Foraging Assemblages

Volume 2

Edited by Dušan Borić,
Dragana Antonović, and Bojana Mihailović

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Front Cover Illustration: Sculpted sandstone boulder named '*Progenitor*' (inv. no. 41) from Lepenski Vir (National Museum in Belgrade)
Back Cover Illustration: Lepenski Vir during excavations (Photograph courtesy of of Alan McPherron)

VOLUME I

85. Marine shells as grave goods at S'Omu e S'Orku (Sardinia, Italy)

Emanuela Cristiani, Rita T. Melis, and Margherita Mussi

This article presents the results of the technological and functional analysis carried out on the exceptional repertoire of *Columbella rustica* and *Cypraea* sp. ornaments as well as on artefacts made on large *Charonia lampas* shells recovered at the Mesolithic burial site of S'Omu e S'Orku (Sardinia, Italy). Our study established the modalities of ornament production and use. While aspects of the visual vocabulary shared by Holocene foragers of Sardinia are typical of the Mesolithic ornamental tradition in the Mediterranean region, other symbolic choices identified at S'Omu e S'Orku are more rarely documented in the European Mesolithic. Finally, the analysis of the *Charonia lampas* shells reveals that these shells were likely modified technologically into instruments for producing sounds (blowing horns), shedding light on non-verbal communication strategies that are specific to the Mesolithic in Sardinia.

Keywords: Mesolithic, funerary practices, Sardinia, shell grave goods, techno-functional analysis

> … And as they walk, suddenly they see
> The body of Aeolus's son, Misenus,
> Haplessly dead, washed up from where he had drowned,
> Lying there on the dry beach, he, whose trumpet
> Summoned the heroes to the battlefield,
> And with its sound aroused the god of war.
> He was great Hector's soldier, brave in battle,
> With spear and trumpet alike (…)
> But then there came a day, one day, when he
> Chancing upon a conch shell, picked it up,
> And with it, madman, caused all the sea around
> To ring with the sound of its clangoring bugling music,
> Challenging what the gods could do with it,
> And jealous Triton, according to the story,
> Caught hold of him and dragged him into the foaming
> Waters among the rocks, and so he drowned.
>
> (Virgil, *The Aeneid*, Book 6, Verses 224–42, translated by David Ferry)

Introduction

Evidence of Mesolithic funerary practices in Italy is not very abundant when compared to the record from other European regions and earlier Palaeolithic evidence from the Italian Peninsula and Sicily. Most of the Italian Mesolithic burials are dated to the first/early phases of the Mesolithic (Martini 2006), and, as a general pattern, burial goods are either absent or represented by few implements. An exception is the site of S'Omu e S'Orku on the island of Sardinia, where three burials dated to a later phase of the Mesolithic yielded some of the rarest repertoires of marine shells associated with Holocene forager inhumations in Europe. This article presents the results of the analysis of the ornaments and grave goods associated with these three individuals at S'Omu e S'Orku. This is the earliest evidence of funerary practices and human remains from Sardinia.

The site: Stratigraphy and chronology

The site of S'Omu e S'Orku ('The House of the Ogre' in Sardinian language and henceforth SOMK) is located on the south-western coast of Sardinia, in the territory of Arbus (Fig. 85.1:1). It is a collapsed rockshelter in an area characterized by Quaternary dunes and Palaeozoic relief rising up to 300 m (Fig. 85.1:2). While today SOMK faces the seashore (Fig. 85.1:3), during the Early Holocene the coastline was several kilometres away from the site, which opened at the base of an eolianite cliff (Lambeck *et al.* 2011). Calibrated radiocarbon dates available on charcoal and human remains as well as the analysis of sediments point to a quick accumulation of deposits after *c.* 7000 cal BC (Melis and Mussi 2016), and notably around the time of the so-called '8200 cal BP event' (*c.* 6300–6100 cal BC), when the Mediterranean experienced strong climatic variability. Many cave sites exhibit gaps in the radiocarbon coverage of the period with evidence of erosional events (*e.g.* Berger and Guilaine 2009; Weninger *et al.* 2006, 2009).

Fig. 85.1. 1: Location of SOMK site; 2: the collapsed rockshelter in the eolianites; 3: views of SOMK site and the coast from the site; 4: Skeleton of SOMK 1 as originally displayed in the museum of Associazione Neapolis of Giuspini.

