



## Excavations at Ra's al-Jinz RJ-1: stratigraphy without tells

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## Excavations at Ra's al-Jinz RJ-1: stratigraphy without tells

CÉCILE MONCHABLON, RÉMY CRASSARD, OLIVIA MUNOZ, HERVÉ GUY,  
GAËLLE BRULEY-CHABOT & SERGE CLEUZIQU

### Introduction

The site labelled as RJ-1 in the registration system of the Joint Hadd Project is located on the summit of a flat tabular relief at the centre of the Ra's al-Jinz embayment (Fig. 2). Locally known as al-Ḥawrah, it is a mesa isolated from the marine abrasion terrace which, from Ṣūr to Ra's al-Khabbah, represents the major component of the coastal landscapes all along the north-eastern Ja'ālān. This white limestone terrace of Miocene age is 30 to 35 m high and its surface is mainly the product of abrasion by the sea during a period of higher sea-level, probably stage 5 of the Upper Pleistocene, *c.* 120,000 years ago, and later cutting by riverine erosion and shaping by aeolian activity. It is almost rectangular in an east-south-east to west-north-west orientation, some 110 m wide and 270 m long. The only easy access is a path along the slope which leads to a gully, some 5 m deep and 15 m wide, which separates the main area from a smaller adjunct, labelled RJ-1b.

The presence of archaeological remains at Ra's al-Jinz first became known in 1975 when it was visited by a Harvard survey team led by Jim Humphries (Hastings, Humphries & Meadow 1975: n. 3), following the advice of W. Payton and P. Threadwell who had located it a month earlier. These investigations were only concerned with the Early Bronze Age site labelled as RJ-2, at the foot of the mesa. Site RJ-1 itself (Fig. 2) was discovered on November 19th 1981 by Professor P.M. Costa, at that time the Archaeological Advisor to the Minister of National Heritage and Culture, while accompanying a visit to RJ-2 by the Italian team working at Qurm RH-5 near Muscat. He immediately understood that its intact deflation pavement of flints and burnt stones, associated with several dozen stone structures, was part of a major archaeological site. A sketch plan was made in 1982 by Enzo Labianca and completed in 1985 by Luca Mariani during the first campaign of the Joint Hadd Project (Cleuziou & Tosi

1986: 5; Mariani 1986). At this time, following the discovery on the surface of two leach-shaped earrings of fourth millennium BC type (Isetti & Biagi 1989: 10) and of stone net-sinkers of the same period, the site was considered to be a Neolithic settlement of circular stone structures. One of these circular structures, called Structure 5, was selected for excavation because, being on the edge of the deflation pavement, the work would not damage this extremely informative surface. Two campaigns were carried out under the direction of Paolo Biagi in November 1986 and November 1987. From the beginning, it became clear that the structure which lay directly on the stone surface of the mesa, was a single building with a single period of occupation dating from the beginning of the second millennium BC, i.e. the Wadi Suq period. Despite the circular appearance of the ruin before excavation, Structure 5 actually consists of two small rectangular rooms perpendicularly set, each with its access door facing east, and an adjacent semi-circular courtyard (Biagi, Jones & Nisbet 1989). Finds included sherds of early Wadi Suq type painted pottery, copper hooks and pins, and remains of the working of *Conus* sp. shells. Two radiocarbon samples produced the dates 1895-1692 cal BC (3450±70 bp, Bln-3689, on charcoal) and 1736-1616 cal BC (3369±44 BC average of Bln-3652/I, 3290 ± 60 bp and Bln 3652/II: 3450 ± 60 bp on *Perna picta* shells). In the meantime, P. Biagi also carried out a sounding at RJ-21, against the inner side of a wall closing the access to the mesa between RJ-1 and RJ-1b, showing that it was still standing to height of *c.* 2 m and was datable by the presence of several painted sherds of Early Wadi Suq date. It was therefore concluded that the archaeological remains on the top of the mesa represented a, possibly well preserved, early second millennium village. This was obviously of great archaeological importance since, contrary to what might be concluded from the little evidence published, it was certainly not a "small site" (Carter 1997: 90-91). Full priority was given to the excavations of the Early

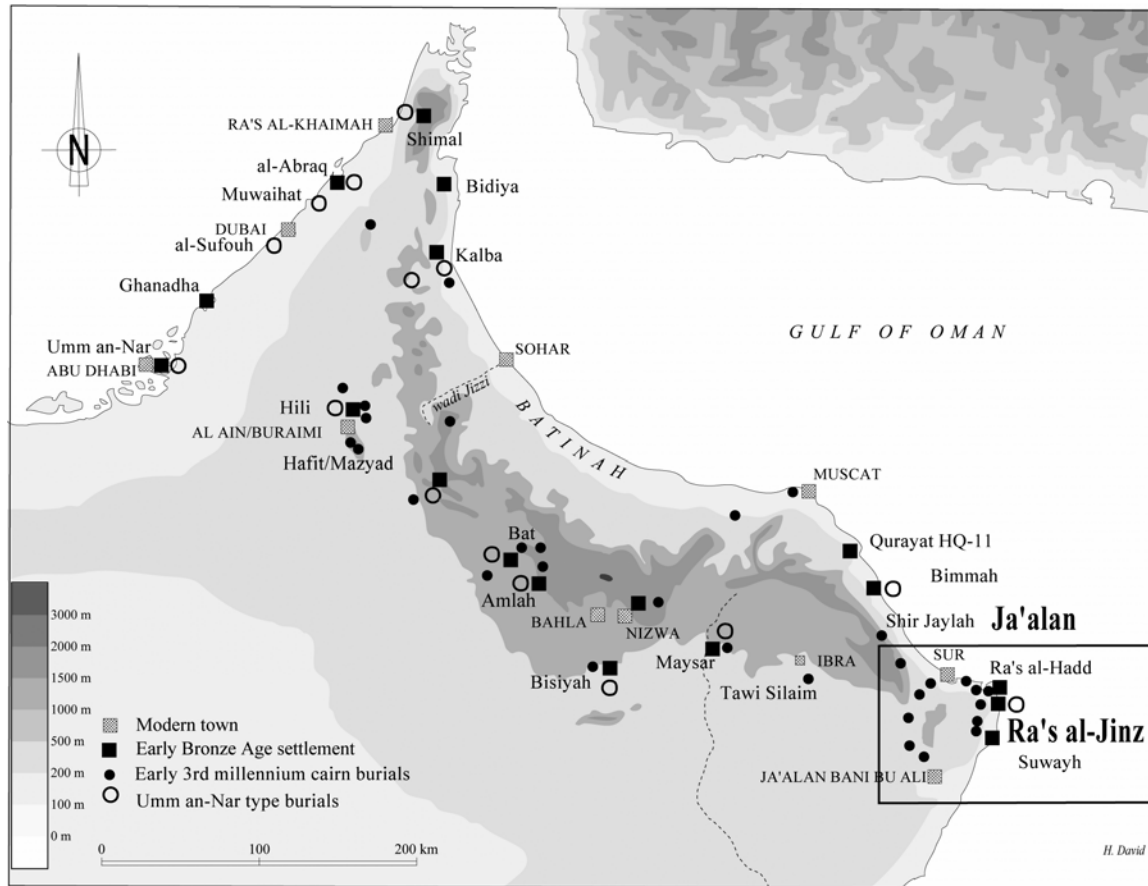
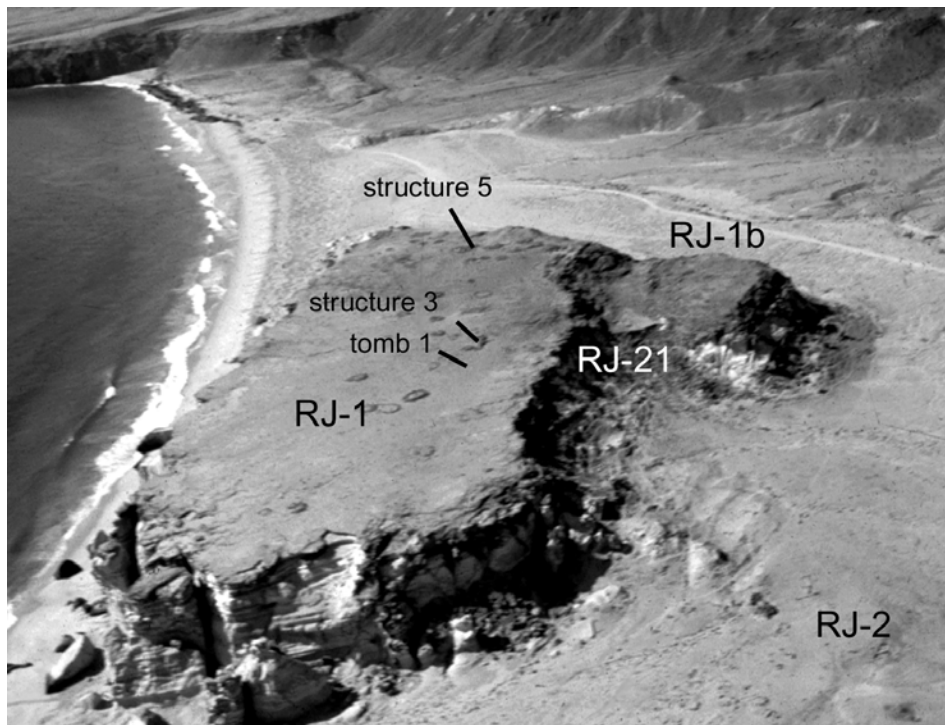


