

Archaeological Interventions. In Search of Traces of the Human Presence in the Valley

Intervenciones Arqueológicas. A la búsqueda de las huellas de la presencia humana en el valle

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ABSTRACT

The text describes the excavations undertaken in different sites of the valley. The reasons for their choice and the results obtained. Seventeen sites were tested, either burial mounds or shelters. We can contextualize the human presence in the valley at different time periods: Late Neolithic, Late Neolithic-Copper Age, Bronze Age and Middle Ages. Also, and despite the plundering, some interesting features regarding the tumuli could be observed through excavation.

KEY WORDS: *Late Neolithic, Bronze Age, tumulus, cist, impressed ceramic, orthostat.*

RESUMEN

El texto describe las excavaciones realizadas en diferentes yacimientos del valle, los criterios por los que se escogieron y sus resultados. Se hicieron diecisiete sondeos, tanto en abrigo como en túmulos. Hemos podido contextualizar la presencia humana en el valle en diferentes periodos temporales: Neolítico Final, transición Neolítico-Edad del Cobre, Edad del Bronce y Edad Media. Además, a pesar del saqueo, hemos podido constatar algunos rasgos interesantes relativos a los túmulos.

PALABRAS CLAVE: *Neolítico Final, Edad del Bronce, túmulos, cista, cerámica impresa, ortostato.*

1. Introduction to the Archaeological interventions

The ARPA's team carried out four field campaigns, from 2008 to 2011/12, addressed to the search of archaeological data, which connected rock art and human use of the landscape, and to find clues that could help us to date and make sense of the messages embedded in the rock art.

The 2008 campaign was devoted to an intensive field survey as well as to positioning the rock art stations, tumuli, shelters, superficial clusters of flint, water fountains etc. For this, two Leica sub-metric GPS, one stationed and the second in motion, were used. A Data-Base was built, where every site was recorded. We gathered information on the possible interest of these sites for digging, if archaeological layers seemed to be preserved, or if the tumuli, although already plundered, could have kept some intact structures. For easy handling, the valley was divided in eight study areas, separated each from other by natural borders as streams, ravines or mountain passes, and numbered from 1 to 8 preceded by the acronym OK that stands for Oukaïmeden. From this information and according the above described criteria, as well as the connection of these possible archaeological sites with rock art, some of them were selected for excavation. Every excavated site was mapped up and every structure or finding positioned with a Leica Total Station. All topographic devices were

provided by the School of Topography of the Polytechnic University of Madrid.

The Harris Matrix (Harris 1989) system was adopted to register the stratigraphy. Every single site was named, first with a C letter that stands for Context, and then with a correlative numeration, from 100 to 900 in year 2009, 1000 to 1900 in year 2010 and 2000 to 2900 in 2011/12. SU stands for Stratigraphic Unit.

The excavated sites

2. Tumulus 1 at the *Igountar* pass. Context 100, OK5 area

2. 1. Introduction

OK5.1 burial mound is located in the *Igountar* mountain pass, dividing areas OK5 and OK6, which, before the construction of the road in the 1940' by the French army, was the main eastern entrance to the Oukaïmeden Valley (fig. 1 C-100). In the map of rock engravings distribution, this area appears as one with the highest concentration of rock art stations. In the widest part of the mountain pass, where the slope ends, there is a large barrow with a central chamber that has been completely emptied. This tumulus remains a visible landmark. Nevertheless, our research focused in an area parallel to a path, and closer to the engravings. Right in the access area there were three

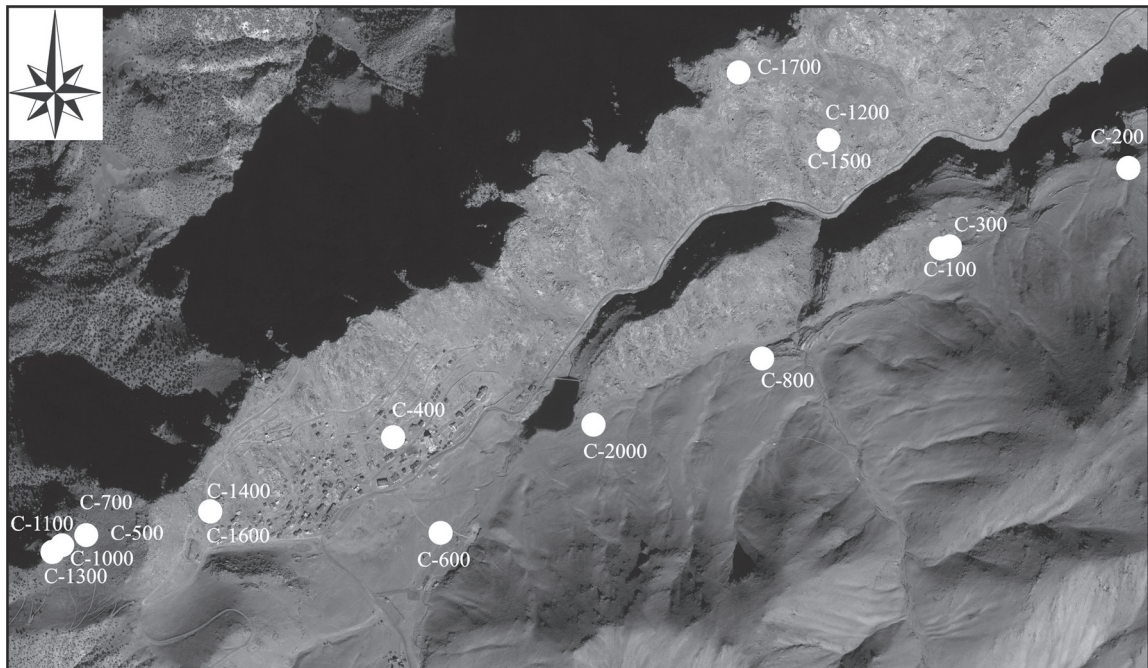


Fig. 1. Location of our diggings in the valley of Oukaïmeden.



Fig. 2. View of the central chamber of tumulus OK5.1.

barrow structures, which were very close to each other and that were named OK5-1, OK5-2 and OK5-3 respectively. We undertook the digging of the one located to the right of the *Igountar* Pass, which looked to be less disturbed.

2. 2. Archaeological results

A 10 x10 meter grid was set to excavate OK5.1 tumulus, covering the whole stone structure visible on the surface. The sides of the grid were cardinaly oriented. Surface information revealed visible removals in the centre of the structure, where the burial chamber was expected to be. At the west

side, the cairn structure was clearly visible because it rested on a natural surface, slightly higher than at the east side.

After examining the surface, we set the east grid as a priority digging area. Work on the rest of the grids was focused on cleaning the barrow rising on the surface and establishing its limits within the area. After we lowered the first level of organic soil (SU-100) in the east quadrant and cleaned the surface of the tumulus limits, the use of large sandstone blocks was clear. The stones probably came from the surrounding area and were there to demarcate the area of the megalithic structure. Also, no clear delimitation of the possible chamber in the centre of the structure could be performed. In this stratum we were only able to document an empty irregular space without stones.

A relatively compact yellowish dirt appeared over the mound surface and within the area of the possible chamber once we removed the superficial level (SU-100). This dirt had a plastic texture between the barrow stones, as if it had been used to bind those together during construction of the structure (SU-101). The centre of the tumulus already showed signs of removal. Once we had removed this layer, we reached an area where stones were more abundant and better-crafted (fig 2). SU-102 was defined from this level onward, although this new stratigraphic unit was made up of a filling and a larger amount of stones than the previous one. However, the soil showed the same features as the layer above.

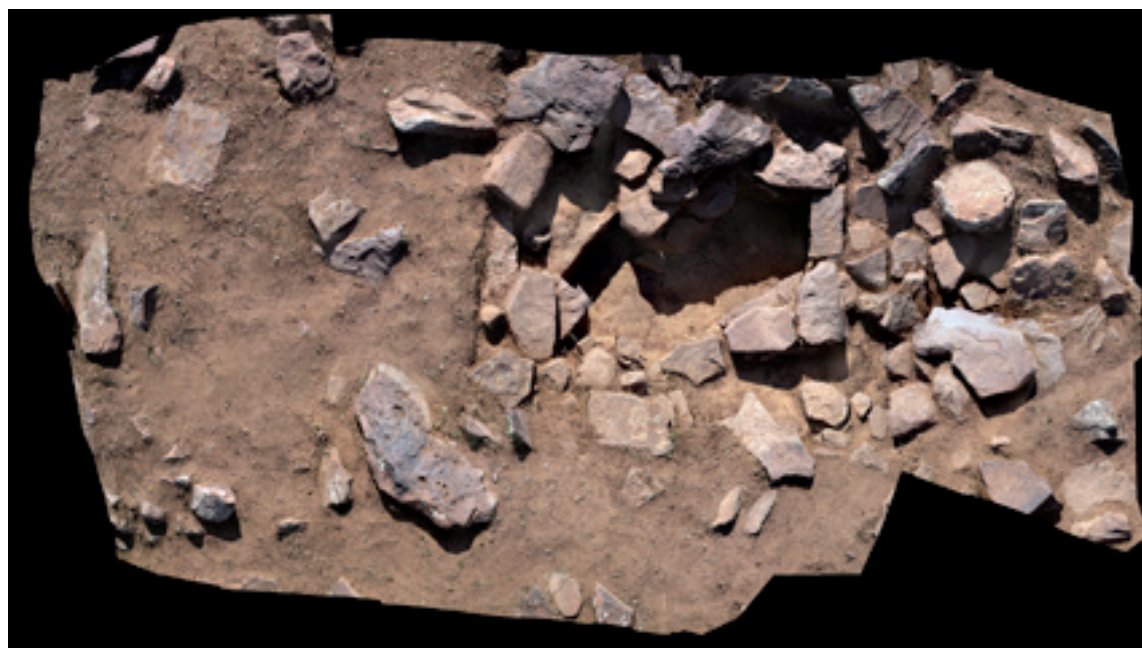


Fig. 3. Overview of OK5.1 tumulus after the excavation.

The central area of the burial mound spread systematically from the east quadrant to the north and south quadrants. We did not excavate the west quadrant, leaving it as a balk wall. The aim of these consecutive enlargements was to find the limits of the plundered area and reach the parts where the barrow was more or less intact, to document the maximum possible dimension of the chamber. This seems to have reached 1.40 m in NW-SE direction and around 1 m in NE-SW direction. A more accurate measure could not be defined for this last sector due to the destruction of the structure.

A more or less horizontal level rose approximately 50 cm below the current surface, following the slight land slope. This level consisted of yellowish compact dirt and pebbles. It was located in the base of the mound and belonged to the upper level of the geological substratum of this area. This level (SU-103) was lowered 20 cm to confirm its nature and that it was sterile. We also proved that the burial mound structure did not penetrate deeper, except maybe for the large stones that constituted the boundary markers of the structure.

Thus, the OK5.1 tumulus structure was defined as detailed below: Round structure -7.40 m (NE-SW) by 7.70 m (NW-SE) - with the best preserved parts made up of four consecutive stone layers, mostly sandstone with granite and earthenware interpolations. Irregular sandstone blocks were placed horizontally as external boundary markers. None of the central chamber sides could be accurately demarcated. We can only guess that the chamber dimensions fit into the plundered area, affecting the centre of the mound (fig. 3).

2. 3. Archaeological findings

The description of the digging provides enough detail to justify that the plundered area affecting the demarcation of the funerary chamber impeded the definition of an intact stratigraphic unit. Because of this, the only finds produced were two small flint flakes -one of them retouched- in SU-102. However, these findings cannot be considered as part of the original grave goods of the burial mound, due to the nature of this SU filling and its vicinity to flint work areas on the surface. They could be part of artefacts transported by the thaw, or have been introduced after the tumulus was plundered, making their dating impossible.

2. 4. Sampling

Sediment samples were taken during the excavation to perform anthracological and carpological analysis. Nevertheless, most of the sample results were negative due to the plundering of the area.

2. 5. Summary

The excavation performed in OK5.1 tumulus has not provided the desired results. Neither grave goods nor organic materials -which could provide a 14C date - were obtained to help contextualize the barrow within the landscape and to define its relation with rock art or with the prehistoric settlements of the area. Despite this, from their morphology we can deduce that these kind of tumuli contains individual burials, minimally monumentalized.



Fig. 4. View of the Elephants shelter before the digging.

However, our work confirms the results obtained by Malhomme in his excavations, when he informed to the French Prehistoric Society that the tumuli he dug up were already plundered (Malhomme 1953b:475 and 1954a:81). Only their location remains as a key element to their study and integration in the history of human settlements in the territory.

3. The Elephants' Shelter. Context 200. OK7 area

3. 1. Introduction

The Elephants' Shelter (also known as the *Abadsan* shelter) is located on rocky outcrop between the *Tizi Igountar* and the *Abadsan Azib* and near the left bank of the *Abadsan* Stream, a tributary of the *Irini* River. (See fig. 1 C-200). The shelter faces the northwest and stands very close to the contact area between the Palaeozoic socket and the Mesozoic sedimentary cover which geologically characterizes the Oukaïmeden Valley. The Elephants' Shelter presents a singular morphology due to the stone blocks that have fallen down from its roof and have enclosed the shelter's interior. These blocks define a very well protected area of about 50 m² and have acted as a barrier against erosion, allowing the sedimentation of sand which otherwise would have fallen down slope. On the other side, these blocks reduce the visibility from the shelter to a minimum, although the visual control of the valley is good enough from its roof (fig. 4).

The Elephants' Shelter is also singular because of its important group of engravings represented over its walls. Most of them correspond to animals, including the three elephants after which the shelter is named. The engravings are especially interesting due to their vertical disposition -an extremely rare position in Oukaïmeden rock art-, their distribution over the walls and the stylistic overlaps documented. Most of the engravings were placed at the main walls of the shelter, but one of them was made over the wall of the outer block.

