



The Chronology of Monte d'Accoddi (Sardinia, Italy) – New Radiocarbon Dates

Maria Grazia Melis^{1*}

¹Department of History, Humanities and Education, University of Sassari, Via Zanfarino 62, 07100 Sassari, Italy

ARTICLE INFO

Article history:

Received: 11th July 2022

Accepted: 2nd November 2022

DOI: <http://dx.doi.org/10.24916/iansa.2023.1.2>

Key words:

chronology

radiocarbon

Monte d'Accoddi

prehistory

Sardinia

ABSTRACT

The shrine at Monte d'Accoddi constitutes an architectural *unicum* in the context of the Mediterranean of the 4th millennium cal. BC. The building comprised of a terrace with an access ramp, a form that has led to an ongoing debate as to the possible origins of this architectural model. In its earliest phase, attributable to the first half of the 4th millennium cal. BC, the edifice consisted of a truncated pyramidal core. During the second half of the same millennium this was englobed by a second building, similar to the first in general shape, but much larger and with a central, possibly stepped, core. The site was occupied during the 3rd millennium cal. BC and occasionally so during the following proto-historic and subsequent phases of history. This paper will present new radiocarbon dates that will help to define the construction and occupation phases of the monument as well as the settlement that grew around it.

1. Introduction

The site of Monte d'Accoddi is to be found in north-western Sardinia, 3.4 km to the south of Platamona beach (Figure 1). The earliest field investigations were carried out by Ercole Contu between 1952 and 1959. His work brought to light the most recent of the two monuments, which was built from large polygonal stone blocks. The excavation of the surrounding area led to the discovery of a village of quadrangular dry-walled huts (Figures 1–3). An examination of the finds led him to attribute the construction of the monument to the first phase of the Ozieri cultural *facies* (first half of the 4th millennium cal. BC). Finds of more recent dates are evidence of occupation in later phases of prehistory, whereas a stone ring may indicate earlier sporadic occupation during the Early or Middle Neolithic (Contu, 1992; 2000).

A second series of field investigations was carried out between 1979 and 1989. These were followed by large-scale rebuilding and restoration of the monument (Figure 2), implemented on the basis of a hypothetical reconstruction by Santo Tinè, who had directed the stratigraphic excavations. The most important discovery was the identification, within the monument itself, of a more ancient building,

featuring red-painted wall plaster and with its own ramp, and containing at its summit, a rectangular *sacellum*. Also of great significance was the acquisition of six radiocarbon dates, which have enlivened the debate over the chronology of the construction phases (Tinè and Traverso, 1992).

More recent studies include those undertaken by Antonella Traverso on a portion of the pottery finds recovered during the excavations directed by Tinè. These studies contributed to the interpretation of the stratigraphic sequence, as well as identifying morphological and technological characteristics of the finds themselves (Traverso, 2005–2007).

The earliest research by the author of this paper was aimed at the morphological and typological study of pottery finds from Hut p-s, attributed to an occupation phase of the 3rd millennium cal. BC. Subsequently this research has been extended to all of the finds recovered during the excavations directed by Ercole Contu, as part of a project aimed at: the overall analyses of stone, clay, hard animal materials and metal artefact production processes; defining the chronology of the building and its various phases of use; and the reconstruction of the character of the settlement that developed around this central monument.

As the radiocarbon results published by Tinè and their subsequent interpretation were inconsistent with the chronological and cultural framework of Sardinian

*Corresponding author. E-mail: mgmelis@uniss.it

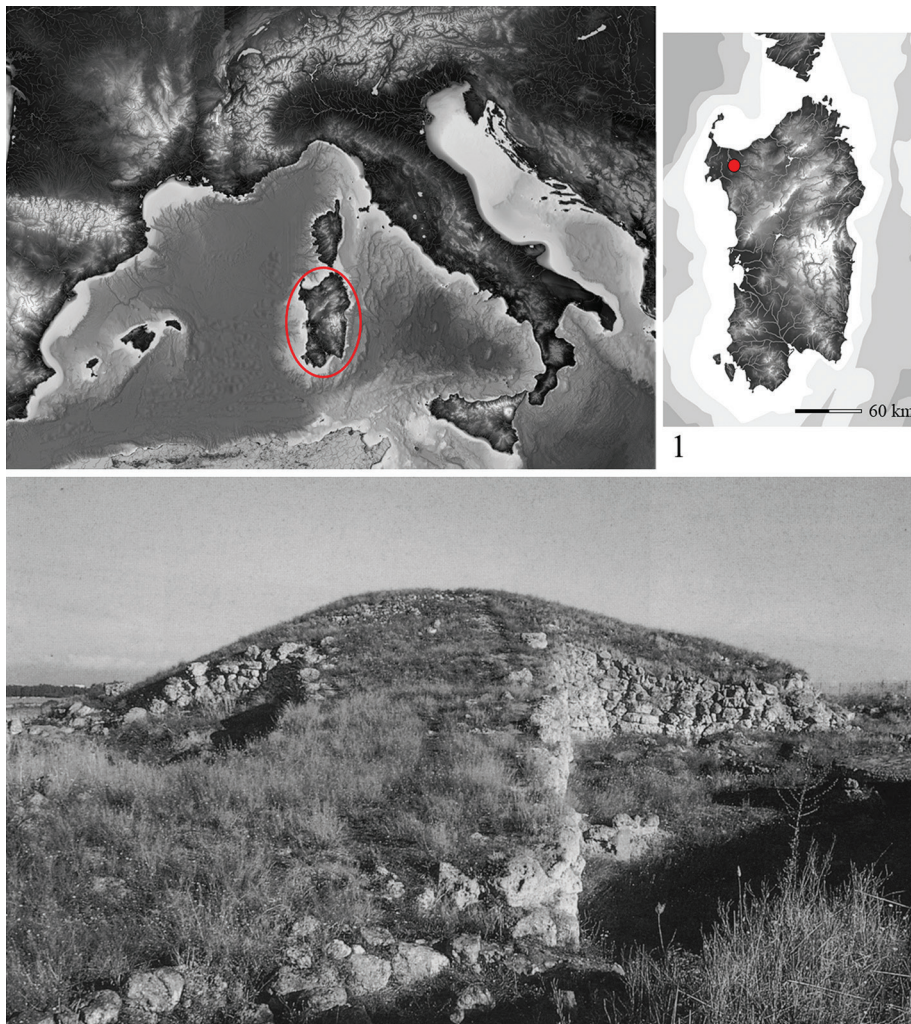


Figure 1. Monte d'Accoddi. 1: Position of the site. 2: The second monument in a 1979 photograph, before the excavation and restoration work carried out by Tiné (according to Tiné and Traverso, 1992, Plate I).