FIGURE 1. An archaeological map of the Early Bronze Age in the Oman peninsula, with the location of the Ra's al-Jinz and Ja'alan sites. (Drawing after H. David).

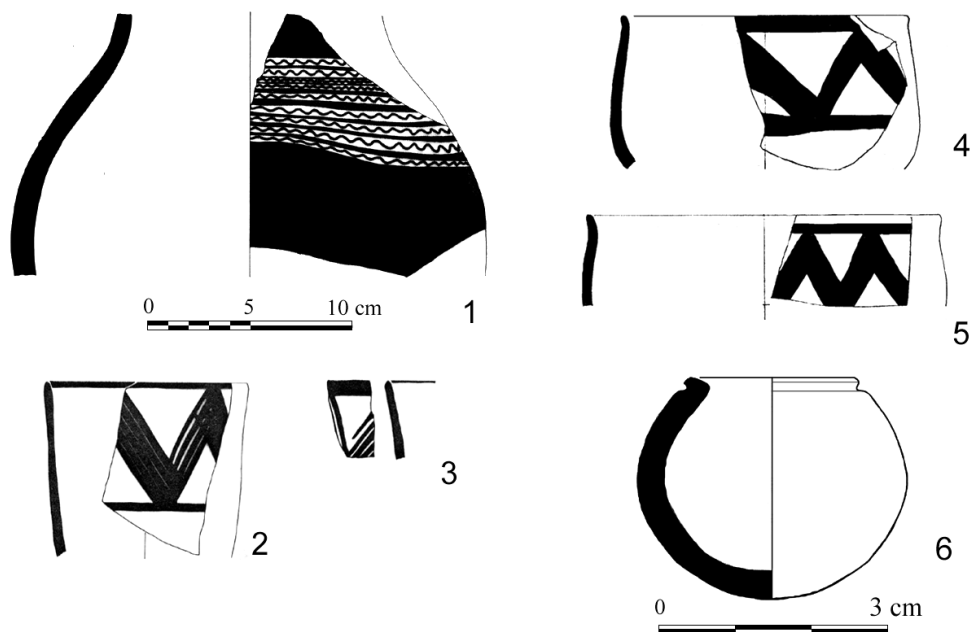
Bronze Age village at RJ-2 and excavations at RJ-1 were left for future investigation. With the program at RJ-2 coming to an end, and in coordination with the development plans for the area prepared by the Ministry of Environment and Regional Municipalities for the Ra's al-Jinz turtle reservation, of which the archaeological sites are a part, it was decided to begin once more the investigations at RJ-1. By that time also, with the growth of archaeological data in the UAE and Oman, the analysis of developments which led to the Wadi Suq assemblage had become an increasingly important research priority. In preparation for this work, several surface surveys and restricted soundings were carried out by Jean-Marc Chofflet between 1992 and 1995. These clearly demonstrated that periods other than the Wadi Suq were present, notably in the central part of the site where fourth millennium BC items were again found. The sounding at RJ-21 was also extended,

and confirmed the importance of a Wadi Suq occupation behind the wall. Some stone shelters abutted against it while all the fissures on both sides of the gully appear to have been settled at various times, one of them yielding a fragment of a buff jar with black paint of possible late Sorath Harappan affinity or provenance (Fig. 3/1), although this remains to be checked through archaeometrical analyses.

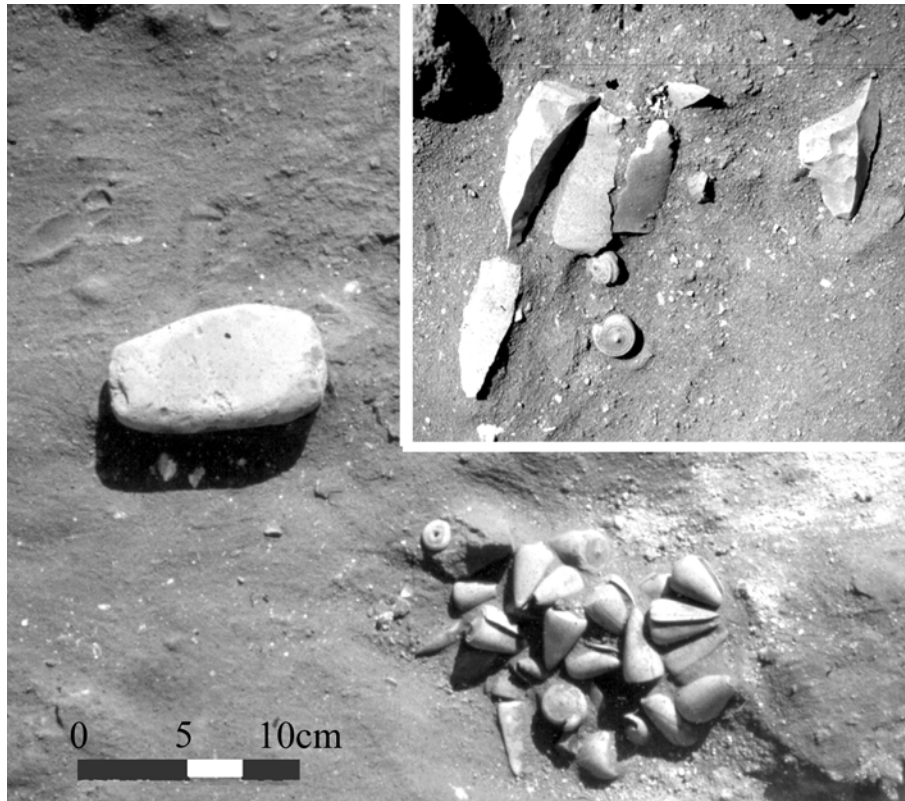
The first excavation campaign took place under the direction of J.-M. Chofflet in January-February 1999 and work has continued every year since then under the direction of two of the authors (S. Cleuziou and C. Monchablon). Structure 3 was chosen for investigation as it was expected to provide an archaeological sequence for the Wadi Suq period itself, in preparation for a comprehensive excavation of the many structures to the west which appeared to constitute the main settlement of this period.