SOMK yielded a unique funerary evidence represented by three burials found within a complex lithostratigraphic sequence, affected by gravitational runoff, and wind processes. From bottom to top, the sequence starts on an uneven surface of eolianites (Late Pleistocene), upon which were accumulated fine sands with debris and ashes dated to 7004–6596 cal BC at 95 percent confidence (AA-76546: 7860±44 BP) (Melis and Mussi 2016) (Fig. 85.2). This dark grey deposit (*c.* 20 cm thick), rich in charcoal fragments and endemic micromammals (mostly *Prolagus sardus*, with a few *Tyrrenicola henseli*), covers the human remains (SOMK 3). It is overlaid by a dark grey hillwash deposit, more than one m thick, with pebbles and blocks of metamorphites and eolianites, caused by runoff washing away the slope above the cliff. Abundant charcoal and ashes occur in these deposits as well as burnt microfaunal remains, which were revealed by micromorphological analysis (Melis *et al.* 2012). At the top of the sequence, there were human remains (SOMK 2 and SOMK 1) capped by blocks deriving from the rockfall of the eolianites and slope deposits, dated to 6199–5850 cal BC at 95 percent confidence (AA-79862: 7127±59 BP).

Human remains

The first human remains were recovered in 1982, when local amateurs uncovered a burial (known as SOMK 1) with the heavily ochre-stained skeletal remains belonging to an adult (Fig. 85.1:4). From the extant evidence, SOMK 1 was a mostly fully articulated inhumation. The remains were stored at a local cultural association, the 'Associazione Archeologica Neapolis', for *c.* 20 years. The location of the original findspot of SOMK 1 was reconstructed years later, thanks to local informants who were active at the time of the first discovery. The only grave good associated with SOMK 1 that was collected and kept at the time of the discovery was one *Charonia lampas*, or 'triton shell' (Fig. 85.3:32). Any attempt to directly date the remains of SOMK 1 failed due to the lack of collagen in bones (Melis and Mussi 2016).

The partial remains of a second adult skeleton, SOMK 2, were discovered in 2007, when systematic excavations started at the site (Melis and Mussi 2016). SOMK 2 was found just below collapsed blocks, although at the time of the excavation erosion had already removed most of skeleton from the original setting, and only the bones of the feet