The combination of all these characteristics made of the excavation of the Elephants' Shelter one of the priorities of the ARPA project. The selection of this site tried to solve some of the main challenges of the project: the documentation of a Prehistoric habitat and the establishment of a reliable chronology for the rock art through diagnostic archaeological objects and 14C dates that could be obtained there. Its physical morphology and size, and the preservation of soil sediments, provided a good chance to find an undisturbed archaeological site, and although no superficial finds were collect-

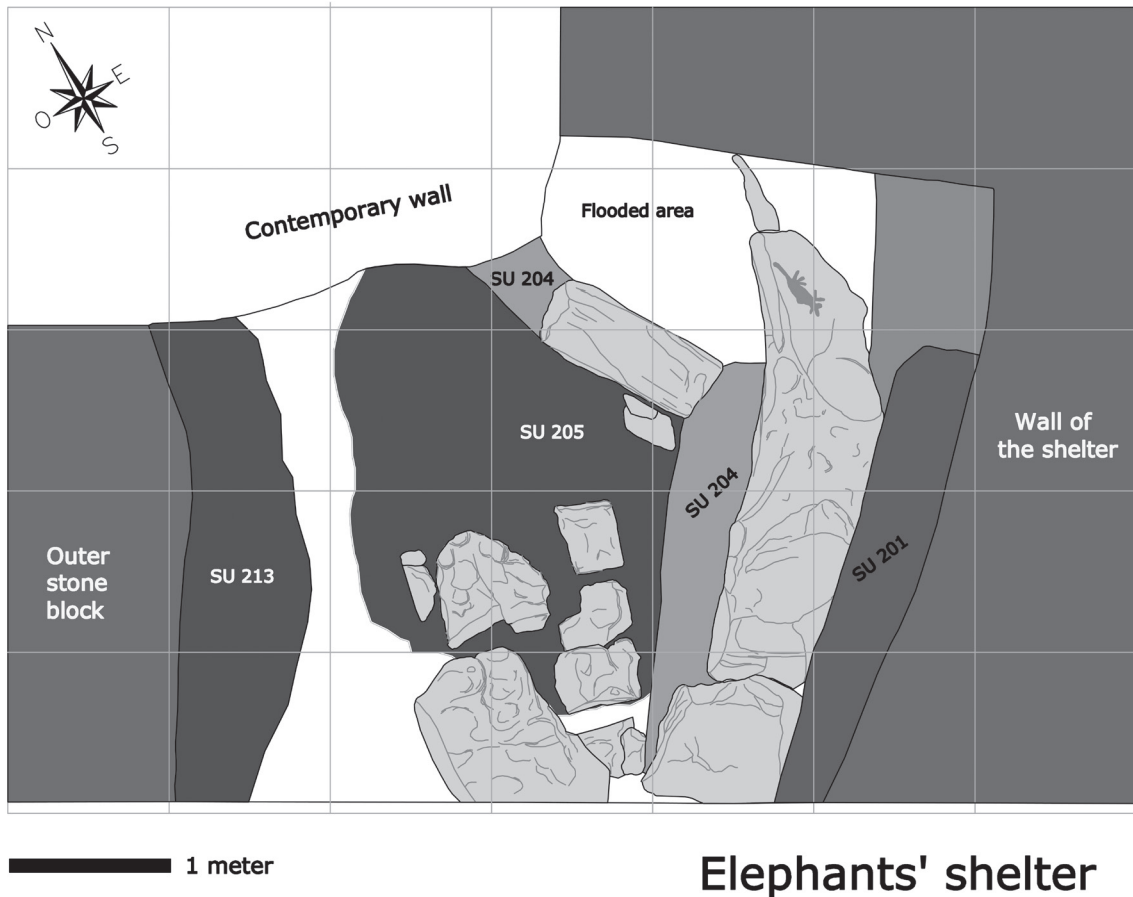
ed inside the shelter, a good sample of lithic tools including blades and knapped pieces was documented on the shelter's roof and its surroundings. Therefore, the shelter was selected for excavation in the previous 2008 field campaign, and one of the first sites excavated in 2009.

3. 2. Archaeological results

The objective of the digging was to get a comprehensive understanding of the stratigraphic process of the shelter's filling. An area as big as possible was initially defined, although some small test pits were made later to understand specific stratigraphic problems and avoid unnecessary work. In some areas sections were preserved to collect pollen column samples, especially at the bottom of the shelter. A systematic sieving was carried on, especially on the layers of anthropic origin or where a relevant amount of artefacts were collected. Regarding the area of excavation, it was adjusted to the characteristics and disposition of the shelter. To the north, its limit was set by a contemporary wall, while the south-eastern limit was planned at approximately 3 meters from it. The total area of the excavation was of about 17 m².

After the removal of the surface cover (SU 201), which was mainly composed of hard packed earth dragged from the upper areas of the valley due to the erosive processes of thaw, and had contemporary artefacts within it -plastics, tins, etc. - two big fallen stones were discovered at the bottom of the shelter, while a reddish layer was documented at the middle of the excavation area. That layer (SU 202) was interpreted as stones fallen from the shelter's ledge and part of the wall, horizontally displayed and later decomposed, and obviously did not present any archaeological artefacts. One of this stones had an engraving on one of its sides which depicted a horseman, but in a style -invasive pecking and horse depicted with four legs- which radically differs from the ones on the walls of the shelter. At the farther side of the shelter wall a different layer was recorded (SU 203), composed of mud mixed with vegetal, decomposed remains. That layer covered almost all the excavation area, and was considered a filling level created by the mud blockage after the strong rains and snow breaking in late spring, when the outer stone blocks prevented a proper drainage of the shelter. The recording of an iron shoe in this layer pointed to a quite modern chronology for this layer and by extension, the upper ones.

Below SU 203 a very uniform yellow layer and with a depth of 7 to 30 cm, depending on the side of the excavation area was recorded (SU 204). Although it was initially considered a sterile, geologi-



Elephants' shelter

Fig. 5. Plan of the Elephants shelter showing the main collapsed rocks and the most important stratigraphic units.

cal level, some wheelmade potteries and lithic tools were later collected, implying the layer was also formed by sand from the upper area of the shelter. However, it did not present the decomposed vegetal remains from the upper layers and it was far more compacted, maybe implying a longer period of deposition. The absence of modern artefacts also pointed to an older chronology, although obviously not a prehistoric one. The uniformity, extension and compactness of SU 204 made us suspect that it could seal the strata below.

This hypothesis was confirmed when SU 204 was removed and a new layer of human origin was located in the central area of the site (SU 205). It was a well-defined black layer horizontally placed with a depth which ranged between 3 and 8 cm. Unfortunately, the archaeological items were scarce and inconclusive to establish a proper chronology for this occupation of the shelter, as they just consisted of some flint tools and a wheel-made sherds. After SU 206, three different strata were defined: a yellowish layer (similar to SU 204) was

detected at the north corner of the excavation area (SU 207), while at the west corner a reddish layer was recorded (SU 208). Finally, a greyish strata with an intense smell of decay, was documented at the south-western section (SU 209). All these layers were devoid of archaeological remains, and were interpreted as the result of natural processes, either the progressive compressing of sand due to erosion (SU 207) or the falling of stone plates from the ledge of the shelter (SU 208). The SU 209 (which was later unified with SU 210 and 211) was slightly different as it had an evident organic composition -although it probably had a natural origin. This layer covered the whole excavation area and showed an unknown depth, and so a small test pit (1 by 1 meters) was planned in the middle of the trench, in order to document its real depth and to evaluate if the removal of the whole strata was affordable. That test not only showed the real depth of SU 209/211 (30-40 cm), but a new, very hard packed layer of red sand which was easily interpreted as the bedrock (SU 212). Thus, it was de-

cided to remove the whole SU 209/211 in order to document that bedrock throughout the shelter.

The removal of SU 209/211 showed two different contexts within the shelter. In most of the excavation area, SU 212 was discovered and thus the excavation was assumed to be finished. However, at the northwest corner, along the stone block that encloses the shelter, a remarkable amount of lithic tools and some hand-made, prehistoric pottery started to appear in an area of approximately 3 by 0.5 meters, along with a good quantity of charcoals, some of them big-sized. The colour of this area was similar to the upper layer, but it had a different texture and it was far more compacted and thus, a new SU was defined (SU 213) (fig.5). As we have said, the presence of archaeological items was really significant (more than 400 pieces), especially taking into account the dearth of archaeological artefacts documented in all the previous layers.

The amount of lithic items and pottery sherds collected at SU 213 clearly could only be explained by the existence of an archaeological layer of human occupation in the shelter, although the disposition of the stratum clearly pointed to a secondary position for this occupation. The erosive processes documented throughout the valley and in the upper layers of the excavation would have dragged the archaeological remains and its associated sediments to the far side of the shelter, where the stone blocks would have prevented their disappearance. After the removal of the SU 213, the bedrock (SU 212) was located and thus the excavation was considered to be completed. After the collecting of pollen samples and the full documentation of sections and plans, the excavation area was completely covered.

The Elephants' Shelter excavation has provided a quite simple stratigraphy with three different kinds of formation processes. Two of them were related to natural causes: stone collapses from the shelter's ledge and layers of clay and sand associated to rain and ice erosion, while the third one had a human origin. Two different occupation periods have been recorded with significant differences in their archaeological characteristics. The oldest phase (SU 213), which provide the most valuable set of artefacts, was found in a secondary position even considering the small area of the shelter, while the newest one (SU 205) showed an *in situ* occupation defined by a black soil layer of approximately 8 cm of depth. Unfortunately, other possible archaeological evidences – as post holes, walls or fire remains – were not detected in this otherwise evidently anthropic occupation. Archaeological artefacts, unlike the older phase, were unclear, mixing lithic tools with wheel-made pottery,

which made radiocarbon dating the main approach to the chronology of this phase.

3. 3. Archaeological findings

A total of 687 archaeological items were collected, of whom the large majority (94.76%) were flint tools. Although all SU had some amount of archaeological artefacts due to erosive processes which have dragged artefacts from the upper zones into naturally formed strata, it is evident that only one of the stratigraphic units (SU 213) met the conditions to be analysed in detail. That SU represented the 88.5% of the archaeological items collected, including the most of the prehistoric pottery sherds found at the shelter. Unfortunately, the sample of prehistoric ceramic is very poor -only six pieces- of which only one has provided relevant information (See fig. 12.2 in Chapter Ceramics). It's a straight rim probably belonging to a middle sized container of possibly globular shape. The rest of sherds did not provided any information. All these hand-made sherds are similar, with rough surfaces and big temper particles (more than 1 mm).

The lithic items were far more interesting. Although SU 213 has yielded a relatively small number of samples (517), however, they represent the whole process of production, use and recycling and provide a good approach to the kind of occupation that took place in the oldest phase of the Elephants' Shelter. Most are poor quality flint with numerous inclusions and fractures which surely made knapping difficult. Although we cannot determine the geographic origin of the flint, we know that flint is exogenous to the valley. The flint material also looks to be affected by thermal alterations which could also point to a relatively prolonged period of use of the site.

Most of the sample consists of *debitage* products (more than 90%), while a proportionally large amount of cores (9) have been documented, too. The best *debitage* products are mainly chips (43%), flakes (28%) and blades and bladelets (around 10%). The good sample of the smaller chips (less than 1 mm) indicates that knapping activities were conducted at the site. The Elephants' Shelter has provided three different kinds of knapping methods related to the presence of cores, trimming and preparation blanks and *debitage* products. Flaking techniques show that both specific and opportunistic strategies of knapping were used, while cores have evidences of exhaustive use, with three successive striking platforms. Evidences of the use of bipolar technique have also been found at six cores, a particular, recently proposed knapping method (Peña 2011) which has been documented

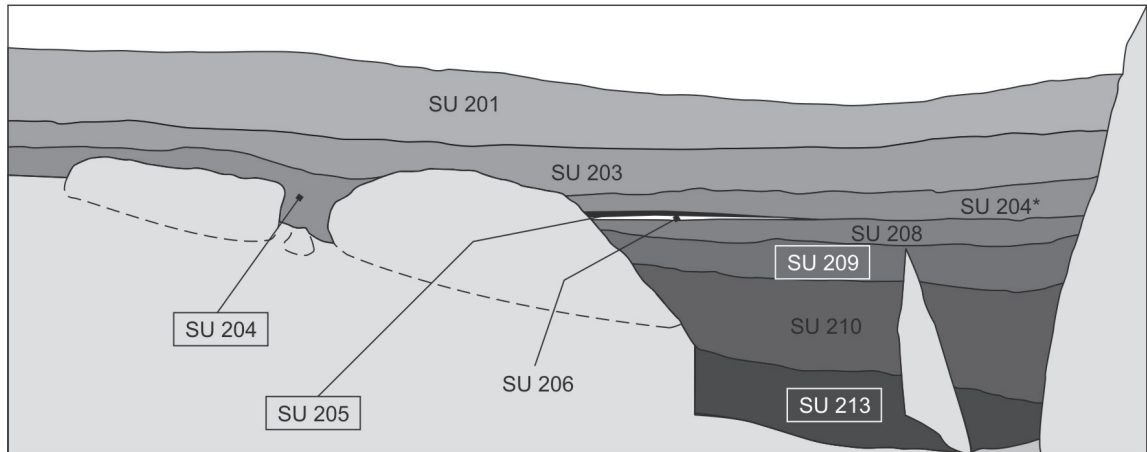


Fig. 6. Southern profile of the excavation displaying the SU where samples were collected. Square symbols represent 14C samples.

in the area for the first time. Additionally, at the Elephants' Shelter, bipolar cores are also by-products of other kinds of knapping methods something that could be interpreted as the result of a recycling strategy.

The main conclusions of the Elephants' Shelter lithic analysis are three. First of all, the wide range of lithic tools implies it was a camp, where all the task of the *chaîne opératoire* (production, maintenance, use and abandonment) took place. Secondly, most of the information analysed points to the use of an expedient technology, carried out quickly and not very carefully, to take maximum advantage of every part of the material. That strategy clearly points to a distant origin of the source of raw materials. Finally, the different knapping methods recorded at the Elephants' Shelter imply different technical skills. While the laminar strategies to generate blades and bladelets represent a type of specialized activity that requires an intricate knowledge of volumes and preparations, the development of bipolar flaking does not require a specific knowledge or expertise.

