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The Seulo Caves Project, Sardinia: a report on archaeological work undertaken in 2009 and 2010.

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Abstract: This short report introduces a new archaeological research project investigating the human uses of caves in the territory of Seulo, central Sardinia, and presents the preliminary results of archaeological field-survey, cave-survey, and excavation work undertaken in 2009 and 2010. At least nine caves were occupied in this area during prehistory, between the Middle Neolithic and the Bronze Age (c. 4700–850 cal BC). All appear to have been used for the performance of rituals, and can be compared to the ritual use of caves identified elsewhere in the Central Mediterranean region. Nevertheless, significant differences can also be identified at each cave, adding detail and diversity to our understanding of the human uses of caves.

BACKGROUND TO THE PROJECT

Rarely has it been possible to evaluate ideas about the ritual transformation of persons, objects and caves using a range of modern scientific techniques on a new archaeological dataset. Such an opportunity was recently provided by the discovery (by Dott.ssa Giusi

Gradoli, COMET – Valorizzazione Risorse Territoriali) and initial contextualization (by Dr. Terrence Meaden, Department of Continuing Education, Oxford University, UK) of an extraordinarily large and well-preserved group of at least nine ritual caves in the territory of Seulo, situated in the deep interior of Sardinia.

Each cave contains rich later prehistoric ritual deposits and one has rare cave paintings. The majority of this material can be assigned to between the Middle Neolithic and the Bronze Age (c. 4700–850 cal BC), although the human use of these caves has continued to the present day. The utilized caves range from wide rock-shelters to small chambers, long corridors, and large complex cave systems with elaborate speleothems. They are distributed along valleys formed by tributaries of the River Flumendosa. These watercourses dissect an extensive limestone plateau, which may have formed a focus for settlement and subsistence in later prehistory, to judge by the presence of scattered surface remains, including megalithic structures.

This archaeological research programme, directed by the author, is investigating the Seulo caves in relation to four key research aims. These are to establish: (1) the diversity of natural caves and their human uses in the territory of Seulo, over space and time; (2) how some of these caves and their natural features were selectively and variously modified from natural spaces into sacred places, especially during later prehistory; (3) the character and variety of rites of passage performed and experienced in these caves by different members of society; and (4) the degree to which these persons and the material dimensions of their cave ritual traditions were connected to (or marginalized from) wider patterns of life on different geographical scales, and transformed over time from prehistory to the present.

The work is being undertaken with the permission of the Direzione Generale per i Beni Archeologici (Rome), in collaboration with the Soprintendenza per i Beni Archeologici per le Provincie di Sassari e Nuoro, and with the assistance of the Comune di Seulo. What

follows is a report on work that is still in progress. Nevertheless, significant results were obtained during the first two years' work, which are worthy of publication in their own right.

FIELDWORK IN 2009 AND 2010

Three complimentary kinds of archaeological fieldwork were undertaken in Seulo during 2009 and 2010. They comprised field survey, cave survey and cave excavation.

Archaeological field survey

In order to begin to establish an above-ground archaeological record for the Seulo territory and an archaeological context for the caves, a small-scale field survey of the 2 km² Taccu di Ticci plateau was undertaken. 50 archaeological 'sites' have so far been identified. A few monumental prehistoric structures were identified on the plateau, at altitudes of between 760 m and 785 m. They include: the remains of three later prehistoric *nuraghi* (distinctive Sardinian megalithic buildings) situated on opposite sides of the Riu Narbonionniga valley; and the remains of a later prehistoric dolmen, with megalithic stone slabs forming a 12 m long corridor. Prehistoric artefacts were found scattered on the Pissu is Ilippas hilltop and on the flanking Fundu 'e Meu hill-slope, between about 810 and 870 m. They may indicate the presence of a large later prehistoric settlement site on the hill. The later prehistoric remains indicate that the most extensive and intensive period of occupation of the Seulo landscape was the Bronze Age (c. 2200-850 cal BC) – a statement that equally applies to the prehistoric caves in the area, and in Sardinia more generally (Lilliu 2003; Skeates in press).

