

Nuragic settlement dynamics: an introduction

2.1 Early Bronze Age (c.2300–1800 BC)

The period which directly preceded the emergence of Nuragic culture in Sardinia is still poorly understood. The Chalcolithic settlement system of Monte Claro culture, which included fortified settlements such as Monte Baranta (Olmedo) and Monte Osoni (Castelsardo), collapsed around 2300 BC, and the subsequent period is apparently characterized by discontinuity (G. Webster 2015, 12–13). The picture of cultural development over the next few centuries is still far from clear, mainly due to an insufficient number of radiocarbon datings and a scarcity of recognized settlement sites. The Bonnanaro culture, which constitutes the major culture of Early Bronze Age Sardinia, is known mainly from burial sites and only a few isolated settlements, one of them being Su Stangioni (Portoscuso)—they indicate that large settlements of the Monte Claro culture were replaced by small farmsteads of single families (Perra 1997, 52), albeit there is evidence of occasional reuse of the Monte Claro fortified sites (G. Webster 2015, 19). The Early Bronze Age sunken hut feature has been recorded also at the site of Sas Osa (Cabras), later an important Nuragic settlement (A. Usai et al. 2012, 774). According to the early interpretations of Lilliu (1999, 24), based on the supposed presence of Bonnanaro pottery, Nuraghe Trobas (Lunamatrona) was an Early Bronze Age structure marking the beginnings of the Nuragic culture—however, subsequently it was demonstrated to be a Middle Bronze Age monument (Perra 2014, 19). Likewise, the protonuraghi (see below), once interpreted as Early Bronze Age structures associated with the Bonnanaro culture, mainly on the basis of imprecise datings of obsidian samples from Protonuraghe Bruncu Madugui (Gesturi; Ugas 2005, 40), are now recognized to be a Middle Bronze Age development (see below). This leaves the Early Bronze Age beginnings which eventually led to emergence of the Nuragic culture in the Middle Bronze Age poorly understood in the area of settlement dynamics.

2.2 Middle Bronze Age (c.1800–1300 BC)

The period after 1800 BC marks the emergence of a Nuragic settlement network focused around monumental structures. Nuraghi can be divided into two main types. Protonuraghi (corridor nuraghi) are relatively squat stone structures of oval (Seneghe, Suni; Corongiu Maria, Nurri), subrectangular (Fronte Mola, Thiesi, Fig. 2.1) or irregular (Mura 'e Coga, Sindia) shape with a corridor (sometimes more than one) crossing the structure (Fig. 2.2). Detailed typologies of protonuraghi have been proposed by Manca Demurtas and S. Demurtas (1991), as well as Ugas (2005, 71–2), but they contribute little towards understanding the

chronology of protonuraghi and their functions. The most convincing approach was taken by Spanedda and Camara Serrano (2012), who divided protonuraghi into those with a corridor and those with a corridor and a chamber. This simple division reflects a major architectural difference among protonuraghi, which might reflect progress in construction techniques and, thus, give a meaningful insight into the chronology and development of Nuragic architecture in Sardinia. As already mentioned, protonuraghi were previously interpreted primarily as Early Bronze Age structures associated with Bonnanaro culture (G. Webster 1996, 68–9). However, recent radiocarbon datings indicate that the majority of them are later than originally believed, belonging to the Middle Bronze Age (G. Webster 2001, 6; Depalmas and Melis 2010, 169). Thus, protonuraghi can no longer be attributed solely to the Early Bronze Age and at least some of them are contemporary with classic Middle Bronze Age tholos nuraghi. Nonetheless, the chronological distinction between protonuraghi and tholos nuraghi does not need to be abandoned completely, as protonuraghi seem to fall primarily into early phases of the Middle Bronze Age (Depalmas 2005b, 646; Depalmas and Melis 2010, 171). Furthermore, there is evidence for the architectural evolution of protonuraghi into classic tholos nuraghi, primarily in a form of mixed-type nuraghi such as Serra Crastula (Bonarcado) or Santu Pedru (Nurri; Ugas 2005, 83), and for a chronological difference between these two types of structures in specific sites. Examples are the corridor nuraghe of Cuccurada (Mogoro) which was later remodelled into a complex tholos nuraghe (Atzeni et al. 2015, 25) and Nuraghe Su Mulinu (Villanovafranca), where original corridor nuraghe has been remodelled and extended into a complex structure with a curtain wall with towers (Ugas et al. 2015).

The architecture and distribution of protonuraghi, not less than 290 of which are known (Bagella 1998, 133–5), offer evidence for the egalitarian structure of the early Nuragic societies with little degree of social stratification (Depalmas 2005b, 648). There is no hierarchy between settlements of this type; each of them was probably a single household (Lilliu 1988, 179), with the head of the family as the highest level of power. Trump (1992, 198) suggested a storage function for the protonuraghi, which is very plausible with regard to their corridors, which could have been used to keep livestock or store food. They are usually very narrow and low, such as the corridor of Protonuraghe Losa (Sindia) or the 1.50-m-high entrance to Protonuraghe Seriale (Bortigali; Moravetti 1998a, 269), which does not leave much of a living space in them. However, there is evidence for the possible existence of wooden structures on the upper terraces of these structures—these could have been living areas. The



Fig. 2.1. Protonuraghe Fronte Mola (Thiesi), a typical example of a corridor nuraghe.

artefact assemblages recovered from the protonuraghi clearly indicate their domestic function. An example is Protonuraghe Bruncu Madugui (Gesturi), where large amounts of pottery, remains of hearths, obsidian blades and other objects of domestic use have been found (G. Webster 1996, 71). Notably, the distribution of protonuraghi is not always consistent with the extent of the most fertile soils in Sardinia (whereas such a correlation is clearly visible in the case of the Chalcolithic settlements of the Monte Claro culture). Some of the protonuraghi (Scudu, Sedilo; Peppe Gallu, Uri) were built in areas which were much more suitable for pastoralism than agriculture (Bagella 1998, 133), which implies reliance on animals in the early Nuragic economy. However, it is necessary to note that many structures that have not been surveyed and are assumed to be single-towered nuraghi could turn out to be corridor nuraghi. Therefore, our understanding of their distribution patterns and their association with the early Nuragic economy and society might be incomplete.

Early phases of the Middle Bronze Age saw also the emergence of open settlements with circular and rectangular huts (Depalmas and Melis 2010, 169), some of which were semi-subterranean and built of mudbricks. It is unsure whether they were permanent settlements or were

occupied just seasonally (G. Webster 2015, 60). Among the examples are settlements of Su Barrocu (Siamaggiore), Su Mattoni (Oristano) and Sa Osa (Cabras), all of them located not far from river Tirso in central-western Sardinia (Castangia 2012, 105).