prehistory, in an early phase of research they were re-examined and compared to new dates originating from other sites, with the aim of clarifying the chronology of the monument. The results confirmed Contu's hypothetical

attribution of the early construction phase to the first half of the 4th millennium cal. BC (Final Neolithic; cultural *facies* of Ozieri I) and of the second to the second half of the 4th millennium cal. BC (Early Eneolithic; cultural *facies* of

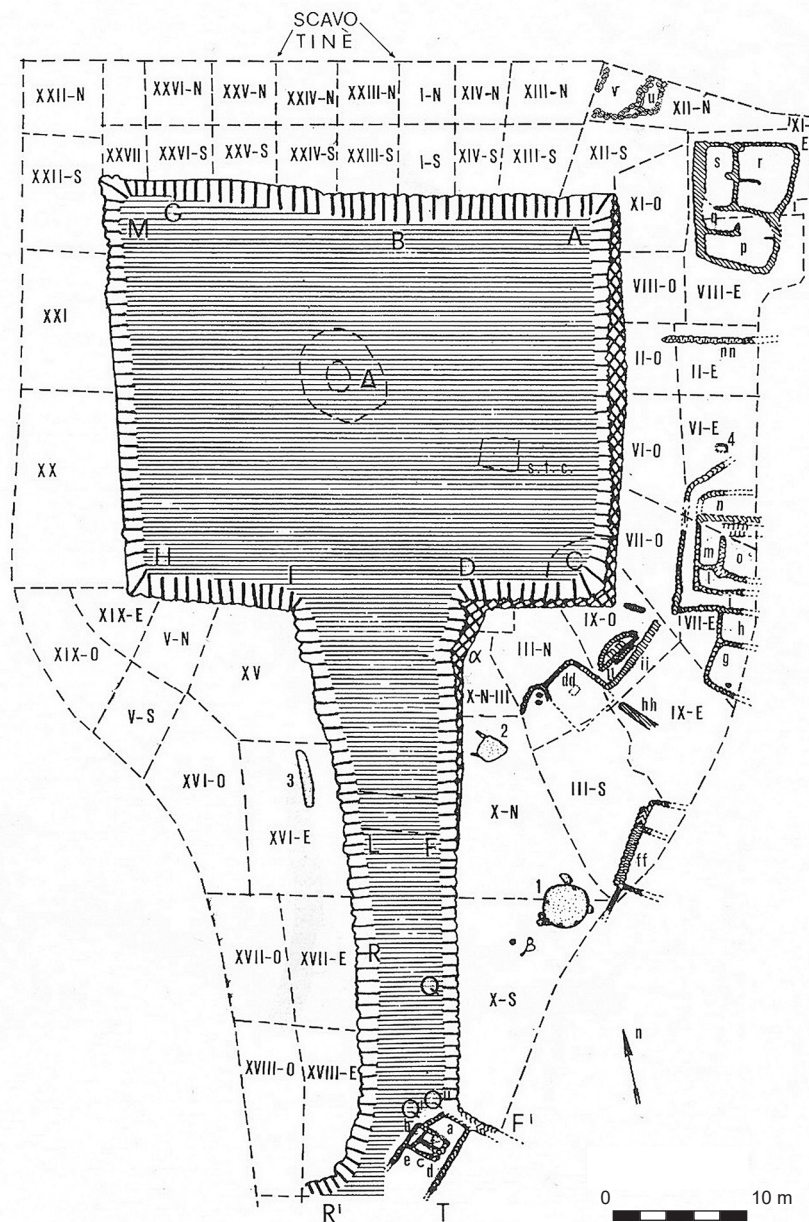


Figure 2. The second monument following restoration (photo Oben s.r.l.).

Table 1. The new radiocarbon dates associated with the stratigraphic data.

Trench									
Level	I	III-N	VI-E	X-S	X-N	X-N-III	XI-E	XII	
1								LTL20016A 4755 ± 40	
2								3638 BC (78.8%) 3497 BC 3436 BC (16.7%) 3378 BC	
3							K LTL20017A 4165 ± 45 2886 BC (94.4%) 2622 BC 2394 BC (1.1%) 2585 BC		
4			D LTL19201A 4505 ± 45 3362 BC (91.9%) 3086 BC 3058 BC (3.6%) 3031 BC						
5				E LTL19202A 4869 ± 45 3769 BC (77.2%) 3618 BC 3587 BC (18.2%) 3528 BC					
6		B LTL19199A 4516 ± 45 3366 BC (93.5%) 3090 BC 3054 BC (2.0%) 3035 BC		F LTL19203A 4530 ± 45 3370 BC (94.6%) 3092 BC 3051 BC (0.9%) 3040 BC	G LTL19204A 4760 ± 45 3640 BC (78.6%) 3496 BC 3439 BC (16.8%) 3378 BC				
7						I LTL19205A 3798 ± 45 2452 BC (2.6%) 2420 BC 2406 BC (3.7%) 2376 BC 2352 BC (84.8%) 2131 BC 2087 BC (4.3%) 2047 BC LTL20013A 5110 ± 40 4036 BC (1.2%) 4026 BC 3988 BC (94.3%) 3790 BC			
8	A LTL19198A 4900 ± 45 3786 BC (93.7%) 3631 BC 3554 BC (1.8%) 3540 BC	C LTL19200A 5264 ± 45 4238 BC (18.0%) 4187 BC 4176 BC (77.5%) 3978 BC			H LTL19206A 3921 ± 45 2568 BC (6.3%) 2527 BC 2497 BC (88.0%) 2284 BC 2248 BC (1.1%) 2236 BC LTL20014A 5144 ± 40 4044 BC (12.1%) 4008 BC 4002 BC (53.7%) 3908 BC 3878 BC (29.7%) 3802 BC	J LTL19208A 4885 ± 45 3780 BC (88.7%) 3626 BC 3576 BC (0.5%) 3570 BC 3562 BC (6.3%) 3533 BC LTL20018A 4629 ± 40 3521 BC (95.4%) 3344 BC			