Cave survey

In order to also place the known Seulo caves of archaeological significance in a speleological context, an extensive cave survey was undertaken within the river catchment of the upper Riu Narbonionniga. 17 caves have so far been recorded in three sample areas.

Six caves are known in the *Foresta di Addoli*, two of which were certainly occupied during prehistory. Nine rock-shelters and caves were recorded at *Su Cannisoni*, a highly visible area of cliffs situated on the north end of the Pissu is Ilippas hill. Most have been adapted in recent times as shelters for herds of goats by the addition of dry-stone walls across their entrances, some of which cut into prehistoric deposits containing human bones and a few pottery sherds. Eight are north-facing rock-shelters, situated in a band between 775 and 808 m altitude. The majority of these are 3 to 13 m wide. Two more rock-shelters were recorded on the *Taccu de Ticci* plateau. Both have been used in recent times as animal shelters. Elsewhere in the Seulo territory, two more caves containing rich prehistoric mortuary deposits have been identified: ‘Su Stampu Erdi’ and ‘Sa Forada de Gastea’. Samples of human bones from both sets of deposits have been radiocarbon dated to the latter part of the Early Bronze Age (c. 2000–1900 cal BC). Prehistoric human groups clearly selected only certain of these natural caves for use, according to factors including their position in the landscape and their form, modifying them into cultural – and more specifically ritual – caves in the process.

EXCAVATION OF FOUR CONTRASTING CAVE SITES

A sample of four of the cave sites known to contain prehistoric deposits was selected for further recording and for test-excavation, in order to deepen our understanding of their human uses.

In order to help define the distinctive environmental character of each cave, Tiny Tag data-loggers were installed in all four caves to record present-day temperature and relative humidity levels, at half-hourly intervals for up to one year. Laser scans were also produced (by Archeogeo) of the entire interiors of three of the caves (Grutta I de Longu Fresu, Su Grutta 'e is Bittuleris and Riparo sotto roccia Su Cannisoni), and of one corridor and chamber in the west branch of Grutta de is Janas, to enhance recording. It is the first time that either of these techniques has been used in Sardinian cave archaeology.

Recording grids of 1 x 1 m squares were then laid out on the floors of selected areas of these caves. Disturbed deposits were cleared from their surfaces. A few grid squares were then selected at each site for further excavation in 10 cm spits. All deposits were excavated carefully, using brushes and fine tools, then dry sieved through a 3 mm mesh and also sampled for environmental analysis. In this way, high quality archaeological recording and sampling was ensured.

Grutta I de Longu Fresu

In the Longu Fresu valley, a group of three south-facing caves lies along the bottom edge of a limestone outcrop flanking the north side of the stream, at altitudes of between 730 m and 750 m. 'Grutta I de Longu Fresu' is the largest of these, and comprises a relatively straight corridor, measuring 15 m long, with short lateral niches.

Two important features lie close to the innermost end of this cave. The first is a small group of paintings (extending over an area of at least 30 x 30 cm), covered by flowstone, situated in a niche just to the side of a now extinct spring. The paintings are difficult to decipher (indeed everyone who sees them has a different interpretation), but the general consensus is that at least two schematic linear representations of anthropomorphic figures can be seen, with legs, arms, and either an elongated head or horns. The style of these paintings

seems to fit within the Central Mediterranean corpus of Late Neolithic cave art (e.g. Graziosi 1973). The second feature is a human skull, also covered by flowstone. A sample of bone from this skull was radiocarbon dated to around 4250–4050 cal BC, which places it in the latter stage of the Sardinian Middle Neolithic Bonu Ighinu culture or in the following (poorly defined) Late Neolithic (c. 4700–4000 cal BC).

<Insert Photo A>

Additional human bones were found on the cave floor, in other niches and holes, including a second adult skull coated with flowstone, child skull fragments, and a juvenile long bone – the latter radiocarbon dated to precisely the same period as the first skull.

