

Art, Landscape and Settlement in the Oukaïmeden Valley, (High Atlas). A Research Project¹

Arte, paisaje y poblamiento en el Valle de Oukaïmeden. Un proyecto de investigación

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ABSTRACT

Main objectives of the project and principal results of field campaigns are summarized.

Our hypothesis was that the valley was occupied not before the Mid Holocene, associated to environmental changes caused by the displacement of the summer monsoon and the onset of more arid conditions. Also that it was the value of bovines as mobile wealth, the reason behind the first summer trips to Oukaïmeden, profiting of snow melting and wet pastures in the valley. The control of critical resources as summer pastures could be underlying into the act of carving rock art.

KEY WORDS: *rock art, GIS, excavations, geology, pollen, anthracology, statistics.*

RESUMEN

Se resumen los principales objetivos del proyecto y los resultados de las campañas de campo. Nuestra hipótesis de partida era que el Valle de Oukaïmeden se ocupó tardíamente, no antes del Holoceno medio en que el cambio de régimen de los monzones de verano produjo la implantación de condiciones climáticas más áridas. Asimismo, que el valor de los bóvidos como riqueza móvil pudo ser la razón de las primeras visitas estivales a Oukaïmeden, aprovechando los pastos húmedos fruto del deshielo. El control de recursos críticos como los pastos estivales podría ser el motivo subyacente a la realización de los grabados.

PALABRAS CLAVE: *arte rupestre. SIG, excavaciones, geología, polen, antracología, estadística.*

Introduction

The discovery of rock art in the High Atlas is a rather recent phenomenon when compared to other areas in the Maghreb.

Several researchers, mainly French (Malhome 1959 and 1961; Jodin 1964; Simoneau 1968; Chernokian 1988; Rodrigue 1999) but also Moroccan (Salih *et al.* 1988; El Ezziani, 2006), and of other nationalities (Searight 2004) after Moroccan independence, have carried out investigations on the chronology and meaning of rock art. Nevertheless, and with few exceptions (El Graoui *et al.* 2008), their attention was mainly focused on rock depictions rather than on the art embedded in the landscape as a *language* conveying how the inhabitants of the valley projected the physical and emotional organization of their place in the world as expressed by Heidegger (Heidegger 2012: 74 and ff.).

Following that perspective, this project was conceived under a Landscape Archaeology approach. We were interested in knowing how the inhabitants of the valley may have projected their vision and understanding of the environment. This, in turn, would be closely connected with their economy, their mental and technological constraints, the degree of control they exerted on the world around them and the various strategies they used to control and exploit resources over time (Hernando 2000).

The Oukaïmeden Valley is located 75 km south of Marrakesh, rising to an altitude of 2630 m.a.s.l., thus offering an ideal setting to test these ideas (fig. 1). The first archaeological records date from at least the sixteenth century A.D., although the valley has been in remote times and is still used seasonally as

a summer pasture reserve – or *Agdal* - in Berber language by the herders of the hamlets or *douars* located at mid altitude both east and west of the main longitudinal entry to the valley. A seminal book by Mahdi (1999), examines how two tribes, one from the *Rheraya* Valley to the west and the second from the *Ourika* Valley to the east of Oukaïmeden, manage and control the rights of pasturage. Rights of grazing are strictly controlled by claiming descent from a mythical ancestor. Some prominent points on the landscape are imbued with symbolic meaning, and penalties and damnations for violating the closure period of the Oukaïmeden pastures are severe.

Project main hypothesis

Our initial assumptions were: 1) That the current traditional pattern of pasture use is probably not very different from that of Prehistoric and Early Historic times; 2) That the environmental conditions in the area determine the horizontal and vertical pastoral movements by profiting from the differences in climate and growth of vegetation, due to the sharp contrasts in altitude between neighbouring areas. This would explain the hamlets scattered at mid altitude on the slopes of both the *Rheraya* and the *Ourika* valleys, so to profit of the winter pasturages on the valley bottoms and of summer grazing on the alpine-like Oukaïmeden Valley². Both of these can be reached within a day's walk. On the other hand, this is the principle underlying most of the traditional Mediterranean pastoral movements (Braudel 1976: 109 and ff.; Cabo 1994; Ruiz-Gálvez 1999; Galán and Ruiz-Gálvez 2001). 3) Our point is that the sea-