Figure 3. Plan of the monument and of the surrounding area, subdivided by trenches and sectors (according to Contu, 1992, Plate XXXVI).



Ozieri II). This reconstruction was founded by considering as *terminus ad quem* the finds from the Final Neolithic, that were the most recent among those contained in the formation layers of the oldest monument. In the same way, the Early Eneolithic ceramics are the latest finds in the formation layers of the second monument and therefore represent the *terminus ad quem* for that building. Examination of the archive documentation (site logs, sketches, drawings and photographs) and the accessible finds in the museum storerooms using a morphological-typological approach, made it possible to reconstruct the frequentation phases of the shrine before, during and after the construction of the ramped monument (Melis, 2011).

This paper forms part of that project and is aimed at providing a more precise understanding of the construction

and occupation phases of the monument and the surrounding settlement.

2. Methodology

The principal difficulties with this type of finds analyses have been, and remain, those that often concern the contexts from earlier excavations. These have included: reviewing site documentation, interpreting stratigraphy, recovering and identifying finds, and accessing the finds in the storerooms of the Museum and the Archaeological *Soprintendenza*. An important aid to the research was the examination of the existing archive and iconographical documentation. A valuable resource was provided by the sketches, often

extremely accurate and including measurements, drawn by Contu in his site diary: this help has contributed to the identification of unnumbered finds and their association to the context they were recovered from.

The acquisition of new dates was made possible thanks to the recent recovery by Marco Zedda of several boxes of fauna remains from Monte d'Accoddi. These finds had been sent by Contu to the Museum of Bergamo to be studied, but they were never examined.

A later stage of the research was begun in collaboration with Marco Zedda in archaeozoological studies (that are still underway) and further analyses of chronological issues. Samples of the animal remains were taken for radiocarbon analyses. These were subjected to accelerator mass spectrometry (AMS) at the *Centro di Datazione e Diagnostica* (CEDAD) at the *Università del Salento* (Lecce). The dates were calibrated in OxCal v.4.4.4 using the IntCal20 atmospheric curve (Reimer *et al.*, 2020; Bronk Ramsey, 2009; 2021).

The sampling strategy took into consideration the excavation methods employed by Contu: the area surrounding the monument was divided into trenches, each of them then subdivided into sectors (Figure 3). The excavation was subsequently carried out through artificial “levels” and not through single-context stratigraphy. This remains the foremost problem concerning the stratigraphical data. In each trench at least 8 levels were indicated (in some cases as many as 10). However, as these were artificially created levels, there was not necessarily any correspondence between levels from one trench to another. In order to identify the earliest occupation phases of the area, samples were taken from the deepest levels, where this possibility existed. Trench X, among those containing the most finds, was chosen for the acquisition of dates from samples in stratigraphic order. Unfortunately, not all the levels in the same sector contained animal remains, making it necessary to look at different sectors of the same trench and even to other trenches, while being fully aware of a possible lack of correspondence. Contemporaneously the finds data and the stratigraphic relationships were examined and compared to the radiocarbon dates.

3. Results

Seventeen samples were analysed. They were collected from the following trenches: I, III North sector; VI East sector; X South sector; North and subsector III; XI East sector; XII (Table 1). For the samples taken from trenches I and XII the documentation did not specify a sector. Two of the samples did not deliver any results.

Seeing as how sample LTL19206A, taken from level 8 of trench X-N, gave an incongruous result (a more recent dating than the one recorded for level 6), the reading was repeated on a second sample (LTL20014A) from the same level, sector and trench (Table 1. H). The second dating is consistent with the associated finds. These are reliably referable to Ozieri I,

being comparable to material from other contexts also datable to the first half of the 4th millennium cal. BC.

In the same way, as the dating of sample LTL19205A, taken from level 7 of trench X-N-III, provided a result too recent with respect to its stratigraphical position, the dating was repeated on another sample (LTL20013A) taken from the same place (Table 1. I). This level yielded pottery fragments relating to Ozieri I (associable to the most ancient dating), Ozieri II and to the Final Eneolithic.

A further incongruous result came from X-8-N-III (Table 1. J): in level 8 the excavation revealed the presence of a layer of ash (which gave the date LTL19208A), overlying a layer (date LTL20018A), which, based on the radiocarbon dating, was more recent than that of the layer above.

The examination of such incongruities, together with the analysis of the finds, made it possible to verify the degree of stratigraphical reliability of the various sectors, and in some cases has confirmed instances of disturbance. For example, a stratigraphical irregularity recorded in X-8-N datable to the 3rd millennium is confirmed by the presence of a pottery fragment belonging to the same vessel as a fragment found in level 7. In summary, it seems possible that the most recent dates evidence disturbances of the stratigraphy, perhaps due to animal burrowing leading to finds being dragged or slipping into lower layers. The dates associated with disturbed layers, while little use for dating those same deposits, can be important however in confirming occupation of the shrine over the timespan that they represent.