A group of four 1x1 m grid squares was excavated at the innermost end of the cave, adjacent to the flowstone-coated skull and paintings. The main feature to be uncovered was a semi-circular structure (0.9 m long by 0.9 m wide). It is formed by a small group of stalagmites. These seem to have been modified – by being truncated and then overlain by one or two large stone blocks (which do not appear to be the result of natural rockfall), now fixed in position by drip water – in order to create a small demarcated circular space.

Close to the north-east side wall of the cave, in a disturbed deposit of loose stones situated between the skull, the stone circle and the painting, a neolithic-style greenstone axe-blade was found. It is trapezoidal, with a curved blade and butt (79 mm long, 34 mm wide at the blade, and 14 mm thick). It has imperfectly smoothed surfaces, the blade being the most smoothed part. This was the only artefact found during the excavations in this cave, which highlights its significance as a specially deposited object – indeed, the deposition of greenstone axes in ritual caves is a characteristic feature of the Italian Neolithic (O’Hare 1990, pp.136–8).

<Insert Photo B>

Underlying basal deposits, comprising compact deposits of stones, soil and microfauna (including the now extinct *Prolagus sardus* or Sardinian pika), can be interpreted as naturally, rather than anthropogenically, accumulated deposits.

So, in the Neolithic, it is clear that this particular cave was used for the performances of small-scale rituals that involved the primary and secondary ‘burial’ of human remains, the production of wall paintings, the delineation of space in the cave interior, and the sacrifice of a valued greenstone axe.

Grutta de is Janas

‘Grutta de is Janas’, by contrast, is a large cave complex with two interconnected branches and at least two entrances, located on the middle of a hill slope at 800 m. The north branch is about 100 metres long and the west branch about 75 m. The cave contains numerous spelethems. The north branch has consequently been adapted for use as show-cave. Final Neolithic and Early Bronze Age deposits have been found throughout the complex. Excavations were undertaken in different areas of the cave system, in those places where these prehistoric cultural deposits seemed deepest.

A low but wide upper chamber (11 m long by 5 m wide, and between 1 m and 1.5 m high) is situated at the inner end of the entrance corridor in the west branch of the cave complex. It contains rich cultural deposits, marked on the surface by large quantities of dark soil, pottery sherds and animal bones. A group of four 1 x 1 m grid squares was excavated here. Two samples of sheep/goat bone produced a radiocarbon date range of around 3800–3650 cal BC, which falls within the time-span of the Sardinian Final Neolithic Ozieri

culture (c. 4000–3200 cal BC). The deposits comprised a homogeneous, 12–24 cm deep burnt layer, composed of stones and fine dark grey ashy soil. This contained numerous relatively large pottery sherds, animal bones, obsidian artefacts, a perforated sea shell ornament (27 mm long), and a polished red stone bead (10 mm long). Many of the artefacts bore signs of having been heavily burnt. The pottery, which included the rim of a large jar and a few handles, was predominantly of coarseware. However, three fragments of a relatively thin (6–7 mm thick) medium-fine burnished ware were also found. Amongst the obsidian artefacts were three tang-and-fins arrowheads, and a flake, all originally deposited with very sharp (and potentially unused) edges.

<Insert Photo C>

A relatively large semi-circular lower chamber (around 6 m wide and 3 m deep) flanks the corridor that connects the west and north branches of the cave system. It is delimited on three sides by the cave wall. Two 1 x 1 m grid squares were placed in the middle of this chamber, and excavated down to bedrock. The prehistoric deposits in this area appear to have been completely disturbed by its more recent use as a domestic animal shelter. Nevertheless, important material remains – most of which can be assigned to the Final Neolithic Ozieri culture – were discovered here. These include: animal bones, pottery sherds, obsidian, a bead, and the head of a stone figurine.

<Insert Photo D>

In the small inner chamber, lying towards the innermost end of the north branch of the cave complex, more intact deposits contained: an animal bone, 18 fragments of prehistoric

pottery (the majority belonging to a single vessel), and the remains of microfauna. The domestic pig tibia was radiocarbon dated to the Early Bronze Age (2150–2000 cal BC).