Along with lithic and prehistoric pottery, some other artefacts were collected during the excavation. The most relevant are the wheel-made potteries documented at the SU 205. Unfortunately, there were only six sherds without any shape to be reconstructed, and so its chronology could only be established through radiocarbon dating. Other materials include about twenty animal bones, most of them belonging to small animals, although an ovicaprid rib and a tooth of a small cow were also recorded.

3. 4. Sample collection

The singular morphology of the Elephants' Shelter which prevented the erosion and allowed the preservation of archaeological levels made this site especially interesting for the collection of pollen samples. The final depth achieved at the west side of the trench, by the outer stone block, was of -1.20 m, making that area an ideal place to obtain a pollen column, sampling collected every five centimetres, making a total of 24 samples which covered from the bedrock to the surface level and included the prehistoric occupation of the site (SU 213). The other phase was not attested in this area, and so a second and smaller pollen column was taken at the north side of the excavation to document this occupation, with an identical 5 cm interval and a total of ten samples. Additionally, 30 kg of sediment from SU's 205, 209/211 and 213 were collected and floated, to collect paleo-environmental samples. Regarding anthracology, two sediment samples of SU 205, one of SU 209/211 and three of SU 213 were collected. Where possible, charcoal samples were also collected: three samples at SU 209/211 and two more at the SU 213. SU 205 did not provide charcoals big enough to be considered individually (Chapter 4.2). Concerning radiocarbon, four samples were taken, three of them based on charcoals and a fourth one on a bone fragment at SU 204. All of them were dated using AMS at *Centro Nacional de Aceleradores* (Sevilla, Spain). As a brief summary of results, we can date two settlement phases, the oldest one corresponding to SU 213 and is datable to the Mid-Third Millennium calBC, i.e. Late Neolithic/

Copper Age. The second one is more than 4000 year younger than the former, being dated between the 11th and the 13th centuries AD. In between there are phases of flooding and dragging.

The flotation of sediments did not provide any seeds to analyse. On the contrary, a good selection of wood samples was collected either after the flotation or directly during the excavation process. Although a comprehensive study of anthracological and pollen samples has been presented in chapter 4.2, the information shows a clear decrease of evergreen holm oak from the oldest to the newest occupation, while with ash trees the opposite process occurs, maybe implying a need for wood to compensate the progressive decimation of holm oaks.

The pollen data suggest a continental Mediterranean dry climate in the area with some symptoms of periods of moister conditions, betrayed by the presence of alder, ash, hazelnut and walnut, although they also may be related to proximity to river courses. On the other hand, the signs of human activities are clearly stronger than all these ecological features and reveal several practices mostly related to herding during two settlement phases: the first one (SU-213) developed at the end of the Neolithic/Early Copper Age, is characterized by a decrease of the forest and by higher values anthropic *taxa* due to pastoral pressure. During the second human occupation (SU-205), in the Almoravid/Almohad period, the forest disappear and there is an increase of the nitrophilous *taxa* linked to human activities, as well as herding

practices revealed by nitrophilous and coprophilous fungus and evidences of fires connected with domestic activities.

3. 5. Summary

The excavation of the Elephants' Shelter has provided contradictory results. On the one hand, it has detected the existence of a prehistoric settlement site, an exceptional fact in view of the yearly processes of snowing and thawing, which the valley goes through. A remarkable amount of archaeological items and good radiocarbon dating have come along with this prehistoric level, doing of it one of the scarce archaeological sites with a clear chronology in Oukaïmeden. The other radiocarbon samples are also coherent, and a relationship could be established between the engraving recorded over a fallen stone during the excavation and the medieval chronology of the SU 205, which correspond to the newest occupation to the site. However, these positive achievements are somehow partial, as the main archaeological items have been located in secondary position, weakening all the previous information and limiting its interpretation. Anyhow, the SU 213 context is interesting, because it comes from the oldest level of occupation, resting directly on the geological base of the Elephants' Shelter. Unfortunately the prehistoric items collected there, are in a secondary context, due to the processes of dragging suffered by the shelter thawing water overflowing from the ledge of the shelter, which has concentrated all remains of human occupation around the rock block which

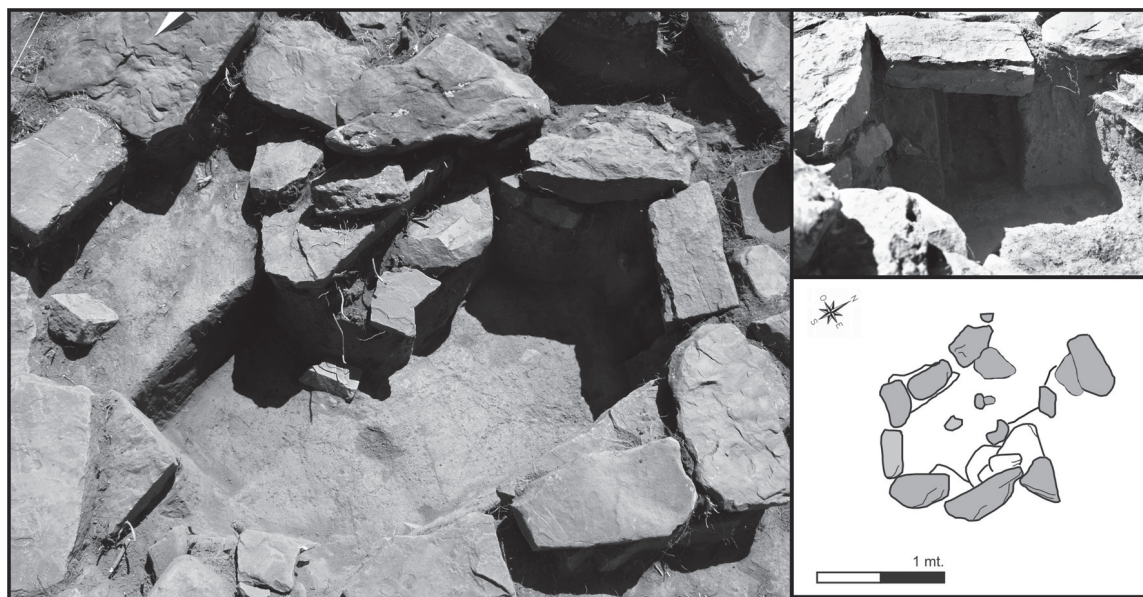


Fig. 7. View of the central chamber of tumulus OK5.2 after the digging.



Fig. 8. Overview of OK5.2. tumulus after excavation.

closes the outer side of it. Also, the documentation of overlapping and of different styles in the engravings of the shelter, makes us think of different engraving periods, providing the Third Millennium calBC date of SU 213 only a *post quem* chronology for the completion thereof. However, it should be noted that no prehistoric occupation have been documented later in the shelter, because after this Mid Third Millennium calBC occupation, there is a long *hiatus*, marked by a level of collapse and flooding of the shelter dated by 14C at the beginning of the First Millennium AD (130-350 cal AD), after which a second soil of anthropogenic formation and wheel-made pottery, dated by 14C in historical times (11th to 13th century cal AD), and sealed by a second level of flooding, collapsing and dragging was recorded. Therefore the SU213 context offers a terminus *post quem* for the rock art of the shelter.

The second archaeological dwelling, although in primary position, has provided neither relevant artefacts nor evidences of structures -fires, walls, post holes- which could help to understand the physical characteristics of the occupation. Eventually, the goal of connecting rock art and archaeological occupation has not been as fully achieved as desired, either. Thus, the most positive contribution of this excavation has been the good integration between radiocarbon data and archaeological artefacts at the oldest phase.

4. Tumulus 2 at the *Igountar* pass. Context 300, OK5 area

4. 1. Introduction

The OK5.2 tumulus is located in the *Igountar* mountain pass area, near the OK5.1 burial mound but at

the opposite side (See fig. 1. C-300). This mound was also a horizontal sandstone accumulation with lesser granite interpolations, located within a slight slope. On the surface, it presented an oval structure. Two round constructions seemed to intersect one another in one of its sides, although this junction was not clear. As in OK5.1, the structure seemed to have been plundered in the central area.

4. 2. Archaeological results

A 16 x 15 m grid was set to excavate the tumulus. The OK5.2 structure have its larger axis oriented NE-SW. It was located on a visible slope, near a sandstone outcrop towards the centre of the mountain pass. The slope is responsible of a certain visual dissymmetry in the structure. At some points some blocks are raised while others remain buried. Nevertheless, once we began to clean the surface, we observed how it split into two more or less round tangent structures. We could not determine *a priori* if they belonged to an originally complex structure, or it was a secondary structure annexed to another previously built one. The building material of both sub-assemblages was not discernible with the naked eye. Both seemed to present the usual mixed building materials, dominated by sandstone with sporadic interpolations of granite. As for the construction features, there were medium-sized sandstone slabs, on average larger than those used to build OK5.1, but smaller than the ones used as boundary markers, placed horizontally. We also observed a smaller amount of granite blocks in the assemblage.

Surface clearing allowed us to document a quadrangular structure, although two of the sides -in the centre of the southern round sub-structure- were partially distorted. Given the impossibility of excavating the whole tumulus structure as we were running out of time, we decided to start working over this possible chamber structure and the barrow area around it, by making a 2.10 x2.40 m test pit. Once the area was free of organic soil (SU-300) the surroundings of this possible quadrangular structure offered a view of organized and intertwined stones making up a clear mound barrow structure. The same yellowish dirt documented in the OK5.1 tumulus appeared inside the possible chamber area with a sandy texture and brownish appearance. It appeared also between the cairn stones with a plastic texture. This mound was named SU-301.

The excavation of SU-301 inside the chamber (fig. 7) did not provide the expected results. The deformation of the chamber structure observed on the surface was confirmed to be a complete violation of the burial area, reaching the contact with the geological level below (SU-303), although it

provided some significant artefacts, as described below. On the other hand, the remaining structure in the chamber area was not deep. Thus, any archaeological remains would have been clearly exposed.

Contrary to the previously excavated barrow, the OK5.2 tumulus was not built directly on the geological level. A layer of soil previous to the mound construction is clearly preserved underneath the structure. A 33 cm deep pollen column was taken to perform analysis that might help us correlate the moment when the mound was built and the data provided by the paleo-environmental study of the valley. This soil presented slightly different features at each side of the chamber. This was due to the presence of a layer of compact, reddish dirt, probably coming from the decomposition of sandstone (SU-302) laying between the original soil, previous to the mound construction (SU-304 = SU-305), and the mound structure. At first we thought that this level could be a preparation for the later construction of the structure. However, it was not spread homogeneously below the mound, and rose at some places around the limits. Thus, anthropic or not, it seems right to classify it as a feature previous to the tumulus (fig.8).

4. 3. Archaeological findings

The contents of the chamber can be explained by plundering and filling, though it still provided significant artefacts. Three ceramic sherds appeared in the upper layer of the filling. Although they were severely affected by humidity, they could be identified as wheel-made. Judging by the body, they were probably of recent age. However, a small handmade sherd was collected from the basal level, in contact with the geological substratum. It happens

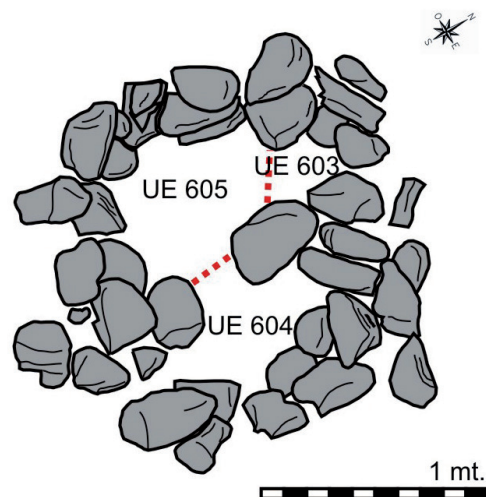


Fig. 9. Drawing of the chamber burial

to be a body sherd belonging to an open vessel with a profile inflexion (See Chapter ceramics fig. 12.1). Not much can be said of such a scarce assemblage. The significant artefacts -found at the bottom of the stratigraphy- could belong to the original content of the mound or to the soil previous to its construction. They could also have been introduced during or after the plundering.

4. 4. Sampling

No samples for dating could be collected from the OK5.2 tumulus due to the plundering of the area. In spite of this, we were able to collect anthracological and pollen samples. An anthracological sample was taken from SU-301. Four different taxonomic

determinations were identified, although the sample was very poor and little conclusive. We were able to obtain an approximately 33 cm deep pollen column, holding 13 samples. We can summarize the results as depicting an open landscape with a mild-Mediterranean climate, few contrasts and strong anthropic activity.

