












The Use-Life of Ancestors: Neolithic Cranial Retention, Caching and Disposal at Masseria Candelaro, Apulia, Italy

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When archaeologists discuss ‘ancestor cults’ or ‘ancestor veneration’, what this might entail in practice usually remains vague, leading to charges that the concept of ‘ancestors’ is often applied generically. In this article, the authors combine bioarchaeological, taphonomic, radiocarbon, and isotopic studies to explore the ritual practice of the selective retention, curation, and deposition of a group of human crania and mandibles. Between 5500–5400 BC, Neolithic people at Masseria Candelaro (Puglia, Italy) deposited broken crania and mandibles from about fifteen individuals in a heap in the centre of the village. These individuals were mostly probable males, collected over the course of two centuries and actively used, with their deposition marking the final disposal of a ritual collection. The motivations for the curation of cranial bone are investigated through comparison with archaeological and ethnographic examples, advancing an interpretation of ritual practice directed towards ancestors.

Keywords: ancestors, cranial curation, taphonomy, Neolithic, Italy

INTRODUCTION: THE WORK ANCESTORS DO

Who becomes an ancestor? What do ancestors do? How do they continue to

form part of the communities they lived in? Following a 1990s vogue in ancestor-related interpretations, particularly for the Neolithic (Barrett, 1994; Parker Pearson & Ramilisonina, 1998), archaeologists

were critiqued for applying the concept generically to any situation involving the dead (Whitley, 2002). A more useful approach starts from the realization that not all the dead become ancestors (Hill & Hageman, 2016: 43). Ancestors form a distinct category of the corporate group's dead that is locally defined and may operate at several levels (Hageman & Hill, 2016). They are often closely tied to kinship systems, designed to trace lineage and descent from leaders and thereby naturalize claims to resources (Middleton, 1960; Bloch, 1971). While the category of 'ancestor' can be difficult to pin down, we might say they reconstitute the community after death, holding spiritual powers, providing a moral anchor, and continuing to be a social force or presence amongst the living. Ancestors vary immensely in how they are understood to exist and act (Hageman & Hill, 2016), and in how the living interacted with them.

Moreover, ancestors do not just happen; they are made. Rituals directed toward the ancestors are not the same as standard funerary rites. While their presence amongst the living references the past, ancestral rituals are forward-looking: they project the ancestors into current socio-political concerns, legitimizing tradition through continuity, and demanding action. The ontological transformation of a dead person into an ancestor is almost always accomplished by transforming their physical remains. Extended post-mortem treatment, such as secondary burial or curating selected bones, provides material through which the memory of dead persons can be prolonged. Curated bones may be circulated among the living, transformed into items which can be carried, worn, used, or eventually reburied. Bodies of specific individuals or ancestors may be preserved to allow for their display or procession amongst the living. Once ancestors are made, they act socially. Their remains

are therefore likely to have an ongoing biography, encompassing use, modification, exchange, and disposal. Because these are material processes, they may be documented archaeologically.

DEALING WITH THE DEAD IN THE SOUTHERN ITALIAN NEOLITHIC

Funerary practices in southern Italy between *c.* 6000 and 3800 cal BC reflect many ways of processing the dead (see Supplementary Material 1). The most straightforward rite consisted of primary burial or deposition, usually within villages or in niches cut into the ditches surrounding them (Pessina & Tinè, 2018: 280–83). From the late sixth millennium BC, successive burials and secondary depositions were commonly made within cists or tombs (Radina et al., 2020). While adults of all ages and both sexes are represented in these burials, infants and children are rarely encountered, perhaps reflecting a distinction in their status as persons or their potential to become ancestors.

But complex mortuary treatments were also carried out at many Neolithic sites. Disarticulated and defleshed body parts were deposited at Grotta Scaloria (Foggia), perhaps as the final stage of mourning (Robb et al., 2015). At the ditched village of Passo di Corvo (Foggia), cutmarks show that some bodies were defleshed before burial (Mariotti et al., 2020). Large deposits of disarticulated bone are known from several cave sites, but scattered fragments are also encountered in villages, attesting to the common practice of disturbing skeletal remains and commingling bones (Lo Porto, 1978; Danby, 1987; Marconi et al., 2004).

Several Early–Middle Neolithic primary burials contain skeletons missing their crania (Tunzi Sisto, 1999: 131–33; Fabbri & Lonoce, 2011; Mallegni, 2013).

Curated bones were manipulated at several sites: at Balsignano (Bari), part of an adult cranium was burnt before being placed in a pit (Pessina & Tinè, 2018: 283); calotte fragments were deposited in the village of San Matteo-Chiantinelle (Foggia) (Tunzi Sisto & Sanseverino, 2008); and at Passo di Corvo, crania fragments were put in a ditch surrounding a hut (Danby, 1987). At the Late Neolithic collective burial sites of Masseria Bellavista and Scoglio del Tonno (Taranto), secondary deposits of disarticulated bones predominantly incorporated crania (Quagliati, 1906).

Variations in how the dead were disturbed suggest diverse rites for remembering, grieving, and disposing of the dead. Human bone was circulated, supporting the proposition that bone was an ontologically important material (Robb, 2007: 95). Secondary deposition frequently singled out complete skulls or isolated crania and mandibles for distinct treatment. Thus, if bone was a symbolically charged substance, crania were probably the most powerful bones to keep around. The ritual importance of the head, as well as its capacity to hold spiritual or political power, is widely attested ethnographically (Stodder, 2006; Kuijt, 2009; Hastorf, 2018).

Masseria Candelaro

Masseria Candelaro is an extensively excavated Early–Middle Neolithic ditched village, located in a densely inhabited area of the Tavoliere Plain in northern Puglia (Figure 1) (Cassano & Manfredini, 1983, 2004). The initial early sixth-millennium BC village comprised a small 0.5 ha compound encircled by a ditch (Ditch Z) (Cassano & Muntoni, 2004: 89). The village was briefly abandoned before it was reoccupied in the mid-sixth millennium BC and extended with four outer concentric ditches, enclosing an area approximately 300 × 250 m (Cassano &

Muntoni, 2004: 89–90). As with many villages, it was eventually transformed into a landmark for ritual and funerary activities. Burial chambers were cut into the sides of the inner ditch, and several older storage features within and surrounding an area known as ‘Structure Q’ were re-used for burial (Marconi *et al.*, 2004). Structure Q is located in the earlier compound inside Ditch Z (Marconi *et al.*, 2004: 66–81) (Figure 2). Fifteen radiocarbon dates place occupation between 5720–4903 cal BC, while eleven dates from human bone span 5630–4903 cal BC, suggesting there were several generations of occupation before burial traditions were established (Cassano & Manfredini, 1993; Skeates & Whitehouse, 1994; Manfredini & Muntoni, 2004; Conati Barbaro, 2014; Whitehouse, 2014) (see Table 1 and Supplementary Material 2).

Secondary deposits of bones were found in multiple areas (Muntoni & Salvadei, 2004). These include isolated fragments within burials, disarticulated bones within the ditch, and fragments scattered across living spaces, some of which were burnt. There is little evidence for defleshing, unlike at Passo di Corvo and Grotta Scaloria (contemporary sites less than 10 km away), but there is evidence for secondary deposition, the circulation of crania, and placing the dead in open pits (Marconi *et al.*, 2004). This fits within regional practices focused on viewing, processing, and interacting with the bodies of the dead, often over considerable timespans.