**FIGURE 2.** *A general view of RJ-1 and adjacent sites from the north-east. (Joint Hadd Project).*



**FIGURE 3.** *1-3: pottery from RJ-21. 4-5: pottery from RJ-1 structure 3. 6: chlorite vessel DA 15635 from RJ-1 Tomb 1.*



**FIGURE 4.** *RJ-1 Structure 3: storage of juvenile *Conus* sp. with hammerstone (left) and flint blades (upper right) used in the working process. (Joint Hadd Project).*

### **Excavations at Structure 3: a general sequence for the site**

From the point-of-view of achieving a better understanding of the Wadi Suq period, the excavation of Structure 3 could be considered as disappointing. Below a heap of fallen stones, it revealed a small rectangular room, *c.* 2.50 x 1.80 m in size, oriented east-west (Structure 3), and to the east the remains of two similar adjacent rectangular rooms, with the same orientation, which were labelled Structure 4. All these rooms opened eastwards. Remains of perpendicular walls south and north of Structure 3 were either the remains of adjacent rooms or temporary shelters. It is likely that the original structures had been refurbished many times. But the associated sediments were at most 0.15 m, and more often less than 0.10 m, thick. Deflation had removed any sediment between the stones themselves which did not allow the tracing of any detail of this

sequence. However, once matched with the excavations of Structure 5, the data recovered may be of interest in interpreting the Wadi Suq period.

These excavations notably include several workshops where juvenile *Conus* sp. were made into large beads, different from the *Conus* sp. rings produced earlier at RJ-2 (Fig. 4). The bone assemblage consisted mainly of fish bones which were poorly preserved, but the presence of several bones from the internal ear of dolphins indicates that such animals were exploited. Pottery included sherds of classical early Wadi Suq pottery such as beakers with painted decoration of black chevrons over a red slip (Fig. 3/3), but also bowls with flat bases in a sturdy red polished ware with decoration of solid oblique lines in black paint (Fig. 3/4-5) which do not match the common Wadi Suq wares. In shape and ware, they could be compared with late or post Harappan Gujarati wares, but this remains to be demonstrated.



**FIGURE 5.** *RJ-1 Structure 3: the eastern section of square E5, showing the four main cultural strata. (Joint Hadd Project).*

Below this level, which represents phase IV in the provisional cultural sequence for RJ-1, there is, however, a stratigraphy in the excavated area, some 1500 years being packed into some 0.50 m of archaeological layers overlapping the limestone surface of the marine abrasion terrace (Fig. 5). This stratigraphy can be described as follows:

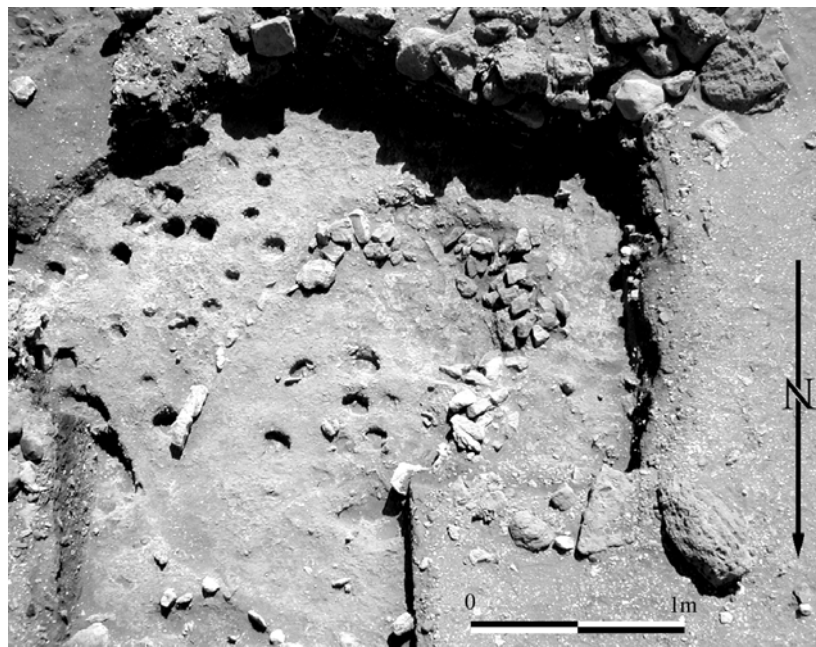
Phase III belongs to the second part of the third millennium BC, being broadly contemporaneous with the Early Bronze Age occupation at RJ-2. It mainly consists of large shallow pits dug into the previous layers. Six of them were fully excavated, but there are many more. These pits were found full of dark ashes, burnt stones and bones of large fish, mainly yellow-fin tuna, and can be interpreted as fish-processing devices, probably for smoking. It is likely that an area of some 200 m<sup>2</sup> located immediately west of Structure 3 and consisting only of thousands of burnt stones lying directly on the rocky surface of the mesa was associated with these fireplaces. We are dealing with a use of the mesa for fish processing by the people of RJ-2, in addition to the many working areas on the site itself, but

it remains difficult to decide to which of the occupation phases at RJ-2 it can be related. Little material was found, mainly flint items similar to those of RJ-2, some small copper items (fragments of fish-hooks and needles), and a few potsherds similar to those of Periods II and III at RJ-2, including at least one sherd of a large jar of Indian origin. Some charred date stones were also present.

Phase II can be dated from the first part of the third millennium BC. It consists of 0.25 m of fairly undifferentiated layers of greyish sand mixed with ashes, with many postholes dug from many different levels, most of which appear to have been part of circular structures. No pottery was found, and we must await further studies to tell if the flint material displays similarities with that of the settlement at HD-6. Metal was still present in the shape of fish-hooks and needle fragments. A small collection of beads was recovered, which displays clear similarities with those found at HD-6 and in the "Hafit-type" cairn burials of RJ-6, HD-7, RJ-13, etc.

Phase I (late fourth millennium BC) is separated





**FIGURE 6.** *RJ-1: the postholes and fireplace of Period 1 below Structure 3 in square D3, from the north. (Joint Hadd Project).*

from phase II by a layer of indurate grey sand 10 cm thick, for which no explanation can be found at present, but which is likely to be a pedological alteration due to weathering. It is even unclear whether it belongs to phase I or phase II, although the first seems more likely. It was cut by many postholes from upper layers, and covers many others from phase I, dug into the stone surface of the mesa. These postholes delimited small circles, some 2-3 m in diameter which can be interpreted as the remains of circular huts (Fig. 6). There were also some curvilinear trenches, 10-15 cm wide and 10-15 cm deep where small flat raised stones were set. At least one large shallow fireplace was dug into the bedrock in square D2, which seems to have been surrounded by a circle of postholes, recalling similar structures found in contemporaneous layers at sites KHB-1 and HD-50.