The later phase of the Middle Bronze Age saw expansion of Nuragic settlements into all parts of the island and domination by the major Bronze Age architectural form: the tholos nuraghe. It emerged as a result of gradual evolution from protonuraghi which involved the creation of larger internal spaces (Manca Demurtas and S. Demurtas 1991, 48) and an improvement of masonry walls from polygonal cyclopean to coursed cyclopean. The aforementioned mixed-type nuraghi (*nuraghi misti*) are hybrids between corridor nuraghi and tholos nuraghi which illustrate this process. One of the most significant examples is Nuraghe Crapianu (Chiamamonti), which was studied by Dore (2010). It has a circular plan and intramural staircase typical of the tholos nuraghi, but the construction of its chamber is quite archaic, as it is not vaulted and the scarcement ledges within it supported wooden floors. Another example is Nuraghe Serra Crastula A (Bonarcado). It includes a ruined structure with a long corridor (a typical feature of the protonuraghi), but

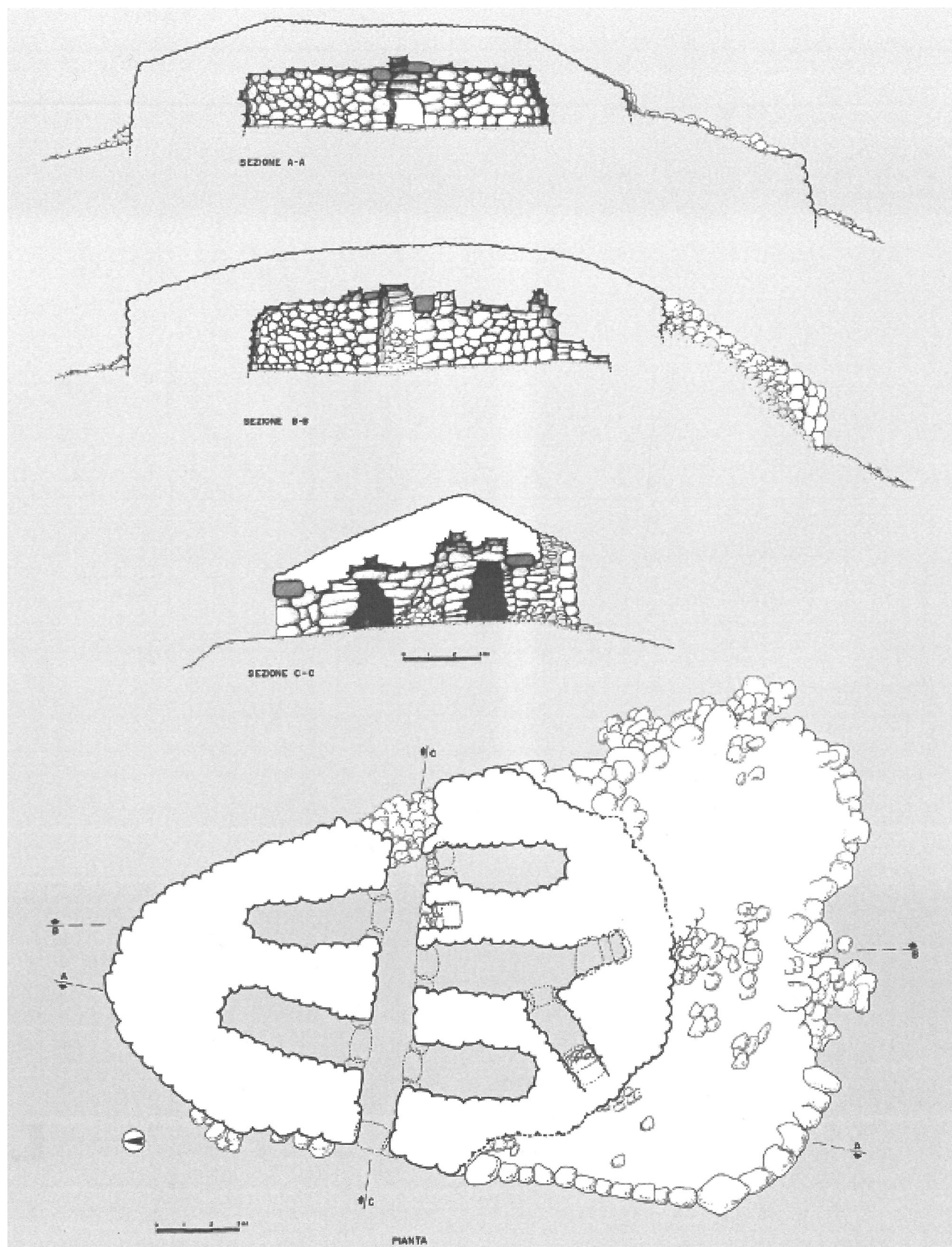


Fig. 2.2. Plan and section of Protonuraghe Mene (Macomer), one of many corridor nuraghi in the region of Marghine (after Moravetti 1998a). Courtesy of A. Moravetti.

also the main tower with a typical tholos chamber (Ugas 1999, 60). Furthermore, some of the protonuraghi have small towers (torrette) which can be interpreted as a sign of architectural evolution leading to the emergence of the tholos nuraghi (Lewthwaite 1986, 25), which is further evidence of the indigenous development of the Nuragic culture in its early phases.

The nuraghi (Fig. 2.3, Fig. 2.4) reached up to 25m in height, although none of them are preserved to their full elevation. Their main feature is tholos chambers built one on top of another. In the walls of the tholos chambers there are niches, usually three which form a cross shape (Santa Sabina, Silanus), but sometimes just two (Crasta, Santulussurgiu) or none (Santa Sofia, Guspini; Lilliu 2005, 154). In rare cases there is a gallery running around the perimeter of the chamber (Santu Antine, Torralba; Domu Beccia, Uras; Lilliu 2005, 157). The chambers are connected with an intramural staircase which opens left of the entrance in about 70 per cent of the towers (Tossilo A, Macomer; Santa Sabina, Silanus; Moravetti 1998a, 177, 533), but sometimes right of it (Majore, Perfugas) or in the tholos chamber (Nuraddeo, Suni; Moravetti 2000b, 275), or even a few meters above the floor level (Toroleo, Paulilatino). Over the entrance to the nuraghe there is usually an architrave consisting of one large stone block, occasionally shaped in the form of an arc (Barca,