UNDERSTANDING THE STRUCTURE Q CRANIAL CACHE

Structure Q was located in the earliest settlement area at Masseria Candelaro but post-dates this occupation by perhaps half a millennium. It consists of a large, amorphous sunken feature containing alternating deposits of domestic and ritual

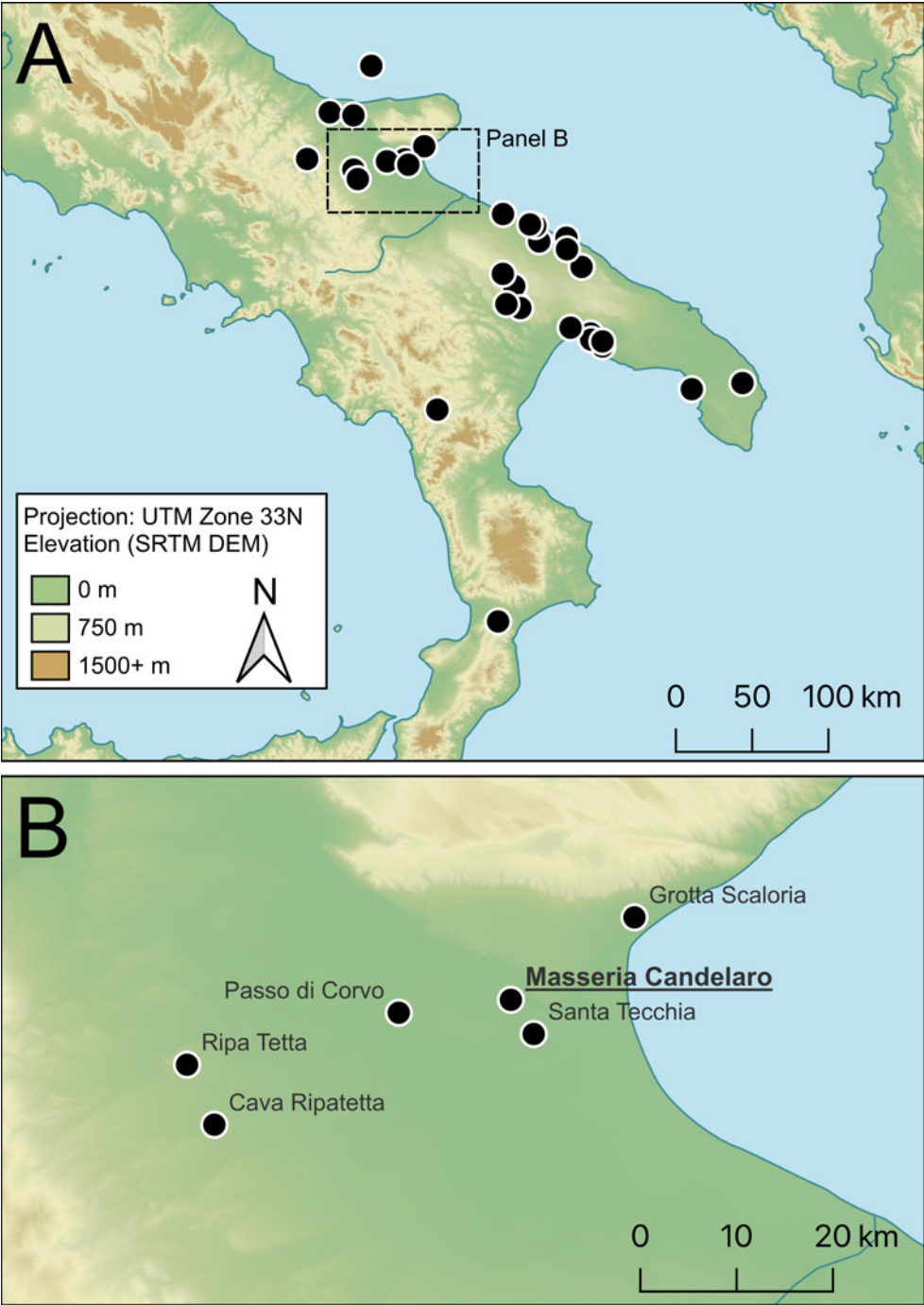


Figure 1. A) Location of Masseria Candelaro and contemporary sites in southern Italy mentioned in text. B) Sites in the vicinity of Masseria Candelaro.

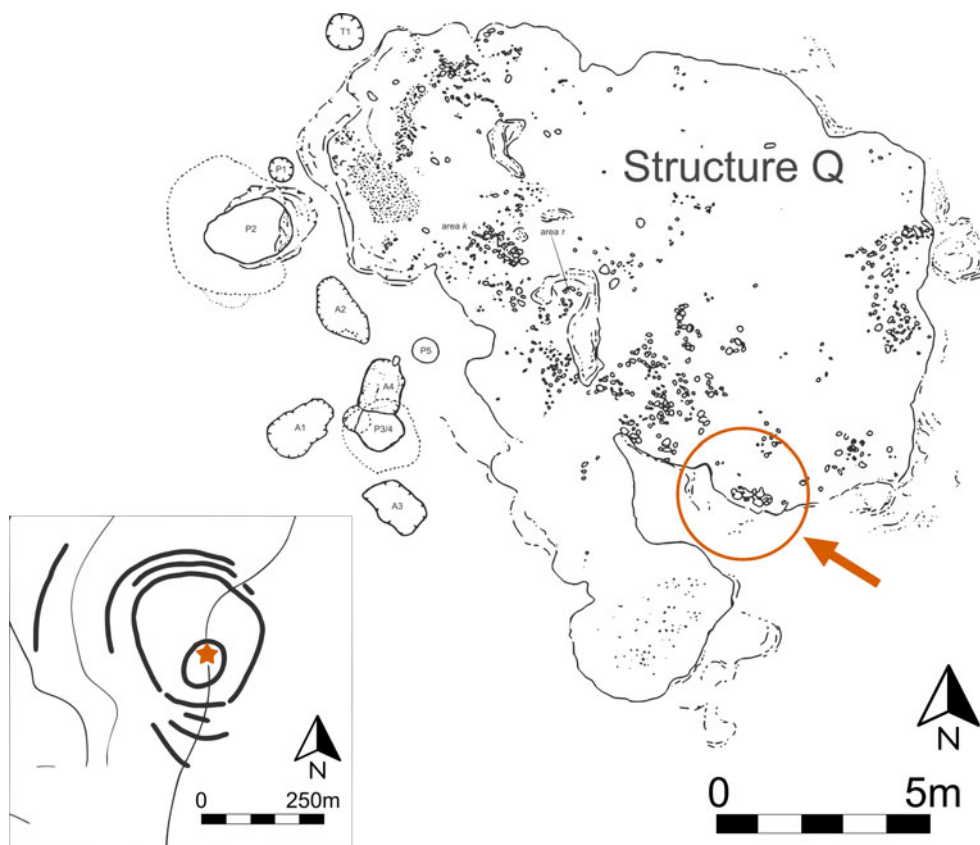


Figure 2. Left: outline of the village ditches with approximate location of cranial cache marked by a star (redrawn after Seager Thomas in Hamilton et al., 2020: 249); Right: excavated features inside Ditch Z, arrow indicating location of cranial cache in Structure Q within the circle (redrawn after Cassano et al., 2004: 69). Reproduced with permission of the Accordia Institute and SABAP for the provinces of Barletta-Andria-Trani and Foggia, respectively.

materials (Marconi et al., 2004: 66–81). The structure extends over a maximum c. 14 × 16 m, with a maximum depth of 1 m. Sporadic human bone fragments (some burnt) were found throughout all layers (Marconi et al., 2004: 66–81). The large deposit of crania and mandibles discussed here was found in the upper layers (Marconi et al., 2004: 70). Structure Q was thus probably a multi-functional space later repurposed for ritual activities (Figure 2).

The large deposit in the upper layers contained only crania and mandibles (henceforth the ‘cranial cache’). The first cranium found during excavation was in

the lower part of layer 1, and the rest beneath, in layer 2 (Figure 3) (Marconi et al., 2004: 70). Initial analysis (Muntoni & Salvadei, 2004: 396–97) identified twelve crania, but there has since been little interpretation of this deposit. Who were these people? Why were their crania curated, and how were they used? What circumstances led to their deposition? To investigate how this cranial cache was formed, we combined contextual, bioarchaeological, and taphonomic analyses of demography and post-mortem treatment, chronological modelling, and isotopic analysis of dietary and mobility practices.

Table 1. Radiocarbon dates from human bone in Structure Q₂, calibrated with IntCal20 (Reimer et al., 2020).