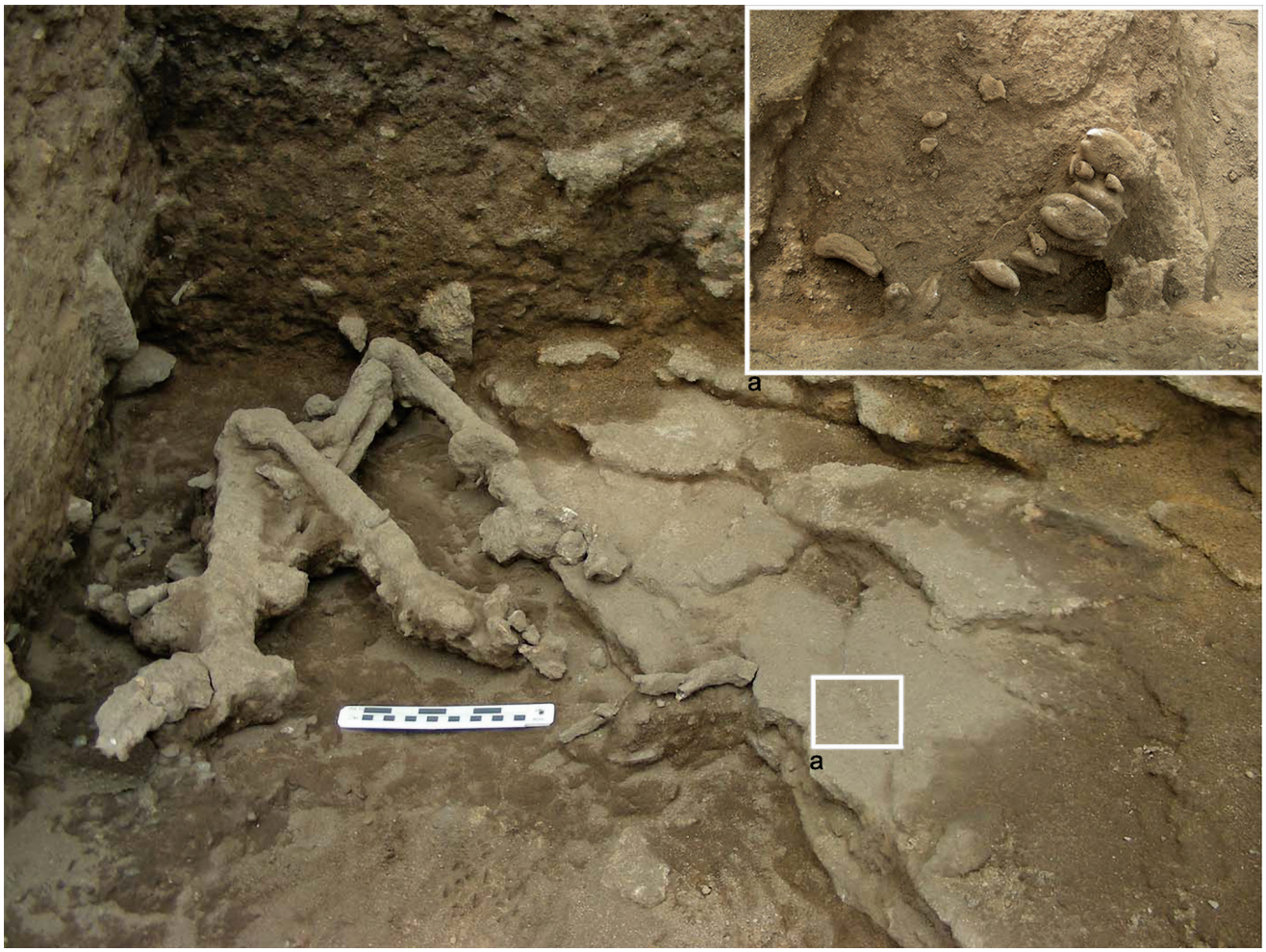

Fig. 85.2. Detail of the flexed lower extremities of the individual in burial SOMK 3. The framed area indicates the location of *Cypraea* sp. and *Columbella rustica* shells.

and parts of the flexed lower extremities were still preserved in the exposed section. AMS dating of the human bones gave the result of 6647–6424 cal BC at 95 percent confidence (AA-76545: 7678±73 BP). Another measurement AA-79862, which yielded a date of *c.* 6000 cal BC (see above), comes from layer e, the deposit that filled the voids among the rocks and covered SOMK 2. A heavily concretioned block of bones of the torso and arms that fell from the section was recovered later and is possibly part of the same individual. No grave goods were recovered in association with this partially preserved burial. Photographs taken in 1982 and observations made during excavations strongly suggest that SOMK 1 was found very close to SOMK 2, in a rather similar stratigraphic position below the collapsed rocks.

More recently, in 2011, a third partial skeleton, SOMK 3, was discovered (Melis and Mussi 2016). The burial was found during systematic excavations at the bottom of the shelter, and some bones were lying directly on the bedrock. All the bones were heavily concretioned, and the flexed lower extremities, feet, and part of one arm were preserved in anatomical articulation (Fig. 85.2). The deposit below the burial, rich in charcoal and ashes, was dated to 7004–6596 cal BC at 95 percent confidence (AA-76546: 7860±44 BP). SOMK 3 was found associated with one big *Charonia lampas* shell (Fig. 85.3:33) and gastropods of different species. In particular, close to the triton and next to the arm, there were 19 large *Cypraea* sp. (Fig. 3:1–19) shells in two superimposed rows, accompanied by a dozen of *Columbella rustica* shells (Fig. 85.3:20–31). The grave goods were found along the left side of the skeleton (Fig. 85.2).

Materials and methods

The assemblage of grave goods recovered at SOMK is composed of 33 worked marine shells: 19 *Cypraea* sp. (Fig. 85.3:1–19), 12 *Columbella rustica* (Fig. 85.3:20–31), and 2 *Charonia lampas* shells (Fig. 85.3:32–33). In this article, we consider only shells found in direct association with the burials and not the many specimens of *Columbella*