The results confirmed the occupation of the site from the last centuries of the 5th millennium cal. BC through to the end of the 3rd millennium cal. BC. The most ancient dating (Table 1. C) was recorded in the lowest level of trench III, sector N. This was attributable to a Late Neolithic settlement (the San Ciriaco cultural *facies*). The Final Neolithic, to which the construction of the first ramped monument is dated, is amply documented both by five radiocarbon dates (Table 1. A, E, H-LTL20014A, I-LTL20013A, J-LTL19208A) and by a notable quantity of finds. These were present in almost all the levels. Three dates (Table 1. G, J-LTL19208A, L), relative to the middle centuries of the 4th millennium cal. BC, correspond to a transition phase between the Neolithic and the Eneolithic. The Early Eneolithic, during which the second ramped monument was built, is documented by three dates (Table 1. B, D, F). Lastly, three dates confirm occupation of the site during the Middle (Table 1. K), Late (Table 1. H-LTL19206A) and Final Eneolithic (Table 1. I-LTL19205A).

4. Discussion

The radiocarbon dates are representative of all the occupation phases of the shrine, as identified by the study of the finds, with the exception of occasional frequentation, documented by finds relating to the Bronze Age and the subsequent historical period. The earliest human presence

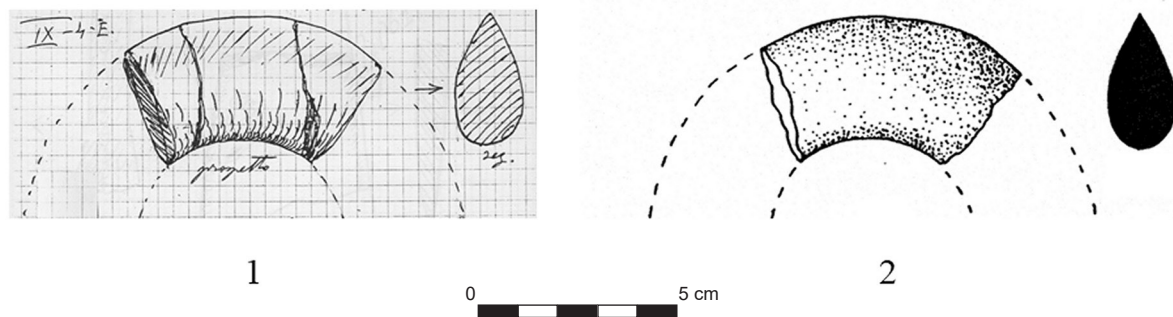


Figure 4. Stone bracelet. 1: Sketch by Ercole Contu. 2: Drawing (Archives of the *Soprintendenza Archeologia, belle arti e paesaggio per le province di Sassari e Nuoro*).

may possibly be represented by the find of a schist stone bracelet (Figure 4). This was found together with a few pottery fragments referable to the cultural facies of the 3rd millennium cal. BC in Level 4 of Trench IX, East sector, which did not provide any radiocarbon dates. This class of find is generally attributed to the Early or Middle Neolithic, the period to which finds of similar rings in Europe, continental Italy and in Sardinia are principally ascribed (Ribero, 2017; Pétrequin *et al.*, 2019; Martinez-Sevilla *et al.*, 2021). However, very often these artefacts have been found out of context and their chronological-cultural attribution, if arrived at on a purely morphological-typological basis, could be considered unreliable. In fact, type AB2, to which group the Monte d'Accoddi example belongs (Tanda, 1977), is represented in Italy by 6 stone bracelets, referable to diverse chronological-cultural contexts, spanning the Early and Recent Neolithic (Ribero, 2017).

Sardinian stone bracelets have been found in 12 sites: for 5 of these there is no chronological-cultural indication as to the context they were found in. Only the bracelet from Filiestru originates in a layer attributable to an advanced phase of the Early Neolithic (5300–4900 cal. BC). The artefact from Nostra Signora del Buon Cammino was a surface find recovered with material from the Early and Middle Neolithic. In other cases, an attribution to the Middle Neolithic has been suggested (4900–4400 cal. BC), but this remains unconfirmed due to a lack of diagnostic finds or because they were recovered together with finds from later periods. Of particular relevance is the exemplar from Liscia Pirastru, which had evidence of occupation during the Final Neolithic (4000–3400 cal. BC) and possible evidence of frequentation during the Late Neolithic (4000–3400 cal. BC). Therefore chronologically, Sardinian stone bracelets existed between the Early and Final Neolithic. Thus, we cannot exclude an attribution of the bracelet from Monte d'Accoddi to the Late or Final Neolithic, phases that are well represented both through dating and finds at Monte d'Accoddi. This dating appears more convincing, especially considering that no finds pre-dating the Late Neolithic were recovered.

In view of this, a comparison with the chronology of Corsican bracelets becomes interesting, even if only one example has a similar shape to that from Monte d'Accoddi.

However, drawing a comparison is necessary, considering the strong relationship that developed between Sardinia and Corsica during the Neolithic, as testified by the circulation of raw materials, by the shared funerary model of the *coffre*, and by the spread of formal models in the field of pottery production. In Corsica stone bracelets have been found in 12 sites, localised mainly in the south of the island. As in the case of Sardinia, in many instances there is no information as to the context they were found in, or they were recovered in multi-phase sites without a clear cultural association. Furthermore, two cases of transformation and reuse as pendants are known in the ambit of the Eneolithic at Terrina IV (Camps, 1988) and during the Bronze Age at Castiddacciu (Jehasse, 1980). Nevertheless, in 50% of the finds the context in which they were recovered is ascribable to the Corsican Middle Neolithic II: the *coffre* burials at Tivulaghju (*coffre* B; Tramoni *et al.*, 2007) and Focè (Pasquet, 1979), the rock shelters at San Ciprianu (Tramoni, D'Anna, 2016) and Torre d'Aquila (Magdaleine, 1995), the open-air settlements of Pastini-Focè (Tramoni *et al.*, 2007) and A Guaita (Lorenzi, 2021). The Corsican Middle Neolithic II began around 4400 cal. BC, at the same time as the Late Neolithic was beginning in Sardinia (the San Ciriaco cultural facies) and ended around 3900 cal. BC, when the transition to the Final Neolithic had already happened in Sardinia (the Ozieri I cultural facies).