Lab code	¹⁴ C determination	Calibrated date	Modelled date	Context
SUERC-103632	6609 ± 23 BP	5512–5485 cal BC (68.3 per cent) 5618–5482 cal BC (95.4 per cent)	5529–5481 cal BC (68.3 per cent) 5550–5478 cal BC (95.4 per cent)	Cranium 6, Structure Q ₂ ?M adult
SUERC-103633	6436 ± 24 BP	5472–5376 cal BC (68.3 per cent) 5476–5335 cal BC (95.4 per cent)	5475–5434 cal BC (68.3 per cent) 5478–5380 cal BC (95.4 per cent)	Cranium 1, Structure Q ₂ M adult
OxA-12064	6501 ± 37 BP	5510–5383 cal BC (68.3 per cent) 5536–5371 cal BC (95.4 per cent)	5521–5471 cal BC (68.3 per cent) 5556–5458 cal BC (95.4 per cent) A1	Cranium 2, Structure Q ₂ M young adult

Osteological remains and methods

The deposit comprised almost 400 fragments of crania and mandibles. In all cases, the calottes or calvaria were broken off from the splanchnocrania and basicrania, and maxillae and mandibles could not be re-associated with cranial fragments. The presence and completeness of cranial and mandibular zones were recorded using two methods: Knüsel & Outram (2004) for cranial elements, and Kranioti (2015) to divide the cranium and mandible into smaller zones (Supplementary Material 3, Figure S7). This allowed assessment of duplication of zones amongst the crania; combined with age estimation and assessment of refits, this produced a new minimum number of elements (MNE) and minimum number of individuals (MNI) (Supplementary Material 3, Table S4). Various MNI estimates are possible. Assuming that each unassociated fragment representing more than half of an element zone (Knüsel & Outram, 2004) corresponds to a separate individual, the maximum number of individuals is fifty-three. If unassociated fragments originated in the smallest possible number of crania, the MNI is fifteen. The true number of individuals is likely toward the lower end of this range.

Sex was estimated using cranial and mandibular traits (Ferembach et al., 1980; Buikstra & Ubelaker, 1994; Brickley, 2004). At least five individuals were male, six were probably male, and sex could not be determined for the rest. Sex estimation from cranial and mandibular traits is between 70.6 and 96.9 per cent accurate in populations with known sex (Inskip et al., 2019). As crania of both sexes are quite robust in this population, we have assessed sex conservatively. Dental eruption and attrition were the most informative indicators of age-at-death (Smith, 1984; AlQahtani et al., 2010). Using these, the crania include a wide age range:

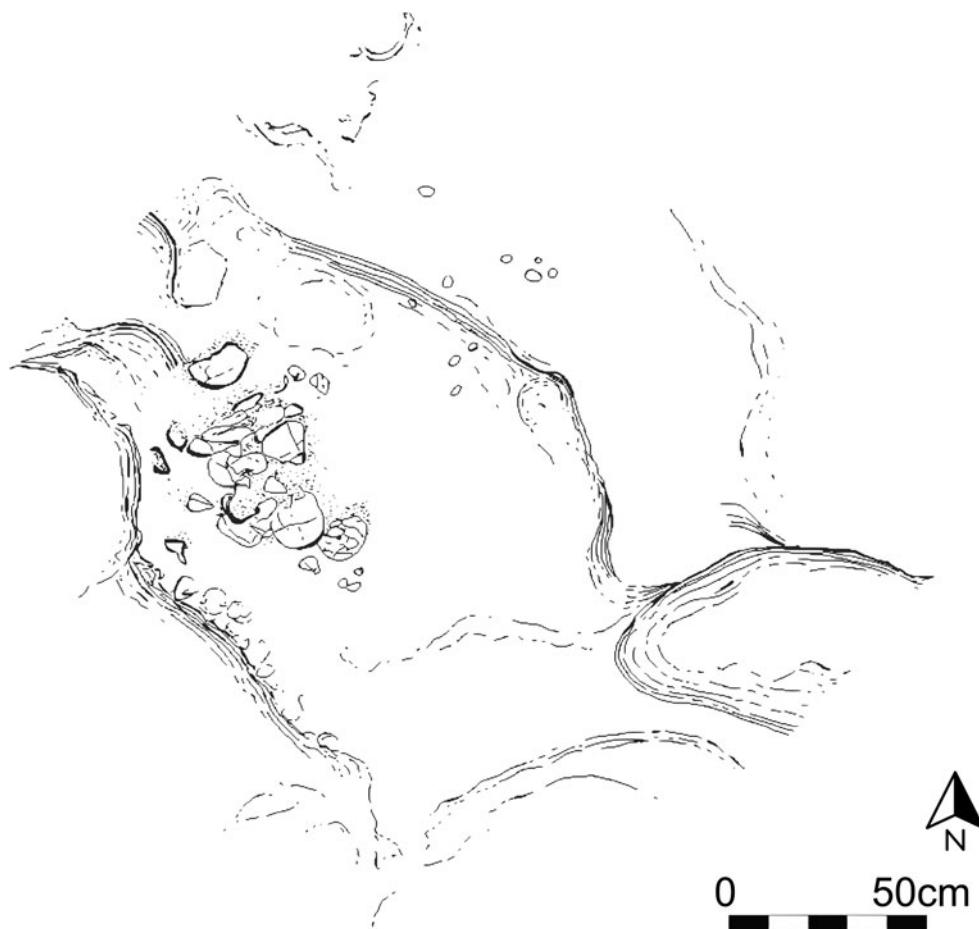


Figure 3. Plan of cranial cache in Structure Q, layer 2 (redrawn after Marconi *et al.*, 2004: 71). Reproduced with permission of SABAP for the provinces of Barletta-Andria-Trani and Foggia.

at least two adolescents (twelve to eighteen years old), one young adult (eighteen to twenty-five), one adult between twenty-five and thirty-five, two adults between thirty-five and forty-five, and one adult older than forty-five years.

Where did the crania come from?

The two most obvious possibilities for the origins of the crania are that they were collected from enemies as trophies or curated from within the group as ancestral remains. Trophy skulls and ancestral remains may be

treated in indistinguishable ways; both may show selective age and sex profiles. The key differentiating factors between these scenarios are: peri-mortem trauma suggesting violent acquisition; peri-mortem removal; decapitation; or morphological, genetic, or biochemical evidence of differences between where the crania were found and where they originated.

As elsewhere in Neolithic Europe, violence and raiding are documented in southern Italy. Village ditches may have been defensive. Healed and unhealed traumatic injuries are occasionally observed, including peri-mortem cranial fractures. Careful

inspection of the Candelaro cranial cache revealed no peri-mortem or healed trauma on the extant fragments, although they are highly fragmentary. The absence of peri-mortem trauma on the remaining elements may suggest that they were not forcibly ‘collected’. There are at least eight examples of skeletons lacking crania or complete skulls in southern Italy, probably through ritual activity, although no examples of decapitation *per se* are known. For instance, the mandible and cervical vertebrae were present in a cranium-less child burial at Grotta Scaloria, implying that the cranium was removed after soft tissue decomposition (Knüsel et al., 2016). At least two burials at Cala Colombo (Bari) lacked crania; in one, it could be seen where the grave had been cut into to retrieve the cranium (Pesce Delfino et al., 1977: 150–51). Therefore, local comparanda suggest that the Candelaro crania probably originated from within the group.

To test whether the cache represents an endogenous or exogenous group, $\delta^{34}\text{S}$ (‰) isotopic concentrations in bone were measured from thirteen crania and mandibles representing separate individuals. Because

almost none of the remains had associated dentitions, and the extant dentitions usually displayed taphonomic abrasion of the enamel, strontium isotope analysis of dental enamel was not applicable. Faunal remains from the site were used to measure the local baseline. The results are reported in Supplementary Material 4. Given this baseline, sulphur isotopes can be used to observe mobility to or from coastal and inland areas (Richards et al., 2001). Masseria Candelaro is located inland, at least 12 km from the Adriatic Sea but close to the Candelaro river. The $\delta^{34}\text{S}$ values from the cranial cache fall within the distribution of $\delta^{34}\text{S}$ values obtained from the fauna assumed to be local (Figure S8, Supplementary Material 4), suggesting that the sampled individuals lived in an environment similar to that of the fauna. While we cannot exclude that some of these crania came from individuals who lived at nearby sites a similar distance from the sea, the results suggest that these crania did not form part of a deposit of trophies obtained from individuals from an isotopically distinct locality (see Table 2).

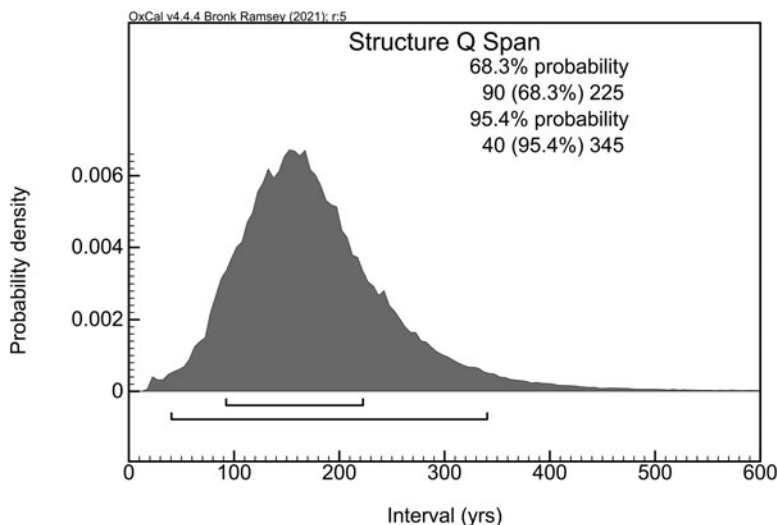


Figure 4. Bayesian model of the duration of Structure Q's use (produced in OxCal version 4.4.4: Bronk Ramsey, 2021).