Sassari), as well as a small window (Orolo, Bortigali; Crabia, Bauladu); in rare cases (Zuras, Abbasanta) two of them (Zedda 2009, 205). Although there are some very clear regional traditions in Nuragic architecture, such as the presence of two staircases and *mezzanini* (small rooms between tholos chamber, usually accessible by separate staircase) in the nuraghi in Anglona (north-central Sardinia; Dore 2006), or the nuraghi with two towers connected by a single wall (*nuraghi binati*) in Pran'e Muru (Campus and Leonelli 2008), the architecture of the nuraghi is fairly homogenous and shares its main features in almost every part of the island. The homogeneity of architecture has been interpreted as evidence of the shared identity of the Nuragic people from different parts of the island (Blake 1999), which is particularly plausible considering the limited degree of settlement hierarchy in the Middle Bronze Age. However, despite this significant degree of homogeneity in material culture, there are very significant differences in settlement patterns and distribution of ritual sites in various parts of Sardinia—this is demonstrated by different settlement patterns recorded on highland plateaus (Lilliu et al. 1985; Puddu 2001), in mountainous areas (Gallura; Puggioni 2009) and in lowland areas in the western part of the island (Sedilo; Tanda 1998), as well as differences in the distribution of ritual sites demonstrated by Depalmas' (2005a, 42–3) comparison between the areas of Abbasanta and the Sinis peninsula. This



Fig. 2.3. Nuraghe Corbos (Silanus), a typical example of a single-towered nuraghe.

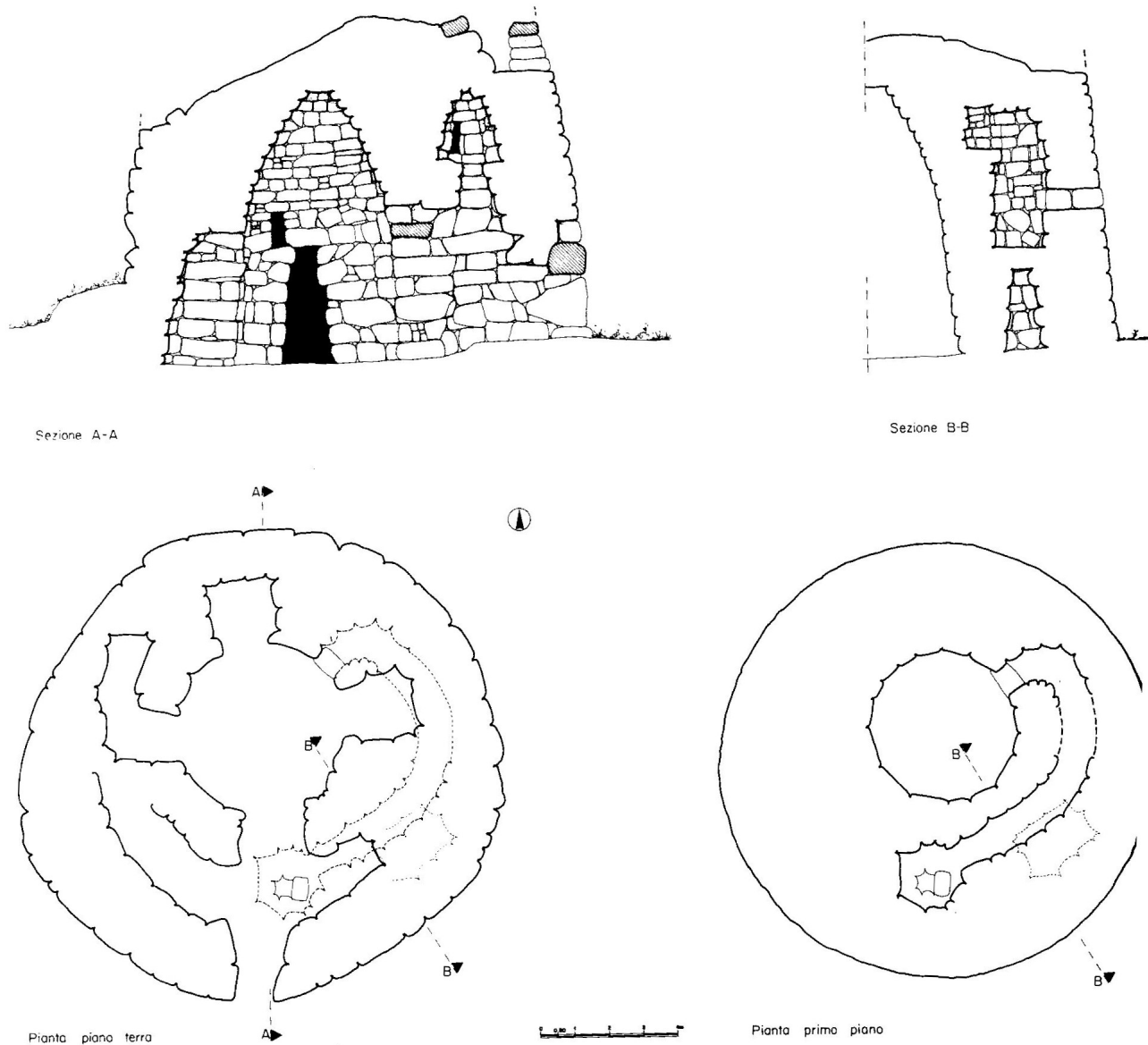


Fig. 2.4. Plan and section of Nuraghe Tittiriola (Bolotana), a typical single-towered tholos nuraghe (after Moravetti 1998a). Courtesy of A. Moravetti.

indicates different organization, subsistence strategies and possibly beliefs of the local communities. Coupled with the aforementioned local traditions in architecture, this necessitates locally focused studies of Nuragic Sardinia in order to capture this variability.

