

**THE PREHISTORIC ROCK ART OF MOROCCO:
A STUDY OF ITS EXTENSION, ENVIRONMENT AND MEANING**

SUSAN SEARIGHT

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ABSTRACT

This study aims to examine all aspects of Moroccan rock art and place it in an archaeological and environmental context. Almost 300 sites are now known but few have been studied fully. This work is the first overall analysis to be attempted.

Data on climatic changes during the Holocene period, together with archaeological and faunal reports, provided the necessary background to the rock art. The distribution of engraved and painted sites in Morocco is very uneven. Animals were the most frequent themes, but a review of all the sites revealed great site and subject diversity. Four main types of engravings were identified, their characteristics described and their distribution plotted.

Climatic fluctuations, new animal species, the introduction of metal weapons, the chariot and writing established a chronological framework. A critical appraisal of these events led to a tentative chronology for Moroccan rock art, thought here to have started around 2500 bc.

The situation of rock art sites showed that they were chosen for very specific reasons, some of them by nomadic pastoralists. Viewing rock art as a medium of communication, it was proposed that the images were messages defining territories, proclaiming ownership or commemorating heroes or battles. The images may have two levels of meaning: one easily understood by members of the group and by outsiders, the second, symbolic, less obviously comprehensible.

Moroccan rock art was not an isolated phenomenon in north Africa. The rock art of Algeria, Libya and Mauritania showed both similarities and differences, implying a cultural link, albeit tenuous, between these countries.

Available archaeological, environmental and rock art data revealed striking differences in information-availability between north and south Morocco. Archaeological research has established a chronological and cultural framework in northern Morocco, to which rock art adds nothing. On the other hand, rock engravings of metal weapons are almost the only evidence of a Moroccan Bronze Age. In southern Morocco, the distribution of rock art sites reveals intensive human activity in an area little known from excavation. Rock art, archaeology and environment are thus related in this study to produce a comprehensive picture of the past.

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increasing population in Morocco has led to heavy demands on building material, and the sandstone rocks which are a support for much of the rock art are being rapidly destroyed for the construction of houses and roads. The effects of natural phenomena - freezing and thawing or exposure to wind-blown sand - contribute to the deterioration of this essentially open-air manifestation.

A research priority is thus undoubtedly the complete recording of existing sites before they disappear. However, no complete, countrywide survey and analysis of the subject has yet been attempted, using data available today. Despite shortcomings in the information available, the present study is an attempt to fill this gap and thereby make an original contribution to a knowledge of Moroccan prehistoric rock art. At the same time, the author is well aware that archaeology is not a static science and that new techniques, new discoveries and resulting new interpretations are a constant feature. It is hoped that the present work will provide a framework on which future generations of researchers can build - or demolish where necessary.

INTRODUCTION

In a survey on the world's cultural heritage in the field of rock art commissioned by UNESCO, the eminent Italian prehistorian Anati selected 144 main rock art zones in 77 countries (Anati, 1984). Morocco was one of these countries. In view of the important place thus accorded to Moroccan rock art as part of a worldwide manifestation, its study fits into a wide scheme of heritage conservation and appreciation of the past.

Painted and engraved rocks exist throughout the world. Australia claims to have some of the oldest known paintings and engravings. Particularly fine examples of rock art are found in the Palaeolithic caves of Europe. Other more recent examples come from the Sahara, South Africa and neighbouring countries in southern Africa. Moroccan rock art too is relatively recent, being of post-glacial date. It is almost exclusively confined to engravings, known from nearly 300 sites.

The use of the word "art" to describe the sculptures, carvings, paintings and engravings done by prehistoric people is often questioned. As Bahn has pointed out (1998: xiii), the word is often rejected on the grounds that it evokes an aesthetic approach, or because it puts a large and varied range of material into a single category. Taçon and Chippindale (1998: 6) also are not happy with the term - nor with proposed alternatives. However, since the term "rock art" has not as yet been replaced by something more satisfactory, it is kept by many researchers as a simple way of discussing images engraved or painted on rocks and, very occasionally, portable objects, independently of any aesthetic appreciation. It is in this sense that it is used in this study.

From an archaeological point of view, the importance of rock art for the "reconstruction of prehistoric values" is recognised (Davis, 1984: 8). The same author states that "rock art functions as a medium of communication ... Rock art is therefore a particular, specialized instrument of the production process" (Davis, 1984: 7). Archaeological excavations reveal the material elements of past life - tools used, pottery made, funerary monuments constructed - but cannot go far beyond deductions based on these external survivals of prehistoric activity. The material manifestations of the prehistoric civilisations of North Africa and the Sahara are often limited to stone artefacts and pottery. A German researcher, noting that the archaeological remains of these civilisations can be difficult to interpret, has pointed out that rock engravings and paintings provide information, particularly on "perishable objects and non-material phenomena", not available in the archaeological record (Striedter, 1982: 185).

The study of rock art manifestations has gained in importance in recent years. The conservation of paintings and engravings in the face of increasing anthropical destruction has become a major priority in many countries, where their cultural and touristic value has been recognised. A rapidly

increasing population in Morocco has led to heavy demands on building material, and the sandstone rocks which are a support for much of the rock art are being rapidly destroyed for the construction of houses and roads. The effects of natural phenomena - freezing and thawing or exposure to wind-blown sand - contribute to the deterioration of this essentially open-air manifestation.

A research priority is thus undoubtedly the complete recording of existing sites before they disappear. However, no complete, countrywide survey and analysis of the subject has yet been attempted, using data available today. Despite shortcomings in the information available, the present study is an attempt to fill this gap and thereby make an original contribution to a knowledge of Moroccan prehistoric rock art. At the same time, the author is well aware that archaeology is not a static science and that new techniques, new discoveries and resulting new interpretations are a constant feature. It is hoped that the present work will provide a framework on which future generations of researchers can build - or demolish where necessary.

PART I - THE SETTING

This section places Moroccan rock art in its general setting.

Chapter 1 outlines the aims of the present study and the methods used to achieve these aims. The reasons for dividing the country into 9 main zones is briefly explained. The sources of published information are listed, recording methods indicated and fieldwork described. Assumptions underlying rock art research are exposed.

Chapter 2 reviews previous research on Moroccan rock art, from the late 19th century to the present day.

Chapter 3 looks at the climatic and consequent vegetational changes that have so influenced population movements in North Africa and the Sahara. Human migrations, caused by increasing aridity or, on the contrary, by periods of humidity, have led to the abandonment of sites and the occupation of new territories, both affecting the distribution of rock art sites. The presence or absence of animals - wild or domestic - is also intimately linked to climatic features, particularly in south Morocco. In turn, the presence or absence of animals is to a certain extent reflected in the rock art.

The first manifestations of rock art probably did not occur before the Neolithic. This period was preceded by many millennia of human activity and cultural successions. Chapter 4 briefly examines Morocco's long prehistory and entry into the historical Mediterranean world. The Neolithic period, known from sites throughout the country, shows increasing cultural diversity. In view of its links with rock art, it is treated here in greater detail than the preceding periods. Aspects of the Moroccan copper and bronze ages are examined, where Iberian influences can be detected in pottery, metallurgy and funerary practices, before the prehistory merges imperceptibly into historical times with the arrival of Phoenician traders along the coast.

Wild animals figure largely among the images carved on rock faces. Chapter 5 lists the animals whose remains have been found in archaeological sites and those noted in early texts.

Note on the presentation of dates

This study has taken into account articles and books by many researchers in the field of rock art and allied subjects. The dates given in this literature are sometimes expressed as 'bp', 'bc', 'BC', 'ad' and 'AD', with 'cal.BC' added where appropriate. For the sake of clarity and uniformity, the following system has been used in the present work:

- 1) All dates before the Christian period are given as 'bc' except for those before the Holocene period. These 'bc' dates are followed in brackets by the published uncalibrated radiocarbon dates expressed as a 'bp' figure, shown also as 'cal.BC' if given in the original text.
- 2) Dates initially published in the 'bp' form have been altered to 'bc' by the subtraction of 1,950 and the mention 'around', to take into account the standard deviations.
- 3) The rare thermoluminescent dates given as 'bp' have been altered to 'bc' by the subtraction of 1980 (the year of the laboratory measurements (Ousmoi, 1989)).
- 4) Exceptions to the above procedure are reliable historical dates for pre-Christian events (Egyptian or Roman, for instance), given here in BC form.
- 5) Dates concerning events from the beginning of Christian times are given as 'AD'.

CHAPTER 1. AIMS AND METHODS

Aims

Nearly 250 sites were recorded in the catalogue of Moroccan rock art sites produced for the Ministry of Culture (Simoneau, 1977). Since then, new sites have been discovered; others have been destroyed. In many cases, the recording of a site is limited to noting its existence. Few of the 250 sites have been the object of detailed reports, and syntheses, where they exist, have been confined to specific areas.

The objective of this study is not only to examine the art itself, but to place it in a wider archaeological and environmental context. A complementary approach also followed here is that exemplified by Bradley's intention to treat rock art as a "medium for a wider study of prehistoric society" (Bradley, 1997: 8). Many aspects of Moroccan rock art are thus taken into consideration in an attempt to provide an holistic account.

The study aims specifically:

- 1) to present an up-to-date account of the history of research into Moroccan rock art from its beginnings in the 19th century.
- 2) to treat rock art as a part of integrated archaeological research.
- 3) to place rock art manifestations in a climatic and ecological framework.
- 4) to establish the distribution of rock art sites, by surveying the position and contents of all sites.
- 5) to find out if all sites contain the same type of engraved material.
- 6) to propose a chronology of Moroccan rock art and provide possible dates for the sites.
- 7) to interpret the engraved images as a "medium of communication" (Davis, 1984: 7). One line of research in this direction is the localisation of this art in the landscape and its relationship to the local topography as a form of sign-posting (see, for instance, Bradley *et al*, 1994).
- 8) to investigate the possible symbolic content of the images.
- 9) to insert rock art into the tissue of Neolithic and later life, in so far as it is known, in order to ascertain its place in the "production process" (Davis, 1984: 7) of the Neolithic and later populations of Morocco. Prehistoric settlement sites are extremely rare in Morocco, and a study of the distribution of rock art sites in the country can indicate land occupation when more obvious archaeological evidence is lacking. When rock art sites can be connected to other aspects of prehistoric activity known from archaeological sources, additional information is gained which is useful for both rock art and archaeological research, particularly where "perishable and non-material phenomena" are concerned (Striedter, 1982: 185).
- 10) to compare the rock art of Morocco with that of the neighbouring north African countries,

especially Algeria, Libya and Mauritania.

Approaches used to achieve these aims

- 1) Evidence for climatic variations occurring during the Holocene period was studied, in order to understand the environment in which the prehistoric populations lived. The same data helped to indicate the wild animal species available for hunters, and the feasibility of raising herds of domestic cattle, sheep and goats.
- 2) Excavation reports were read. An outline of Moroccan prehistory was drawn up into which the rock art could be inserted.
- 3) Available reports on rock art sites were read.
- 4) The rock art sites themselves were studied from several angles. Stratigraphy being absent, except in cases where one engraving overlay another, situation, associations and a comparison of the contents of the sites were used to analyse them.
- 5) The distribution of rock art sites was ascertained by studying relevant maps.
- 6) The establishment of a chronology required the study of existing literature, often referring to events and sites outside Morocco.
- 7) The rock art sites were fitted into the local topography by means of visits and map study.
- 8) The possible symbolic content of the images was investigated through a study of the themes and consideration of material external to Morocco.
- 9) Comparisons with neighbouring countries were done by personal visits and a study of the literature.

Methods

Division of the country into zones for easier handling of the material

Situated in the extreme north-west corner of the African continent, Morocco forms a link between Africa and Europe. Contact between these two land masses has existed since early prehistoric times. Morocco was also the terminus of a Moslem expansion implemented by Arab troops, who pushed westwards across Berber-occupied north Africa in the 7th century AD from Arabia to the Atlantic.

Geographical variety is the dominant physical characteristic of Morocco. The total land surface of the kingdom is 710,850 km² (including the ex-Spanish Sahara, made up of the Saguiet el Hamra and Rio de Oro provinces) (Banque Marocaine du Commerce Extérieur, 1997: 1) (figure 1). The Moroccan coastline stretches some 3,500 km. Unlike its neighbours, Morocco is fortunate in having several important rivers. Most flow into the Atlantic: the Loukos, the Sebou,

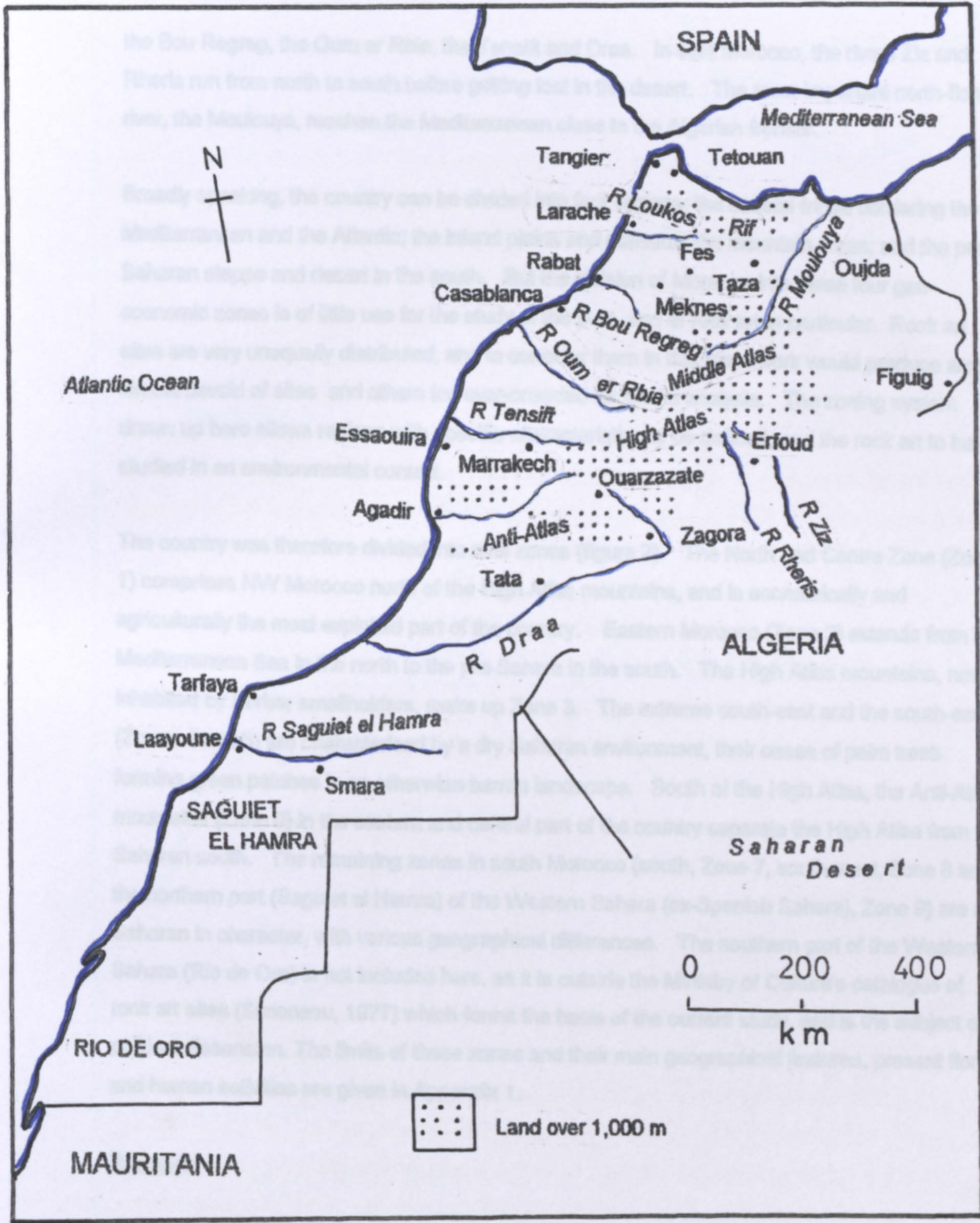


Figure 1. General map of Morocco

the Bou Regreg, the Oum er Rbla, the Tensift and Draa. In east Morocco, the rivers Ziz and Rheris run from north to south before getting lost in the desert. The most important north-flowing river, the Moulouya, reaches the Mediterranean close to the Algerian frontier.

