

ABSTRACT

The island of Sardinia in the west-central Mediterranean preserves an exceptionally rich record of its Final Neolithic and Copper Age cultures, featuring not only a diverse ceramic and other crafts repertory but also megalithic henges and dolmens, statue-menhirs, thousands of rock-cut tombs and the only known ziggurat in Europe. Recent, local studies have achieved much to further our understanding of these expressions, but they remain little known outside the region. The present study therefore aims at providing a broad-ranging, detailed and interpretive synthesis of the archaeological record of the Sardinian 4th and 3rd millennia BC, for a wider scholarly readership interested in Mediterranean cultural adaptations during this earliest period of metallurgy.

Metallurgy appears to have spread slowly across the Mediterranean from east to west, reaching today's Italy and France in the 4th millennium BC. Finds of metal artefacts and rare crucibles in Sardinian 4th millennium contexts document this development here, likely in relation to already existing networks for the export of the island's obsidian resources. As elsewhere, the infusion of metallurgical practices and products had profound implications, first seen in an overall weakening in the demand for obsidian which had sustained Sardinian participation in Mediterranean trade since the Middle Neolithic. In subsequent centuries, island cultures underwent a series of more or less wide-ranging transformations tied directly or indirectly to developments in metallurgy – locally, within the wider Mediterranean basin, and beyond.

These transformations, spanning some two millennia, are studied in terms of material cultures or *facies*. A primary aim of the volume is to present an in-depth report of the archaeological findings relating to each of these as they are currently defined and understood. In presenting and discussing the evidence, one chapter each will be devoted to the cultural modes called Ozieri, Sub-Ozieri, Filigosa-Abealzu, Monte Claro and Bell Beaker. The Ozieri *facies* is a Final Neolithic modality, its metal record evincing only use and not production. The Sardinian Copper Age or Eneolithic is formally set to begin with Sub-Ozieri in the later half of the 4th millennium, when metallurgy is first documented. At the other end of the chronological spectrum encompassed here, Monte Claro and Bell Beaker modes extend into the Sardinian Early Bronze Age.

In addition to a more comprehensive view of the ways of life and production of each *facies*, one overarching finding here is the understanding that Sardinia was periodically engaged with extra-insular cultures, as far away as Asia Minor and Mesopotamia. But Sardinia was also periodically remote, its resulting interfaces crisply perceived, its confronted others exotic and strange. Indeed, it seems that engagements largely bypassed the adjacent and the similar, as suggested by the very limited evidence for relations with nearby Corsica, and with continental Europe (prior to the Bell Beaker *facies*), and favoured instead the distant and the different. This relative bypass of the adjacent and preference for the exotic will inform our use of the concept of glocality regarding Sardinia specifically. In our estimation of the record, the periodic punctuation of its insular condition had profound and long-lasting effects on the development of the island's cultural modalities. Their study can thus provide valuable insights into issues of considerable current interest. By way of a conclusion, we will therefore present some thoughts on how each of the investigated *facies* might contribute to understandings regarding concepts of connectivity and identity formation.

CHAPTER 1. INTRODUCTION

The island of Sardinia in the west-central Mediterranean preserves an exceptionally rich record of its Final Neolithic and Copper Age cultures, featuring not only a diverse ceramic and other crafts repertory, but also megalithic henges and dolmens, statue-menhirs, thousands of rock-cut tombs – hundreds of which are more or less elaborately appointed – and the only known ziggurat in Europe. Recent, local studies have achieved much to further our understanding of these expressions (see below), but they remain little known outside the region. The present study therefore aims at providing a detailed and interpretive synthesis of the Sardinian 4th and 3rd millennium record for a wider scholarly readership interested in Mediterranean cultural adaptations during this earliest period of metallurgy.