4. 5. Summary

The OK5.2 tumulus structure is defined as detailed below: A generally oval structure of 10.40 m (60°NE-240°SW) by 7.70 m (310°NW-130°SE) meters of dimension, clearly made up of two more or less round, tangent structures fixed to each other. We documented three overlaying stone layers,

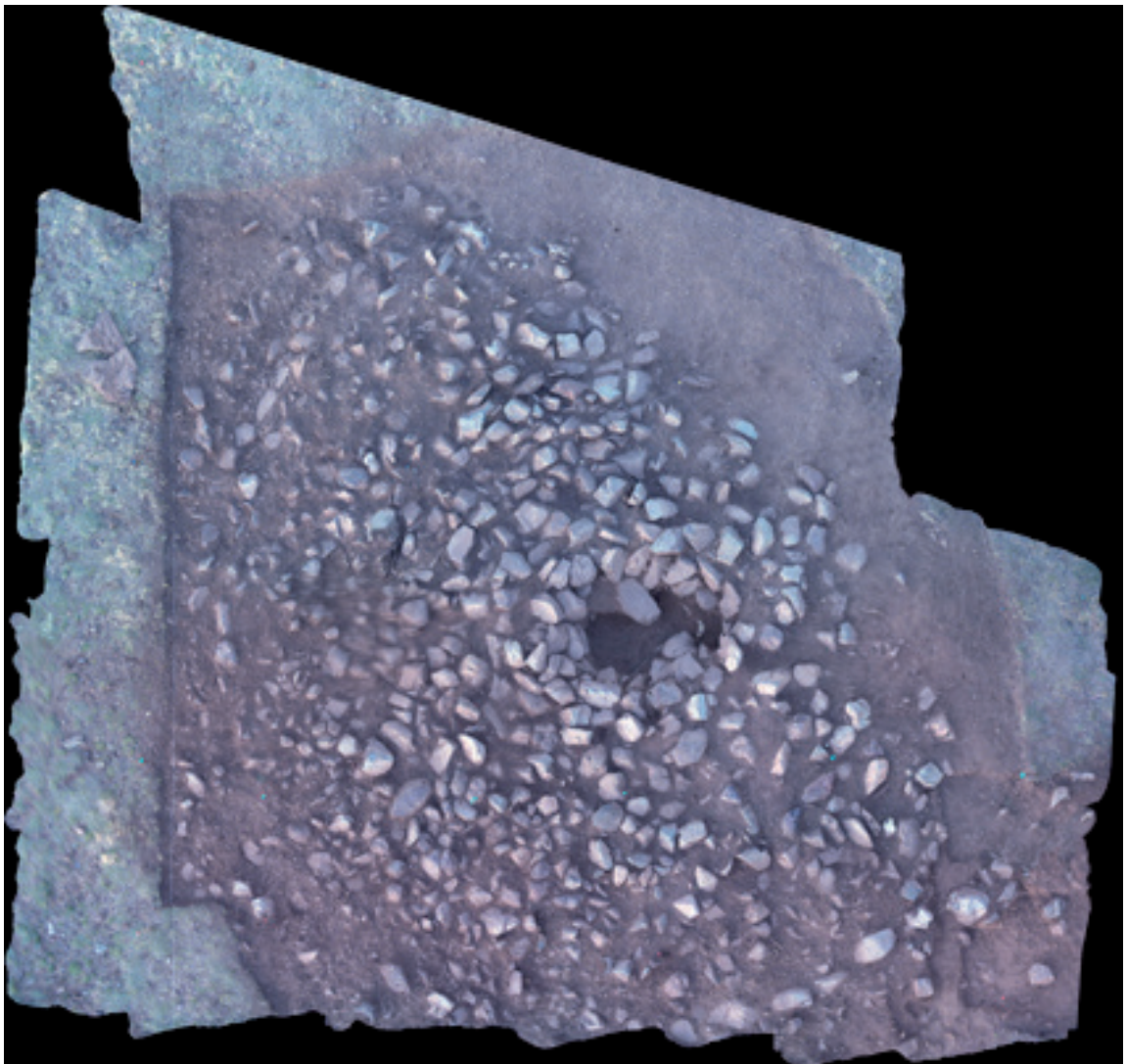


Fig. 10. Overview of OK2. 1. tumulus after excavation.

mainly made up of sandstone with some granite interpolations. The southern round sub-structure presents a small quadrangular structure with an approximate size of 90x60 cm.

Unlike the OK5.1 tumulus, the OK5.2 mound provided some datable material that might be broadly related to the Copper Age/Bronze Age. Nevertheless, the stratigraphic position of the pottery sherd does not allow accurately assign it, either to the tumulus erection, its use period or its plundering. Anyway, it might suggest a prehistoric chronology for this kind of structure.

The monuments OK5.1 and OK5.2, which we excavated in this part of the valley, look to be minimally monumentalized single burials. OK5.2 tumulus is a complex structure that could have hosted more than one body in different chambers. However, we could not verify if the burials were contemporary, or took place over an extended period of time by fixing a new structure to the previous one. This does not mean that there were no larger monuments used as collective pantheons in the Oukaïmeden Valley, but the few mounds fitting that description that were surveyed, were found wholly plundered.

It should be noted that both documented structures are two different variants of the same common model. This opens the question of whether these differences were the product of burial traditions pertaining to two different groups, or to different cultural periods or even if they were due to social factors we cannot detect now.

5. The *Pinguet* shelter. Context 400, OK2 area

5. 1. Introduction

This test pit was done in a shelter located in the middle of Oukaïmeden village, corresponding to

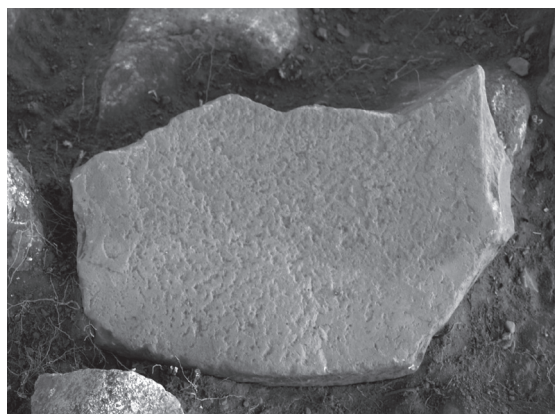


Fig. 11. Grindstone reused in the building of the burial mound.

the OK2 area defined by the ARPA project (See fig. 1 C-400). It has been called *Pinguet* due to its proximity to an anthropomorphic engraving discovered by the French teacher *Pinguet* in the early 40's. It is precisely its vicinity to that engraving and the existence of soil preserved in the shelter, what motivated its selection. The shelter sits under a stone crest which was almost filled with sand eroded from the top.

The excavation of the shelter was quite difficult, as most of it was filled with sand and thus there was not room enough to work properly.

5. 2. Archaeological results

This test pit was negative. No sample was collected, and after doing the topography and taking photographic records, the shelter was covered again.

6. Test pit 1 at *Aougnin N'ait Ourigh* upper platform. Context 500, OK1' area

6. 1. Introduction

Aougnin N'ait Ourigh is the Berber name of two platforms, called *Izdar* (upper) and *Oufalla* (lower) in Berber language, that are set at the main and steep western entrance to Oukaïmeden from the *Rheraya* valley, crossing the *Tizi Oukaïmeden* (See Fig. 1. C-500). These platforms were traditionally used by the Berber shepherds to camp on the eve of August 10th and then proceed to enter to the Oukaïmeden Valley at dawn the day after (Mahdi 1999). In the 2008 field survey, many *debris*, lithic tools and some few small sherds scattered on the surface, as well as some simple rock art stations were recorded there. On the basis of the strategic setting of these platforms, and of the information gathered, several test pits were planned there for next campaigns. The goal pursued was to evaluate the archaeological potential of the area and to check whether these lithic items and ceramic sherds found on surface revealed archaeological sites or just erosive processes. The first test pit was placed in the upper platform and among three stone blocks which defined a small but well protected area. On the surface some lithic tools and a possible prehistoric sherd were collected, which initially pointed to the presence of an archaeological site in this area.

6. 2. Archaeological results

This test pit was negative. No sample was collected, and after doing the topography and taking photographic records, the shelter was covered again.

7. Tumulus 1 opposite the Oukaïmeden village. Context 600. OK2 area

7. 1. Introduction

Context 600 consists of a small tumulus, although very conspicuous in the surrounding landscape. The mound is basically built with outcropped materials, mainly granite -the predominant rock in the vicinity-, although other materials have been used in smaller proportions. These materials are sandstone and quartzite and also belong to the own lithology of Oukaïmeden and can be found relatively close to the location of the burial mound.

The monument is located opposite to the modern village of Oukaïmeden (See fig. 1. C-600), where the valley widens, and is set into the flooding area of the River *Irini* headwaters, which flows barely a few hundred meters away. Therefore, the mound is inside the current pasture area, but also rather close to the granite elevation that encloses the valley on the southern side. Thus, the mound was built at the far side of the rock carvings, which are located exclusively within the Triassic lithological formation of sandstone. In the theoretical division of the valley that we performed to facilitate our research, this space belongs to the OK2 area.

This tumulus was one among several mounds of earth detected in the same area, although most of them were more or less eroded and covered by vegetation. Most of them showed signs of previous interventions in the form of trenches perfectly aligned, dividing some of the mounds through the centre. We presume that these ought to be traces of Jean Malhomme's diggings, as he excavated at least five tumuli in Oukaïmeden in the summer of 1953 (Malhomme, 1953b:475).

We chose for digging the one apparently better preserved, because the tumulus structure protruded and the firmly anchored stones of part of its cairn were visible.

7. 2. Archaeological results

The excavation began with the setting a 10 x 15 m grid on the visible part of the monument, as in surface, the megalithic structure was relatively oval. Surface cleaning revealed a polygonal elongated area at the top of the structure, the main axis of which was oriented 320°NW-140°SE and seemed to belong to a small funerary chamber. In its centre, we found a large rock with round edges, surrounded by smaller rocks. Two thin sandstone slabs were located almost vertically at the shorter ends of the rock.

A 1 m wide trench was laid out -orientation 40°NE-220°SW- traversing the monument at its centre to define the structure of the mound and the limits and characteristics of the chamber more accurately. The upper topsoil layer (SU 600) revealed a generally well-preserved stone structure. The stones were still in place and not separated. When the chamber area was reached the original colour of the sediment became lighter. The soil also contained numerous small pebbles and seemed looser. This filling was singled as SU 601. The NW side of the chamber - located inside the trench -, was excavated, and then the excavation was expanded to the rest of the chamber. This was a sterile unit from an archaeological point of view. The stones inside the chamber that were documented on the surface were loose and rested on or went through this layer. This was also true of the aforementioned sandstone slabs included in this filling. In origin, they might have belonged to the chamber covering. After digging slightly more than 25 cm into this layer, a pale yellowish soil surface of sandy nature, free from stones and pebbles, made its appearance. It was identified as SU 602. Beneath it, it was another layer almost perfectly horizontal. This layer was barely 5 to 10 cm deep and showed a soil composition similar to the previous one, but mixed with rounded pebbles (SU 603). Underneath SU 603 there were two more layers. SU 604 was 5 cm deep on average, and consisted of the same yellowish sand, free of stones. Below this layer, SU 605 was recorded, which again consisted of a mixture of sand and rounded pebbles. This layer was defined on the surface but was not excavated (fig. 9).

To sum up, the strata deposit shows a typical fluvial environment, alternating natural layers of sand and gravel. This alternation was the result of successive phases of material transportation and deposition.



Fig. 12. Final view of context C-700 in *Aougnin N'ait Ourigh* upper platform, after its digging.

The excavation of OK2.1 tumulus allowed us to record a new kind of funerary structure in the Oukaïmeden Valley. Once the perimeter of the structure was cleaned, the size of the mound was revealed to be considerably larger. It also showed clear differences between the outer ends of the east and west sides. Indeed, the east side of the mound presented an arm of aligned stones -more or less mixed with the rest of the filling- describing a curve from NE to SE. The end of this curve was meticulous and presented two possible stone appendices, that recall the so called crescent tumuli or tumuli with V arms typical of the Sahara (Souville 1998, di Lernia and Manzi 2002: 28-29; Bokbot 2003). We excavated further into those extensions, but the poor conservation of the structures only allows for speculation over the existence of V arms, since the stone alignment disappears within a few meters.

The meticulous digging carried out to define the structure helped us to make it clearly visible in this part of the tumulus. The mound was demarcated with a slightly higher number of stones of similar size and shape (fig 10). Immediately outside the barrow, a new line of stones was intentionally set almost horizontally - leaning slightly outside- following the barrow limits, and lastly, a third outer ring delimited the boundaries of the mound. This circle also consists of stones, which were placed slightly higher than the previous ring stones. This peculiar structure is not attested in the east side of the mound. So, it looks like an intentional differentiation of this part of the mound in respect of the remainder of the structure is sought. This means that we are facing an unusual mode of construction.

7. 3. Discussion

To sum up, we could define the OK2. tumulus 1 as an overall oval structure. The dimensions of the mound are 7.50 m 50°NE-230°SW by 6.70 m. 320°NW-140°SE. The barrow structure presents three different levels of overlapped stones in the centre of the mound, where we found a slightly off-centre and approximately quadrangular chamber of 1 m edgewise. Two of the lateral limits of the chamber appear to have been built by setting vertical stones in a single line -possibly placing a second horizontal stone line over it- whereas in the third side, which is well preserved, the three horizontal stone lines are clearly visible. The mound presents two different boundaries. The first one -simple and rough- is located in the eastern area. The second one -more carefully finished than the first one- is made up of three perimeter stone lines in the northern, western and southern areas.

7. 4. Archaeological findings

Despite the positive expectations suggested by the apparently semi intact condition of the tumulus at the initial survey, the digging was a bit disappointing, since no archaeological findings were made. No items were collected either on the surface or in the chamber filling, i.e. SU 601. The excavation of SU-602 -which was barely 10 cm deep-, provided some archaeological artefacts, such as small unmodified flint flakes and a small plain pottery sherd. Some small flint flakes -also lacking any kind of modifications- were found in SU 603. No items were found below these layers.

The few archaeological artefacts that we collected belong to the units located below the structure and thus to an earlier moment. They are probably the result of transportation from the environment due to the formation processes of the alluvial plain where they are set. Flint is an exogenous raw material in Oukaïmeden. Thus, the presence of these artefacts is only an indicator of human presence in the area when the tumulus was built, but does not provide any complementary data to better define the relative chronology. Eventually it should be noted the finding of a sandstone slab located within the surface of the structure (fig. 11). One of its sides is perfectly flat, showing numerous signs of striking or notches on the surface. Therefore, it seems to be a grinding stone reused in the building of the tumulus.

7. 5. Sampling

Once the excavation inside the chamber was concluded, a pollen column was taken. Due to the reduced depth of the stratigraphy, only four samples could be taken. Results are comprehensively discussed in chapter 4.2. Therefore, suffice to say that it draws an open landscape with limited woodland vegetation and a predominance of grasses.

7. 6. Summary

Again, the tumulus was already plundered and we could not get any clue about its chronology. There were no original layers preserved inside the chamber previous to its plundering. Its filling, that took place after the plundering, does not contain any archaeological remains. Anyway, according its architecture, we can conclude that this kind of relatively small-sized monuments with a reduced chamber may have been monumentalized cists. They would probably have contained the remains of a single corpse only, although no evidence of such burials has been found.



Fig. 13. View of the *azib* area and the Elephants Frieze before the digging.

Small and scarcely conspicuous tumuli with one or just few burials, not very different of those that we excavated in Oukaïmeden, are known in the Libyan Sahara, where AMS bone samples of well preserved burials have a Prehistoric chronology between the Mid Fourth and the Second Millennium calBC. (di Lernia and Manzi 2002).