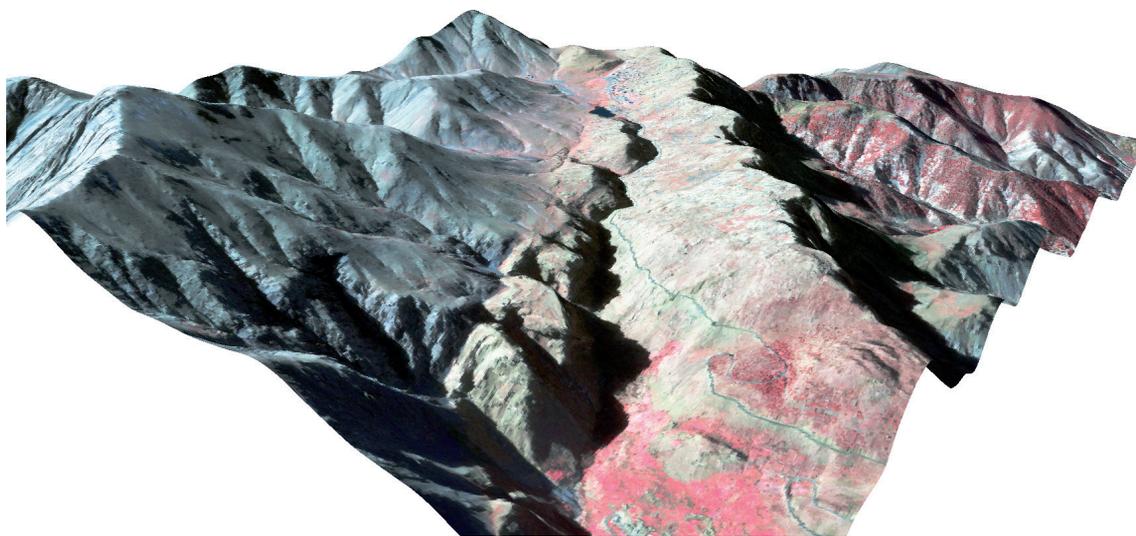


Fig. 1. East/West view of the Oukaïmeden Valley.

sonal use of the summer pastures in Oukaïmeden began relatively late in prehistoric times, probably not before the Mid Holocene. This would correspond to the desiccation process of the Sahara, which began after 3500 calBC., coinciding with the African Monsoon retreat ((Brooks 2006: 32-33; Lopez and Lopez 2008:3-5.)). The consequences in the Atlas region, north of the Sahara, were probably more contrasted weather conditions between winter and summer (Zeroual 2001:189). This would be translated into drought in summer affecting mid and low altitudes, and thaw on the highest peaks of the Atlas dominating the Oukaïmeden Valley, conditions which continue up until today with few changes (Harouni *et al.* 2009:168). As in other marginal areas of the Mediterranean, such as the Alps and the Pyrenees, these climatic conditions probably determined relatively late human colonization of the valley within a summer regime of intense grazing and exploitation (Nicholson and Flohn, 1980; Zeroual 1995: fig.8.7 and pp. 189-190; Dergachev *et al.* 2007: 842; Claussen 2008: 238-240 and 247; Curdy 2007; Ejarque 2011). It is important to remember that, due its altitude, the Oukaïmeden Valley remains covered by snow approximately from mid October to end March/early April; these climatic conditions and its proximity to Marrakesh were what determined the establishment of a ski resort there in French colonial times. Due the total lack of archaeological information on faunal analysis, we can only hypothesize that it was the value of cattle for their secondary products, the reason underlying these prehistoric seasonal movements. Two sites in the Libyan Acacus Sahara desert, *Ti-Tortha* and *Wa-n-Muhuggiat*, provide the earliest dates (Fifth millennium calBC) for cattle domestication in Northern Africa (Le Quellec

2006:180). These match the oldest evidence of dairy consumption also in the Libyan Sahara (Dunne *et al.* 2012). It is therefore possible that herders could have reacted to the worsening conditions caused by changes in the Mid-Holocene monsoonal regime, with greater cattle mobility (Brooks 2006) and the first systematic exploitation of high mountain pastures. The prevalence of cattle among animal depictions in Oukaïmeden rock art could point in this direction and perhaps to their value as draft animals (fig.2); bovines depicted would have necessarily to be domestic and introduced by man, since the steep slopes and open landscape of the high mountain are not their natural habitat. However, in the absence of faunal data, this is only a hypothesis for now.

It is also important to point out that the Oukaïmeden valley was never permanently settled, but only seasonally used until the arrival of the French troops to the area in the 1940's. French army engineers built a meandering and narrow path, later transformed into a road, to allow access to the area in order to pacify the pugnacious Berber tribes settled in the hamlets and villages located between 900 and 1700 m on the mountain slope.