The burial of a child, laid on its right side in a crouching position, broadly aligned north-south with the head to the north, was found in the indurate layer in square E5. No pit was evident and the body seems to have been deposited rather crudely among some stones (the head was partly crushed by two medium-sized stones). It is uncertain whether it should be considered as dating from phase II or I. It contained two beads of *Engina mendicaria*, an item common in both periods. A second child burial, certainly dating from phase I, was

found in square D3. The body was deposited in a shallow pit, in a crouched position with the head towards the north. No material was associated with it.

### Excavation of Structure 2

In view of the situation in Structure 3, it was decided during the 2000-2001 season to move some 15 m eastwards, where a rectangular structure which appeared to be a small Wadi Suq house was visible on the surface, apparently associated with a circular courtyard, recalling to some extent the situation in Structure 5 previously excavated by Paolo Biagi (Biagi, Jones & Nisbet 1989: fig. 2). All the remains protruded slightly through the deflation pavement where we expected to find some substantial layers of the Wadi Suq period.

A first cleaning of the surface confirmed this impression. We were able to delimitate the western part of a small rectangular room, some 2.20 m wide, associated with the south-eastern quadrant of the round "courtyard". It could have measured over 3 m long and its western wall may also have extended several metres southwards. The material collected included flints of the variety associated elsewhere with phase IV and three sherds of typical Wadi Suq pottery. But below the deflation pavement and some 5 cm of black sand and ashes, this courtyard turned into an almost perfect circle,

8 m in diameter, filled with reddish clay clearly originating from the lowermost part of the embayment, north of RJ-2. Several shallow pits full of ashes and burnt stones had been dug across its surface.

It soon became obvious that this circular structure was a grave of Umm an-Nar type that had later been re-used to build a Wadi Suq house. The inner walls delimiting the south-eastern chamber had been re-used to make the northern wall and north-western corner of the house. The remains of the grave, which was probably already ruined, had later been plundered to build the house, and its outer wall was left and refurbished to be used as a courtyard. The model of housing already known from Structure 5 was reproduced here.

### Tomb 1

This tomb was labelled Tomb 1. Its inner walls were still preserved in the clay filling and it was soon possible to trace them. It was divided into two sectors, between which there was no communication, by a partition wall running more or less east-west across the diameter of the tomb. Each part was then divided into four chambers by three walls, making eight chambers in total.

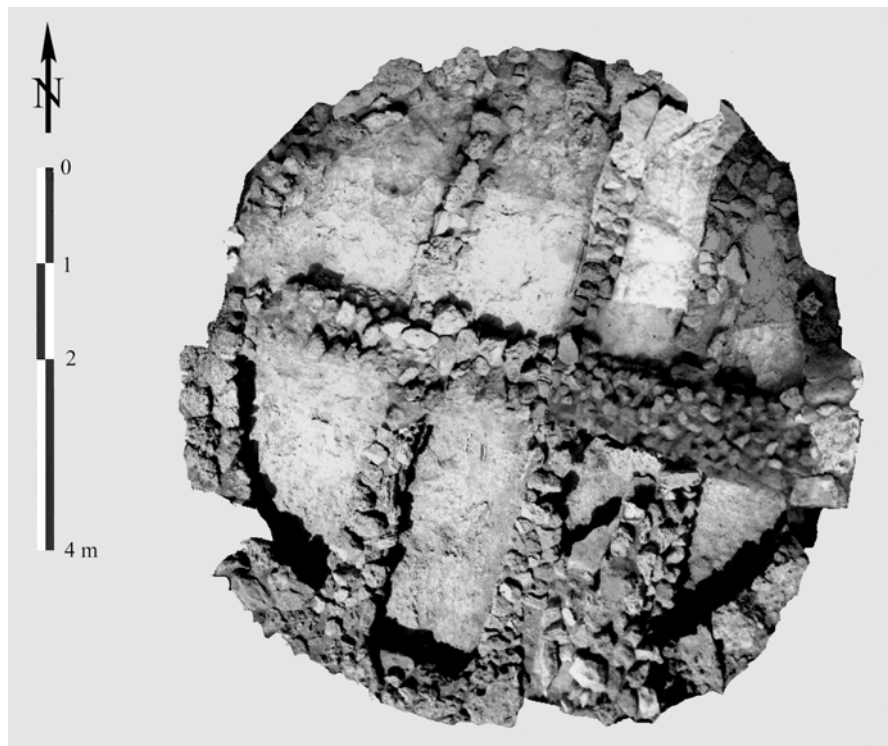
The monument was built in a circular excavation, 30 to 40 cm deep, cut through the previous sediments down to the bedrock (the surface of the abrasion terrace). At some places, and notably in Chambers 1 and 2 to the north-west, the bedrock itself was dug into to a depth of some 10-15 cm in the extension of the chambers, probably to maintain an almost constant base level for these chambers. A sounding carried out to the west of the tomb clearly displayed the section of the trench with a dark mixture of ashes and sand in the filling. These sediments mostly date from Period II, although a small net-sinker of a fourth millennium BC type was found. But as none of the postholes, so characteristic of Period I (late fourth millennium BC) below Structure 3, was found in all the wide surface of bedrock exposed in this sounding and below Tomb 1, one may conclude that activity of this period was absent in the area of Tomb 1. The diameter of Tomb 1 varies between 7.90 and 7.70 m according to where it is measured. The outer and inner walls were some 0.75 m wide and, contrary to what is usually found in Umm an-Nar tombs, none of the eight chambers communicated with any of the others at the preserved level of the remains (Figs 7 and 8).

This can be explained by the fact that what is preserved of Tomb 1 is the subterranean part, below the actual pavement of large flat slabs in the chambers

themselves. Various details of the construction point to this interpretation. The outer wall, up to the surface level, and the dividing walls were made of two curtains of boulders, *c.* 25 cm in average size, separated by a filling of smaller stones. Above these was a course of flat slabs broadly disposed as headers, which was only preserved in several places notably to the north-west, similar to the usual setting of the "plinth" characteristic of Umm an-Nar type burials. Some large flat slabs, 10-15 cm thick, were found in an oblique position against the walls of Chambers 1, 4, 6 and 8 and may be all that remains of the pavement of the chambers themselves, one of these slabs being still possibly *in situ* in the eastern part of Chamber 7. One of the slabs, found in a vertical position across the filling of Chamber 8, was 1.30 m long. All the other pavement slabs were probably carried off during the destruction of the monument.

It can therefore be concluded that Tomb 1 was built with subterranean spaces, some 30-40 cm high, below the original level of the chambers. These spaces were probably not used for funerary deposition, contrary to what is known for instance from Tomb A at Hili North (Vogt 1985: pl. 29b), as almost all the material found inside them appears to have fallen from the upper part of the monument during its destruction. It seems more likely that these spaces were left empty. Many bones of small rodents were found during the excavation, and their identification may throw some light on this question. Shallow subterranean spaces below the pavement of the chambers have already been found in an Umm an-Nar grave (Tomb 1) excavated at Maysar 4 (Weisgerber 1980: 92-93, Abb. 57). Like Tomb 1 at RJ-1, it had also been dug some 30-50 cm into the ground. However, some material and bones, including parts of three skulls were found in the western part of the northern chamber, which was still covered with stone slabs. We may suppose that they were *in situ*.

All the chambers were filled up to the top of the preserved remains with yellowish clay that was obviously brought from the plain of the Ra's al-Jinz embayment. Into this filling, and more especially towards its bottom, were found scattered fragments of human bones usually of a very small size (see below), some 300 sherds and 2506 beads, in addition to several copper items (rings, pins) and a single small chlorite vessel. Most of these items were found at the bottom of the filling or near the walls, and none of them can be considered in primary deposition. It is most likely that they were accidentally mixed with the clay during the process of the destruction and filling of the grave.