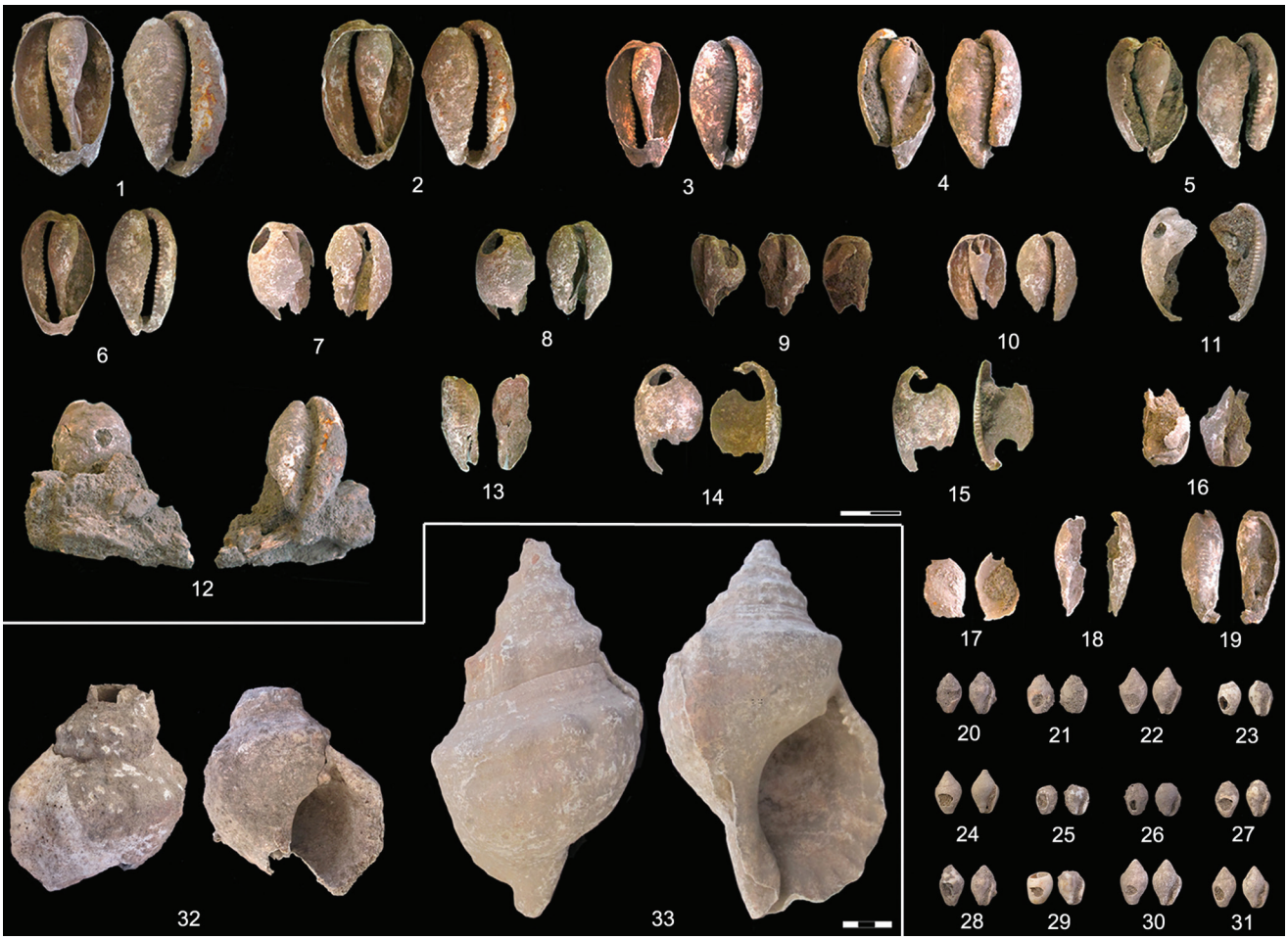

Fig. 85.3. ***Cypraea*** **sp. and** ***Columbella rustica*** **shell beads found in direct association with SOMK burials.**

rustica, other marine gastropods, and bivalve shells found in the collapsed deposit. Furthermore, with the exception of one of the two *Charonia lampas*, all the shells discussed here were associated with burial SOMK 3. This rich repertoire underwent a technological and functional analysis aimed at better understanding Mesolithic technological and symbolic behaviour. Artefact analysis focused on reconstructing the modalities of ornament production and the extent to which shell goods were related to the life of the deceased.

The analytical approach used for the study of grave goods was based on the integration of metrical, technological, and use-wear studies, aided by modern experimental comparison. Metrical variables included the dimensions of the ornaments (maximal length, width, and thickness of the entire and fragmented artefacts), measurements made on perforations (maximal length and width), shape of the perforation, section morphology of the walls, percussion flakes, micro-flaking, compressions, crushing and notching marks, striations, and cracks. In particular, the outline of the perforation (circular, oval, sub-regular, and irregular), the section morphology of the perforation walls (straight, internally bevelled or jagged), the presence/absence of the percussion flakes, the position (internal or external) and the invasiveness of the micro-flaking, the presence/absence and the organization (isolated or bands) of striations, the invasiveness of compression marks as well as the presence/absence of crushing and notching along with the presence/absence of cracks starting from the perforation rim were recorded for each perforated shell. Each shell was analyzed at low magnification using a Zeiss AxioZoom Digital Stereomicroscope with magnifications ranging from 10x to 168x and photographed at 20x using a Zeiss Axiocam 305 colour camera. Observations have also been made using an environmental SEM Hitachi T3000. Diagnostic technological traces have been identified and described on the basis of widely published criteria (Álvarez Fernández 2006; André and Bicho 2016; Benghiat *et al.* 2009; Bonnardin 2007, 2009; Chauviere 2002; Cristiani *et al.* 2020; d'Errico and Backwell 2016; d'Errico and Vanhaeren 2002; Mărgărit

Fig. 85.4. Technological and use-wear traces on archaeological shell beads; 1: close-up of a partially preserved perforation of one *Cypraea* sp. shell bead; note the deformed outline of the edge of the hole; 2: deformed outline of the perforation of one *Cypraea* sp. shell bead; 3: deformation of the outline of the lip of one *Cypreae* sp. shell bead due to prolonged suspension; 4: close-up of a perforation of a *Columbella rustica* shell; note the irregular outline of the hole and the smoothing of the natural texture of the shell on the outer surface; 5: perforation on a *Columbella rustica* shell; note the developed rounding on the upper part of the perforation and the smoothing of the natural texture of the shell on the outer surface; 6: developed rounding on the edges of the perforation of one *Columbella rustica* bead; note the smoothing of the natural texture of the shell on the outer surface; 7: close-up of a perforation of a *Columbella rustica* shell; note the developed rounding or the perforation edge and the smoothing of the natural texture of the shell on the outer surface.