A typical single-towered nuraghe (*monotorre*) was probably a single farmstead occupied by one or few families. It is clearly indicated by the repeated pattern of domestic features and assemblages found inside the nuraghi—examples are provided by nuraghi Duos Nuraghes A and B (Borore), which produced evidence of hearths (G. Webster 2001, 29, 34), and Nuraghe Pizzinnu (Posada), where domestic pottery forms (such as plates) and tools (awls) were found (Contu 1960, 240). Therefore, it is likely that the structure of Nuragic societies did not undergo any significant degree of stratification in the Middle Bronze Age. However, what we can observe is the emergence of the first territories in the form of clusters of

nuraghi. These have been distinguished in Sedilo (Gallin 1989; Bonzani 1992), Borore (G. Webster 2001) and the Sinis peninsula (Fig. 2.5; Depalmas 2008). Around these a “buffer zone” was maintained as an area where no nuraghi were built, presumably to maintain a territorial boundary. The cooperation needed to form these clusters was probably on the level of individual households which established loose alliances or confederations (G. Webster 1996, 99), which is consistent with the lack of settlement hierarchy and an interpretation of the Middle Bronze Age societies as egalitarian ones. This does not deny the probability of collective effort put into construction of the nuraghe, perhaps under supervision of heads of families or other people of significance (G. Webster 1991, 854). As A. Usai (1995, 254–5) correctly points out, we should not interpret the single-towered Middle Bronze Age nuraghi either as evidence of emerging hierarchical power or as projects achieved by small groups of people in isolation.

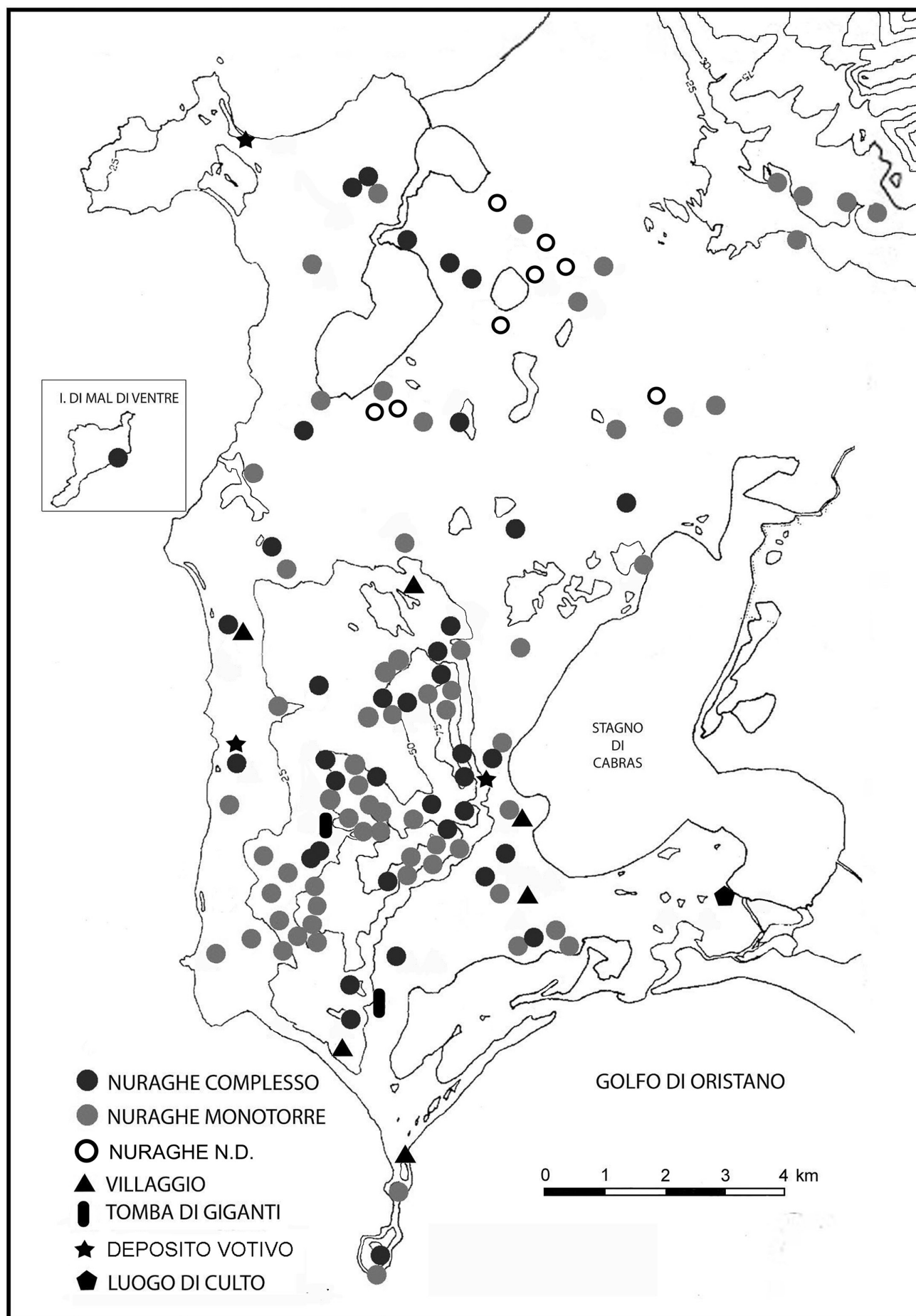


Fig. 2.5. Distribution of Nuragic sites on the Sinis peninsula (after Depalmas 2008). Courtesy of A. Depalmas.

It is possible that the neighboring semi-independent territories maintained peaceful relations, perhaps with some degree of fluidity which could have included episodes of warfare—as suggested by the defensive locations of the nuraghi (Namirski 2012; 2013) and the emergence of buffer zones around the clusters of settlements (Gallin 1989; Bonzani 1992)—the scale of which is difficult to determine. Possible evidence of local unrest and instability in this period is found on the Sinis peninsula, where many of the single-towered nuraghi (presumably of Middle Bronze Age date) were abandoned before their construction was finished. There is possible evidence of trade between different areas of the island. An example is provided by the grinding stones found by Trump (1990, 13) in the Bonu Ighinu valley, made of rocks which were not of local origin. Such contacts probably occurred within down-the-line exchange networks, similar to those which emerged in the Early Bronze Age after the collapse of Chalcolithic societies and the demise of the extensive Central Mediterranean exchange networks (Freund and Tykot 2011, 157).

Not every area of Sardinia shows signs of emergence of territoriality in the Middle Bronze Age. In Gallura (north-east Sardinia) Nuragic settlement is rather dispersed (Puggioni 2009), including many protonuraghi and mixed-type nuraghi such as Izzana (Aggius) or Laicheddu (Calangianus).