Metallurgy appears to have developed in western Asia during the 9th–7th millennia BC, and spread very slowly across the Mediterranean from east to west, reaching today's Italy, southern France and the Balearics during the 4th millennium (Avilova 2008; Kassianidou and Knapp 2005; Maggi and Pearce 2005; Ambert et al. 2002). Finds of metal artefacts and rare smelting crucibles in Sardinian 4th millennium contexts document these developments there, likely in relation to networks of communication already established for the trade of the island's obsidian resources (Lo Schiavo 2005, 407). As elsewhere in the Mediterranean, the infusion of metallurgical practices and/or products had profound implications for Sardinia. These were first realised in an overall weakening in the demands for obsidian which had sustained Sardinian participation in Mediterranean exchange networks since the Middle Neolithic (see Tykot 1995; Tykot et al. 2011). In subsequent centuries, island cultures underwent a series of transformations tied directly or indirectly to developments in metallurgy locally, within the wider Mediterranean basin, and beyond.

Sardinian prehistory is generally documented and studied in terms of its material cultures or *facies*, primarily recognised by their ceramic modes. The present volume will provide an in-depth survey of the archaeological findings relating to each of the Final Neolithic and Copper Age cultures – Ozieri, Sub-Ozieri, Filigosa-Abealzu, Monte Claro and Bell Beaker – as they are currently defined and understood and, where applicable, discuss their interpretation.

The landscape

In terms of its natural configuration, Sardinia was likened in shape to a footprint or a sandal by ancient Greek chroniclers, who called it *Ichnussa* and *Sandaliotis* (Pausanias 10.17; Pseudo-Aristotle 100). It is a comparatively large island, second only to Sicily in the Mediterranean. Measuring 270 km north-to-south and 145 km east-to-west, it covers some 24,000 sparsely populated square kilometres – only 1.5 million people, or 60 per sq. km, live here today (whereas Sicily, only very slightly larger, counts some five million). Corsica, Sardinia's smaller, mountainous neighbour island to the north, is today only some 12 km away, separated by the wind-swept channel known as the Straits of Bonifacio.

Along with Corsica, Sardinia occupies a relatively central position in the western Mediterranean (Figure 1): nearly 200 km from the Italian Peninsula, 300 km to Sicily, 250 km to France and some 400 km to the Balearic islands and the Iberian mainland. Sardinia and Corsica share geological history and common landmass, referred to as the Tyrrhenid, emerging in the late Tertiary period. Both landscapes are characterised by large expanses of exposed palaeozoic granite and crystalline rocks, some with siliceous quartz formations (cherts, flint, chalcedony) as well as metalliferous ores. But unlike Corsica, Sardinia is home to an extinct volcano, Monte Arci, which was a major source of obsidian glass for edge-tools throughout the west Mediterranean from Middle Neolithic times. The Sardinian landscape is also more heterogenous than Corsica's predominantly mountainous profile, featuring large lowland expanses with ancient and recent alluvial soils suited to dry farming. These are bordered by dissected upland plateaux and hills from 200 to 500 meters in elevation and in turn by rugged interior mountains rising to over 1000 meters. The uplands and mountains have long supported sheep-, goat- and pig-herding, and the large expanses of superficial and often highly weathered volcanic rocks (trachytes, tuffs and basalts) have supplied ready building stone for an extraordinarily rich and multi-faceted megalithic record.

The island's climate, as in much of the Mediterranean, is today characterised by hot, dry summers and cool, more humid winters. Rainfall is marginal, however, and draughts often severe. Many freshwater springs, which are numerous in the uplands, and wells and cisterns, have ancient foundations. Adding to the

general aridity, strong seasonal winds and centuries of overgrazing and deforestation have contributed to a landscape increasingly denuded by erosion. The once widespread forests, especially of cork oak, have been greatly reduced, although to a lesser extent, they still provide a harvestable cork crop. The predominant vegetation is scrub (*macchia*) including plants with traditional use-value such as fig, pear, nettle, fennel, lentisk and blackberry.

Until the last century, cereal cultivation (wheat and barley) employing the hoe and scratch-ard coupled with the keeping of sheep, goats, cattle and pig and supplemented by hunted and gathered foods dominated local economies (see G. Webster 1996 for an account of traditional land-use patterns). It is evident, however, that current climatic and attendant environmental conditions may not accurately represent those of former times. Lai's recent analysis (2008, 61-67) has revealed evidence of significant climatic fluctuations during the 4th and 3rd millennia BC, which will doubtless have effected both the availability of wild plant- and animal resources as well as arable land for cultivation and pasturage for stock animals. Potentially critical for local economies were the periods of extreme aridity indicated from the 29th through 27th centuries and again during the 23rd-22nd centuries cal. BC (Lai 2008, Table 2).