Fig. 85.5. 1–2: *Charonia lampas* **shells from SOMK and a close-up of the technologically modified apex of the triton shell; 3: blowing a conch shells to announce the capture of a sea turtle among Aboriginal Australians on the island of Groote Eylandt, Northern Territory in 1948. Photograph credit Charles Mountford; State Library of South Australia PRG 1218/34/2638.**

2016; Rodríguez-Hidalgo *et al.* 2010; Vanhaeren and d'Errico 2001, 2003, 2005). The evaluation of taphonomic alterations of archaeological ornaments was based on the articles by Driscoll and Weltin (1973), Claassen (1998), and d'Errico *et al.* (2005). Type and distribution of use-wear traces on well-preserved ornaments were recorded in relation to the hole, the lip of gastropod shells, and their dorsal and ventral surfaces.

Results

With the exception of few specimens of *Columbella rustica*, the majority of ornaments from the SOMK burials show post-depositional modifications, mainly exfoliation, affecting the original morphology and appearance of the shells.

Post-depositional damage heavily affected the dorsum of the ornaments on *Cypraea* sp. shells, sometimes causing the removal of the whole dorsum and the rare preservation of complete holes. For this reason, discerning the perforation technique was not possible on *Cypreae* sp. shell beads. Considering the position of the perforation on the dorsum and in the proximity of the spire, we cannot exclude that the perforation on *Cypraea* sp. shells might have been produced through pressure from the inside of the shell. The striations identified around the holes of *Columbella rustica* shells and the irregular outline of the holes on the gastropod specimens suggest they were perforated through indirect percussion from the outside, using a lithic tool and possibly a pebble (Cristiani *et al.* 2020) (Figs. 85.4:4, 85.7). Overall, use-wear traces are well developed on ornaments, indicating that all shell beads were used before their deposition. Functional modifications on *Columbella rustica* ornaments include the rounding along the edges of the perforation, the smoothing of the natural texture of the shell on the external surfaces close to the hole (Fig. 85.4:4–7), and the rounding on the lip of the shell. In the case of *Cypraea* sp. shells, a preferential deformation of the outline of the hole was identified even on partially preserved holes and connected to the of the ornaments (Fig. 85.4:1–2). A functional deformation caused by prolonged was also identified on the lip of the *Cypraea* sp. shell specimens (Fig. 85.4:1–3). Further information about the use of the ornaments comes from their distribution in relation to the skeleton. In particular, in burial SOMK 3, *Cypraea* sp. ornaments were found lined up in a row (Fig. 85.2:a). This arrangement may suggest that the ornaments might have been attached to a string.

Microscopic analysis also indicated that most of the ornaments preserve traces of red pigment around the hole and along their lips. Although no specific analysis was carried out to determine the nature of such pigment, ochre outcrops can easily be reached on the nearby island of San Pietro, which at that time could be reached on foot given the lower sea levels. Also, ochre was extremely abundant on SOMK 1 skeletal remains, literally coating the skullcap (Melis and Mussi 2016). Numerous ochre fragments, some shaped as ochre pencils, were also discovered in the deposit outside the burials.

The analysis of the *Charonia lampas* from SOMK indicates that these shells were technologically modified. In particular, the tritons had the first coils cut off, and the

presence of micro-edge removals around the remaining apex of the shell would suggest that this operation was carried out through direct percussion (Fig. 85.4:F). While a clear opening was identified on the apex of the triton shells, experimental activity shows that *Charonia lampas* shells can produce powerful sounds even after minimal modification, such as by just cutting off the last coils (Cortese *et al.* 2004).

Discussion

SOMK burials and grave goods provide important evidence for better understanding of the nature of Mesolithic funerary practices and symbolic representation. These findings are unique as, along with the burial of Mondeval de Sora (Guerreschi 1992), they represent the sole evidence of a late phase of Mesolithic burial practices in Italy. Additionally, while burial goods are generally absent or poorly represented in Mesolithic Italy, SOMK burials were accompanied by an exceptional repertoire of grave goods on marine shells. The techno-functional analysis carried out on *Columbella rustica* and *Cypraea* sp. personal ornaments indicates that beads were produced using techniques such as pressure and indirect percussion, which were already diffused at other contemporaneous sites of the Mediterranean region (Bertolini *et al.* 2015; Cristiani *et al.* 2014) and that these beads were used before their deposition. Also, the distribution of the adornments in relation to the skeletal remains of the individual in burial SOMK 3 and the location of the functional traces on such shells point out to their use as decoration appliqués possibly attached to an individual's attire.