Table 2. *Characteristics of crania retained for specific practices (data from Bonogofsky, 2006, 2011; Chacon and Dye, 2007b; Bello et al., 2015; Tiesler & Lozada, 2018; Santana et al., 2019).*

Features	Curated, enhanced, venerated and displayed crania	Patterned reduction, e.g. ‘skull’ cups	Active use as powerful substance or ritual paraphernalia
Over-modelling and embellishment	Frequently over-modelled with materials such as plaster, clay, shell, plant remains, pigment; modelling of hair, eyes, nose, ears, etc.	No evidence for over-modelling	There may be some embellishment (e.g. if bones wrapped or carried); over-modelling unlikely
Reduction	Cut or scrape marks from defleshing; peri-mortem removal of cranium, skull, or scalp (e.g. decapitation chopmarks or incised scalping marks); incised designs; enlargement of <i>foramen magnum</i> ; polish from handling	Extensive reduction of the cranium, e.g. percussion marks and pits; cut or scrape marks from defleshing; high rates of fragmentation and fresh bone breakage, which may be present alongside peri-mortem trauma	High rates of fragmentation and breakage; possible peri-mortem trauma; breakage may be variable, e.g. to fresh and mineralized bone
Mounting or display	Perforation/s, drill holes, or materials to mount, hang, display, or carry the cranium/skull	No modifications to facilitate mounting or display	Minimal or no modifications to facilitate mounting or display
Presence of soft tissue	Soft tissue may be intentionally preserved	‘Pot polish’ indicating boiling to facilitate soft tissue removal may be present	Soft tissue unlikely to be preserved, and may be intentionally removed
Preservation of bone and completeness of elements	Usually good preservation and completeness, including intracranial bones	Low completeness: patterned presence of selected areas (e.g. for calottes and ‘skull’ cups, the frontal, parietal, and occipital bones)	Varied completeness of skull/cranium and assemblage may also contain infra-cranial remains
Presence of mandible	Mandible often present, may be re-attached or bound to cranium	Mandible usually absent	Variable presence of mandible
Other characteristic features	Chronometric evidence for retention and curation, e.g. earlier radiocarbon date than other bone in same context	May be associated with evidence of cannibalism, e.g. fresh bone breakage and tooth marks	None
Demographic patterns	There may be a sex or age bias; trophy skulls may over-represent adult males	Information on demographic patterns is lacking; ‘skull’ cups are usually rare finds	There may be a sex or age bias which varies culturally

How long were the crania used?

Structure Q’s use began in the second quarter of the sixth millennium BC, and its duration is modelled as lasting between 90–225 years (at 68.3 per cent probability) or 40–345 years (at 95.4 per cent) (Figure 4; Supplementary Material 2). The ninety-five per cent probability intervals for Cranium 6 (5618–5482 cal BC) and Cranium 1

(5476–5335 cal BC) do not overlap. Therefore, the crania almost certainly do not represent a collection from a single episode or a narrow timeframe. Instead, they represent people who died over a period of about two centuries, perhaps six to eight generations. The timeframe of their deposition is equally important. Integrating stratigraphic information, we carried out Bayesian modelling (Bronk Ramsey, 2009) on the six

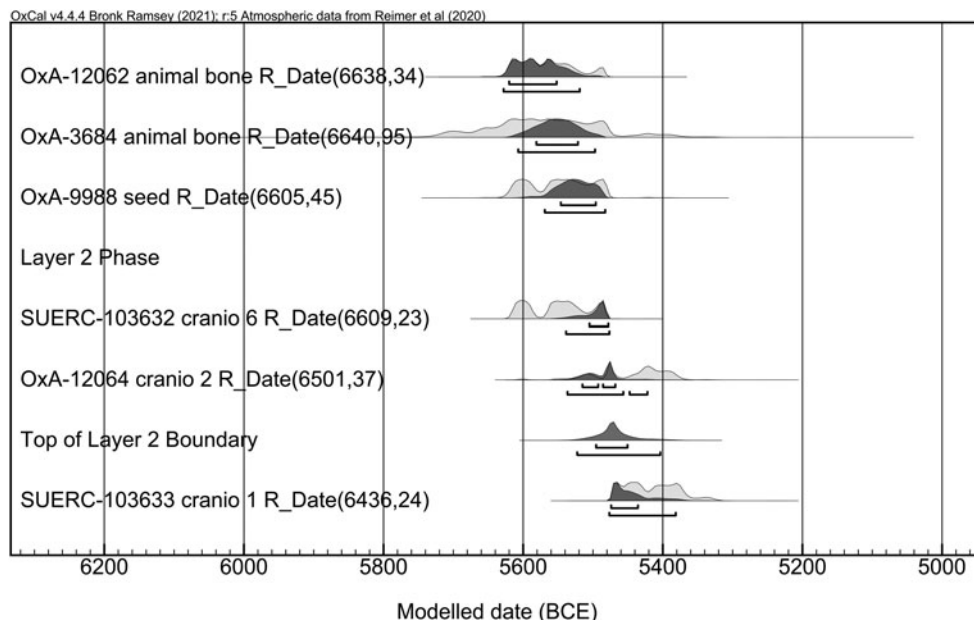


Figure 5. OxCal plot (version 4.4.4: Bronk Ramsey, 2021) of probability distributions for radiocarbon dates from each of the layers in Structure Q, modelled stratigraphically.

available radiocarbon dates from Structure Q. The cranial group in layer 2 seems to have been placed in a single event around the late fifty-sixth or early fifty-fifth century BC. The final cranium in layer 1 was deposited between the late fifty-fifth to early fifty-fourth century BC (Figure 5). Cranium 6 may have come from an individual who lived during an earlier settlement phase, while Crania 1 and 2 are more consistent with the later phase. The cranial cache represents a collection that was constantly changing, but its long duration suggests an enduring tradition of use, alteration, and augmentation. It contains crania gathered over a maximum of two centuries, kept above ground and used, and eventually deposited in a group.

How were they used?

Taphonomic study provides insights into how post-mortem ritual and use modified the remains of the dead (Knüsel & Robb, 2016). We highlight three common patterns

of use for cranial collections and their expected taphonomic features (Table 2).

- Preservation and display, for example Papua New Guinean tribal ancestral or trophy crania, Pre-Pottery Neolithic A plastered skulls, or medieval saints' relics. This can involve reassembling the cranium or skull, over-modelling it with features resembling flesh and eyes, or perhaps displaying it in a reliquary, i.e. enhancements intended to give it greater visual and spiritual effect.
- Subjecting the element to patterned reduction, such as 'skull' cups (e.g. from Upper Palaeolithic levels in Gough's Cave, Cheddar Gorge, England: Bello et al., 2011) or calottes of consistent form (e.g. at Early Neolithic Herxheim, Rhineland-Palatinate, Germany: Orschiedt & Haidle, 2006). This may be observed alongside evidence for cannibalism and peri-mortem trauma.
- Using the cranium actively in ways that modify the bone. For example, a

repeatedly-used teaching collection undergoes damage, with fragile elements lost and bones reduced (Caffell et al., 2001); another instance might be if bone is understood to have inherent power within magical actions (Chacon & Dye, 2007a: 623).

With such variability, there is little use in defining typological categories, whether for how remains were modified or for their contextual meaning. For example, enemy trophies and venerated ancestral skulls may show similar kinds of modification for display (Bonogofsky & Graham, 2011; Hastorf, 2018).

Taphonomic analysis of the Candelarò crania included examination of fragment zonation, element completeness, surface modifications, and bone breakage characteristics (Knüsel & Outram, 2004; McKinley, 2004; Bello, 2005; Fernández-Jalvo & Andrews, 2016). These revealed several salient features:

- Concreted sediment was observed on most bones, typical of the calcareous geology of the Tavoliere plain. The surfaces of many fragments were finely abraded and root-etched, and occasionally perforated by roots, reflecting the post-depositional environment.
- No evidence was found of burning or animal intervention such as gnawing or insect activity. The absence of the latter may suggest that the bones were not exposed in an open environment.
- There was no evidence of peri-mortem trauma, injury, or 'fresh' bone breakage. Most breakage margins were consistent with the way dry bone breaks.
- There was no consistent pattern as to which elements of the crania were preserved.