In the later phase of the Middle Bronze Age we observe emergence of the first complex nuraghi. Although traditionally they are interpreted as indicators of Recent Bronze Age development (which is true in many cases), some of them reached complex shape already in the Middle Bronze Age. An example is Nuraghe Arrubiu (Orroli), where the pentalobate bastion was constructed in the final phase of the Middle Bronze Age, as indicated by pottery from that period found in tower C (Perra 2018b, 112–13). Likewise, Nuraghe Nolza (Meana Sardo) reached its quadrilobate shape possibly already in the final phase of the Middle Bronze Age (Cossu and Perra 1998, 97). This lead A. Usai (2014a, 38) to suggest that the beginnings of social hierarchy in Nuragic Sardinia, manifested by settlement nucleation and emergence of complex nuraghi as centres of power, began already in the Middle Bronze Age.

A phenomenon chronology of which is yet to be established is the emergence of small circular structures known as *nuracheddus* (“small nuraghi”), which are massive roundhouses rather than towers and are common in the Sinis peninsula (Nuraghe S’Ollastu, Cabras; S’Imbucada, Riola Sardo), but are present also in other parts of Sardinia. According to A. Usai (2014a, 39) they can be interpreted either as archaic structures slightly preceding typical tholos nuraghi or as Recent Bronze Age monuments built close to the end of the period in which nuraghi were constructed.

2.3 Recent Bronze Age (c.1300–1150 BC)

After 1300 BC single-towered nuraghi were still being used, although this period is marked by the wider

emergence of complex nuraghi. The settlement nucleation which resulted in the extension of about 30 per cent of the nuraghi to complex structures (Lilliu 1996, 38) through the addition of bastions, courtyards and lateral towers could have been a result of demographic development and increasing competition for resources. The control over them made some of the families and their settlements more powerful than others, relegating some of the nuraghi to an inferior role which ultimately led to their abandonment (an example is Nuraghe Su Nuraxi, Seulo; Perra 2012a, 129). It has to be considered, however, that some of the single-towered nuraghi (*monotorri*) still remained important centres. An example is Nuraghe Sa Mandra ‘e Sa Giua (Ossi), where a large village emerged around the single-towered nuraghe (Rowland Jr. 2001, 39). Recent Bronze Age pottery was obtained also from Nuraghe Gasoru (Orroli), a single-towered structure on the Pran’e Muru plateau (Campus and Leonelli 2008, 53). Among the examples of complex nuraghi built in the Recent Bronze Age is Nuraghe Is Paras (Isili), a structure with a trilobate bastion and the tholos dome of the main tower which is the highest preserved in any Sardinian nuraghe (Megna et al. 2016, 201). Recent Bronze Age materials were obtained also from tower B of Nuraghe La Prisgiona (Arzachena) and its surrounding large settlement (Antona 2012, 694).

The architecture of complex nuraghi is characterized by great variety and it is not possible to classify them typologically—the floor plans of many monuments are unique. One of the most common forms are the *nuraghi a tancato* (two towers connected by a courtyard, such as Nuraghe Domu de S’Orcu, Sarroch or Nuraghe Mal di Ventre, Cabras), and a triangular-shaped nuraghe with a main tower with the addition of a triangular bastion with lateral towers (Nuraghe Longu, Cuglieri; Nuraghe Orolo, Bortigali). Among the most important features within the Recent and Final Bronze Age villages are *capanne delle riunioni* (meeting huts), present in many of the largest Nuragic settlements associated with complex nuraghi. They have traditionally been interpreted as meeting places of the elite where major decisions were made (Moravetti 1992, 116; Lilliu 1999, 134). However, their ritual interpretation is equally probable (Moravetti 1998b, 53). In *capanna delle riunioni* in the Nuragic complex of Palmavera, a decorated cylindrical seat made in sandstone was discovered, as well as a stone model of a nuraghe of 1m height (Moravetti 1992, 83–5), which are objects likely to be associated with ritual, found also in the Nuragic sanctuaries. Most of the huts in Nuragic settlements had beams, cross beams and wooden roofs, while stone roofs made of slabs were very rare (Depalmas and Melis 2010, 172). Some of the settlements are surrounded by antemurals (curtain walls) with towers (Casteddu de Fanaris, Vallermosa; Losa, Abbansanta), which supports Trump’s (1992, 199–200) interpretation of complex nuraghi as defensive structures. G. Webster (1996) has proposed a division of the Recent and Final Bronze Age settlements into three classes:

Class I—these constitute over 70 per cent of all Nuragic settlements and usually consist of a single-towered

nuraghe with up to 20 huts around it. They were inhabited by an estimated 5–40 people.

Class II—they constitute about 28 per cent of Nuragic settlements and consist of a complex nuraghe with 30–40 huts inhabited by an estimated 70–5 people. One of the examples is Santu Antine (Torralba).

Class III—only 14 Nuragic centres belong to this group. These are the largest complex nuraghi with villages, which could have been inhabited by a few hundred people. Some examples are Su Nuraxi (Barumini), Arrubiu (Orroli; Fig. 2.6), Su Mulinu (Villanovafranca), Lugherras (Paulilatino) and S'Uraki (San Vero Milis, Fig. 2.7).

While this division is somewhat arbitrary, it does reflect a significant degree of settlement hierarchy observable in Recent Bronze Age Sardinia. However, it is necessary to emphasize that the complexity of the phenomenon of settlement nucleation (primarily through the growth of existing settlement sites rather than the emergence of new ones) cannot be captured solely in Webster's classification. Large open settlements emerged also around some of the archaic protonuraghi, such as Bruncu Madugui (Gesturi) and Pinnadu (Cossoine; Foddai 1995), and single-towered nuraghi—among the examples are Nuraghe Mannu (Dorgali; Fadda 1980), Nuraghe Ola (Oniferi) and Nuraghe Santa Cristina (Paulilatino; Moravetti 2003). Nevertheless, the main settlements were complex nuraghi, with villages of roundhouses around them, the largest of which are located in the western part of the island—among them Nuraghe Palmavera (Alghero; Moravetti 1992), Nuraghe Serucci (Gonnesa; Santoni 2010) and Nuraghe Su Nuraxi (Barumini; Lilliu and Zucca 2005). The emergence of these settlements, which eventually grew into proto-urban centres, can be interpreted as a marker of the increasing social hierarchy associated with competition for resources, fitting into Carneiro's (1970) circumscription theory, according to which population pressure and increasing competition led to warfare and the emergence of chiefdoms or states. The largest complex nuraghi can be seen as centres of power controlled by the elite deriving its authority from military power (Camara Serrano and Spanedda 2014, 158). However, given the wide variety of Nuragic settlement patterns in different parts of the island, the reasons for and the degree of the Recent Bronze Age settlement nucleation could have varied regionally, which will be one of the problems addressed in this work.