Broadly speaking, the country can be divided into four regions: the coastal fringe bordering the Mediterranean and the Atlantic; the inland plains and plateaux; the mountain areas; and the pre-Saharan steppe and desert in the south. But the division of Morocco into these four geo-economic zones is of little use for the study of the past, and of rock art in particular. Rock art sites are very unequally distributed, and to consider them in this framework would produce areas almost devoid of sites and others too over-crowded for useful analysis. The zoning system drawn up here allows regions with specific characteristics to be defined, and the rock art to be studied in an environmental context.

The country was therefore divided into nine zones (figure 2). The North and Centre Zone (Zone 1) comprises NW Morocco north of the High Atlas mountains, and is economically and agriculturally the most exploited part of the country. Eastern Morocco (Zone 2) extends from the Mediterranean Sea in the north to the pre-Sahara in the south. The High Atlas mountains, now inhabited by Berber smallholders, make up Zone 3. The extreme south-east and the south-east (Zones 4 and 5) are characterised by a dry Saharan environment, their oases of palm trees forming green patches in an otherwise barren landscape. South of the High Atlas, the Anti-Atlas mountains (Zone 6) in the eastern and central part of the country separate the High Atlas from the Saharan south. The remaining zones in south Morocco (south, Zone 7, south-west, Zone 8 and the northern part (Saguiet el Hamra) of the Western Sahara (ex-Spanish Sahara), Zone 9) are all Saharan in character, with various geographical differences. The southern part of the Western Sahara (Rio de Oro) is not included here, as it is outside the Ministry of Culture's catalogue of rock art sites (Simoneau, 1977) which forms the basis of the current study, and is the subject of political dissension. The limits of these zones and their main geographical features, present flora and human activities are given in Appendix 1.

Research

Written sources: written sources were consulted in the libraries of the Moroccan Archaeological Institute (Institut National des Sciences d'Archéologie et du Patrimoine) in Rabat, the Musée de l'Homme in Paris, the Institute of Archaeology in London and Bournemouth University. Private and semi-private collections were also useful. Published work consisted of the corpus of High Atlas engravings (Malhomme, 1959 and 1961), numerous articles on individual sites and a few regional syntheses (not based on any corpus of engravings).

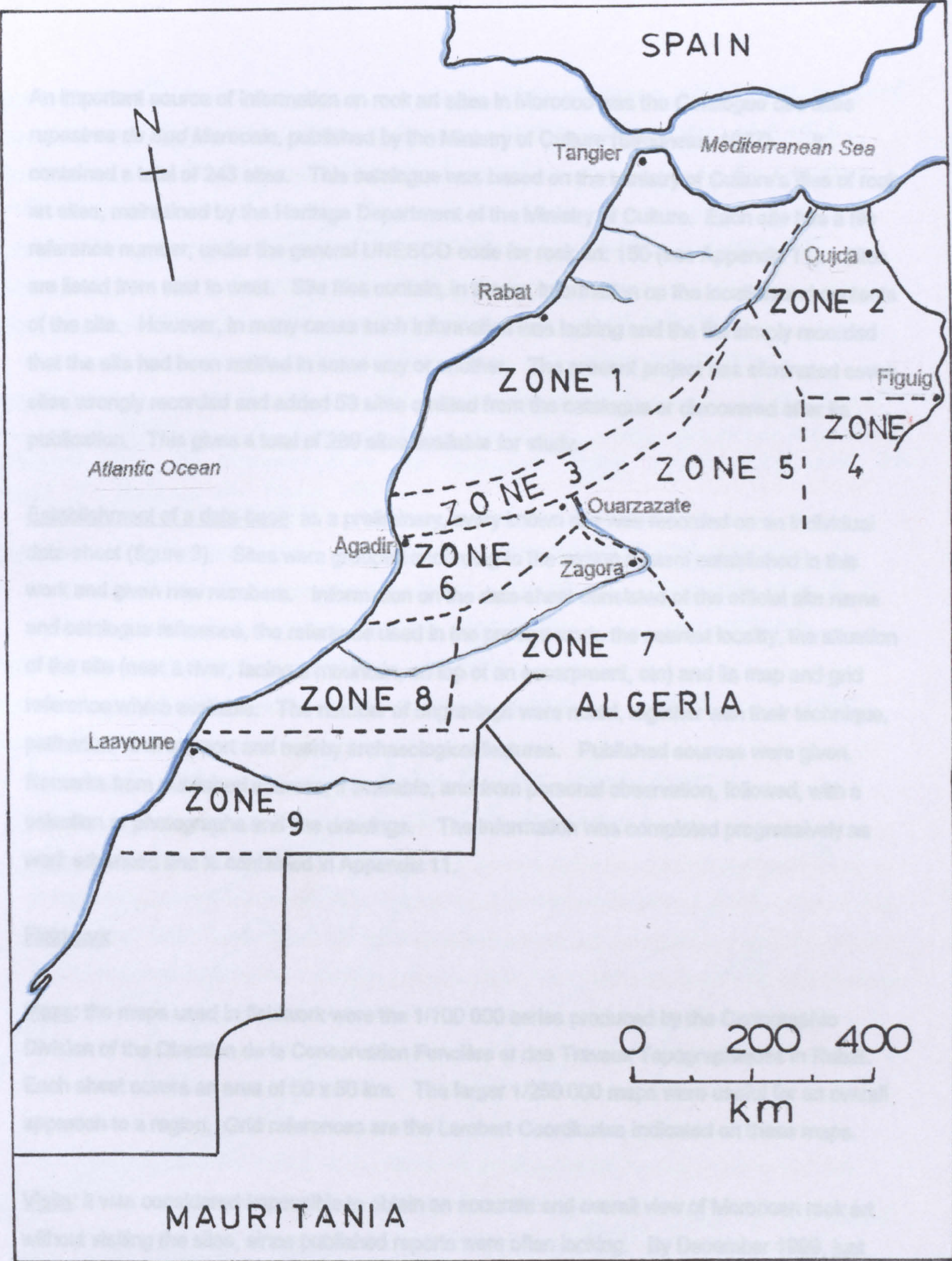


Figure 2. Morocco divided into the nine zones used in this study

- Zone 1 - North and Centre
- Zone 2 - East
- Zone 3 - High Atlas
- Zone 4 - Extreme south-east
- Zone 5 - South-east
- Zone 6 - Anti-Atlas
- Zone 7 - South
- Zone 8 - South-west
- Zone 9 - Western Sahara

An important source of information on rock art sites in Morocco was the *Catalogue des sites rupestres du Sud Marocain*, published by the Ministry of Culture (Simoneau, 1977). It contained a total of 243 sites. This catalogue was based on the Ministry of Culture's files of rock art sites, maintained by the Heritage Department of the Ministry of Culture. Each site has a file reference number, under the general UNESCO code for rock art: 150 (see Appendix 11). Sites are listed from east to west. Site files contain, in theory, information on the location and contents of the site. However, in many cases such information was lacking and the file simply recorded that the site had been notified in some way or another. The present project has eliminated seven sites wrongly recorded and added 53 sites omitted from the catalogue or discovered after its publication. This gives a total of 289 sites available for study.

Establishment of a data-base: as a preliminary, every known site was recorded on an individual data-sheet (figure 3). Sites were grouped according to the zoning system established in this work and given new numbers. Information on the data-sheet consisted of the official site name and catalogue reference, the reference used in the present work, the nearest locality, the situation of the site (near a river, facing a mountain, on top of an escarpment, etc) and its map and grid reference where available. The number of engravings were noted, together with their technique, patination, rock support and nearby archaeological features. Published sources were given. Remarks from published sources, if available, and from personal observation, followed, with a selection of photographs and line drawings. The information was completed progressively as work advanced and is contained in Appendix 11.

Fieldwork

Maps: the maps used in fieldwork were the 1/100 000 series produced by the Cartographic Division of the Direction de la Conservation Foncière et des Travaux Topographiques in Rabat. Each sheet covers an area of 50 x 50 km. The larger 1/250 000 maps were useful for an overall approach to a region. Grid references are the Lambert Coordinates indicated on these maps.

Visits: it was considered impossible to obtain an accurate and overall view of Moroccan rock art without visiting the sites, since published reports were often lacking. By December 1999, just over a third of the known sites had been personally studied in the field. A 'site' may consist of several hundred engravings, or be simply one engraved rock. A definition of where one site ends and another begins can be difficult to determine. In this work, a 'site' is one listed as such in the *Catalogue des sites rupestres du Sud Marocain* (Simoneau, 1977). New sites, not listed in this inventory, are clearly distinct units, separated by at least 500 m from any other site (see definition in Anati, 1993: 7).

Name of site: Tazka Map reference (1/100 000) Tapaout

Nearest town: Tapaout Catalogue number: 150.152

Situation: on rock face, and large rock at base of rock face. 1st visible, 2nd not

Number of engravings: under 10 10-50 50-100 over 100

Technique: polished pecked

Information: published more or less fully short reference

unpublished: no information some information

Published sources: A. Ruhlmann: "Recherches de préhistoire dans l'extrême Sud marocain" PSAM, fasc. 5, 1939. Lt. Klug "Notes sur des gravures rupestres recueillies dans la circonscription de Tapaout" BSPM 1-2 sem. 1939, p17-24. Mazel, J: Enigmes du Maroc 1971

Themes: anthropomorphs weapons chariots/carts wild animals

Libyco-Berber horsemen/foot soldiers "idols" domestic animals

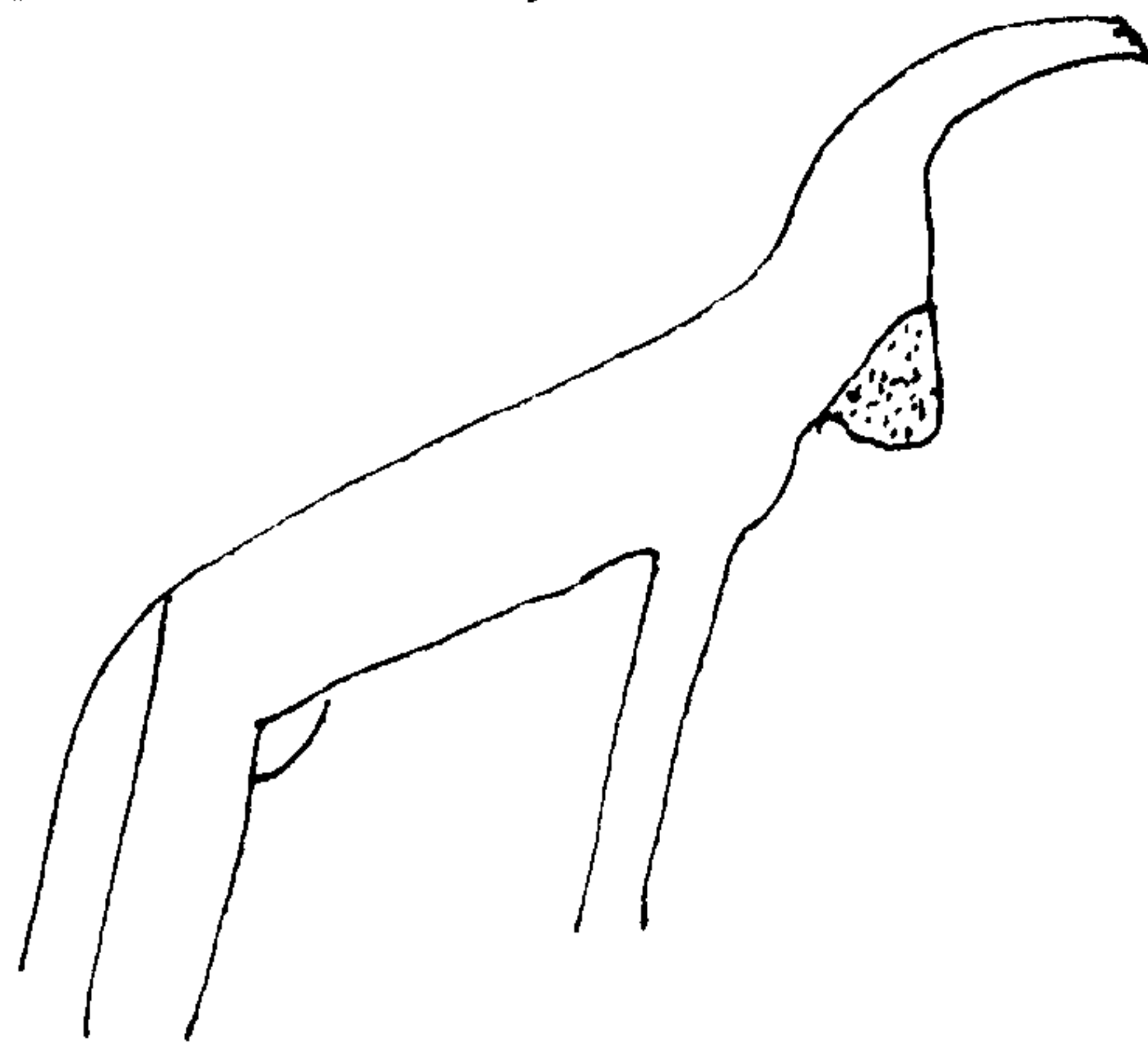
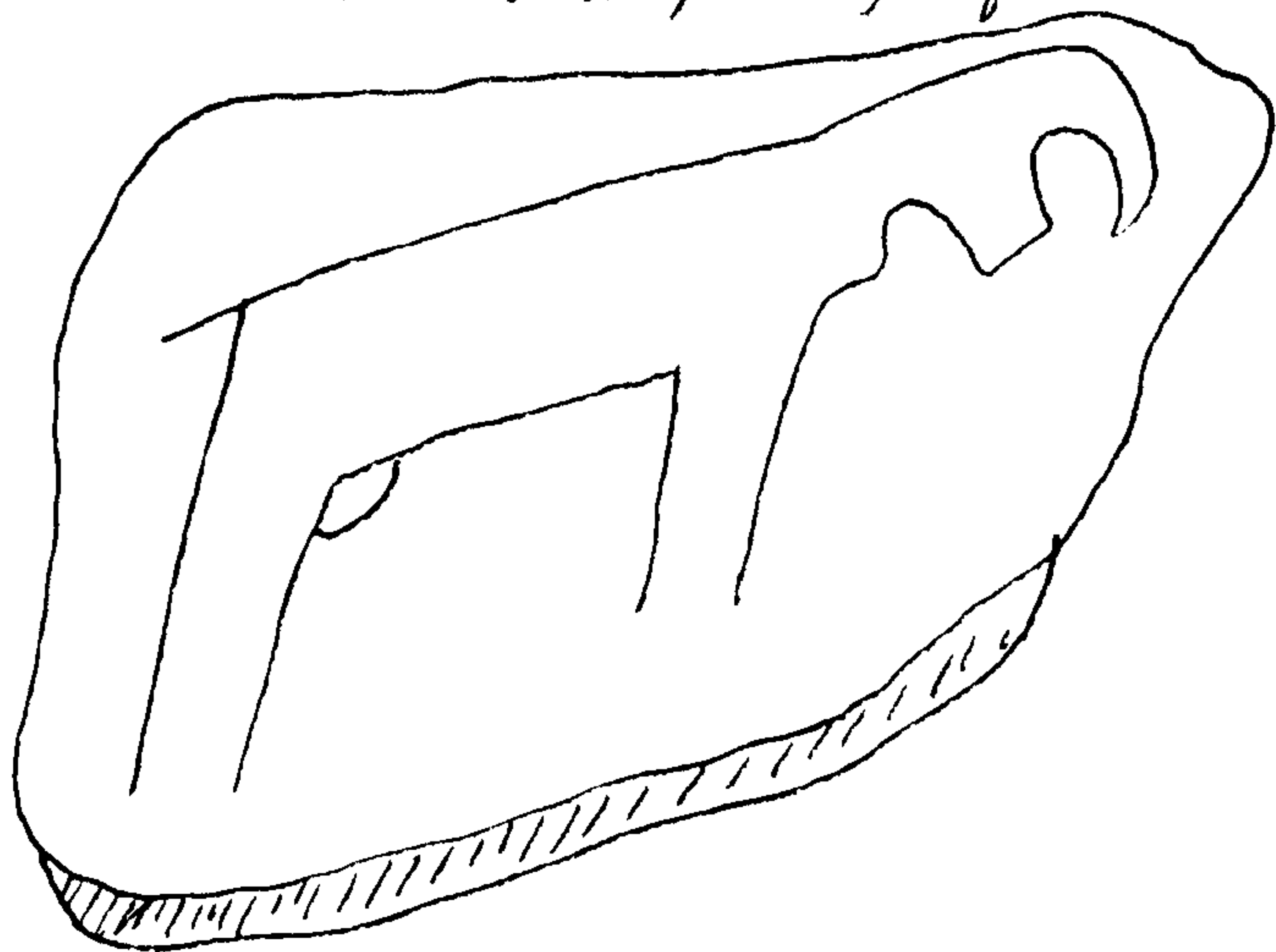
ancient alphabet miscellaneous: identifiable unidentifiable

