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SOMMARIO

FORUM ARTICLE

Responses

EATING MOLLUSCS AT STROMBOLI (AEOLIAN ISLANDS, ITALY), 1700 BC

Massimo Vidale, Sara T. Levi, Marco Bettelli, Andrea Di Renzoni, Matteo Bettuzzi, Valentina Cannavò, Franco Casali, Francesca Ferranti, Leandro Lopes, Maria Pia Morigi, Carmelo Triolo, Mario Triolo

Summary

A seashell dump from the site of San Vincenzo (Stromboli, Aeolian islands, Italy) was studied using an interdisciplinary approach to identify the type of molluscs and the formation process of the deposit, with the aim of reconstructing the most important cultural and social aspects of the meal. A large village occupied Stromboli during the Early and Middle Bronze Age. The village, at least during its later phases, had a modular topographical structure made up of rectangular enclosures with imposing stone elements at the corners. A large pit filled almost exclusively with marine shells was found near one of these stones and by an enclosure wall at the southernmost edge of the village. A sample of the deposit where the shells are embedded in their originally sandy matrix was extracted, investigated by means of CT scanning and reconstructed in 3D, confirming deposition after a single discard event. Radiometric, stratigraphic, typological and archaeometric data indicate that the meal was consumed contemporaneously with the beginning of interactions with the Mycenaeans, and discharged in a specific location possibly marking a major topographical transformation. The quantity of molluscs consumed was reconstructed experimentally by comparing the ancient record with the corresponding quantity of meat provided by contemporary animals collected as a specimen from the rocky shores of the island. Shell deposits of the Mediterranean Bronze Age have been rarely studied in such detail and this case study may reveal forms of ancient communal consumption of such food at the beginning of the Middle Bronze Age, and therefore important feasting contexts in which ancient communities materially interacted and exchanged information.

INTRODUCTION

A recent review of archaeological studies of molluscan remains in prehistory (Thomas 2015a; 2015b) indicates an intensive proliferation in the past 15 years of studies of the role of mollusc exploitation in world prehistory. It also suggests a growing differentiation of topics and specialized scientific approaches, ranging from environment and subsistence, seasonality and settlement patterns and absolute dating to social practices and cognitive aspects. However, field recovery methods, stratigraphic analysis and explanatory approaches are hardly standardized. Another marker of heterogeneity is that mollusc consumption has been more thoroughly investigated in early and mid-Holocene contexts given its important role in the diet of coastal communities, while in later sites shell middens or similar deposits have hitherto been largely overlooked. The purpose of this paper is to stress the importance of a rare mollusc shell deposit found in a site of the Middle Bronze Age on the island of Stromboli (Sicily, Italy), discussing the contextual constraints of fieldwork, a new approach to shell midden stratigraphy and the potential of similar cases for the proto-history of the central Mediterranean.

GEOMORPHOLOGICAL AND ARCHAEOLOGICAL CONTEXT

Stromboli is the northernmost island in the Aeolian archipelago; it is located in the southern Tyrrhenian Sea, between the NE coast of Sicily and the W coast of Calabria, along the route from the Strait of Messina to the island of Vivara in the Gulf of Naples (Fig. 1. 1-2).

Stromboli is an active volcano, 12.2km^2 wide and 926m high, generally with a very steep surface and only a few flat areas, mostly located on its northern coast.

The archaeological site of San Vincenzo is located on the northeast side of the island, on a plateau mainly composed of a scoriaceous lava flow belonging to the last phase of Neostromboli and dated to 6.2 kyrs BP (Fig. 1. 3-4). The plateau is covered by the "Secche di Lazzaro Pyroclastics", thought to have erupted at ≤ 6 ka. Eruptions

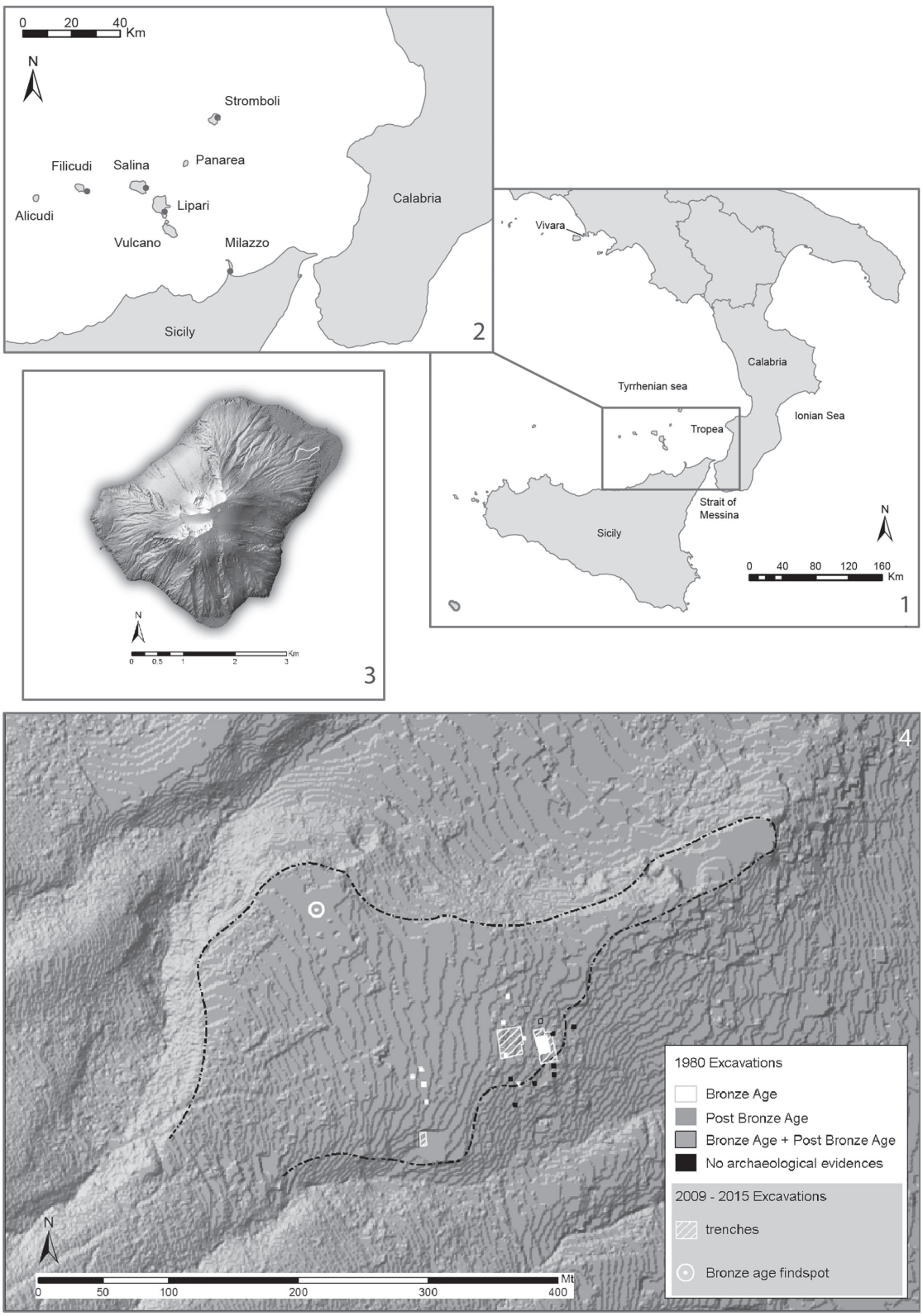

Fig. 1. 1-2. Localization of the Aeolian Islands in the lower Tyrrhenian sea. 3. The plateau of the site of San Vincenzo. 4. The excavation area.

seem to resume only in the Greco-Roman period (San Bartolo lava flows, palaeomagnetically dated to between 360 BC and AD 7): a Holocene eruption gap of the volcano may have coincided with the development of Bronze Age occupation (Renzulli *et al*. 2013).

Besides the Bronze Age village both earlier and later evidence is attested, dating from the Late Neolithic (Diana-Spatarella *facies*) to the present day with a significant presence during classical and medieval times (Ferranti *et al.* 2015; Yoon *et al.* 2018; Rosi *et al.* 2019). The steep-sided plateau covers about 6 ha, but the Bronze Age village appears to occupy about 3 ha (Zhao *et al*. 2015; Bettelli *et al*. 2016), with an altitude that ranges from 40 to about 100m a.s.l. It ensures good control over the best landing points in this part of the island and provides remarkable visual (and perhaps also effective) control over the southern Tyrrhenian Sea (Levi *et al*. 2011; Bettelli *et al*. 2016). A ViewShed analysis performed from contemporary sites in the Aeolian Islands clearly shows that the village is best placed for visual control over the Strait of Messina and the Calabrian coast, north of the promontory of Tropea. At the same time, however, it has no visual contact with the other islands (Di Renzoni *et al*. 2016a).

The site was accidentally discovered in 1980 and was subsequently explored via a series of trenches (Fig. 1.4) opened along the southeast edge of the plateau (Cavalier 1981). Since 2009, the site has been under investigation by the University of Modena and Reggio Emilia's Department of Geological and Chemical Sciences, in collaboration with the National Research Council (CNR-ISMA, Roma), the Superintendency of Messina and the "Parco Archeologico delle Isole Eolie e delle aree archeologiche di Milazzo, Patti e comuni limitrofi, Lipari". Recent research has adopted a multidisciplinary approach and has been organized as an international field school for students (Levi *et al*. 2015; Di Renzoni *et al*. 2016b).[1]

CULTURAL AND CHRONOLOGICAL CHARACTERIZATION

San Vincenzo village belongs to the Capo Graziano *facies* named by Luigi Bernabò Brea and Madeleine Cavalier after the Bronze Age discoveries at the "Montagnola di Capo Graziano" on the island of Filicudi, dated to the Early and Middle Bronze Age 1-2 (23rd-15th century BC). The typological repertoire suggests that the site had a long-lasting occupation, with more than 40 radiometric dates identifying a range between the end of the third millennium BC and the 15th century BC.

Shapes of the indigenous handmade burnished 'impasto' from the later period of Capo Graziano are widely attested: carinated cups, both plain and decorated with a repertoire of incised motifs that typically include zigzags, horizontal and vertical lines, dots and circles, often suggesting a schematic representation of the marine landscape (Levi *et al*. 2014). There are also several rounded bowls and carinated cups comparable with ceramic types generally dated to earlier phases of Capo Graziano, as at Casa Lopez at Filicudi and in the Pignataro di Fuori shipwreck at Lipari (Levi *et al*. 2011; Bettelli *et al*. 2016).

The interdisciplinary study of pottery suggests cultural interactions and network exchanges at different scales. According to petrographic and microchemical characterization, the circulation of Capo Graziano pottery throughout the islands was intense (Brunelli *et al*. 2013). The study of the decorative styles suggests a closer relationship between Lipari and Stromboli while the island of Filicudi presents a large number of exclusive motifs (Levi *et al*. 2014).

A characteristic of San Vincenzo is the large amount of diagnostic ceramic shapes that do not belong to the Aeolian Capo Graziano style, but that are comparable with pottery types of the Rodì-Tindari *facies* which spread from Sicily to southern Calabria between the Early Bronze Age and the initial phase of the Middle Bronze Age. Petrographic analyses have demonstrated that half of the non-Capo Graziano vessels were imported from outside the archipelago (mainly from Calabria) and the other half was made locally (Levi *et al*. 2017).

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1 From 2009 to 2017: 65 weeks of fieldwork involving 350 students from the Universities of: Bologna, Bordeaux 3, Boston University, Buffalo, Cagliari, Cantabria, Catania, Ferrara, Firenze, Genova, Glasgow, Hunter College (CUNY-NYC), Lecce, Lipsia, Madrid, Milano, Milano Cattolica, Modena e Reggio Emilia, Napoli Federico II, Napoli Orientale, Padova, Parma, Pavia, Roma 1, Roma 3, Salento, Salonicco, Sheffield, Trento, Trieste, Urbino.

Stromboli was involved in the Mycenaean connections touching on the lower Tyrrhenian at the early stage of Aegean travels towards the west in the 17th century BC (Jones *et al*. 2014). Aegean pottery (mostly Vapheio cups FS 224) dated to the LHI and IIA and several faïence beads of probable Aegean or eastern Mediterranean production are also attested at San Vincenzo (Levi *et al*. 2017).

