided in the literature examined were not quantified, reducing their potential comparability. For the following four caves, the most basic aspect of NISP was lacking, while the range of species identified was provided:

- Grotta del Costone di Battifratta: scarce wild boar.
- Grottone di Val de' Varri: pig and ovicaprines (in order of quantity).
- Grotta Polesini: sheep, goat, cattle, fox, domestic cat, microfauna, shells.
- Grotta Misa (before the reanalysis carried out for this research): ovicaprines, pig, cattle, dog, red deer, wild boar, hare, bats and amphibians.
- Buca Tana di Maggiano (before the reanalysis): cattle, sheep, goat, wild boar, (probably) domestic pig, dog, red deer, turtle, badger, weasel, rodents, bats, insectivores, birds, molluscs, reptiles. Abundance of cattle, pig and turtle. Large mammals presented cut marks.
- Grotta Nuova (before the reanalysis): domestic and wild fauna.

For Grotta Nuova and Buca Tana di Maggiano, these data were unavailable before my own reanalysis of the evidence. Grotta dell'Osservatorio was not known in the literature at all, although the site had been investigated between the 1920s and the 40s by Calzoni.

The age classes are not specifically quantified for three of the nine datasets providing kill-off pattern information. However, the publications available do report an unusual percentage of juvenile or sub-juvenile domestic animals at these sites. These assemblages are:

- Grotta di Carli: subjuvenile lambs and kids;
- Grotta Sant'Angelo: subjuvenile lambs and kids;
- Grotta dello Sventatoio: subjuvenile domesticates;

- Grotta Beatrice Cenci: 25 per cent of the ovicaprines are “infant”.

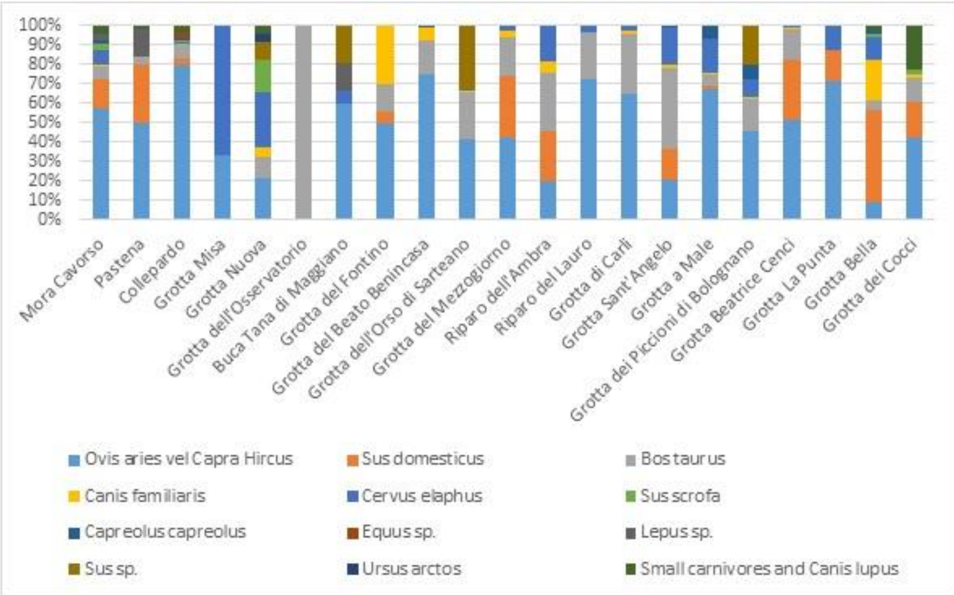


Fig. 78 Distribution of animal species from E-MBA caves by NISP percentage. Caves where faunal remains were recognised but not quantified in the available publications could not be used for this purpose.

Overall, it would seem that ovicaprines are the most common species found, followed by cattle and pig (Fig. 78). Hunted and wild animals are less common, but remain widespread, with a predominance of red deer, wild boar and roe deer. These data do not provide new direct knowledge of the Bronze Age in Central Italy, but will be later integrated with contextual and ethnographical/historical information, using a comparative method that does shed new light on many aspects of cave use in the study area.

9.4.1.2. Paleoethnobotany

Table 35, summarising the data available on the botanical remains of MBA caves in Central Italy is now presented. The table is constructed in order to detail the degree of completeness of previous investigations on this material class.

Cave Name	Latest Publication	Stratigraphy	Species	Taxon	Methodology	Quantity	Plant part	Treatment	Preservation	Palaeopathology	Measurements	Discussion
Grotta dell'Orso di Sarteano	Cremonesi 1968	X	X	X			X					
Riparo del Lauro	Bigini 1987	X	X	X		X	X	X	X	X	X	
Grotta del Mezzogiorno	Tongiorgi 1956	X	X				X	X		X		
Grotta di Pastena	Unpublished	X	X	X	X	X	X	X	X	X		X
Grotta Regina Margherita	Unpublished	X	X	X	X	X	X	X	X	X		X
Grotta dello Sventatoio	Angle et al. 1991	X	X	X		X	X	X		X		
Grotta Beatrice Cenci	Agostini et al. 1991	X	X	X			X					
Grotta di S.Francescodi Belverde	Calzoni 1962	X	X	X			X			X		
Antro della Noce di Belverde	Calzoni 1962	X	X	X								
Antro del Poggetto di Belverde	Calzoni 1962		X					X				
Grotte di Belverde	Calzoni 1962		X	X			X					
Grotta Nuova	Tongiorgi 1947	X	X	X			X	X		X		
Grotta Misa	Tongiorgi 1947	X	X	X			X	X				
Grottone Val de'Varri	Güller & Segre 1948									X		
Tane del Diavolo	Guidi 1992		X	X						X		
Grotta Vittorio Vecchi	Costantini & Costantini Biasini 2007		X	X		X	X			X		

Table 35 List of the E-MBA caves in Central Italy with published archaeobotanical remains, unpublished ones from archival collections and from new excavations.

A key issue which emerges from the comparison of these plant datasets is the lack of quantification for 66 per cent (23) of the caves documented. Aside from the two new case-studies (Grotta di Pastena and Grotta di Collepardo) and the archival revision (Grotta Nuova) carried out for this thesis, only three published assemblage present the exact quantities of the plant remains retrieved (Grotta dello Sventatoio, Grotta Vittorio Vecchi - Costantini & Costantini Biasini 2007 and Riparo del Lauro - Cocchi Genick 1987). In addition, Tongiorgi (1947) provides a precise volume quantification of the plant remains from Grotta Misa; unfortunately, his data cannot be compared with the other available assemblages. In view of the unevenness of the evidence, a general comparison between the assemblages from different sites can only be attempted by using the frequency of occurrence of certain species, i.e. through a qualitative comparison. However, a significant interpretative bias emerges from correlating the few quantitative descriptions of the plant datasets available with the respective qualitative ones: for example, if we consider the pie chart in Figure 79 it appears that bread wheat represents 11 per cent of all species attested, barley 8 per cent, cereals 43 per cent, and fruits 19 per cent. Even if the importance of bread wheat seems slightly reduced in the qualitative pie chart (Fig. 80), cereals is slightly increased (54per cent). The same trend is noted for fruits (23%).

Such percentages could lead us to infer that cereals and fruits played a fundamental role in cave rituals in MBA Central Italy (and, to a certain extent, in the economy of this area). However, the quantitative pie chart (Fig. 81) reveals that bread wheat actually represents an average 3per cent of the total composition in the six available datasets, cereals 28per cent and fruits 3per cent, while the predominant species is the broad bean. We still lack the real percentage of presence in the other caves where explicit quantity values are not recorded, but certainly this result raises doubts as to the reliability of qualitative inferences and makes the available literature (e.g. the interesting and only synthesis on agricultural activities in the Italian Bronze Age by Fiorentino et al. 2004) less usable than previously thought. Interestingly, while Fiorentino's study would show a predominance of cereals, it appears that, at least from the accurate analysis of cave deposits, legumes where more intensively exploited. However, caves are sites with evident biases, as isotopical analyses later discussed will demonstrate (§9.7.4.1).

Ten plant datasets, including the new ones analysed here, include palaeopathological studies. These, however, only mention the identification of the parasite known as the *bruchus*, which caused macroscopic holes in the broad bean pulses. Infection has been recorded for 55 per-cent of the cases (8) where broad bean was recognised. This would suggest that the seeds were deposited in the caves long after their harvesting, given the biologic time required by this pest to develop and create the holes (Tongiorgi 1947: 805). Two of the five datasets with non-infested broad beans relate to very small assemblages: Grotta di Collepardo yielded only 4 pulses, and Riparo del Lauro only 1 specimen. Apart from the assemblages I have directly examined, the only large assemblage not to show traces of this pest is Vittorio Vecchi. Here, the absence of infestation is explicitly specified by the scholars who analysed the material. Such determination appears sufficiently reliable, particularly since a parallel study has been undertaken by the same authors (Costantini and Costantini Biasini 2007) on two additional cave datasets: in this case, they mention the disease only for one of the two assemblages. This highlights the importance of detailing in publication the methodologies used to study an assemblage, making literature data collections easier and more reliable to future users.

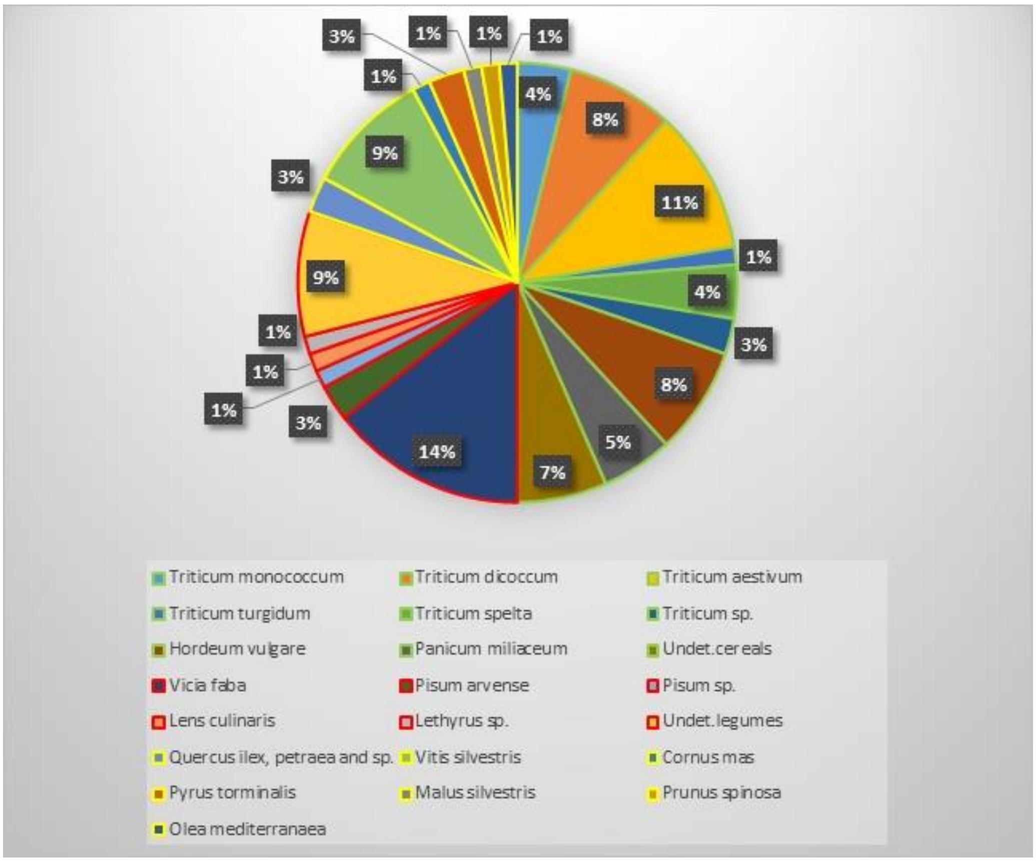


Fig. 80 Overall percentage of species present in plant assemblages of MBA caves, in terms of a qualitative (presence/absence) representation. Cereals are green, legumes are red, and edible fruits are yellow.

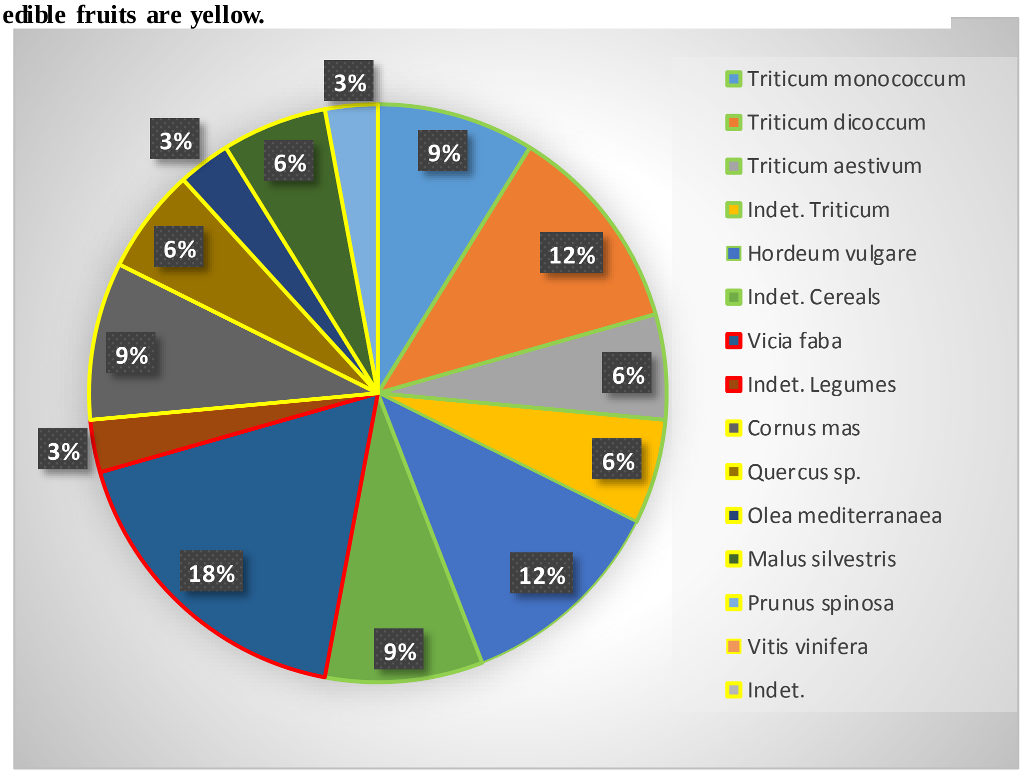


Fig. 79 Qualitative (presence/absence) plant species representation from the 6 caves with available data (Grotta di Pastena, Grotta di Collepardo, Grotta Vittorio Vecchi, Grotta dello Sventatoio, Riparo del Lauro).