Patination: complete medium recent

Archaeological features in the neighbourhood: tumuli tools other

Commentary:

- Découverte 1934 par Cap. Ribaut (acc. Ruhlmann)
- 2 bovidés, au profil absolu (Ruhlmann)



Local say: 2 gazelles

visited April 1984
" May 1992

Figure 3. Sample data-sheet

Fieldwork was difficult. Many sites were hard to find, the grid references (where given) being often incorrect. Some catalogue entries turned out in fact not to be rock art sites at all, and thus had to be eliminated (see above). A few have never been re-discovered after their initial early recording, so their contents have never been reviewed. In 31 cases, the only information available on a catalogued site was its map reference (see above for cartographic data). In this work, all available data have been used and their shortcomings indicated. A few sites were known to have been almost completely destroyed even when visited by the initial researcher. Others have been considerably damaged between visits. It is recognised here that the rock art visible today probably only represents a fraction of that originally produced.

Only a handful of sites could be reached after a few minutes' walk from a tarmaced road. Access to the High Atlas sites of Oukaimeden (2,500 m) was certainly possible by a steep, narrow and winding road; other High Atlas sites required several hours' walking carrying tent, food and water - or, more agreeably, with a mule to carry the baggage. Reaching the Yagour plateau, for instance, required a stiff climb of over 1,000 m (from the road at 1,250 m to the plateau at 2,500 m). In southern Morocco a 4-wheel drive vehicle was generally necessary to approach a site: many sites lay at the end of rough tracks cut by river-beds, on the banks of boulder-strewn, now-dry rivers or after many kilometres of stony regs or round sand dunes. Again, it was essential to provide one's own food, water and sleeping equipment. High Atlas sites could only be visited in the summer or early autumn, since the rest of the year they risked being under snow (seasonal use of such sites by prehistoric populations was taken into account). On the other hand, heat made it impossible to work seriously on southern Moroccan sites from May to September (inclusive). Without being paranoid, it was also unadvisable for a female to be alone on a site for any length of time, and even less to camp unaccompanied. Poor indications of the whereabouts of many sites led to endless hours, if not days, walking and climbing hills in a fruitless search for engravings. All this added to the difficulties of fieldwork.

The time spent on a site varied. If the aim was a quick appreciation of its contents, potential interest and extension, or if the visit was merely to verify already published work, a couple of days was usually sufficient. If, however, the site was a large one (several hundred engravings) or spread out (several hundred metres), or requiring thorough study, a first visit usually lasted from 4-5 days, followed by two or three further visits of similar duration at a later date to check on initial work. These subsequent visits were absolutely essential to ensure - amongst other things - good photographic coverage, not perhaps always successful the first time, and to see the engravings under different lighting.

On-site study of the engravings: as Coles has pointed out (1990: 13), methods of recording rock

engravings have varied over the years. Researchers have used free-hand drawings, tracings, rubbings and photographs, with photography being increasingly favoured. The American Committee to Advance the Study of Petroglyphs and Pictographs, while recognising that it is "impossible to prepare a universal, objective set of standards for recording petroglyphs and pictographs" (Swartz, 1992: 18), has proposed minimum standards for recording. The Committee indicated that methods requiring surface pressure should be used with great caution. Initially, in the present work, tracing by coloured waterproof pens on plastic sheets was used when the rock surface was not too fragile, but this method was found to be extremely lengthy and fairly subjective. Engravings (and paintings) were therefore photographed on a horizontal plane, using colour slides and black and white or colour print. Their dimensions (measured to the nearest 0.5 cm), technique, patina, situation, associations and orientation were noted. Patination differences between engravings on the same rock face, or those having similar orientations and situation while not being actually engraved on the same rock face, were useful to establish the order of engraving. However, the speed of patination being as yet an unknown factor, no time span can be deduced between the execution of an engraving with a 'total' patina (rock surface colour) and another with a fresh, pale patina. Appendix 2 includes a discussion on technique.

Identification of the object engraved: "Identification of figures in art can never become an exact science" (Bahn and Vertut, 1988: 116). Whilst the majority of Moroccan engravings can be identified without too much problem (excluding abstract designs), exact attributions are often difficult concerning certain animal species. Some engravings are completely enigmatic to the modern observer. Following Bahn's advice (Bahn and Vertut, 1988: 116), a "hierarchy of identification" has been adopted. Identifications are definite unless indicated as only "possible" or "probable".

Detailed site studies: a study of the literature and an initial examination of a number of rock art sites showed that four main groups of engravings could be distinguished, differing in theme, technique and style (Chapter 7). Consequently, in order to obtain an overall view of Moroccan rock art, one site representative of each group was selected for deeper study to confirm or invalidate first impressions (Chapter 8). Sites selected were studied as above. In addition, particular attention was paid to their spatial organisation, associations, styles, themes, intra-site variability, orientation and the relevance of nearby archaeological features. Site maps were drawn.

Post-fieldwork

Reproduction of engravings: colour slides of the images photographed in the field were projected onto a sheet of squared paper fixed to a board, the distance between the projector and the board

being adjusted so that the projected image thrown onto the paper corresponded to the dimensions of the image noted in the field. A standard scale was used for each image on a site. The outline was then inked in, and the completed tracing subsequently compared in the field with the original engraving and adjusted if necessary.

Further study: the engravings - slides or reproductions - were studied and analysed with regard to style and any particularities not noticed in the field.

Terminology

A number of terms appearing in this text have been used to mean different things by different authors. Appendix 2 gives the meaning attached to these words in the present context.

Assumptions underlying rock art research

A basic assumption in relation to this rock art is that it was done with a purpose. If it was merely the doodling of idle shepherds, the usefulness of its study would be reduced to an appreciation of the artistic talents - or their absence - among prehistoric populations. It is supposed that such images had a *meaning*. In a recent bilingual publication for UNESCO, a leading French rock art specialist has said: "Rock art is rarely gratuitous or anecdotal" (Clottes, 1997: 6). The recognition in the late 19th century of the authentically prehistoric nature of parietal art in the French caves started off a whole series of speculations as to its meaning. 'Art for art's sake' gave way to the theory of 'hunting magic', but this in turn proved unsatisfactory to explain the complexity of Palaeolithic art. 'Fertility magic' was also evoked in an attempt to interpret the meaning of this art, followed by a structuralist approach proposed in a series of publications by Leroi-Gourhan from the end of the 1950s (see Ucko and Rosenfeld (1967: 116-149) for a review of these early theories). The latest line of research into the purpose and meaning of Upper Palaeolithic art was started by Lewis-Williams and Dowson (1988), following their work on the rock art of southern Africa. This introduced the shaman and the notion of entoptic phenomena and altered states of consciousness to explain certain signs in the Palaeolithic painted caves of France. But as Bahn has pointed out (1996: 55): "Interpretations in rock art studies - and indeed in archaeology as a whole - come in cycles or phases which often reflect their period and cultural background".

Whatever the 'meaning' of Moroccan rock art - and this will be discussed in a later chapter - it is assumed in this work that it had a purpose and a meaning. This is not to deny that aesthetics may have played a part in their production.

Another assumption made in this work is that the animal or object engraved had actually been seen in the area by the engraver (excluding, of course, rough, obviously recent, unpatinated copies placed next to an old engraving). No convincing proof of the contrary has been put forward, while archaeological excavations and early historical accounts often testify to the real animals' existence in Morocco. If this assumption is not made, then whole portions of the theory of rock art studies fall to the ground: chronology, faunal distribution and information on the "perishable objects and non-material phenomena which do not normally appear in the archaeological record" (Striedter, 1982: 185). In connection with Moroccan engravings, it can be noted that children scratching images on the rocks today portray familiar objects such as cars, lorries, bicycles and aeroplanes; they do not draw dinosaurs or rhinoceroses which they have never seen - despite the accessibility of pictures of such creatures. It is however possible that exceptionally an image has been engraved by someone *recalling* something seen elsewhere. A case in point is a sailing ship, dated between the 2nd century BC and the 1st century AD, engraved at a site 80 km from the Atlantic coast, probably by a shipwrecked explorer (Martinet, 1996: 92).

Non-figurative images (circles, meanders, serpentiforms and so on) naturally fall outside the assumption that they had actually been seen. However, it is certainly assumed that they meant something to the people who engraved them.

It is *not* assumed that engravings depicting animals represented the full range of animals present in the neighbourhood, nor that the engravings are faithful copies of the animals or objects seen. But as far as the former are concerned, it is taken as a strong possibility that the proportions of one species against another are relatively correct. That is to say that a site with engravings of 20 antelopes, 15 ostriches and a few elephants, rhinoceroses and lions indicates an environment with antelope and ostrich populations outnumbering those of elephants, rhinoceroses and lions. This is a logical assumption in view of overall faunal numbers in the wild. However, it is also possible that a cultural bias existed and that certain animals were preferred models.

Symbolism

Rock art has been described as "a dynamic component of the ideology and social practices of prehistoric societies" (Barich, 1997: 131). As such, its interpretation, whether the art be European Palaeolithic, Saharan or Moroccan, cannot avoid a consideration of its possible symbolic charge. "The inextricable forest of Saharan rupestrian symbols", to use the words of the author of a 600-page work on symbolism and rock art in the Sahara (Le Quellec, 1993: 6), has to be penetrated. So images which are felt, subjectively, to have a possible secondary signification beyond that which is immediately obvious have been considered from a symbolic

angle in Chapter 12.

Conclusion

In this first chapter, the aims of the research have been outlined and the approaches followed to achieve these aims. The methodology has been described: the division of Morocco into nine zones to simplify analysis; library research as an essential preliminary to achieve the outlined aims; the establishment of a data-base; fieldwork (with many sites personally visited, studied and photographed); study of the engravings with regard to technique, style, patina, associations and orientation; the sites' situation and visible archaeological features noted. The very limited nature of the published material on the sites made extensive fieldwork long and exhausting, but necessary. This chapter on aims and methods has ended with an outline of the assumptions underlying the present approach to Moroccan rock art: it was assumed to have a meaning, that the animals and objects represented had been seen by the engravers although the animal images did not necessary include all the available faunal resources, and that frequency of depiction may in fact represent a reality in the life of the prehistoric engravers.

CHAPTER 2. PREVIOUS RESEARCH ON MOROCCAN ROCK ART

First discoveries in the 19th century

The presence of rock engravings in Morocco was noted for the first time in 1875 by Rabbi Mardochee Abi Serour. Rabbi Mardochee, a Jewish merchant born in Akka (south Morocco), had travelled widely before being encouraged by the French geographer Duveyrier to undertake a series of explorations in the then unknown regions of SW Morocco. An avid traveller and a keen observer, Mardochee was entrusted with an official mission to collect plants and insects. He took notes of the places through which he passed, discovering six rock engraving sites in the course of his travels. Unfortunately, the exact location of these sites was not always clear. A 12-page summary of his log was published by Duveyrier (1875). A year later, Duveyrier published another short article on Mardochee's discoveries (Duveyrier, 1876), followed by two pages on rock engravings in the Souss (Anti-Atlas) (Duveyrier, 1893). This first mention of rock art in Morocco came 25 years after the well-known German explorer Barth had discovered rock engravings in the Fezzan (Barth, 1857-1858), and some 30 years after the discovery of the first rock engravings in the Algerian Atlas mountains south of Oran (see Muzzolini, 1995b: 28).

Mardochee's sighting of rock engravings in Morocco was followed by that of the German geologist and explorer, Lenz. In 1879, Lenz left Tangiers for Timbuctoo, entrusted with an exploration mission by the African Society of Germany. His account was published five years later (Lenz, 1884). On his way down through south Morocco, Lenz was struck by some "strange drawings or decorations" engraved on the rocks seen just before reaching the village of Fom el Hassane (Zone 7) (*idem*: 10). The inhabitants of the site (Tizgui) knew the engravings well and thought they had been done for fun by shepherds, although they admitted that they could have been very old. Lenz had seen the "paper prints" made by Mardochee of the engravings he had observed on sites "east" of his own site, and recognised that he was faced by the same sort of drawings (*idem*: 10). He gave a brief description of the technique used, noted that ostriches and elephants could be easily identified but found that there were a lot of graffiti that could not be deciphered (Lenz, 1884).

Another 19th century explorer was the Frenchman Douls. After a series of epic adventures among the desert dwellers of the far south-west corner of Morocco in 1887, Douls managed to undertake a return journey northwards. In the course of this trip he noted engravings of an elephant, giraffe and an animal he described as a hippopotamus in the lower valley of the river Chebelka (Zone 8) (Douls, 1888). This site has never been re-discovered and no engraving of a hippopotamus has ever been clearly identified in Moroccan rock art.

Research during the French and Spanish Protectorates from 1912

After these early recordings of engravings in south-west Morocco and a description in 1902 by Hamy of an important site at Zenaga, on the Morocco-Algerian frontier (Zone 2) (Hamy, 1902), interest in the subject waned. In 1912 the Treaty of Fes turned Morocco from an independent kingdom into a French Protectorate. The French army and administration penetrated slowly but firmly into the interior of the country. Most of the discoveries of rock art sites in the years that followed are due to the interest and energy of French officials.

In 1926, an army doctor did further studies on the site of Zenaga and published a very complete description of the site and its engravings, accompanied by drawings and two photographs (Russo, 1926). In the same year, the Prehistoric Society of Morocco was founded. Although carrying mainly articles on prehistoric archaeology, its Bulletin also began to publish reports on rock art sites. Information on newly discovered sites in south Morocco became more generalised and doubtless stimulated further research.

In 1934, Russo published two short articles on sites near the river Draa and the Souss area of SW Morocco (Zones 7 and 8) (Russo, 1934a, 1934b). Articles by Odinet (1928), Clariond, an engineer (1933), Comand, a Belgian engineer (1933) and Joleaud (1935) began to fill in the distribution map of known sites. Russo, with another doctor, Pons, presented a paper on a new engraved rock shelter in east Morocco (Jbel Youssef, Zone 2) at the XVI International Anthropological Congress in Brussels in 1935 (Russo and Pons, 1936). A few years later, Pons, this time in the company of Vaufrey, Professor at the Institut de Paléontologie Humaine in Paris and specialist in North African prehistory, revisited the J Youssef site, publishing a joint paper on it in Oran (Algeria) (Pons and Vaufrey, 1938). Two important sites in south Morocco (Zone 7) were discovered in the late 1930s by two intrepid women explorers, Senones and du Pulgaudeau, in the course of their travels on camel-back in areas only recently under French control (Senones and du Pulgaudeau, 1941a, 1941b).