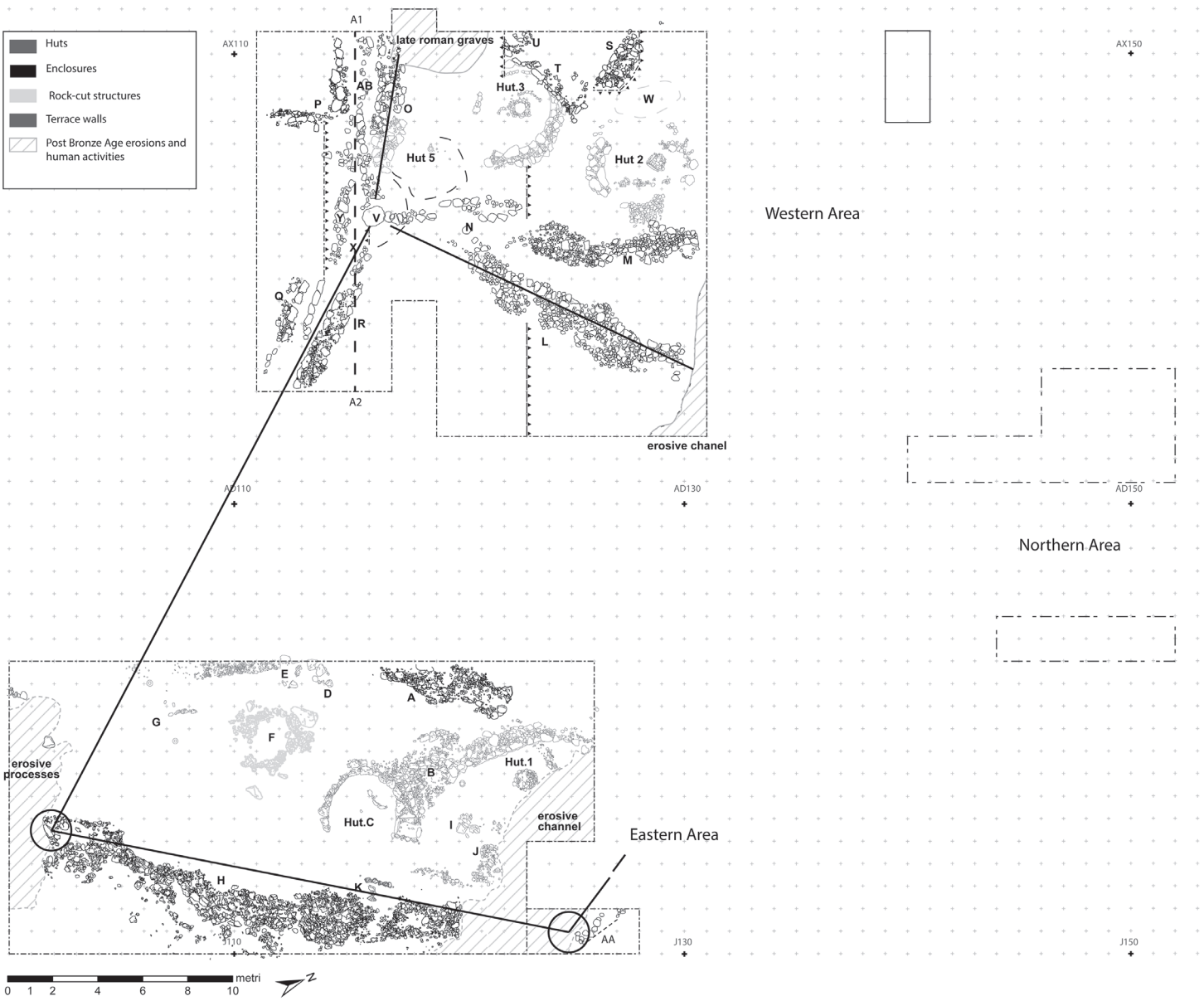


Fig. 2. General map of the A_1-A_2 excavation area with the main structures found: terracing walls L, M, N; huts 2, 3, 5; angular structures P, S-T-U. Dashed line indicates the position of the section of Fig. 4; solid lines indicated the supposed enclosures.

TOPOGRAPHY AND SOUTHERN EDGE OF THE VILLAGE

As already noted, the Bronze Age site probably covered 2 or 3 hectares. The excavation (divided into three main areas – east, west and north - for a total of 800m^2) focuses on the southern edge of the settlement, characterized by an uneven sloping surface that influenced the topographical organization of the dwellings (Fig. 2), leading inhabitants to construct huge stone terracing walls creating artificial flat areas (Bettelli *et al*. 2011; Di Renzoni *et al.* 2014; Bettelli *et al*. 2016; Cannavò *et al*. 2017, fig. 3).

In the eastern area the terrace wall (Fig. 2, wall I) is about 25m long. Its southernmost end is near the edge of the plateau where erosion processes have partially destroyed the archaeological deposit. Nevertheless, a large stone was discovered where the walls seem to stop. The northern end of the wall was severely damaged by an erosion channel dated to the Middle Ages. During the 2017 winter field season, the filling of the channel was excavated. Here, on the same alignment as wall I, several stones were identified covering the north side of the channel, suggesting the collapse of a sizeable wall (Fig. 3). A much larger stone was discovered among the stones with a size comparable to those of wall I. Immediately north of the channel, a stretch of Bronze Age wall follows an east-west alignment (the same direction as the slope of the surface). To summarize, in the eastern area a terrace wall was built to support a flat area on which at least 2 huts were erected (Fig. 2, hut C and hut 1). The wall was ca 25m long and large stones marked both ends. The north end at least was connected to another wall, running almost perpendicularly.

In the western area different building phases can be identified, marked by the use of different terracing walls (Fig. 2, walls L, M, N), huts (Fig. 2, huts 2, 3, 5) and angular structures (Fig. 2, P, S-T-U) (Levi *et al*. 2014; Ferranti *et al*. 2015; Bettelli *et al*. 2016). In the northern part of this area, the stratigraphic sequence is marked by two terrace walls. The earlier (wall M) supports a flat area with a hut (hut 2) and a feature (Fig. 2, structure W), probably related to the hut. A thick yellow layer covers wall M, the collapse of hut 2 and structure W, and also marks the end of the use of the terrace and a change in the topographical organization of the area.

Another terrace wall (wall L) replaced wall M. It has a slightly different orientation and seems to be connected to the large stone V (Fig. 2, V). The collapse of wall L was discovered downstream, immediately below the post-Bronze Age stratigraphic units. The new terrace was larger than the former and supported two huts (huts 3 and 5). A straight wall (Fig. 2, wall T) is superimposed on the north side of hut 3 and is connected to other walls (Fig. 2, walls S and U) creating a rectangular space.

North of huts 3 and 5, the large wall O (Fig. 2, O) constitutes the southern margin of the topographical system described. A different smaller wall (Fig. 2, wall AB) was found between wall O and the rectangular structure P (Fig. 2, P). It runs west-east and is directly connected to stone V. Here the archaeological deposit becomes deeper due to the slope of the substratum, and the sequence of three walls divides the stratigraphy into 3 main phases. These walls seem to mark the southern edge of the village, near the margin of the plateau.

The most ancient walls (Fig. 2, X and Y) were built next to the substratum, and it is supposed to be artificially modelled. They consist of a single row of irregular stones and seem to encase an oval cavity dug into the bedrock, filled by two main stratigraphic units (SU 685 and SU 690). Above the filling layers is wall R (Fig. 2, R) and stone V. The wall, dressed with two lines of stones, is at least 5.6m long and runs from the eastern margin of the excavation area to the area of stone V, along the line through stone V and the stone at the south margin of wall I, in the eastern area.

We can say that, at least during the latest phases of the settlement, this part of the village was organized into groups of huts built on artificial flat areas, surrounded by huge walls delimiting rectangular areas (Fig. 2, solid lines). It is worth noting that the excavation carried out in the north area, though the archaeological investigation is still in progress, did not reveal Bronze Age structures but only layers containing extremely fragmented sherds.

THE STRATIGRAPHIC CONTEXT OF THE MARINE SHELL DEPOSIT

The context of the shell deposit (SU683, -SU686, SU681, SU682, SU687 and SU650, SU652) was discovered near stone V, immediately west of wall R in an area corresponding to the cavity under stone V, as described above. The midden is thus located in the corner between two walls surrounding at least one group of huts (Fig. 2).

Fig. 3. Wall AA and the supposed collapse of terrace wall I into the erosive channel.

Figure 4 presents a sketch of the stratigraphic sequence of the southern edge of the village, drawn using the stratigraphic unit plans. The sequence can be summarized as follows: (1) contemporary layer; (2) post-Bronze Age layers covering the collapse of the latest Bronze Age structures; (3) clusters of stones from the collapse of the latest Bronze Age structures and related layers; (4) layers between wall R and stone V, walls Y-R; 5) layers under stone V, covering walls X-Y.

The seashells were deposited in a pit dug in the layers described above (4), reaching the top of wall X. The layer (SU 682 II) cut by the pit with the seashells covers the upper row of stones of wall X, suggesting that at the time of deposition it was no longer in use. Furthermore, wall R lies on the same SU; some thin layers (SU 650 II, SU 652, SU 681 I, SU 682 I) stop against the wall and cover the shell deposit. The cluster of shells first emerged

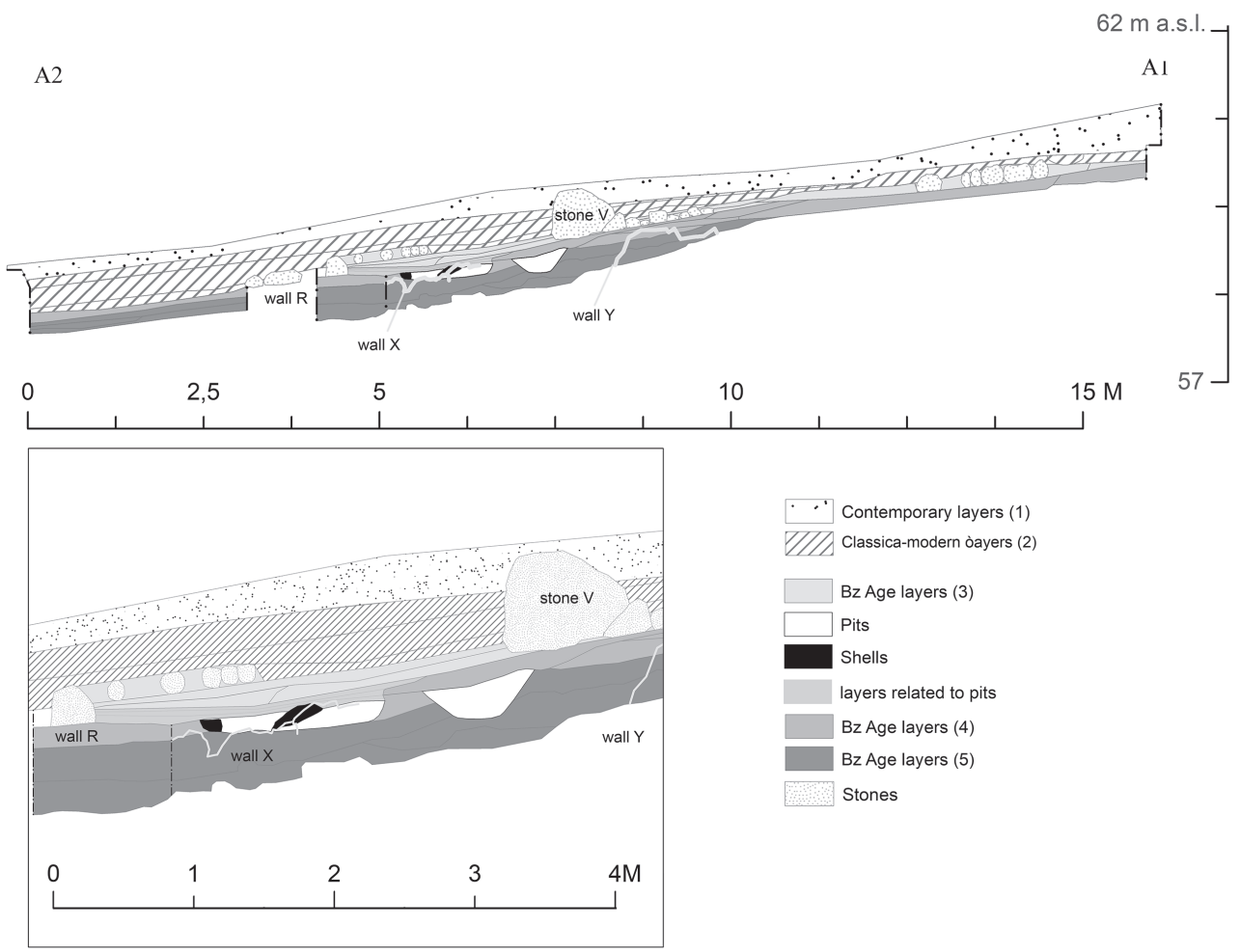


Fig. 4. Synthesis of the stratigraphic sequence in the Western Area, the sequence position is reported in Fig. 2. Numbers in brackets refer to the text.