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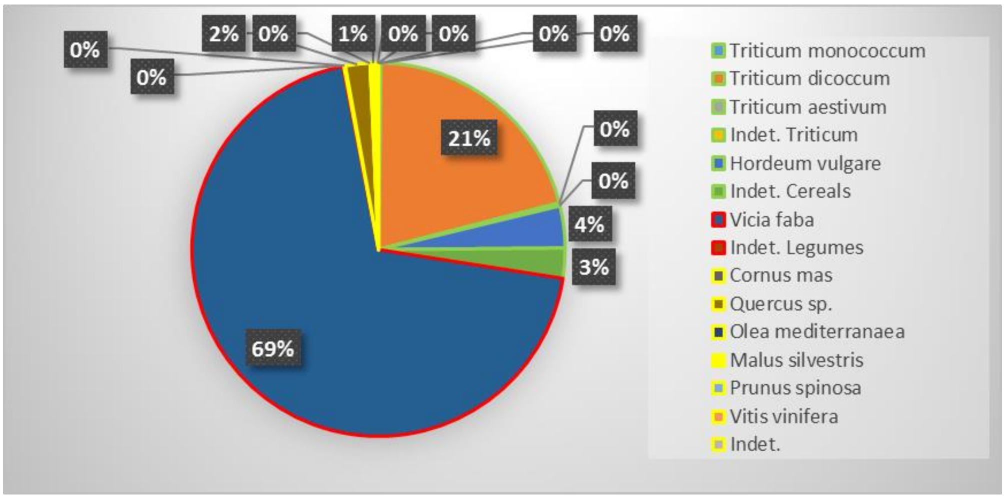

Fig. 81 Quantitative representation from the same cave assemblages. Cereals are green, Legumes are red and edible fruits are yellow.

9.5. Results of archival analyses

9.5.1. Grotta Nuova

The most remarkable and unexpected result of my archival research on Grotta Nuova has not come from (brand-new) analysis of the faunal or botanical remains, but as a consequence of the attention given to these ecofacts, since among the animal bones from Grotta Nuova were also the remains of a five-year-old child. This discovery has allowed me to rebut the widely agreed interpretation of Grotta Nuova as an exemplary case of a cult site with no burial activity. The opportunity to analyse some of the carbonised seeds retrieved on site also allowed me to corroborate the burial-related use of broad beans – to be discussed in Section 9.8.3. The carbonised seeds were found in intact pots deposited alongsides of inner stream, suggesting an offering, and this legume makes more than 95per cent of the total botanical assemblage from Grotta Nuova. The faunal dataset shows, conversely, a rather wide species variability. A slight (and unusual) predominance of wild species over the domesticated ones is noted both in terms of NISP and MNI. The age classes and body part distribution do not show any recurring feature, unlike most of the other caves (Figs. 83-84).

The new data I have produced, coupled with the already reported discovery of carbonised seeds, suggest that the cave was at least occasionally used as a funerary site, where rituals related to the harvest (and hunt?) were also performed.

9.5.2. *Grotta Misa*

Grotta Misa is similar in its structure and geographically very close to Grotta Nuova (see, for example, the inner stream in both caves). It has long been known for the outstanding ritual activities recognised in association with at least five human individuals (see Chapter 8). These were lacking their skulls and bearing possible defleshing marks. The cave also yielded a ring-shaped hearth with well-separated heaps of cereals, legumes and flour. In addition, several rare items such as copper arrowheads and an amber bead were found, along with many animal remains. My analysis of a much smaller and less varied sample than the one described in the literature, has identified a slight predominance of red deer bones. Reed deer had been more soundly documented in the nearby Grotta Nuova.

Overall, Grotta Misa was a cave with a stronger funerary connotation than Grotta Nuova. However, both caves share the important feature of the water stream and the ritual performances mostly involving cultivated plants.

9.5.3. *Grotta dell'Osservatorio*

It is unclear whether the faunal sample I analysed from this cave of the Belverde complex is representative of the original retrieved dataset. However, the widespread presence of well-preserved cattle (417 bones for at least 5 individuals of all age classes) would indicate a precise selection, even in the case that Calzoni had also retrieved other species in the same site. The deposition of a whole cattle was also found in the Antro Della Noce (Calzoni 1962). This suggests that this animal might have had a specific role in the cult practices carried out by the people that frequented the Cetona Mount.

9.5.4. *Buca Tana di Maggiano*

This is one of the northernmost caves examined in this thesis, and presents slightly different patterns than most of the other sites analysed. First, the Bronze Age depositional use of the cave was limited to the chambers located beyond a deep shaft. Along with an unusually high deposit of 39 human individuals of all ages and both sexes, personal ornaments including rare steatite buttons were found. Moreover, among the reportedly abundant animal remains, many belonged to dormouse and two turtle species. However, the evidence described in the literature (Minto & Puccioni 1914; Puccioni 1914) was not confirmed by the archival collection presented in this work. Indeed, my dataset showed two other markers indicating possible intentional faunal selections: half of the sheep sample belonged to sub-juvenile individuals, and the vast majority of the main species' remains consisted of teeth. Both these features could be due to a later dispersion of the excavated materials. However, intentional selection dating to the Bronze Age cannot be excluded. Sub-juvenile depositions are common in several sampled caves (e.g. Grotta Mora Cavorso, Grotta dei Cocci and Grotta Sant'Angelo), and so is the presence of extremities and skulls (Fig. 84).

9.6. Results of the analyses of the new case-studies

9.6.1. Grotta Mora Cavorso

A very important period of use of this cave was the Early-Middle Bronze Age (see Chapter 5): excavation of Soundings D and B2 revealed the presence of cult and burial practices, such as the presence of a disarticulated but almost complete skeleton of an adult woman, two pits, and hundreds of faunal remains (Rolfo et al. 2013b). The pits' location in the innermost (and darkest) part of the entrance chamber, the presence of an upside-down bowl and a spindle-whorl in one of them, the retrieval of the only two flint arrowheads next to it, their association with human remains, and the anomalous presence of subjuvenile animals, seems convincing enough evidence to interpret this context as a funerary one, with the possibility that ritual performances were reiterated through time. Both stratigraphy and quantitative values of the animal bones, in fact, suggest a multiplicity of ritual episodes. It can even be hypothesised that the single burial event had triggered a series of successive rituals that were at the same time a form of cult of the ancestors *and* fertility cults.

Sub-juvenile lambs/kids and piglets, including some foetuses, dominated the assemblage (60 per cent and 75 per cent respectively of the species, 65 per cent of the whole assemblage) (Fig. 36). The highest concentration of perinatal bones was recorded completely mixed with the bones of the adult woman, although the distribution of the sub-juvenile remains occupied a slightly wider area. All body parts pertaining to sub-juvenile specimens were represented and no butchery marks were identified. Despite the lack of skeletal connections observed at the time of the excavation, this evidence suggests that the bodies were deposited whole. The possibility of peri/post-mortem processing is highly unlikely considering that traces of fire were also absent. By contrast, cut marks were found on wild game (wild boar and red deer) and adult domesticates (cattle and sheep/goat). In addition, remains of such animals were more concentrated on the horizontal floor of the wider and better illuminated part of the entrance chamber. This suggests that adult animals and hunted fauna were treated differently from the sub-juvenile specimens, and deposited in a separate location. By contrast, the latter were probably slaughtered and deposited to become part of the human burial context.

9.6.2. Grotta di Pastena

Research in this cave has revealed a relatively well-preserved archaeological deposit (see Chapter 6), located in a small and dark space that is only reachable by climbing 15 metres of steep rocks. A sequence of cobble pavings and layers of carbonised legumes and cereals was observed during the stratigraphic excavation of the chamber. These layers were repeated at least three times, leading to the hypothesis of cyclical use of this space. Some overturned bowls were found in situ, along with hearths and ash areas. In two cases, the bowls were buried in pits surrounded by stones.

A range of artefacts was discovered lying over the whole excavated area, apparently in a random distribution similar to that of the pottery and human and animal bones. These artefacts included faïence beads and buttons, a miniature stone axe, two stone pendants, two bronze rings and fragments of a bronze pin, several intact and fragmented spindle-whorls, two small flint arrowheads and a bone awl. The chamber, with its difficult-to-reach geomorphological features, still held the only example of extensive paving structures known in similar contexts in the area. The paving was alternated with the above mentioned layers of carbonised seeds. The sampled deposits included broad beans, free-threshing wheat, glume wheat and barley (*Hordeum vulgare*). Three grape seeds and an olive or Cornelian cherry stone were also found.

The estimated number of seeds across this space amounts to several hundreds of thousands. This discovery is exceptional, although the presence of legumes, cereals and fruits has been identified in various sampled caves in Tuscany and Lazio (Miari 1995), including the nearby Grotta Vittorio Vecchi (Costantini & Costantini Biasini 2007). Another important feature of Grotta Pertuso is a small natural terrace in the upper part of the chamber, which might have been accessible via a ladder or possibly via a collapsed rock path. On this terrace it was possible to identify more hearths and seeds (of the same species and proportions as in the main chamber). Additional finds from the terrace include some human bones, a bronze artefact, faunal remains and a stone circle covering an over-turned bowl. All these remains appear to have been intentionally deposited, presumably with a ritual purpose, especially when considering the context of the barely accessible and dark Grotticella W2.

The faunal remains of W2 were scattered amongst hundreds of fragments of coarse pottery and a few human remains. The c. 30 human bones belong to at least 5 individuals of both sexes and pertain to different age classes - from child to adult age. The faunal remains belong almost exclusively to domesticates. The number of identified specimens is slightly more than 100, half of which belong to sheep/goats. Of the six sheep/goat present, two were adult, one a young-adult and two were around 6 months old. One third of the remains belonged to pigs, represented by four individuals. These were an adult, two young and a very young individual. Anatomical elements belonging to all body parts were present for all the species identified. Ten per cent of the bones, including ribs of medium-sized mammals, had cut marks. The marks were mostly located on the radii, humeri, scapulae and tibiae. Vertebrae also had butchery marks and 20per cent of the bones had been exposed to fire (burnt or covered in charcoal). Only four cattle remains, three of which were teeth, were found in the deposit. They belonged to an adult and a young individual. Among the wild fauna, a single bone of wildcat, one of marten and one of a large bird were recovered. The bird bone displayed a deep cut mark. In addition, 13 lower limb bones of an adult hare were found. Most of these hare bones, which did not present skeletal articulation nor anthropogenic marks, were found in one of the most inaccessible areas of the cave, namely the above-mentioned terrace.

The kill-off patterns (following Payne 1973) and the cut and fire marks on the domesticate bones indicate that meat consumption was the main reason for their presence at the site. The animal bones were found lying on the various stone paving structures and next to the hearths or combustion areas. Given the nature of the depositional context, it is likely that meals involving meat consumption were performed as part of some sort of repeated practices. This is suggested by the presence of stratified pavings and seeds layers, noted above. By contrast, the hare bones seem to have been deposited but not consumed. This indicates that they might have been placed in the cave as an offering, possibly for the individuals buried nearby.

9.6.3. Grotta Regina Margherita

This cave is certainly one of the richest cemeteries of the Central Italian MBA, including more than 95 individuals of all ages and both sexes. The burials were deposited in clusters located in different sectors of the site, most likely according to the geomorphology of the cave floors. Although a preliminary osteological study, conducted by Claudio Cavazzuti, suggested the existence of family groups (personal communication), this has not been confirmed by more recent studies by Jessica Beckett. She has, however, confirmed through accurate taphonomical analyses, that the commingled human bones belonged to primary burials that underwent multiple manipulations (e.g. removal of skulls, accumulation of long bones in selected spaces, deskinning, pounding, etc.).

The faunal sample found in this cave consisted of slightly over a hundred identified specimens and a few hundred indeterminate fragments (see Chaper 7). No visible burnt layer was present and only four carbonised broad beans were retrieved from two areas (D and G) during wet-sieving. Overall, the faunal and plant assemblages are much smaller than the ceramic and human bone collections, both represented by thousands of finds. Other types of artefacts were also found, including bronze spirals, a mother-of-pearl button, faïence beads, occasional obsidian and flint flakes, amber bead fragments and a decorated animal bone. Such artefacts were distributed alongside the human and faunal remains with no apparent pattern.

Sheep/goat bones made up almost 90 per cent of the overall faunal assemblage, both in terms of NISP and MNI. Most ovicaprines were young individuals (Area A) or young-adults (Area F). The young specimens had been killed between six months and one year from birth. Detailed analyses of the faunal remains from the other areas (B, C, D, E and G) did not give any valuable results due to the scarcity and high fragmentation rates of the bones retrieved. The most common anatomical parts of the overall sample were long bones, especially humeri. These showed a recurring fragmentation pattern, having been smashed in the medial portion of the diaphysis, presumably to extract marrow (e.g. Outram 2001: 404). The kill-off pattern was calculated only for Areas A and F, where the sample was quantitatively more consistent. Both the kill-off pattern and the skeletal element representation, which mainly refers to meat-rich long bones, confirm a focus on meat consumption.

Evidence of other domesticates, such as pig and cattle, is much rarer. The evidence pertaining to these species includes mostly bones of young individuals. A few metapodials and phalanges of wild boar, red and roe deer and fox were also found. Given their extreme rarity and lack of anthropogenic marks, these remains might be considered as incidental occurrences brought in by predators such as badgers and martens, which still frequent the site.

Given all the evidence available, the faunal assemblage from Collepardo Cave might have been associated with activities linked to funerary practices. Such activities, including potentially meat consumption, were to a certain extent spatially separated from the burials. In fact, hearths and animal bones appear to be more frequent in the entrance chamber of the cave (Areas A and F), in a naturally illuminated area. By contrast, their frequency decreases substantially in the innermost and darkest part of the cave, where human remains and associated artefacts occur almost exclusively. Meat consumption at the cave must have represented a special event, as testified by the preliminary isotope analyses carried out on 10 human individuals, indicating that their palaeodiet was poor in protein and rich in cereal intake (Crowder 2016).

9.7. Lifeways and ritual practices

9.7.1. Subsistence

Graeme Barker (1981) was able to shed new light on human subsistence strategies in MBA Central Italy. The use of previously unpublished data or types of evidence rarely considered before, such as faunal and botanical remains, along with artefacts, allowed him to identify diverse economic patterns in the region (e.g. agriculture, stock-farming and sheep-farming). However, he combined data from both settlements and caves, despite acknowledging the potential ritual use of the latter (e.g. Grottone di Val de'Varri). A similar approach can be found in many other publications on MBA subsistence in Central Italy, with almost every existing synthesis of the topic including assemblages from caves (e.g. Wilkens 1992). Criticism to these generalisations was made by Di Fraia & Cremonesi (1996: 196) in relation to the work of Peroni (1989), and by Luca Alessandri (2013: 20) with regard to the plant dataset from Grotta Vittorio Vecchi. The only exception to this trend is Claudia Minniti's (2012) recent volume on Central-Italian subsistence strategies between the Bronze and the Iron Age, where she separates caves from other sites, acknowledging the bias that the data from potential cult sites might generate. However, Minniti also states that 'The ratio between categories of domesticates is the aspect most influenced by the function of the caves', concluding, for example, that Grotta a Male would have been frequented seasonally when the flocks were moved towards the high pastures (Minniti 2012: 112, author's translation).