**FIGURE 7.** *RJ-1, Tomb 1: a vertical view.*  
(Vertical photograph assembled by L. Belfioretti).



**FIGURE 8.** *RJ-1, Tomb 1: a view from the south-west.* (Joint Hadd Project).

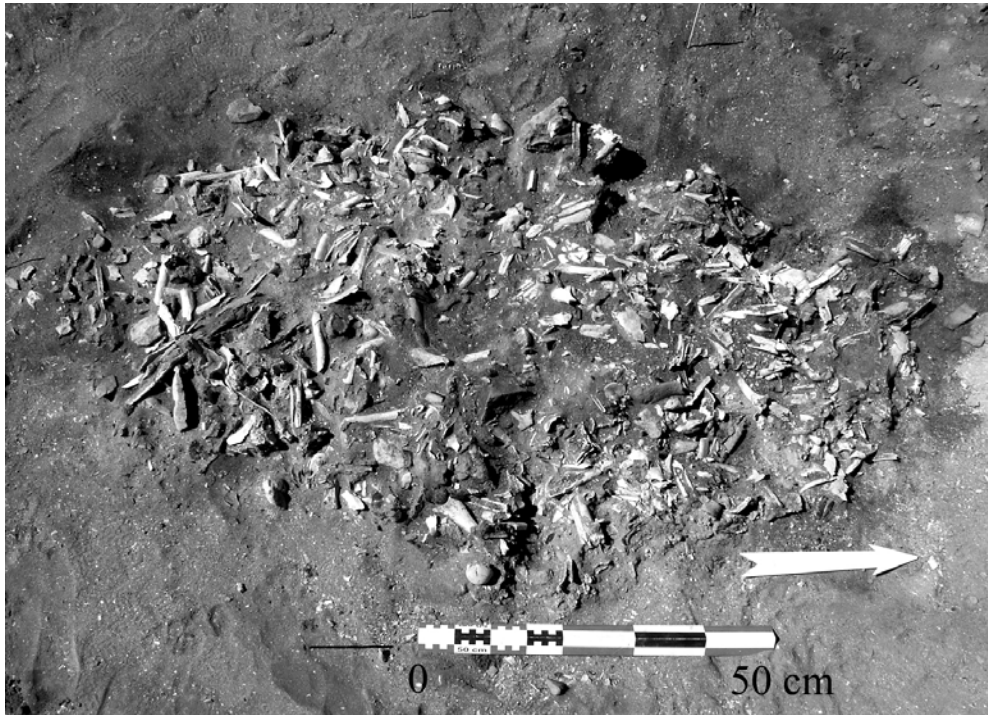


FIGURE 9. RJ-1, Bone Pit 1: the upper bone level in the course of excavation. (Joint Hadd Project).

### The bone pits

Four metres south of Tomb 1, human bones appeared while cleaning the alignment of stones which extends the western wall of Structure 2 in this direction (Period IV). It appeared to be an oval pit full of human bones, c. 1.30 m long, 0.90 m wide and 0.40 m deep in a north-south orientation (Fig. 9). Excavation of this pit was carried out according to the normal standards of physical anthropology by Hervé Guy and Olivia Munoz. Although it could not be completed this year due to lack of time, several conclusions can already be drawn.

The bones were very fragmented in the upper part and better preserved near the bottom. This may not only be due to post-depositional processes. From the careful examination of bone associations, it could be shown that bones were not thrown into the pit, but deposited as bundles, keeping some loose associations between the bones of several individuals. Some of the bones, especially in the upper layers, had been burnt at various temperatures over 600°C, most of them reaching a white colour. A skull was (intentionally?) set at the southernmost end in the upper layer, while others were found in the lowest layers, preferentially towards the

edge of the pit. For the time being, the remains of at least 29 individuals,<sup>1</sup> male and female, adults and children, including neonates, have been identified, and a reasonable estimate indicates that the remains of more than 150 individuals may be represented in Pit 1.

Cultural material also tends to be concentrated towards the bottom of the pit. Out of the 636 beads found until now, 445 were found in the lowermost level of which only a small area has been excavated, indicating that many more are still to be found. Apart from these, several potsherds of common and painted ware were found, including an almost complete squat bottle (DA 15634) with a black on red decoration of chevrons on the upper part of the body (Fig. 10).

While cleaning a small trench east of Bone Pit 1, another deposition of human bones was found at a distance of about one metre. It was left untouched but it may indicate that at least one other bone pit is associated with Tomb 1.

These bone pits are not unique in the record of Umm an-Nar type graves. They match those found at al-Sufouh near Dubai around a grave that can be dated around 2500-2300 BC (Benton 1996: 170-171), which is also the provisional date that we assign to Tomb 1.

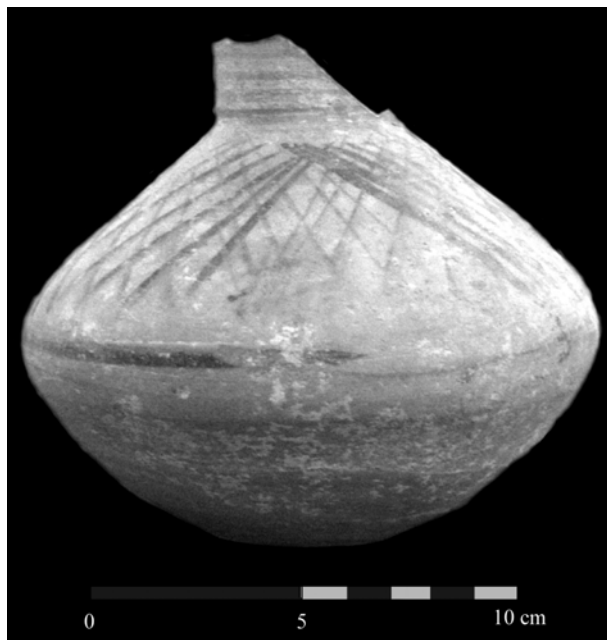


FIGURE 10. RJ-1: black on red vessel DA 15634, from Bone Pit 1. (Joint Hadd Project).

### The date of Tomb 1

A date in the third quarter of the third millennium BC, that is broadly contemporary with Period II at RJ-2, is provisionally suggested for Tomb 1. Arguments in favour of this date were first drawn from the typology of the beads, notably the absence of the long tubular heated steatite beads which characterize early Umm an-Nar tombs, such as Cairn V at Umm an-Nar (Frifelt 1991: 112) or Tomb M at Hili,<sup>2</sup> and the relatively low number of carnelian beads (5.8 % in Tomb 1 and 2.5 % in Bone Pit 1) when compared to later graves such as Hili North A<sup>3</sup> or Mowaihat (11.3 % of the total found during the first season according to Al-Tikriti 1989: 95).<sup>4</sup> As a matter of fact, with a total of 1911 beads in Tomb 1 (76.2 %) and 430 beads in Bone Pit 1 (67.6 %),<sup>5</sup> the chlorite microbeads make up the bulk of the finds, a figure much higher than those published from other graves in Oman and the UAE, where the highest frequencies are respectively 21.5 % in Tomb M at Hili and 20.9 % in Cairn V at Umm an-Nar, dated to the second quarter of the third millennium BC. Tombs such as al-Sufouh or Umm an-Nar Cairn II, which we suggest are contemporary with Tomb 1 at RJ-1, are mainly characterized by a high frequency of heated steatite microbeads (75.7 % and 95 % respectively), while these

account for only 6.6 % in Tomb 1 and 23.3 % in Bone Pit 1. If we consider all the microbeads, the figures are fairly comparable, with 95 % at Umm an-Nar Cairn V, 94 % at RJ-1 Tomb 1, and 84.4 % at al-Sufouh, and we may suspect a regional rather than chronological pattern. Another argument in favour of the proposed date is the absence of any soapstone vessel of the *série récente* type, common in graves later than 2300 BC but almost entirely absent in earlier ones, for instance at Umm an-Nar or al-Sufouh. The only exception is a small globular vessel (DA 15635, Fig. 3/6), which does not belong to any known type.