The latter point is especially significant. Previous work comparing archaeological crania with known examples of decorated

crania and 'skull' cups has shown that crania subjected to post-depositional taphonomic processes present lower element completeness and poorer preservation of the facial elements; in contrast, decorated crania often retain most or all elements, including facial bones (Bello et al., 2022). In the Candelarò cranial cache, several crania retain parts of more than one facial element, but maxillae and nasals were often broken or absent. This was also observed in primary burials from Masseria Candelarò; it likely represents typical post-depositional taphonomic processes. For the cranial cache, the approximate anatomical position of each fragment was digitally transcribed, superimposing the fragments to create a composite diagram of bone representation (Figure 6). Each cranium preserves a different selection of elements, with the frontal and occipital bones predominating (Supplementary Material 3). Breakage patterns and element representation do not fit the expected profile of either trophy heads or of intentional, patterned reduction of the cranium (Table 2).

The Candelarò crania may have become fragmented through several pathways. Some breakage probably occurred *in situ* in primary burials through compaction and crushing. The under-representation of robust regions such as the temporal bones, the extensive reduction of all elements, and concretion across broken margins show that they were broken *before* deposition in Structure Q. The lack of cutmarks, chopmarks, and percussion pits sets the Candelarò cache apart from other cranial collections such as Herxheim and Gough's Cave, where there is convincing evidence for cannibalism alongside processing of bone and production of 'skull' cups or calottes (Boulestin et al., 2009; Bello et al., 2015). In contrast, long-term storage and regular handling of bone leads to increased fragmentation, often beginning at the margins of bones (Caffell

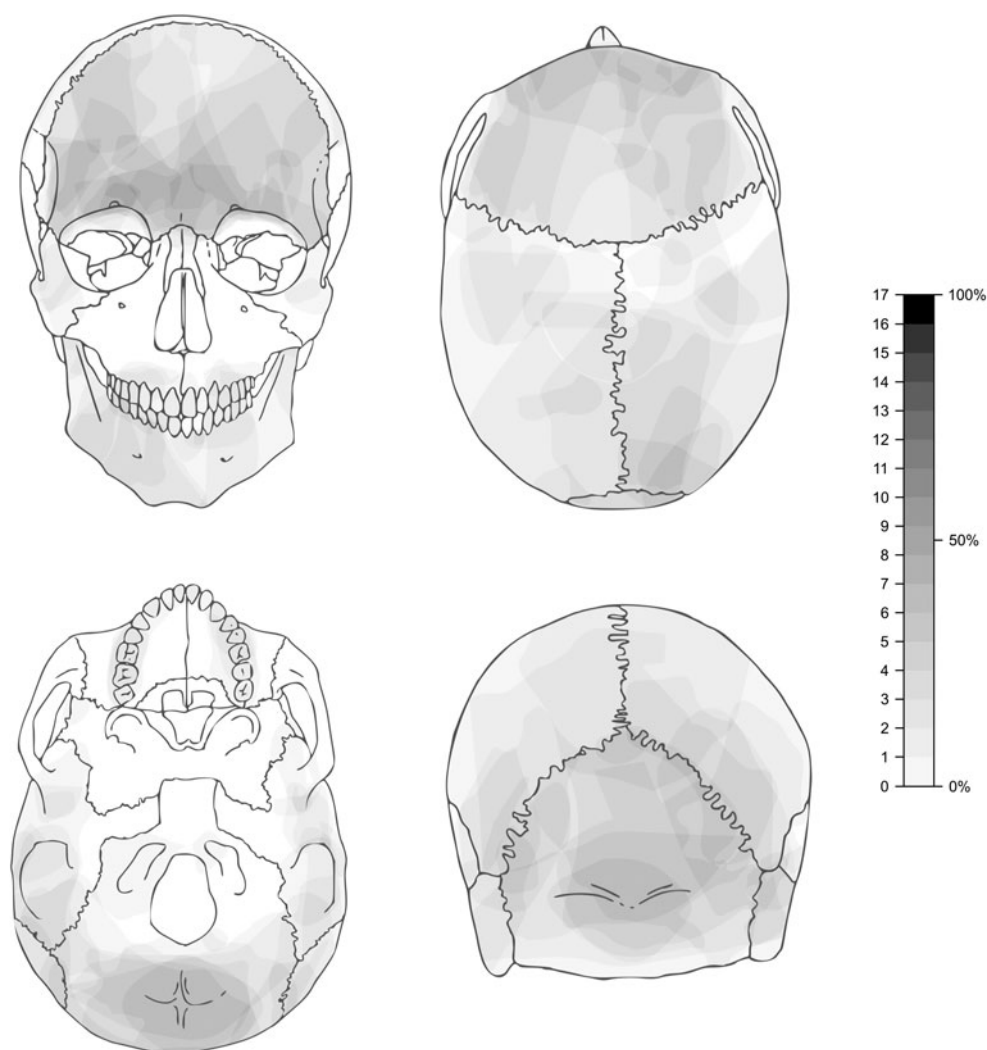


Figure 6. *Approximate position of all fragments from the cranial cache superimposed. The colour gradient on the greyscale indicates the representation of overlapping fragments with that location preserved (MNE). The maximum (100 per cent) was set at seventeen as at least seventeen separate groups of elements were identified. The highest MNE derived from this illustration is 9.*

et al., 2001). It seems most likely that these crania and mandibles were retrieved from burials post-mortem and actively used over a century or more. Their circulation and handling caused further breakage, perhaps explaining why some crania are represented by multiple, morphologically similar but non-refitting, fragments. Secondary burial within Structure Q may have caused further breakage.

BIOGRAPHY OF AN ANCESTRAL DEPOSITION

We can now tell the history of the cranial cache in some detail. It began probably between 5700 and 5600 BC. The Tavoliere plain was populated with a dense, interconnected network of Neolithic villages. Their inhabitants had many ways of dealing with the dead, some of which

indicate that human bone was a potent substance. Normative practice may have merely been a guideline; presumably these options fed into the local bricolage of ritual practice. Death rituals particularly intersected with age; burials of children are more often disturbed and disarticulated (Robb, 2007: 66; Pessina & Tinè, 2018: 298).

While male and female bodies were differentiated in life, there seems to have been little sex-related differentiation in death (see Robb, 1994). In the Tavoliere landscape, removing crania from burials was relatively common; they were presumably circulated, handled, and sometimes redeposited. Ritual practitioners at Candelaro collected crania, mostly of males and older individuals. In contrast, at nearby Passo di Corvo, female and non-adult crania were retrieved from burials (Mariotti *et al.*, 2020). Given the lack of systematic gender differentiation in life-ways and deathways, the possible male sex bias in the Candelaro cranial cache may be the only known instance of a general social pattern or a collection used in a particular ritual context.

The cranial collection probably involved a tradition spanning up to eight generations. This might represent the addition, on average, of one cranium every decade or so, but some may also have passed out of the collection before its final deposition. This cache clearly represents just a fraction of the small village population, and some principle of selection must have come into play. One possibility is kinship and lineality; alternative scenarios include a specialized ritual faction. They may have been ordinary people, ritual participants, or individuals singled out by circumstances or mode of death. That there is no clear selection for age may suggest that ‘ancestors’ were drawn from group predecessors rather than selected specifically based on accumulated seniority, knowledge, and

experience. All societies have groups defined by intersections of age and gender; how this relates to broader social formations in sixth-millennium BC southern Italy remains to be theorized.

Once collected, these crania were used; their extensive breakage and wear shows that they were frequently handled, perhaps regularly passed around between group members and houses. Without genetic estimation of relatedness, we cannot investigate whether they represent ancestors in terms of direct descent. The evidence for careful selection alongside multi-generational use indicates that the crania were ancestral remains in a general sense, at least. These were not static ancestors, but active ritual materials. Their curation suggests repeated engagements with ancestral spirits which held significance amongst the living. We can only speculate whether their potency grew or diminished as time passed and their bones were reduced.

Ex-ancestors: the meaning of the deposit?