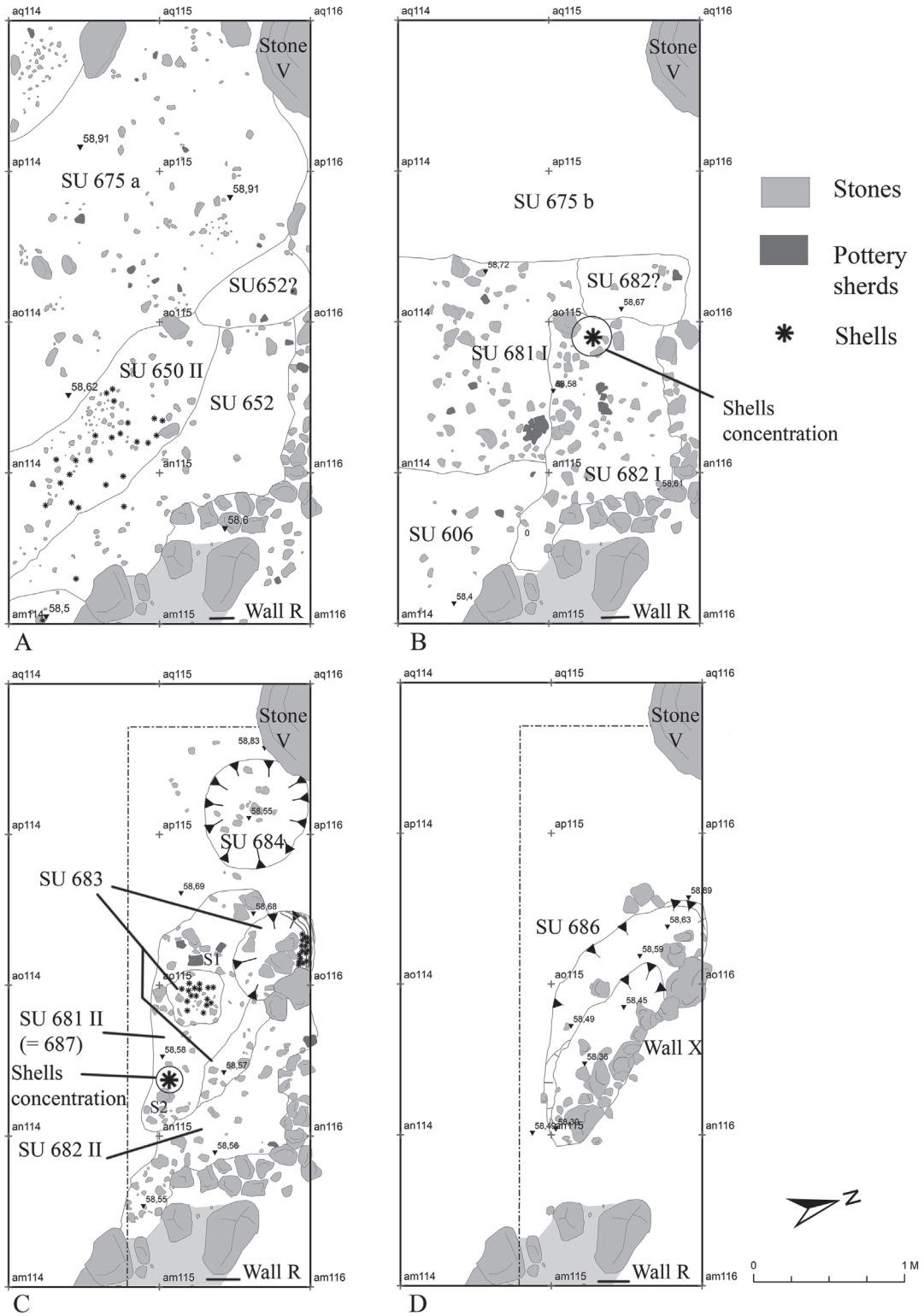


Fig. 5. Excavation plans of the midden area, showing the sequence of the identified layers. A-B. Layers are related to the post-depositional events that affected the deposit. C. The most preserved part of the midden (s1-2 refer to section in Fig. 8). D. The pit of the midden.

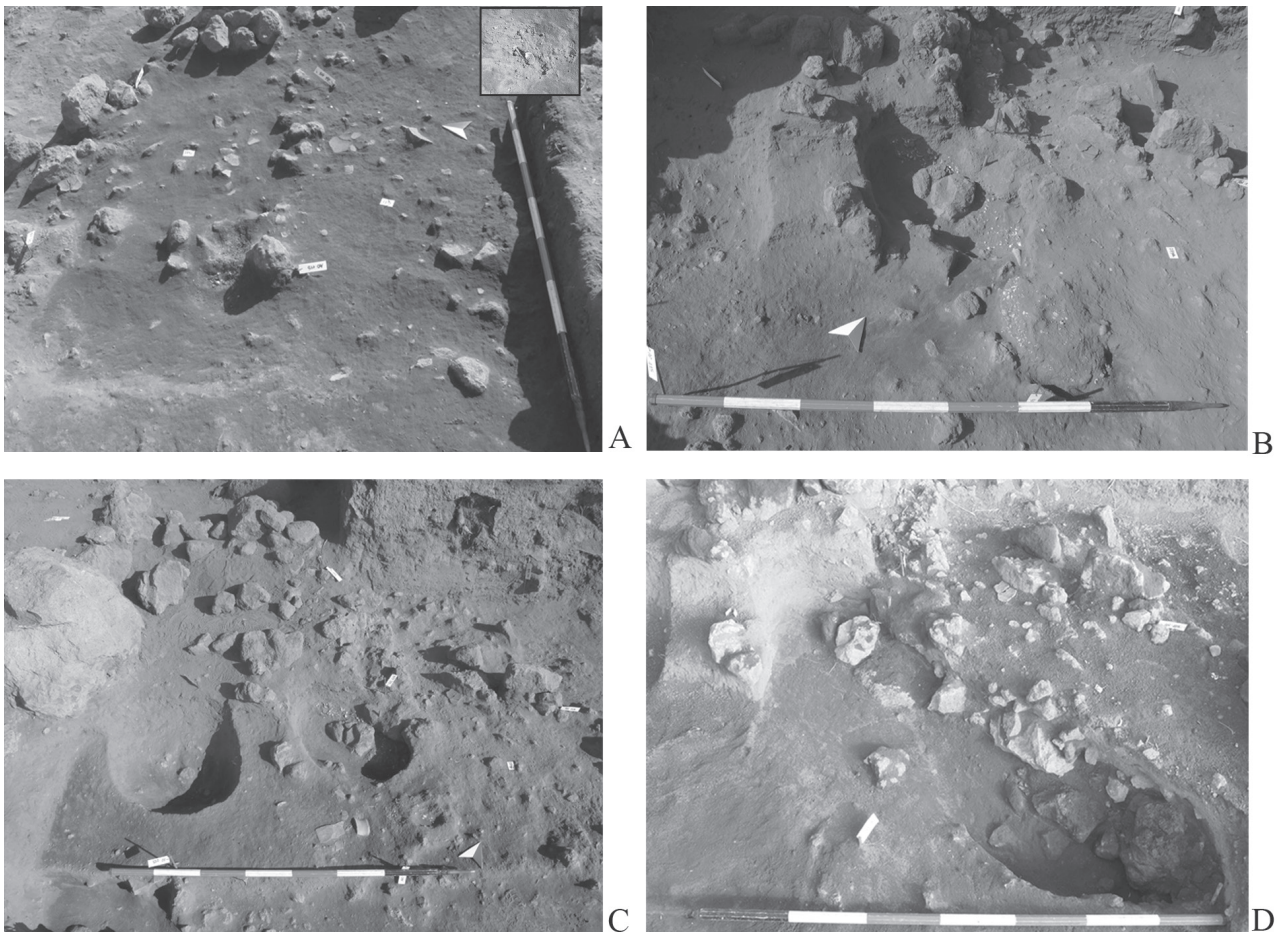


Fig. 6. Different stages of the excavation process. A. First appearance of the shells. B. The shell deposit clearly exposed. C. The holes filled by the shells. D. The pit of the midden.

during the excavation of these layers (SU 650 II, SU 682 I and 681 I, Figs. 5A-B, 6A). A large amount of shells appeared during the excavation of these SUs (Figs. 5B, 6B). It seemed to fill three different holes – close to one another – two of them circular in shape and the third with an elongated outline (Figs 5C, 6C). The completion of the excavation revealed the presence of a single feature (Figs. 5D, 6D) whose upper part had been damaged by post-depositional processes. It was ca 1.6m long and 0.7m wide with a maximum preserved depth of ca 15cm, probably surrounded by a stone-line.

The highest concentration of shells was found in the centre of the cavity (Fig. 7D-G), slightly to its south margin, while on the other side the seashells were found mostly between the stones of wall X (Fig. 7A-C, H). Furthermore, the larger cluster of seashells appeared damaged by post-depositional factors (Fig. 8A-B). Another pit, without artefacts or echo-facts (with the exception of a few animal bones), was immediately west of the dump (SU 684, Fig. 5C), on the same stratigraphic level.

The main excavation problem was that the filling had a fairly loose sandy matrix and, no matter how careful the trowelling was, its pressure was sufficient to modify the setting of the shells, displacing them aside and below the exposed surfaces. All in all, the excavation method destroyed the evidence it was seeking. This is a recurrent hurdle in the excavation of shell middens and the consequent microstratigraphic results are often hard to evaluate; as remarked by Vila *et al.* 2006: "... The usual excavation systems tend to segment the deposits in coarse arbitrary partitions of the stratigraphy and sample the record in columns assuming an overall homogeneous distribution of the remains."

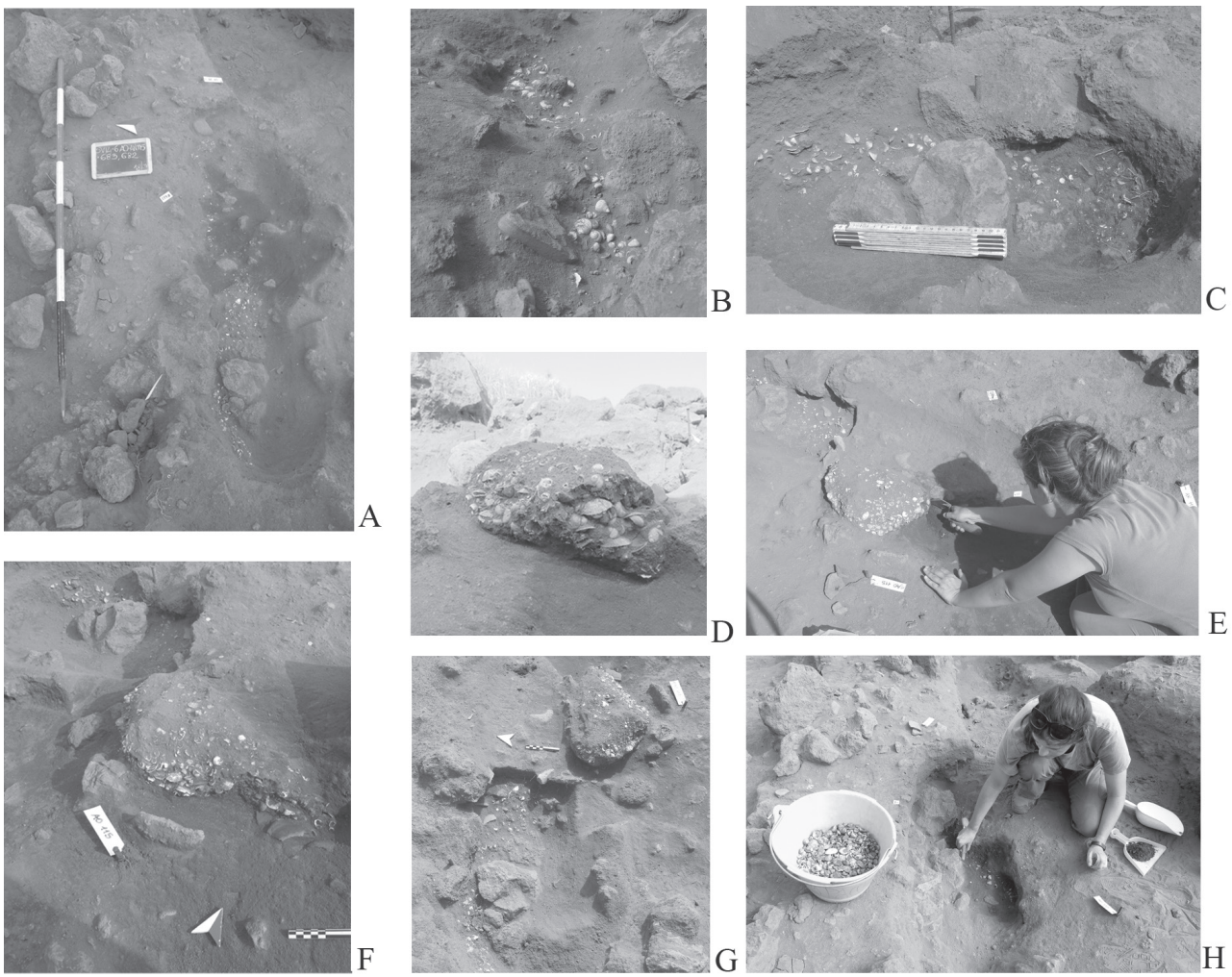
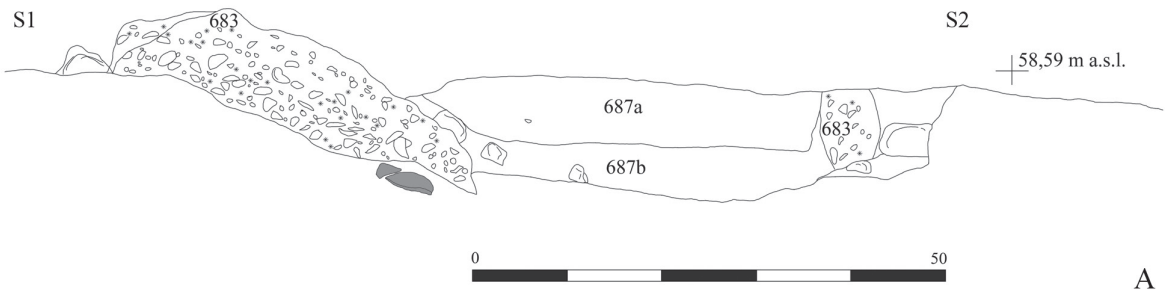


Fig. 7. Pictures of the shell deposit. A-B-C. The shell deposit during the excavation. D. The well preserved section of the deposit. E. The excavation process of the shell-cluster removed for the CT analysis. F. The shell deposit is totally exposed, lateral view. G. The shell deposit is totally exposed, frontal view. H. The shell deposit is completely excavated.