In this section, I will attempt to clarify some issues concerning subsistence in MBA Central Italy, such as differentiated flock exploitation, seasonality and the choice of certain plant and animal species over others. These inferences will be made by identifying recurrent features of ecofact assemblages from cave sites, while also taking into account the biases inherent in these archaeological samples.

A comparison of the ratios of species' occurrence between datasets from caves and settlement sites would not be particularly revealing in the case of plants, especially because quantitative data from the settlements are not currently available. Figure 82 shows that plant values vary significantly from cave to cave. This indicates that the variability of patterns of occurrence is much higher than previously thought. Since ecofact assemblages from settlements can shed light on subsistence variation from site to site, their different compositions are always observed very carefully. This has not happened for sites such as caves, which were supposed to be used for different purposes (e.g. cult). However, it is likely that the differences in the use of animal and plant species in caves, and their respective ratios, also reflect past intentional choices. Potentially, selection patterns in caves might have been even more careful, particularly given the likely symbolic value of plant and faunal use at ritualised cave sites.

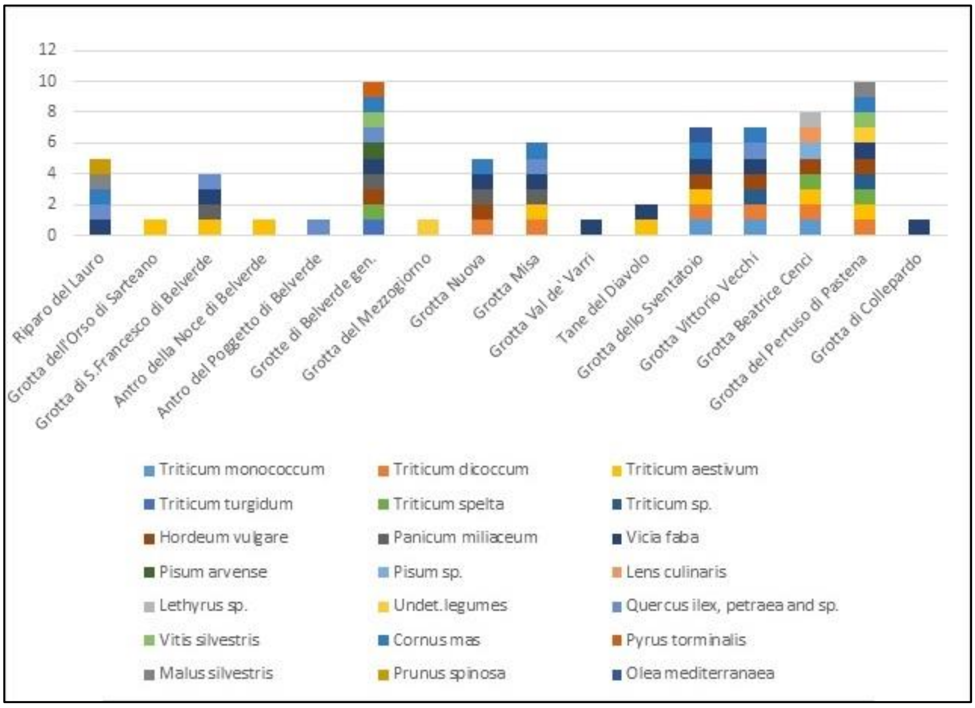

Fig. 82 Qualitative (presence/absence) representation of plant species in MBA Central Italian caves.

Even in the late 2010s, ecofact datasets from Central Italian MBA sites remain scarce. This issue with the evidence is acknowledged both for palaeobotanical remains (Fiorentino et al. 2004: 225) and for zooarchaeological remains (Minniti 2012: 95) and relates to gaps in research or in research methods (see Chapter 3). The limited amount of information from settlements is perhaps one of the reasons that led scholars to use cave assemblages to draw palaeoeconomic inferences. Recent research has, however, provided more precise bioarchaeological data on MBA settlements. The only datasets of certain chronological attribution from open air sites are from Coccioli, Cerchio La Ripa, Luni sul Mignone, Castiglione (Minniti 2012), Villaggio delle Macine (Tagliacozzo et al. 2012) and La Crocetta (ongoing study by the author for the Soprintendenza). These datasets enabled me to attempt a preliminary comparison between faunal assemblages from settlements and caves. From a subsistence perspective, the relative absence of subjuvenile elements from settlement sites contrasts with their frequent occurrence in caves (Fig. 83). This might indicate that the kill-off pattern of settlements was also potentially influenced by ritual selections, particularly if the lambs and kids were transported to caves for ritual offering or sacrifice. Previously, it was simply deduced that milk and cheese were produced specifically in caves (e.g. Puglisi 1959), because of the nomadic attitude of modern transhumant shepherds and the typology of selected artefacts that were often found in these sites, such as ceramic sieves; although the dairy-related function of such tools has been recently confirmed through lipid analyses (Salque et al. 2013), these have been found more in settlements than in caves (Di Fraia 2015). The kill-off pattern of subjuvenile sheep and goats only corroborated this somewhat simplistic interpretation, as sub-juvenile ovicaprines could have been killed for maximising milk production and utilisation by the humans, and lambs and kids were often identified in caves more than in dwelling sites. From this perspective, it has been concluded that the subsistence strategy of settlements was more oriented towards meat and wool exploitation. However, it is possible that milk production was another important aspect of flock exploitation– while not appearing in the archaeological record because of the transportation of lambs and kids to cave contexts (absence of evidence is not, as we know, evidence of absence).

As already proposed by Barker (1972; 1981), the variability of assemblages from site to site suggests the existence of highly varied economic systems in a relatively small region. Scholars have recently suggested that such variability was influenced not only by the environment, but also by cultural choices. In fact, this was previously hinted at by Barker (1991: 28), who stated that '(subsistence is) partly a landscape adaptation, partly a cultural artefact' (my translation). This is supported by the latest results of isotope analyses (Varalli et al. 2015), which probably constitute the most reliable basis for making subsistence inferences from zooarchaeological datasets coming from funerary and ritual sites. Such analyses were recently undertaken for the first time on human and faunal samples from four MBA caves in Central Italy (including Grotta Vittorio Vecchi - Alessandra Varalli, personal communication), three of which are now published (Varalli et al. 2015). These three caves - namely Grotta dello Scoglietto, Spaccatura del Felcetone and Grotta Misa - are situated between Southern Tuscany and Northern Lazio and have yielded unexpected dietary results, according to which the human individuals buried in the first cave had a high-protein (i.e. meat and probably fish diet), those buried in the second fed mainly of legumes and millet, and the third one of a terrestrial diet mixed with millet consumption. It is interesting to note that, despite the vicinity of these sites and their palaeoenvironmental affinity, subsistence patterns proved different in each case, presumably due to specific choices rather than different available resources.

Despite the accuracy and novelty of the data presented in this isotope study, a typical misleading statement can be found. It is mentioned that the isotope evidence of cooked millet consumption by the humans buried in Grotta Misa, who presumably belonged to the same human groups attending the cave, can be confirmed by the archaeological evidence of carbonised millet identified close to a hearth (Varalli et al. 2015: 11). However, it is clear that such a find does not have to represent the everyday dietary habits of the cult practitioners. The ritual practice of carbonising millet, along with other cereals and legumes, might have been completely unrelated to the action of eating it at that specific place and time. For example, preliminary isotope results from the human samples of 10 individuals buried in the Grotta di Collepardo testify to a low-protein intake diet, despite the fact that the animal remains found were much more numerous compared to the extremely rare plant remains.

In sum, the palaeobotanical and archaeozoological data used in my study indicate that people in Middle Bronze Age Central Italy maintained varied subsistence strategies. This is testified by the presence in the sampled assemblages of a wide range of domesticate and wild game animals (certainly more common in mountain and forested areas, but not exclusive to these environments), as well as by a variety of cereals, legumes and wild fruits. This confirms the interpretation, first introduced by Graeme Barker (1981), of a mixed economy, and brings it forward. While the British scholar was the first to acknowledge the coexistence of agricultural and pastoral subsistence strategies in Central Italy, he overlooked the fact that the evidence of both could be found even in the same site. Isotope analysis shows, in addition, that every site could present different food choices even in close-by areas and similar environments. This cannot be inferred by looking at the assemblages from settlements, that appear very homogenous at least in relation to animal food exploitation[7] (Fig. 81), nor by examining the highly variable cave deposits, that are influenced both by natural factors (environment-related necessities) and ritual ones.

9.7.2. Mobility/seasonality: filtering out ritual bias

While the absence of juvenile and subjuvenile domestic animals from a cave site does not necessarily reflect upon their presence or absence in nearby settlements, their presence constitutes one of the few reliable sources of information on subsistence strategies that can be derived from the study of faunal remains from cult sites. In contrast to assemblage composition, species ratios, body part representation, sex and even butchery and fire marks, kill-off patterns do reflect some kind of economic choices. We can note that the slaughtering of very young caprovines and calves would have left the adult females free to be milked. However, looking at the recurrence in cult caves of similar kill-off patterns in species which do not provide secondary products (such as pigs and deer), we can deduce that such mortality curves are not so much related to flock exploitation as they are with mobility and seasonality.

Indeed, in several of the cave assemblages analysed (Fig. 85), it emerged that domestic as well as wild species were killed at a young age. Assuming that the most favourable time of the year for giving birth was in the warm season (e.g. Balasse et al.2003), for obvious reasons relating to easier food procurement and a milder climate, it can be concluded that these caves were certainly frequented by humans and animals during this period. This is also corroborated by palaeobotanical analysis: for most of the broad bean datasets analysed, these pulses turned out to have been often attacked by an insect pest, the *Bruchus pisorum*, showing a macroscopic hole on the surface. This indicates that the larvae of this parasite, which hibernates in the pulse and emerges during the summer (see above) to reproduce, entered the beans in the warm season. After the moment when the bruchus' egg is deposited, during

[7] Quantitative data about plant remains from settlements are quite rare to find.

the pre-harvesting period, the larva takes around three months to exit the pulse, creating the typical hole. Harvesting of broad beans is normally carried out in early summer (June-July), therefore holes can form on the pulses between August and September. Since the seeds were burned when the holes were already present, the deposition and combustion of the broad beans (and, consequently, of the cereals found mixed with them) cannot have occurred earlier than late summer or early autumn. The frequency of wild fruits found in several caves (e.g. apple, cornel, plum, grapes and olives), still showing their exo- and endocarps, also testifies to the frequentation of these sites in the late warm season, which corresponds to the fruiting periods of most of these plants. If the fruits and the seeds were deposited (and, in the case of the latter, also burned) around the same time, it is possible to hypothesise that these rituals were performed between September and early November. Such frequentation would, then, have occurred also in coincidence with the sowing period (see also Grifoni Cremonesi 2015:14). This would also be the period of movement from the uplands to the lowlands for a pastoral group. In this season shepherds might have been moving from the cooler altitudes of the Inner Apennines to the warmer valleys and plains of the Tyrrhenian and Adriatic coasts. One might relate this to the hypothesis of a short-to medium range transhumance (Minniti 2012; Rossenberg 2012) undertaken in the MBA between the two coasts of Central Italy and through various routes of the Apennines, including those previously considered as 'peripheral' (e.g. the Upper Aniene Valley, see Festuccia & Zabotti 1992).

9.7.3. Transhumance, exchange and communication

Transhumance appears as a valid possibility for the economic patterns in the region and to explain the use of the caves, if one examines the location of the archaeological sites (mostly – but not only – caves) of the MBA, and – to a certain extent the species represented. Because of the mobile nature of transhumance, this might have constituted a primary impulse for cultural communication and exchange in this area. Cultural similarities between the rituals identified and the locations chosen, as well as the complementarity between the few settlements and the more numerous caves known, however, make possible that these sites were frequented by one or very few, possibly kindred, human groups, during an extended period of time. After all, Barker and Grant (1991) who carried out an ethnoarchaeological survey of an area between the provinces of Rieti and L'Aquila (i.e. one of the most Central to my thesis), verified that present-day shepherds (both the long-distance and the short-distance transhumant ones) and the farmers often belonged to the same village and to same family groups.

Unexpectedly, pastoralists recorded worldwide in ethnographic research use their flocks as a source of food only exceptionally. They either have to be very wealthy, and be thus able to sacrifice part of their trading power and long-term production, or in a condition of severe famine. Otherwise (Germov & Williams 2008: 211), shepherds tend to get their subsistence resources from trade, hunting, fishing and gathering or even from spontaneous staple cereals. This is attested in the Middle East (Germov & Williams 2008: 227) but also in 20th-century Central Italy, with Barker and Grant (1981) noticing that shepherds cultivated cereals and potatoes while stationing in the uplands. Interestingly, the first isotope analyses on MBA humans buried in Central Italian caves demonstrate a predominance of vegetal food intake (Crowder 2016; Varalli 2015) of agricultural derivation (e.g. cereals), perhaps indicating that shepherds could readily obtain cultivated products (either from being part of farming communities or from trading with them).

While the human routeways of Tuscany and North-Western Lazio (e.g. Negroni Catacchio 2008), as well as those of Abruzzi (Agostini et al. 1992) have been extensively investigated, the inner Apennines region, especially in the area of Southern Lazio, has been much less considered, due to the relatively limited archaeological research undertaken in this area. A more focused approach was adopted for this thesis, taking into account neighbouring areas that had previously been examined in isolation. This revealed that the Sabine, Simbruini and Lepini Mountains, connecting the mid-Tyrrhenian coast with the Fucino Lake Basin, held a large number of sites (mostly caves). Arguably, these were situated along a transhumance route following the various river valleys of the area. Clearly, cult caves – at least the most hospitable ones - might have also been used as temporary shelters and by a limited number of human individuals and their herds. This interpretation is supported by the work of micromorphology by Iaconis and Boschian (2008) in Grotta Sant'Angelo and Grotta dei Piccioni. It has also been hypothesised by Guidi (1990: 54-

55), especially for Grotta Scura (Farfa, RI), Peschio Tornera (Collepardo, FR), Grottone di Val de'Varri (Pescorocchiano, RI), Grotta Polesini (Tivoli, RM), Riparo Liliana (Roccasinibalda, RI) and Grotta di Valle Oliva (Itri, LT), as well as by Daniela Cocchi Genick (1987) for Riparo del Lauro. It is more likely that flocks were moved from one area to another by a few shepherds rather than by an entire community, as testified by the ethnoarchaeological example of the Cicolano region (Barker and Grant 1991). Although the traditional view still doubts the preponderance of sedentism on nomadism in Central Italian Middle Bronze Age, the scarce evidence of intense day-to-day occupation of caves (as opposed to the intensity of ritual and burial evidence) should raise a doubt about this assumption. This doubt is only corroborated by the growing evidence of Central Italian large settlements, mostly located either on hilltops and plateaux or close to lakes and other water sources, discovered or identified over the last few years (e.g. Lacus Velinus basin –Carlo Virili personal communication; Villaggio delle Macine, Achino 2016 and references therein; Minniti 2012).