After the pacification, the French authorities decided to build a ski resort and several chalets and hotels in the best and more sheltered valley slope, the one oriented to the south. This was done by purchasing the land from the most prominent tribe, considered direct progeny of the mythical ancestor, which traditionally established their summer village – *azib* in Berber –there, and moving them to an area with less favourable orientation. By doing this, they destroyed an unknown number of rock art surfaces. Neither do we know how many rock engravings and other archaeological evidences were previously



Fig. 2. Cattle grazing in Oukaïmeden in August 2010.

destroyed by Berber *azib* settlements. However, in view of its southern orientation, it is highly probable that the main prehistoric settlement was located there.

These factors, i.e., the continuous although seasonal occupation of the valley, the new but bustling tourism and very especially the harsh weather conditions have influenced the preservation of the archaeological record.

Despite these handicaps, the aim of our project was to investigate and understand the various ways in which human beings adapted to changing conditions, the strategies of land-use and how these were projected in the physical and symbolic organization of the landscape.

Project Objectives 2008-2012

The main objective of the project *Art, Landscape and Settlement in the Oukaïmeden Valley* (acronym ARPA in Spanish), developed between 2008 and 2011/12, was to contextualize the rock art as a way of exploring changes in land-use, how the seasonal but recurrent occupants conceived the landscape and how these changing strategies could have been translated into the signs depicted and the location of rock engravings. This required a precise geo-referenced database of all the rock carvings, archaeological sites and other points susceptible of providing information, such as fords, streams, springs, hills and mountain passages, paths, etc. Thus, we would be able to develop a GIS model that would help us to test different hypotheses related to human behaviour in the landscape. This task, as well as an archaeological and a geological survey, were the targets of our first field campaign carried out in the fall of 2008. The campaign was made possible thanks to a cooperation agreement signed by the Complutense University of Madrid and the Moroccan Institute of Archaeology and Heritage Sciences (INSAP) and the support of Dr. Mercedes Farjas from the Faculty of Topography, Mapping and Geodesy (Polytechnic University, Madrid). One of Dr. Farjas' final year students joined the group and developed the GIS model as his BSc Dissertation. Since good quality conventional maps were not available, building a digital map was a difficult task. Therefore, we purchased Ikonos satellite images, as well as stereoscopic views of the valley from the Paris National Geographical Institute that were taken in the early 50's, prior to the building of a dam in the valley that changed the course of the *Irini* River.

A geological survey of the valley and a wear analysis of rock art surfaces were also carried out in order to gain a better understanding of the areas chosen

for human settlements and art carvings as well as the risks for rock art preservation. As we consider the landscape to be a fundamental actor in the human settling of the valley, pollen sampling was performed in both, wet areas and sites where digging had taken place. Water flotation for plants, seeds or bones and recovery of micro-mammals was also performed. However, only wood remains were obtained, probably due to the acidity of the soil. These were analyzed by an anthracologist and have helped to complete the reconstruction of the landscape made by pollen data. Through them we aimed to recreate the evolution of the landscape and the human impact on it. In most of the sites tested, we obtained 14C data, although these came from long-lived samples. Samples of moss were also taken in wet areas, because they are good natural sensors of pollen grains and can therefore be used as a reference for current pollen rain.

In order to connect the human management of the landscape with the art, we needed to sample several archaeological sites to provide 14C samples that would help us to date the art and reconstruct the human history of the valley. Four field campaigns were conducted in the area from 2008 to 2011/12, mainly devoted to excavation on the one hand and rock art survey and analysis on the other hand. The purpose of this was to find a way of sequencing and connecting the human presence on the valley with the different art phases, acknowledged as much by stylistic criteria as by overlapping. During the 2008 campaign we surveyed and marked a number of sites susceptible of being excavated in the project database. These were selected following several criteria: a) Their connection with rock art depictions b) The recovery in field survey of archaeological remains in situ c) The preservation of archaeological sediment d) In the case of the tumuli, its apparently total or almost total preservation and the need to gather chronological information on these monuments, which are poorly known in Morocco.

During the next three campaigns, we sampled and excavated some seventeen sites, both tumuli and small shelters. Unfortunately, only very few of these offered results of any interest. Even lesser were the number of these which afforded us a connection between art depictions and human activities in the same spot.