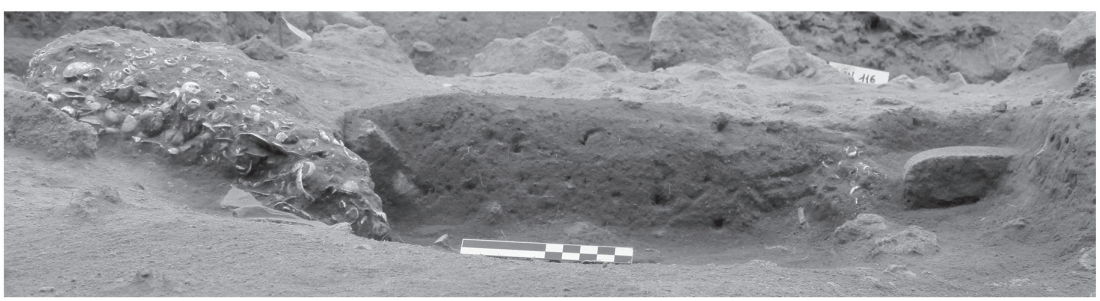
In contrast, while removing the filling (of the best preserved side of the dump) as a whole, it was decided to test the possible presence of inner stratigraphic limits by visualizing the distribution and setting of the embedded shells and potsherds, extracting a solid block of stratigraphy from its core. Given its fragility, the block was carefully carved from the surrounding filling, fixing its edges with paper and tape to avoid it crumbling, until the block (25x15cm) could be completely separated and removed. Its inner structure was then analysed with tomography.

The CT investigation of the shell agglomerate was carried out in a radiographic laboratory of the Department of Physics and Astronomy of Bologna University, on the Ravenna Campus.

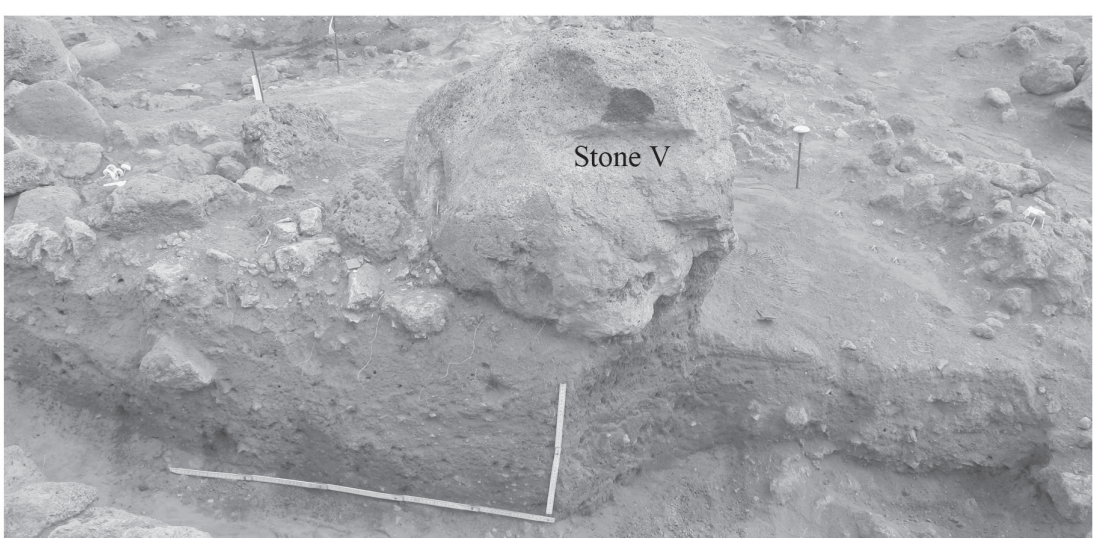
The CT system, expressly conceived for the study of large objects, consists of the following components: (1) a directional X-ray tube that operates at up to 200 kV (Gilardoni MHF 200); (2) a rotating platform where the object to be analysed is positioned and which is in turn placed on a vertical translation axis; (3) a CCD-based detector that moves along a motorized horizontal axis at the same height as the X-ray source. The detector consists of a structured Caesium Iodide scintillating screen (1 mm thick, 45 × 45cm2), optically coupled to a cooled CCD camera (Apogeee Alta U32, 2184 × 1472 pixels). With a Field Of View (FOV) of 45 × 30cm^2, at maximum resolution (binning 1 in the CCD chip), the pixel size in the radiographic images is about 200μm.



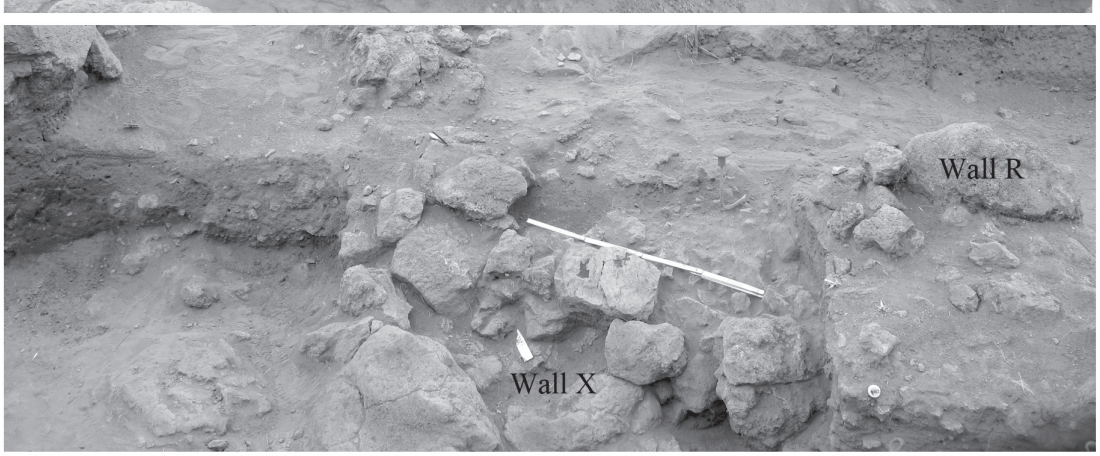
A



B



C



D

Fig. 8. A-B. Sections of the most preserved part of the midden. C. Stratigraphic sequence under stone V. D. Sequence of wall R and wall X.

If the field of vision of the detector is smaller than the size of the object, it is necessary to operate in the so-called tile-scanning mode: the object moves in the vertical direction by means of the translation axis and stops at different heights. At each height the detector is translated along the horizontal axis in order to get the entire horizontal projection of the object, obtained as a mosaic of a certain number of frames. In this way, the object is virtually split into several horizontal portions that are separately reconstructed. For each frame, the object is rotated over 360° with fixed angular steps, while the detector acquires the set of radiographic projections at different angles. After a full rotation, the motorized axis moves the detector into a new position and the procedure described above is repeated.

The CT reconstruction of the shell agglomerate was achieved by FDK algorithm, while the VGStudio Max software program (Volume Graphics, Heidelberg - Germany) was used for the 3D rendering. The main parameters of the CT analysis are listed in Table 1.

X-ray tube voltage	200kV
X-ray tube current	4mA
X-ray beam filtration	2mm
Voxel sixe	220μm

Table 1. CT analysis parameters.

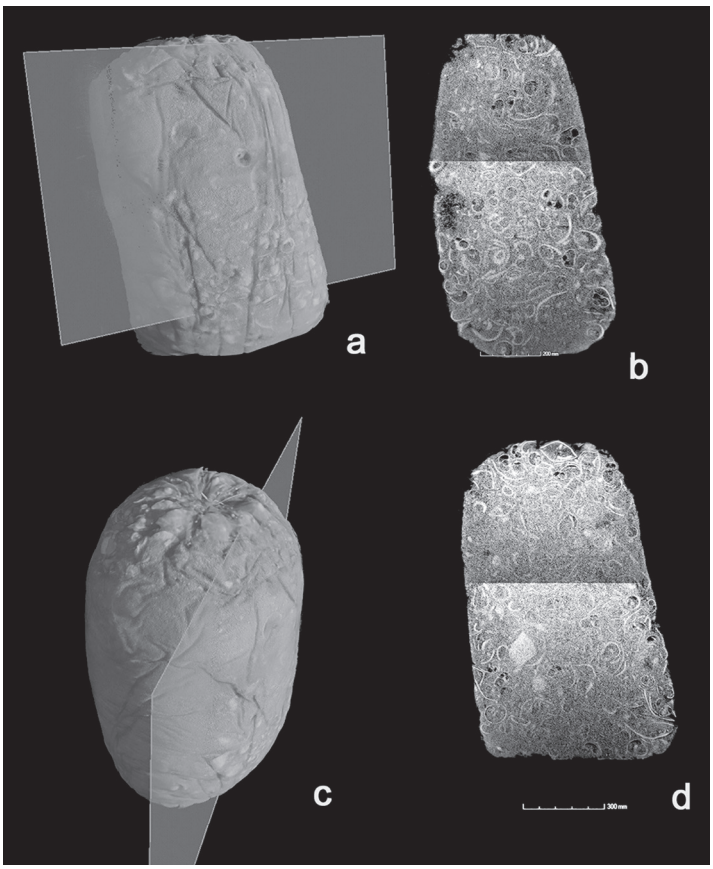


Fig. 9. Tomography of the shell bulk sample. a-b. Position of the vertical frame and its radiographic image. c-d. Position of the vertical frame and its radiographic image, translated along the horizontal axis to the inner portion of the sample.

Tomography (Fig. 9) clearly shows an irregular structure without any visible stratigraphic boundaries, confirming that the shell dump was the result of a single discharge. Furthermore, it is clear that the preservation of this cluster was possible only if we imagine the shells being placed in a container made of organic material and then buried in the ground. The deterioration of the container and post-depositional phenomena scattered the shells into the slits between the stones of wall X, and partially destroyed the upper part of the pit.

Another characteristic of the stratigraphic sequence in the midden area is the large amount of animal bones found. Organic remains such as animal bones are very rare in the site of San Vincenzo, probably due to the acidity of the sandy matrix composing the archaeological deposit. Nevertheless, some areas present (low) concentrations of such materials: (1) *ca.* 110g of animal bones from structure W, probably related to hut 2; (2) *ca.* 90g of animal bones from the layers above hut 3, related to the rectangular features described above; (3) *ca.* 80g of animal bones from the layers related to hut 3; 4) *ca.* 670g from the area of the seashells deposit, *ca.* 170g from the layers linked to the deposit and *ca.* 500g from the layers filling the cavity under the deposit, related to walls X and Y.

Some important considerations can be made to outline the context interpretation. First of all, contexts where animal bones are preserved in the archaeological record can be clearly referred to huts, while the area of the pit is not. Moreover, in such contexts seashells are completely absent, suggesting they were not frequently used in people's everyday diet (see below).