In terms of fauna, Sardinia is one of few reserves of the ancient mouflon sheep (*Ovis musimon*), thought to represent a feral sub-species of a domesticate introduced along with goats, cattle and swine during the Neolithic. Today, the most common sheep breed is a rustic, woolly-fleeced variety possibly introduced in the early 4th millennium (*Ovis aries*, see chapter two). Wild game of likely importance in prehistory include the fallow deer (*Dama dama*), the European stag (*Cervus elaphus*) and the European boar (*Sus scrofa meridionalis*), all still found in limited numbers – and, in the case of the latter two, in dwarfed varieties. Also exploited was the pika-hare *Prolagus sardus*, a robust lagomorph, now extinct.

The metal resources

Of special interest to the study of the Sardinian Copper Age record are current assessments of the island's potentially exploitable metal deposits. Ancient written sources indicate an interest in them during the periods of Punic and Roman domination (M. Webster 1997, 5 and 10), but with the exception of a few, largely hypothetical examples, direct evidence of ancient

mining is still elusive. More recent mining up to the present has, however, identified the island's major metal sources and hence those most likely to have been exploited in prehistory.

Silver and lead

Lead and silver would have been obtained from the galena-bearing deposits occurring mainly in the Iglesias region (Montevecchio, S'Oreri, Iglesias) but also in more limited ore bodies in the southeast (S'Ortu Beccia), the eastern mountains (Sarrabus, Bacci Locci, Genna Tres Montis, Correboi, Sos Entos, Guzzurra), the northwest (Argentiera) and the north-central uplands at Su Elzu (Melis 2014b, Fig. 2). Lead could be extracted by simple smelting, while it is unlikely that silver deposits not requiring cupellation were used in prehistory – these are rare, and seem to have been discovered only in the past few centuries (in the Sarrabus region, see Valera et al. 2005a, 60 and Sanna et al. 2005, 409). While the extraction of silver thus would have required knowledge of the cupellation process (C. Atzeni et al. 2005, 164), no material remains of it have so far been securely identified in Sardinia (Melis 2014b, 487). According to C. Atzeni, however, it is 'fairly simple to perform. In practice, lead is molten in a shallow, wide crucible called "cupel", and the temperature is then raised to 900-1000 °C and air is blown onto the surface of the lead bath' (2005, 27). After removing impurities and lead, silver will settle in the form of a button at the bottom of the crucible. The process can be improved by using bone ash cupels for better binding the molten lead. Historically, these were made of ground, burnt bone or antler mixed to a paste and moulded to the shape of an inverted cone.

Copper

Sardinia has numerous copper sources, mainly in mineralizations including polymetallic deposits often associated with lead. From these, extraction by simple smelting was possible. So-called native copper is also known in lesser amounts and could have been directly worked into useable shapes by cold-hammering. For producing cutting- and edge-tools, however, it is likely to have been heated to improve hardness (Cirillo and Atzeni 2005, 18). Copper deposits have much the same distribution as those of lead/silver, but with the more important concentrations located at Calabona, Funtana Raminosa and Sa Duchessa-Domusnovas (Sanna et al. 2005, 409).

Arsenical copper

Arsenic-copper alloys were used at least by the mid-3rd millennium, as documented in a Monte Claro *facies* dagger blade from Janna Ventosa-Nuoro (C. Atzeni et al. 2005, 118). Arsenical minerals occur in many copper ores, however, so it is not unlikely that alloys were created inadvertently. But the superior hardness of the resulting metal compared to plain copper, as well as its silvery sheen, would not have gone unnoticed, and may have been replicated by adding arsenic to copper melts lacking it (Cirillo and Atzeni 2005, 23; Valera et al. 2005a, 70).

Tin

Sardinia possesses tin deposits found as cassiterite specks in quartz mineralizations. As an essential component of bronze, its presence has been considered a potentially significant resource and attraction to local and foreign prospectors in the past. Recent geological studies have qualified this, however, and it now seems unlikely that tin was exploited to any extent prehistorically, given its rarity and cost of extraction (Valera et al. 2005b, 363; Kassianidou 2006, 10; Sanna et al. 2005, 409). The closest tin districts were probably Monte Valerio in Tuscany and Castilla y León in Spain (Valera et al. 2005a, 44) whence it might have been imported to Sardinia.