After up to two centuries of use, around 5450 BC or later, this group of ancestral crania and mandibles were deposited in Structure Q, in a discrete area on the surface of its upper levels. The crania were not buried, but they may have been lightly covered with soil or placed in some organic container. Later, around 5400 BC, the final cranium was placed on top. Depositing the cranial cache was not necessarily an important ritual act; it may have been an unelaborate, final disposal of a heavily used collection of crania at the end of their use-lives. In some respects, it parallels the decommissioning of disarticulated human bone at Grotta Scaloria (Robb *et al.*, 2015).

Why these crania were taken out of circulation and transformed into ex-ancestors

is an open question. It is possible that this was how the collection was normally stored, and simply abandoned one day. Alternatively, it may represent disposal of well-worn ritual material that had fallen out of use, while the practice of cranial curation continued in ways that have not been archaeologically detected. It is also possible that this signified the end of cranial collection during a time of social change. In later centuries, crania continue to be important, bones continue to be circulated, and villages remain places of ancestral memory, but this is accomplished in other ways. For instance, Late Neolithic groups often returned to the site of earlier villages to bury their dead. The placement of the final cranium in Structure Q could signify a commemoration of the older ancestors and final closure of this ritual cycle. If this is the case, it fits well with ethnographic studies of ritual practices which emphasize the temporary nature of ritual cycles, particularly in small-scale groups (Barth, 1995). The post-mortem lives of the Masseria Candelaro ancestral crania extended over four to eight generations; this is likely to have surpassed the duration of living memory and may well be at the limit of most oral histories in tribal societies (Wiessner & Tumu, 1998).

CONCLUSIONS

As bioarchaeological studies of funerary rituals develop, an increasing lexicon of taphonomic signatures for funerary practices is defined. Our analysis expands the range of documented practices by describing a so-far unique case of cranial curation, use, and deposition in Neolithic Italy, adding previously undocumented variation to Italian and European prehistory. Our goal is not to add a new interpretive formula for identifying cranial curation taphonomically, but to expand our understanding of the ritual process. In a social

perspective, the Masseria Candelaro cranial cache provides an intriguing example of transgenerational village ritual. Insofar as we can determine through taphonomic and stable isotope analyses, it shows how a local group combined widely shared elements of deathways to create an idiosyncratic ritual which endured for centuries. While the practice apparently focused on males, this does not mean that southern Italian Neolithic society was male-dominated. Instead, the cranial cache may represent a particular kinship or ritual identity, among a heterarchy of contexts with differing ties to age and gender.

What 'ancestors' meant was based around the inherent power of human bone, perhaps associated with a particular way of defining group identity which was applied on a categorical basis. 'Ancestors' in other contexts could signify completely different practices and meanings, with different archaeological signatures. At Candelaro, the distinctive feature was that ancestors were not carefully treated, but instead had active use-lives. These were working ancestors who were circulated and manipulated in ways that showed little concern for preservation but high regard for their contextual significance. By emphasizing practices prior to deposition, this analysis finds that their final burial probably not an important ritual act, but rather a simple post-use-life decommissioning of ancestral crania.

ACKNOWLEDGEMENTS

This work was supported by the European Union through the European Research Council Advanced Grant 'Making Ancestors: The Politics of Death in European Prehistory', no. 885137 (John Robb, Jess Thompson, Mary Anne Tafuri, Silvia Soncin, Sofia Panella). We are grateful to the rest of the 'Making Ancestors' project team for their advice

and input on the analysis of this assemblage, and to the Soprintendenza Archeologia, Belle Arti e Paesaggio for the provinces of Barletta-Andria-Trani and Foggia for collaboration and permission to study the assemblage, curated at the Museo delle Civiltà (Rome). We would like to thank our six reviewers for their constructive feedback on the ideas and data presented here.

SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit <https://doi.org/10.1017/ea.2024.43>.

REFERENCES

- AlQahtani, S.J., Hector, M.P. & Livsidge, H.M. 2010. Brief Communication: The London Atlas of Human Tooth Development and Eruption. *American Journal of Physical Anthropology*, 142: 481–90. <https://doi.org/10.1002/ajpa.21258>
- Barrett, J.C. 1994. *Fragments from Antiquity: An Archaeology of Social Life in Britain, 2900–1200 BC*. Oxford: Blackwell.
- Barth, F. 1995. *Cosmologies in the Making: A Generative Approach to Cultural Variation in Inner New Guinea*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511607707>
- Bello, S.M. 2005. The Reciprocal Effects of Taphonomy, Funerary Practices and Anatomical Features on the State of Preservation of Human Remains. In: S.R. Zakrzewski & M. Clegg, eds. *Proceedings of the 5th Conference of the British Association for Biological Anthropology and Osteoarchaeology* (BAR International Series 1383). Oxford: Archaeopress, pp. 1–10.
- Bello, S.M., Crete, L. & Parfitt, S.A. 2022. Intentional Burial or Natural Deposition? A Taphonomic Approach to the Interpretation of Isolated Human Skulls. Paper presented at the 91st Annual Meeting of the American Association of Biological Anthropologists.
- Bello, S.M., Parfitt, S.A. & Stringer, C.B. 2011. Earliest Directly-Dated Human Skull-Cups. *PLOS One*, 6: e17026. <https://doi.org/10.1371/journal.pone.0017026>
- Bello, S.M., Saladié, P., Cáceres, I., Rodríguez-Hidalgo, A. & Parfitt, S.A. 2015. Upper Palaeolithic Ritualistic Cannibalism at Gough's Cave (Somerset, UK): The Human Remains from Head to Toe. *Journal of Human Evolution*, 82: 170–89. <https://doi.org/10.1016/j.jhevol.2015.02.016>
- Bloch, M. 1971. *Placing the Dead: Tombs, Ancestral Villages, and Kinship Organization in Madagascar*. London: Seminar Press.
- Bonogofsky, M. ed. 2006. *Skull Collection, Modification and Decoration* (BAR International Series 1539). Oxford: Archaeopress.
- Bonogofsky, M. ed. 2011. *The Bioarchaeology of the Human Head*. Gainesville (FL): University of Florida Press. <https://doi.org/10.5744/florida/9780813035567.001.0001>
- Bonogofsky, M. & Graham, J. 2011. Melanesian Modeled Skulls, Mortuary Ritual, and Dental X-Rays: Ancestors, Enemies, Women and Children. In: M. Bonogofsky, ed. *The Bioarchaeology of the Human Head*. Gainesville (FL): University of Florida Press, pp. 67–96. <https://doi.org/10.5744/florida/9780813035567.003.0003>
- Boulestin, B., Zeeb-Lanz, A., Jeunesse, C., Haack, F., Arbogast, R.-M. & Denaire, A. 2009. Mass Cannibalism in the Linear Pottery Culture at Herxheim (Palatinate, Germany). *Antiquity*, 83: 968–82. <https://doi.org/10.1017/S0003598X00099282>
- Brickley, M. 2004. Determination of Sex from Archaeological Skeletal Material and Assessment of Parturition. In: M. Brickley & J.I. McKinley, eds. *Guidelines to the Standards for Recording Human Remains* (IFA Paper, 7). Southampton & Reading: University of Southampton & Institute of Field Archaeologists, pp. 22–25. https://www.archaeologists.net/sites/default/files/ifa_paper_7.pdf
- Bronk Ramsey, C. 2009. Bayesian Analysis of Radiocarbon Dates. *Radiocarbon*, 51: 337–60. <https://doi.org/10.1017/S0033822200033865>