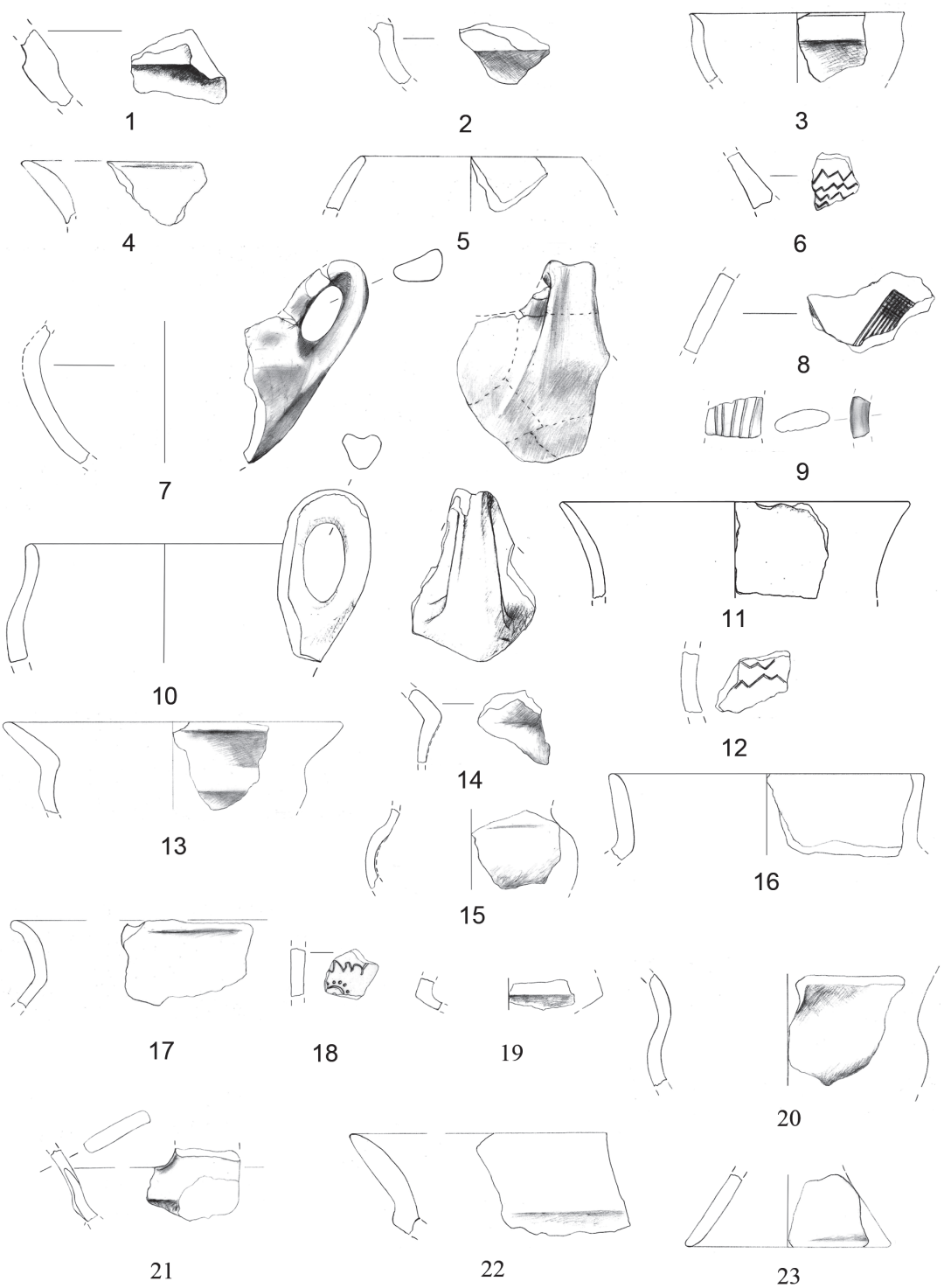


Fig. 10. Pottery from the layers related to the pit. 1-6 SU 650: 1. inv. 3671, AM 115; 2. inv. 3171; 3. inv. 3172; 4. inv. 3146, AN 114; 5. inv. 3147, AN 115; 6. inv. 3156, AN 114. 7-9 SU 652: 7. inv. 3258, AO 114; 8. inv. 3256, AO 115; 9. inv. 3227, AO 114. 10-12. SU 682: 10. inv. 3686; 11. inv. 3655; 12. inv. 3695, AN 115. 13-18. SU 683: 13. inv. 3346, AO 115; 14. inv. 3395; 15. inv. 3539; 16. inv. 3516, AN 115; 17. inv. 3290, AO 115; 18. inv. 3403, AN 115. 19-23. SU 681: 19. inv. 3282; 20. inv. 3302; 21. inv. 3303. AP 114; 22 inv. 3325, AN 115; 23 inv. 3275, AO 114. Scale 1:3, except 5 and 11, scale 1:4.

No less important, the quantity of animal bones in the area of the seashells is up to five times greater than in the other contexts listed above. This concentration is higher for the layers below the pit, but still remarkable in the SU linked to the pit.

To sum up, the deposition of the seashells took place in a specific area of the village, along its southernmost edge, during the change of the general topography of the village. The shells were probably deposited in an organic container and buried in a pit close to wall R and stone V, the latter being a crucial feature of the wall-system that seems to enclose this part of the settlement. Furthermore, stone V was placed above a previous feature presenting clearly different traits from other contexts such as huts or rectangular spaces, suggesting that this zone had a particular function.

CHRONOLOGY OF THE MARINE SHELL DEPOSIT

The radiometric data of a marine shell from the deposit was measured in 2015 at the University of Groningen, Centrum voor isotopenonderzoek, with the result of 1730-1625 BC Calibrated (including a 400-year reservoir effect) (Table 2). It is in keeping with the date proposed on the basis of the typological analysis of the context.

GrA	Sample Name	Age BP	Error ±	∂13C	Calibrated (1-sigma)
63879	M1736	3770	35	2.68	1730-1625 BC The calibration includes a 400-year reservoir effect

Table 2. Calibrated chronology of the marine shell deposit

Several handmade and burnished 'impasto' diagnostic sherds were found in the layer filling the pit and in the immediately related layers (Figs. 10, 11A). They are representative of the ceramic assemblage of the site, especially in late phases. They belong both to the typical Capo Graziano pottery, including incised decoration, and the Rodì Tindari pottery that characterizes North-Western Sicily and Southern Tyrrhenian Calabria in this period. A poorly preserved and abraded fragment of a pedestal vessel collected in the pit has a fabric coherent with an intrusive production area according to petrographic analysis, and is therefore probably imported from Calabria (Fig. 11B. 8). Again, the presence of an allochthonous pot fits with the composition of the ceramic assemblage of the site, as mentioned above. In fact, about 1/3 of the 'impasto' pots discovered at Stromboli do not belong stylistically to the local Capo Graziano *facies*: half are locally produced and the other half imported from the Southern Tyrrhenian, mainly Calabria (Levi *et al*. 2017).

To summarize, radiometric and chrono-typological data indicate that the marine shell deposition took place during the 17th century BC, a phase also characterized by the first contacts with the Mycenaeans as demonstrated by the LHI imports.

THE MOLLUSCS AND THEIR CONSUMPTION

The three *Gastropoda* identified in the dump of SU683 are *Patella sp.*, most probably to a large extent *Patella caerulea* (WoRMS 2015a); *Phorcus turbinatus* (WoRMS 2015c); and *Phorcus richardi* (WoRMS 2015b) (Figs. 12-13).

Patella caerulea (Sabelli, Feinberg 1980, 199) has a medium-sized shell, with concentric sculpture, radial furrows and polygonal contour. The species lives mostly in the Mediterranean Sea, where it is one of the most common molluscs. It may be gathered on mesolittoral rocks or in the upper levels of infralittoral zones, rarely in deeper waters.

The shell is detached from the rock by quickly inserting a blade or the shell of another animal of the same species between the host rock and the edge of the shell, thus cutting its grey or orange foot. The fingers of the gatherer may be cut in this activity, and the impact may chip the edge of the shell. In the buried deposit of S. Vincenzo

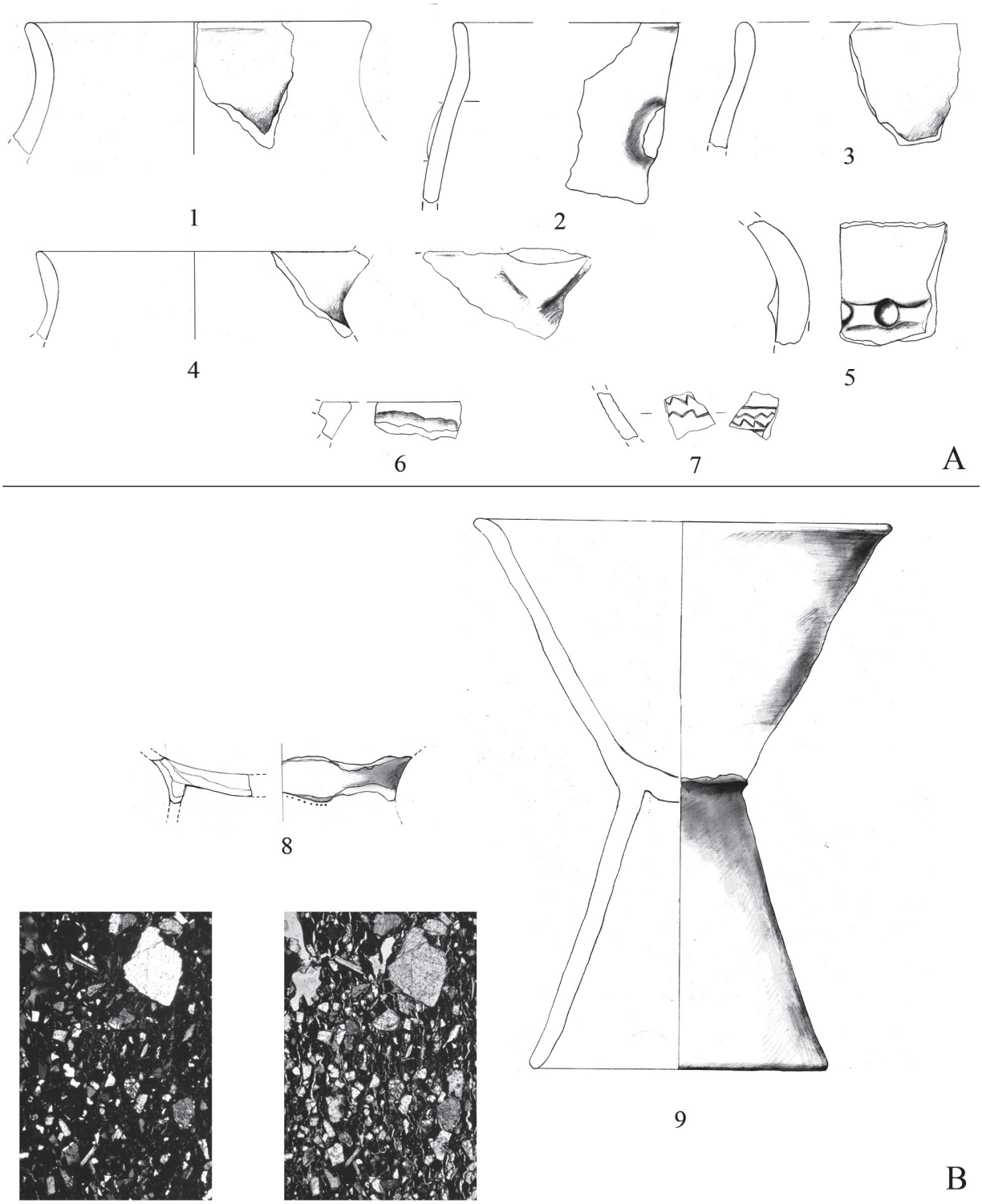


Fig. 11. A. Pottery from the layers related to the pit. SU 681: 1. inv. 3291, AO 114; 2. inv. 3306, AP 114; 3. inv. 3323, AN 115; 4. inv. 3322; 5. inv. 3328, AP 115; 6. inv. 3318, AO 114; 7. inv. 3282, AP 114. Scale 1:3. B. 8. Fragment of pedestal vessel inv. 3384 from SU 686 AN 115, scale 1:3, and its petrographic thin section (XPL image on the left; PPL image on the right, widt image 5,5mm). 9. Pedestal vessel inv. 2635 SU 590 L116 (K), scale 1:4.

village, SU 683, the shell lost its outer concretions, and was strongly bleached to a light brown or white colour; the edges are extremely fragile and decay in thin sheets at the slightest touch. To a large extent, the edges of the *Patella caerulea* shells recovered after excavation are severely damaged by recovery impacts. However, in a few cases we believe we have identified ancient lateral impacts, covered by sediments that might have been formed during the detachment of the shell from the rock. In Fig. 12. these examples of ancient edge damage are compared with those created today when detaching the animal with a metal blade.

Phorcus turbinatus (previously *Osilinus turbinatus* and *Monodonta turbinata*: Abbott, Dance 2000, 41, 1.3), the *turbinate monodont*, has a solid, thick cone-like shape, with spiral series presenting thin parallel grooves and purple to chocolate quadrangular blotch patterns. *Phorcus turbinatus* has a thick shell and its diameter is often greater than 3cm, providing a substantial amount of meat. Like *Patella* it is common in mesolittoral intertidal rocky shores up to 5-7m deep. Informants on Stromboli report that this mollusc (known in the Aeolian dialect as *ufalu*, a term that popular etymologies link to the ancient Greek word ὀμφαλὸς, "navel") spends the day hiding in cavities or below hanging rocks. At night, until the first rays of dawn, it can be found and caught on rocky surfaces covered by the tiny algae that constitute its nourishment. At the slightest alarm, as a defence mechanism, the animal releases its grip on the rock and falls down onto the rocky bottom, often out of sight and reach. The shell is very sensitive to microclimatic changes and seasonal variations and is currently used for environmental studies in Mediterranean coastal archaeological sites (Mannino *et al*. 2008; Colonese *et al.* 2012). *Phorcus turbinatus* deposits found in Mesolithic sites near Sicilian waters suggested a preferential exploitation in winter or spring (Colonese *et al.* 2012). Taphonomic changes include discolouration of the outer shell and probably partial absorption of solutions from the surrounding soils; the shell becomes fragile but still remains more substantial compared to the changes undergone by the shells of *Patella* and the following sea snail species.