8. Test pit 2 at *Aougnin N'ait Ourigh* upper platform. Context 700, OK1' area

8. 1. Introduction

As explained above, *Aougnin N'ait Ourigh* is the generic name given in Berber language to two platforms which precede the western entrance to Oukaïmeden from the *Rheraya* valley (See fig. 1.C-700). The strategic position of the upper platform and the surface findings of flints, the existence of impressive formations of vertical boulders offering shelter, made of it a candidate area for digging. In fact it is probably also the place where Rodrigue (1996b) documented three sites with microburin lithic industry.

The *Aougnin N'ait Ourigh* platform presents geological features different from the Oukaïmeden Valley. The boulders, which could be used as shelters are not part of eroded crests as in Oukaïme-

den, but fallen blocks, rolled down from neighbour peaks and deposited in the upper platform. That is, although there are not true rock shelters in this area, the boulders could provide protection as wind-breaks and be used as shelters.

In 2009, two test pits were planned in the upper platform. The first one, which was negative, has already been described (see above C-500). The second test pit -which was successful- was planned beside a huge stone which acted in part as a windbreak. Archaeological remains were recorded on the surface, including lithic tools, a small plain handmade sherd of pottery and a small polished stone which could have been used as a bead. As we have said, the boulder offered only a partial protection and thus some structures of human origin -postholes, parapets- were expected to be found. The test pit received the code C-700, following the correlative order established for all the archaeological excavations undertaken in this project.

8. 2. Archaeological results

A test pit of 2.20 by 1.5 meters was open, covering the whole length of the stone, although a small section was reserved beside the stone to collect a pollen column. Additionally, the test pit was topographically documented with a total station and was positioned with a GPS.

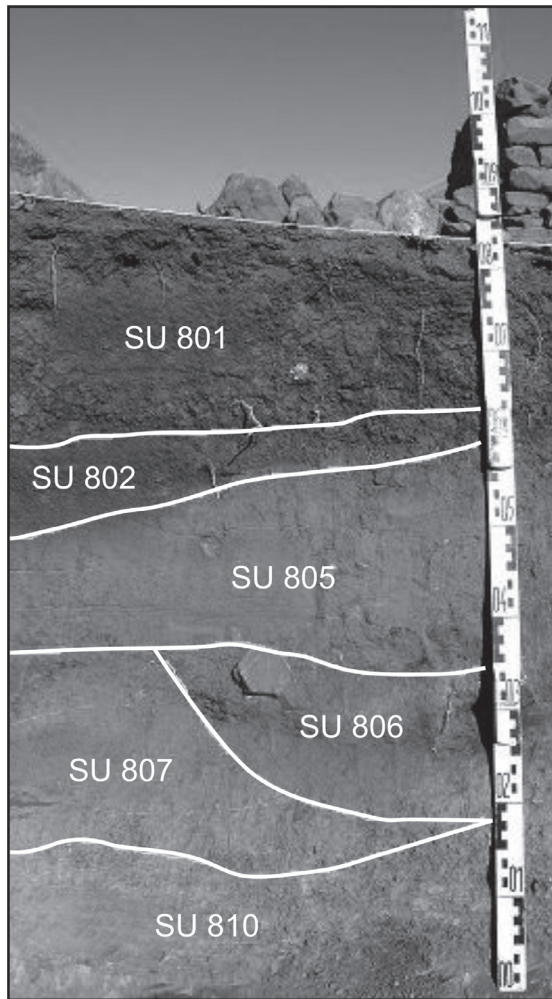


Fig. 14. View of the Eastern profile of C-800 after the digging.

After the removal of the surface level (SU 701), which was made of loosely packed earth, with a depth between 12 and 20 cm, and which did not provide archaeological items, except for a much eroded sherd, a second sand layer was documented. This layer (SU 702) covered the whole test pit area and was made of light brown, loosely packed sand. Accumulations of charcoals were documented throughout the excavation area, along with several bone fragments, some of them burnt. At the south corner, beside the stone, a different kind of sand was attested: darker, more compacted and with clayish texture, which was labelled as SU 703. The removal of SU 702 (with a depth between 8 and 16 cm), confirmed that SU 703 covered the whole test pit area, and filled a remarkable stone collapse. It also presented strong evidences of human activity: archaeological items -including bones and

lithic tools-, charcoals and other organic remains. Unfortunately, no dwelling structures were documented during the excavation of SU 703, and the disposition of the *stratum* -very irregular, filling the spaces among stones- suggests that the layer was in secondary position, dragged from higher areas or strongly disturbed. Anyway, due to its interest, 20 kg of sand and several charcoal samples were collected to make pollen, anthracological or radio-carbon analyses.

Even if SU 703 was considered an altered *stratum*, its human origin and the absolute absence of archaeological sites in this area, led us to enlarge the excavation area towards the northeast. The final dimensions of the test pit were 2.30 by 2.50 m, with an area of 5.75 m² excavated. This enlargement specifically aimed to document SU 703, along with any structure which could have been used to define the shelter. The excavation, as expected, documented the same strata than the former test pit, but with a higher rate of archaeological items, including several prehistoric sherds in the SU 702 and a remarkable amount of flint tools and pottery sherds in the SU 703. Unfortunately, no dwelling structures were documented in this area either, and so it was concluded that SU 703 was placed in a secondary position, although, as happened in the Elephants' Shelter, retained by the boulder. After the removal and complete sieving of SU 703 a small stones layer was recorded (SU 704) which was interpreted as the bedrock of the platform. At this moment the test pit was considered finished, and after the photographic and topographic recording the excavation area was covered again (fig. 12).

8. 3. Archaeological findings

Considering its small area and the absence of structures, C-700 has provided some interesting artefacts. We have already made reference to the fragment of a polished stone bead collected on the surface, one of few examples of polished stones documented in Oukaïmeden. Regarding the lithic items, there is a small sample of just 72 pieces. Most of them (63 items) were collected in the SU 703 and are similar to the ones documented in the other sites: small pieces, abundant *debitage* products, non-specialized tools and laminar industry. A specific type of microliths, made from blade fragments with an abrupt retouch on one or both sides, is recorded. The rest of artefacts correspond to exhaustive used cores and *debitage* products.

Much more interesting is the sample of prehistoric pottery, especially when connected to the radiocarbon dates obtained in the site (Chapter 3.2 fig.12.4). The sample has been relatively big (32

sherds), considering the poverty of most sites in Oukaïmeden. It has also provided five sherds with rim whose shape could be reconstructed. They happen to be low quality hand-made sherds, with a rough surface and medium or big size tempers. They show a tendency toward straight or globular shapes, although due the small size of the sherds and their bad condition of preservation, we could just approximately orient their rims. The most remarkable piece has a straight rim with a long ledge handle decorated with four deep fingernail impressions. The pottery sample could be compared with others coming from Moroccan Bronze Age sites as comprehensively explained in chapter 3.2.

Additionally, the few animal bones collected were kindly identified by our colleague Dr Manuel Dominguez, Lecturer at the Complutense University of Madrid. A proximal bovine ulna and an ovicaprine metatarsus were documented in the SU 702, and in SU 703 a rib belonging to an unknown type of animal of medium size and a humerus and a radius from an ovicaprine.

8. 4. Sampling

Several samples were collected in SU 702 and 703. A charcoal and a bone sample were collected at SU 703, along with four bags (20 kg) of sediment to be later floated. At SU 702 a sample of burnt bones was collected, too. Lastly, a pollen column was taken at the bottom of the test pit, beside the stone. Samples were collected every five centimetres, making a total of 15 samples which covered from the bedrock to the surface level. Carbon sample collected at a depth of 35 cm in SU 703, provided a chronology of Mid Second Millennium calBC, i.e. Bronze Age, matching with a second date obtained from a sample taken from the pollen column. On the contrary the AMS dates obtained from bone samples coming from SU-702 and SU-703 were the same age but inconsistent both with the archaeological findings and with carbon dates. The only possible explanation could be post depositional processes affecting these samples.

Unfortunately, no seeds could be recovered from the flotation, but the pollen column identified 35 *taxa*. They draw a generalized open landscape with a strong anthropic activity and a decrease in humidity after the Mid Second Millennium calBC.

8. 5. Summary

Although the archaeological results have been quite modest, the finding of prehistoric diagnostic pottery set a first approach to the Bronze Age record in Oukaïmeden that, until now, could only

be guessed through some engravings as halberds, traditionally assumed to belong to that period. Unfortunately, the absence of dwelling structures and the scarcity of flint artefacts prevent a better understanding of the human exploitation of natural resources and the economic strategies undertaken by the communities who occupied the valley at that period.

9. The Elephants' Frieze. Context 800, OK4 area

9. 1. Introduction

One of the most significant sites in the Oukaïmeden *agdal*, is the "Elephants' Frieze", so called after a frieze depicting four elephants, a rhino or perhaps a warthog, a feline and two anthropomorphic figures. Overlapping them, there are two Libyan-Berber inscriptions. It is set in the OK4 area, limited on one side by the dam of the OK2 area and the *Assif Tiferguine* (stream in Berber) (See fig. 1. C-800). The first references to the Frieze were written by Simoneau (1967b), but it is not until later that it was fully published by Rodrigue (1987 and 1991).

Prior to our archaeological works there, the only prehistoric dating from a site in Oukaïmeden came from one of the two test pits performed by Dr. El Graoui, former Director of the *Centre National de Patrimoine Rupestre*. The test pit was located directly below the frieze, which is one of the most representative rock art stations of the area, and no dwelling structures or archaeological findings were made but only several bonfires, of one of these the sample dated was taken (El Graoui *et al.* 2008).

Despite the small dimensions of the test pit where the 14C date was obtained, it occupied the only available area in contact with the rock surface below the engravings, since the frieze verged on one side with a small rock shelter already tested by Dr. El Graoui, and on the other side, there was a fallen stone, the size of which left no room where to open a new test pit (fig. 13).

9. 2. Archaeological results

A new 2x2 m test pit, labelled C-800, was dug in the Elephants' Frieze, between the fallen stone and the wall that encloses the old *azib*. The area chosen is located inside the abandoned *azib*, at a distance of 2 m from the rock frieze that holds the engravings, and at some distance of Dr. El Graoui's test pits. The main goal of this new pit was trying to



Fig. 15. View of the Gar Issafen Shelter.

get archaeological information that could help us to contextualize the engravings.

The Elephants' Frieze is not really a rock shelter. Its orientation does not provide either an efficient windbreak or protection against precipitations. Therefore, we did not expect to find a complex settlement in front of it. Nevertheless, the excavation might reveal an area frequented over time and maybe, even some evidences concerning the period when the carvings were performed.

The test pit was set under these premises. A first organic layer (SU-801) was removed. It was nearly 30 cm thick on average, and contained numerous modern human and animal wastes. Next, a lighter soil with remains of burnt wood began to appear at approximately 25 cm deep in the SW corner. It spread gradually over the whole excavation area, constituting what appeared to be a modern bonfire level. This level (SU-802) was barely 15 cm deep. Underneath, the section revealed a 10-15 cm level of deep yellowish soil (SU-805), that was practically sterile except for several areas with concentrations of stones and ash. In the SW corner, this level was crossed by a pit (SU-803) the bottom of which reached a depth of 33 cm. The pit was filled with brownish soil (SU-804), also archaeologically sterile. This pit reached the geological substratum (SU-810), which is located 70 cm below the present surface.

A basin-shaped pit was detected below SU-805 and near the centre of the eastern section of the profile. The pit contained a fire-structure similar to a hearth or a mere bonfire minimally prepared, and filled with charcoal and bone remains. This rounded structure (SU-806) reached 50 cm wide in the profile and was of a similar depth. Many samples were collected to perform paleo-environmental and radiocarbon analyses (fig.14).

From that level of fire, a new layer (SU-807) became apparent. It was a compacted floor made by the ones responsible for the bonfire (SU-806).

There were no changes in the features of this new SU when compared with the preceding, except for some items discovered in it, as ceramics, some lithic, and bone remains. SU-807 was resting directly on the geological base and was around 20 cm thick. Two charcoal accumulations (SU-808 and SU-809) were documented lying directly over the geological base. The second one (SU-809), was just a shallow accumulation, without a well defined shape. However, SU-808 was clearly another bonfire. It consisted of a 3-cm thick, round accumulation of charcoal of 25 cm. diameter. Samples of it were taken for anthracological and radiocarbon analyses. Nevertheless, neither SU-808 nor the area around it provided any archaeological material.

The geological base consisted of reddish soil resulting from the decomposition of sandstone, combined with some rock outcrops. We continued digging up to 30 cm within this base, and found that the stratum was uniform and sterile. At this point the fieldwork ended up after taking a pollen column from the eastern profile of the excavation, where the stratigraphy was more clear.

9. 3. Findings

Despite the depth of the test pit, the archaeological findings were very poor. Scarcely could we collect a dark-brown flint *debitage* with cortex from SU 805, and a dark-brown flake and a roughly handmade body sherd showing irregular firing and coarse tempering from SU 807. Neither of them were chronologically diagnostics.

9. 4. Sampling

A pollen column was extracted from the eastern profile, in which samples were taken from UE

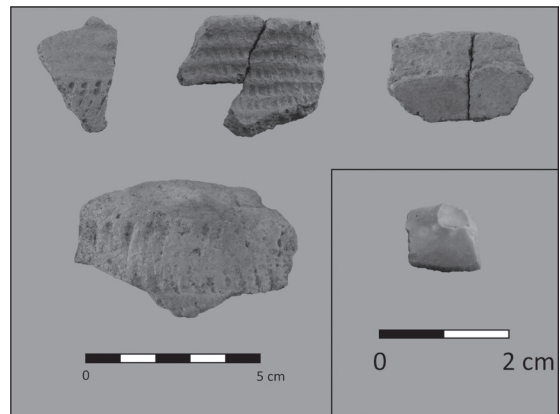


Fig. 16. Sample of impressed ceramics and retouched flint tool from C-1200.

801, 802, 805, 806, 807 and 810. A total of 31 *taxa* were documented. From this data we can deduce an open and anthropic landscape, with gradual increase of shrub vegetation and pastoralism, although with two more humid periods detected in SU 805 and 806. Also sediment was collected and floated, of which a total of 75 charcoal fragments were analysed. Some significant arboreal vegetation was preserved in SU-810 prior to the first evidences of human presence in the area. This arboreal vegetation started to decline afterwards, although some remnants were still visible in samples of historic times (SU-807 and SU-805).