Most of these early discoveries were made by French army doctors, civilian doctors and colonial administrators posted in what were at the time remote and little-known regions. They were the result of chance rather than the fruit of systematic research. Klug, for instance, an army lieutenant posted in Tafraout (Anti-Atlas, Zone 6), investigated three rock art sites in his area (Klug, 1939). Another army lieutenant belonging to the Bureau des Affaires Indigènes in Goulmine (SW Morocco), produced a study on four rock engraving sites south of Goulmine (Zone 8) (de Mareull, 1939). These early reports were generally well documented, with photographs and illustrations of the engravings. Understandably, the position of the sites was

accurately indicated (though sometimes in relation to the number of hours required to reach them on horseback). These reports provided a useful basis for further research.

The first direct intervention in the field of rock art by a professional archaeologist came in 1934. Military operations in February and March 1934, followed at the end of March by cartographical work, led to the discovery of an engraved elephant on the summit of a rocky hillock at Merkala, south of the River Draa (Zone 7). An archaeological mission to record this engraving was rapidly organised under the responsibility of Ruhlmann, Inspector of Moroccan Prehistoric Antiquities. Considerably helped by the army, Ruhlmann was able to visit the site and photograph the engravings. He published his report in the bulletin of the Moroccan Prehistoric Society the same year (Ruhlmann, 1934a). The bulletin also contained an article by Ruhlmann on a site at Igherm (Anti-Atlas, Zone 6), again discovered by an army officer (Ruhlmann, 1934b). The same military operations in south Morocco in February-March 1934 produced another site, discovered by another army officer north of Merkala (Ruhlmann, 1938).

In 1939, Ruhlmann followed up his first contact with rock art with a 36-page report on current knowledge within a general account of prehistoric research in south Morocco (Ruhlmann, 1939). At that time he was able to record the existence of 24 sites in south Morocco, extending from the frontier with Algeria in the east to within a few kilometres of the Atlantic Ocean in the west. This work completed and rectified - for Morocco - an existing distribution map of North African engravings and paintings (Perret, 1937). Ruhlmann was the first professional archaeologist to draw up an overall picture of rock engraving sites in south Morocco. He actively encouraged the submission and publication of information on these sites, conscious of the importance of reports by interested people outside the direct field of prehistory (in any event, trained archaeologists were extremely rare in Morocco at that time). One of the sites discovered at the end of the 19th century by Mardochee was visited and carefully written up by Monteil (1940), basically an Islamic scholar, who added four new sites found in the region (Zone 8).

Archaeological activity has always been more important in north Morocco, especially around Rabat, the capital, and the industrial town of Casablanca. Not surprisingly, the few specimens of rock art were soon detected: Herber and David (1933) recorded engravings on the Atlantic coast south of Casablanca (Zone 1), and Antoine, future Inspector of Prehistoric Antiquities, published a note on some crude engravings near Casablanca (Antoine, 1935).

In the northern, Spanish-occupied zone of Morocco, a Spanish army officer reported on a rock-shelter, in which he had discovered a number of paintings (Zone 1) (García Hernández, 1941). The site has been the object of many articles but has not been rediscovered in recent years despite serious attempts. It is one of only 12 sites with paintings known in Morocco (as studied

here). Research into prehistoric remains and rock art was also being carried out by Spanish archaeologists in the south, in what was then the Spanish Sahara (Saguiet el Hamra (Zone 9) and Rio de Oro). In 1941, two short articles were published on the first rock art sites in this Spanish possession (Martinez Santa-Olalla, 1941a, 1941b), followed shortly by information on further sites (Morales Agacino, 1944). Two years later, Almagro Basch published 12 pages on prehistoric art in the territory (Almagro Basch, 1944) and in 1946 produced an important study on the prehistory of North African and the Spanish Sahara (Almagro Basch, 1946). Chapter III dealt very thoroughly with the prehistoric art, especially that in the north of the Saguiet el Hamra (Zone 9). Mateu (1945/46) also added to the list of known sites in this Spanish territory. Spanish army officers stationed in the Spanish Sahara contributed to the discovery of new sites but apparently not to the extent of their French counterparts. However, several sandstone slabs with animal engravings ended up in the Officers' Mess in Smara, a locality rich in rock art sites (Zone 9).

Increased research from the 1950s onwards

World War II interrupted publication of reports in that part of Morocco under the French Protectorate, though it may not have entirely halted research. It was not until the 1950s that further sites became known. An exploration by the Speleological Society of Morocco of an underground cave (Ghar Goran) near Safi (Atlantic coast, Zone 1), in July 1950, led to the discovery of a number of engravings on the ceiling of one of the chambers. A study was undertaken and published by Antoine (1950). A second site with paintings (red undulating lines and semi-circles) was discovered in 1952 near Ifrane, in the Middle Atlas (Zone 1) (Choppy, 1952).

At the II Prehistoric Congress in Algiers in 1952, a paper was presented on three sites in the upper reaches of the SE-flowing River Draa (Zone 6) (Glory *et al*, 1955). One of these sites had already been notified to the Service des Antiquités in 1938 by Captain Fournier, who had supplied a photograph but no text and no indication of its whereabouts. A colonial administrative officer published three fairly complete articles on his discoveries of rock art sites in pre-Saharan Morocco (Zone 7) (Lafanechère, 1951, 1952, 1953). Three further rock art sites and the excavation of well-preserved "pre-Islamic" tombs in the extreme south-east corner of the country (Zone 4) were the object of a full report by Meunié and Allain (1956).

Early in the 1950s, rock art sites began to be discovered in the High Atlas mountains (Zone 3), at first by chance. In the course of his 1951 excavations in the Toulkine rock-shelter, in the northern foothills of the High Atlas, Glory - prehistorian and friend of Breuil - noted the presence of red schematic paintings on the ledge overhanging the shelter (Glory, 1955). In 1951, Glory visited and wrote an imaginative paper on a High Atlas site at the foot of the Jbel Rat (Glory,

1953), incurring the irritation of another Frenchman, Malhomme, a school-teacher, who had started his own work on the rock art sites of the High Atlas in 1949.

Malhomme had begun his investigations of the area around Marrakech during the war. In April 1949, Antoine, Inspector of Prehistoric Antiquities, asked him to examine engravings recently found by a Casablanca teacher in Oukaïmeden (Zone 3), a ski resort in the High Atlas south of Marrakech. The first of almost 30 articles on his discoveries in the Atlas was published by Malhomme in 1950. This was followed regularly by articles almost every year until 1959. In that year, an important event in the history of Moroccan rock art studies was the publication of the first of two volumes of Malhomme's corpus of High Atlas sites (Malhomme, 1959). The volume was prefaced by Breuil, who underlined the importance of the discoveries. It contained tracings of engravings from Oukaïmeden, nine sites on the adjacent Yagour plateau (oth Zone 3) and one site on the outskirts of Marrakech (Zone 1). The second volume followed in 1961 and covered three further Yagour sites and one at the base of the J Rat, already discussed by Glory (1953).

This corpus, although inevitably incomplete in view of the thousands of engravings involved, was the first of its kind to be published and remains an invaluable tool. Malhomme's sudden death in 1963 undoubtedly prevented this dedicated worker from completing his task. The corpus is notable for containing rubbings and/or tracings of *all* the engravings found by Malhomme during his ten years' research. It is thus a more or less faithful record of the images, though unfortunately very few photographs accompanied the drawings.

From the 1960s onwards, new discoveries continued to be made both in the High Atlas mountains and in the far south. The most outstanding work was that of Simoneau, another French school-teacher living in Marrakech. Simoneau was the first, after Malhomme, to deliberately look for rock art sites, often on the indications of his Moroccan students. Simoneau's first interest was in the High Atlas, only a few hours from his Marrakech home. Between 1965 and 1970 he published seven reports on new discoveries in the Atlas before turning his attention to southern Morocco (Simoneau, 1965, 1967a, 1967b, 1967c, 1968, 1968/72, 1970). A last article on the High Atlas engravings followed in 1975, on the occasion of the International Symposium on Prehistoric Religions held in Valcamonica (Italy) in 1972 (Simoneau, 1975a). Simoneau then became fascinated by southern Morocco and his systematic prospections in the sub-Saharan part of the country led to a number of articles from 1968 to 1976. It is probable that his premature death in 1979 prevented most of his southern Moroccan discoveries from being published other than in very sketchy form. Simoneau was also the author of the *Catalogue des sites rupestres du Sud Marocain*, published by the Ministry of Culture in 1977.

In 1964 and 1966, Jodln, detached from the French Council for Scientific Research (CNRS),

published two long analytical articles on the sites on the Yagour plateau and Oukaimeden, in the High Atlas (Zone 3). In 1966 and 1967, Letan, an electrical engineer, produced two short articles on sites discovered in the course of his work in the Anti-Atlas (Zone 6) and south Morocco (Zone 7). In 1964, Lhote, well-known for his pioneering work on the Tassili paintings in Algeria, published a short but complete article on two sites near Fourn el Hassane (Zone 7). The sites had been indicated to him by a Moroccan interpreter during his visit to the region in 1955 but were published nine years later (Lhote, 1964). A number of engravings discovered NW of the J Rat (High Atlas, Zone 3) by a Moroccan student from the area were indicated by Luquet, curator of the Roman site of Volubilis (Luquet, 1967).

Results of work undertaken in the Spanish Sahara were published during the 1970s (Pellicer and Acosta, 1972; Milburn, 1973; Balbin Behrmann, 1975; Nowak *et al*, 1975; Nowak, 1976, 1977). Overall, the Spanish Sahara, before it came under Moroccan administration in 1976, has been well covered by rock art research, although there is often confusion over the identification of sites.

In northern Morocco, de Wailly's excavations from 1968 to 1972 in the cave of Kef el Baroud, near Rabat (Zone 1), revealed painted images on the roof, recently more or less obliterated by the smoke from the fires of hunters and shepherds sheltering in the cave, and a few engravings on the rock faces outside (de Wailly, 1973/75). In eastern Morocco (Zone 2), hitherto little visited, a number of sites with lithic material and rock art were also the object of investigation from 1968 (Greisson, 1973/75). A few years later, Wolff, an engineer based in Agadir, published two detailed reports on a dozen geographically-linked sites in S Morocco (Zone 7) (Wolff, 1976, 1979). A fairly full description of some southern sites, already known but hitherto poorly reported, was published shortly after (Zone 7) (Viñas Valverde, 1981).

In the 1980s and early 1990s, after the death of Simoneau, only two researchers were engaged in regular work on rock art sites. In 1985, Rodrigue published the first of a series of articles on a new site just north of Marrakech (Zone 1), followed by articles on new engravings revealed on known sites in the High Atlas (Zone 3) (Rodrigue, 1985, 1986, 1988, 1994a). The same researcher published reports on three sites in south Morocco, two new and one mentioned by Simoneau (Rodrigue, 1989, 1992a, 1993). Between 1979 and 1984, a site in the Anti-Atlas (Zone 6) was comprehensively studied by the present researcher (Searight, 1987). This was followed by a description of a site situated some 150 km south of Casablanca (Zone 1) (Searight, 1991), the publication of a new site on the southern side of the J Rat (High Atlas, Zone 3) (Searight, 1994a), a short note on new engravings in pre-Saharan Morocco (Searight, 1994b) and two articles on known sites hitherto only briefly mentioned, also in south Morocco (all Zone 7) (Searight, 1996a, 1996b). Painted rock-shelters in south Morocco (Zone 7) were reported in 1995 (Sallih, 1995). An enlarged corpus of the engravings at Oukaimeden and on the Yagour Plateau, in the High

Atlas (Zone 3), has recently been the subject of a doctoral thesis at Aix-en-Provence (Rodrigue, 1997). Four small new sites in south Morocco were published by Sallh and Heckendorf (1998), one by Rodrigue and Wolff (1999) and a series of new sites by Sallh and Heckendorf (2000) (all in Zone 7).

The creation in 1986 of the Moroccan Institut National des Sciences de l'Archéologie et du Patrimoine and the formal recognition in 1994 of the Parc National du Patrimoine Rupestre, designed to protect rock art sites, may stimulate the search for new sites - before they are destroyed.

Conclusion

Put briefly, rock art research in Morocco has been made up of several strands. First there were the explorers or travellers of different nationalities who recorded images they came across in their travels at the end of the 19th century. Then came the period following the installation of the French Protectorate in 1912, which was marked by sporadic but wide-ranging reports by officials of the French administration who discovered sites by chance in the course of their work, or following information from local sources. These reports were almost always accompanied by a few photographs, drawings and an accurate localisation and description of the sites. Attempts were rarely made to draw up comparisons with known sites elsewhere in Morocco, even less in neighbouring Algeria. Just before World War II, and following Moroccan independence in 1956, an interest in rock art by professional archaeologists can be noted. Officials belonging to the Moroccan Service of Antiquities, or detached from France, began to study and analyse known sites or write up newly-discovered engravings. However, chance discoveries continued to be made by people whose professional activity brought them into contact with potentially rich rock art areas. They proceeded in much the same way as the earlier officials; in the course of their work they noted rock art or archaeological sites and published reports on the subject, sometimes very briefly, sometimes at length.

New ground was broken around the beginning of the 1960s with the publication of a two-volume corpus of engravings in the High Atlas (Zone 3) (Malhomme 1959, 1961). This event represented a first deliberate attempt to look for and fully publish rock art sites. The systematic search for sites and methodical prospecting in the High Atlas and in south, Saharan Morocco increased considerably in the 1960s and 1970s, though most of the newly-discovered sites remained poorly described. The 1980s and, particularly, the 1990s saw several researchers finding new sites and reporting on them in considerable detail.

By the mid-1990s a considerable stock of site material existed, though much of it was

unfortunately very limited in scope and lacking in precision. The rare syntheses remained local in range. In spite of the two publications forming a corpus of High Atlas engravings (Malhomme, 1959, 1960), only two articles attempted an overall view of two out of the three High Atlas groups (Jodin, 1964, 1966), until the presentation of a doctoral thesis by Rodrigue (1997), which also only covered two groups. Two short regional overviews of southern Moroccan rock art by Simoneau appeared in 1969 and 1975 (Simoneau, 1969, 1975b); a third, written just before his death in 1979, was published posthumously nearly 15 years later (Simoneau, 1995). New sites continue to be found, particularly as a result of research by members of the Parc National du Patrimoine Rupestre, established recently in Marrakech. However, no attempt has yet been made to describe the extent, environment and meaning of Moroccan rock art, taken as a whole, and its place in Moroccan prehistory. This will form the basis of the rest of this work.

CHAPTER 3. HOLOCENE CLIMATE AND FLORA

Morocco, the Maghreb and the Sahara

One of the aims of this study is to situate rock art manifestations in a climatic and vegetational framework. Climatic changes have for long been a feature of Morocco's past. The importance of these changes for plants, animals and humans is evident. The arrival, expansion, departure or precarious survival of human groups in a given region depends on the natural resources available, themselves largely dependent on the climate.

While the present study is concerned with Morocco, it is impossible not to consider climatic events further afield, notably in the neighbouring Maghreb countries of Algeria, Tunisia and Mauritania, and in the Sahara. Human and animal migration here, following environmental change, inevitably had repercussions on Morocco. Recent research on all aspects of the prehistoric climates of northern Africa has been brought together by Vernet (1995). Information comes from sedimentology, palynology and fossil vegetation backed up by C14 dates.