From a wider geographical perspective, while the use of *Columbella rustica* beads characterizes the Mesolithic ornamental tradition in Italy (Mussi 2001) and the whole of the Mediterranean region (*e.g.* Álvarez Fernández 2006), *Cypraea* sp. shells were mainly selected as body ornaments during the Upper Palaeolithic. Such shells were found in Italy in most of the Gravettian burials (*e.g.* in the burial of 'Il Principe' at Arene Candide and in the many burials of the Balzi Rossi or Grimaldi Caves; see Mussi 1995; Taborin 1993) but very rarely at European Mesolithic sites or in funerary contexts (Rigaud 2011). To the contrary, the widespread use of the smaller *Trivia monacha*, such as 'cowrie shells', is documented almost across the whole of the Mediterranean during the Mesolithic. In the Levant, *Cypraea* sp. shells became numerous in the Natufian period (Rigaud 2011).

Finally, the discovery of shell trumpets at SOMK is also particularly significant as they pre-date the first use of such shells in Italy, moving it to the Mesolithic, as it was previously thought that their use first started in the Neolithic (Cortese *et al.* 2004; Skeates 1991). Our analysis confirmed that large *Charonia lampas* shells were technologically modified into sound producing instruments, hence used as visual symbols and acoustic signals. From a historical perspective, 'seashell horn' created using different species of large marine gastropod shells (*e.g. Strombus gigas, Charonia tritonis*, or *Turbinella pyrum*) are known from various non-western traditional societies, notably in Melanesia, Polynesia, Korea, and Japan (*cf.* 'Conch instruments' in Wikipedia) as well as in pre-Hispanic central and southern America (Montagu 1981), and were used in non-verbal communication during specific ritual events. Shell trumpet sounding instruments were also found represented on ancient funerary monuments (Cortese *et al.* 2004). Up to the recent times, Sardinian sailors still used *Charonia lampas* trumpets (*corru marinu*) as an acoustic signal for communicating on the open sea (Spanu 2014). Considering the widespread use of tritons as communication tools, we are left with the open question as to whether the placement of such shells in SOMK burials had the specific aim of mediating and maintaining symbolic communication between the world of the living and the world of the dead or if they reflected an occupational activity of the deceased during her life.

In conclusion, our analysis reveals that while Mesolithic symbolic representation at SOMK is partly shared by other Mesolithic forager groups in Italy and, more in generally in Europe, some aspects of this symbolism seem to have been peculiar and distinctive to Early Holocene forager adaptation in Sardinia.

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Contributions

E. C. analyzed the shells. R. T. M. directed the excavations and established the stratigraphic sequence. M. M. studied the archaeological context and the burials. All the authors wrote and revised the manuscript.

References

André, L. and N. Bicho (2016) Perforation techniques and traces of use on the Mesolithic adornments of the Trench Area at Cabeço da Amoreira Shellmidden (Muge, central Portugal). *Comptes Rendus Palevol* 15, 569–80.

Álvarez Fernández, E. (2006) *Los objetos de adorno-colgantes del Paleolitico superior y del Mesolitico en la Cornisa Cantabrica y en el Valle del Ebro: una vision europea*. Unpublished PhD thesis, University of Salamanca, Spain.

Benghiat, S., D. Komšo, and P. T. Miracle (2009) An experimental analysis of perforated shells from the site of Šebrn Abri (Istria), Croatia. In S. B. McCartan, R. Schulting, G. Warren and P. Woodman (eds.) *Mesolithic Horizons. Papers Presented at the Seventh International Conference on the Mesolithic in Europe*, *Belfast 2005*, 730–6. Oxford and Oakville, Oxbow Books.

Berger, J.-F. and J. Guilaine (2009) The 8200 cal BP abrupt environmental change and the Neolithic transition: A Mediterranean perspective. *Quaternary International* 200, 31–49.

Bertolini, M., E. Cristiani, M. Modolo, P. Visentini, and M. Romandini (2016) Late Epigravettian and Mesolithic foragers of the eastern Alpine region. Animal exploitation and ornamental strategies at Riparo Biarzo (northern Italy). *Quaternary International* 423, 73–91.

Bonnardin, S. (2007) From traces to function of ornaments: Some Neolithic examples. In L. Longo and N. Skakun (eds.) *'Prehistoric Technology' 40 Years Later* (British Archaeological Reports Int. Ser. 1783), 297–308. Oxford, Archaeopress.

Bonnardin, S. (2009) *La parure funéraire au Néolithique ancien dans les Bassins parisiens et rhénans – Rubané, Hinkelstein et Villeneuve-Saint-Germain*. Paris, Mémoire de la Société Préhistorique Française.

Chauviere, F.-X. (2002) Industries et parures sur matières dures animales du Paléolithique supérieur de la grotte de Caldeirão (Tomar, Portugal). *Revista portuguesa arqueologia* 5, 5–28.

Claassen, C. (1998) *Shells*. Cambridge, Cambridge University Press.