The integration of the results of the new dating at Monte d'Accoddi with those previously published dates, with the stratigraphical context together with the study of the finds has made it possible to define the occupation sequences of the shrine more accurately (Figure 5; Table 2), as illustrated.

4.1 Phase 1 (Late Neolithic)

This phase is represented by a settlement at Monte d'Accoddi, typified by the substructures identified by Tinè in diverse areas (Tinè and Traverso, 1992). Pottery finds recovered by Contu in numerous levels as well as in a trial trench dug roughly 90 m to the NE of the monument can also be assigned to this period. The San Ciriaco cultural facies, documented across the whole of Sardinia in the period between 4400 and 4000 cal. BC, was involved in the phenomenon of the earliest megalithic funerary monuments, consisting of *coffres* surrounded by stone circles. This same

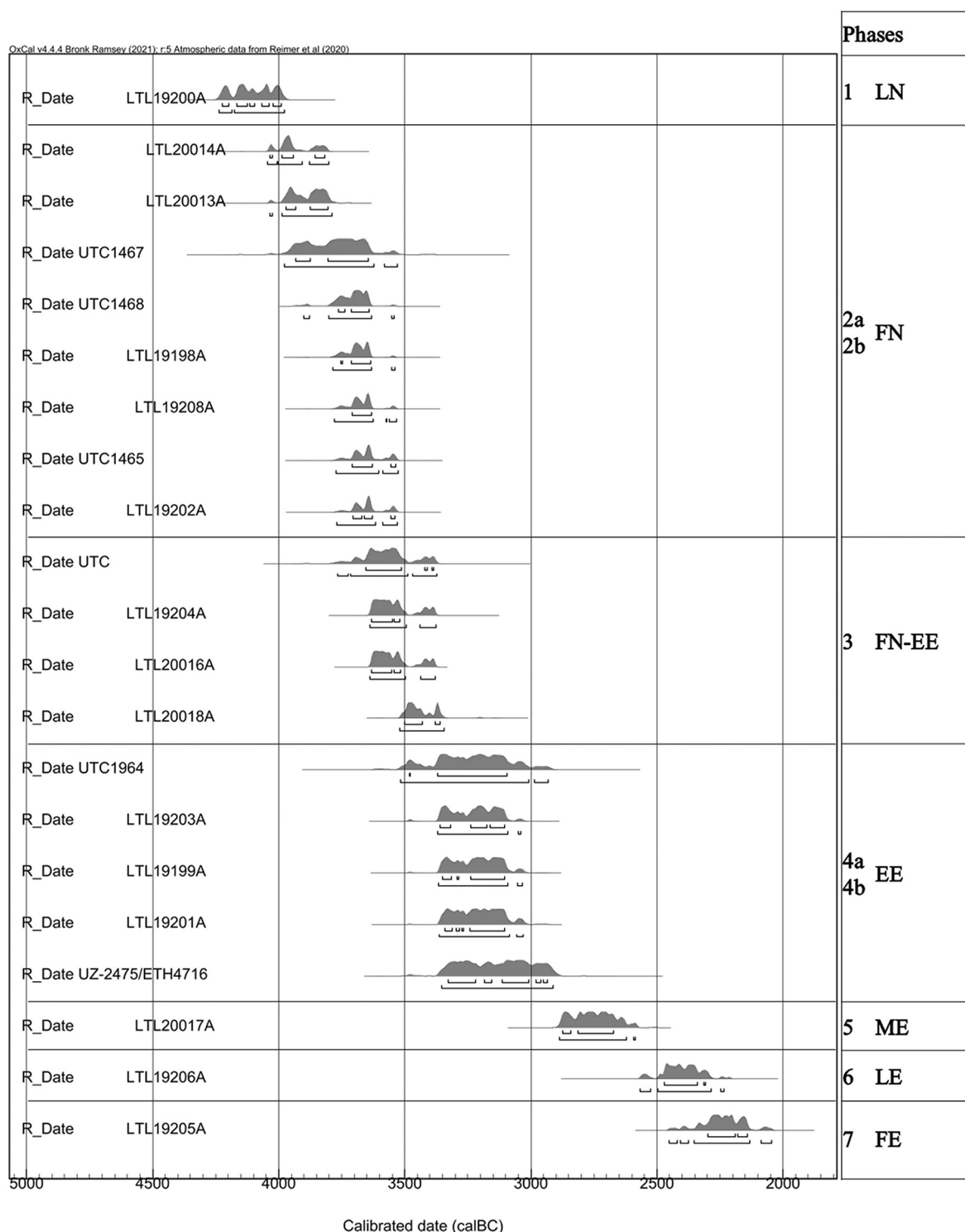


Figure 5. Complete list of the radiocarbon dates.

model appears in a slightly earlier period in Corsica, which endured for the entire second half of the 5th millennium cal. BC. The presence of Sardinian obsidian, and of pottery bearing formal characteristics analogous to those of San Ciriaco, confirm the existence of a strong relationship between the two islands. From a terminological point of view, in Corsica the period between 4900 and 4400 cal. BC

is entitled Middle Neolithic I, and that between 4400 and 3900 cal. BC Middle Neolithic II. For the Sardinian San Ciriaco cultural *facies*, the term Late Neolithic is preferable, as several elements suggest it should be considered a distinct phase and not a sub-phase of the Middle Neolithic. These include the apparition of megalithic *coffres* and the rock-cut tombs known as *domus de janas*.

Table 2. Occupation timeline of the shrine.