The climatic and vegetational history of the Maghreb is approximately the same for the three countries concerned. The Sahara, however, by its position and extension, offers a different picture. The Sahara's limits are difficult to define. An average annual rainfall of 100±50 mm is generally considered to limit, north and south, a desert environment; this corresponds in the Sahara to an area 8-9 million km² (Vernet, 1995: 10). The "heart" of the Sahara, some 1 million km², is characterised by an annual rainfall of 5 mm (Petit-Maire, 1984: 1374). Between the Saharan desert and the Maghreb, where the presence of the Atlantic Ocean, the Mediterranean and considerable mountain ranges temper an essentially hot, dry climate, transitional zones have always been vital for the lives of prehistoric and modern people. Southern Morocco, south of the Atlas mountains, has become today a transitional, pre-Saharan, zone.

Environmental changes in the Sahara and northern Africa

Today's climate in northern Africa is characterised by the presence of three conflicting air masses: one permanently dry and sub-tropical (Saharan anticyclones); one, European and Mediterranean, alternating between polar and temperate; one southern, wet and hot, centered on the Equator (Musée de l'Homme, 1996).

During the Holocene - and indeed in the preceding geological periods - the cycles of arid and humid periods linked to the glaciials, interglaciials and changing sea-levels experienced elsewhere affected the north of Africa.

As Vernet has underlined (1995), this vast area is, and always has been, a mosaic which renders palaeoenvironmental generalisations impossible. Many factors intervene, such as proximity to the sea, altitude and the presence or absence of ground-water, which have enabled prehistoric populations to survive in an otherwise unfavourable environment. In addition, many large mammalian species were able to inhabit a special type of environment created during the last Pluvial and remained there as long as local conditions were suitable (Shaw, 1976: 144).

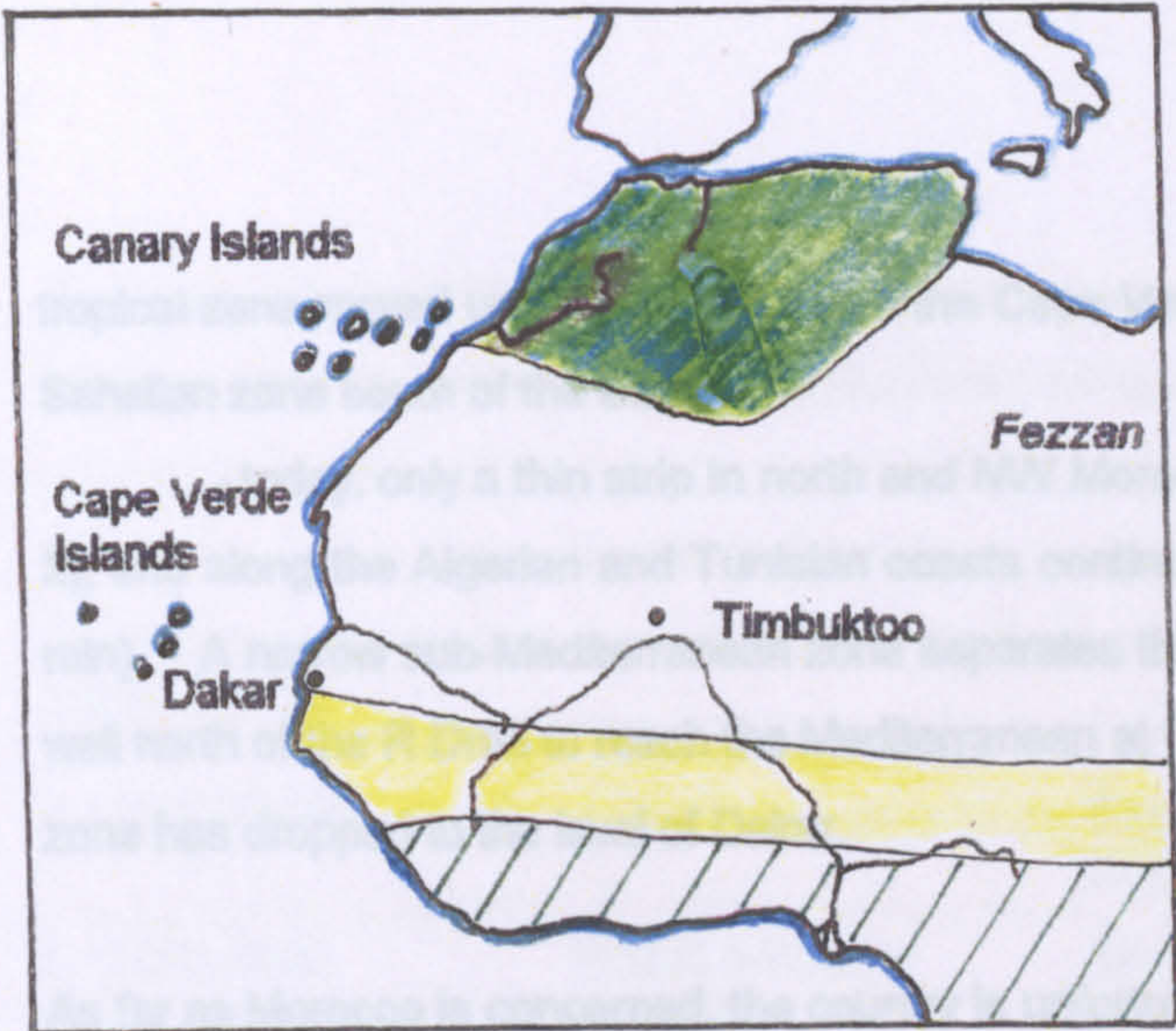
The idea of a Sahara homogenous in its environmental evolution has thus been discarded in favour of a recognition of its heterogeneity. While it has long been known that there could be a variation of several factors in the transitional zone between the Maghreb and the Sahara for instance, these N/S oppositions are now joined by recognition of NW (Algeria) and NE (Libya and Egypt) oppositions (Vernet, 1995). Again, it is no longer necessary to point out, as Shaw did over 20 years ago, that the Sahara suffered a slow progression "through successively drier humid phases via periods of climatic deterioration" rather than enjoying a "wetter Neolithic" (Shaw, 1976: 137). The image of a "green" Sahara is no longer valid.

Attempts to delimit climatic cycles are also handicapped by doubts concerning the reliability of C14 dates and their relative scarcity. Although more than 4,000 human and palaeoenvironmental dates for the last 40,000 years are available for the north of Africa (Vernet, 1995: 28), the area is vast. There is also (inevitably) the tendency for dates to be clustered in regions of intensive research, leaving large zones totally unexamined.

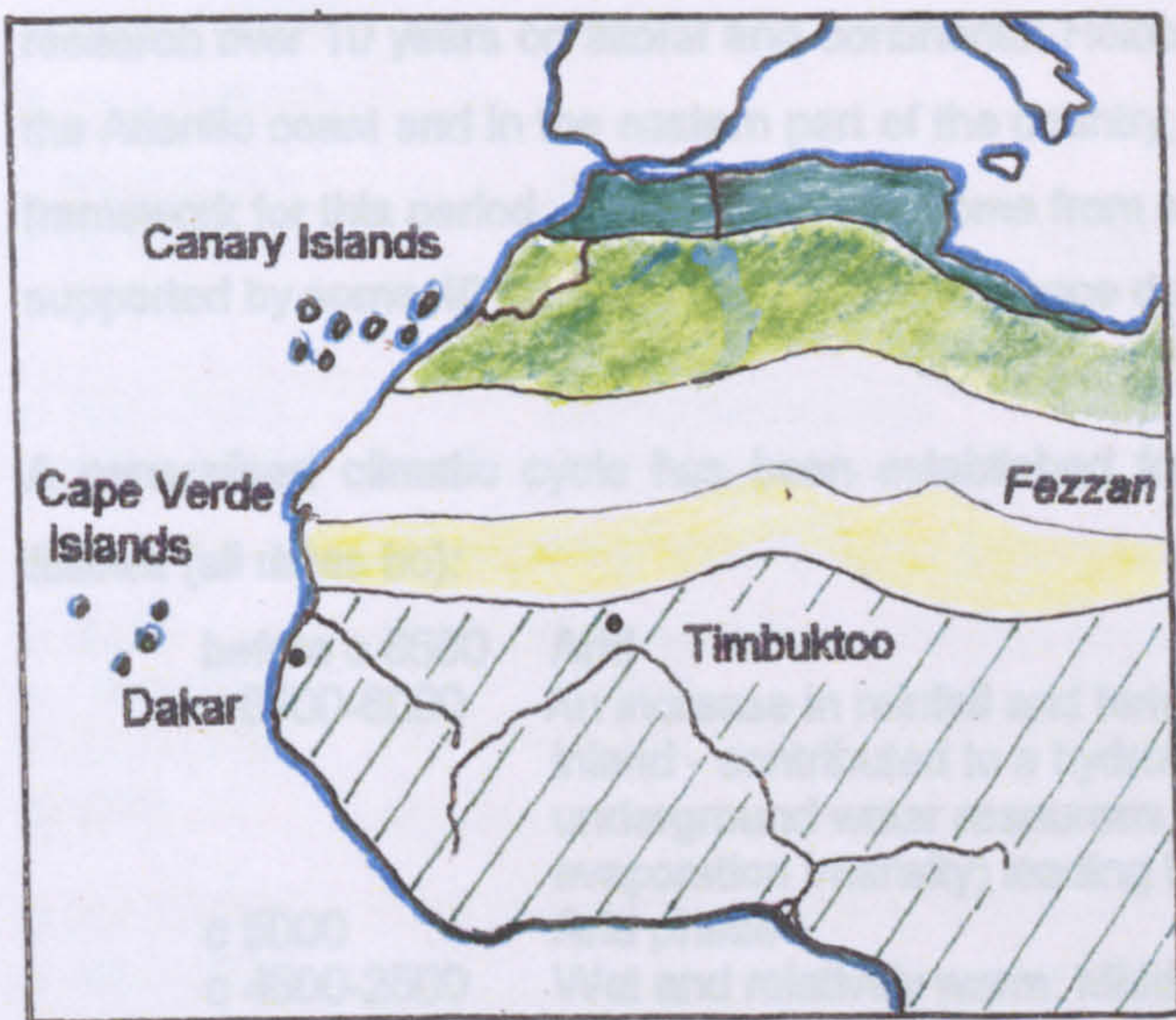
On the basis of multi-disciplinary research, a number of proposals, or assertions, concerning the dry/wet cycles in the Sahara and north Africa have been put forward. Petit-Maire, after extensive research, has drawn up schematic maps showing three stages in the recent environmental changes in northern Africa, resulting from these arid/humid climatic cycles (figure 4) (Petit-Maire, 1984). They show that:

- from around 16050-10050 bc, the Saharan arid zone (5-100 mm rain/year) extended eastwards in a broad belt from points on the Atlantic coast level with the Canary and Cape Verde Islands (including this study's Zone 9). North of this arid zone, a roughly-trapezoidal area of semi-arid sub-Mediterranean type included all Morocco north of the R Draa (equivalent to Zones 1-8), southern Algeria and most of Tunisia. South of the Sahara, a narrow Sahelian belt separated the Saharan arid zone from a coastal tropical zone.






- from around 7500-2500 bc, the Sahara had shrunk to a third of its former size. Northern Morocco and the High Atlas mountains (Zones 1, 2 and 3), Tunisia and a coastal Libyan strip enjoyed a Mediterranean environment (> 300 mm rain). The sub-Mediterranean zone now extended eastwards in a belt from the Atlantic coast near Safi (covering Zones 4-9). In turn the

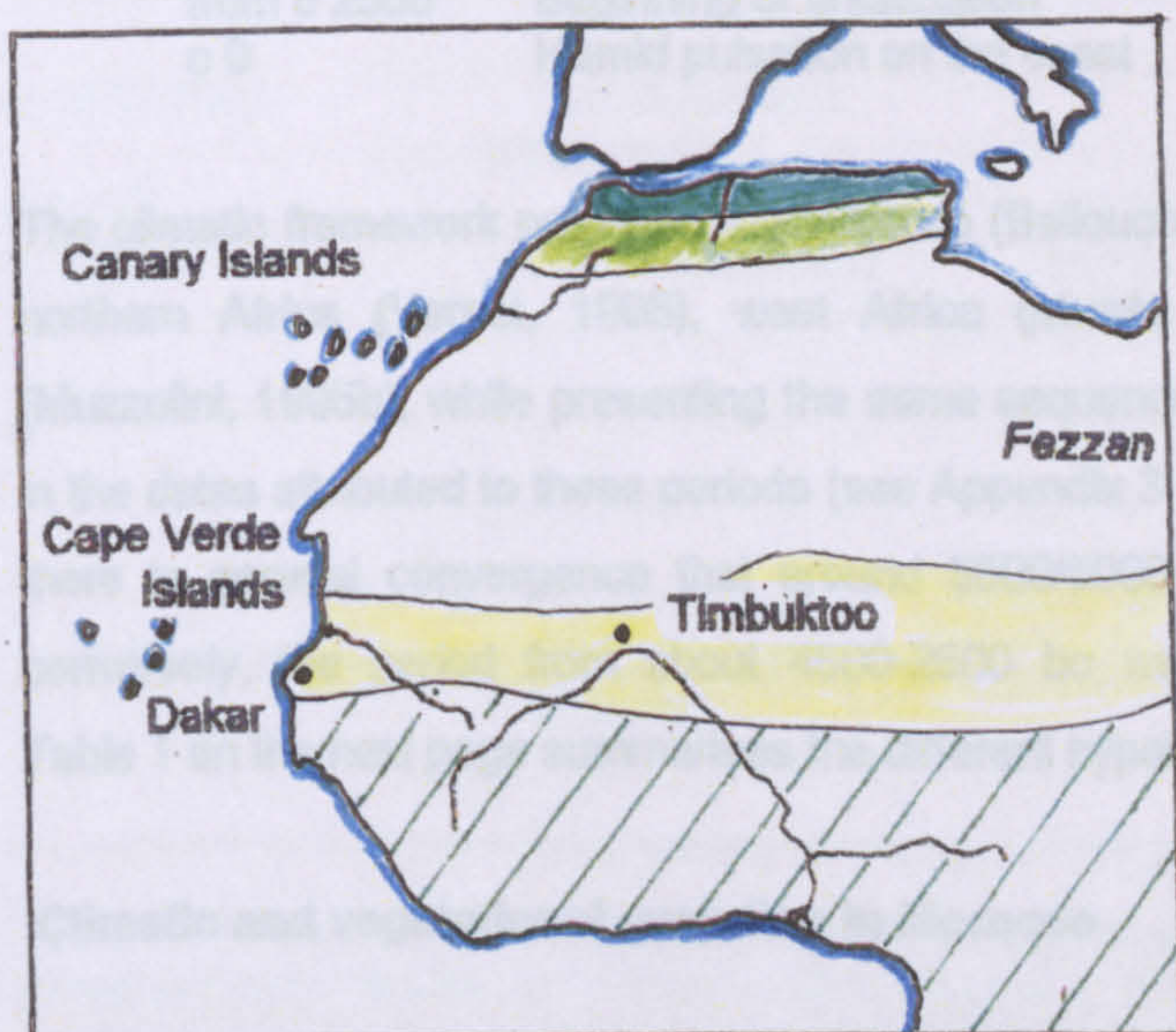


a) From around 16,050 - 10,050 bc



b) From around 7,500 - 2,500 bc

-  Mediterranean zone (> 300 mm rain/year)
-  Sub-Mediterranean zone
-  Saharan zone (5-100 mm rain/year)
-  Sahelian zone
-  Tropical zone



c) Today

Figure 4. Recent environmental changes in northern Africa (after Petit-Maire, 1984)

tropical zone moved up to a line level with the Cape Verde Islands, leaving a narrow intermediate Sahelian zone south of the Sahara.

- today, only a thin strip in north and NW Morocco (Zone 1 and the northern part of Zone 2), and along the Algerian and Tunisian coasts continues in the Mediterranean zone (> 300 mm rain). A narrow sub-Mediterranean zone separates this zone from the Sahara, which now starts well north of the R Draa to reach the Mediterranean at the Gulf of Gabes (Tunisia). The tropical zone has dropped to the level of Dakar.