Cortese, G. E., A. del Lucchese, and P. Garibaldi (2004) *Charonia* sp., uno strumento musicale del Neolitico? *Preistoria Alpina* 40 (Supplement 1), 91–6.

Cristiani, E., R. Farbstein, and P. Miracle (2014) Late Pleistocene and Early Holocene personal ornaments from the eastern Adriatic: The evidence from Vela Spila (Croatia). *Journal of Anthropological Archaeology* 36, 21–31.

Cristian, E., A. Zupancich, and B. Cvitkušić (2020) Combining microscopic analysis and GIS to analyse experimental perforations on *Columbella rustica* shells. In M. Mărgărit (ed.) *Beauty and the Eye of the Beholder: Personal Adornments Across the Millennia*, 27–40. Târgoviște, Cetatea de Scaun Publishing.

Driscoll, E. G. and T. P. Weltin (1973) Sedimentary parameters as factors in abrasive shell reduction. *Palaeogeography, Palaeoclimatology, Palaeoecology* 13, 275–88.

d'Errico, F. and L. Backwell (2016) Earliest evidence of personal ornaments associated with burial: The *Conus* shells from Border Cave. *Journal of Human Evolution* 93, 91–108.

d'Errico, F. and M. Vanhaeren (2002) Criteria for identifying red deer (*Cervus elaphus*) age and sex from their canines. Application to the study of Upper Palaeolithic and Mesolithic ornaments. *Journal of Archaeological Science* 29, 211–32.

d'Errico, F., C. Henshilwood, M. Vanhaeren, and K. van Niekerk (2005) *Nassarius kraussianus* shell beads from Blombos Cave: Evidence for symbolic behaviour in the Middle Stone Age. *Journal of Human Evolution* 48, 3–24.

Floris, R., R. T. Melis, M. Mussi, M. R. Palombo, P. Iacumin, A. Usai, and A. Mascia (2012) La presenza umana nella Sardegna centro occidentale durante l'Olocene antico: il sito di S'Omu e S'Orku (Arbus, VS). Il Mesolitico della Sardegna nel contesto insulare tirrenico. In *Atti della XLIV Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria: La Preistoria e la Protostoria della Sardegna: Cagliari, Barumini, Sassari 23–28 novembre 2009*, 999–1004. Firenze, Istituto Italiano di Preistoria e Protostoria.

Guerreschi, A. (1992) Il sito di Mondeval de Sora: la sepoltura. In A. Angelini, and E. Cason (eds.) *Atti del Convegno Sepolture preistoriche nelle Dolomiti e primi insediamenti storici*, 89–102. Belluno, Fondazione Giovanni Angelini, Centro Studi sulla Montagna.

Lambeck, K., F. Antonioli, M. Anzidei, L. Ferranti, G. Leoni, G. Scicchitano, and S. Silenzi (2011) Sea level change along the Italian coast during the Holocene and projections for the future. *Quaternary International* 232, 250–57.

Luglié, C. (2012) Il Neolitico antico. In *Atti della XLIV Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria: La Preistoria e la Protostoria della Sardegna: Cagliari, Barumini, Sassari 23–28 novembre 2009*, 39–47. Firenze, Istituto Italiano di Preistoria e Protostoria.

Mărgărit, M. (2016) Testing the endurance of prehistoric adornments: Raw materials from the aquatic environment. *Journal of Archaeological Science* 70, 66–81.

Martini, F. and C. Tozzi (2012) Il Mesolitico della Sardegna nel contesto insulare tirrenico. In *Atti della XLIV Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria: La Preistoria e la Protostoria della Sardegna: Cagliari, Barumini, Sassari 23–28 novembre 2009*, 399–406. Firenze, Istituto Italiano di Preistoria e Protostoria.

Melis, R. T. and M. Mussi (2016) Mesolithic burials at S'Omu e S'Orku (SOMK) on the south-western coast of Sardinia. In J. M. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, and H. Meller (eds.) *Mesolithic Burials – Rites, Symbols and Social Organisation of Early Postglacial Communities. International Conference Halle (Saale), Germany, 18th–21st September 2013* (Tagungen des Landesmuseums für Vorgeschichte Halle 13/II), 733–40. Halle (Saale), Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt, Landesmuseum für Vorgeschichte.

Melis, R. T., M. Mussi, R. Floris, M. Lamothe, M. R. Palombo, and A. Usai (2012) Popolamento e ambiente nella Sardegna centro occidentale durante l'Olocene antico: primi risultati. In *Atti della XLIV Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria: La Preistoria e la Protostoria della Sardegna: Cagliari, Barumini, Sassari 23–28 novembre 2009*, 427–34. Firenze.

Montagu, J. (1981) The conch in prehistory: Pottery, stone and natural. *World Archaeology* 12, 273–9.