9.7.4. Ritual practices:

9.7.4.1. The overlooked role of animals and plants in Middle Bronze Age cults in Central Italy

As became increasingly clear after the first anthropological studies by Fischler (1988) and Smith (1997), 'food is almost never only a mere survival action, but it bears with it a sensorial experience and feelings' (Joan Smith 1997: 334). It is also a 'nexus of culture and nature' (Fischler 1988), as in human beings the instinct to eat is almost always accompanied by an instinct to share the experience of eating with other members of their group. This peculiar human characteristic has been called 'Social appetite' (Germov & Williams 2008). As a social feature of human communities, this phenomenon can be studied within the framework of a 'sociology of food', which investigates the historical, cultural, structural and critical factors that give food an active role in the construction of the identity of an individual and his community. The sociology of food also involves a concept termed 'sociological imagination' (Mills 1959), which describes the ways in which we can come to understand a social dynamic according to our personal theoretical framework as scholars and life experiences as people. Like all other cases where the interpretation of forgotten symbols is required, the sociology of food is a tricky path, especially when it comes to ritual practices. Also for this reason, there have been few attempts to consider ecofacts found in ritual deposits in terms of the ritual uses of cave sites. An earlier study of this kind was undertaken by Wilkens (1995) for certain categories of animals and for a period ranging between the Neolithic and the Iron Age. Monica Miari (1995; Negroni Catacchio et al. 1989) has also made an excellent attempt at the identification of possible ritual patterns in the use of ecofacts. Her study was more focused on the area of Southern Tuscany and Northern Lazio, and included both faunal and plant remains. More recently, Italian cave expert Renata Grifoni Cremonesi (2015) has presented an updated synthesis of the literature on the topic, listing most of the features (e.g. ritual pits, overturned pots, etc.) covered earlier in Chapter 2 and 3 and analysing each case-study. She also added information relating to the bioarchaeological remains, such as the accumulation of burnt seeds and fruits, the deposition of skulls or other selected animal parts, as well as of sub-juvenile animal individuals or intact animals. Crucially, my analysis of new case-studies from caves, and the use of primary data and the same research protocols for all the datasets, can lead to further enhancement in our understanding of this topic. The association of ecofacts with ritual deposits in caves has previously been recognised by individual authors and in the above-mentioned syntheses by Miari (1995) and Grifoni Cremonesi (2015). Ritualised offerings are represented by heaps of seeds, pulses and fruits in vases - often placed upside down to cover the offering. A crucial role is also played by plant remains deposited in pits or left in/near hearths of debatable practical use. As noted above, such finds become especially significant when recorded in inaccessible areas of the cave. The same applies to animal remains. At the same time, some faunal assemblages, either found in structural features (such as pits) or spread on the cave floors, were recognised as meal residues with a possible ritual value, based on butchery and cut marks, fire traces and (meat) body parts, combined with the inhospitable area of cooking and consumption. Another type of ritual performed with animals was sacrifice, which is more often characterised by the presence of sub-juvenile domesticates, and in some cases by the occurrence of depositions of whole animals. Finally, a recently identified novel feature is the repeated deposition of entire layers of burnt seeds, as noted at Pastena Cave.

Clear trends are difficult to recognise across the various zooarchaeological datasets from the few settlement assemblages available and the more numerous caves (the datasets detail animal species recurrence with both NISP and MNI, the age classes, and body portions). As previously mentioned, faunal data are available for only 6 settlement sites of the Central Italian Middle Bronze Age. Furthermore, not all of them provide data on the MNI and/or on the age classes and body portions of the sampled animals.

NISP	4	5	6	7	8	9	10	11	12	13	14	15	16	17	S1	S2	S3	S4	S5	S6
Ovis aries vel Capra Hircus (Sheep/goat)	25	60	179	79	15	18	67	27	141	124	66	28	6	37	54	520	103	106	64	144
Sus domesticus (Domestic pig)	3			57	19			21	3		40	6	32	16	23	482	39	65	28	
Bos taurus (Cattle)	7	14	104	37	23	6	31	54	13	45	20		3	11	11	945	123	96	63	35
Canis familiaris (Dog)	15	5	6	7	4		2	2	1	4	2			2	14	34	7	6	7	10
Cervus elaphus (Red deer)			3	5	14	1	3	26	36	25	1	5	8		178	4	5	1	6	6
Sus scrofa (Wild boar)													1	2	10		1	1	1	
Capreolus capreolus (Roe deer)		1						1	15	20			1		12	3	1			
Equus sp. (Equide)														5		9			18	2
Lepus sp. (Hare)													1		1	2				1
Sus sp.(I ndet. Pigs)			141							55					14					85
Ursus arctos (Cave bear)													1		1					
Small carnivores and *Canis lupus* (Wolf)													13	15	7	11			1	
Turtles															1	6	62			
TOT.ID	50	80	433	185	75	25	103	131	209	273	129	39	67	88	326	2016	341	275	188	283

Table 36 Number of Identified Specimens (NISP) of the faunal remains from the sites investigated through the literature review (4: G. del Fontino; 5: G. Beato Benincasa; 6: G. Orso di Sarteano; 7: G. del Mezzogiorno; 8: Riparo dell'Ambra; 9: Riparo del Lauro; 10: G. di Carli; 11: G. Sant'Angelo; 12: G. a Male; 13: G. Piccioni di Bolognano; 14: G. Beatrice Cenci; 15 G. La Punta; 17: G. dei Cocci; S1: Villaggio delle Macine; S2: Luni sul Mignone; S3 Castiglione; S4: Coccioli; S5: Cerchio La Ripa; S6: Crocetta); regular numbers correpond to caves, those starting with an S correspond to settlements.

From the comparison of the species representation (Figs. 83-84; Table 36), it appears that ovicaprines are the prevalent species in almost all MBA sites in Central

Italy, but are more predominant in caves than in settlements. Conversely, cattle, which occur in all but 3 of the caves, are generally more significant in

settlements.

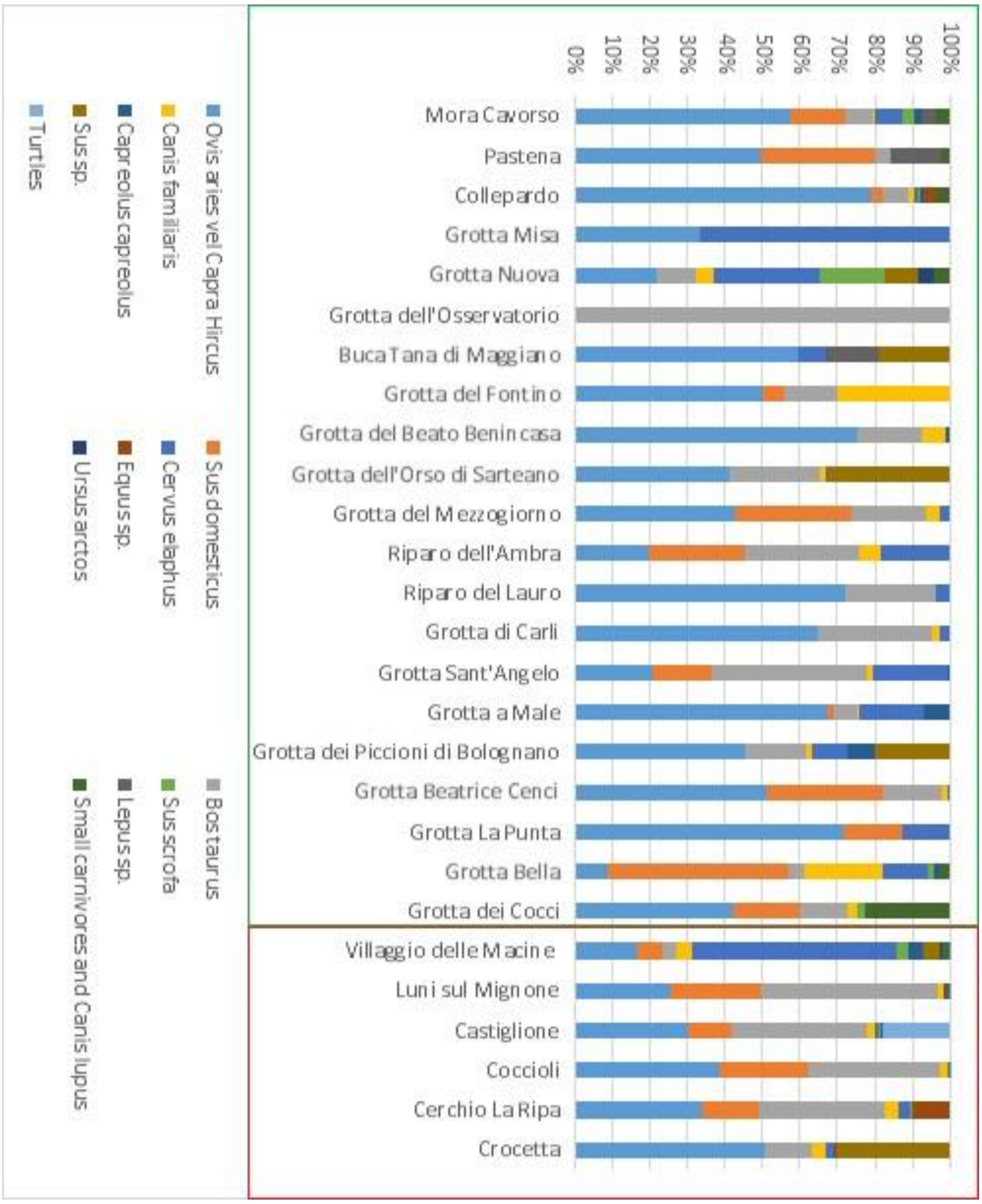

Fig. 83 Animal species representation by NISP in 21 E-MBA caves (in the green square) and 6 settlements (in the red square).

The evident exception of Grotta dell'Osservatorio is undoubtedly due to the incompleteness of the archival material held for this site (see Chapter 8). The occurrence of domestic pigs (or undetermined pigs) is also very frequent, with a variable incidence which does not seem to change between settlements and caves. All but 5 cave sites show the presence of at least undetermined pigs.

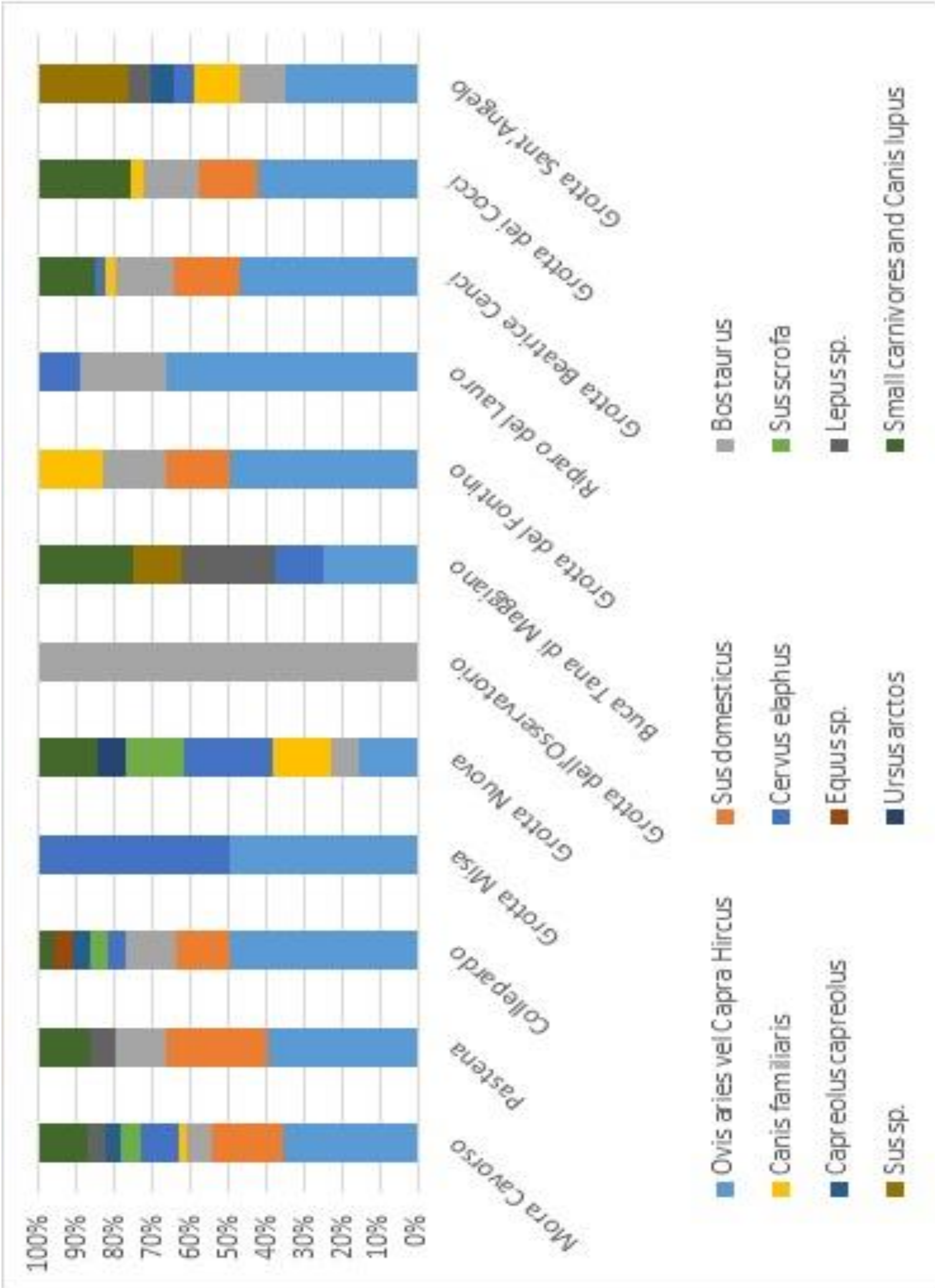

Fig. 84 Animal species representation by MNI in 12 caves, showing high variability.