As far as Morocco is concerned, the country is unfortunately one of those areas mentioned above with relatively few C14 determinations available to trace climatic change. Nevertheless, recent research over 10 years on littoral and continental Holocene formations and on Neolithic sites on the Atlantic coast and in the eastern part of the country, has enabled the elaboration of a climatic framework for this period. Information has come from sedimentological and palynological studies supported by some 40 C14 and thermoluminescence datings (Ballouche *et al*, 1990).

A generalised climatic cycle has been established for Morocco (Ballouche *et al*, 1990:1), as follows (all dates bc):

before c 6500	Arid
c 6500-6000	An increase in rainfall and temperatures cooler than today - at least inland - contributed to a hydrological optimum (affected by underground water resources, their situation, their origin and evaporation intensity) leading to lacustrine extensions
c 5000	Arid phase
c 4500-2500	Wet and relatively warm: Middle Holocene climatic optimum (affected by rainfall and temperature)
from c 2500	Beginning of aridification
c 0	Humid pulsation on the coast

The climatic framework proposed for Morocco (Ballouche *et al*, 1990) and those put forward for northern Africa (Vernet, 1995), west Africa (Musée de l'Homme, 1996) and the Sahara (Muzzolini, 1995b), while presenting the same sequence of arid/humid phases, differ somewhat in the dates attributed to these periods (see Appendix 3 for detailed tables). On the other hand, there is general convergence that around 5500/5000 bc arid conditions returned, and that, conversely, the period from about 4500-2500 bc was very favourable for man and beast. Table 1 on the next page summarises the different hypotheses.

Climatic and vegetational evolution in Morocco

Although the overall pattern of Morocco's Holocene climate and vegetation has been established, information is still patchy. Pollen analysis has only been carried out in a few places: four in the High Atlas (Zone 3) and three in the Middle Atlas (Zone 1), from which five C14 dates were obtained (Reille, 1976); and eight in the Jbala and western Rif (Zone 1 in both cases), giving 10

C14 dates (Reille, 1977). Ballouche sampled five sites on the Atlantic coast and one in eastern Morocco and obtained five C14 dates (Ballouch, 1986).

bc	Musée de l'Homme	Muzzolini	Vernet	Ballouche
13000-12500			Beginning of some humidity	
c 12000-10000		End of Hyper-Arid		
c 10000-5500	Humid, with drier episodes	'Major Humid'		
c 8700			Dry episode	
c 8000			Very wet	Arid
from c 6500			Maximum humid	Wet
c 5500-5000	Arid		Very arid	
c 5500-4500		Arid		Arid
c 5000				
c 5000-2000	Humid everywhere			
c 5000-3000	Climatic optimum		Humid, but not uniform (no "mid-Holocene arid")	
c 4500	Dry episode			
c 4500-2500	Humid	Humid		Humid
c 3000-2000			Becoming arid	Becoming arid
c 2500				
c 2000-1500	Arid			
c 2500-1000		Progressive aridity		
c 2000-1000			More humid in the south	
c 1500-1000	Humid phase in the south			
c 1000		Humid phase		
c 1000	Increasing aridity	Increasing aridity	Arid with humid remissions, but varied	
0				Humid episode on the coast
1st millennium AD	Arid with humid episodes		Arid with occasional humid episodes	

Table 1. Recent climatic changes in northern Africa in general, the Sahara and Morocco (simplified after Musée de l'Homme, 1996; Muzzolini, 1995b; Vernet, 1995; Ballouche *et al.*, 1990).

Only two of these localities affected areas with rock art. One was Tirsal (Jbel Rat), the other Oukaimeden (Reille, 1976) (both Zone 3). Unfortunately, neither provided useful information on the environment of the rock engravings. The whole of the diagram for the first site was felt to be

later in date than the Arab conquest of the 8th century AD (*idem*:166); two metres of peat bog at the second site merely proved a tendency towards a drier climate from the first half of the 1st millennium bc (*idem*: 166).

Wider effects have had to be inferred from this research. In this section, the information is given by zone, though it is evident that climate and vegetation do not confine themselves to the frontiers used in this study. As can be seen, vegetational and/or climatic data is totally lacking for some zones and for some periods. This reflects the unfortunate paucity of environmental studies in these sectors.

Latin names have been used because the original researchers, in their pollen diagrams and text, used the internationally recognised Latin names, and some of the plants have no English equivalent (Latin and common English names are given in Appendix 4).

Morocco's Holocene climate and vegetation appears as follows:

Before 6500 bc: The beginning of the Holocene was generally speaking very dry and cool
(Ballouche *et al*, 1990)

Zone 1 The Atlantic coast was arid (Ballouche *et al*, 1990). In the Rif mountains a *Cedrus* forest prevailed, deciduous *Quercus* was scarce (Reille, 1977). On the slopes of the Middle Atlas, the forest coverage was also probably *Cedrus* in a steppic environment (Ballouche, 1986)

Zone 2/1 Palynological studies in the Ksabl basin, middle reaches of R Moulouya (borders of Zones 2 and 1) (900 m), qualified as pre-Saharan by the researcher, have shown a steppe composed of *Chenopodiaceae* (indicative of drought conditions), *Cruciferae* and *Compositae*; the absence of *Zizyphus*, *Pistacia atlantica* and *Papilionatae* suggested a rather sub-Saharan landscape similar to that of today (Ballouche, 1986)

Zone 3 Pollen analysis in the upper reaches of the R Tessaout, central High Atlas (2,900m), showed that at the beginning of the Holocene, the High Atlas was characterised by a clearly steppic vegetation, essentially composed of *Chenopodiaceae*, *Ephedra* and *Artemesia*. Trees were rare, with forest cover varying from 1-12%, though *Quercus ilex* was on the increase. *Pinus* and *Juniperus* (probably *J thurifera*) were present (Reille, 1976)

c 6500-5000 bc: More rain and temperatures cooler than today led to the installation and development, from c 6500-6000 bc of a Holocene vegetational climax, resulting in the transformation of the Lower Holocene landscape (Ballouche *et al*, 1990). This optimum occurred later in the Maghreb than in other zones of northern

Africa, due to the influence of the European continent and the North Atlantic ocean (Vernet, 1995)

- Zone 1** On the Atlantic coast (Oualidia, Safi), *Olea* and *Pistacia* started to develop (c 6500 bc) (Ballouche, 1986). In the western Rif mountains (J Rhesana, 1,270m), the pollen diagram showed that *Quercus faginea* and *Q pyrenaica* reached their maximum (Reille, 1977). In the Middle Atlas (Lac de Tigalmamine), the most striking change took place c 6500 with *Artemesia* and *Chenopodiaceae* considerably regressing and *Quercus canariensis* and *Q rotundifolia* doubling (Ouassini, 1992)
- Zone 2/1** In the Ksabi basin, vegetation associated with marshlands and lakes developed, shown in the pollen analysis by the importance of *Typha*, *Filicineae* and *Cyperaceae*. Humid conditions were confirmed by the decrease in *Chenopodiaceae*. The steppe landscape became enriched with *Artemesia*, perhaps with the addition of a grass steppe (*Stipa tenacissima*). Privileged locations - depressions or river banks - were occupied by *Zizyphus*, *Pistacia atlantica*, and even *Olea* (Ballouche, 1986)
- Zone 3** An "important climatic change", attributed to the influence of the 'Atlantic climatic zone' (beginning, according to Reille (1977: 60) at around 5500 bc), was visible in the R Tessaout pollen analysis (Reille, 1976: 170), which led to the replacement of the steppic vegetational cover by spiny scrubland
- Zones 6, 7, 8,9** c 6000, a transition from desert to savanna took place in Taoudenni (Mali). On the basis of this, it has been suggested that the increase in rainfall caused this grass savanna to move north through the western Sahara (Zone 9) as far as south Morocco (Zones 7,8) and the Anti-Atlas mountains (Zone 6), where colonies of the accompanying *Acacia radiana* still exist (Ouassini, 1992). This acacia is a very familiar tree in the desert/steppe areas of south Morocco today, though only existing in the form of thinly scattered individuals preferring now-dry river-beds where their roots can find underground water

c 5000 bc: Almost no information is available concerning the effects of this fairly short (some 500 years) arid period

Zone 1 On the Atlantic coast at Oualidia (Safi), an *Olea* and *Pistacia* climax was reached c 5000 (Ballouche, 1986).

Zone 2/1 In the Ksabi area, the palaeoenvironment stabilised as marshlands, after the preceding wet period which had seen the expansion of lakes. Heavy evaporation probably rendered the remaining lakes rather shallow. No

important transformation took place in the Ksabi basin during this dry episode (Ballouche, 1986)

Zone 3 As in the Rif, *Cedrus* declined and *Quercus faginea* reached an optimum (Reille, 1976)

4500-2500 bc: The Mid-Holocene climatic optimum

Zone 1 On the Atlantic coast at Oualidia (Safi), the unexpected presence of *Quercus suber*, below its previously known ecological limits, was probably due to the increased humidity. A few present-day isolated stations of this tree in the region may well be the result of this event. A well-developed *Quercus suber* forest was already in place near the lake of Sidi Bou Rhaba, on the Atlantic coast just north of Rabat, by around 4520 bc; further north, at Larache, the same vegetation was probably also dominant at this period (Ballouche, 1986). On the other hand, on analogy with relic forest stands near the Ashakar complex at Tangier (dated c 2700 bc) (Daugas *et al*, 1989), Gilman proposed (1975: 84) that open woodlands of *Olea europaea* and *Pistacia lentiscus* could perhaps have covered the low hills immediately behind the site. Fossil roots found during excavation at the Neolithic necropolis of Rouazi (Rabat), dated to about 2500 bc (Daugas *et al*, 1989), showed a fairly important scrubby vegetation similar to that growing near the river banks today (*Herbaceae*, *Chenopodiaceae*) with possible *Juniperus* and *Tamarix* on the dunes (Lacombe *et al*, 1990). In the Rif, the mixed *Quercus* forest may have been connected to that of the Middle Atlas (Ouassini, 1992)

Zone 2/1 Around the Ksabi basin, forests of *Pinus*, *Quercus* and *Fraxinus* spread, at the expense of grass prairies and steppe

Zone 2 Archaeological excavations in the north-east (Rhafas cave, Oujda) (dated c 3190 bc (Wengler *et al*, 1989) showed the presence of *Tetraclinis articulata*, *Olea oleaster*, *Pistacia lentiscus*, *Ficus carica*, a leguminous plant of *Genista* type and, particularly, *Quercus coccifera* and *Quercus ilex*, all species denoting a wetter and slightly cooler climate than today (Wengler *et al*, 1989)

From 2500 bc: From now on a tendency towards aridity is clearly visible. Forests regress and certain arboreal species disappear from their previous habitats

Zone 1 A climatic deterioration led to a new extension of *Cedrus* in the Rif at the expense of *Quercus faginea* (Reille, 1977). This Sub-Boreal period also saw the beginnings of *Q. ilex* and *Q. suber* forests in the Rif (Reille, 1977). The pollen diagram at the Col du Zad (2,100 m), starting at around 910 bc showed that the vegetation in the Middle Atlas had not experienced great

upheavals during the last three millennia; *Cedrus* still dominated while the *Quercus ilex* forest had for long been degraded (Reille, 1976)

Zone 2 c 2600, excavations in sites near Rhafas cave (Oujda), all around 1,000 m in altitude, revealed the same species as in the previous period, with the loss of *Olea oleaster* and the addition of *Juniperus sp*, *Pistacia atlantica*, *Phyllirea sp* and *Zizyphus lotus* (Wengler *et al*, 1989)

Zone 3 Pollen analysis at Oukaimeden (2,500 m) showed a decrease in arboreal pollen shortly after 730 bc, though it was felt that the site was not a very clear palaeoclimatic marker (Reille, 1976). The drop in *Q.faginea* noted in the Atlas towards the "middle of the Sub-Atlantic" (c 400 bc) was also interpreted as showing an increasingly dry climate (Reille, 1976: 166)

c 0 : Increasing human impact on the environment, leading to its progressive degradation, renders attempts to outline the prehistoric, natural vegetation, extremely difficult. However, the general tendency towards aridity was relatively unimportant in north and central Morocco (Zone 1). The Romans at the beginning of the 1st century AD maintained extensive olive groves and cereals were exported to Rome (see Appendix 1). In the High Atlas (Zone 3) at approximately the same period, pollen analysis near the R Tessaout showed a good level of tree coverage, with *Q ilex* the dominant species, forming forests incorporated with *Pinus* (probably *halapensis*) (Reille, 1976). Arab authors after the arrival of Islam in the 7th century AD wrote persistently of wild animals lurking in the impenetrable forests outside the cultivated areas in north and central Morocco and in the High Atlas: a 12th century historian, for instance, described the mountainous area south of Tetouan (Zone 1) as "covered with trees, rather like a jungle" (Jaubert, 1840: 251). Local legends and historians affirmed that the Jbel Sarhro (Zone 5) was wooded until at least the 16th century AD (Jodin, 1966a: 15).

General conclusions

Throughout northern Africa and the Sahara, an extremely arid period began to give way to more humid conditions at the beginning of the Holocene. By 10000 bc, this return to a more favourable climate was recorded everywhere, although it was not until 6500 bc that it was noted in Morocco. Up to then, a semi-arid Mediterranean zone still covered the country north of the R.Draa and as far as NE Tunisia. In the Rif mountains and probably in the Middle Atlas (Zone 1), the cedar was the principal tree. Trees were rare in the High Atlas (Zone 3). Between this semi-arid Mediterranean area and the arid Sahara, an intermediate Sahel and arid-Mediterranean zone included SW Morocco, S Algeria and S Tunisia.

Between about 10000 and 5500 bc, increased rainfall progressively transformed the landscape. The Saharan desert shrunk and a Sahelian and arid-Mediterranean environment took its place, with scattered swamps and lakes. Dry episodes occurred during this major humid period, but on the whole this period was marked by considerable rainfall and a rise in the water-table. The semi-arid Mediterranean zone now extended eastwards to take in all Tunisia and the Mediterranean coast as far as the Red Sea. In Morocco, more rain and cooler temperatures from around 6500 bc helped tree-growth on the Atlantic coast in the north. In the Rif (Zone 1), holm oaks overtook the cedar. In the Middle Atlas (Zone 1), the steppe vegetation regressed and the forest coverage, in the form of oaks, advanced. In the High Atlas (Zone 3), holm oaks decreased considerably in favour of Canary oaks, the Aleppo pine also decreased and scrub replaced the previous steppic vegetation. At lower altitudes, on the border between Zone 1 and 2, the formation of marshes and lakes encouraged an appropriate vegetation; the steppe landscape was enriched by new species, and trees - jujube, Atlantic pistachio and even olive - arrived in favoured locations. In the extreme south and south-west pre-Saharan part of the country a grass savanna with white-spined acacia may have spread north from Mali, through the Western Sahara, to south Morocco and the Anti-Atlas mountains (Zones 7, 8 and 9).

Even the arid period, starting about 5500 bc in the Sahara, so clearly felt elsewhere in northern Africa, had less dramatic effects in Morocco. The presence of the Mediterranean sea, the Atlantic Ocean and the Atlas and Rif mountains undoubtedly contributed to the less extreme variations suffered further to the south and east. However, the increasing aridity of the Sahara would certainly have had a negative effect on the regions in the far south of the country. Gilman (1975: 83) was only partially correct in considering that "the drying out of the Sahara need have had no related effect on the Maghreb". This short arid interlude led to a reduction in the cedar forests of the Rif (Zone 1) and High Atlas (Zone 3), with an optimum for the holm oak in both mountain ranges. In the Ksabl region (borders 1/2), drier conditions led to the transformation of lakes into marshland.