Besides complex nuraghi and surrounding settlements, we have growing evidence of the development of open settlements specialized in production. One of the examples is Sa Osa (Cabras), where evidence of wine production and consumption has been discovered, including Recent Bronze Age storage jars (*dolii*) with large numbers of grape and fig seeds (Castangia 2012, 112), as well as the remains of ponds which might have been used for salt extraction (Castangia 2012, 116). The evidence of such settlements in the landscape is more sparse than in the case

of monumental sites; thus, it is possible that a significant number of the Recent and Final Bronze Age production sites have not yet been detected. The emergence of structures of specifically economic significance is observable also in non-specialized open settlements, including ones with monumental architecture. For example, in the settlement of Serra Orrios (Dorgali) there are roundhouses which are likely to have been used exclusively for storage purposes, as suggested by remains of large jars found along their internal perimeter (Moravetti 1998b, 41). A similar pattern is observable in the settlement of S'Urbale (Teti, G. Webster 2015, 107).

Increasing competition for resources must have led to alternative subsistence strategies in some parts of the island. This is visible in the area of Pran'e Muru where the palaeopalynological evidence from Nuraghe Gasoru (Orroli) has revealed that the area around the monument was mostly woodland in the Recent Bronze Age (Depalmas and Melis 2010, 175–6). Therefore, hunting and gathering must have played a more significant role in the life of its inhabitants than in the case of the nuraghi located on the fertile plains of Campidano (south-west Sardinia). This is supported by evidence from Duos Nuraghes, where a significant number of wild animal bones were discovered (G. Webster 1996, 134). These changes in economy can be seen as a direct result of increasing competition pushing part of the population out of the most economically suitable areas, resulting in a search for other subsistence solutions. Furthermore, in some of the complex nuraghi we see structures of strictly economic significance, such as cisterns and silos (outer courtyard of Nuraghe Arrubiu, Orroli; Lo Schiavo and Sanges 1994, 29; Perra 2018a, 89–90). The presence of the latter ones is understandable in light of the environmental evidence indicating increased production of cereals in the Recent and Final Bronze Ages (Perra 2010, 83). Another striking pattern is the lack of large complex nuraghi around Monte Arci, which suggests a lesser emphasis on the control of the main source of obsidian in Sardinia, which is probably related to the decreased importance of obsidian in the economy of Recent Bronze Age societies (Freund and Tykot 2011, 158).

2.4 Final Bronze Age (c.1150–900 BC)

The final period of the Sardinian Bronze Age saw significant changes in Nuragic settlement dynamics. Nucleated settlements around the nuraghi continued to develop, but many of the nuraghi had collapsed or were abandoned. Among the examples are Nuraghe Nolza (Meana Sardo), which was abandoned circa 1150–1100 BC (Cossu and Perra 1998, 97), Nuraghe Alvu (Pozzomaggiore), where tower A partly collapsed between the Recent and Final Bronze Ages (Boninu et al. 2013, 88), and Nuraghe Nastasi (Tertenia), abandoned in the early phase of the Final Bronze Age (Perra 2012a, 129). Likewise, Nuraghe Su Nuraxi (Barumini) suffered extensive damage in the Final Bronze Age which resulted in its rebuilding (G. Webster 2015, 100–1). Evidence of disruption, damage

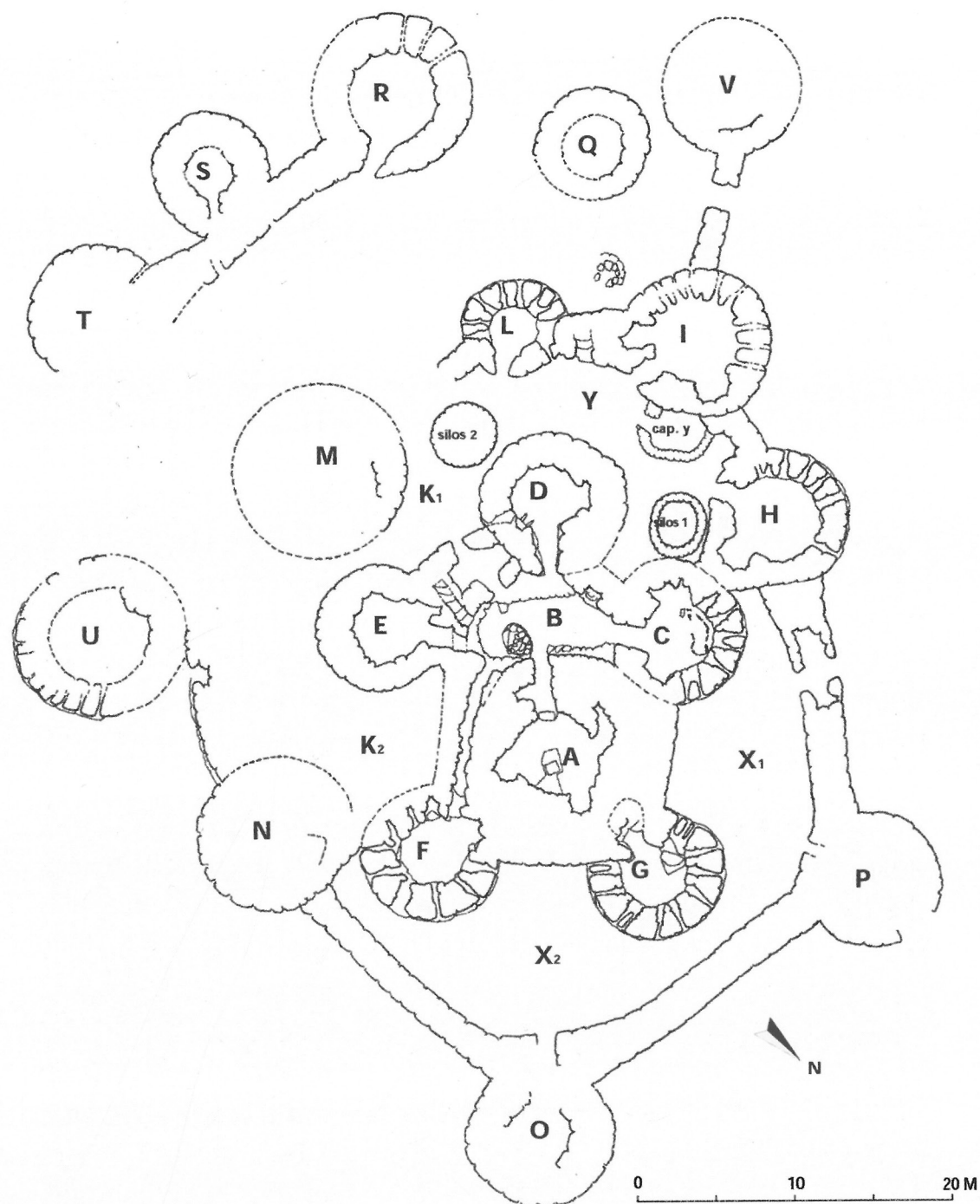


Fig. 2.6. Plan of Nuraghe Arrubiu (Orroli), one of the largest complex nuraghi in Sardinia. Drawing by A. and R. Pitzalis, courtesy of Anna Pitzalis.