Archaeological record and archaeological culture

As already noted, Sardinian prehistory is traditionally studied – as here – in terms of a succession of archaeological cultures that developed in the island. In large part, the intellectual framework has been dictated by the nature of the archaeological record, which presents what might be seen as paradoxical qualities: on the one hand, it is immensely rich in all categories (settlements, burials, cult places, iconography, crafts etc.); at the same time, the wealth of the data is generally very poorly controlled in terms of both relative and absolute chronology. For the archaeologist, it is a harsh reality that there are currently no reliable, fine-grained stratigraphic sequences by which to order the finds from the diverse sites and assemblages across the island. It is true that the number of available radiocarbon dates has increased in recent decades, but it is equally true that very few of them have come from undisturbed contexts. This is all understandable in a setting like Sardinia, where most sites reveal evidence of very long periods of frequentation, renovation and re-use, where illicit treasure hunting has an almost

equally long and still active tradition, where the impact of modern, mechanised agriculture, road building and general settlement development on existing deposits continues at a variably brisk pace, and where, in consequence, most cultural deposits are identified, recorded and variably cursorily analysed in the context of “salvage archaeology”.

There are also categories of remains that cannot currently be assigned with certainty to specific periods, mainly the hundreds of menhirs, other standing stones, petroglyphs and assorted megalithic features that dot the Sardinian landscape. Probable Copper Age foundations, they evince at least use in the periods explored here, and are reviewed below.

That noted, it can also be said that our ability to build an integrated picture especially of the Sardinian Copper Age has greatly increased in the past decades, due in large part to the results of careful research by a handful of scholars. To name some of the key contributions, there are the pioneering studies in ceramic seriation by M.G. Melis and in tomb iconography by G. Tanda; there are Melis’ and M.R. Manunza’s thorough documentation of the excavations at the Sub-Ozieri settlement of Su Coddu Canelles, Manunza’s revealing and detailed recording of the nearly intact Monte Claro tombs of Bau su Matutzu and Ganni, and A. Traverso’s new investigations of the remarkable temple complex of Monte d’Accoddi. There is also E. Castaldi’s documentation of the plateau sanctuary of Sa Sedda de Biriai in Oliena and A. Moravetti’s exploration of the acropolis of Monte Baranta, as well as L. Lai’s groundbreaking study of environmental and dietary data by stable-isotope analyses, all of which have broadened our knowledge base very considerably.

Archaeological culture as cultural modality

Since the concept of an archaeological culture has long been questioned as an appropriate unit of study (see Roberts and Vander Linden 2001), it is necessary to clarify how it is used in Sardinian archaeology. Although rarely stated explicitly, the understanding has generally followed that proposed by V.G. Childe regarding assemblages of ‘regularly associated traits’, i.e. ‘pots, implements, ornaments, burial rites and house forms’ (1929, v-vi) with definable geographical and temporal limits – the later dimension usually referred to as a cultural phase. In contrast to the Childean understanding of an archaeological culture, however, there is no *a priori* assumption made that

such units constitute an archaeological equivalent of a “people”, whether tribe or nation, or socially, politically, ethnically or genetically constituted entity. In practice, the relation of the Sardinian cultural *facies* with ancient populations is one of material contexts of action and reflection as well as their material expressions. Contemporary scholarship would recognise such constructs as a basis of so-called cultural identity formation, by which one’s world and one’s place within it are defined and experienced (see Shennan 1994). B. Bernstein framed this relationship in terms of the modality of a culture creating ‘a specific reality through its distinctive classificatory principles and, in so doing, necessarily constructs a set of procedures, practices, and relations from a range of such sets. As a consequence, each modality can be regarded as an arbitrary angling of a potential reality’ (1981, 339-40).

As it will be employed here, the archaeological cultures or cultural modalities are seen as atemporal in the sense that their chronological boundaries are set in terms of the presence or absence of the formal characteristics by which they are recognised. So, for example, the common use of terms like “Ozieri phase” or “Ozieri period” refers not to an arbitrary chronological division, demarked by insular-wide horizons, but rather to the timespan over which that *facies* can be recognised and framed. Cultural phases may thus overlap chronologically. Such overlaps can in turn encourage an analytical sensitivity to evidence of cultural interfaces, entanglements and hybridities.