Also charcoal or/and wood samples from SU-808, SU-809, 807 and 806 were dated by AMS. They point to some activities, unknown to us, in the neighbourhood of the Elephants' Frieze at different time periods, some in Mid First Millennium calBC and others in Mid First Millennium AD. Unfortunately, the lack either of archaeological structures or of diagnostic items, prevent us of establishing any connection with the engraved frieze and its inscriptions.

9. 5. Summary

In a small area of 4 m² we were able to document the overlapping of at least three different bonfires that could have corresponded to three different periods of human camp activities in the spot.

The first one is the bonfire over the geological substratum and is characterized by a possible settlement layer and a small hearth. A short and occasional shelter can be deduced from the small size and the lack of archaeological remains in this structure.

The next stratigraphic units are also made up of a bonfire (UE-806) with an associated settlement layer (UE-807). Once again, the scarcity of the findings and the small size of the hearth suggest a sporadic, short camping activity.

To sum up, the human presence in the vicinity of the Elephants' Frieze seems clear. Nevertheless, as much the test pit that we performed or the ones by El Graoui (El Graoui *et al.* (2008) show only sporadic activities associated with bonfires of human or non-human nature. Due to their ephemeral nature, a connection between the carvings and the Libyan-Berber script and the several 14C dated samples could not be established.

Next to the frieze carvings and attached to them is a house structure and wall that make up a shepherds' *azib* (See fig. 13). We can think then, that this is a place of certain significance among the herders that settled occasionally, or repeatedly, in the *agdal* Oukaïmeden and that the engravings were known. Perhaps the significance of this place was integrated -and orally transmitted for generations- into the collective mind of these societies.



Fig. 17. Overview of the shelter C-1300 and its setting.

10. Test pit 1 at *Aougnin N'ait Ourigh* lower platform. Context 1000, OK1 area

10. 1. Introduction

Additionally to the two test pits carried on in 2009, three other test pits were open in the lower platform of *Aougnin N'ait Ourigh* (OK1 area), the main entrance to the Oukaïmeden Valley from *Rherarya* valley. As in the upper platform (OK1' area), many surface findings of lithics and handmade sherds were attested in the 2008 field survey. A flat part of the platform near a large boulder was chosen for the first test pit, as real rock shelters did not exist in the area. According to the information provided by the *Centre National de Patrimoine Rupestre*, several burial mounds were located in the area and later destroyed by the construction of the present meandering track that connects Oukaïmeden and *Asni* through the narrow *Rheraya* valley. Lastly, some relevant findings - a polished stone axe and part of a quern stone - where located in the area nearby (see fig. 1.C-1000).

The first test pit was set in the lower part of the slope, and was labelled C-1000 according to the ID numbers ascribed to every excavation in the project. The test pit was open beside a large, broken boulder 1.8 meters of height, and its size was 2.5 x 4 meters and split in half vertically.

10. 2. Archaeological results

In summary, the excavation of C-1000 just confirmed the existence of prehistoric human activities in the area, although unfortunately, not in C-1000, which was a natural sink and therefore, any archaeological layer was not preserved. Yet, the archaeological artefacts collected were significant, very specially, the impressed sherds.

11. Test pit 2 at *Aougnin N'ait Ourigh* lower platform. Context 1100, OK1 area

11. 1. Introduction

As with context 1000, C-1100 was located in the upper part of the slope of the *Aougnin N'ait Ourigh* lower platform (Fig. 1. C-1100). It is a small platform of about 12x6 meters, surrounded by large boulders, with good visibility over the grazing areas nearby. On surface there were found two polished stone fragments, being one of them part of a quern. The trench was east-west oriented, and had 2 x 4 meters of size with its longest side running perpendicular to the boulder.



Fig. 18. View of the 2012 structures located outside the hut.

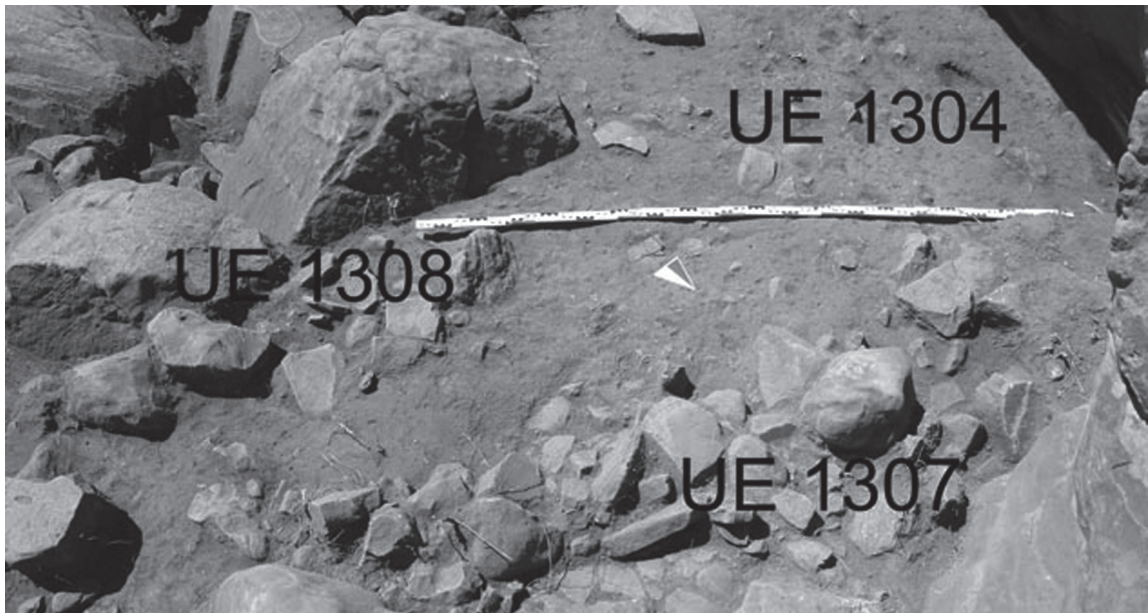


Fig. 19. Floor (SU 1304), wall (SU 1307) and possible storage pit (SU 1308) inside the hut.

11. 2. Archaeological results

The excavation, together with the experience achieved in C-1100, let us to identify the site as a natural sink, whereby water seeps beneath the stones and drags artefacts, due to erosive processes. The existence of this sink precludes the existence of any archaeological level preserved in this area of the trench. Throughout the excavation we collected plenty (106) of wheel-made pottery, terribly eroded. Although they probably were not strictly of the same age, they are undoubtedly modern. Flint tools, on the other hand, are really scarce -only two- and can be considered anecdotic. The same can be said about hand-made pottery, of which only three polished sherds were collected.

12. Test pit 1 at Tizi n'Gar Issafen. Context 1200, OK3 area

12. 1. Introduction

Three test pits were excavated in the OK3 area, in the west side of the Bull mountain pass or *Tizi n'Gar Issafen* in Berber language. (See fig. 1. C-1200). This area forms a strong slope where huge stones, fallen from the top of the mountain define small natural platforms and enclosures which have been traditionally used as pastures, animal pens or human shelters. Throughout the whole pass, these stones delimit a central area made of sandstone

horizontal layers, upon which some of the most relevant engravings of the area are found. Test pits 1 and 2 (C-1200 and C-1500) were planned on the foot of the so called *Gar Issafen* shelter, which stands at a medium altitude and at about 300 meters away from the road to *Ourika*, while the test pit 3 (C-1700) was open at the top of the mountain pass, near the entrance to the valley from *Tahanout*.

The *Gar Issafen* is a sheltered area, framed by several huge boulders, which delineate two small platforms standing up at different heights. At the upper platform, there is a small cave with a fallen slab full of engravings, which pointed to the importance of the site, while at the lower one, a kind of circular structure was identified. The shelter offers good protection against weather inclemency, while the platform is wide enough to use it as a herd fold (Fig. 15). These good characteristics had been noted before, and two previous test pits were performed at the upper platform, respectively by A. Rodrigue and M. El Graoui. This last author refers only vaguely (El Graoui *et al.* 2008) to the finding of flint tools and of some evidences of bonfire, and Rodrigue's excavation was never published. Both test pits were still visible on surface when our digging began.

The new test pit performed on the upper platform (C-1200) was placed beside the big stone which delimits the shelter and partly included the previous test pit by El Graoui. By doing so we aimed at checking its results and to determine if there were dwelling structures there.

12. 2. Archaeological results

C-1200 test pit at the *Gar Issafen* shelter presents a very simple stratigraphy, where the only evidence of any human activity in the spot, came from El Graoui's previous test pit. The only unit of C-1200 which provided archaeological artefacts seems to be of natural and no of archaeological formation, having been the artefacts dragged to the platform because of strong erosive processes, very characteristic of the valley of Oukaïmeden. In fact, the artefacts collected here are similar to the other surface findings made throughout the *Tizi n'Gar Issafen*. The campfire, to which El Graoui refers (2008), was not documented in our digging, and we must assume it was fully excavated in 2004. Unfortunately neither plans nor drawings of it were published.

12. 3. Findings

The sample of archaeological artefacts collected at C-1200 -especially at the lower SU of the test pit- is of some interest, even if they did not appear related to any archaeological level. Firstly, the flint tools seem to come from the same raw material area, as in some cases the flint characteristics are so similar they could belong to the same core. Most of them are flakes and *debitage* products, without retouching and with abundant cortex residues. When retouch appears, it is usually abrupt and direct, and sometimes it could be a result of post-depositional processes, rather than of the use of knapping techniques. One of the artefacts, on the contrary, displays clear evidences of preparation and retouch. It is a square shaped artefact made on a blade with an abrupt, continuous retouch along two of its sides and it looks like other artefacts found at several sites throughout Oukaïmeden. The sample also includes a possible granite hammer.

Regarding the pottery, leaving aside the sherd of modern chronology collected at the superficial level, five prehistoric sherds were gathered during the excavation, two of them belonging to the same vessel. Three of them correspond to a very specific kind of pottery: small sized shapes with smooth walls and square impressed decorative patterns, forming parallel, horizontal and oblique lines. A fourth sherd repeats these patterns but belongs to a bigger and coarser vessel. The fifth sherd was a plain and bigger vessel of poor quality. All the pieces are hand-made and have a clear prehistoric chronology which points to the oldest period of Oukaïmeden human settlement (Late Neolithic), if we consider the kind of decorations and their size (fig. 16).

Unfortunately, the absence of any clear archaeological context in C-1200 weakens any interpre-

tation of these artefacts, and thus its contribution to the study of the human history in the valley of Oukaïmeden is incidental. Also due to the lack of any archaeological context no samples were collected.

13. The Neolithic site of *Aougnin N'Ourigh*, lower platform. Context 1300, OK1 area

13. 1. Introduction

OK1 area is made up of two small plateaus located at different altitudes, although set at a lower altitude than the main pastures area of the valley. Both plateaus have a similar structure: half of their surface is flat and covered with pastures, while the surface of the other half is covered by huge boulders fallen from the sandstone formation that constitutes the northern border of the valley, known as *Tizrag*. The area has a generally ridge structure although it does not lack also of very steep slopes. Our interest in this area increased by the presence there of the first rock carvings visible when entering the valley from west. Therefore, we thought of a possible relationship of rock art with settlement structures in the spot. The overall peripheral location of OK1 area with respect to the valley and the fact that it has its own pasture areas explains this area name, as the word *aougnin* is the diminutive of *agdal*. A great amount of knapped flint -exogenous to the area- is visible over this surface, as well as prehistoric handmade pottery sherds, frequently presenting dark firing colour. The rate of artefact findings in surface is higher here than in any other surveyed area of the valley. This is why, in 2009, we considered performing the excavation of a series of test pits (See above).

In the 2010 campaign and, as a part of the systematic exploration of the valley, three test pits (C-1000, C-1100 and C-1300), were dug up in the lower plateau called *Izdar* in Berber language, of *Aougnin n'ait Ourigh* (See above). The third of them, provided evidence of a small Neolithic settlement. This constitutes the oldest evidence of human presence in the High Atlas so far (See fig. 1. C-1300).

The C-1300 site was found following Mme. Bravin's indications¹. It is made up of a small quadrangular platform of approximately 25 m², sheltered by a large sandstone block which lies northeast of the boulders assemblage. The lower part of the boulder presents a concave cavity and although it does not form exactly a shelter, it offers a comfortable and protected space, thanks also to the projected shape of the rock top (fig. 17). Opposite, there is a flat surface, isolated from its environment and pro-

SU	Shards	Lithic tools
1300	35	99
1301	85	469
1302	56	111
1303/1311	63	265
1304	1	-
1305/1312	22	85
1306	1	2
1309	43	54
1310	10	264
1313	-	2
1320	3	82
1321	14	203
1322	38	431
1324	11	172
1325	20	291
1326	-	71
Totals	404	2601

Fig. 20. Summary of lithic tools and pottery sherds documented in C-1300.

tected on its sides by smaller rocks. There are also ridges at its southwest and southeast flanks, which make this space even more isolated, forming a kind of natural basin among the rocks. This place has a privileged view of the small patches of the surrounding pastures and of the natural path used by humans and animals to enter the *agdal* from this side of the valley. Among the documentation preserved at the Moroccan CNPR, there are some references and some not very diagnostic artefacts apparently attributed to the existence of burial mounds at the border of this plateau. Nevertheless, these were destroyed in 2000 to build the current earth track from Oukaïmeden to *Asni*, and we could not find any rest of their existence in the field.

This site was excavated during the 2010 and 2011/12 campaigns. The remains of a small Neolithic hut sheltered by the rock were found during the first campaign. The dwelling floor was well preserved, evincing rests of several structures such as a small stone fence, a possible small storage pit and an accumulation of burnt wood that could have belonged to the supporting frame of a light roof. The second campaign was performed under heavy snow and therefore, conditioned by these hard factors. During this second campaign, excavation focused on the area outside the hut, where we documented

a round and very damaged stone structure. It was located at the same height as the structures studied in the previous campaign, and furnished the same kind of archaeological artefacts (fig. 18).