A return of the rains in the Middle Holocene, starting around 5000/4500 bc, led to a climatic optimum in the Sahara and northern Africa in general, although humid conditions were not uniform throughout the area. Muzzolini (1995b: 51) noted that the "peak of pastoral Saharan societies" occurred at this time, an opinion confirmed by Vernet (1995: 149). Chapter 4 shows that vigorous Neolithic societies were active in north-west Morocco during this humid period. It is probable that southern Morocco too was occupied at this time; the relationship of these populations to the rock engravings is discussed in Chapter 11. Overall, a wet and relatively warm climate favoured vegetational growth throughout Morocco. At high ground, mixed oak forests may have been continuous from the Rif mountains to the Middle Atlas. On the Atlantic coast, near Safi, olive and pistachio reached a maximum. To the north, the same trees may well

have featured in the landscape around Tangier, though south of Tangier a cork oak forest occupied coastal zones (all in Zone 1). In NE Morocco, on plateaux at 1,000 m, olive, fig, pistachio, the kermes and holm Oak and other tree species were present, indicating a wetter, cooler climate than today (Zone 2). On the Zone 1/2 border, forests of pine, oak and ash took the place of the grass prairies and steppe.

This climatic optimum was of relatively short duration. From 3000 bc onwards (2500 bc in Morocco), the climate became increasingly arid, though occasional more humid episodes intervened. A short humid phase occurred, for instance, around 1500 or 1000 bc. This is the period when the Iberian Bronze Age began to affect the populations in north-west Morocco (see Chapter 4). People frequenting the High Atlas (Zone 3) started to engrave metal weapons on the sandstone rocks (see Chapter 11). Vernet (1995: 149) noted that 2000-1000 bc was also a very favourable period in the southern Sahara, and that cattle raising was still possible in northern Mauritania during the 1st millennium bc. In southern Morocco, hunters and cattle herders were also able to live in the micro-environments provided by the rivers and mountains, where they too engraved their preoccupations (see Chapter 11). But inexorably, the Saharan desert slowly extended its margins north and south. In Morocco's Zone 1, the climatic deterioration caused a change in the forest species in the Rif but few differences were noted in the Middle Atlas. In NE Morocco, the olive disappeared and was replaced by juniper and jujube, giving the landscape its present semi-arid Mediterranean landscape. Forests everywhere regressed, and certain arboreal species disappeared from previous habitats.

However, natural conditions were still sufficiently good at the beginning of the Christian era for the Romans to enjoy extensive cereal cultivation and olive growing in north-central Morocco (Zone 1), and, a few centuries later, thick forests infested with wild animals were still a danger to travellers (Jaubert, 1840). While the general tendency towards aridity had little impact on the north of the country, southern Morocco suffered increasingly from the climatic degradation with a near-desert environment becoming established. In the Sahara, short humid remissions at the beginning of the Christian period, especially around 1000 AD, allowed some human populations to reoccupy positions lost at the end of the Neolithic (Vernet, 1995:149).

In Morocco, from the beginning of Christian times, and probably a few centuries earlier, human activities became increasingly responsible for the destruction of the forests and the impoverishment of the natural vegetation. Ballouche (In press) has underlined that in spite of the obvious climatic fluctuations, the agro-pastoral societies of the Neolithic, Protohistoric and - in particular - the historic periods have been largely responsible for the formation of the Moroccan landscape during the last 3,000 or 4,000 years.

CHAPTER 4. AN OUTLINE OF THE PREHISTORY OF MOROCCO

The early period

The prehistoric populations responsible for the rock art in Morocco did not live in a country previously uninhabited. Palaeomagnetic data suggest an age of more than 780000 bp (Raynal *et al*, 1995: 258) for Lower Acheulian tools unequivocally *in situ* found during ongoing excavations in Casablanca quarries. The earliest hominid remains, those of *Homo erectus*, are younger and are dated to approximately 400000 bp (Raynal, 1997: 4). The Acheulian tradition continued for many millennia, to be replaced progressively by Mousterian and Aterian tools.

The Aterian culture, noted for the invention of the tanged tool, is limited to North Africa, present from the Atlantic to Libya and from the Mediterranean to the Niger. It is however particularly abundant in Morocco, Algeria and Tunisia. In Morocco it developed between 40000 and 20000 bp (C 14 and thermo-luminescence dating (Debenath *et al*, 1986: 236)). Aterian tools have been found throughout Morocco, often on the present-day surface, especially in southern Morocco where the majority of rock art sites are located. Certain similarities between the rock art of northern Africa and that of the Sahara have led Aumassip in her enquiry into the age of this art to suppose a common origin in an early culture covering the same territory: that of the Aterian "corresponds perfectly" to this profile (Aumassip, 1997: 216).

The Epipalaeolithic

The Aterian industry and its users were replaced by a new population and a new culture, the Iberomaurusian, first dated in east Morocco (Taforalt, Zone 2) to around 19950 bc (21900±400 bp) (Delibrias and Roche, 1976: 14). The new industry showed a complete break with the Aterian tradition, being essentially microlithic, dominated by backed blades. The associated human type is a *Homo sapiens sapiens*. The most recent Iberomaurusian layer in the Grotte des Pigeons (Taforalt, Zone 2) is dated to around 8850 bc (10800±400 bp) (Delibrias and Roche, 1976: 14). Simple ornaments made from shells appeared for the first time in Moroccan prehistory. It was claimed that two stones had traces of crude engravings - one of an elephant, the other of either a Barbary sheep or an anthropomorph (Roche, quoted by Camps, 1974: 99). These engravings were considered doubtful (Camps, 1974: 99). In any event, the Iberomaurusians are not credited with any great artistic skill, though 112 of the 3,196 ostrich egg fragments recovered from the Epipalaeolithic Site 19 (Zone 8) were engraved with geometric designs (Grébénart, 1972: 162). Other Epipalaeolithic industries, probably developing from the classic Iberomaurusian, lasted longer, particularly noted on the Atlantic coast of south Morocco (Petit-Maire *et al.*, 1980: 28). Epipalaeolithic sites have been discovered in many parts of Morocco. Major published sites are indicated in Appendix 5.

It has traditionally been held that the Iberomaurusian was progressively replaced by a new industry, the Capsian, and a new human group of proto-Mediterranean physique (Camps, 1974:190). The oldest Capsian date is from Algeria: around 7855 bc (9805 ± 160 bp) (Lubell *et al.*, 1989: 260). The Upper Typical Capsian lasted for some four millennia. No certain Capsian site has been found in Morocco, but the Capsians are important for rock art studies, since they are credited with the first true artistic manifestations in North Africa: small sculptured figurines as well as decorated ostrich eggshells (Camps, 1974: 186). These proto-Mediterranean Capsians are considered to be the first Berbers (Camps, 1984b: 19).

An Upper Pleistocene age for the oldest Saharan rock art has been claimed by Mori (1974: 91), based on the patina and degraded state of the engravings.

The Neolithic

Many specialists do not accept a pre-Neolithic age for North African rock art, but there is general agreement that by Neolithic times, rock art was widespread in North Africa and the Sahara. Despite the periodisation well-defined in NW Morocco, the term 'Neolithic' when used in Morocco has no strict chronological implications. It is used here to describe populations who no longer relied solely on hunting and gathering for subsistence and who had adopted one or more of the basic 'Neolithic' requirements: animal domestication; agriculture; pottery and polished stone tools.

Zone 1: the best data come from a series of recent excavations in the north-west, where six dated sites provide a coherent sequence for the Neolithic occupation of the region (Daugas *et al.*, 1989). The Early Cardial Neolithic is known from the cave of Kef-Taht-el Ghar (Tetouan), dated by C14 to around 4100 bc (6050 ± 120 bp), and from O Tahadart (Tangier), dated by C14 to around 3650 bc (5600 ± 200 bp) (cal.BC 5260-4730 and 4915-3940 respectively by the authors, Daugas *et al.*, 1989: 681). The former showed traces of stockbreeding (sheep, goats, cattle), and palynological studies tentatively suggested cereal cultivation; O Tahadart produced many pottery vessels, grinding material and polished axes. The Early Neolithic is also known from the cave of El Harhoura II (Rabat), where the disturbed deposits contained a mixture of pottery from the Early, Middle and Recent Neolithic. Two burials in the cave have given dates of c 4030 bc (5980 ± 210 bp, cal.BC 5280-4560), and shells a date of c 3850 bc (5800 ± 150 bp, cal.BC 5070-4415 BC) (Daugas *et al.*, 1989: 681). An almost complete Cardial pot was found in excavations in Mnasra cave (Rabat) (Daugas, 1992: 17). A site with cardial pottery was recently excavated at the extreme eastern limit of this zone (Archaeological Museum, Rabat, 1998).

A funerary cave, El Harhoura I (no pottery and few lithics), dated to c 3450 bc (5400±290 bp, cal.BC 4875-3670), is felt to belong to the early Middle Neolithic (Daugas *et al*, 1989: 682). It has been compared to the collective burial in the nearby Grotte des Contrabandiers, where part of the pottery is of Middle Neolithic age (Daugas *et al*, 1989: 682). TL dating on Cardial pottery in this latter cave has given a date of c 4650 bc (6600±600 bp) (Daugas, pers.comm. July 1998).

Late Middle Neolithic dates come from two important cemeteries on the Atlantic coast near Rabat/Casablanca: Rouazi and El Kiffen. The former (dated to c 2610 bc (4560±150 bp, cal.BC 3655-2920) (Daugas *et al*, 1989: 682)) produced the remains of over 100 individuals of all ages. Grave goods were numerous, including pottery, stone vases, polished axes, bone tools, containers and ornaments in elephant ivory and decorative objects in ostrich eggshell. El Kiffen cave is remarkable for the series of over 40 almost complete pots which accompanied the burials. It is considered to represent "an evolved stage of a local tradition with clear Saharan affinities" (Daugas *et al*, 1989: 685). Two C14 determinations were carried out, on the same sample, in 1958, and gave dates of c 2350 bc (4300±80 bp), and 1250 bc (3200±200 bp) (Bailloud and Mieg de Boofzheim, 1964:169). The excavators preferred the earlier date, as do Daugas and his colleagues (cal.BC 3350-2660) (Daugas *et al*, 1989: 682).

Caves in the Tangier area were the object of excavation as early as 1912 (Michaux-Bellaire and Biarnay, 1912). Five caves yielded Neolithic material (flint artefacts and pottery): Mugharet el Khail, Mugharet es Saifiya and Mugharet el 'Aliya (called collectively the Ashakar caves, since they are situated a few hundred metres one from the other, on Cape Ashkar); Grotte des Idoles (also Cape Ashkar); and El Khil, three linked caves slightly to the north. By analogy with sites further down the coast, the Ashakar cave complex was attributed to the later Middle Neolithic, about 2750 bc (Daugas *et al*, 1989: 684); but a recent C14 determination from a Cardial level in one of the caves (Grotte des Idoles) came out at c 3680 bc (5630±80 bp, cal.BC 4696-4356) and TL dating on Cardial pottery at El Khil was approximately the same (cal.BC 4920-4420 (Daugas, pers.comm. July 1998). Daugas (1992: 17) stated that the Neolithic layer in Gar Kahal, further east, of approximately the same age as the Ashakar caves, underlay Beaker material.

Undated Neolithic material was recovered from the Rabat cave of Dar es Soltane I, excavated in 1937 and 1938 (Souville, 1973: 104). Dar es Soltane 2 produced Neolithic pottery, dated by TL at around 3020 bc (5000±350 bp) (Daugas, pers.comm. July 1998). Neolithic people also occupied the cave of Kef el Baroud, inland from Rabat, where a transitional archaeological deposit underlay a possible Bronze Age level. The C14 dates for this cave - around 3210 bc and 2800 bc (5160±110 and 4750±110 bp) - are held to date the copper objects found in the cave (de Wally, 1976: 51), but doubts about the stratigraphy render this exceptionally early beginning for the use of metal in Morocco difficult to exploit.

Neolithic populations left numerous sites near Casablanca, including Oued Merzeg cave (Capitat and Mieg de Boofzheim, 1954), and the Grotte Velozzo (Mieg de Boofzheim, 1956). In the latter, the pottery sherds mixed in with the earlier Epipalaeolithic material could not be attributed with certainty to the Neolithic (Treinen, 1973/75: 36), but it is very possible that the cave was indeed inhabited by Neolithic people, since they used the neighbouring caves of El Kiffen and O. Merzeg.

Further down the Atlantic coast, a surface site at El Jadida produced 521 almost complete polished axes and 101 fragments (Souville, 1973: 282). Other nearby sites yielded similar material, in smaller quantities. Near Safi, the top two levels of the Ma Izza cave, containing pottery considered to be Neolithic, were dated at 470 bc (2420±90 bp); the lower level, undated, was held to be Epipalaeolithic (Berthélémy, 1987: 81). The excavator indicated (Berthélémy, pers.comm. 25.8.1987) that the date was from charcoal from a hearth below a burial, but the C14 assay was made on samples some 30 years after the initial excavation. Although the excavator considered that the site showed a transition from the Epipalaeolithic to the Neolithic (Berthélémy, 1987: 81), the date is highly unlikely in the light of current Neolithic dates (around 2610 bc for the late Middle Neolithic at Rouazi, see above). However, the pottery of the top layers confirms the Neolithic status of at least part of the assemblage. A distinct Neolithic facies, characterised by a large triangular or trapezoidal weaponhead (Antoine, 1952a) was recognised at Cap Sim (Essaouira), and given the name of Mogadorian (the old name for Essaouira).

Moving inland, a hilltop delimited by a rough wall, overlooking R Beth (some 40 km west of Meknes), is considered to be a Neolithic site on account of the numerous surface finds of polished stone axes, grooved stone items, grinding stones, pestles and pottery fragments (Ruhmann, 1936). A similar fortified camp was identified nearby. Ain Smene cave (12 km south of Fes) produced a Neolithic or perhaps even "a more recent culture" in the shape of four polished axes together with pottery and metal objects (Souville, 1989: 20). Surface collections at Bab Merzouka (Taza) produced many polished stone axes and large amounts of unusual, worked stone axe-like objects (Souville, 1972; 1995; Grébénart, 1996). The artefacts are undated but are considered to be of Neolithic age and to denote the practice of agriculture (Souville, 1995: 99).

In the Haouz plain, centred on Marrakech, a number of surface sites have also yielded large amounts of polished stone axes and tools similar to those of Bab Merzouka. They have been called "hoes" (Bensimon and Martineau, 1987a: 689) and felt to be the work of more or less sedentary agriculturalists, installed in the region towards the 2nd millennium bc. Microliths of Toulkine type from the High Atlas (see Zone 3 below), only about 60 km away, were also found, as were some 40 weaponheads of Mogadorian type (see above) (Rodrigue, 1992b).

Zone 2: nineteen C14 dates, spanning the last four millennia bc, have been obtained from six excavations of caves, rock-shelters and open-air sites around Oujda, near the Algerian frontier (all from Wengler *et al*, 1989). The oldest dates come from Rhafas cave, situated at 900 m OD. The upper archaeological level contained Neolithic material and was dated to around 3240 bc (5190±100 bp) (*idem*: 513). Ostrich eggshells from El Heriga cave (1,080 m OD, c 30 km SW of Rhafas) gave a date of c 2650 bc (4600±60 bp) for the oldest Neolithic level (3c) (*idem*: 515). A date of c 500 AD (1450±50 bp) for a slightly higher level (3a) was rejected by the excavator on the grounds of contamination by intrusive material, and a more credible date of 2550/2450 bc was suggested (*idem*: 515). Although level 3 indicated that the cave was occupied over a long period, numerous bones of carnivorous animals showed that human occupation was probably not continuous. The lack of material in level 2 made its attribution difficult. Dated at c 120 and 730 AD (1430±50 and 1220±50 bp), it is not considered to represent a habitat but a temporary shelter (*idem*: 515). A final, sub-surface layer (1), undated, probably also indicated short stays (*idem*: 515). Lying mid-way between Rhafas and El Heriga, the small Jorf el Angra cave supplied a C14 dating for the Neolithic material of c 2160 bc (4110±90 bp) (from ostrich eggshells) (*idem*: 515). Levels 1, 3 and 4 in Abri Rhirane, 10 km W of Rhafas, all contained Neolithic material. Several radiocarbon determinations were carried out, some of them unacceptable to the excavators (Wengler *et al*, 1989): c 1950 bc (3900±90) for layer 3 was acceptable, while 1540 bc (3490±90 bp) for the underlying layer 4 was too young and should be about 2000 bc. Layer 1 was estimated at around 1900 bc. Occupation of the shelter is thought to have been discontinuous (*idem*: 515). Two dates were obtained for the Neolithic level at Abri Bou Guennouna, just south of Abri Rhirane: c 1870 and c 1450 bc (3820±90 bp and 3400±80 bp) (*idem*: 517). Finally, the open-air site of Rahal Fontaine, about 30 km south of El Heriga, produced lithic material considered to be Neolithic and a date of approximately 510 bc (2460±60 bp) (*idem*: 519). Perhaps too young, this date was accepted by the excavators in view of the lack of information on the region.