Insularity

In recent decades, research about islands as such has greatly refined our understanding of the complex relationship between natural and cultural insularity. Following Braudel (1972, 150), P. van Dommelen has underlined the importance of seeing insularity as a relative phenomenon, dependent on an array of natural and social conditions, circumstances and events that ‘accordingly may either integrate it into or isolate it from the outside world’ (1998, 11; see also Knapp 2013, 483 and 2007, 50, and Robb 2001, 196). Island environments may at times experience high levels of connectivity (Knapp 2013, 47; Gordon and Kouremenos 2017), and this is foregrounded in contemporary research on island identity formation generally. The nature of the Final Neolithic and Copper Age record in Sardinia will prompt some inroads to its exploration here as well.

The paucity of prehistoric Sardinian materials outside the island has led to general but tacit assumptions regarding an aversion to maritime travel on the part of local communities, while F. Lo Schiavo (2013, 668) has suggested that Sardinia’s physical separation from surrounding landmasses at the same time buffered it against any but the most resolute and determined foreign ventures. Certainly, the island’s relief does inhibit easy access to and from the sea along much of its shoreline, especially the precipitous eastern seaboard. Coastlines have changed over time, as the sea level has risen steadily: it is estimated to have been 12-8 m below the current level in ca. 4000 BC, and 6-4 m below today’s level around 2000 BC (Lai 2008, 65, cf. Lambeck et al. 2004, Fig. 3e). It is thus likely that some shorelines – particularly in the gulfs – were as much as four kilometres further out during the 4th and 3rd millennia BC than they are today. But this will not have affected the likely importance of the gulfs in enabling extra-insular contact, during all periods. Regarding incoming approaches, those opening on to valleys reaching inland through hilly landscapes, otherwise of difficult access, were no doubt of particular importance. Landing spots of at least periodic significance as places of anchorage and potential entry points included the small eastern gulfs of Orosei and the mouth of the Flumendosa river; in the southwest, the Gulf of Palmas, and in the northwest, the gulfs of Alghero, Asinara and Coghinas. Especially significant during all periods were probably the gulf of Oristano on the west coast, giving access to both the Tirso and Mogoro river valleys, and the Gulf of Cagliari in the south, opening into the great lowland plain of the Campidano by the Mannu and Cixerri rivers. Apart from the Tirso, heavy siltation during the past few centuries has rendered these waterways impassable now, but it is likely that they were navigable by small craft in former times, at least in their lower reaches.

As elsewhere, archaeological research in Sardinia reflects historical shifts in approach or paradigm as well as methodology. These have come about as much from altered sensibilities and interests as from new evidence, and are perhaps most pronounced in questions regarding extra-insular relations and allied phenomena of diffusion, migration, colonisation and conquests. Early research on the material record frequently drew attention to stylistic parallels outside the island, especially in the eastern Mediterranean and beyond. In our view, it is regrettable that these potentially informative leads were rarely followed up and later largely put aside in favour of approaches foregrounding indigeneity, autochthony and locality. The

present study attempts to redress this imbalance of emphasis. It consciously jettisons *a priori* assumptions regarding the relative significance of extra-insular versus intra-insular relations in the formation of the cultural entities or modalities under consideration. All the evidence that can be mustered for external contacts, whether direct or otherwise, is here investigated close-up, and given equal billing with that regarding internal cultural adaptations. One overarching finding resulting from this approach is the understanding that Sardinia was engaged periodically with reference spheres outside the island, often as far away as Asia Minor and

Mesopotamia, involving both indirect cultural transmission (traditional diffusion, see Eerkens and Lipo 2007; Storey and Jones 2011) and direct contact. As will become clear in the following chapters, this periodic puncturing (from without) as well as ruptures (from within) of the Sardinian insular condition had profound and long-lasting effects on the development of the indigenous cultural modes under study. A more extended discussion of this finding is reserved for the last chapter.



Figure 1. Map of the Mediterranean and the Near- and Middle East.