- Bronk Ramsey, C. 2021. OxCal v.4.4.4 [software]. <https://c14.arch.ox.ac.uk/oxcal.html>
- Buikstra, J.E. & Ubelaker, D.H. 1994. *Standards for Data Collection from Human Skeletal Remains* (Arkansas Archaeological Survey Research Series, 44). Fayetteville (AR): Arkansas Archaeological Survey.
- Caffell, A., Roberts, C., Janaway, R. & Wilson, A. 2001. Pressures on Osteological Collections: The Importance of Damage Limitation. In: E. Williams, ed. *Human Remains: Conservation, Retrieval and Analysis. Proceedings of a Conference Held in Williamsburg, VA, Nov 7–11th 1999*. Oxford: Archaeopress, pp. 187–98.
- Cassano, S.M. & Manfredini, A. 1983. *Studi sul Neolitico del Tavoliere della Puglia* (BAR International Series, 160). Oxford: British Archaeological Reports.
- Cassano, S.M. & Manfredini, A. 1993. Tre nuove date C14 da Masseria Candelaro. *Origini*, 17: 246–47.
- Cassano, S.M. & Manfredini, A. 2004. *Masseria Candelaro: Vita quotidiana e mondo ideologico in una comunità neolitica del Tavoliere*. Foggia: Claudio Grenzi.
- Cassano, S.M. & Muntoni, I. 2004. La frequentazione del villaggio nel tempo. In: S.M. Cassano & A. Manfredini, eds. *Masseria Candelaro: vita quotidiana e mondo ideologico in una comunità neolitica del Tavoliere*. Foggia: Claudio Grenzi, pp. 89–91.
- Cassano, S.M., Manfredini, A., Marconi, N., Muntoni, I.M., Carboni, G. & Curci, A. 2004. Lo scavo. In: S.M. Cassano & A. Manfredini, eds. *Masseria Candelaro: vita quotidiana e mondo ideologico in una comunità neolitica del Tavoliere*. Foggia: Claudio Grenzi, pp. 41–85.
- Chacon, R.J. & Dye, D.H. 2007a. *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*. New York: Springer Science. <https://doi.org/10.1007/978-0-387-48303-0>
- Chacon, R.J. & Dye, D. 2007b. Supplemental Data on Amerindian Trophy Taking. In: R.J. Chacon and D. Dye, eds. *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*. New York: Springer Science, pp. 618–29. https://doi.org/10.1007/978-0-387-48303-0_24
- Conati Barbaro, C. 2014. Forme di aggregazione sociale e uso del territorio nel Tavoliere di Puglia. In: M. Bernabò Brea, R. Maggi & A. Manfredini, eds. *Il pieno sviluppo del Neolitico in Italia, Rivista di Studi Liguri*, vols. 77–79, 2011–2013. Bordighera: Istituto Internazionale di Studi Liguri, pp. 111–17.
- Danby, G. 1987. The Skeletal Material from Passo di Corvo. In: G.D.B. Jones, ed. *Apulia. Vol. I: Neolithic Settlement in the Tavoliere*. London: Society of Antiquaries of London, pp. 206–07.
- Fabbri, P.F. & Lonoce, N. 2011. Gli aspetti funerari. Le sepolture. In: I. Tiberi, ed. *Serra Cicora tra VI e V millennio a.C.* Firenze: Istituto Italiano di Preistoria e Protostoria, pp. 187–233.
- Ferembach, D., Schwidetzky, I. & Stloukal, M. 1980. Recommendations for Age and Sex Diagnosis of Skeletons. *Journal of Human Evolution*, 9: 517–49. [https://doi.org/10.1016/0047-2484\(80\)90061-5](https://doi.org/10.1016/0047-2484(80)90061-5)
- Fernández-Jalvo, Y. & Andrews, P. 2016. *Atlas of Taphonomic Identifications: 1001+ Images of Fossil and Recent Mammal Bone Modification*. New York: Springer. <https://doi.org/10.1007/978-94-017-7432-1>
- Hageman, J.B. & Hill, E. 2016. Leveraging the Dead: The Ethnography of Ancestors. In: E. Hill & J.B. Hageman, eds. *The Archaeology of Ancestors: Death, Memory, and Veneration*. Gainesville (FL): University Press of Florida, pp. 3–41. <https://doi.org/10.5744/florida/9780813062518.003.0001>
- Hamilton, S., Whitehouse, R. & Seager Thomas, M. 2020. *Neolithic Spaces. Volume 2: The Bradford Archive of Aerial Photographs*. London: Accordia Research Institute.
- Hastorf, C. 2018. Using their Heads: The Lives of Crania in the Andes. In: V. Tiesler & M.C. Lozada, eds. *Social Skins of the Head: Body Beliefs and Ritual in Ancient Mesoamerica and the Andes*. Albuquerque (NM): University of New Mexico Press, pp. 269–74.
- Hill, E. & Hageman, J.B. 2016. The Archaeology of Ancestors. In: E. Hill & J.B. Hageman, eds. *The Archaeology of Ancestors: Death, Memory, and Veneration*. Gainesville (FL): University Press of Florida, pp. 42–80. <https://doi.org/10.5744/florida/9780813062518.003.0002>
- Inskip, S., Scheib, C.L., Wilder Wohns, A., Ge, X., Kivisild, T. & Robb, J., 2019. Evaluating Macroscopic Sex Estimation

- Methods Using Genetically Sexed Archaeological Material: The Medieval Skeletal Collection from St John's Divinity School, Cambridge. *American Journal of Physical Anthropology*, 168: 340–51. <https://doi.org/10.1002/ajpa.23753>
- Knüsel, C.J. & Outram, A.K. 2004. Fragmentation: The Zonation Method Applied to Fragmented Human Remains from Archaeological and Forensic Contexts. *Environmental Archaeology*, 9: 85–97. <https://doi.org/10.1179/env.2004.9.1.85>
- Knüsel, C.J. & Robb, J. 2016. Funerary Taphonomy: An Overview of Goals and Methods. *Journal of Archaeological Science: Reports*, 10: 655–73. <https://doi.org/10.1016/j.jasrep.2016.05.031>
- Knüsel, C., Robb, J. & Tafuri, M.A. 2016. The Cave's Occupants in Life and Death. In: E.S. Elster, E. Isetti, J. Robb & A. Traverso, eds. *The Archaeology of Grotta Scaloria: Ritual in Neolithic Southeast Italy*. Los Angeles (CA): Cotsen Institute of Archaeology, pp. 117–91.
- Kranioti, E.F. 2015. Forensic Investigation of Cranial Injuries Due to Blunt Force Trauma: Current Best Practice. *Research and Reports in Forensic Medical Science*, 5: 25–37. <https://doi.org/10.2147/RRFMS.S70423>
- Kuijt, I. 2009. Neolithic Skull Removal: Enemies, Ancestors, and Memory. *Paléorient*, 5: 117–20.
- Lo Porto, F. 1978. La preistoria del Materano alla luce delle ultime ricerche. *Atti della XX Riunione Scientifica in Basilicata 16–20 ottobre 1976*. Firenze: Istituto Italiano di Preistoria e Protostoria, pp. 275–94.
- Mallegni, F. 1978. I resti scheletrici trovati nelle grotte n. 2 e n. 3 di Latronico. *Atti della XX Riunione Scientifica in Basilicata 16–20 ottobre 1976*. Firenze: Istituto Italiano di Preistoria e Protostoria, pp. 215–17.
- Mallegni, F. 2013. Resti umani neolitici provenienti dal sito di Trasano (Matera): analisi biologiche e considerazioni tafonomiche. *Archivio per l'Antropologia e la Etnologia*, 143: 3–60.
- Manfredini, A. & Muntoni, I.M. 2004. Datazioni radiometriche. In: S.M. Cassano & A. Manfredini, eds. *Masseria Candelaro: vita quotidiana e mondo ideologico in una comunità neolitica del Tavoliere*. Foggia: Claudio Grenzi, pp. 463–65.
- Marconi, N., Muntoni, I.M., Cassano, S.M., Manfredini, A., Carboni, G. & Curci, A. 2004. Le strutture e le stratigrafie. In: S.M. Cassano & A. Manfredini, eds. *Masseria Candelaro: vita quotidiana e mondo ideologico in una comunità neolitica del Tavoliere*. Foggia: Claudio Grenzi, pp. 49–85.
- Mariotti, V., Muntoni, I.M. & Belcastro, M.G. 2020. New Insights into the Funerary Rituals of the Neolithic Site of Passo di Corvo (Apulia, Italy): The Study of the Human Remains. *Journal of Archaeological Science: Reports*, 34: 102643. <https://doi.org/10.1016/j.jasrep.2020.102643>
- McKinley, J.I. 2004. Compiling a Skeletal Inventory: Disarticulated and Co-Mingled Remains. In: M. Brickley & J.I. McKinley, eds. *Guidelines to the Standards for Recording Human Remains* (IFA Paper, 7). Southampton & Reading: University of Southampton & Institute of Field Archaeologists, pp. 14–17.
- Middleton, J. 1960. *Lugbara Religion: Ritual and Authority Among an East African People*. London: Oxford University Press for the International African Institute.
- Muntoni, I.M. & Salvadei, L. 2004. I resti scheletrici umani: stato di conservazione e considerazioni sulle dinamiche tafonomiche. In: S.M. Cassano & A. Manfredini, eds. *Masseria Candelaro: vita quotidiana e mondo ideologico in una comunità neolitica del Tavoliere*. Foggia: Claudio Grenzi, pp. 391–97.
- Orschiedt, J. & Haidle, M.N. 2006. The LBK Enclosure at Herxheim: Theatre of War or Ritual Centre? References from Osteoarchaeological Investigations. *Journal of Conflict Archaeology*, 2: 153–67. <https://doi.org/10.1163/157407706778942330>
- Parker Pearson, M. & Ramilisonina 1998. Stonehenge for the Ancestors: The Stones Pass on the Message. *Antiquity*, 72: 308–26. <https://doi.org/10.1017/S0003598X00086592>
- Pesce Delfino, V., Scattarella, V., de Lucia, A., Ferri, D. & Giove, C. 1977. Antropologia della comunità neolitica di Cala Colombo. In: A. de Lucia, ed. *La comunità neolitica di Cala Colombo presso Torre a Mare, Bari*. Bari: Società per lo Studio di Storia Patria per la Puglia, pp. 96–178.
- Pessina, A. & Tinè, V. 2018. *Archeologia del Neolitico: l'Italia tra VI e IV millennio a.C.* Rome: Carocci.