and repairs is visible also in many other complex nuraghi in the western part of Sardinia (G. Webster 2015, 111), demonstrating that the Final Bronze Age saw a significant crisis among the Nuragic societies which lead to important societal changes. Reasons for these events might have been both political and economical. As suggested by Ialongo (2018, 31), “saturation of agricultural surface is likely to have represented an insurmountable limit to the former expansion model”. Evidence from Nuraghe Arrubiu (Orroli) indicates that the area of the Pran’e Muru plateau was deforested to gain areas for agriculture and pastoralism (Perra 2009, 363), which could have led to degradation of the soil, crisis and eventual abandonment

of the site which was subsequently only occasionally visited in the Early Iron Age (Perra 2012a, 129).

However, the Final Bronze Age crisis did not lead to a collapse of Nuragic societies. New settlement strategies have been observed—collapsed nuraghi were often not rebuilt, but material from them was reused to construct huts and further expand settlements around the nuraghi (Depalmas 2009a, 141). An example is the Nuragic settlement of Iloi (Sedilo), which continued to be occupied in the Final Bronze Age (see Fig. 2.8)—finds from excavated hut 3 date primarily to this period (Depalmas 2012, 869).



Fig. 2.7. Towers in the curtain wall of Nuraghe S'Uraki (San Vero Milis).



Fig. 2.8. Huts in the settlement near Nuraghe Iloi (Sedilo) which were occupied in the Recent and Final Bronze Ages.

Ritual centres became an important part of Sardinian cultural landscape, settlements around them replacing the Middle and Recent Bronze Age settlement network to some extent (Perra 2012a, 135). The earliest of them could have originated in the Recent Bronze Age, as in the case of the sanctuary of Romanzesu (Bitti; Fadda and Posi 2006, 46). Their main features were sacred wells (*pozzi sacri*, Fig. 2.9), such as Santa Vittoria (Serri) and Santa Cristina (Paulilatino), and rectangular megaron temples, for example Sa Carcaredda (Villagrande Strisaili) and Sos Nurattolos (Ala dei Sardi) among others (Cappellini 2011). They consist of an underground tholos chamber with a staircase and an *atrium* on the ground level. It is possible that a significant portion of *pozzi sacri* had above-ground structures built as a direct continuation of the underground tholos chambers, perhaps even relatively small tower-like constructions (Contu 1999, 136). A smaller type of monument connected with the water cult was the Nuragic spring (*fonte sacra*) which consisted of a small chamber and *atrium*, both on the ground level; one of the finest examples is Su Lumarzu (Bonorva, Caprara 1986, 62–5), where two benches run parallel to both walls of the *atrium*. The ritual function of these structures is confirmed by numerous objects deposited probably as votive offerings. In *fonte sacra* Su Tempiesu (Orune) 20 votive swords were found inserted into the masonry of the spring, while many other bronze offerings

were recovered from the bottom of the pool (Dyson and Rowland, Jr. 2007, 86). In *pozzo sacro* Serra Niedda (Sorso) complete goat and sheep skeletons, indicating the sacrificial role of deposited animals (Wilkins 2000, 263), as well as bronzes, among them a model of a quadrilobate nuraghe (Blake 1997, 152), were found. In many cases (Sant’Anastasia, Sardara; Santa Vittoria, Serri; Abini, Teti) the well-temples have associated settlements without complex nuraghi, being surrounded by other monumental structures of ritual function, as well as numerous huts. This is visible especially in the Santa Vittoria complex, where around the sacred well there are numerous huts and a large enclosure measuring 73 m × 50 m (Zucca 1988, 52). The distribution of ritual sites is clearly divorced from that of the largest complex nuraghi—therefore, it is possible that religious and secular power were separated in Final Bronze Age Sardinia. These distribution patterns also imply a possible division of the landscape into sacred and domestic areas. However, it needs to be emphasized that there are many areas which deviate from these patterns—examples are provided by western Gallura (Puggioni 2009) and most of Sarrabus (Ledda 1985; 1989), where sanctuaries are absent. There are also local phenomena, such as votive deposits of pottery at the Sinis peninsula which are sometimes associated with the nuraghi (A. Usai 2014a, 51). Therefore, conclusions regarding social differentiation drawn from the rise of sanctuaries cannot be



Fig. 2.9. The sacred well (*pozzo sacro*) of Sa Testa (Olbia).

applied universally to the whole of Sardinia—it is possible that at least in some areas the Middle and Recent Bronze Age social relations with lesser degree of differentiation continued in the Final Bronze Age.

Some of the Nuragic settlements saw metallurgical activity in the Final Bronze Age, among them Nuraghe Ortu Comidu (Sardara; Balmuth 1994), Nuraghe Santa Barbara (Bauladu; Gallin and Tykot 1993) and the site of Monte Zuighe (Ittireddu; G. Webster 1996, 137). This corresponds with an increase in the number of metal objects found, among which are swords, daggers and bronze beads (Lo Schiavo 2005a). It is also possible that early ironworking dates back to the Final Bronze Age—a piece of worked iron was found in Nuraghe Antigori (Sarroch), and there is evidence of ironworking from the south-east part of Sardinia (Dyson and Rowland Jr 2007, 100). Another aspect of the Final Bronze Age material culture in Sardinia is the use of amber. Beads made of this material were found in the sanctuaries of Sa Carcaredda (Villagrande Strisaili; Minoja 2014, 326) and Su Tempiesu (Orune; Fadda and Posi 2006, 37). Interestingly, the working of amber artefacts differs between sites, which could imply the existence of local workshops (Fadda and Posi 2006, 38), or the import of objects from various sources. This indicates involvement of Nuragic settlements in wider trade networks. Sites such as Nuraghe Antigori and Nuraghe Domu de S’Orcu (Sarroch) could have seen trade between local population and Aegean merchants (Melis 2003, 71)—Mycenanean pottery and its imitations were found in both (Smith 1987, 98–9). Further evidence for contacts between Sardinia and the Eastern Mediterranean are oxhide ingots, a number of which were found within Nuragic settlements—at least some of them are of Cypriot origin (A. Usai and Lo Schiavo 2009, 279), but some might be local imitations. However, the influence of the Aegean cultures on the Nuragic culture should not be overestimated. Russell (2010, 111) points out that there is no real correlation between the distribution of the Cypriot finds in Sardinia and the locations of major Nuragic centres of power, although the Cypriot material culture certainly did influence Nuragic metalworking—examples are double axes and tripods of Cypriot type which were produced locally (Lo Schiavo 2005b, 313–14). As Dyson and Rowland Jr. (2007, 100) conclude, occasional trade with Aegean merchants would not have significantly altered the development of increasingly complex societies of Final Bronze Age Sardinia.