Our preliminary interpretation is that all of these deposits were formed during the course of ritual performances (rather than as a consequence of domestic practices), and that, over time, the ritual use of the cave extended from those chambers located closest to the entrances to the innermost parts of the cave complex.

Su Grutta 'e is Bittuleris

Above the main band of rock-shelters at Su Cannisoni, at 825 m altitude, just below the summit of the rocky spur, lies a small single-chambered cave (8 m wide and 6.5 m deep), known today as 'Su Grutta de is Bittuleris' (and in the past as 'Sa Omu 'e is Ossus'). It is well known as a prehistoric burial cave, and contains rich archaeological deposits.

A 1 x 1 metre grid square was excavated in the north-east corner of this cave. Completely disturbed deposits were found right down to bedrock, to a depth of 0.22 m. Cultural material, radiocarbon dated to the Middle Bronze Age (1750–1600 cal BC), included substantial quantities of human bones (ranging from large to highly fragmented pieces), a few animal bones, small fragments of coarse and fine pottery, obsidian artefacts, a trapezoidal bone pendant (25 mm long), a shell bead (10 mm long), and a ceramic bead (17 mm long). Specialist study of the human remains (by Dr. Jessica Beckett, a freelance osteoarchaeologist based in Sardinia) points to successive primary inhumations in this cave, of adults and children, males and females, followed by significant disturbance and fragmentation of the bones. This cave, then, represents a good example of a later prehistoric burial cave, comparable to contemporary burial caves and rock-cut tombs found throughout the Central Mediterranean region (e.g. Whitehouse 1981).

Riparo sotto roccia Su Cannisoni

The largest of the rock-shelters at Su Cannisoni, known as ‘Riparo sotto roccia Su Cannisoni’, is 40 m wide, and also contained prehistoric deposits. A key feature found towards the eastern end of this rock-shelter is the remains of an artificial pile of stones, piled up against the back wall, and cemented by flowstone derived from a now extinct spring. Two 1 x 1 m grid squares were excavated immediately in front of this pile. They clarified that the pile of stones had been constructed over a secondary burial deposit, radiocarbon dated to the Middle Bronze Age (1530–1450 cal BC), and to a stage slightly later than that represented at the nearby Su Grutta ’e is Bittuleris. The mortuary deposit comprised: a pair of poorly preserved adult human skulls; an adjacent artificial semi-circle of stones containing a large group of poorly preserved, disarticulated, human bones (especially long-bones, but also fragments of a child skull), some animal bones (sheep/goat), a few relatively large sherds of coarseware, and some fragments of charcoal. Specialist study of the human bones confirms that only selected body parts, especially skulls and long-bones of adults and children, were deposited here as part of secondary burial practices, and that they were later affected by severe weathering, due to the exposed position of the rockshelter. Further evidence of secondary burial practices, and more specifically of the movement of bones between caves, is represented by a human vertebra found in the upper deposits, which appears to derive from the same arthritic individual as another vertebra found in Su Grutta ’e is Bittuleris. So, in contrast to the slightly earlier primary burial cave, the Su Cannisoni rock-shelter was used for a somewhat different set of secondary mortuary practices.

<Insert Photo E>

FUTURE WORK

These are preliminary results. Nevertheless, they do highlight the excellent research potential of the Seulo caves. Consequently, a second phase of research will now take place: with larger-scale excavation in Grutta de is Janas; and more extensive scientific research, including landscape characterisation, cave sediment analysis, palaeoclimatic analysis of speleothems, and isotope and DNA analyses of human and animal bones. All these approaches are intended to shed more light on the multiple human uses of the Seulo caves and on the processes of their cultural transformation.

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PHOTO CAPTIONS

- Photo A Cave painting in Grutta I de Longu Fresu (photo: J. Veitch)
- Photo B Greenstone axe-head from Grutta I de Longu Fresu (photo: J. Veitch).
- Photo C Excavations in the upper chamber of Grutta de is Janas (photo: R. Skeates).
- Photo D Figurine head from Grutta de is Janas (photo: J. Veitch).
- Photo E Excavations at Su Cannisoni rock-shelter (photo: R. Skeates).