Grotta del Fontino and Grotta Bella present an anomalous 20-30 per cent of domestic dogs, which is otherwise always represented by 3-5 per cent of the total in all the sites where they are found, i.e. at all the sampled settlements and half of the caves. This might indicate another previously unrecognised ritual dimension, which involved the sacrifice/ ritual use of dogs at least in selected sites. This pattern is less clear at the Grotte di Belverde, for which quantitative data are not available but where several skulls (although possibly belonging to badgers) were reported to be found and interpreted as ritual deposition (Calzoni 1933; 1962). Another interesting aspect consists of the greater presence on average of red deer in caves compared to open sites, with the exception of the Villaggio delle Macine. Apart from this site, the percentage of red deer in settlements does not exceed 5per cent, whereas in 7 of the 15 caves that yielded remains of this species, values range between 10 and 20 per cent of the total animal composition. This can be most likely attributed to the greater presence of such animals in forested environments, such as those characterising most of the caves, although an intentional and symbolic selection cannot be excluded in view of the evidence available. Finally, hare appears in two caves (Grotta di Pastena and Buca Tana di Maggiano) as an important species, present with a 15 per cent incidence. For the first cave, its occurrence is unequivocally of ritual nature, given its location on the terrace (see Chapter 6) and body part selection. Buca Tana di Maggiano shows a similar body part distribution, but the position of the bones in this context are unknown. Finally, horse is only attested in two settlements (La Crocetta and Cerchio La Ripa), while the horse from Grotta di Collepardo is most likely an earlier intrusion given its fossilised condition. Aside from the low general representation also in settlements, indicating that horse use in Middle Bronze Age Central Italy was still not common, the absence of horse from cave contexts might not be casual (although, as it was already mentioned above, 'absence of evidence is not evidence of absence').

	F/N	VY	Y	Y-A	A	Total MNI
Grotta del Fontino			1		4	5
Grotta del Mezzogiorno	2	1	5	10	9	27
Grotta dei Cocci	2	2	9	2	10	25
Riparo del Lauro			1	2	6	9
Villaggio delle Macine		4	4	4	11	23
Luni sul Mignone	3		73	92	135	303
La Crocetta			7	1	8	16

Table 37 Age classes of the main domesticated species from E-MBA cave sites and settlements (F/N: Foetus/Newborn; VY: Very young (between 3 and 6 months); Y: Young (between 6 months and 1 year); Y-A: Young adult (between 1 and 2 years); A: Adult (older than 2 years).

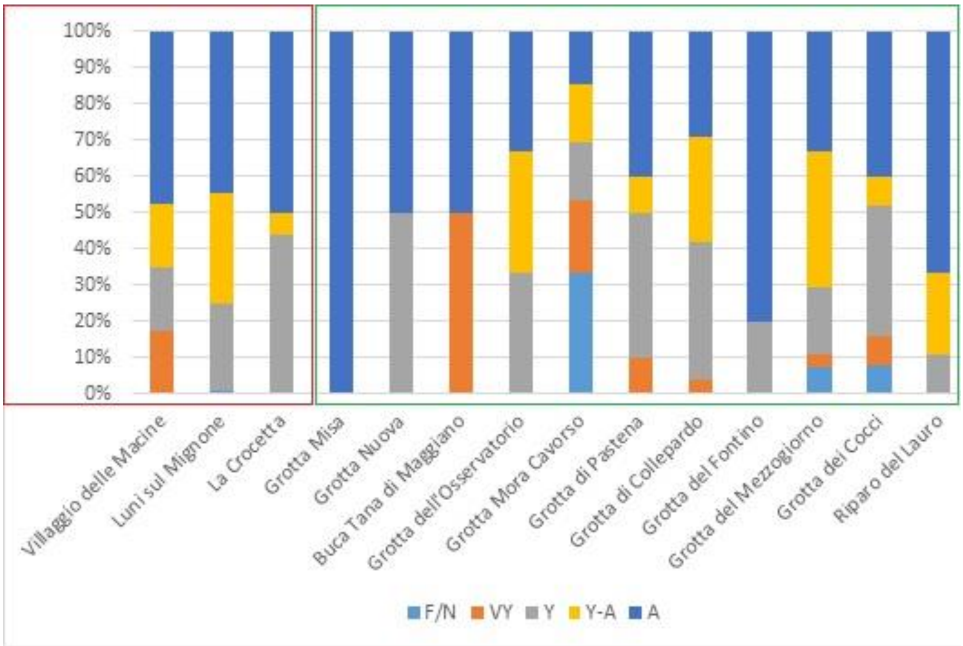

Fig. 84 Age classes of the main domesticated species from E-MBA caves sites (green square) and settlements (red square). F/N: Foetus/Newborn; VY: Very young (between 3 and 6 months); Y: Young (between 6 months and 1 year); Y-A: Young adult (between 1 and 2 years); A: Adult (older than 2 years).

In this study, age classes were considered only for domesticated animals, as this is the only faunal category whose age trends are usually recorded in publications (see, for example, Minniti 2012). Despite the limited sample, distinctive elements could be noticed in both the open-air and the cave sites (Fig. 85). Particularly notable is the presence of a relatively constant percentage of adult domesticates (about 50-60 per cent of the total) in the sampled settlements, compared to the more variable and, on average, smaller presence of this age class in the caves. Another relevant aspect is the almost complete absence of sub-juvenile individuals in the settlements, whereas half of the caves show the presence of newborn and very young domesticates. Grotta Mora Cavorso and Grotta dei Cocci were already known for this feature before this study. A similar feature has been reported for other caves known in the literature, for which unfortunately an exact quantification of the remains or of the MNI is not provided (i.e. Grotta Di Carli, Grotta Sant'Angelo and the Final Bronze Age Grotticella 10 di Sorgenti della Nova). Looking at Figure 85, however, two more sites can be added to this group of caves with a significant presence of very young individuals, namely Grotta del Mezzogiorno and Buca Tana di Maggiano. This extends the identification of sub-juvenile animal sacrifices also to the Marche region, with all the regions of Central Italy now presenting at least one example of this ritual practice during the Middle Bronze Age. Overall, however, the kill-off trends shown by the caves' datasets are very variable, especially when compared to one another or to the settlements. Contrary to what could first be inferred by looking at these mortality data, the actual pattern is one of unpredictability of composition. This confirms the limited value of these datasets to palaeoconomic studies, while testifying to the cultural nature of the human choices that generated the ecofactual deposits of these sites.

Animal selection in ritual deposits is a recurring feature (e.g. Grifoni Cremonesi 2015 and references therein) in archaeological and ethnographical records, but it was never previously identified in MBA Italian contexts. Overall, the presence of extremities appears more widespread in caves, e.g. for ovicaprines and especially for pigs, cattle and dogs (Fig. 86; Table 38). Buca Tana di Maggiano seems to indicate an almost exclusive presence of these bones for ovicaprines, pig and red deer, with only hare being excluded from this trend. In particular, pig extremities are more frequent in caves where perinatal sacrifices are attested (Mora Cavorso and Grotta dei Cocci), confirming that the carcasses were deposed whole or in large portions. Forelimbs are much more present in caves, especially for ovicaprines and cattle, whereas cattle hindlimbs occur much more often in settlements, with those of pigs being virtually absent from caves. Red deer does not show particular patterns in body part distribution. Finally, hare is almost absent from most settlements and does not show a specific trend in skeletal representation between caves and open sites. The reasons for the choice of a meaty versus a non-meaty body part, of a right versus a left bone, or of a cranial or a post-cranial skeletal element in each context are difficult to grasp. However, they once again speak to the formal affinity of cultic expressions, rather than highlighting the differences between them.

It has to be reiterated that these data are limited to a small group of sites, for which quantitative data (in some cases rather small) were available. Interpretations inferred from these contexts might well be modified by new data from other sites. Despite these shortcomings in the recorded evidence, this thesis at least offers a new research perspective and uses as far as possible the data available to date in an attempt to move beyond traditional research.

Unfortunately, the palaeobotanical datasets provided considerably less information given the more limited amount of detailed analyses undertaken. Despite this, some inferences are possible. The most useful observation that can be made relates to the significant part played by legumes, especially broad beans, in cave rituals. Although quantitative data are not available from settlements, Fiorentino et al. (2004) and others' (e.g. Carra et al. 2007) qualitative data seem to suggest that cereals and fruits are more common in both settlements and caves than legumes (Fig. 82). This seems to be confirmed by the first results of the isotope analyses carried out on a sample of MBA deceased individuals of Central Italy (Varalli 2015; Crowder 2016).

The analysed individuals show a consistently prevalent intake of cereals, with a low contribution of meat and legumes (with similar nitrogen values) on the everyday diet. However, looking at the only available quantitative datasets from the archaeological record, – three of which analysed in this thesis for the first time – and all belonging to cave deposits (Fig. 87), it emerges that broad beans are always prevalent in these sites by 60 (Grotta Regina Margherita) to 95 per cent (Grotta di Pastena). Interestingly, most of these caves are funerary sites. Therefore, it does seem legitimate to assume that broad beans already had a special role in ritual practices during the Bronze Age, especially in relation to the mortuary sphere (see 9.8.3). As discussed further below, these data can provide both interesting economic information and a cult-related information.

Ovis aries vel Capra hircus	Skull&Teeth	Forelimbs	Hindlimbs	Extremities
Grotta Sant'Angelo	6	15	10	8
Grotta Beatrice Cenci	9	41	36	12
Grotta dei Cocci	17	1	2	22
Luni sul Mignone	25	20	25	24
Castiglione	50	12	13	16
Coccioli	25	32	29	20
Cerchio La Ripa	28	8	14	14
Crocetta	102	26	8	17

Sus domesticus	Skull&Teeth	Forelimbs	Hindlimbs	Extremities
Grotta Sant'Angelo	1	2	0	3
Grotta Beatrice Cenci	20	10	8	2
Grotta dei Cocci	3	1	0	13
Luni sul Mignone	3	1	6	0
Castiglione	26	6	6	1
Coccioli	25	18	10	11
Cerchio La Ripa	13	9	3	3
Crocetta	59	13	2	11

Cervus elaphus	Skull&Teeth	Forelimbs	Hindlimbs	Extremities
Grotta Sant'Angelo	0	0	0	3
Grotta Beatrice Cenci	non quant			
Grotta dei Cocci				
Luni sul Mignone	non quant			
Castiglione	2			3
Coccioli				1
Cerchio La Ripa	4	1	1	
Crocetta	1	1	0	4

Lepus sp.	Skull&Teeth	Forelimbs	Hindlimbs	Extremities
Grotta Sant'Angelo	0	1	1	0
Grotta Beatrice Cenci	non quant			
Grotta dei Cocci				1
Luni sul Mignone				
Castiglione				
Coccioli				
Cerchio La Ripa				
Crocetta	0	0	0	1

Bos taurus	Skull&Teeth	Forelimbs	Hindlimbs	Extremities
Grotta Sant'Angelo	1	2	0	6
Grotta Beatrice Cenci	1	9	2	8
Grotta dei Cocci	3			9
Luni sul Mignone	16	6	14	12
Castiglione	57	17	18	30
Coccioli	29	15	14	36
Cerchio La Ripa	18	9	8	26
Crocetta	18	3	0	10

Canis familiaris	Skull&Teeth	Forelimbs	Hindlimbs	Extremities
Grotta Sant'Angelo	1	0	1	1
Grotta Beatrice Cenci		non quant		
Grotta dei Cocci				2
Luni sul Mignone	non quant			
Castiglione	5			2
Coccioli	non quant			
Cerchio La Ripa	non quant			
Crocetta	6	0	0	3

Table 38 Skeletal portions of the main species from the sites researched in the literature.

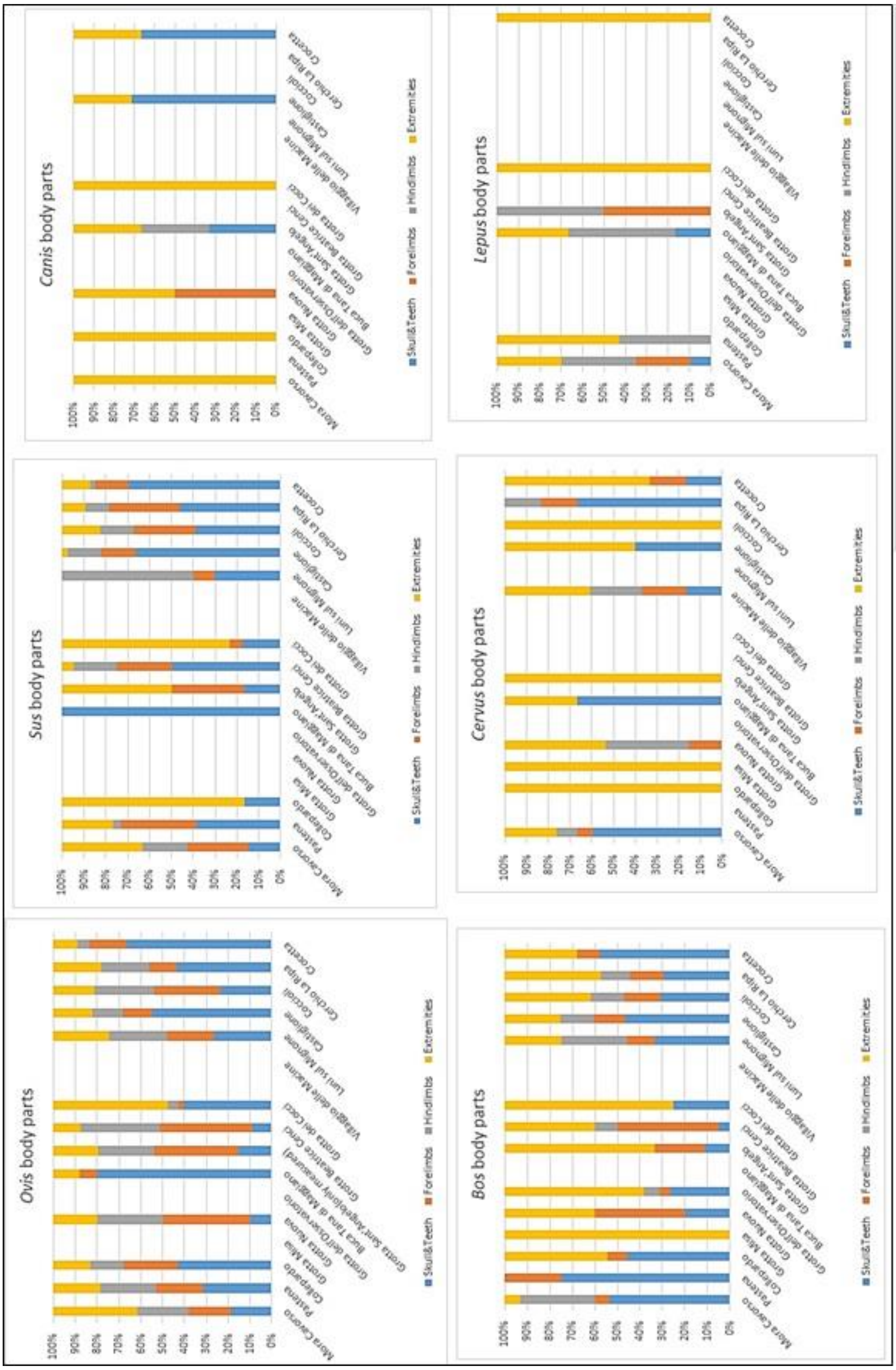

Fig. 85 Body part distribution for the main species identified in ritual deposits, from cave (left side of the charts) and settlement sites (right side of the charts) where information was available.