13. 2. Archaeological results

First, we set a grid of 2 m (NW-SE) by 3 m (NE-SW) facing the large sheltering stone, but without reaching it. Approximately at the centre of the grid, and looking NE-SW, there was a row of small stones that seemed to separate the area next to the rock cavity from the rest of the site. Taking this alignment as a reference, we excavated, while keeping the findings and stratigraphic units on both sides of the row clearly separated. Thus, the organic soil -which was never thicker than 5 cm- was labelled SU 1300 inside, and SU 1301 outside the stones alignment.

Nevertheless, both areas -inner and outer- began to show significant differences. The inner area (SU 1302) was made up of a compact yellowish soil and scarce stones, while the outer area (SU 1303) also presented this soil composition, although alternating with greyish areas and numerous stones of variable sizes. This difference led us to widen the excavation area 1 m sideways into the SE profile and adding 1 m. to the NW side until it reached the rock. A third extension of 1 x 1.5 m was open later on the SE side of the stones alignment. Thus, practically the whole length of the site was excavated to obtain a cross section of the structures and verify if the characteristics of the so-called “outer” area remained coherent.

The base of SU 1302 consisted of compact, well levelled soil that extended homogeneously over the entire surface of the area. This soil is clearly anthropic, and was labelled SU 1304. On the NE side

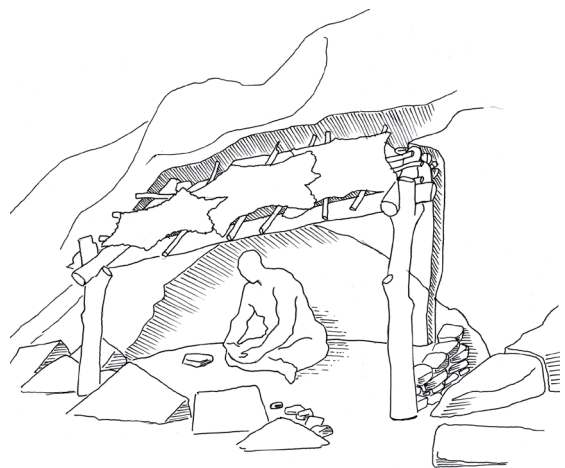


Fig. 21. Reconstruction of C-1300 hut.

of that man-made soil formation, we unearthed an accumulation of medium-sized stones forming a small, low wall. The wall delimited the dwelling floor, of 2 m. long and had an average width of 40 cm. This small structure -SU 1307- was located in the only place where the site slopes upwards instead of downwards and therefore, where more protection against climatic harshness could have been necessary (fig.19)

Another small structure was recorded in front of the farthest side of the wall from the rock, and concurs with what seems to be the only possible entry to the dwelling area. It forms a small semicircle. Its straight side is supported by two big stones demarcating the dwelling floor. The rest is made up of several smaller, roughly semicircular stones protruding from the ground, the centre of which seems to have been paved with small flat stones. This structure (SU 1308) could have been a storage facility, since its dimensions -80 x 60 cm- are too big to belong to post holes supporting a possible roof, although it must have been rather flimsy anyway.

Right at the end of the wall (SU 1307) there was a large accumulation of burnt wood that reached a depth of 40 cm, and provided us with a great amount of samples for dating. This accumulation was located at the very limit of the area interpreted as dwelling floor. Regrettably, no specific structure, either indicating a possible hearth, or well defined remains of a post hole, could be identified. Nevertheless, the thickness of the burnt wood remains as well as their location, a natural extension of the wall (SU 1307), led us to conclude that they may have belonged to the roof framework of the hut

In the inner part of the hut and once the dwelling floor was clearly delimited, we proceeded excavating the space available between the large boulder and the aligned stones enclosing the area. The further we excavated this surface, the more we found medium-sized stones -some mixed with sediment-. So, we concluded that these were the material used to level the floor. The excavation of this area (SU 1309) also provided some ceramic and flint artefacts. Although not abundant, these items are enough to prove the simultaneity of the floor preparation and its use, in view that there were not significant differences between them. Some few remains of burnt wood were also collected here.

Outside the dwelling area any further structure was not detected. The SU 1305 and SU 1312 are made of just soil refill between stones set *in situ*. Archaeological artefacts are scarce in both SU, and gradually decreased in number as we deepened. So, we interpreted these SU as previous to humans set foot there.

Summing up, the site consists of a small hut, barely around 4-5 m² of inner space, which meets the criteria of an occasional shelter. Nevertheless, the work invested in levelling the ground and building some structures as the small stone wall or the possible storage pit, points to something more than a short stay and it could translate a discontinuous but planned dwelling repeated over time.

Despite the great amount of information provided by the first campaign and the fact that the hut was almost fully excavated, we still lacked some relevant information. First, no clear hearth structures could be found despite the great amount of charcoal recovered. This led us thinking that it could have been set outside the hut, within the area that was still not excavated. As that area did not exceed 25 m², was well defined, and looked to be deep enough as to provide us with a stratigraphy, we planned to excavate it in the next field campaign.

Consequently, in 2012 a 3 x 2.50 m grid was set, although one of the sides was extended to adapt to the rocks surrounding the platform. In that way, the grid covered almost completely the space chosen for excavation.

As in the 2010 campaign, the first topsoil layer was made of organic soil with some objects, while stones were almost absent. It was labelled SU 1320. Once the profile was levelled, the west corner displayed an area of loose black earth with many herbage roots. It was clearly different from the brown-yellowish soil on the rest of the profile, which also contained a much smaller amount of roots. Some medium to large rocks emerged from the natural rock outcrop. Again herbage roots and items, just flint, were here more frequent, probably because the small stone wall has held them back.

We focused our work first on a 1.5 x 1.5 m area delimited from the western corner. It was labelled SU 1321. It was similar to the SU 1303, excavated in 2010, and presented the same characteristics. At the same time, we dug up the SU 1322, which has a brown to yellowish colour. From the beginning, we noticed that the darker soil was specifically concentrated near the western corner of the SU profile. Nevertheless it contained just some few small and medium-sized stones and numerous roots. In the rest of the SU medium-sized stones appeared among the yellowish soil. They were aligned one next to the other, forming a kind of structure, similar to the small wall that shut the northern end of the hut, brought to light in the previous field campaign. As the excavation proceeded, a semi-circular shaped structure was revealed, extending towards the part of the grid still not dug. So we extended the excavation to that area, and unearthed the remains of a nearly round, dry stone structure with a maxi-

mum diameter of 2 m. It was seriously damaged in some areas and was located almost perfectly tangent to the last extension of the 2010 excavation. The structure was partially based on the natural rock outcrop and on soil in other areas. We could not find out where it ended, as it has partially disappeared. This new structure was labelled SU 1323. We distinguished and excavated separately the artefacts found at both sides of that structure. The inside area with the semi-circular stone structure was labelled SU 1324 and the outside area was labelled SU 1325. A larger amount of archaeological findings was made at the outside structure than at the inside one.

At its northern side, we found a large and flat stone that appeared isolated from the rest. A possible explanation of it could be that it belonged to the hut threshold, although no other data supports this explanation.

Despite the weather conditions under which the 2012² campaign was carried out, which prevented a more accurately documentation of the structure characteristics, two facts are certain. First, the structure is set -at least partially- on the natural rock outcrop of the platform. Secondly, that the hut we dug in 2010 is partially set on the same rock outcrop. And lastly, that both structures are placed at exactly the same height. These facts together with the homogeneity of the archaeological items collected at both field campaigns, suggest that both areas were coeval. We interpreted that we had unearthed the foundations of a much larger structure, probably disappeared.

Yet, we still were able to excavate a small area in the centre of the outside part of the structure -labelled SU 1326- and under the average high of it. From here on, the finding of archaeological items gradually rarefied. Nevertheless it was not a sterile SU, as a considerable amount of finds were made after water sieving.

Lastly, another stone accumulation (SU 1328) was discovered near the northern corner. Given the small size of the excavated area, we cannot say whether it was a man-made closure or just a natural accumulation of collapsed rocks.

13. 3. Findings

This small dwelling site has provided a surprisingly high amount of items. This fact confers a remarkable value to this site, given the sparseness of finds documented in other sites excavated throughout the valley by Malhomme (1953b), in more recent times (El Graoui *et al.* 2008), or even in the framework of our project. It also represents a unique cultural moment that greatly widens our knowledge for this period. However, it must be noted that the only objects

that we found are ceramic and flint industry. Bone artefacts or faunal remains were totally absent, as occurred in the rest of our archaeological interventions.

Due to the large amount of finds, the *Aougnin n'ait Ourigh* items will be analysed in detail in another chapters devoted to material culture. Here we will only make a brief introduction. Broadly speaking, the materials provided by both field campaigns undoubtedly share the same identity. Anyway, we could not find any trace of a possible settlement in the area, except for the one represented by the Neolithic hut sheltered by the rock. The table (fig. 20) sums up the amount and kind of materials found in every stratigraphic unit.

On the one hand, the most frequent material is handmade pottery, usually impressed or grooved (See chapter Ceramics for a more comprehensive analysis).

There is also a flint industry among which the microliths stand out as reference elements, specially the triangles ((See chapter Lithics for a more comprehensive analysis). While only a few similarities have been found between the ceramic finds of this site and some sherds of C-1200 and others without context around *Tizi n'Gar Issafen*. (OK3 area), the lithic materials are very much like those found in surface at several locations throughout the valley (Antoine 1954; Rodrigue 1996b).

13. 4. Sampling

A total of 13 14C dates were obtained from charcoal samples. There are more comprehensively discussed elsewhere. Suffice it to say that they date the hut between the second half of the Fourth Millennium calBC and the early Third Millennium calBC. However, the samples obtained in the 2012 campaign are very old and could refer to a fire, perhaps a natural event occurred long before the human settling in the spot.

A pollen column was also obtained from samples belonging to UE 1302, 1304 and 1309, i.e. of the inner part of the hut. The results are thoroughly described in chapter 4.2. Broadly speaking, the pollen analysis reconstructs a Mediterranean open landscape with less human pressure on resources nearby than in other areas sampled (Ruiz Zapata *et al.* 2010). This could be easily explained taking into account that the site provides the oldest 14C chronology for the human presence not only in the Oukaïmeden ecosystem but also for the whole Atlas.

13. 5. Summary

This exceptionally well preserved site has provided the oldest context for the human presence in the Oukaïmeden Valley, together with an outstanding

number and variety of archaeological finds, something exceptional in comparison with most of the test pits we open. This small hut sheltered beside the rock could only accommodate a small number of people. It might have been used as a mere night refuge for a hunting party or for shepherding. The interpretation of the charcoal accumulation of SU 1303 as the rest of a wooden structure associated to the stone wall (SU 1307) leads us to suggest a possible reconstruction of the hut. It could have consisted of a light roof -made of branches and maybe some fur, supported at the rear on the rocky natural platform, and by two wood posts at the front (fig. 21). One of those two posts would explain the charcoal accumulation in SU 1303. The other post was probably placed outside the excavated area. Outside, near the hut entrance, which was located near the possible second post, it would have been a rounded structure. Due its poor preservation, we can only suggest as a hypothesis its use as an auxiliary facility, perhaps a storage unit, rather than as a dwelling area.

As much the stratigraphy -proving a single and well-defined occupation- as the homogeneity of the materials recovered along the different SU, suggest a single occupational period of this site. However, the consistency of the floor and the presence of several stone structures in the hut implies that the site was reused an indeterminate number of times while the hut was still standing. The light difference of date between one of the fourth samples from UE 1303 (sample CSIC 2232) and the others could respond to the fact that it was taken from the deepest part of the charcoal accumulation, and can be interpreted as reflecting two different moments -practically consecutives- of construction and repair or renovation of the small structure (See Chapter C14).

To record Neolithic dwelling structures is a rare fact in Northern Africa. The recently published hut of *Zafrin*, in the *islas Chafarinas* (Rojo *et al.* 2006; Gibaja *et al.* 2012) constitutes a case similar to the one of Oukaïmeden. Other less clear cases are the possible pebble floors of *Butte Catherine* (Chavaillon and Chavaillon 1957) and *Oued Farès* (Alimen and Bayle des Hermens 1977). Both sites are set in the *Ougarta* Mountains of west Algeria, and constitute similar cases of dwelling floors.

The C-1300 site is also an example of the possibility of finding well preserved archaeological sites in areas as climatic and geomorphologically complex as Oukaïmeden. Only Malhomme's intervention in the *La Caze* rock shelter has provided similar results so far, although unfortunately only minimal amount of his work there is known (Malhomme 1954a).

14. Test pit 1 at the entrance of the Oukaïmeden village. Context 1400, OK2 area

14. 1. Introduction

The test pit named C-1400 was located in OK2 area, which corresponds to the current village of Oukaïmeden, (See fig. 1.C-1400). It is a rock shelter, used as an animal pen, of approximately 4.5 by 3.5 meters, set in the upper part of the hill, near of the area where the repeater antenna raises. We chose it for two reasons. First, because it had a thick soil sediment, and second, due to its vicinity to one of the most complex rock art stations (n° 3 of OK2 Repeater Station). The shelter is placed among the remains of the original *azib*, dismantled when the ski resort was built. The shelter is surrounded by big sandstone boulders that protect it against rain and wind, and partially hide it, as well. Additionally, it has an SW orientation, profiting of a high amount of daily sunshine. The shelter had a modern wall build for further protection, and evidences of recent bonfires, confirming its suitability as a shelter. The excavation covered the whole area of the shelter

14. 2. Archaeological results

Despite the excellent setting of the shelter, the excavation of C-1400 not only did not offer any ar-



Fig. 22. Detail of the sealed passage of the tumulus.



Fig. 23. Detail of the stone carved with a spiral-like motive reused as an orthostat and its wedges.

archaeological results but it also presented very scarce evidences of modern occupation. Although the presence of a fence proves its use in recent times, it seems to have been a sporadic one, not enough to leave other remains than a small fire.