Phorcus richardi (Robin 2008, 32, 16; D'Angelo, Gargiulo 1978, 89) as we shall see, is the most common taxon in our context. Its conoidal shell is olive-green with yellowish bands, with wide oblique longitudinal stripes. Unlike the grooved shell of *Phorcus turbinatus*, the entire surface is smooth, thin and very fragile. Its smaller size and deep umbilicus also distinguish it easily from the other sea snail. Its average diameter (1.6-1.8 cm) is much smaller than *Phorcus turbinatus*; its habitat, generally speaking, is the same as the other two species – the intertidal rocky shores of Mediterranean coasts. Its popular name in Aeolian dialect, *ufalu surdu*, literally "deaf ufalu", is due to the fact that when disturbed this gastropod, contrary to *turbinatus*, does not fall from its grazing surfaces (and is therefore considered "deaf") but remains attached to the rock where it can be easily captured. Buried in the subsoil, its shell lost part of its colouring and became very brittle. Preliminary calculations suggest that of the three species *Phorcus turbinatus* may have undergone the greatest loss in weight, possibly because of water retention in the thicker shell by modern gastropods.

In SU 683, we collected a total of 6.116kg of shells (without sediments). 2.241kg of shells were taken as a sample amounting to *ca.* 37% of the total content of SU683. In this assemblage, we identified 1314 specimens of *Phorcus richardi*, 450 specimens of *Patella*, and 278 of *Phorcus turbinatus*.

When referred to the total, these percentages suggest – as a minimum estimate – an original amount, in order of importance, of 3551 *Phorcus richardi*, 1216 *Patella sp*., and 751 *Phorcus turbinatus*. These values, considering the fragmentary remainder of shells that could not be determined, should be increased (conjecturally, but with a conservative estimate) by 10%.

Next, we experimentally evaluated the amount of molluscan meat provided by the recorded animals. We collected 33 specimens of *Phorcus richardi*, 100 specimens of *Patella sp*. and 70 of *Phorcus turbinatus* from the rocky shores of the island, taking care to include in the sample a certain number of large and small animals. While the notion that intensive shell harvesting would lead to an overall size reduction in Patella is questionable (Horwitz *et al*. 1991), in terms of size the archaeological and living samples appeared visually comparable. Then we recorded their weight in meat subtracting from the total weight of each species that of their shells.

The resulting values, including the total estimated weight in molluscan meat represented by the remains of SU 683, are summarized in Table 3 below.

Species	No. of shells (37% of the total in weight)	Estimated 100%	Integration (+ 10%)*	Average weight of meat for unit (in gr)	Estimated original weight of meat (in gr) per species
Phorcus richardi	1314	3551	3906	0.60 (33 cases)	2344
Patella sp.	450	1216	1337	2.44 (100 cases)	3262
Phorcus turbinatus	278	751	826	1.52 (70 cases)	1255
Total weight					**6861**

Table 3. Total estimated weight in molluscan meat in SU 683.
* Accounting for the loss of a substantial fraction of broken and non-identifiable shells

The most substantial source of meat in the dump is *Patella sp*., followed by the two sea snails. Considering that the estimated total number of individuals, as stated above, is conservative, and that the sedimented block of the basal SU 683, inspected by CT scanning, contains hundreds of other shells, we are not too far from reality in assuming that in the meal represented by this selective dump between 7 and 8kg of seafood were consumed, quite likely in a single episode.

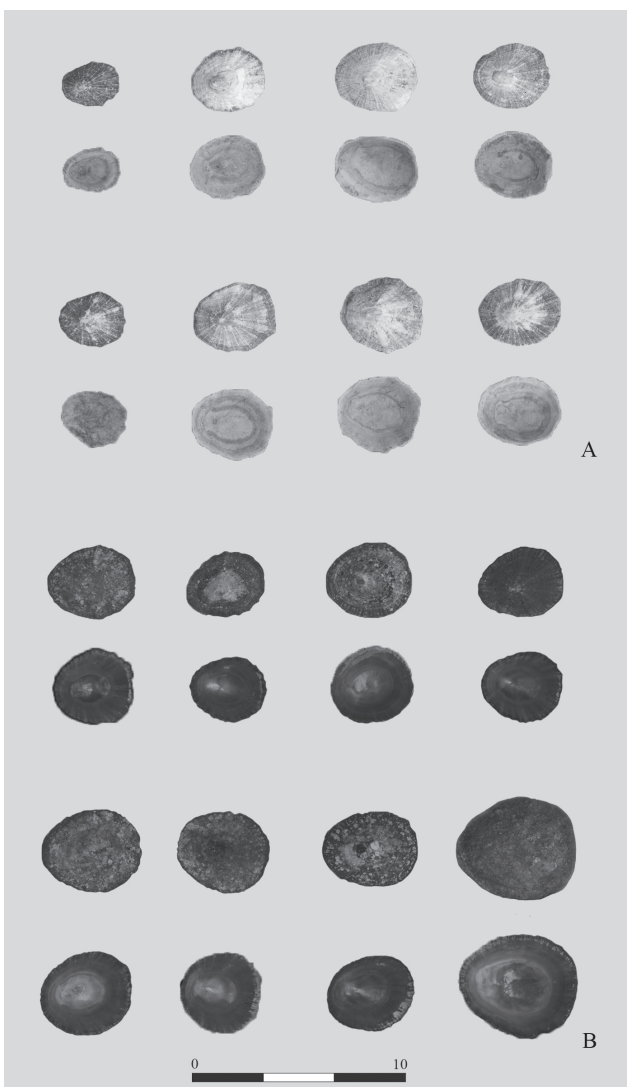


Fig. 12. A. *Patella caerulea* from the deposit. B. Contemporary *Patella caerulea* collected for the experimental evaluation of the amount of molluscans.

Averaging as a preliminary, approximate example, the estimates of Erlandson 1988, Table 1 (values on the nutritional values of eight molluscan species gathered in coastal California), 100g of molluscan meat would provide no less than 15g of proteins, 3g of fats, 3-4g of carbohydrates, and more than 100Kcal. Considering a daily protein requirement of 40g (*ibidem*, Table 2), the Stromboli SU 683 dump would be the result of the ingestion of 1000-1050g of proteins, equal to the daily need of *ca*. 20 individuals or more (the average protein content of 19 different Mediterranean species reported in Girod, Riccardino 2008, Tab. 3 is *ca.* 11.4 per 100g of meat, slightly less than the Californian samples).

Although the overall nutritional content of the assemblage is limited, the evidence, connected with the stratigraphic assessment (see above) points to group consumption during a single communal meal. Obviously, there is no certainty that what was found represents the original discarded shells, nor that molluscan meat was the only food consumed during this event.

Although shell 'middens' and similar deposits are rarely studied in detail for the Middle Bronze Age (see below and a general review of specific studies in Minniti 2005; 2012; Colonese *et al.* 2011), this study demonstrates that in our case, too, they have significant archaeological potential. The marine shell deposit at San Vincenzo Stromboli, according to the available data, is the result of a selective catch, possibly following a specific culinary recipe, and the result of a single depositional episode.

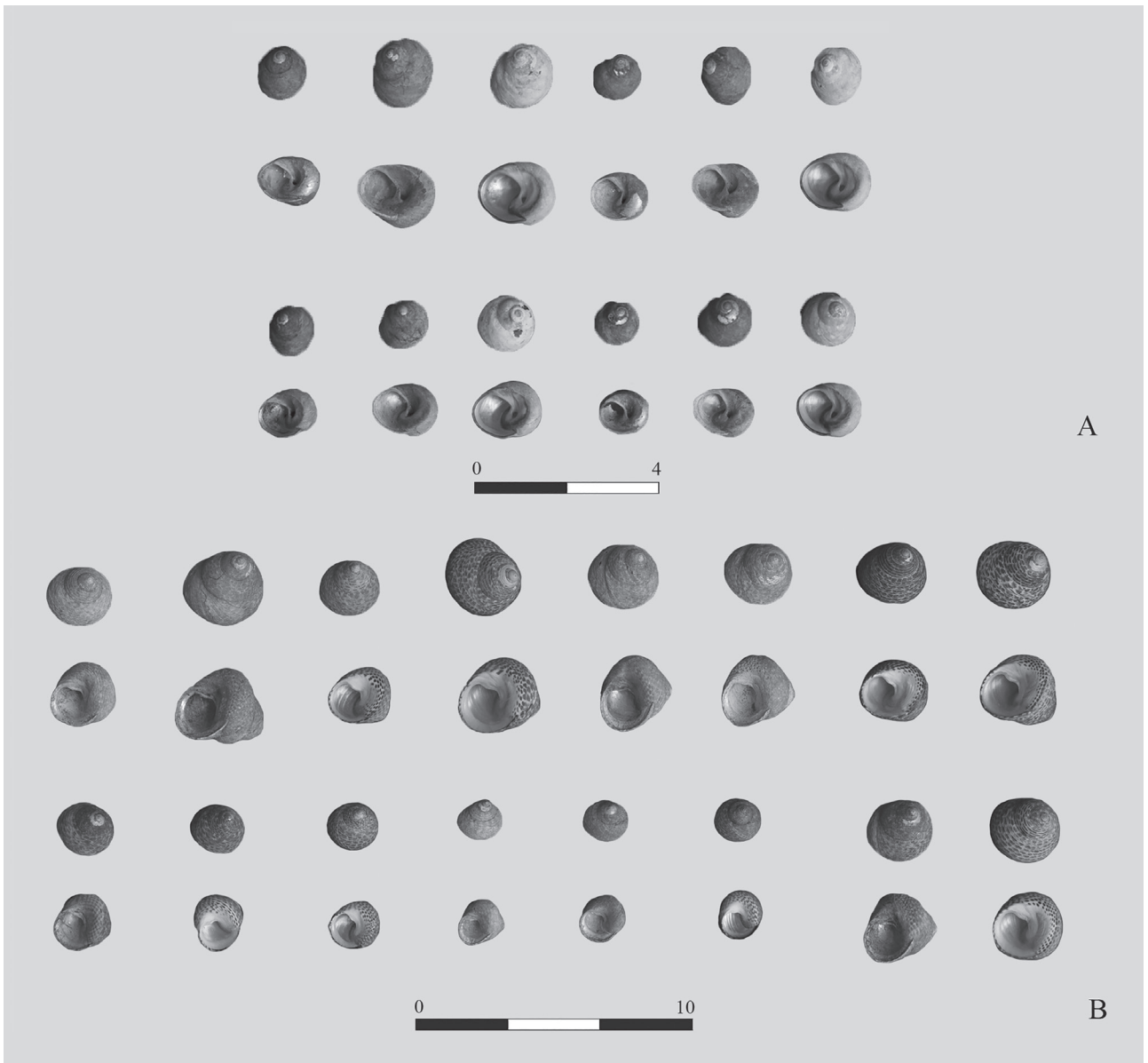


Fig. 13. A. *Phorcus* shells from the deposit. B. Contemporary *Phorcus* shells collected for the experimental evaluation of the amount of molluscans.

The dumping of the shells took place at the southern border of the village after several phases of occupation. Given the interpretation of the midden as the remains of a meal, the stratigraphic and topographical evidence discussed above lead us to consider it as probably the result of a feast. The location of the dump was carefully chosen, possibly marking a major topographical transformation of the area. It is worth mentioning that this transformation, taking place in around 1700 BCE, corresponds with the beginning of the interaction between the Central Mediterranean and the Aegean world.

The pottery recovered from the dump is not particularly informative: the conservation, quantity of sherds and their shapes seem similar to the majority of Bronze Age contexts recovered at San Vincenzo; it is therefore difficult to interpret the sherds as related to the hypothesised meal. Conversely, we would have expected to find a