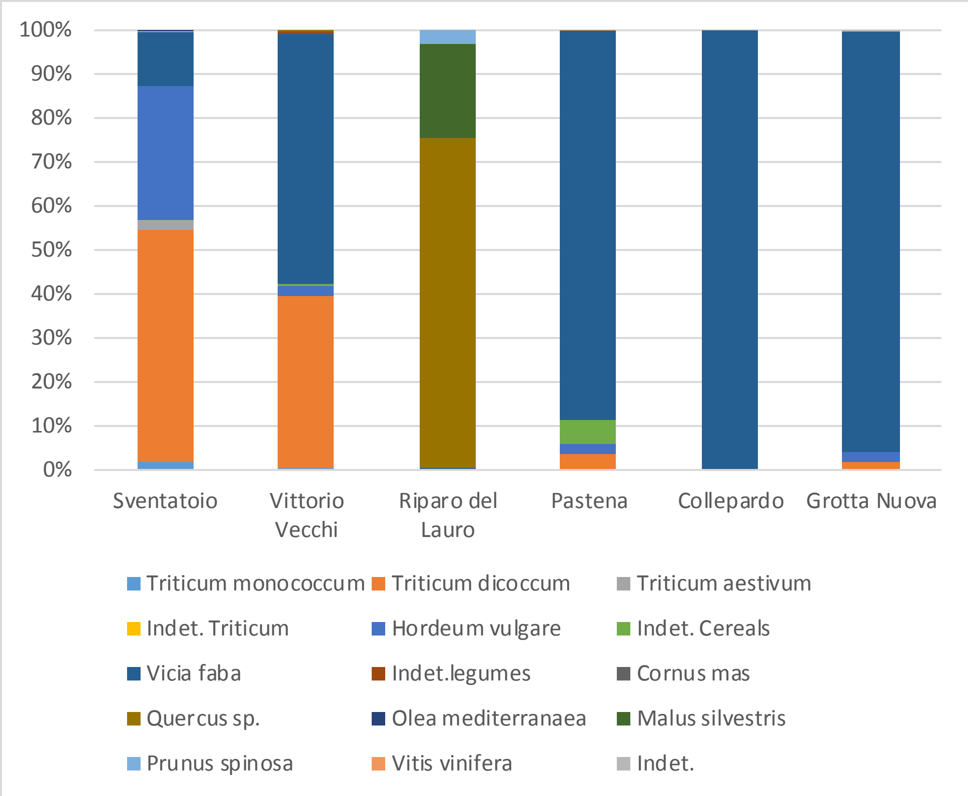

Fig. 86 Plant species representation from the 6 MBA caves with this type of information available.

It is also interesting to note that almost no caves from the Abruzzi region have produced plant remains, even though they are particularly rich in long-lasting ritual/burial frequentations and show precise zooarchaeological patterns. The reason for such an absence might be attributed to methodological bias, but in Grotta Sant'Angelo, for example, carpological remains were recorded for the Neolithic layers (in a specific pit deposit), whereas they seem absent from the Bronze Age contexts. The same situation is recorded in Grotta Mora Cavorso, which is currently in the territory of Lazio but is very close to Abruzzi both geographically and culturally, with rare seeds found in earlier levels and none in the Bronze Age. Preservation bias can be excluded for this ecofact category, especially for Mora Cavorso, where hundreds of tiny, fragile bones were preserved. Therefore, it might cautiously be suggested that human groups using caves on the Tyrrhenian side of the peninsula were more likely to use plants as part of their ritual activities in caves. It is worth pointing out Grifoni Cremonesi's observation (Di Fraia & Grifoni Cremonesi 1996) that metal objects also do not seem frequent in Abruzzo where the assemblages comprise mostly personal ornaments such as pins; by contrast, in Tuscan caves copper as well as bronze arrowheads and daggers are often found. This suggests that choices were made regarding the cultural material to be used in cave rituals, although this might have also been related to easier access to metal for Tyrrhenian than for Adriatic people.

9.7.4.2. Associated deposits in MBA caves in Central Italy

Below, a concluding synthesis is presented of the updated data from all the Middle Bronze Age Central Italian caves containing a palaeobotanical and/or a zooarchaeological deposit. In particular, I will consider the main morphological features from these sites, the overall context, and the presence of burials, unusual structures and remarkable artefacts. Bioarchaeological evidence which correlates with ritual practices is seldom set apart in MBA caves of Central Italy. The synthesis presented below will show how these material classes are often accompanied by other contextual sets of evidences which complete and aid the interpretation of archaeological sites.

The caves examined, that included bioarchaeological remains, number 28. First of all, we can note how natural features seem to constitute an important aspect in the choice of the ritual location.

Only 2 sites out of the 16 where the type of access is specified have a shaft entrance. Of these, 13 caves have a wide, easy entrance. However, 4 of these 13 sites only had archaeological remains in the darkest part of the cave, often inside their tunnels. Except for this detail, speleothems do not seem to have impacted on the occupation choices, as caves or cave sectors with more “fascinating” stalactite or stalagmite formations are not always selected to hold rituals.

For 14 of the 28 sampled caves, it has been possible to recognise a proximity to water sources at less than 70 m outside the cave. In the rest of the cases, the information was not available, meaning that the existence of such a feature cannot be excluded. More specifically, uncommon water sources characterised 9 of the 14 sites for which relevant information was available, with 5 displaying (or being close to) inner creeks or lakes, one being close to a salty lake, one having steam coming out of the sinkhole-shaped cave entrance, and two being in the vicinity of waterfalls and small ponds.

Moving forward to the artificial features associated with cave use, a range of special structures have already been identified by scholars such as Whitehouse or Grifoni Cremonesi (Fig. 88). The presence of such features gain a more credible ritual value when considered in context. Among the sites with bioarchaeological remains, it was possible to count 6 caves holding one or multiple hearths. In one case, namely Grotta Misa, the hearth was arranged in a peculiar ring-shape structure and accompanied by piles of burnt seeds or flour. Five caves yielded pits, in some cases surrounded or covered by stones, dug for a not-easily understandable reason. Multiple pits were often present in each site and, despite the scepticism shown in interpreting such features as ritual ones, the content preserved in many of them has shed some light on their use. As noted above, the two pits recognised at Mora Cavorso were located in dark, secluded areas and in a context which yielded other remains that were likely to be connected with ritual practices. Of the two, one contained an overturned bowl, a flint bladelet and a spindle-whorl, while two flint arrowheads where found just slightly away. Grotticella W2 at Pastena contained at least four pits, one of which covered by flat stones: all contained an intact or a collapsed upside-down bowl and most a river pebble. Grotta del Mezzogiorno in the Marche region yielded several pits with such characteristics, often filled with burnt seeds. Finally, Grotta Sant'Angelo in Abruzzi has the widest range of such pits, ranging in their chronology between the Neolithic period and the Late Bronze Age. In particular, four have been dated to the MBA, including one containing an intact pot (not overturned) and another yielding human remains. The nearby Grotta dei Piccioni di Bolognano also held one pit with an intact pot, making artificial pits and vases very strictly correlated to one another in nearly every context identified.

Artefacts are another material category to be taken into account contextually. The most recurrent and striking evidence is probably related to the unusual positions in which pots are often found, as mentioned above. For example, three caves had overturned bowls (4 cases in Grotticella W2, 1 in Mora Cavorso, 1 in Grotta Nuova). Moreover, spindle-whorls, which in prehistoric and classical Italy are traditionally considered as funerary goods accompanying the female deceased, are found in 10 out of the 15 caves with an ascertained presence of human remains, whereas they are apparently never found in caves without this type of evidence.

Fig. 87 Top: stone circles and pits at Grotta dei Piccioni di Bolognano (Cremonesi 1976). Bottom: circle of stone, non-functional pit, whole upside-down pot from Grotta Mora Cavorso.

This could confirm the relation between the two categories of remains, even when – as it is typical of MBA caves - taphonomic processes prevent from associating the dead with grave goods with certainty. Flint arrowheads seem to be also only present in association with human burials. This co-presence is even more understandable in relation to beads, buttons and pendants, which are likely to have constituted personal ornaments and to have moved away from their original positions on the bodies and clothing of the deceased.

Ecofacts add to these better-known material classes to enrich the interpretation of cave sites: 19 out of 28 sets of zooarchaeological remains found in the sampled caves show unusual characteristics, holding for example a high ratio of sub-juvenile individuals or selected skeletal elements. Other significant features of such assemblages are the presence of meal remains in unsuitable eating places or an unexpectedly high frequency of certain species which are less common in settlements. All these peculiarities are found in association with at least one of the above-mentioned non-ecofactual features. In addition, 14 out of 28 caves also held plant remains, 13 of which are described in sufficient detail to show a non-domestic character. First, plants or seeds appear to have been always intentionally carbonised. Also, they can be found close to burial areas, stored in pits, pots or located under overturned vessels, associated with related manufacturing tools such as millstones and grindstones, scattered over a surface or even arranged in groups around a ring-shaped hearth.

If a single set of evidence does not convince us of the ritual use of these contexts, the association of two or more of these features, recurring in multiple caves, is hardly casual and is unlikely to relate to a use of the sites simply as dwelling contexts or temporary shelters, as claimed by Treffort (2005) for the French caves of the Jura Valley. This overview, then, shows unequivocally that interpretation of the uses of cave sites is significantly enriched also taking into account ritually deposited bioarchaeological remains. This is even more striking when no other ritual markers are recognised in a cave (e.g. Grotta Beatrice Cenci, Grotta La Punta), because in these cases faunal or botanical remains can contribute significantly to the interpretation of the use of the sites.

9.8. Social bioarchaeology, Middle Bronze Age lifeways and cave uses in Central Italy

9.8.1. Food and culture: a necessary premise

Food is essential to life and when we ingest it, it becomes part of our bodies. Food also requires or produces a lot of interaction, not just with other humans but also with animals, plants and the environment. Notably, food cannot be considered as an inert entity, as it is a non-human object that derives from living beings, such as animals and plants, and continues to interact with other living beings, namely humans. In the book "The Social Life of Things" (Appadurai 1981; but see also Knappet & Malafouris 2008; Pollard 2001; Robb 2004; Shanks 1998), it is recognised how essentially inanimate objects can play an active role in human life, although food and its natural derivation from former living beings are not explored in their role as agents within the book and rarely are elsewhere. For all these reasons, the symbolic power of food can never be overlooked while studying the sociology of food dynamics. One of the central problems in interpreting the meaning of past symbols relating to food, however, lies in the lack of our contextual understanding and direct involvement in the socio-cultural framework being investigated. Nevertheless, despite such interpretative issues, the existence of rituals can be often recognised in the archaeological context. Rituals related to food production, preparation and consumption do not only contribute to building one's individual personality, but also help define social identity. Food constraints, taboos or exclusivity can concur to build up gender roles or status differences, while also strengthening the social bonds of certain segments of a community. Such practices involving the symbolisation of food can thus either reinforce the relations existing in social groups or intentionally highlight the divisions within them (a phenomenon defined as "gastro-politics" in Appadurai 1981). In this thesis, animal and plant remains are only considered for their direct or indirect food dimension, as no other possible level of interpretation appears to have been relevant in the cases-studies examined (e.g. medicine, fuel, building material, etc., Russell 2012). This does not exclude, however, that such perspectives existed and underwent similar processes of ritualisation, which I could not identify here in view of the evidence available.

The recurrent association in caves of ecofacts and special features such as pits and pots has been summarised above. It is important to attempt to interpret the reasons for such ritual choices. Meaningful bioarchaeological analyses should not overlook the potential symbolic significance of assemblages, especially when such an interpretation is reinforced by other, non-bioarchaeological, features of the deposits.

Generally, it is possible to note that, in past societies, the relationship between food and religion has been played out in three different contexts (Wilkins & Hill 2009: 80):

1) Festivals, which were often defined by food seasonality and involved rituals focusing on animals and other foodstuffs (sacrifice, offerings, etc.);

2) Ritual meals, which were often related to power affirmation or reinforcement. However, meals can have ritual connotations even when they are small and relatively private.

3) Identity reinforcement due to observing a tradition. Food offerings were performed for thanking the gods for the favours obtained and/or in order to invoke future ones.

As a general rule, social categories such as 'feast', 'sacrifice' and 'taboos' should not be considered as generalizable nor, conversely, as isolated phenomena. On the one hand, a strict categorisation would lead us to interpret past cultural behaviours through modern perspectives, as already mentioned by Bradley (2005) with regard to ritual. Moreover, while adjacent ancient societies had opposed food-related symbolic restrictions (e.g. pork prohibition among ancient Egyptians/Jews, while elsewhere in the Mediterranean it was considered a delicacy), such restrictions appear to be limited to specific situations: for example, broad beans could not be eaten on certain occasions, while pork would be especially eaten in others. Certain prescriptions might have excluded one or more members/categories of the community, such as priests, women, children etc., either permanently or just on certain special occasions (Grottanelli & Milano 2004; Wilkins & Hill 2009) It also needs to be stressed that every food-related prescription in the religious sphere is always part of a wider and complex picture relating the organisation of a society as a whole: this makes every attempt to interpret any alimentary rite outside of the social context in which it was generated extremely difficult. This is why understanding the context of a find/practice as deeply as possible is crucial to producing plausible interpretive reconstructions.

Food and drink-related behaviours and choices are certainly related to culture and identity. Scheid (2004) believes that a universal model for sacrifice or feast does not exist and that it is therefore impossible to define specific food constraints as a universal category. However, he appreciates that, in demonstrating that such ritual diet constraints exist everywhere, we have a confirmation that humans use their environment and daily activities to construct and show, by systems of oppositions (e.g. being allowed or not allowed to eat a type of food forbidden to other human groups, eating domestic or wild game, raw or cooked food), the different aspects of their identity. Although the meaning of practices of food consumption may and does vary cross-culturally, the formal protocols are recurrent – such as choosing certain species out of all the available ones and/or elaborating a certain set of actions to kill, process and offer certain foods in order to convey a symbolic message, and can in fact be considered generalizable. Therefore, the study of the different expression of such universal behaviours (e.g. the importance of eating together) emphasises the basic unity of certain aspects of human thinking, much more than what the comparison of similar practices in different contexts can do. Reliable analogies are more often found among different behaviours rather than in similar ones. For example, the Romans did not apparently have proper food restrictions followed by the whole population, in contrast to the Middle Eastern cultures. These constraints, therefore, appear to have been more contextual than universal.