Phase	Age	Cultural facies	Type of occupation
1	Late Neolithic	San Ciriaco	Settlement. Necropolis (?)
2a	Final Neolithic	Ozieri I	Settlement
2b	Final Neolithic	Ozieri I	Construction and occupation of the 1 st terraced building. Settlement surrounding the 1 st terraced building
3	Final Neolithic – Early Eneolithic	Ozieri I-II	Occupation of the 1 st terraced building and surrounding settlement
4a	Early Eneolithic	Ozieri II	Occupation of the 1 st terraced building and surrounding settlement
4b	Early Eneolithic	Ozieri II	Construction and occupation of the 2 nd terraced building. Settlement surrounding the 2 nd terraced building
5	Middle Eneolithic	Filigosa; Monte Claro	Settlement surrounding the 2 nd terraced building
6	Late Eneolithic	Abealzu; Monte Claro; Bell Beaker	Settlement surrounding the 2 nd terraced building
7	Final Eneolithic	Bell Beaker	Settlement surrounding the 2 nd terraced building
8	Early Bronze Age – Final Bronze Age	Bonnano; Nuragic	Burial. Sporadic occupation
9	Historical Age	Various periods	Sporadic occupation

4.2 Phase 2a-b (Final Neolithic)

At the beginning of the 4th millennium cal. BC (phase 2a) a settlement attributed to the Ozieri I cultural *facies* existed at Monte d'Accoddi, in a period of demographic growth and technological development in the field of the transformation of raw materials and architecture in Sardinia. This phase also corresponds to the period of maximum exploitation and diffusion of Sardinian obsidian both in Sardinia and in the western basin of the Mediterranean.

In this cultural scenario the first ramp-and-terraced monument was built and the settlement that surrounded it continued to be occupied (phase 2b). The existence of a sub-phase of occupation during the Final Neolithic, before the building of the first monument, is demonstrated by the presence of diagnostic pottery in the formation layers of the edifice.

The positioning of a *menhir* to the west of the ramp may have occurred in this or in the preceding phase. The dating resulting from the area of the *menhir* (Figure 5, UZ-475/ETH4716) cannot be attributed to the erection of the monolith, which from a stratigraphical point of view is older than the second monument, but rather to the occupation of the Early Eneolithic settlement, of which several substructures were found to the west of the ramp, near to the area of the *menhir*.

4.3 Phase 3 (Final Neolithic – Early Eneolithic)

The transition phase between the Neolithic and the Eneolithic at Monte d'Accoddi is represented by four dates that correspond to a period of occupation of the shrine before the second monument was built. The extraordinary find of a sperm whale tooth (Table 1.L) belongs to this phase, adding to the number of attestations of this type of cetacean in the prehistoric Mediterranean (Melis and Zedda, 2021). The transition from the Neolithic to the Eneolithic is well documented in the settlement at Su Coddu/Canelles

(southern Sardinia) in Pit 134, from which pottery, stone and hard animal material finds were recovered. These had intermediate morphological and technological characteristics between the Final Neolithic and the Early Eneolithic, with a dating ranging between 3630 and 3371 cal. BC (LTL2930A, 4708 ± 45 BP, 3630-3556 [22.6%], 3538-3482 [23.2%], 3476-3371 [49.6%] cal. BC; Melis, 2013).

4.4 Phase 4a-b (Early Eneolithic)

At the beginning of the Eneolithic the frequentation of the oldest monument is confirmed by finds of diagnostic pottery on the floor of the *sacellum*, positioned at the summit of the building. The existence of a sub-phase of frequentation during the Early Eneolithic (phase 4a) before the construction of the later building is also established by diagnostic pottery finds in the formation layers of the second monument. A large-scale rebuilding intervention was made necessary by structural instability (phase 4b): the building was incorporated into a larger structure possessing similar general characteristics.

Several elliptical substructures relative to an Early Eneolithic settlement were brought to light during the excavations run by Tiné to the west of the ramp.

4.5 Phases 5 and 6 (Middle and Late Eneolithic)

Occupation during the 3rd millennium cal. BC was formerly only attested by finds and building remains to the east of the monument, that are stratigraphically later than the monument. It is now confirmed by the radiocarbon dates. The first is attributable to the Filigosa cultural *facies* of the Middle Eneolithic (Table 1.K). The presence of pottery finds belonging to the Monte Claro cultural *facies* could also be attributed to this and/or to the succeeding phase: this is based on radiocarbon dates from other sites, developing over a long period between the Middle and the Late Eneolithic.

The second date (Table 1.H), therefore, may be ascribable to this cultural *facies* or to the coeval Abealzu. The important context of Hut p-s, situated to the north-east of the monument, is attributable to the latter. Interestingly, it was destroyed by fire, preserving intact evidence of its last phase of existence. Unfortunately, the context was not datable, as none of the available fauna remains came from the hut itself.

4.6 Phase 7 (Final Eneolithic)

Occupation during the Final Eneolithic, recognisable by the presence of finds attributable to Bell Beaker (Melis, 2019), is also confirmed by a date (Table 1.I), which partially overlaps the Late Eneolithic. This characteristic conforms to the picture presented by the few existing radiocarbon dates for the second half of the 3rd millennium cal. BC, which makes it impossible to identify a clear delimitation between the Late and the Final Eneolithic. The limited number of finds implies an infrequent occupation of the shrine. However, the presence of Bell Beaker material at Monte d'Accoddi may have begun earlier, as suggested by pottery fragments typical of the international style and by formal similarities with pottery belonging to the other cultural *facies* of the 3rd millennium cal. BC. This hypothesis may also be supported by the dating of the Bell Beaker site at Bingia 'e Monti (Perra and Lai, 2020). In particular the most ancient of these dates (MAMS26891, 3984±29 BP, 2578–2456 cal. BC 2σ), if not attributable to the construction phase and earliest use of the tomb, ascribed to Monte Claro, would make it possible to backdate by about a century the presence of Bell Beaker in Sardinia. However, considering the meagre evidence available, it remains necessary to await eventual confirmation through dates obtained from radiometric and stratigraphical data.