15. Test pit 2 at *Tizi n'Gar Issafen*. Context 1500, OK3 area

15. 1. Introduction

The second test pit in the *Gar Issafen* shelter (C-1500) was placed in its lower platform, just three meter away from the first one but one and a half meters lower (See fig. 1. C-1500). It is a platform east-west oriented, with dimensions of 12 meters long by 3 meters wide, with a slight slope towards the southeast. Although the platform is less protected against wind and rain, it was chosen because of the presence of a stone oval structure at the middle of the platform, which looked like a tumulus. This structure, which was visible to the naked eye, had at least three lines of middle sized stones forming a semicircle enclosing the platform in its south side. Another, less prepared group of stones seemed to close the western side of the structure, and its bad

preservation was interpreted as the result of erosive processes. A 6 by 4 m. grid, oriented west-east, was delimited, to include the whole structure.

In order to collect all the existing materials, a comprehensive sieving was made at the most relevant SU.

15. 2. Archaeological results

Our initial interpretation of the oval stone structure as a tumulus was given up after the excavation of C-1500. It corresponded to a semi-circular wall of modern chronology, which probably was part of a hut used as shelter. The other remaining strata are of natural origin, as result of either stone collapses or erosion caused by snow melting.

16. Test pit 2 at the Okaïmeden village. Context 1600, OK2 area

16. 1. Introduction

C-1600 test pit was located in the OK2 area, several meters to the east of the previous test pit C-1400 and a little below the Repeater antenna, at the entrance to the modern village (See figure 1.C-1600). Despite it was sterile, the shelter area where we opened the first test pit (C-1400) met excellent conditions for prehistoric dwelling. Therefore we tried a second time, opening a new trench outside the shelter, in an area protected by slabs that acted partially as roof

16. 2. Archaeological results

As with C-1400, the results of C-1600 excavation were poor, providing neither prehistoric structures nor artefacts in a primary context. Most of the items are modern, and the only object of possible prehistoric chronology, the flint flake, was found in a secondary position. Thus, the shelter can be definitively discarded as a site of archaeological interest.

17. Test pit 3 at *Tizi n'Gar Issafen*. Context 1700, OK3 area

17. 1. Introduction

We chose that time the top of the *Tizi n'Gar Issafen* or the Bull Mountain Pass to open our third test pit. The site was located close to the natural path which gives access to the Oukaïmeden Valley from the *Tahanaout* village in the *Ourika* valley, crossing through the *Tizi* (See fig. 1. C-1700). In this case,

the test pit aimed to evaluate the potential of a strategic area, near of one of the main entrances to the valley and in an area located at a substantially higher altitude than other excavations carried out by us throughout Oukaïmeden. The area chosen did not enjoy excellent sheltering conditions against harsh weather, but a significant sample of flint items, some of them with retouch, were clustered in its vicinity. The test pit, of 3 by 2 m. of size, was set near a huge stone with a flat and extended horizontal area around.

17. 2. Archaeological results

This test pit was negative. No sample was collected, and after doing the topography and taking photographic records, the shelter was covered again.

18. Tumulus 1 next the *assif Tiferguine*. Context 2000, OK4 area

18. 1. Introduction

The tumulus is located at the OK4 area, which lies at the south-western half of Oukaïmeden Valley

(Fig. 1. C-2000). It was built approximately in its geographical centre and about 300 meters from the south shore of the modern dam. It is an area of low mounds and small streams which converge toward *Tiferguine* Stream, before joining the *Irini* River. The tumulus was already recorded during the 2008 campaign, but as it was evidently plundered its excavation was initially discarded. During the 2012 field campaign we noticed the existence of an engraving over the surface of the only orthostat that was still standing. This fact, exceptional among the valley tumuli, together with its big size, the evidences of a burial chamber and of an apparently sealed passage and last but not least, the heavy snow that forced to change our plans, led to the excavation of the tumulus.

Contrary to the tumuli previously dug up (See above C-200, C-300 and C-600), the tumulus 1 of OK4 is so far the only one documented with passage and a chamber built with big, upright stones. It is also one of the biggest in Oukaïmeden, with an oval shape of approximately 12 meters wide by 13 meters long. The chamber is surrounded by two stone rings with an irregular, quite unclear distribution. The first one has only been documented at the southern half of the tumulus, around the passage



Fig. 24. Plan of the tumulus, including the outer circle of lying slabs. Light grey stones blocking the passage. Dark grey, the carved stone reused for building the chamber.

that leads to the chamber. The second, external ring has been documented in the north and east parts of the perimeter, but it is neither completely circular of shape nor strictly concentric to the chamber, as it opens keeping an increasingly straight line to the south.

Its preservation was irregular. The south half, where the passage is located, is relatively well preserved, but the north half has lost most of the stones which defined the chamber, remaining only those at the bottom. Inside the chamber a big hole was perceptible, probably the trace of the former Malhomme's excavation. As the hole was open in the middle of the chamber, we focused on its southern area which seemed less affected. Additionally, the analysis of the tumulus revealed, that the passage had been sealed by three big stones which still were in its original position, implying that the passage area could still be preserved. Therefore, the grill area included the southern half of the tumulus and the passage. At the same time, a clearing of the perimeter area was undertaken to document how the tumulus was built. The total excavated area was of 16 m².

18. 2. Archaeological results

The characteristics of the tumulus, affected by plunder or by previous excavation or both, made sometimes difficult to identify the layers. A systematic water sieving was carried on every layer. The archaeological work was challenged by the heavy snow, which affected the valley during the whole campaign. That fact made work more difficult, as its melting complicated the systematic excavation, the identification of SU and the accurate adscription of archaeological artefacts. To cope with this, we removed daily the snow over and around the tumulus and covered the excavation area with plastics to avoid the accumulation of snow and its compacting at nights. All this demanded a huge amount of time and energy that drastically reduced the one dedicated to excavation.

The excavation began with the removal of the vegetal cover (SU 2001) and the definition of several stratigraphic units which corresponded to the big kerbstones ring (SU 2002) and the sand layer between the kerbstones ring and the chamber (SU 2003). During the preliminary superficial clearing some flint items were recovered at the surface, including two flint blades. After the removal of SU 2001, a dark brown, loosely packed layer (SU 2004) was displayed throughout the chamber. No archaeological items were collected there and the layer was interpreted as a natural deposition after the plundering of the tumulus. Beneath SU 2004 a new, reddish

layer emerged (SU 2005), except for the western part of the chamber, where the upper layer continued appearing and for its central part, where a small area of decomposed, tiny yellow stones was also documented (SU 2006)

The removal of SU 2005 showed that the yellow layer (SU 2006) appeared in other areas of the chamber as well. It was sterile and of a clearly natural origin, made of small, disintegrated stones and yellow clay, which was evenly extended throughout the chamber. The experience achieved in the digging of other tumuli of the area, helped us to interpret this layer as an alluvial stratum over which the tumulus was built. This interpretation was reinforced by the detection of two small stones and a wide, red area running parallel to the only remaining orthostat, which we identified as its foundation trench and the wedges to keep the stone upright. As the foundation trench marks the moment when the tumulus was erected, the SU 2006 was considered the natural level which indicated the end of the excavation. The foundation trench (SU 2008) had a depth of just 5 centimetres, after which the yellow, alluvial sediment (SU 2006) appeared.

Once the SU 2006 was reached in the whole digging area, the archaeological work focused on the passage, whose sealed appearance pointed to the existence of possible preserved archaeological layers (fig. 22). After the removal of the big stones sealing the corridor, a reddish layer was documented (SU 2007), which had similar features than the one inside the chamber (SU 2005). Unfortunately, the excavation of this new stratum provided a good amount of modern items, including cans and iron unshaped fragments, that according the local workers, could correspond to military exercises developed by an army unit based at Oukaïmeden. However, these items looked to have been deposited there by erosive rather than by human activities. Regardless its origin, their presence ended up with any possibility of finding an undisturbed area in the tumulus. Under the removal of SU 2007 the same yellow, decomposed layer that appeared in the chamber was located, and thus the excavation in the corridor was deemed complete.

Eventually, a small test pit of 50 by 20 cm was excavated in the space between the chamber and the kerbstones ring, just below the carved orthostat. This test pit aimed to document the engraving which was partially covered by sand, and to check whether the yellowish layer recorded into the chamber was also to be found in this area. The removal of the cairn which originally covered the tumulus was difficult as the stones were tightly fasten, what proved that the rock with the engraving was older than the tumulus, as the engraving was partially covered by

the cairn and inserted looking at the kerbstones ring. The carving consisted of a spiral pattern, of a kind nor very frequent in the art repertoire of Oukaïmeden (fig. 23). Once the stones were removed, the same yellow layer of decomposed stones and clay already recorded in the chamber and the passage appeared again, confirming this was the natural soil over which the tumulus was built. At this point and due to the poor archaeological results, and the harsh weather conditions, the excavation was concluded. After cleaning, drawing and taking photos of the tumulus, the dug area was covered again.

The archaeological interpretation of the tumulus structure is really simple. The tumulus was built over a natural layer of yellow decomposed stones and clay of alluvial origin. To place the big stones which define the funerary chamber, foundation trenches were excavated and small stone wedges were used. At least in one case, an engraved stone was used to build the funerary chamber. Since the engraving faced the external ring and was originally covered by stones of the cairn, it seems that the original meaning of that depiction was already lost when the tumulus was built, and the orthostat was only meant to be reused as building material. The mortuary chamber was partially surrounded by a stone ring which has only been documented in the southern area. Additionally, a second, bigger kerbstones ring was built, perhaps with a decorative function, as the stones were horizontally placed and thus could not help to reinforce the structure of the tumulus. However, they could have a role of improving the visibility of the tumulus, as they can be seen from a substantial distance (fig. 24).

Although no remains were preserved *in situ* neither at the chamber nor at the passage, one of the strata, that we documented both, in the chamber and in the passage, the one with a reddish soil, could have corresponded to the use period of the tumulus, although after Malhomme's excavation is very disturbed and lacked of any context. This reddish layer was present in the chamber and the passage, but not beneath the cairn, and rested under the stones which sealed the corridor, implying that this was the archaeological floor when the tumulus was sealed. The sealing of the corridor was clearly intentional and condemned the use of the monument until its first digging by Malhomme in the 20th century.

18.3. Findings

The excavation of the tumulus has not offered any relevant chronological information, since no contextualized items were found during the digging or during the water sieving. Less than 20 items have been collected, all of them without archaeological

context and their formal and technological characteristics do not provide any information on the chronology of the tumulus. The only items which could be considered as tools -two non-retouched blades- were collected on surface. The rest of the findings are very modern and therefore, irrelevant to the study of the tumulus.

This dearth of archaeological findings is common to the tumuli excavated in Oukaïmeden, and it could be explained by the systematic plundering these tombs have suffered or by the previous Malhomme's excavations, although a third possible explanation is advanced in chapter 7.1, in view that in the passage, which was sealed and not excavated by Malhomme, the amount of items collected was also insignificant.

18.4. Sampling

During the excavation, several soil samples were collected at the most relevant layers of the tumulus, to be later floated for environmental analysis. The samples were collected at the places where there was some possibilities to find undisturbed soils, as the foundation trench beside the engraved orthostat or the small test pit excavated into the covering of stones. Some of these, collected in the foundation trench of the orthostat were selected for 14C analysis. Unluckily, the amount of organic sediment was not enough to get a 14C date.

18.5. Summary

The excavation of tumulus 1 in OK4 has documented in detail one of the biggest tumuli in Oukaïmeden, with a completely different typology from the ones excavated in previous campaigns. Those differences could imply its adscription to a different chronology, although with the information available that is just a hypothesis. Its size and centrality within the valley, mark it as a milestone in the landscape. Its position is outstanding. It is set not far from the *Tizi n'Aouttou* or frontier pass, where according the Berber shepherds, the traditional boundary between the *Rheraya's* and *Ourika's* pastures used to be before the dam was built, and approximately corresponds to the border between the different groups of prehistoric engravings detected through statistical analysis and to the current limits between the Berber groups who nowadays exploit the valley. The big size of the chamber (around 16 m²) could point to a collective burial, contrary to the individual or restricted burials that could have contained the three other tumuli excavated by our team. Unfortunately, due to the lack of diagnostic materials and the impossibility to date the tumulus

through radiocarbon samples, we neither can ascertain its chronological context, nor advance further interpretations.

General Overview

Seventeen sites set at different areas throughout the whole valley have been investigated. All of them were chosen for sensible reasons: their strategic position, their relation to engravings, their excellent conditions for human shelter, the apparently preservation of archaeological soil or of intact structures. Nevertheless only three of them provided ¹⁴C samples associated to an archaeological context, and although some others offered interesting archaeological information or artefacts, most part of our diggings lacks of any archaeological context.

This is understandable taking into account that Oukaïmeden is located around 2700 m.a.s.l. and is therefore subjected to harsh climatic conditions, translated into heavy snow, torrential thaws, congelifraction and heavy erosion.

Although the results of our diggings have been not as good as expected, we cannot talk either of a failure. A Late Neolithic context has been clearly contextualized and dated. This is the oldest proof of human presence to date, not only in Oukaïmeden

but in the whole Atlas. We have also proved the human settlement of the valley in the Bronze Age, till now only guessed because of the weapons depicted in rock art. And referring to the tumuli, although we could not date them, we obtained some relevant information. As for instance, that most of them were small, not very conspicuous and had a central cist of small size, what probably points to a single or just very few burials in every tumulus. This is relevant information that can suggest a prehistoric chronology as will be discussed later (See Chapter GIS).

For the period between the First Millennium calBC to the Muslim invasion, the so called Libyan-Berber period, there is not archaeological information, other than the inscriptions carved in the Elephants' Frieze and the rock art assigned to that period, as our excavation there, as happened with that by El Graoui (2008), produced some ¹⁴C dates linked to a probably manmade bonfires, but no diagnostic artefacts were associated.

Lastly, there are also some traces of human presence in the valley during the Middle Ages provided by the horseman and the dwelling floor dated by ¹⁴C at the Elephants' Shelter. Not less important are the palaeoenvironmental samples collected within archaeological contexts obtained by digging, what has afforded a reconstruction of the valley's landscape from Late Neolithic to the Middle Ages.

NOTES

1. Mme. Bravin, who is based in Marrakesh and is doing her Ph. Thesis on Libyan-Berber art, participated at the 2010 and 2012 field campaigns.
2. The field campaign was planned for fall 2011, but the funds needed were delivered in January 2012.