The seasonal nature of the prehistoric human occupation and therefore, the scarce investment in the refurbishment of the dwelling, together with the climatic conditions of the valley, subjected to periodic freeze/thaw phenomena, often of violent nature, are the main causes that explain the poor preservation of the archaeological record. These, however, are not the only causes. Also responsible for this are in the first place, the building of *azib* or seasonal homes by

the Berber shepherds in the better oriented and most favourable places, which are the same as those chosen by their ancestors in prehistoric times. A second, more recent factor is the construction of a permanent village, following the installation by the French colonial authorities of a ski resort and subsequently of several hotels and chalets on the best slope facing south, resulting in the destruction of rock art surfaces and other archaeological evidences.

In spite of the above, so far we have documented the oldest human settlement in the High Atlas, dated to the mid-fourth millennium calBC in *post quem* dates³, which corresponds to a Late Neolithic phase. Cardial and comb decorated sherds, as well as a mainly microlithic industry made of exogenous flint have been found associated with a flimsy dwelling structure on what seems to have been a temporary shelter. Anyway, this is an outstanding finding, since it is not only the earliest documentation so far of the human colonization of the valley, but also because it provides information that will give us a better understanding of the Late Neolithic, scarcely contextualised up to now in Morocco. These can be summed up in certain old diggings, such as that of the *Toulkine* shelter, also in the High Atlas (Bayle des Hermens *et al.* 1984), the *Ma Izza* site on the Moroccan Atlantic coast (Barthelémy and Accard 1987), or more recently *Ifri Armas*, *Ifri Oudane* and *Hassi Ouenzga* in the Moroccan Rif (Lindstädter 2003: 11-112; 2008 and 2010:232-234), other less clearly defined levels produced in old excavations in the *Tingitan* region (Daugas and El Idrissi 2008a) and perhaps *Harbours 2* in the western coast (Nespoulet *et al.* 2008:33-35).

A second phase within the human colonization of the valley could be situated in the first half of the Third Millennium calBC, as attested by the lowest level of the so called Elephants' Shelter. We chose to investigate that site firstly because, as the shelter's name suggests, there were several depictions of elephants on the walls, and even more interesting, some engravings are overlapped. A few sherds suggest a Copper Age-Pre Beaker period (Bailloud and Boofzheim 1964; Bokbot 2005; Daugas *et al.* 1984, 1990, 1998; Lacombe 2004; Tixier *et al.* 2008) and were associated with an exogenous flint industry of retouched flakes and blades. These findings are interesting because, as mentioned, they come from the oldest cultural level of the shelter, resting directly on the bedrock and on a much lower level than that at which the animals were engraved. Therefore, the 14C date of Third Millennium calBC could provide a *terminus post quem* for the rock art of the shelter. Unfortunately, we are dealing with a secondary context, caused by the frequent drag processes affecting the shelter. These are the consequence of the snow melting in spring, when the water falls violently from the shelter's roof. Only the presence of a huge

block, fallen from the shelter's roof, and acting as a windscreen as well as retaining wall explains why all the archaeological items were found concentrated in a corner of the rock block.

There is also evidence of human presence in the valley during the Bronze Age. This is an interesting fact, because it helps us to connect some of the weapons depicted in rock art and traditionally interpreted as belonging to the Bronze Age with the use of the valley resources at that time. This was assumed before, but never proved until now. As is common in the valley, we are dealing with an insubstantial dwelling, which profits from the shelter provided by a huge standing stone and probably was of short duration in view of the thin archaeological layer documented. Nevertheless, it contained abundant organic material and charcoal, as well as abundant sherds of hand-made pottery of smooth surface and of fingernail and boss decoration. Two charcoal samples, one from the archaeological layer and a second from the base of a pollen test were dated to the middle of the Second millennium calBC.

We also have a series of 14C dates obtained in the course of our work on the Elephants' Frieze. The site is a small shelter, unfortunately totally disturbed by the installation of a Berber summer home (*azib*) inside. Outside and connected with the shelter there is a sandstone frieze, from which the shelter's name derives. Depictions on the frieze are very interesting: a procession of elephants and a small rhinoceros or perhaps a warthog, together with two depictions of humans wielding what could be interpreted as a weapon preceded by a feline. Two vertical inscriptions in Libyan-Berber writing overlap the frieze. There is no consensus on the chronology and duration of the Libyan-Berber period, of which the scarce remains include inscriptions and a certain rock-art style. It is assumed that Libyan-Berber writing derives from a Semitic writing introduced in Northern Africa by the Punic colonists (Salih and Heckendorf 2002; Bravin 2009; Ewague *et al.* 2013); hence the interest of an archaeological excavation at the site. But there was very little room leftover to plan the digging. The shelter, as already mentioned, was totally disturbed. In 2006, Dr. El Graoui, head of the *Centre National de l'Art Rupestre*, conducted research with other archaeologists at the site, where they opened two test pits at the foot of the frieze. Although a charcoal sample dated to the Second Millennium calBC/ First Millennium calBC transition was obtained in one of these, it was useless because it could not be connected with any evidence of archaeological structures or other human activities at the site (El Graoui *et al.* 2008).