9.8.2. Towards a social bioarchaeology of Middle Bronze Age Central Italy

Traditions maintained by literate civilisations can often find their roots in ancestral practices – especially those traditions known among their observants as ‘archaic’, or related to ‘ancient’ gods such as Demetra (Albarella 2014; Versnel 2002). Therefore, I will now try to establish some analogies between the symbolic world of mostly

Mediterranean literate cultures such as the Roman one and the Middle Bronze evidence from the caves of Central Italy. Among the most evident special features identified from my sample are those that indicate the sacrifice and ritual offering of sub-juvenile domesticates, the ritual meals and the burnt crops. Even if the killing of lambs, kids and calves does not represent - at least, directly - a major economic sacrifice, the waste of potentially fundamental food resources (pigs and cereals, legumes and fruits) appears much more significant. In order to improve our understanding of this issue, we need to draw upon a wide range of archaeological, ethnographic and textual sources, while bearing in mind the limitations of ethnographical and historical analogies.

Some aspects of rituals involving food, such as the farming and slaughtering practices concerning some selected animals, as well as the criteria/timing of their selection, are largely lost to us but might have left some traces in the archaeological record. This is also the case for all the gestures and steps that preceded, accompanied and followed the act of killing, preparing, consuming, offering and/or disposing of such ritual subjects (Grottanelli & Milano 2004). What is left to read is sometimes enough to trace a picture of what such prehistoric practices might have looked like, and to build some possible comparisons with archaic religious practices recorded by later cultures. These are, in fact, likely to have inherited some socio-cultural traits from their protohistoric ancestors - as it appears from other coeval civilisation that have left more tangible traces in literature and art, e.g. in the case of pre-Greek Aegean world).

In the case of Mora Cavorso, the object of the sacrifice, as well as the location of the rites, are easily understandable: the Simbruini Mountains, connecting the Fucino area of Abruzzi with the Tyrrhenian coast via the Aniene river valley, are one of the most convenient routes for transhumance-. This area was well known in historical times and, basing on the extent of the Neolithic deposit (see Chapter 5) and the relative importance of the BA frequentation, which was probably part of a widespread pattern of recurring ritual sites (see Chapters 2-3), equally relevant during later prehistory. Therefore, it is not surprising that sheep and goats, representing the vast majority of the faunal record of MBA Mora Cavorso Cave and also of most settlement sites in the region, became the main object of ritual attention. They were, in fact, the most readily available species, and the most important animals for the survival of the community. Combining the data from the kill-off patterns of all the species recorded from this area with the history of the mobility strategies of transhumant shepherds, we can suggest that Mora Cavorso site was frequented on a seasonal basis - more specifically, during the warm months (assuming animal birth in spring-summer and knowing that transhumance in the uplands occurred in that period of the year). Given the high number of animal individuals found at the site, and the presence of at least two stratigraphic horizons, we can hypothesise that the cave was repeatedly occupied and ritualised. It is risky to make assumptions as to whether the death of the woman buried there gave the first impetus to enacting sacrifices, that may have then come to be repeated every year at a certain time (not necessarily coincident with that of her death). However, we might assume a connection between these potentially separate events, also in terms of meaning. The cave location, the repeated sacrifice of infant animals and the deposition of the dead woman should be considered along with the presence of the two pits and the overturned bowl. These might have been symbols of offerings with a feminine connotation, referring to the act of penetrating the earth and fecundating it with a liquid or food poured from the bowl (Bonanno 1986, among the others, stresses the affinity between the fertility of the woman and of the earth – a classical example being the 'Pothnia Theron' of the Mycenaean culture): overall, this evidence suggests the occurrence of a layered ritual message, on one hand related to honouring the deceased, and on the other one to propitiating fertility or productivity. On the other hand, two of the most archaic deities of Greek civilisation, i.e. Demetra and Kore, who representing the cycle of seasons (and the sleeping life of the underground world), were the recipients of a very clarifying ritual the Greek festival of Thesmophoria (also suggested in Albarella 2014; Versnel 1992). This was a female-only ceremony where women killed newborn piglets and threw them into caves and crevices, as well as in pits filled with snakes, and left them to decompose. Then the women went into these chasms and recovered the bones to 'bail the piglets out'.

Several classical sources describe the most archaic rituals of Ancient Rome as connected to fertility deities such as Ceres, Maia/Cybele and Rumina. Newborn lambs and kids, as well as piglets and pregnant sows were sacrificed to these female goddesses during initiation ceremonies or on their sacred days (Ovid, Cato, Cicero, Varro, Columella, Pliny – See Silvestri 2011; Silvestri et al. in press a).

Such ritual practices powerfully testify to an historic connection between the female gender, the underground world and natural fertility: a conceptual association that may have been born already in late prehistory. Although this fertility-oriented interpretation has sometimes been over-emphasised in the literature (Brady & Ashmore 1999; Tomkins 2009), it does seem plausible in this case.

Today, mostly because of its status in two of the most widespread monotheistic religions (Judaism and Islam), pig is considered as an impure animal, while in present-day Western cultures it often symbolises 'loath, lasciviousness and promiscuity' (Harris 1997). Pigs do not chew the cud (Leviticus 11:7), and love to roll in the dirt. In prehistory, as well as in many historically and ethnographically attested cultures, however, it is possible that other features of pigs defined their symbolic meaning: for example, their notable meat yield compared to the food consumed (35 per cent as opposed to the 10-15per cent of cattle, sheep and goat) might have been significant; also notable might have been their frequent and prolific reproductive qualities (up to two times per year and up to 10 piglets at a time, as opposed to the single time and birth per year for cattle and ovicaprines); probably, the variability of their omnivore diet and their adaptability, as well their ease in breeding in non-dry environments, were also influential factors - ones that led to a dietary taboo in the Near and Middle East (Judaism and Islam), and to their close coexistence with humans in the more water-rich regions of the Old World (Harris 1997).

The concept of fertility in relation to pig also recurs in other European and Mediterranean cultures. Such cultural ideas seem to have had, at least in certain cases, very ancient origins. Good examples are the Celtic sow-goddess Ceridwen (Filmer-Davies 1996) and the Egyptian heavenly sow-goddess Nut (Maravelia 2003), which is painted underneath coffin lids. According to mythological and Classical texts, even in these cultural contexts pigs were considered a symbol of fertility, and were also linked to cycles of death and rebirth. But it is equally important to mention those ethnographic cultures in which piglets, pregnant sows and pigs are relevant in the everyday life of humans groups as both a food source and sacred animals. Especially in South-East Asia, the so-called 'pig complex' is a common phenomenon (Strathern 1971). This is characterised by an obsession with talking about pigs, which on some occasions are also the centre of ritual practices. As can happen with other species all over the world, pig herds can even be shaped according to ritual requirements rather than economic ones, although the killing of the animals often constitutes the most important occasion for meat consumption (Strathern 1971). Pigs are often considered as symbolic substitutes of their owners, and for this reason they are sacrificed in their place. Occasions can be, for example, healing rituals or the foundation of a new matriline (Küchler 2002: 43). It has never been hypothesised before that certain species in Central Italy's Bronze Age could have been herded for, and/or consumed in, ritual contexts only, or that, conversely, certain species could be excluded from the list of the edible ones on ritual occasions (. Could this have been the case for the community of Mora Cavorso Cave, as domestic pigs - in contrast to few other adult animal remains found, including wild boar, show no cut marks or fire traces? Hamilakis and Konsolaki (2004), in their study on a sacrificial context of pre-classical northern Greece (Ayios Konstantinos), notice that pig only was used in the ceremony and that some perinatal piglets were buried whole. This provides a useful comparison in support of our hyphothesis.

Red (and roe) deer might be thought of as belonging to a completely different symbolic sphere, less related to agro-pastoralism and more to an atavistic, hunting-related one (Baker et al. 2015 and references therein). The detailed analyses of the cave contexts undertaken here, especially when compared with the evidence from the sampled settlements, show a notable presence of these species. This could have had a strong ritual implication, even though deer hunting for food procurement cannot be ruled out. As already stated by Ruth Whitehouse with particular reference to the Grotta dei Cervi di Porto Badisco (Whitehouse 1992; 2007), the presence of deer representations and deer bones in cave contexts might refer to hunting or hunting-related initiation cults, possibly restricted to the male members of the community (Harris 2015). However, the location of these sites with deer remains, mainly close to woodlands, might have constituted a less compelling reason for the choice of animals as ritual symbols, although landscape and environment are certainly key factors in the development of cultural traditions.

Less can be said about the hare, although it does seem to be of particular significance in caves, particularly given the possible intentional selection of limbs (as seen elsewhere, for example, in Glencurran Cave, Dowd 2009) and its location on the terrace of Grotticella W2. Similar patterns of hindlimb selection have been noted at Buca Tana di Maggiano for the Bronze Age and at Grotta Patrizi in the Neolithic (Grifoni Cremonesi & Radmilli 2001). In particular, this cave held one hare thigh in isolation and three tibiae, which were recovered beneath a drilled human skull (Bigini & Turini 2002). The hare is a symbol of fertility, death and rebirth in several cultures around the world (Boyle 1973), with the superstition of the hare/rabbit's leg as a charm still preserved today (also observed by Grifoni Cremonesi 2015).

The presence of dog seems easy to justify, this animal being a loyal companion to humans and crucial aid to their survival. In fact, dogs are found almost exclusively in burial contexts in MBA Central Italy and never bear any cut or butchery marks. It could even be hypothesised that dogs were brought into caves as guard dogs, but this would not explain their rarity in settlements, where this use of the canids would have been equally important.

The apparent exclusion of the horse from the range of species used for ritual practices in caves would not necessarily indicate that a symbolic importance was not ascribed to this animal. However, reflecting on the nature of this species, at a time in Italy when it had just been introduced into the everyday life of human groups (albeit likely limited to certain members of the community), it could be that it was not deemed appropriate to traditional chtonic religion.

9.8.3. The symbolic significance of broad beans: new insights for the Mediterranean Bronze Age

Among the plant species identified, broad bean assumes a central role in all the caves for which the quantity or relative proportion of plant remains were specified[8]. Despite the significant presence of broad beans (*Vicia faba*) in several cult and burial caves of Middle Bronze Age Central Italy (Fig. 81), their symbolic role in such contexts

[8] i.e. Riparo del Lauro in Tuscany, Grotta dello Sventatoio and Grotta Vittorio Vecchi in Southern Lazio, quite close to Pastena.

has never been explored. Relevant research has been done, however, for later periods and for coeval literate civilisations (Grottanelli & Milano 2004). Broad beans seem to have represented a key part of protein intake in ancient diets, especially in substitution of the more difficult-to-obtain meat and fish. They were, therefore, often important in the diet of peasants and poorer segments of the urban population (Beer 2010: 44). However, extensive evidence shows that a strong taboo involving this ingredient was quite frequent in the ancient Mediterranean and that it was a dramatic one, as it prevented consumption of one of the most important food resources at the time. In all the cultures examined (Egyptians at first, Greeks, Romans and later civilisations of Northern Europe), beans were considered strongly linked to the cycle of life and death and used in related rituals (Grottanelli & Milano 2004: vii). These legumes have widely been thought to contain the souls of the dead. This made them a taboo food in ancient Egypt, for the head of the Flamines priests in ancient Rome and among the Greeks observing Pythagora's practice (Beer 2010: 44). Burkert (1962) relates the Pythagorian taboo to Orphism, which was linked in turn to the myth of Demetra. The latter prohibited the consumption of broad beans and enforced periods of fasting accompanied by certain clothing instructions and the repetition of sexual formulas. Some assert that, by causing flatulence, broad beans were excluded from the diet to pursue purity (Beer 2010: 44); some that the shared taboo would have strengthened the practitioners' sense of belonging to a separate group, while everyone else made broad beans their main food source. Because of their soul content, beans were also used among Greeks in political elections, as the wise minds of the ancestors would have guided the citizens towards a good decision. Among the several uses of broad beans in ancient rituals, those related to death are the most recurrent: archaic Roman rites included offering beans to the dead and to the Gods of the Underworld; these seeds were also thrown to the ground by the pater familias during the Lemuralia and Parentalia festivals, in order to keep the evil spirits away on the days when the world of the living was accessible to the creatures of the Underworld. Both Roman and Greek cultures seem therefore to link the broad bean to the souls of the dead. As consequence, for example, to Pythagorians, which were vegetarian, eating broad beans would have been similar to eating meat or fish. Plutarch also associates this belief with the use of such beans in funerary rituals.

There might be a practical reason for this ambiguous role of broad bean in cult, namely a possible connection with the deadly effect of this legume on a small percentage of humans, an allergy called favism. Interestingly, favism appears to be most frequent in Mediterranean people, especially in the Middle East, with Kurdish Jews having a 1:2 ratio according to the Jewish Genetic Desease Consortium (JGDC). This interpretive hypothesis does not seem entirely convincing. Nonetheless, the rarity of this disease might have made it appear a form of divine punishment or a sign of the gods' will, thereby leading to the surrounding of broad bean consumption by religious symbolism.

Another cause for this association with death and the afterlife might be related to the bean shape - phallic for the pod and similar to an embryo for the seed. Moreover, these legumes were sowed in winter and harvested in early summer: for this reason they were considered the first fruits of the earth, and 'gifts from the dead' (Kislev 1991). As with the other animal and plant species analysed in this work, it is not possible to prove that a direct analogy existed between these historical examples and the protohistoric practice. However, given the strong affinity between the use of broad bean detected in MBA (especially funerary) caves and the evidence known from later Mediterranean civilisations, including the Roman-Greek one, this hypothesis does not seem completely unreliable and it is risky, but not entirely unfounded, to imagine that such beans were already considered as symbols of death and rebirth.