### Interpretation

Tomb 1 appears to have been destroyed intentionally once its use came to an end. The bones and part of the fabric were carefully deposited in one or more pits dug a few metres away. Most of the stones were carried away, and the lowermost part of the monument was carefully filled with clay brought with a significant amount of effort from the bottom of the embayment. Most of the stones which were removed, notably the large flat slabs that made the floor of the chambers, were probably re-used soon after this episode, to build another grave, possibly by the same people who destroyed Tomb 1. We might even suggest that Tomb 1 was destroyed and condemned by the same group of kin-related people who had previously buried their dead within it. House 2 of the Wadi Suq period was probably built much later, after several centuries of abandonment, taking advantage of remains which were still visible. In the meantime a fish-processing area had been established nearby, to the north-west. From this point-of-view, Tomb 1 is important since it confirms some elements suggested by the excavation of several burials in the UAE, providing a demonstration of the deliberate destruction of the monument by the community itself, probably in order to build a new, larger and more monumental one nearby.

A similar process probably took place at al-Sufouh, where two pits full of bones were found immediately outside the grave (Benton 1996), although the excavators interpret these differently, suggesting that the bones found in the pits had been burnt while fleshed rather than dry (Benton 1996: 61), and represent the introduction of a new method of treatment. They even speculate that this was introduced by newcomers from across the sea, i.e. from Baluchistan or the Indus (Benton 1996: 175).

However, considering the occurrences of cremation now known from the graves of Umm an-Nar type, we

would suggest another hypothesis. In Tomb A at Hili North, the final study has established that all the burnt bones and the burnt funerary goods originate from the upper (above-ground) part of the monument, while all the bones found in primary deposition in the lowermost part and all the associated goods were found unburnt. This situation matches the one found in Tomb I at al-Sufouh (Benton 1996: 41, fig. 28). Detailed study of the bones of Tomb A (Bondioli, Coppa & Macchiarelli 1998: 233) indicates that most of them were burnt at high temperature (over 600°C for *c.* 60%),<sup>6</sup> following the complete (or partial) decomposition of the bodies. This suggests that the burning of the bones took place at a later stage in the treatment of the bodies.<sup>7</sup> The evidence gathered at Hili N, where some of the bones were burnt *in situ* (Al-Tikriti & Méry 2000: 208) does not contradict this proposition. On the contrary, the funerary goods found inside the grave and the bone pits at al-Sufouh do not present, according to the excavators themselves (Benton 1996: 88), any significant difference which could be interpreted in chronological or cultural terms, and the same seems to be true at RJ-1. The study of the bone remains of RJ-1 by Olivia Munoz, with the assistance of Hervé Guy and Matthieu Gaultier, is still in progress. At present, 2841 bone fragments out of an estimated total of over 7000 have been studied, but this already throws some light on the relationship between Tomb 1 and Bone Pit 1. A total of 1442 fragments originate from Tomb 1 (out of an estimated total of *c.* 2000) while 1399 originate from the upper levels of Bone Pit 1, and their distribution is strongly contrasted. The cranial bones, upper and lower limbs and to some extent the axial part of the skeleton are under represented in Tomb 1 while the smaller bones of the hands and feet are over represented.<sup>8</sup> These figures lead us to conclude that the small bones found in Tomb 1 were probably left inside the grave during one or more cleaning phases, a rather convincing indication that Pit 1 was filled with bones that had once been in Tomb 1. One also has to stress that no burnt bones were found in Tomb 1.

In addition to the question of the condition of the bones before cremation, which was mentioned above, many points remain to be clarified. For instance, were all the bones included in the cremation or only a selection of them? Did the cremation occur when the monument was destroyed or were there successive occurrences while it was in use? Ongoing studies at RJ-1 or Hili N may help to reach a better understanding of the funerary rituals, which appear to be much more complex than the simple successive deposition of bodies in funerary chambers.

At this stage of the work, it is too early to elaborate on the population of the tomb itself. The 29 individuals identified comprise two foetuses, two babies below one year, two below four years, two children of between five to nine years, two of between ten to fourteen years, two sub-adults, and 17 adults. Male and female were present but sex is difficult to establish due to the fragmentary condition of the bones. With an estimated 150 individuals, and possibly more, Tomb 1 falls into the range generally found for this type of monument. If we consider that at least five other Umm an-Nar tombs are present at RJ-1, and at least four at RJ-11, this seems to indicate that the population dwelling seasonally for a maximum of five to six months at RJ-2 and RJ-3 during the second part of the third millennium BC was a rather large one. When fully studied, the skeletons of Tomb 1 and the bone pits may allow significant insights into the palaeodemography of the Ja'alan.

## Excavation of Structure 21

The remains of a rectangular room built of stones, some 5 m long and at least 1.50 m wide, were found against the north-eastern wall of Tomb 1. At the beginning of excavations, it was expected that this would prove to be a Wadi Suq house belonging to the same compound as Structure 2. But the fact that the outer wall of Tomb 1 had encroached on it, combined with a careful study of its stratigraphic relations with Tomb 1 unambiguously demonstrated that this construction was earlier than the tomb.<sup>9</sup> This was later confirmed by the associated material.

A small square room, possibly a storeroom, was added to its north-eastern wall. The stones of the northern wall of the large room, preserved in two courses, lie directly over the bedrock of the terrace, as does the eastern wall and those of the small storeroom. Inside the large room, along the northern wall, are square postholes, *c.* 15 x 15 cm, dug at regular intervals into the bedrock to a depth of *c.* 15 cm. Two similar postholes may correspond to the alignment of the southern wall, which has partly disappeared. At this stage of research, we may suggest that they were part of the roofing system, but further excavation is needed to reach a better understanding of the whole structure.

A large array of metal objects including copper pins and fish hooks, a scalpel-shaped tool, a chisel, etc. were found in the fill, together with 207 beads. Of these, 45% are shell beads (mainly, *Conus* sp., *Prunum terverianum*, *Oliva bulbosa*, *Engina mendicaria*, *Medusa fissurella*, and stranded apices used as beads),<sup>10</sup>

while 18% are small pierced fish vertebrae. Of great interest was the discovery of a bead workshop in Room 1, with many grinders and hammers made from a large variety of stones, a flat stone anvil, a flint microdrill and various fragments of chlorite and beads at various stages of the manufacturing process.

Two objects characteristic of Period I, a fragment of a large, leach-shaped earring and the notched apex of a shell fish hook, were also found in the filling, but this does not seem to imply an earlier occupation of Structure 21 during this period.

A single potsherd was found in Room 1. Its greenish, well fired paste appears at first examination to be of Mesopotamian origin, although this will need confirmation.

There is very little that can be said about ecofacts at this stage of the excavations. One can only mention that the bones of large fish were also scattered all around.