We chose to excavate in an area next to the stone enclosure that encircled the dwelling where the flock

was locked at night, because it was the only spare zone that remained, and because there were apparently archaeological sediments preserved, despite its use as sheepfold. As in the previous probe by El Graoui, we obtained several samples of charcoal dated respectively to the Second Millennium/First Millennium calBC transition, and another two corresponding to the first Millennium AD. All of these came from fire places that were clearly anthropogenic. Nevertheless, they were either not associated with archaeological items or structures or scarcely associated with undiagnostic flint flakes.

In sum, we still depend on the typological classification of rock art to contextualize human management of the valley during a period as long as the one between the First Iron Age and the Muslim invasion.

There are also proofs of human use of the valley resources in Middle Ages. This evidence came from the Elephants' Shelter, the upper levels of which revealed a horseman engraved on a block that had become detached from the wall of the shelter and was half buried by an archaeologically sterile level. The depiction of the horseman differs from those that are common in schematic Libyan-Berber rock art (Bravin 2009). Underneath the sterile level, there was another level of flooding and drag with some fragments of handmade and wheel-made pottery, dated by a bone sample to 1390-1460 cal AD. This sample provides an *ante quem* context for the rider's engraving, since it was sealing an anthropogenic level made of a compacted floor and some discarded wheel-made sherds whose forms, unfortunately, could not be reconstructed. A sample of charcoal from this level was dated to 1010-1210 cal AD.

Four tumuli considered intact or partially intact were investigated along with other shelters or open sites. The barrows, as most of the other sites investigated, were either sterile or totally disturbed, despite some surface findings. We chose to dig some tumuli because, as occurs with the Libyan-Berber period, there is a dearth of archaeological and chronological information on this type of burial in Morocco (Bokbot 2003). All four tumuli were either excavated or looted, and only a fragment of a handmade ceramic shoulder was found in one of them. A 14C sample from a tumulus excavated recently in Southern

Morocco provides a very late date (El Graoui *et al.* 2010). Anyhow, some characteristics, as the scarce prominence of the tumuli, the existence of a central cist and of a single or just very few corpses buried there, recall some prehistoric tumuli recently published in the Libyan Sahara (di Lernia and Manzi 2002) and opens up the possibility of a prehistoric date for them.

Art and Statistics

We were therefore reaching an impasse. Very few of our diggings were successful in connecting rock art with human dwelling and the management of the valley. As a result, we did not have the means with which to test our hypotheses and to make sense of the SIG tool. This led us to what a Castilian proverb calls "to make a virtue of need" i.e., to use the rock art record, the most profuse evidence of human presence in the valley and well analyzed by Collado, as a device by which to try and make sense of the scarce archaeological information. To do so we submitted the data to statistical analysis.

We used the WinBASP program, a free download statistical package developed by archaeologists from the Bonn University. The Art database by Dr. Collado distinguished several styles and a general evolution from a naturalistic style to a more schematic one. Taking into account that the most abundant motifs in Oukaïmeden art were weapons, our initial hypothesis was that those that were iconographically similar to the ones dated to the Bronze Age in Europe, (Chernokian 1988), could be used as a dating clue, in view of the archaeological proofs of human presence in the valley at that chronological period. The statistical analysis provided an evolution of weapon depictions, that we could date to pre-Bronze Age, Bronze Age, Libyan-Berber period and post-Libyan probably Muslim period. Overlapping and associated depictions were then subjected to statistical analysis, first individually and thereafter for the whole rock art stations.

The results and reconstruction of human behaviour in the valley resulting from the statistical analysis will be developed in the following chapters of the current volume.

NOTES

1. Project funded by The Spanish Ministry of Economy, Innovation and Competitiveness (Project HAR 2009-071699); Spanish Ministry of Education, Culture and Sports (IPCE 2008,2009, 2010 and 2011) and the Spanish Ministry of Foreign Affairs (AECEI grant 2008)

2. According to Mahdi (1999) winter pastures on the plain were traditionally exploited by the Ourika herders until the 16th century A.D. when the Saadi dynasty introduced irrigation in the plain, adding value for agriculture but limiting herders' access to the winter pasturages.

3. In view that the dates were obtained from charcoal sample.