- Quagliati, Q. 1906. Tombe neolitiche in Taranto e nel suo territorio. *Bullettino di Paleontologia Italiana*, 32: 17–49.
- Radina, F., Aprile, G., D'Onghia, P., Russo, G., Sicolo, M., Sivilli, S., et al. 2020. Società neolitiche del sud-est italiano tra VI e V millennio a.C. Simboli e modelli di circolazione mediterranea nella documentazione funeraria. *Rivista di Scienze Preistoriche*, 70: 109–24.
- Reimer P.J., Austin, W.E.N., Bard, E., Bayliss, A., Blackwell, P.G., Bronk Ramsey, C., et al. 2020. The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0–55 cal kBP). *Radiocarbon*, 62: 725–57. <https://doi.org/10.1017/RDC.2020.41>
- Richards, M.P., Fuller, B.T. & Hedges, R.E.M. 2001. Sulphur Isotopic Variation in Ancient Bone Collagen from Europe: Implications for Human Palaeodiet, Residence Mobility, and Modern Pollutant Studies. *Earth and Planetary Science Letters*, 191: 185–90. [https://doi.org/10.1016/S0012-821X\(01\)00427-7](https://doi.org/10.1016/S0012-821X(01)00427-7)
- Robb, J. 1994. Burial and Social Reproduction in the Peninsular Italian Neolithic. *Journal of Mediterranean Archaeology*, 7: 27–71. <https://doi.org/10.1558/jmea.v7i1.27>
- Robb, J. 2007. *The Early Mediterranean Village: Agency, Material Culture, and Social Change in Neolithic Italy*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511499647>
- Robb, J., Elster, E.S., Isetti, E., Knüsel, C.J. Tafuri, M.A. & Traverso A. 2015. Cleaning the Dead: Neolithic Ritual Processing of Human Bone at Scaloria Cave, Italy. *Antiquity*, 89: 39–54. <https://doi.org/10.15184/aqy.2014.35>
- Santana, J., Rodríguez-Santos, F.J., Camalich-Massieu, M.D., Mart ín-Socas, D. & Fregel, R. 2019. Aggressive or Funerary Cannibalism? Skull-Cup and Human Bone Manipulation in Cueva de El Toro (Early Neolithic, Southern Iberia). *American Journal of Physical Anthropology*, 169: 31–54. <https://doi.org/10.1002/ajpa.23805>
- Skeates, R. & Whitehouse, R. eds. 1994. *Radiocarbon Dating and Italian Prehistory*. London: Accordia & British School at Rome.
- Smith, B.H. 1984. Patterns of Molar Wear in Hunter-Gatherers and Agriculturalists. *American Journal of Physical Anthropology*, 63: 39–56. <https://doi.org/10.1002/ajpa.1330630107>
- Stodder, A.L.W. 2006. The Taphonomy of Cranial Modification in Papua New Guinea: Implications for the Archaeology of Mortuary Ritual. In: M. Bonogofsky, ed. *Skull Collection, Modification and Decoration* (BAR International Series 1539). Oxford: Archaeopress, pp. 77–89.
- Striccoli, R. 1988. *Le culture preistoriche di Grotta Pacelli (Castellana Grotte, Bari)*. Brindisi: Schena.
- Tiesler, V. & Lozada, M.C. eds. 2018. *Social Skins of the Head: Body Beliefs and Ritual in Ancient Mesoamerica and the Andes*. Albuquerque (NM): University of New Mexico Press.
- Tunzi Sisto, A.M. 1999. *Ipogei della Daunia: preistoria di un territorio*. Foggia: Claudio Grenzi.
- Tunzi Sisto, A.M. & Sanseverino, R. 2008. Nota preliminare sull'insediamento neolitico di C.no S. Matteo-Chiantinelle (Serracapriola- Fg). In: A. Gravina, ed. *Atti 28° Convegno Nazionale di Preistoria, Protostoria, Storia della Daunia. San Severo 25–26 novembre 2007*. Foggia: Centro Grafico, pp. 87–98.
- Whitehouse, R. 2014. The Chronology of the Neolithic Ditched Settlements of the Tavoliere and the Ofanto Valley. *Accordia Research Papers*, 13: 57–77.
- Whitley, J. 2002. Too Many Ancestors. *Antiquity*, 76: 119–26. <https://doi.org/10.1017/S0003598X00089870>
- Wiessner, P. & Tumu, A. 1998. *Historical Vines: Enga Networks of Exchange, Ritual, and Warfare in Papua New Guinea*. Washington DC: Smithsonian Institution Press.

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Les ancêtres et leur durée d'emploi: rétention, conservation et dépôt de crânes néolithiques à Masseria Candelaro en Italie méridionale

Quand les archéologues évoquent le « culte des ancêtres » ou la « vénération des ancêtres », ils ne précisent en général pas ce que cela implique en pratique, mettant ainsi en cause le concept d'ancêtres, souvent appliqué de façon trop générique. Les auteurs de cet article présentent leurs études combinées de la bioarchéologie, de la taphonomie, des datations radiocarbones et des isotopes stables d'un groupe de crânes humains (crânes et mandibules) et crânes seuls afin d'élucider les pratiques rituelles régissant leur rétention sélective, conservation et déposition finale. Au Néolithique, entre 5500 et 5400 av. J.-C., les habitants de Masseria Candelaro dans les Pouilles (Italie méridionale) déposèrent les mandibules et crânes brisés d'environ quinze individus dans un tas au centre de leur village. Les crânes de ces individus, probablement masculins, avaient été assemblés pendant deux siècles et utilisés de manière active avant que cette collection rituelle fût définitivement mise hors service. En comparant cet ensemble avec des exemples archéologiques et ethnographiques, les auteurs examinent les motivations qui auraient pu mener à la conservation des crânes et proposent une interprétation des pratiques rituelles touchant aux ancêtres. Translation by Madeleine Hummler

Mots-clés: ancêtres, conservation de crânes, taphonomie, Néolithique, Italie

Die Gebrauchsdauer der Ahnen: Aufbewahrung, Speicherung und Entsorgung von neolithischen Schädeln in Masseria Candelaro, Süditalien

Wenn Archäologen den „Ahnenkult“ oder die „Ahnenverehrung“ besprechen, bleibt, was das praktisch beinhaltet, oft unbestimmt und führt zum Vorwurf, dass der Begriff von Ahnen zu allgemein angewendet wird. In diesem Artikel kombinieren die Verfasser ihre Untersuchungen der Bioarchäologie, der Taphonomie, der Radiokarbondatierungen und der stabilen Isotopen einer Sammlung von selektiv aufbewahrten, gespeicherten und deponierten menschlichen Schädeln (Crania und Unterkiefer) und Crania, um ihre rituelle Anwendung zu erforschen. Zwischen 5500 und 5400 v. Chr. haben die neolithischen Bewohner von Masseria Candelaro (Apulien, Süditalien) die zerbrochenen Schädel und Unterkiefer von ungefähr fünfzehn Individuen in einem Haufen in der Mitte ihrer Siedlung deponiert. Man hatte die Schädel dieser wahrscheinlich männlichen Individuen während zwei Jahrhunderte gesammelt und intensiv gebraucht, bevor man diese rituelle Sammlung endgültig deponierte. Durch Vergleiche mit archäologischen und ethnografischen Beispielen untersuchen die Verfasser die Motivationen hinter der Aufbewahrung von Schädeln und legen ihre Interpretation der rituellen Praxis in Bezug auf Ahnen vor. Translation by Madeleine Hummler

Stichworte: Ahnen, Aufbewahrung von Schädeln, Taphonomie, Neolithikum, Italien