4.7 Phases 8 and 9 (Bronze Age and Historical Age)

From the end of the 3rd millennium cal. BC the frequentation of the shrine became sporadic and remains unverified through radiocarbon dates. An infant burial, containing grave goods of a tripod vase and a bowl, is attributable to the first phase of the Early Bronze Age, between the end of the 3rd and the beginning of the 2nd millennium cal. BC. A few scarce pottery fragments are attributable to the Middle and the Final Bronze Age. Lastly, the Historical Age yielded finds from various periods: a glass bead, pottery fragments and several coins.

5. Conclusion

The data presented here leads us to several considerations. The radiocarbon dates seem to suggest a continuity in the use of the shrine and the gradual nature of the transitions from one phase to another. For the most part the dates are attributable to the 4th millennium cal. BC, during which the two building phases of the monument can be placed. The analysis of the finds, still underway, shows an abundance of material relative to this period. This perhaps indicates that it corresponds to the most intense period of frequentation of the area.

The finds are evidence of the observation of ritual practices and activities connected to the economy of production and to the transformation of raw materials (Melis, 2020). The enormous quantity of animal remains discovered during the course of the excavations run by Contu, as well as in successive campaigns, may be the result of consummation during community gatherings, feasts and ceremonies, *etc.* These activities, together with the singular architecture of the shrine (evidently the fruit of collective effort) suggest that it served as a reference point in an intensely occupied territory, perhaps for the whole island, an identifying symbol of an affluent and cohesive society. This could be compared to the model of “pre-state cooperative affluent societies”, which manage their own “surplus gain” in specific activities (such as the construction of a communal monument, collective feasting and the development of artisanal production) preventing its transformation into “surplus profit” (Risch, 2018).

An outdated hypothesis, still dear to some scholars, that the ramped building had oriental origins, inspired by the *ziggurat* model, has no scientific confirmation. With the exception of the ramp, the edifice possesses different architectural characteristics, something also true of the building methods. The chronology of Monte d'Accoddi appears, if anything, compatible with that of the terrace buildings considered prototypes of the *ziggurat* (Butterlin, 2013). However, there is no proven evidence of relationships between Sardinia and the Near East in the 4th millennium cal. BC, such as genetic data, exogenous finds or raw materials. On the contrary, relationships in the sphere of the western Mediterranean are well documented by the circulation of obsidian and by the diffusion of megalithic monuments. When the first megalithic monuments appeared in Sardinia, in western Europe large funerary monuments with mounds were being built, some of which were stepped structures (Giot, 1987). These were sometimes (Laporte *et al.*, 2002) assembled using a system similar to that of the “*cassoni*” at Monte d'Accoddi: a series of large rectangular dry-stone boxes, which were then filled and covered by the mound of the second monument. Also in this case, they represented a different type of monument, that, furthermore, was part of a cultural phenomenon with which Sardinia came into contact in its most southern and Mediterranean facets.

Thanks to the new radiocarbon dates presented here, the frequentation of the 5th and the 3rd millennia cal. BC are identified, for the first time, in terms of absolute chronology. During the 3rd millennium cal. BC, the shrine was still occupied by a stable community, as demonstrated by the huts to the east of the monument, although perhaps by fewer people compared to the preceding millennium. In this new cultural scenario, which on a regional scale showed a growth in social inequality and territorial competitiveness, the structure built at the base of the ramp seems likely to have been used to control access to the summit of the monument. In this cultural panorama the fire that destroyed Hut p-s may be evidence of the final event before the shrine was abandoned.

Acknowledgements

I wish to thank Pascal Tramonì for his suggestions regarding Corsican prehistory. I would also like to thank Marco Zedda with whom I profitably share part of the research on Monte d'Accoddi. I am furthermore grateful to Gianluca Quarta, who recalibrated all the dates (Figure 5).