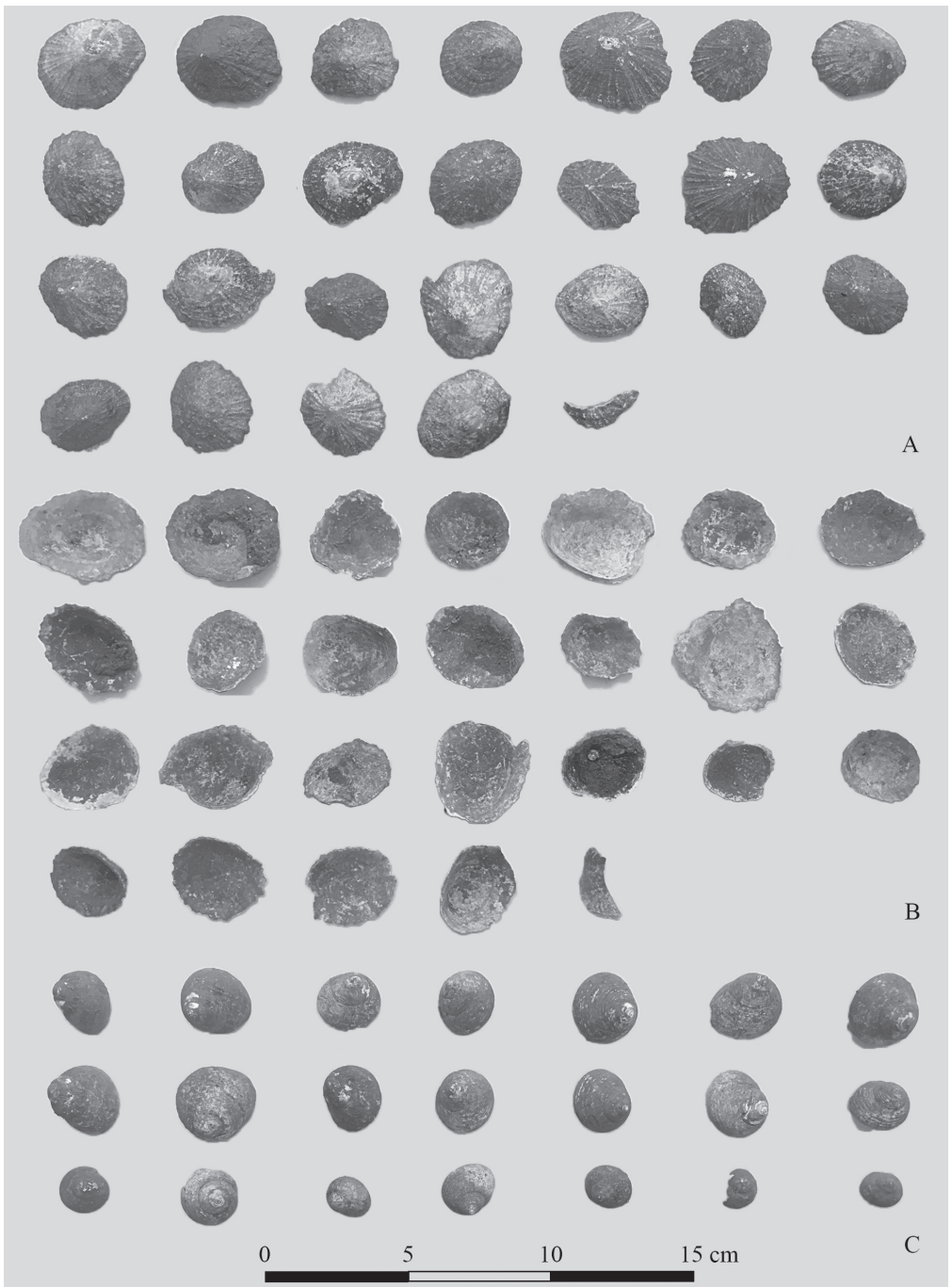


Fig. 14. Filicudi, area surrounding the Montagnola site, shells from the *Anfratto* nr. 13.

different assemblage of pottery, consisting of well-preserved and mainly restorable vases, given the preservation of the shells and a possible feasting activity, as happens in many Bronze Age Mediterranean contexts.[2] It can be argued that the consumption of the seafood took place in a different location from the deposit.

2 Mostly complete vessels were found in some cases, where the collapse of the structures covered and protected them over time.

A precise estimate of the people involved is impossible – as molluscs might have been consumed together with invisible, unpreserved edibles (see above the pit SU 684) – but 7 to 8kg of molluscan meat is a considerable amount and suggests a group of some size.

MARINE SHELLS FROM SAN VINCENZO IN CONTEXT

Central Mediterranean

The use of molluscs for dietary purposes is attested in other Aeolian settlements during the Bronze Age. In the Capo Graziano and Milazzese village of Montagnola at Filicudi there are a number of remains of marine shells, mainly *Patella caerulea* and to a lesser extent *Monodonta*, concentrated in two huts and in an important open space termed "La Piazza" (Bernabò Brea, Cavalier 1991, 83-87, 137-138, 153-156). According to P. Villari (1991, 324), the nearly homogenous nature of the shellfish found at the Montagnola village is due to the island's rocky coast, a perfect habitat for this species of mollusc, while the uniform size of the specimens suggests a seasonal gathering.

In the same site at Filicudi, in a different type of context, a similar assemblage of molluscs was found. In the area surrounding the Montagnola village a series of natural cavities (so-called *anfratti*) in the rocky slopes were investigated, mostly found in the spaces between large rocks that had fallen down the sides of the hill (Bernabò Brea, Cavalier 1991, 57-68). They were interpreted by the excavators as graves due to the presence, in some cases, of human bones and grave goods. In *anfratto* nr.13 (Bernabò Brea, Cavalier 1991, 66, tav. XXVII.4) at least 26 *Patellae* and 21 *Monodonta* are attested (Fig. 14); in this case it is possible that the consumption of seashells played a role in the funerary ritual, as we will discuss below for the Aegean contexts.

A few marine shells are also present at Lipari in the Ausonian levels of the village on the acropolis: (1) *Spondylus* and (2) *Patella ferruginea* (Villari 1995, 382-385).

The gathering of molluscs is well-attested in various Italian Bronze Age sites, both on the mainland and on the islands of the central Mediterranean. The potential for a reliable assessment of the impact of this type of food in the diet of local communities and for a comparison among different sites is complicated by several factors, such as the variability of archaeological sources, their state of preservation and level of documentation; in any event this economic activity was evidently of secondary importance in the local subsistence economy (Wilkens 1991-1992; 1995; 1998; Minniti 2005; 2012).

Several species of molluscs have been found at many Early and Middle Bronze Age sites in Sicily (Villari 1995, 382-385; Minniti 2012, p. 382). Shellfish are also well-attested at Pantelleria, in the Early-Middle Bronze Age village of Mursia. According to B. Wilkens, there are over 2,000 specimens, the majority of which belong to *Monodonta*, and 13% of which are comprised of *Patella* and individual examples of other species (Wilkens 1987; Minniti 2005; 2012, 382). On this island the same types of shells, especially *Patella rustica*, are present in burials contemporary with the settlement and located in its vicinity (so-called *Sesi*). They are both perforated and used as ornaments in grave goods, and intact, probably as part of the food offered to the dead or consumed during funerary rituals (Nicoletti, Tusa 2012, p. 830, 832-835, fig. 2B, 15-22).

A recent finding at Pantelleria adds further elements for discussion to this topic. Near the Lake of Venus, a *bothros* beneath the floor of the Punic-Hellenistic and Roman temple dedicated to Tanit/Venus was discovered (Tusa, Ursini 2012). A great quantity of ceramic sherds dated to the local Copper Age were found filling this large pit, surrounded by a circle of stones and previously rich in thermal waters. The technological and stylistic sophistication that characterizes most of this pottery together with the presence of particular shapes – including miniaturized ones – speak in favour of a ritual function for this facility, probably in relation to a water cult originated by the sub-volcanic activities in the area. The excavation report highlights the presence of a large quantity of animal bones, especially birds, which, according to the excavators, may have been victims of poisonous fumes. However, considering the strict selection of the animal species present, a ritual killing cannot be ruled out. Together with these a number of shells belonging particularly to *Patella*

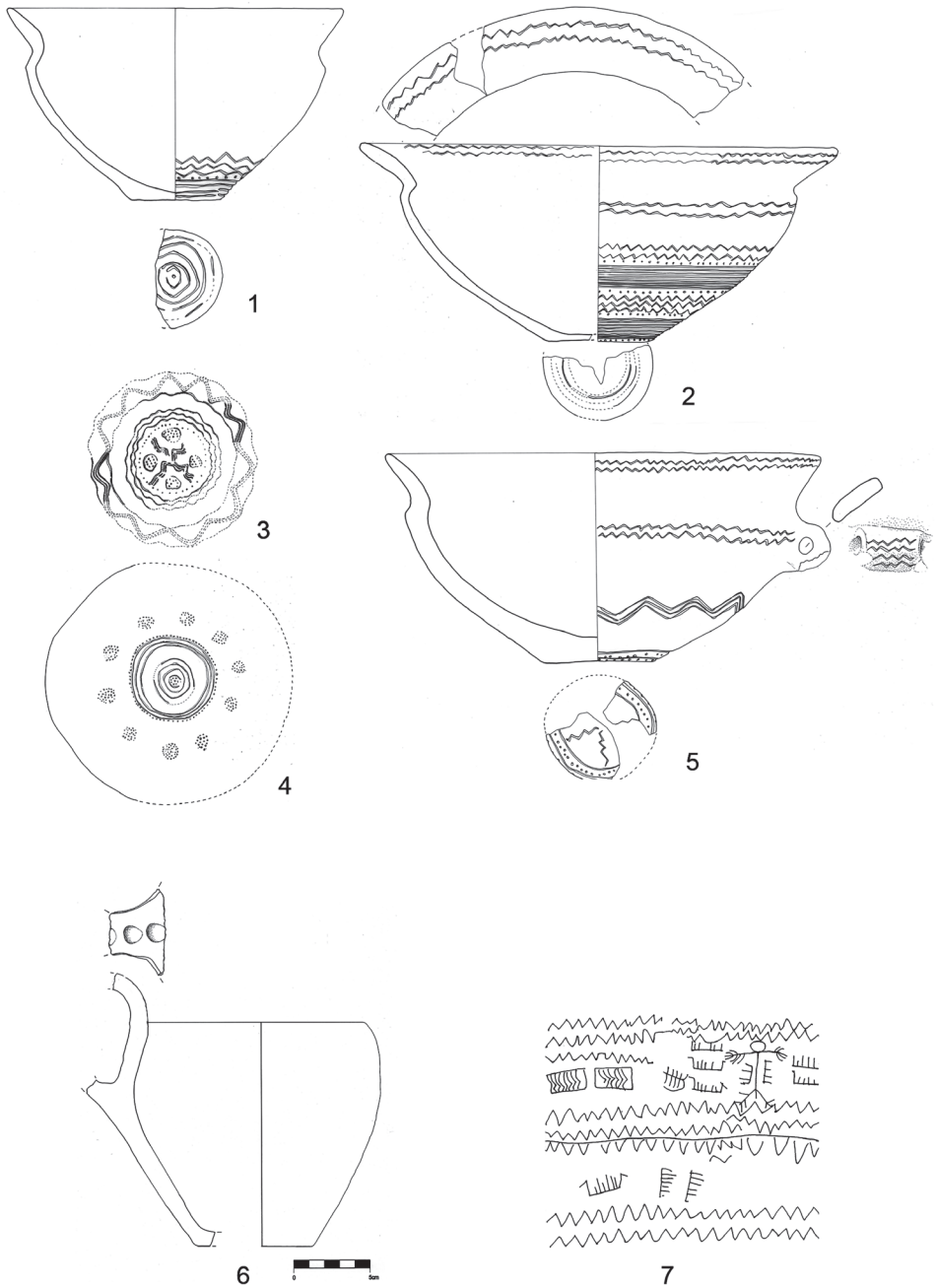


Fig. 15. Decorated vessels of the Capo Graziano *facies*: 1. Stromboli - San Vincenzo, hut A, vessel 401; 2. Lipari - Diana, grave 22, vessel 102; 3. Lipari-Acropolis, Tr. N level 10, vessel 17; 4. Lipari - Diana, grave 14, vessel 103; 5. Filicudi-Montagnola, hut 1, vessel 201; 6-7. Decorated cup from Filicudi-Filo Braccio. 1-5, 7 after Levi *et al*. 2014, figs. 2, 5-6, 9, 11; 6. after Martinelli *et al*. 2010, fig. 14. 1-5, 7, not to scale.

caerulea and *ferruginea*, *Monodonta turbinata,* and *Cypraea* were also found (Tusa, Ursini 2012, 633, fig. 19). According to the authors the presence of molluscs may further support a cultic function of the prehistoric *bothros* (Tusa, Ursini 2012, 633).[3]

3 At Calcara, a Capo Graziano site on the northern side of the island of Panarea (Aeolian Island), several *bothroi* have been investigated. The area of the site is characterised by a strong fumarole activity. A cultic interpretation of the context was proposed by L. Bernabò Brea and M. Cavalier (1968, 19).

As concerns the peninsular zones closer to Stromboli, a small quantity of molluscs comes from the Early and Middle Bronze Age levels of Grotta Cardini in Tyrrhenian Calabria, in particular *Patella* and *Monodonta*, with a few bivalve shells (Tagliacozzo *et al.* 1989; Minniti 2012, 382).

In the numerous Bronze Age sites of coastal Apulia, the use of molluscs in the diet of local communities is very well-attested. Obviously the species present in these settlements vary depending on the micro-environments in which each settlement developed. Particularly important is the nature of the coast, rocky or sandy. For instance, at Coppa Nevigata – one of the best-known sites from this point of view – there is a huge number of mussels (*Mytilus*) and common cockles (*Cerastoderma edule*), used as food, together with murexes (*Phyllonotus trunculus*) which, according to the excavators, were used to obtain a purple dye (Minniti 2005; 2012, 374-376). These species are present in different proportions during the various phases of the site (Minniti 2005, fig. 2; 2012, tabs. 1-2). In terms of distribution, each phase presents a particular concentration of molluscs, sometimes inside specific huts – as in the case of the early Proto-Apennine structure predating the construction of the defensive walls – and sometimes in open spaces – as in the case of the levels between the two towers along the Apennine walls, accumulated in the period when the gate was removed (Minniti 2005; 2012, 377-382). This type of distribution recalls, albeit on a larger scale, the situation that we observed at Filicudi-Montagnola, though with major differences regarding the species of shellfish found. It is also important to highlight that when an accumulation of crushed marine shells is discovered in open spaces of specific architectural and topographic significance – as in the aforementioned examples of Filicudi-Montagnola and Coppa Nevigata – a function as building materials cannot be ruled out, especially in the light of the Aegean cases discussed below.