2.5 Early Iron Age (c.900–750 BC)

The Sardinian Iron Age can be divided into two subperiods on the basis of the material culture, mainly pottery: the Geometric period (850–730 BC) and the Orientalizing period (730–580 BC). There is no evidence of the construction of new nuraghi, although given the small number of excavated and dated towers such a possibility cannot be excluded (G. Webster 2015, 143–4). The largest among the existing nuraghi were remodeled and settlements around them extended, reinforcing their

positions as regional centres of power. An example is Nuraghe Genna Maria (Villanovaforru) where some of the structures around the complex nuraghe were dismantled, including part of a defensive wall (Phillips 1991, 85) in order to construct large multi-chambered buildings which were probably residences of the local elite (G. Webster 1996, 160). This is indicated by clear evidence of different functions for each room, which implies these were large households with rooms for specific domestic purposes rather than communal buildings. Creation of these large, multi-roomed buildings, found also in settlements associated with Nuraghe Sant’Imbenia (Alghero) and Nuraghe Su Nuraxi (Barumini), is one of the defining features of Early Iron Age domestic architecture (Ugas 2009, 173). Besides the largest Nuragic settlements, some single-towered nuraghi continued to be occupied—an example is Nuraghe Toscono (Borore; Michels and Webster 1987).

Settlements associated with sanctuaries continued to be occupied as well—among the examples is Punta Unossi (Florinas), where Early Iron Age material was discovered in huts around the *rotonda* (Derudas 2008, 47). Evidence of further use of ritual monuments comes from the *rotonda* of Coroba Arrubia (Genoni), a circular structure with ashlar masonry (A. Usai 2012, 859), and the sanctuary of Romanzesu (Bitti) with megaron temples (Fadda and Posi 2006, 46). The Early Iron Age also saw some of the nuraghi used as sanctuaries. An excellent example is Nuraghe Nurdole (Orani), where a sacred well was built inside the tower. Ritual practices are attested by presence of large amounts of bronze artefacts, such as votive swords, daggers, buttons, rings and both human and animal figurines (Webster 2015, 195). However, with few nuraghi being excavated and securely dated, full extent of the phenomenon of ritual reuse of the nuraghi is yet to be understood.

The Early Iron Age can be characterized as a period in which social stratification of the Nuragic culture increased further, continuing the trend observable in previous periods. As Camara Serrano and Spanedda (2014, 159) conclude, “aristocracy is most visible in the Iron Age, but its origins are found in preceeding elites”. Much more significant emphasis on the individual is seen in the burial record, marked by the emergence of individual burials (A. Usai 2014b), which, however, show little differentiation (Tronchetti 2012, 854). An argument for the hierarchical structure of Early Iron Age societies can be derived also from bronze figurines (*bronzetti*) which might represent members of elites (Lilliu 1966) and the monumental statues of Monte Prama (Tronchetti 1986).

2.6 Late Iron Age (c.750–500 BC)

Although the end of the Nuragic culture is commonly placed at the close of the sixth century BC and associated with the Punic conquest of Sardinia, the processes which led to its gradual decline started a few hundred years earlier. From the seventh century onwards there is evidence of the

destruction of important Nuragic centres such as Nuraghe Palmavera (Alghero) and Nuraghe Funtana (Ittireddu; G. Webster 1996, 158). These violent events were probably due to the Phoenician expansion towards the central part of the island, as suggested by evidence from sites such as as Pani Loriga (Santadi). However, understanding this process as solely a military confrontation between Nuragic communities and Phoenician colonists would be an oversimplification, as in some cases Phoenician settlements were founded at the sites of already abandoned Nuragic complexes, such as Monte Sirai (Bartoloni 2004, 39). On the other hand, some of the complex nuraghi in the western part of the island flourished well into the Iron Age—among them are Nuraghe Casteddu de Fanaris (Vallermosa) and Nuraghe Sant’Imbenia (Alghero, Hayne 2010). Despite this evidence of complexity and variation in the nature of contact between the Nuragic societies and the Phoenicians, there is little doubt that the Late Iron Age (750–500 BC) was a period of decline for the Nuragic culture. One illustrative example is the rapid decrease in metalwork deposits during the Late Iron Age (Ialongo 2013, 203). A. Usai (2007, 56–7) points out that many of the excavated Nuragic sites were abandoned in the Orientalizing period, which might indicate a significant demographic crisis. He argues that by the Late Iron Age Nuragic political and social systems no longer existed. According to Usai, resistance against the Punic invasions did not contain any Nuragic element and can be identified only with the forces of the Phoenician colonies, which by that time controlled at least the most important parts of western Sardinia.

Although A. Usai’s arguments align with our current state of knowledge, two issues must be pointed out. First, the situation seems to have been less dramatic in the south-west part of the island where some of the Nuragic centres such as Casteddu de Fanaris (Vallermosa; G. Webster 2015, 149), Tuppèdili (Villanovafranca; Ugas and Lami 2015, 21–2) and Baratuli (Monastir; Balzano and Atzeni 2013) were still occupied. Second, very few nuraghi in the central and eastern parts of the island have been excavated so far; therefore, we cannot be sure whether the majority of them were abandoned in the Late Iron Age. The conflicts between the Nuragic people and the Phoenicians probably contributed to the decline of the Nuragic culture, but there is not enough evidence to say they finished it off in all parts of the island. Moreover, it is necessary to point out that the decline of the Nuragic culture could have taken different paths in specific parts of the island, ranging from the collapse of the settlement system based on centres of power (but with continued domination of the Nuragic material culture), to gradual integration with the Phoenicians and local communities, resulting in hybridized culture, similar to the integration and hybridization after the Punic conquest of Sardinia (van Dommelen 1998).