The excavation of Structure 21 has important implications for the cultural sequence at RJ-1. Period II was already known from the excavation of the soil below Structure 3, although no consistent structural remains were found, while the many "Hafit-type" graves in the area already suggested the presence of consistent third millennium remains (RJ-6, RJ-12, RJ-24, RJ-29, etc.). A closer look at the surface of the site south and east of Tomb 1 up to Tombs 3 to 4, discloses several stone alignments buried in the sediment that may also be remains of early third millennium structures. Notably, a rounded corner between two perpendicular walls can be seen below the scanty remains of the southern wall of Structure 3. Testing the possibility of a larger early third millennium presence in this area will be one goal of our next campaign.

On a more regional scale, this discovery also confirms the importance of this period in the Oman peninsula itself. At present, the only excavated settlements are the tower of Period I at Hili 8 and the walled settlement at Ra's al-Hadd HD-6. This has led some authors to question its existence.<sup>11</sup> The problem is much too large to be debated here. The over 2500 Hafit-type burials located in the Ja'lan are a good indication of an early development of the region already by that time (Cleuziou 2002b). The presence of coastal settlements devoted to the intensification of fishing, such as HD-6 and RJ-1, is part of an intensified use of resources which, after the establishment of drier climatic conditions early in the fourth millennium BC (Lézine *et al.* 2002), had become discontinuous in time and space. While oases such as Hili 8 allowed more intensive production of dates and cereals, sites like HD-6 or RJ-1 could produce and process much more fish than was

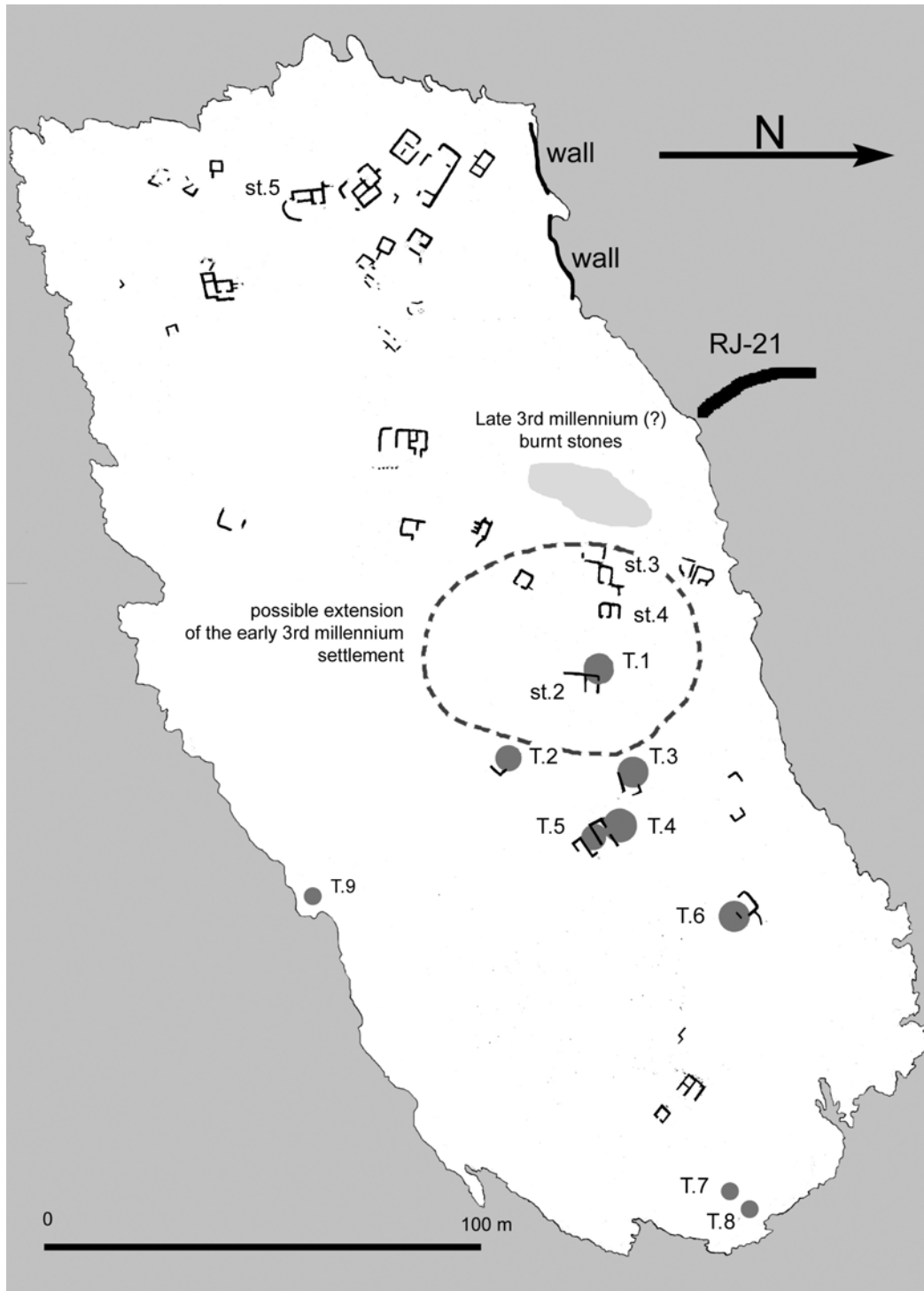
necessary for daily life, and both could channel their products for delayed consumption across the exchange system. Since at present we know almost nothing about fourth millennium BC settlements in the interior, the Ja'lan, where dozens of such sites are known, is probably a key to understanding some aspects of the cultural process through which the small communities of the Middle Holocene transformed into the larger tribal systems of the Early Bronze Age (Cleuziou 2002a).

## Complete recording of surface data at RJ-1

A complete photographic survey was carried out by Yves Guichard during the campaign in the winter of 2001-2002, using a digital camera mounted under a kite. A complete coverage of the site with topographic points was made, with the help of Olivia Munoz, in order to be able to assemble selected photographs and obtain a perfect vertical planimetry. This document has formed the basis of a detailed survey, recording all visible structures of which at least six are Umm an-Nar type tombs, all of them re-used during Wadi Suq times, three are earlier Hafit-type graves which were completely destroyed down to their lowermost course of stones, and some 25 can be interpreted as Wadi Suq houses. Two of the Hafit-type burials (RJ-1/7 and 8) are located on the edge of the eastern cliff of the mesa, overlooking the eastern beach and facing the 11 cairns of graveyard RJ-11, along the western cliff of Ra's al-Jinz. The third one, RJ-1/9 is isolated on the middle of the southern cliff, facing the sea. They belong to the now more than 300 graves of that type registered in the Ra's al-Jinz area, confirming the importance of human occupation there as early as 3000 BC.

By examining all the Wadi Suq structures, in trying to sketch the actual walls below the fallen rubble, we have been able to produce a provisional map, disclosing for the first time the plan of an early second millennium village in the Oman peninsula. All visible concentrations of archaeological sediments and remains have also been recorded and we are now able to present a good picture of human settlement and its evolution at RJ-1 (Fig. 11).

Most of the Wadi Suq houses tend to be concentrated on the western part of the mesa, and occur only occasionally in its north-eastern quadrant and never in the south-eastern one, which is the most exposed to the sea. Two main orientations occur, one broadly eastwards and the other some 30° to 45° to the south-east. As already noted, they are built of small rectangular cells, *c.* 2 x 3 m or less, and the heaps of



**FIGURE 11.** RJ-1: a map of the Wadi Suq structures, Umm an-Nar tombs (1-6) and Hafit-type tombs (7-9). (From an assemblage of kite digital photographs by H. Guichard).



stones recovered suggest that most of their elevation, if not all of it, was made of stones.

