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Introduction

Pigs and humans have a long history of interaction spanning thousands of years. Wild and domestic pigs have played a major part in our history, not only because of their role as a meat source but also for their influence on the organization and cultural beliefs of human societies (Dawson 1998; Nemeth 1998). From prey to farm animals, as pets, entertainers and subjects of medical experimentation, pigs have a complex relationship in the evolution and shaping of human culture that exists up to this day. By way of example, in present day there are more than 500 breeds and varieties of domestic pig, as a result of a long history of evolution and human selection (Porter 1993).

The emergence of farming practices is indisputably one of the key points of human evolution, and the process of domestication of the wild boar (*Sus scrofa*) and the emergence of the domestic pig (*Sus domesticus*) a fundamental aspect of that evolution. The particular characteristics of pigs, namely the ample natural distribution of its wild ancestor – the wild boar – and their omnivorous diet, have shaped their relationship with humans in a way unlike other animals (Albarella et al. 2006a). Whilst the earliest evidence of pig domestication comes first from the Near East (Flannery 1983; Peters et al. 1999; Vigne & Buitenhuis 1999) and then the Far East (Jing & Flad 2002), pigs could have been potentially domesticated anywhere in most of North Africa and Eurasia (Clutton-Brock 1999; Davis 1987), due to the broad natural distribution of the wild boar in those continents. Indeed, multiple domestications have occurred, as proven by genetic evidence (Larson et al. 2005, 2007a). Additionally, the generalized omnivorous diet of the pig opens a series of possible relationships with humans not available in the case of other herbivorous domesticates. Pig exploitation is not restricted to hunting and close domestic control, but instead can take various intermediate forms (e.g. free-range management), as can be seen in historical and ethnographic examples (Albarella et al. 2006a, 2011; Clutton-Brock 1999; Dwyer 1996; Grigson 1982; Hamilton & Thomas 2012; Redding & Rosenberg 1998). In sum, the process of pig domestication poses a unique set of challenges and questions to its study unlike those of other species and must be approached by taking into account the climatic, environmental, geographic, chronological, and cultural contexts.

In the past, the subject of pig husbandry in Europe has been limited mainly to archaeological studies at small geographical and temporal scales, thus masking the inherent complexities of such a process. In the particular case of the Italian peninsula a series of issues have hindered past studies on the emergence of animal husbandry as a new cultural and economic phenomenon; namely the intrinsic difficulties in understanding such process in the archaeological record, the scarcity of well-dated evidence, and the local focus of most studies carried out so far. Only recently has this issue been acknowledged in the literature and studies of pig domestication in a wider regional and chronological context, based on large amounts of data, have been attempted (Albarella et al. 2006c). However, a whole series of questions remain unanswered and more work needs to be done at a wider regional scale and from a diachronic perspective. The main objective of this study is therefore to address these problems and contribute to the understanding of the origins and development of pig domestication in prehistoric Italy.

Previous research on Italian prehistoric sites has laid the groundwork for this research by proposing a series of hypotheses regarding the possible origins of pig domestication in the peninsula (Albarella et al. 2006c). So far the data seems to support the hypothesis of slow and gradual local pig domestication in the region, echoing the results of the biomolecular analysis (Larson et al. 2005, 2007a). Particularly, previous research has revealed that during the Early and Middle Neolithic periods no clear distinction between wild boar and domestic pig could be identified on the basis of biometry, suggesting loose management and interbreeding. From the Late Neolithic onwards, there is a rather abrupt change, as a distinction between the two forms becomes evident (Albarella et al. 2006c). Genetic research has highlighted the existence of a unique Italian genotype, separating the history of these animals from those of the rest of Europe (Larson et al. 2005, 2007a). Thus, the current scenario suggests that the domestication of the pig in Italy has likely involved a mixture of introduced domestic animals and local domestication, but there are many more areas that need greater clarification and to which this research will contribute:

1. Can the current hypothesis withstand scrutiny by the analysis of a larger sample, both in terms of actual data and geographic/chronological coverage?
2. Unlike Spain, where a mixed scenario occurs (Hadjikoumis 2010), in Italy it has not been possible so far to identify any example of an abrupt change in pig management between the Mesolithic and the Neolithic – can this further work identify such cases?
3. Can the system of more intensive pig management suggested for the Late Neolithic be identified at other sites? Was it widespread and how does it compare with other European areas?
4. Does the overall pattern of pig domestication in Italy appear to be unique or is it similar to other European areas? How can it be integrated with our overall understanding of the beginning of farming in Europe?

Building on previous work, the main methodology proposed to address these questions is the collection of comparable data from several prehistoric sites in Italy in order to detect patterns of regional and chronological change, thus filling the gaps left by previous research. The potential of the biometrical approach has been extensively demonstrated in the past (Albarella et al. 2005, 2006c, 2009). The comparative method will allow us to assess the influence of specific environmental and cultural factors on the biological variations of pig populations. Although this research focuses on the beginnings of pig domestication, the timeframe considered for the analysis ranges from the Upper Palaeolithic to the Bronze Age. The reason behind this long chronological scale rests on the assumption that domestication processes can be better understood by taking a long-term view. The analysis will mainly rely on biometrical data, which is more akin to comparisons between sites than other sources of evidence. This data will be complemented with evidence of kill-off patterns, and sex distribution in order to achieve a comprehensive analysis of the domestication event.

In the following chapter, the current knowledge of the taxonomy and ecology of the wild boar and the domestic pig will be presented, followed by an up to date review of pig domestication studies in chapter three. An overview of relevant knowledge on Italian prehistory will be introduced in chapter four. In chapter five, the methods used in this study will be put forward, while in chapter six the archaeological materials studied will be presented. In chapter seven the results of the analysis of the archaeological pig assemblages will be introduced, while in chapter eight these results will be compared to other European and Near Eastern sites. A thorough discussion of the results achieved and its significance for the understanding of the pig domestication process, and its contribution to our understanding of the origins of farming in Europe will be put forward in chapter nine. Finally, chapter ten will conclude this work by summarizing the finds, discussing the results of the research, and presenting future avenues of inquiry.