References

- BRONK RAMSEY, C., 2009. Bayesian Analysis of Radiocarbon Dates. *Radiocarbon*, 51(1), 337–360.
- BRONK RAMSEY, C., 2021. OxCal. Available from: <https://c14.arch.ox.ac.uk/oxcal.html>.
- BUTTERLIN, P., 2013. Les terrasses monumentales proto-urbaines et les centres proto-urbains de Suse à Uruk, étude proto-urbaine 1. In: J.L. Montero-Fenollos, ed. *Du village néolithique à la ville mésopotamienne*. Bibliotheca Euphratica 1, Ferrol: Sociedad Luso-Gallega de Estudios Mesopotámicos, pp. 117–132.
- CAMPS, G., ed., 1988. *Terrina et le Terrinien. Recherches sur le chalcolithique de la Corse*. Rome: École Française de Rome.
- CONTU, E., 1992. Nuove anticipazioni sui dati stratigrafici di Monte d'Accoddi. Scavi 1952–1958. In: S. Tinè, and A. Traverso, eds. *Monte d'Accoddi, 10 anni di nuovi scavi*. Genova: Istituto italiano di archeologia sperimentale, pp. 21–36.
- CONTU, E., 2000. *L'altare preistorico di Monte d'Accoddi, Sassari*. Sardegna archeologica. Guide e itinerari, 29, Sassari: Carlo Delfino.
- GIOT, P.R., 1987. *Barnenez, Carn, Guennoc*. Travaux du Laboratoire anthropologie, préhistoire, protohistoire, quaternaire armoricains. Rennes: Université de Rennes.
- JEHASSE, J., 1980. Corse. *Gallia préhistoire*, 23(2), 549–565.
- LAPORTE, L., JOUSSAUM, E.R., SCARRE, C., 2002. Le tumulus C de Pére à Prissé-la-Charrière (Deux Sèvres). État des recherches après 6 années d'intervention. *Gallia Préhistoire*, 44, 167–214.
- LORENZI, F., COLONNA, A., DUBAR, M., NICOLLET, C., ZAMAGNI, B., and CONFORTI, J., 2021. Économies des populations néolithiques de Corse Apport de l'étude typo-technologique du matériel en pierre polie et du macro-outillage du site de A Guaita (Morsiglia, Haute-Corse). *Bulletin de la Société Préhistorique Française*, 118(2), 323–362.
- MAGDELEINE, J., 1995. Préhistoire du Cap Corse: les abris de Torre d'Aquila, Pietracorbara (Haute-Corse). *Bulletin de la Société préhistorique française*, 92(3), 363–377.
- MARTINEZ-SEVILLA, F., BAYSAL, E.L., MICHELI, R., IFANTIDIS, F., and LUGLIÈ, C., 2021. A Very Early “Fashion”: Neolithic Stone Bracelets from a Mediterranean Perspective. *Open Archaeology*, 7(1), 815–831. DOI: 10.1515/opar-2020-0156
- MELIS, M.G., 2011. Monte d'Accoddi and the end of the Neolithic in Sardinia (Italy). *Documenta Praehistorica*, 38, 207–219. DOI: 10.4312/dp.38
- MELIS, M.G., 2013. Problemi di cronologia insulare. La Sardegna tra il IV e il III millennio BC. In: D. Cocchi Genick, ed. *Cronologia assoluta e relativa dell'età del Rame in Italia*. Verona: QuiEdit, pp. 197–211.
- MELIS, M.G., 2019. Bell Beaker evidence in the domestic sphere of island contexts: Sardinia and Sicily. In: A.M. Gibson, ed. *Bell Beaker Settlement of Europe. The Bell Beaker phenomenon from a domestic perspective*, The Prehistoric Society Research Paper 9, Oxford & Philadelphia: Oxbow Books, pp. 109–129.
- MELIS, M.G., 2020. Prehistoric metallurgy in the western Mediterranean. New archaeological and archaeometric data from Sardinia. *Origini*, 43, 77–111.
- MELIS, M.G., and ZEDDA, M., 2021. Sperm whales in the Neolithic Mediterranean: a tooth from the sanctuary of Monte d'Accoddi (Sardinia, Italy). *Antiquity*, 95, 383. DOI: 10.15184/aqy.2021.115
- PASQUET, A., 1979. Contribution à l'atlas préhistorique de la région de Porto Vecchio. *Archeologia Corsa. Etudes et Mémoires*, 4, 53–81.
- PERRA, M., and LAI, L., 2020. La tomba preistorica di Bingia 'e Monti di Gonnostramatza: per una revisione delle fasi archeologiche e della loro cronologia. *Traces in Time*, 10, 53–75.
- PETREQUIN, P., CASSEN, S., ERRERA, M., PAILLER, Y., PRODEO, F., PETREQUIN, A.M., and SHERIDAN, A., 2019. Disc-rings of Alpine rock in western Europe. Typology, chronology, distribution and social significance. In: R. Gleser, and D. Hofmann, eds. *Contacts, boundaries & innovation: Exploring developed Neolithic societies in Central Europe and beyond*. Leiden: Sidestone Press, pp. 305–334.
- REIMER, P.J., AUSTIN, W.E., BARD, E., BAYLISS, A., BLACKWELL, P.G., RAMSEY, C.B., BUTZIN, M., CHENG, H., LAWRENS EDWARDS, R., FRIEDRICH, M., GROOTES, P.M., GUILDERSON, T.P., HAJDAS, I., HEATON, T.J., HOGG, A.G., HUGHEN, K.A., KROMER, B., MANNING, S.W., MUSCHELER, R., PALMER, J.G., PEARSON, C., van der PLICHT, J., REIMER, R.W., RICHARDS, D.A., SCOTT, E.M., SOUTHON, J.R., TURNEY, C.S.M., WACKER, L., ADOLPHI, F., BÜNTGEN, U., CAPANO, M., FAHRNI, S.M., FOGTMANN-SCHULZ, A., FRIEDRICH, R., KÖHLER, P., KUDSK, S., MIYAKE, F., OLSEN, J., REINIG, F., SAKAMOTO, M., SOOKDEO, A., and TALAMO, S., 2020. The IntCal20 Northern Hemisphere radiocarbon age calibration curve (0–55 cal kBP). *Radiocarbon*, 62, 725–757.
- RIBERO, M., 2017. Anelloni litici italiani: aggiornamenti e nuove proposte interpretative a quaranta anni dalle prime ricerche. *Rivista di Scienze Preistoriche*, 67, 111–144.
- RISCH, R., 2018. Affluent societies of late prehistory. In: H. Meller, D. Gronenborn, R. Risch, eds. *Surplus without the State – Political forms in Prehistory*. Halle: Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt – Landesmuseum für Vorgeschichte, pp. 45–65.
- TANDA, G., 1977. Gli anelloni litici italiani. *Preistoria Alpina*, 13, 111–155.
- TINÈ, S., and TRAVERSO, A., eds., 1992. *Monte d'Accoddi, 10 anni di nuovi scavi*. Genova: Istituto italiano di archeologia sperimentale.
- TRAMONI, P., D'ANNA, A., PASQUET, A., MILANINI, J.L., and CHESSA, R., 2007. Le site de Tivulaghju (Porto-Vecchio, Corse-du-Sud) et les coffres mégalithiques du Sud de la Corse, nouvelles données. *Bulletin de la Société Préhistorique Française*, 104(2), 245–274.
- TRAMONI, P. and D'ANNA, A., 2016. Le Néolithique moyen de la Corse revisité: nouvelles données, nouvelles perceptions. In: T. Perrin, P. Chambon, J.-F. Gibaja, G. Goude, eds. *Le Chasséen, des Chasséens... Retour sur une culture nationale et ses parallèles, Sepulcres de fossa, Cortaillod, Lagozza*. Toulouse: Archives d'Écologie Préhistorique, pp. 59–72.
- TRAVERSO, A., 2005–2007. Il santuario prenuragico di Monte d'Accoddi (Sassari): tipologia e cronologia dei materiali ceramici dai saggi di scavo sul monumento (1984–2001). *Bollettino di Paletnologia Italiana*, 96: 63–107.