At this stage of our work, it is of course impossible to tell whether all these structures were in use at the same time. But one fact is immediately obvious: none of the structures recovered at RJ-1 is larger than four rooms. This is in sharp contrast with what is known of the previous occupation at RJ-2, where the three-to-four-room minimal structures among the mud brick houses of the settlement were, with one exception (Building III), grouped into larger units, labelled as the southern and northern compounds (Cleuziou & Tosi 2000: 29-39, fig. 5). The excavations at HD-6 already demonstrate the existence of tightly packed clusters for small units as early as the beginning of the third millennium BC (Cleuziou & Tosi 2000: pl. 6) and we may conclude that such a pattern was in use for almost a millennium. The abandonment of these large clusters of smaller isolated units, as suggested by the provisional mapping of RJ-1, may be considered as a new element indicating a deep social change around 2000 BC. It comes at the same time as the abandonment of the monumental Umm an-Nar graves and their complex rituals, and may be a measure of the importance of this transformation.

Some attention was also devoted to the north-western part of the mesa, known as RJ-1B. There, the deflation pavement of flaked flint is extremely dense, even more than at RJ-1 itself, but a new survey allowed the detection of several structures protruding through it. A stone wall, some 40 m long, follows the northern edge of the cliff. A narrow rectangular structure abuts against it in its central section. This wall is comparable to the one on the north-western edge of RJ-1 itself but no date can be proposed. The only (broadly) datable elements are three flat oval pebbles with a pecked depression on both sides, an object found mainly in fourth and early third millennium contexts, which may be the date of the main occupation at site RJ-1B. The flaked flints present on the pavement also seem to be different from RJ-1, with a predominance of large side- and end-scrapers. This may, in turn, cast some doubt on the date of the north-western wall at RJ-1, which we used to consider as contemporary with the Wadi Suq village. It was undoubtedly still visible, but may in fact have been built much earlier, at the time of Period I, by the end of the fourth millennium BC. This, of course, is hypothetical and will remain so for a long time, but at present the only confirmed "fortification" of the early second millennium BC at RJ-2 is the wall that closes the entrance to the plateau at RJ-21, as early Wadi Suq type pottery was found in safe association with it.

Although the stratified accumulation of sediments at RJ-1 never exceeds 50-70 cm, we are able to reconstruct a fairly complex story, without the help of the classical tell formations that are the paradigmatic form of archaeological remains in Middle Eastern archaeology, and a mirage that has attracted several scholars in Oman and the UAE. This is not to suggest that deep stratified sites do not exist, but even those like Kalba, Tell Abraq and possibly Nud Ziba, appear to be heaps of soil accumulated over and around single monuments in the course of many uses, refurbishments and abandonment. Looking horizontally rather than vertically for various periods across a large area where some tiny stratigraphic links can be traced is also a rewarding strategy, and we should abandon the dream that soundings will at once yield a full type-sequence like those at Jericho, Uruk, Nippur or Susa. Most of our information comes in fact from pockets of sediments trapped in between structures which were used over a long period, such as the towers, or from large eroded areas. Movement in space rather than accumulation in time is the key to archaeological interpretation in most part of Arabia, and this is hardly a surprise if one considers the main ways of life in such areas. Despite the small accumulation of sediments, the structures scattered all over the mesa at RJ-1 — most of them still visible on the surface, albeit sometimes separated by more than a millennium — allow some understanding of the two major cultural transformations that mark the beginning and the end of the Early Bronze Age in the Oman peninsula, while others, like Tomb 1, contribute to our understanding of cultural evolution within this period. But this can only be established through cross studies with other structures scattered all over the Ra's al-Jinz embayment and in adjacent areas. Only regional studies of this kind can contribute to the sound reconstruction of a past that could not be foreseen 27 years ago, when the sites were first visited.

## Notes

- <sup>1</sup> This provisional calculation was made by Olivia Munoz after the study of 2841 bone fragments from Tomb 1 and Bone Pit 1, out of an estimated total of over 7000, remembering that at least one third of the contents of the pit remains to be excavated, and that there must also have been a second pit. The estimate was obtained simply by counting the most common bone in the assemblage according to classes of age, without any further consideration and there may therefore have been a higher number of individuals.
- <sup>2</sup> 1234 of the 1911 beads found in Tomb M (64.6%)

- belong to that type (Cleuziou, Méry & Vogt, forthcoming).
- <sup>3</sup> 741 of the 901 beads found in Tomb A (82.3%) are carnelian beads (Cleuziou, Méry & Vogt, forthcoming).
- <sup>4</sup> Haerinck does not mention any figures for the second season of excavations, but indicates that carnelian is "quite well represented" (1991: 18).
- <sup>5</sup> These figures are still provisional, as Bone Pit 1 is not fully excavated and more beads can still be expected from Bone Pit 2.
- <sup>6</sup> This reaches over 75% if grey-burnt bones are added. These figures are consistent with those of Benton (1996: fig. 52) who indicates 76.2% for Tomb II and 64% for Tomb III, although she draws different conclusions.
- <sup>7</sup> In the comparisons she draws between al-Sufouh and Hili North, Benton (1996: 172-173) is trying to interpret a paper published by al-Najjar (1985) on part of the Hili North bone assemblage. It should be stressed here that this paper was never discussed with the excavators and contains views held only by its author, who never participated in the excavation. Benton rightly casts doubt on al-Najjar's suggestion of a possible inhumation in the context of a battle. Bondioli, Coppa and Macchiarelli's study (1998: 233) clearly indicates that most cracks found on the bones are related to their cremation, and that the (few) cut-marks found are related to *post mortem* disarticulation, probably during the process leading up to the burning.
- <sup>8</sup> Out of the total number of bones studied, cranial bones range between 1.83% in Tomb I and 6.37% in Bone Pit 1, upper limbs (including shoulder bones) between 2.25% and 8.24% respectively, lower limbs between 3.13% and 11.33%, and axial skeleton bones between 4.75% and 8.24%, while, on the contrary, hand bones range between 13.34% and 2.25% respectively, and feet between 17.63% and 0.04%. Of course, these figures will probably change after the study is completed, but this is unlikely to alter this preliminary conclusion. It should be added that, according to this study, all classes of bones are equally represented, excluding the possibility that some classes are over represented due to selective or taphonomic processes.
- <sup>9</sup> This study and the excavation of Structure 21 was carried out by Gaëlle Bruley-Chabot.
- <sup>10</sup> These determinations were made by Chloé Martin.
- <sup>11</sup> Potts rejects the early dates proposed for Hili 8, suggesting that Building III, for the construction of which they provide a date, may not be so early (1997: 88). These dates were not obtained on logs but on brushwood, and are consistent with the occurrence of Mesopotamian pottery of Jemdet Nasr or EDI type in later layers (Cleuziou 2002a: 195-196). Some C<sup>14</sup> dates are also available for HD-6. BM-3075: 4340±45 BP (3016-2899 calBC) was obtained on charred wood which is contemporary with the use of the mud brick houses inside the settlement. Pa1719 was obtained from *Amiantis umbonella* shell, measured at 4945±60 BP (i.e. a conventional age of 4545±60 BP), that is 3077-2889 calBC assuming a  $\Delta r$  of 235±30 BC (Lézine *et al.* 2002). BM-3076: 4200±50 BP (2883-2698 calBC) and BM-3077: 4240±40 BP (2894-2876 BC), on charred wood, correspond to later layers.

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