Along the Adriatic and Ionian coasts of Apulia many Bronze Age settlements are located on rocky plateaux extending towards the sea. In a number of these sites the gathering of shellfish is well-attested (Wilkens 1991; 1991-92; 1995; 1998; Minniti 2012, 382-385). In the Middle Bronze Age levels at Bari-Santa Maria del Buonconsiglio, Egnazia, Giovinazzo, Punta Le Terrare and Rocavecchia molluscs from a rocky habitat are usually present (*Patella caerulea*, *Monodonta turbinata*), together with other species more typical of a sandy or muddy environment, such as *Cerastoderma*. In several situations it is interesting to observe that, as mentioned above, shells are concentrated in individual structures or areas; for instance, at Egnazia a high concentration of *Patella* is attested in the Proto-Apennine-dated level VII, in which a hut was also found (Cinquepalmi 1998; Wilkens 1998, p. 227, fig. 640). At Giovinazzo the use of molluscs is apparently preferred in the earliest hut in the stratigraphy (Cataldo *et al.* 1989-90, 231-234). In many of these sites reworked shells had a symbolic function and were often used as personal adornments (Wilkens 1998, 238-240, figs. 684-685, 690, 694).

Aegean

Recent advances in Aegean marine zooarchaeology confirm that molluscs played a role in the diet of both Greek mainland- and island-dwelling communities during the Bronze Age (Karali 1999; 2000; Berg 2013, 7-9, tab. 3; Mylona 2014; Theodoropoulou 2014). According to T. Theodoropoulou (2014, 362), a recurrent pattern in several Aegean Bronze Age assemblages is the exploitation of locally available resources, usually on a diversified scale depending on specific needs or ecological settings. Even within the farming communities of the Aegean region, fishing and the harvesting of small quantities of molluscs have been considered a secondary resource from the Neolithic onwards, and especially in the complex socio-economic structures of the Bronze Age (Karali 1999, 16; Berg 2013, 1-9; Mylona 2003; 2014, 3; Theodoropoulou 2014, 363). The stable isotope data on Bronze Age Greece also support this reconstruction, with the preference for a terrestrial diet over marine food consumption; an exception seems to be the very important instance of some individuals from the Shaft Graves at Mycenae (Richards, Hedges 2008; Berg 2013, 8, 13, tab. 4).

Huge amounts of shellfish have been found in several settlements in Minoan Crete, the Cyclades, and partly on the mainland – and not only on the coast. They were gathered mainly for dietary purposes, but, as we will discuss below, shells also played a very important role in the local symbolic language.

Various types of *Patella* and *Monodonta*, together with *Murex*, are usually the most common shells in important sites of the Early to Late Bronze Age, such as Keros, Keos, Akrotiri, Chania, Myrtos, Mochlos, Tylissos,

Knossos, Papadiokambos, Palaikastro, Phaestos (Coy 1986; Reese 1987a; 1987b; 1995; 2004; Karali-Yannacopoulou 1990; Minniti 2005, 77-78; 2012, 385-386; Berg 2011, 129; 2013, tab. 3; Mylona 2011; Brogan *et al.* 2013; Karali 2013; Theodoropoulou 2014), with *Patella* being the most common edible mollusc.

At the current state of knowledge, perhaps the largest quantity of these types of marine invertebrates comes from the Minoan levels at Kommos, where more than 35,000 specimens from 322 deposits have been excavated. Even here the vast majority belong to the *Patella* and *Monodonta* species, with a significant presence of *Murex* exploited both for meat and for purple dye[4] (Reese 1995). It is important to highlight that the principal accumulations of *Patella* and *Monodonta* were identified in specific deposits at the site (Reese 1995, 252-253, tab. 5.27).

A huge amount of shellfish was also found at Hagia Triada in MM III and, especially, LM deposits (Wilkens 1996a, 1517; 1996b, 249, tab. 20.4). It is interesting to observe that, even in this case, molluscs were usually concentrated in particular contexts, such as room 9 of the NW Building, where a high quantity of *Arca noe* was present, interpreted by Wilkens as the remains of a meal.

New, rich contexts of relevance to this topic from the Protopalatial site at Petras (Siteia) have been published recently (Theodoropoulou 2012). Here, a comparison in terms of mollusc consumption is interesting between the Neolithic site at Kephala and the Minoan site. In both periods *Patella* and *Monodonta turbinata* are the most consumed shellfish. However, we see a decline in the dietary importance of molluscs during the Bronze Age, as mentioned above, with a diversification of the species consumed. The use of shellfish in feasting activities may also be attested at Protopalatial Petras, as suggested by the ceremonial deposit at Lakkos (Haggis 2007, 718-720; Theodoropoulou 2012).

A further, well-established use of marine shells in the Aegean world is as a building material. Shells were used to reinforce walls and may have been used as plaster inclusions when brought in as a flooring packing material (Doumas 1983, 52-53, 117; Reese 1995, 273; Minniti 2005, 78).

A pivotal point recently developed in several studies is the perception of marine organisms in specific socio-cultural contexts, such as the Aegean world (D'Arcy 2006; Berg 2011, 2013; Mylona 2014, 4-9; Theodoropoulou 2014, 366-367). As is common in many communities whose life is closely connected to the sea, for Aegean people the marine world was more than a food or economic space, but – together with its real or imaginary creatures – was imbued with symbolic and ideological meanings. It is well-known that the sea played a central role in the imagery of Aegean Bronze Age communities; it was expressed thorough different media, from single objects such as vases, to complex and politically meaningful depictions like frescoes. As far as marine shells are concerned, these are sometimes associated with socially distinct contexts and took on a symbolic significance in specific rituals. Marine remains are also present in cult and funerary deposits, thus suggesting the possible symbolism attributed to marine organisms especially by the Minoans (Theodoropoulou 2017).

Examples of molluscs from Aegean contexts with a possible ritual or cultic function are present from the Early Bronze Age onwards. According to L. Karali (2015) shell remains, mostly *Patella rustica*, were found in the ceremonial deposit at Kavos (Keros); they might be ritual food offerings, but an interpretation as accidental finds cannot be ruled out either. In the former case, considering the peculiar nature of this ritual deposit, the practice of feasting must be ruled out, and the shellfish may therefore constitute offerings included in the cultic deposit (Renfrew 2015, 386).

Regarding Crete, the great quantity and variety of painted shells present in late MM III Temple Repositories at Knossos are worth noting, among which *Monodonta* are also attested (Evans 1921, 517-519, figs. 377-378; Reese 1987a, 201; Berg 2011, 121). Examples of the same type of molluscs are also present at the Juktas peak sanctuary (Reese 1987a, 201). Concerning these types of cult places, at the Syme Viannou sanctuary, located on the southern flank of Mount Dikte at 1130m a.s.l., some examples of marine shells have emerged from several MM and LM I sacrificial deposits. These shells belong to different species, including limpets, and must

4 For purple dye production in the Bronze Age Aegean see Ruscillo 2005; 2006; Brogan *et al.* 2012; Betancourt *et al.* 2012.

be considered part of the votive offerings deposited in the pyre; few of the shells can be considered food debris (Lebessi, Reese 1986).

Among the deposits, the shell material from Petras offers a rich and diversified record; besides the molluscs from the settlement area discussed above, various rituals and beliefs associate the marine world with the afterlife (Theodoropoulou 2012, 2017). In the Pre- and Protopalatial cemetery at Petras shells – mostly limpets – are present both in the tombs and in the nearby external areas, where ceremonial activities linked to funerary rituals probably took place. According to the excavator, molluscs were collected especially outside the tombs, within the so-called votive deposits (Tsipopoulou in Theodoropoulou 2012, 102).

As concerns the Mycenaean period, the case of the shrine at Ayios Konstantinos (Methana) seems relevant to this topic (Hamilakis 2003; Hamilakis, Konsolaki 2004; Hamilakis 2008). This cult building shares many characteristics with the Mycenaean sanctuary at Phylakopi, starting with its architecture. In this cult place – rich in animal and human votive figurines – a huge quantity of animal bones was found, possibly demonstrating the practice of ritual meals partaken in by worshippers. Feasting activities are also indicated by the large quantity of open ceramic shapes, especially kylikes, discovered together with the bones. It is worth noting that among the zoological remains marine shells are also attested, mostly limpets; in this case it is possible that molluscs were consumed in ritual meals together with cooked meat (Hamilakis 2008). Again as concerns the Mycenaean period, the use of seashells in cult activities is also attested in the so-called "Katre 1" plot in the heart of ancient Kydonia in Crete, where traces of animal and possibly human sacrifices were discovered (Mylona 2015). The animals remains come from a closed and well-structured deposit in a courtyard of the Mycenaean palatial complex. Along with various mammals remains – that were apparently not cooked, differently from the aforementioned case of Methana – several types of molluscs were found (Mylona 2015, 53-54 n. 6). Some of the shells are burned, possibly indicating a different treatment of molluscs compared to other animals during this specific ritual.

CONCLUSIONS

This short overview, which illustrates the diffusion and, possibly, the function of marine shell usage among Bronze Age communities both in the central Mediterranean and the Aegean, raises a number of points. Setting aside the state of preservation and documentation of the different archaeological contexts, it appears that the gathering of molluscs played an ongoing role in the subsistence economy of local communities.

It seems clear that the impact of shellfish on the diet began to decline from the Neolithic, even in coastal and island-dwelling communities. Despite this, it is worth noting that marine shells were largely used in circumstances of particular socio-cultural importance, such as ritual meals, or offered as votive objects to divinities or to the dead in cult places and cemeteries, not only in the Aegean given the examples from Filicudi and Pantelleria mentioned above. Moreover, the fact that in many cases concentrations of molluscs were discovered in specific buildings, rooms or areas inside settlements may be connected to particular social functions of these structures and areas.

In the Aegean, the attention paid to shellfish in ritual activities must be considered in light of the entire symbolic world of local communities. The importance of the seascape for Aegean societies is well-known, especially in terms of sea voyages that facilitated contacts and interactions, together with the development of long-distance exchange networks. The marine environment, including molluscs, eventually became richly symbolized and represented across a number of different media and materials, such as vases, gem engraving, jewellery, frescoes and more (Berg 2011; 2013; Mylona 2014, 4-9; Apostolakou *et al.* 2014;Theodoropoulou 2014, 366-367). This clearly demonstrates that, even if marine resources lost their dietary importance in the Bronze Age Aegean, they nevertheless maintained a central role in the ideological structures of these societies. As examples of this attitude we can mention both the significant marine contribution to the diet of certain individuals in Shaft Graves A and B at Mycenae and the figures of marine creatures, including molluscs, which were possibly symbolically associated with the *wanax* in palatine contexts (Richards, Hedges 2008; Berg 2011, 129-132; 2013, 17; Farmer, Lane 2016, 62-64, tab. 4).

Turning to the central Mediterranean, to what extent can we infer similar observations regarding prehistoric mindsets and attitudes in the absence of iconographic sources comparable to those of the Aegean? Whilst this lack of sources is true for the majority of the Bronze Age local communities, the case of the Aeolian Islands is slightly different. The so-called Capo Graziano *facies* – which developed in the archipelago from the last centuries of the third millennium to the first half of the second millennium BC – is characterized by a particular style of pottery usually very rich in incised decorations (Fig. 15). As mentioned above, scholars suggest that the Capo Graziano decorative patterns are mostly linked to the seascape, with the schematic representation of waves and, often, the islands themselves (Levi *et al.* 2014). A recent and very important discovery from the Filo Braccio village at Filicudi further supports this interpretation, which otherwise would have been merely conjectural (Martinelli *et al.* 2010, figs. 14-16; Levi, Martinelli 2013; Martinelli forthcoming). A cup found in hut F presents a complex decoration which, according to M.C. Martinelli, clearly represents a marine scene with waves, several boats, and a huge human figure, possibly male (Fig. 14. 6); the author suggests a possible divine role for this figure, considering its size and posture. The possibility that this cup was used for ritual purposes cannot be ruled out, since it was found crushed on the floor belonging to the last phase of the hut before its abandonment. Martinelli rightly highlights the ideological meanings of the depictions, linked to the importance of the sea for the Capo Graziano communities in terms of the local powerscape, avenues of communication and connectivity on different scales.

From this point of view, similar attitudes towards a conceptualization of the sea can be noted between the Bronze Age Aegean and the Capo Graziano communities in the Aeolian Islands. As mentioned above, compared to a decline in the exploitation of marine resources for dietary purposes, the seascape took on a symbolic function that manifested itself in iconography and ritual activities. Starting from the Neolithic the seascape shifted from subsistence, *strictu senso*, to other spheres of economy – such as exchange, knowledge of faraway and exotic lands – and politics in general. It may not be a mere coincidence that the rich marine decorative patterns in Capo Graziano pottery developed primarily in the same period as the first Aegean voyages westward, mainly to the lower Tyrrhenian and the Aeolian archipelago. According to our interpretation, the involvement of the Aeolian Islands in Mediterranean exchange networks contributed to increasing the significance of the seascape for the Capo Graziano communities even in the sphere of imagery.

Considering this scenario, the use of molluscs at Stromboli as the main dish during a communal meal, possibly of a ceremonial nature, does not seem anomalous. These are likely the remains of a feast; the location of the dumping was chosen with care and probably marked a major topographical transformation of the area, with the abandonment of the previous topographic system and the adoption of a new one, based on the large rectangular enclosures.

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