9.8.4. Social bioarchaeology in action: food and identity in Middle Bronze Age Central Italy

Looking at the wide range of animals and plants used in the rituals described in this work, it is worth investigating whether they were chosen for their role as high-status food or for other reasons. Food status is a complex subject and is very difficult to grasp in an archaeological context, but it has been a crucial factor in different human communities across space and time. The rich and the poor in the Greek world used to eat similar foods but in different ways and proportions: for example, meat was certainly more accessible to the rich, whereas the poor could only eat it during public festivals or propaganda events (Wilkins & Hill 2006: 56). Pulses, cereals and nuts (especially bitter vetch, barley and chestnuts) were usually considered as animal food, but in case of famine or any other necessity they would be eaten by people. Another difference in nutrition, more than gender- or status-related, was based on the different occupations of the eaters: workmen (low-class), athletes and soldiers (higher-class) and people involved in other activities that required significant energy obviously had to eat more and better than the others.Although MacLean and Insoll (2003: 565) state that any difference existing in the past between normal food and high status food is probably unintelligible now, Curet & Pestle (2010) have developed a method to identify the status of food, according to both economic and non-economic criteria, which can be applied relatively to egalitarian societies. In the first category fall: (**a**) scarcity (either deriving from natural rarity or from social restrictions), which increases the desirability of the food; (**b**) abundance, which is inferred by comparing the different quantities or the body part distribution/product refinement among different segments of the human group; (**c**) diversity, which points out to the acquisition power upheld by certain individuals or groups of individuals; (**d**) labour investment, which can be calculated based on the difficulty of acquisition and preparation of food; (**e**) periodicity/seasonality, notable if a certain type of food is present only in the context of feasts and festivals; and finally (**f**) the place of origin, for the difficulty to obtain exotic food and the symbolic significance of owning and controlling it. Among non-economic factors are the taste and the symbolism of foods, the latter being perhaps the hardest to identify.

Examining these parameters would certainly be important in clarifying the status of the food *sacrificed* (here intended more in terms of economic loss than ritual performance): certainly, the lambs/kids and piglets of Mora Cavorso and the broad beans (and also cereals) of Pastena, as well as the 5 cattle skeletons of Grotta dell'Osservatorio, can relate to the aspects of abundance. This is also valid for the selected sheep bones of Collepardo and the recurring forelimbs from many caves recorded in the literature. Rarity is a factor for the meals consumed at Grotta di Pastena and, probably, at Grotta di Collepardo: meat consumption was in fact an exceptional event, especially looking at the isotope analyses undertaken on the individuals found in Collepardo (ongoing study in Durham University) and also from other areas (Varalli 2015). Periodicity, another key feature in this framework, also concerns all the other species, as much as diversity does. In addition to those factors, symbolism seems one of the most relevant factors, which would definitely give a high status to the food chosen in the rituals. Unfortunately, in the absence of comparative examples, it would be helpful to explore carefully the evidence from new settlements: such an analysis would be crucial to clarifying whether non-exotic and very common animals and plants might have represented an exclusive food on special occasions.

Despite the apparent similarities of the cave locations and ritual/burial contexts, variability of cult manifestation can be clearly observed in all the caves analysed in this work, reinforcing Schied‘s (2004) theory that diversity of the formal expressions of a cult are part of a more universal way to construct human groups' identities. The striking distance between apparently similar ritual practices in Bronze Age Central Italy can be better observed when looking at the three most recently analysed caves ì, which were also geographically and culturally close. At Mora Cavorso, despite the good preservation of both the Bronze Age deposit (where several intact foetal bones were retrieved) and the older layers (plant seeds were indeed found in the Neolithic contexts), no plant remains were identified. By contrast, the deposit included several sub-juvenile domesticates, deposited whole and most likely uncooked, and some wild game. On the other hand, the coeval phase of Pastena Cave revealed the presence of entire layers of carbonised seeds (hundreds of thousands) still *in situ* and a limited amount of meal-related animal remains. Finally, Collepardo Cave produced only half a dozen carbonised broad beans dispersed in three soundings as well as a few cereals. Also, it yielded a rather low amount of forelimbs mostly pertaining to sheep with no trace of consumption. All were located in a symbolically meaningful area.

Other aspects of the ritual use of the sites analysed, including those used for burial, point to the performance of a more widely-shared set of practices, such as the digging of pits, the deposition of over-turned bowls found in-situ, the presence of recurring artefacts next to human bones (such as personal ornaments or possible grave goods – spindle whorls, arrowheads, beads and bronze jewellery), and the use of dark and secluded cave locations. However, ritual manifestations related to the bioarchaeological remains show evident variability. As a consequence, they might reflect a more complex set of practices compared to those previously envisaged in relation to the sub-juvenile deposits and a few isolated animal burials (Grifoni Cremonesi 1996; Wilkens 1995). In particular, it can be demonstrated how such variability is manifested in contemporary sites which are believed to have been used for similar purposes. The latter were most likely related to the cycle of life and death -both in terms of the human funerary sphere and in the subsistence sphere, which was connected with the abundance of the harvest and herds (Cocchi Genick 2002; Grifoni Cremonesi 1996, 2002; Guidi 1991). Visible actions of ritually-imbued repetition, such as the three-times reiterated deposition of burnt seeds'layers in Grotta di Pastena, the multiple offerings of piglets and lambs/kids to the dead woman in Grotta Mora Cavorso, and the several episodes of human bone commingling in Grotta di Collepardo, would reinforce this hypothesis.

The diversification of ritual practices involving animals and plants in a circumscribed set of sites - in this case the MBA caves of Central Italy – offers a glimpse into the local and conceptual complexity of the symbolic world of these agro-pastoral communities. However, additional information needs to be added to this picture through a more focused study of other existing faunal and plant assemblages. As it was hopefully shown in this thesis, it was possible to build up solid interpretations only when spatial and stratigraphic data were available, and when detailed taxonomic information (often overlooked because considered unhelpful in a non-economic perspective) were accessible. Even such simple, yet crucial data, would make the interpretive process much easier and productive, as demonstrated by the considerable amount of new information inferred starting from only three new sites, four archival datasets and less than thirty literature sources. This will hopefully be possible in the future and involve the systematic investigation of new cave sites, with special attention paid to bioarchaeological remains from the earliest stages of excavation.

CHAPTER 10 – CONCLUSIONS

This thesis has explored the significance of ecofactual remains in caves by means of social biaorchaeology. In doing so, it has shed new light on some key aspects of the life of Bronze Age communities in Central Italy.

The research presented in this thesis has had several aims, of both a methodological and an interpretive nature. The first aim concerns assessing the value and reach of previous studies of caves in MBA Central Italy and comparing their results to new research directly undertaken by the author. This was done in order to compare the interpretive potential of fieldwork, archival and literature-based analyses.

In this regard, I have demonstrated that the design and application of an easy to follow, but accurate archaeological protocol, used in the field and in the post-excavation analyses, right up to the publication phase, provides much more interpretive potential than research produced in the past with less systematic approaches. First of all, this protocol has allowed me to analyse the data in different ways (for example, to draw inferences on both the economic and symbolic strategies of the communities under study). Moreover, by using the same methodology on several datasets, I have been able to undertake a comparative analysis, which revealed significant variability in both the subsistence and the religious practices attested at different cave sites. Furthermore, this systematic dataset will, in the future, enable other archaeologists to scientifically re-analyse and improve the work done on the available evidence, regardless of the interpretations I drew.

Another objective of my thesis was to present 'social bioarchaeology' as a useful tool in the study of ecofacts from the MBA cave sites of Central Italy. In particular, my research was intended to show how such an approach could help us correct some existing interpretive misconceptions (such as those related to the one-sided economic interpretation of ecofacts) and improve our understanding of the cave sites.

Social bioarchaeology (Marciniak 2005; Morehart-Morell Hart 2013; Russell 2012) is a field of study that focuses on the significance of ecofacts in the social aspects of past human life, including those related to rituals and symbolism. As shown in this work, a multidimensional approach, drawing both on archaeological theory and science-based methods such as zooarchaeology and palaeoethnobotany, has proved highly effective when applied to the bioarchaeological remains of caves in MBA Central Italy. Analysing these datasets beyond the traditional subsistence-related approach allowed me to unveil a hidden interpretative potential of this class of materials. More specifically, an in-depth, contextual analysis of such artefacts has enabled me to shed new light on the symbolic world of the protohistoric communities of the Apennines.

These result swere possible thanks to another key aspect of my research, namely the investigation and critical discussion of three new caves from which I obtained first-hand data. In fact, an additional aim of this thesis was to test the validity of social bioarchaeology with practical examples, as this approach has so far scarcely been applied to real case-studies.

In this thesis, I have been able to analyse and discuss three cave deposits whose excavation and post-excavation processes I have closely followed right from the beginning. Being able to contextualise the bioarchaeological remains in their sites, in differentiated spaces within the sites, and in relation to other evidence found in each cave, improved the interpretive potential of such materials immensely. For example, the Collepardo dataset would have had little significance without the spatial information. Differences were noticed between these three newly excavated and complete datasets, even though they would have looked rather similar (in their ecofactual composition) had they been analysed using traditional methods. For example, animal species identification, which is one of the few analytical parameters usually covered in MBA Italian cave publications (as shown in Chapter 3 and 8), would simply show a general predominance of domesticates, especially of ovicaprines. My more in-depth analysis demonstrated, instead, differences between the age classes, the body part representation, the spatial location, and even the ratio of the species. This demonstrated the qualitative advantages of a first-hand assemblage, even compared to the archival collections belonging to the same sites. For example, the absence of contextualisation of the archival collection from Collepardo did not allow for any interpretation at the time of the 2008 excavations, carried out before my involvement in the project (see Angle et al. 2010a; b). However, my analysis of the archival collections from the sampled caves in Lazio and Tuscany still returned better quality information than most assemblages whose study has been based on the literature only. The opportunity to analyse the datasets directly – although with little or no accompanying documentation and with some original evidence now missing - allowed me to recognise the existence of age/species selections (Buca Tana di Maggiano, Grotta dell'Osservatorio) and even the presence of unexpected human burials in one cave (Grotta Nuova) where the possibility of any burial activity had been excluded in the previous literature. In sum, being able to view the materials directly is obviously more productive than examining the published records only: unfortunately, such records are often incomplete, for they were designed to only show limited sets of information (usually of an economic nature).

Overcoming the traditional perspective of viewing bioarchaeology exclusively as a tool for palaeoeconomic analysis, allowed me to apply social bioarchaeology with effective results, despite the fact that this approach haa often been considered difficult to apply. However, thanks to the use of social bioarchaeology, I was able to recognise a wide variability in ritual practice among cave sites, along with the existence of forms of plant and animal selection that had never been noticed before – the most striking being the widespread deposition of broad beans in burial caves. In addition, by recognising the biases of previous palaeoeconomic interpretations in caves studies, I have managed to isolate some data that can still be reliably used to shed new light on subsistence practices and patterns in the study area (e.g. seasonality, transhumance, intensity of frequentation).

The final, overarching aim of my thesis was, then, to shed new light on the human uses of MBA Central Italian caves in their wider social contexts.

Most importantly, my work has shown the variability and complexity of the human use of this key category of site in mid-second millennium BC Central Italy. These sites have traditionally been considered either as shelters for flock, sanctuaries or cemeteries, with a strict conceptual distinction drawn between them. By contrast, I have demonstrated that MBA Central Italian caves are much less easy to categorise than previously thought, as the physical and conceptual boundaries between their different uses are blurred and not necessarily spatially separated. Furthermore, thanks to a contextual study of the neglected class of ecofactual remains, it has been shown that certain caves, unanimously considered as ritual sites up until the integration of the bioarchaeological information, in fact had traces of domestic human life (e.g. Grotta Sant'Angelo sulla Montagna dei Fiori - Iaconis & Boschian 2008), or of human burials (Grotta Nuova), while other caves yielded archaeological and bioarchaeological evidence that can be connected to all three of these aspects (religious, domestic, funerary) at once (Grotta dei Piccioni, Grotta Sant'Angelo, and potentially also Grotta Mora Cavorso). This reinforces Bradley's (2005) theory that a strict dichotomy between ritual and domestic is simply untenable in the case of prehistoric societies.

Through bioarchaeological studies, I have highlighted that ecofacts from ritualised archaeological contexts in MBA Central Italian caves, can contribute less than was previously thought to palaeoeconomic studies. Nevertheless, they can provide crucial information on other aspects of past social life, especially with regard to ritual and mortuary practices. Every time a relatively detailed analysis of ecofacts was possible, the distribution and frequency of animal and plant remains in the sampled caves have shown a recurrent pattern, - the almost complete absence of any pattern. Even though the presence of perinatal domesticates was quite widespread in many of the sites considered (including Grotta Mora Cavorso), the overall variability of ritual practices related to ecofacts is much more striking than any potential similarity in their use. For example, we have the predominance of meat parts with traces of food processing and consumption (at Grotta di Pastena), or meat parts neither traces of cuts nor exposure to fire (at Grotta di Collepardo); the prevalence of domesticates (at all of the above), or of wild game (e.g. Grotta Nuova); the commingling of ecofacts with human bones in funerary areas (e.g. Grotta Mora Cavorso, Grotta di Pastena), or their separation (Grotta di Collepardo); the presence of large amounts of plant remains alongside a scarcity of animal bones (Grotta di Pastena), or the opposite (Grotta Mora Cavorso); and the presence of almost intact animals (Grotta dell'Osservatorio) or of very selected body parts (Grotta di Pastena). All the sampled assemblages, however, have one thing in common: they do not reflect the regular patterns of food exploitation usually found in settlements, nor do they mirror the palaeodietary habits indicated by the few isotope studies carried out so far (e.g. Crowder 2016; Varalli et al.2015).

To further enhance the results of this thesis, future research on the topic should draw on a larger set of fresh data, derived not only from other caves but also from other types of sites, notably settlements. This would enable us to draw more general inferences and conclusions. Key limitation of current research on MBA Italy is, in fact, the lack of detailed published information (not only ecofactual) about settlements. Moreover, some of the analysed datasets were scarcely comparable to one another and, subsequently, the amount of available usable data from these assemblages was much smaller than what they could have provided in the case of a first-hand study.

Increasing the number of well-recorded bioarchaeological assemblages would therefore constitute an enormous step forward in research on MBA Central Italy. Our understanding of sites of this period could also be enhanced by undertaking radiocarbon as well as isotope and DNA analyses on both the human bones and the ecofacts found in each cave. Radiocarbon dating would help clarify the intensity of human frequentation as well as the (dis)continuity of cave use over time. Isotope analyses would add important information about palaeoeconomy through the analysis of palaeodiet. In addition, DNA analysis would provide clues about any possible kinship relationships between the buried individuals. Building a comprehensive database of deposits, all analysed following comparable protocols, would also allow us to identify any regional variability, which is currently invisible.

Overall, this thesis constitutes a first step towards the resumption of larger-scale, integrative studies on MBA Central Italy. This region has yielded an extraordinarily rich archaeological record, which carries significant interpretive potential. However, archaeological research in this area – including cave research - is still characterised by several unsolved questions and misconceptions, such as the relationship between open air and cave sites, the burial practices dedicated to the ‘invisible dead’ of this study area, and the links between the communities of the uplands/lowlands and of the Tyrrhenian/Adriatic areas. These open problems, however, only make Central Italy a more intriguing region to explore and understand archaeologically, and stimulate future research on this territory.

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