Mussi, M. (1995) Rituels funéraires dans les sépultures gravettiennes des Grottes de Grimaldi et de la Gr. delle Arene

Candide: une mise au point. In Otte M. (ed.) *Nature et Culture*, 822–30. Liège, ERAUL 68/II.

Mussi, M. (2001) *Earliest Italy: An Overview of the Italian Paleolithic and Mesolithic*. New York, Springer.

Mussi, M., M. R. Palombo, and R. T. Melis (2005) Il più antico popolamento della penisola italiana, della Sicilia e della Sardegna. In M. Santonja, A. Pérez-González, and M. J. Machado (eds.) *Geoarqueología y Patrimonio en la Península Ibérica y el Entorno Mediterráneo*, 17–27. Almazán (Soria), ADEMA.

Pauc, P. and J.-M. Strangi (2009) Charonia lampas lampas: du coquillage à l'instrument sonore. In C. Dumas, B. Roussel, and P.-J. Texier (eds.) *Langage de pierre: la restitution du geste en archéologie préhistorique*, 40–2. Les Baux de Provence, Musée des Baux de Provence

Rigaud, S. (2011) L*a parure: traceur de la géographie culturelle et des dynamiques de peuplement au passage Mesolithique-Neolithique en Europe*. Unpublished PhD thesis, Bordeaux, University of Bordeaux.

Rodríguez-hidalgo, A. J., A. Canals, P. Saladié, A. B. García, and M. García (2010) Upper Paleolithic ornament seashells from Sala de las Chimeneas, Maltravieso cave (Cáceres, Spain). *Munibe (Suplemento – Gehigarria)* 31, 36–46.

Skeates, R. (1991) Triton trumpet. A Neolithic symbol in Italy. *Oxford Journal of Archaeology* 10, 17–31.

Spanu, G. N. (2014) *Strumenti e suoni della musica popolare sarda*. Cagliari, Ilisso.

Taborin, Y. (1993) *La parure en coquillage au Paléolithique* (Supplément à Gallia Préhistoire 32). Paris, ed. du C.N.R.S.

Vanhaeren, M. and F. d'Errico (2001) La Parure de l'enfant de la Madeleine (Fouilles Peyrony). Un nouveau regard sur l'enfance au Paléolithique supérieur. *Paléo* 13, 201–40.

Vanhaeren, M. and F. d'Errico (2003) Childhood in the Epipaleolithic. What do personal ornaments associated to burials tell us? In L. Larsson, Kindgren, H., K. Knutsson, D. Leoffler, and A. Akerlund (eds.) *Mesolithic on the Move. Papers Presented at the Sixth International Conference on the Mesolithic in Europe*, *Stockholm 2000*, 494–505. Oxford, Oxbow Monographs.

Vanhaeren, M. and F. d'Errico F. (2005) Grave goods from the Saint-Germain-la-Rivière burial: Evidence for social inequality in the Upper Palaeolithic. *Journal of Anthropological Archaeology* 24, 117–34.

Weninger, B., E. Alram-Stern, E. Bauer, L. Clare, U. Danzeglocke, O. Jöris, C. Kubatzki, G. Rollefson, H. Todorova, and T. van Andel (2006) Climate forcing due to the 8200 cal BP event observed at Early Neolithic sites in the eastern Mediterranean. *Quaternary Research* 66, 401–20.

Weninger, B., L. Clare, E. J. Rohling, O. Bar-Yosef, U. Böhner, M. Budja, M. Bundschuh, A. Feurdean, H.-G. Gebel, O. Jöris, J. Linstädter, P. Mayewski, T. Mühlenbruch, A. Reingruber, G. Rollefson, D. Schyle, L. Thissen, H. Todorova, and C. Zielhofer (2009) The impact of rapid climate change on prehistoric societies during the Holocene in the Eastern Mediterranean. *Documenta Praehistorica* 36, 7–59.

Foraging Assemblages is the publication of the proceedings of the Ninth International Conference on the Mesolithic in Europe, held in Belgrade in September 2015. The two volumes of these proceedings gather 121 contributions on Mesolithic research in Europe, covering almost every corner of the continent. The book presents a cross-section of recent Mesolithic research, with geographic foci ranging from the Mediterranean to Scandinavia, and from Ireland to Russia and Georgia. The papers in the volumes cover diverse topics and are grouped into 11 thematic sections, each with an introduction written by prominent Mesolithic experts. The reader will learn about changes in forager lifeways and the colonization of new territories at the end of the Ice Age and the beginning of the Holocene warming; the use of diverse landscapes and resources; climatic instabilities that influenced patterns of settlement and subsistence; the organization of settlements and dwelling spaces; the formation of regional identities expressed through various aspects of material culture and technologies of artefact production, use, and discard; aspects of social relations and mobility; symbolic, ritual, and mortuary practices; diverse ways in which Mesolithic communities of Europe were transformed into or superseded by Neolithic ways of being; and how we have researched, represented, and discussed the Mesolithic.

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