Pottery was relatively rare in these Oujda sites. As far as could be judged, Cardial influence, important in NW Morocco, did not affect the NE part of the country. The considerable lithic material was dominated by microliths with exceptionally few specifically Neolithic objects such as polished axes or arrowheads. Grinding material was also very limited. Elements of personal decoration were confined to a few pierced shells and small necklace discs of ostrich eggshells.

About 160 km to the south, some 40 km from the Algerian frontier, the upper level of the Kheneg Kenadsa (Tendrara) cave was attributed to a late Neolithic phase (Jodin, 1956: 154). It included flint artefacts, two fragments of a polished axe, a few other polished stone items and a dozen pottery sherds. Small concentrations of flint and sandstone artefacts of a very indeterminate nature were found near Talsinnt, 150 km south-west of Tendrara (Grelsson, 1973/75). From the

description given, they would seem to be of Neolithic or later date. Sixty kilometres south of Talsinnt, at the very southern limit of this zone, the unexcavated cave of Kef Aziza (Tazzouguert) also contained Neolithic material, but by 1972 it had been cleaned out and its contents - pottery and lithic material, including polished axes - scattered outside the mouth (Camps, 1974: 320).

Zone 3: practically nothing can be said about the Neolithic occupation of the High Atlas, as revealed by archaeology. Only one full-scale excavation has been undertaken, that at Toulkine rock-shelter, in the Atlas foothills, 50 km SW of Marrakech. The site produced much lithic material - more than 50,000 artefacts, grindstones and pestles - pottery, colouring matter, bone tools, items of personal decoration and faunal remains. A new type of flint arrowhead, the Toulkinian point, was recognised (Glory, 1955: 434). The pottery is said to be reminiscent of Cardial ware (Daugas *et al*, 1989: 685). Narrow ledges above the site contain red-ochre paintings (see Chapter 7). Recent TL dating of three sherds has produced dates ranging between 2020 to 2420 bc (4400-4000 bp) (Ousmol, 1989, no page).

Slightly over a thousand flint items collected from the surface at the rock engraving site of Oukaimeden (see Chapter 7) were studied and considered to be Neolithic (Antoine, 1954: 20). Recent research has produced some 350 further items and shown that these industries can be attached to the Toulkinian (Rodrigue, 1996: 98).

Zones 4 and 5: no Neolithic sites have been published from these areas. Scattered flints of all periods have been reported, picked up from the present-day surface.

Zone 6: the only published material from the Anti-Atlas concerns a small surface site at the mouth of R Massa (40 km S of Agadir), containing 550 flint artefacts and numerous disks made out of ostrich eggs. The site was felt to be a small workshop, corresponding to a short stay by few people, and to be undoubtedly "Saharan" (Antoine, 1951: 76).

Zone 7: stone tools, of extreme beauty, in a variety of material (flint, jasper, chalcedony), bifacially flaked, often barbed and tanged, are a characteristic feature of the Neolithic of south Morocco. For long prized collectors' pieces, they are - or were - abundantly scattered on the present-day surface, or revealed intermittently as the wind changed.

No sites have been excavated in this zone. However, a certain number of surface collections have been analysed and published. Sites with characteristically Neolithic tools were recorded in the neighbourhood of Tata (Senones and du Puigaudéau, 1941b; Lafanechère, 1951; 1952).

Adrar n'Metgourine, just north of Akka, described as "the finest bovidian site in south Morocco" on account of its rock engravings (Simoneau, 1977: 55) (see detailed study in Chapter 8) is also remarkable for the large scatter of Neolithic material around the site: polished axes, grinding stones, flint arrowheads, decorated pottery (Simoneau, 1972, 1977; Grébénart, 1995).

Zone 8: five sites on the Atlantic coast, within a few dozen kilometres of Tarfaya, have been the object of methodical research: a site with pottery 1 km from Tarfaya, dated around 1350 bc (3300 ± 100 bp); the nearby Site H, poor in lithic material but rich in ceramic and ostrich eggshells dated c 2500 bc (4450 ± 110 bp) (both Charon *et al.*, 1973: 409, 388); site 16, with Neolithic material but without pottery, dated c 1880 and 1390 bc (3830 ± 100 and 3340 ± 100 bp), and another small site nearby, N°17, similar but with a fragment of pottery, dated 2370 bc (4320 ± 100 bp) (both Grébénart, 1972: 182). Oued el Ouar, a site with tools and pottery fragments showing "a convergence of Saharan influences in the lithic tool-kit and northern in the pottery", is rather older at 3000 bc (4950 ± 100 bp) (Grébénart, 1972: 182). Four Neolithic sites, G, I, J and K, are not dated (Bayle des Hermens and Vialou, 1979). At Izriten, a Neolithic occupation and use of the dune as a necropolis followed the dated Epipalaeolithic layer (c 8400 and 4150 bc) (Grébénart, 1972: 182)

Four other sites are situated further east along or near the coast: O Fatma, O Laguid I and 2, and O Aoreora (Bensimon and Martineau, 1987b: 63). All had abundant pottery sherds and lithic artefacts, characteristic, according to the authors, of the southern Moroccan Neolithic. Several kitchen-middens along the coast had already been noted, one of the richest of which was, in fact, that of O Fatma (Almagro Basch, 1946).

Zone 9: vast quantities of bifacially flaked barbed and tanged Neolithic arrowheads, nearly always accompanied by polished axes, were collected by Spanish archaeologists (and others) throughout this area. One of the most important sites is Sebkhâ Tasruma, some 35 km south of Laayoune. No pottery was found but Neolithic arrowheads were abundant (Almagro Basch, 1946). More recent research (Petit-Maire *et al.*, 1980) has shown that the shores of the *sebkhâ* Laasailia (near Laayoune) are rich in Neolithic sites in the form of shell-middens, with faunal remains, many pottery sherds and poor lithic industries. Human remains from a burial were dated at around 1150 and 790 bc (3100 ± 100 and 2740 ± 110 bp) (Petit-Maire *et al.*, 1980: 38). Other Neolithic sites have been identified further south along the coast, but the material recovered was too limited for any significant conclusions to be drawn.

Published radiocarbon and TL dates (bp) for Neolithic sites are given in Table 2.

Zone 1	Zone 2	Zone 3	Zone 7
Kef Taht el Ghar 6050±120	Rhafas 5190±100	Toulkine	O El Ouar 4950±100
O Tahardart 5600±200	El Heriga 4600±60	2420-2020	Site H 4450±110
El Harhoura II 5980±210	(rejected) 1450±50	(TL)	Site 17 4320±100
	1430±50		Izriten post end 5th millennium
El Harhoura I 5400±290	1220±50		Tarfaya 3300±100
Kef el Baroud 5160±110	Jorf el Angra 4110±90		Site 16 3830±100
[copper age?] 4750±110	Abri Rhirane 3900±90		3340±100
Rouazi 4560±150	(rejected) 3490±90		
Grotte Idoles 6900±600	c 3900-3800		
El Khil 6400±500	Bou Guennouna		<u>Zone 8</u>
	5950±350		Laasailia
Dar Soltane 2 5000±350	Rahal Fontaine		3100±110
El Kiffen 4300±80	2460±60		2740±110
(rejected) 3200±200			
Ma lzza 2420±90			
[doubtful]			

Table 2. Published dates for Neolithic sites (TL= thermoluminescence)
(‘rejected’ = rejected by excavator; [] = comments by the present researcher)

General remarks on the Moroccan Neolithic

Excavation bias is undoubtedly responsible for the unequal amount of precise data on this period. North-west and north-east Morocco have been the object of considerable research, resulting in the emergence of a relatively clear picture of prehistoric occupation. Elsewhere in the country, excavation has been extremely scarce; surface sites are abundant but are undated.

Despite gaps in our knowledge, it is possible to see the emergence of different influences in the north-west, the north-east and the south. Current research shows NW Morocco (Zone 1) to have been a vital point of penetration for Neolithic ideas and the Neolithic way of life from the Iberian peninsula. Ceramics (in the shape of Cardial pottery and other decorated items) show strong Iberian affinities which become even more marked with the appearance of Beaker pottery. However, Saharan influences were clear in the pottery at the NW coastal site of El Kiffen (Daugas *et al*, 1989: 685). Polished stone tools, especially axes, were current. Goats, sheep and cattle were raised and agriculture practised. The almost total independence of this area from the Mediterranean Neolithic of western Algeria has been underlined (Camps, 1974: 280).

The extent to which newcomers actually occupied the territory was probably limited. Excavations in the Rouazi necropolis near Rabat indicate a physically mixed population (Lacombe *et al*, 1990). It would seem that the preceding Epipalaeolithic people remained in place and simply adopted a new life style without being overwhelmed by a massive arrival of newcomers. In the opinion of Lubell *et al* (1989: 308), the Iberomaurusian culture led "directly into a variety of early Holocene industries in the western Maghreb... These cultures in turn begin after about 7500 bp to add

selected Neolithic arts, idiosyncratically interpreted, to their repertoires." Gilman, referring to the Tangier area, had already concluded (1975: 131) that "ethnic continuity and local adoption of Neolithic arts" was more probable than a maritime spread of early Neolithic people. In his view, "the only clearly imported, important resource, sheep, was treated as if it were wild....exactly what one would expect of hunter-gatherers taking up new techniques" (*idem*: 95).

In eastern Morocco (Zone 2), it was noted (Wengler *et al*, 1989: 530) that ceramic affinities lay with the Oranian (Algerian) pottery rather than with the Cardial of NW Morocco. No Beaker ware was found. Flint work showed clear Iberomaurusian influences, reinforcing the impression of already existing populations simply taking over certain aspects of Neolithic culture. The east Moroccan sites were considered to represent the culture of nomadic shepherds, basically raising sheep and goats and hunting wild animals (Wengler *et al*, 1989: 531). This way of life continued until early Christian times, apparently with no knowledge of metallurgy (Wengler *et al*, 1989: 522).

In S Morocco (Zones 4,5,7,8,9), lithic material and pottery forms are fundamentally distinct from those of the NW and NE (Zones 1,2). The lithics suggest close affinities with a number of Neolithic facies which developed in the Algerian Atlas and in the northern Sahara on a Neolithic-of-Capsian-Tradition substratum. Pottery was rare but its absence was amply compensated by an abundant use of ostrich eggshells as containers (Camps, 1974: 292). The arrival in south Morocco of a Saharan Neolithic movement based on cattle herding perhaps took place during a humid phase or, on the contrary, during an arid phase when the area could have been a refuge zone. The exact route taken by these ideas - or people - is not clear, but material of the West Saharan Neolithic-of-Capsian-Tradition is widespread in this region south and west of the classic Capsian zone, stretching, south of the High Atlas mountains, from a line approximately perpendicular to Algiers as far as the Atlantic Ocean.

Finally, unlike the European Neolithic, excavations of this period have produced practically no information on the beliefs or rituals of its populations, beyond the presence of a few functional grave goods and simple funerary practices. Unequivocal Mother-Goddess statues or carvings are absent. Some 40 small terracotta objects, 3-7 cm high, found in the early excavations of the Achakar caves (Tangier, Zone 1), were considered to be phallic figurines (Koehler, 1931). On the other hand, a specialist on Saharan art has seen these very crude objects as female figures in the "mother goddess" tradition (Camps-Fabrer, 1966: 411). In any event, they seem to belong to the late Neolithic or more likely the beginning of the Metal Age (Camps, 1974: 277). A small, cruciform "idol" found during excavations at the Chella (Rabat, Zone 1) has also been attributed to the Early Bronze Age on analogy with similar objects found in Spain (Boube, 1983/84: 126). It is therefore left to the rock art to help with the "reconstruction of prehistoric values" (Davis, 1984: 8) and to provide information on "non-material phenomena" (Striedter, 1982: 185).

The introduction of copper and bronze

Echoes of the European Copper Age began to reach Morocco in the middle of the 3rd millennium bc in the shape of Spanish Bell Beakers and associated material. A few rare copper axes and weaponheads are considered to be of Iberian origin. North-west Morocco clearly benefitted from the importation of new objects and ideas, and it has been proposed (Daugas *et al*, 1989: 685) that a close cultural unity existed at this time on both sides of the Straits of Gibraltar, with Morocco probably at the origin of some Beaker decoration. Research by Ponsich (1970) proved strong Bronze Age influences in NW Morocco.

The presence of numerous copper mines in Morocco makes the existence of a local metallurgical industry a possibility, though no trace of prehistoric slags, furnaces, crucibles, moulds or other evidence has been found. If proof of production - but not consumption - is so far absent, articles by eminent archaeologists tending to prove the existence of an authentic Bronze Age in Morocco are not lacking (Camps, 1960; Souville, 1965, 1986, 1989; Camps and Cadenat, 1980).

Data on Copper and Bronze Age objects and influences are given below.

Zone 1: burials: Once again the main information comes from NW Morocco, notably around Tangier (Ponsich, 1970). While their Neolithic way of life changed little, the local populations were better equipped and were able to penetrate into the interior instead of confining themselves to the coast. Population increase led to the creation of new villages, known only from their burial grounds (*idem*: 64). The most informative of the latter were El Mries, with 21 trapezoidal cist tombs, Dar Kebira (five tombs), Ain Dahlia (eight tombs, two metal objects) and Mers, where the 19 tombs excavated contained material including ceramic fragments resembling those found in the oldest Phoenician tombs nearby, and three metal objects. Similar tombs were also excavated in a number of neighbouring localities.

A unique and striking monument south of Tetouan, the Mzora, may have its place in this period: A circle of 167 standing stones, averaging 1.5 m in height, surround a tumulus 55 m in diameter by 5 m high. A retaining wall of carefully trimmed sandstone slabs is clearly visible at the base of the tumulus. The monument is generally considered to be "late", the tomb of a local Mauritanian prince, influenced by current Punic fashions, but an Early Bronze Age date was proposed by Mavor (1976: 102), based on astronomical calculations. Recent excavation revealed that the monument had undergone at least three stages of construction (Debenath *et al.*, 1981/82: 21), which may validate the early date.

Pottery: the upper layers of Kef-Taht-el Ghar and Ghar Cahal contained Beaker sherds and shouldered bowls, with an archer's wristguard in the latter (Daugas, 1992: 17). Fragments of Beaker pottery were recovered from the surface further down the coast north of Rabat (Souville, 1973: 64). An upper level in Dar es Soltane cave (Rabat) produced an almost complete, small, shouldered Beaker bowl, 70 sherds showing Beaker influence and an archer's wristguard in schist (Souville, 1973: 104). Beaker pottery fragments have been found in rock shelters and caves near Rabat and Casablanca.

Copper and bronze items : finds of copper and bronze are rare in North Africa generally. To date, most have been found in Morocco. It has been noted (Grébénart, 1988, 51) that no metal object of copper or bronze age has as yet been found in NW Africa east of Algiers. Such items cannot be said to represent sites, though some have been revealed in the course of excavation. They are listed here to complete the review of Copper and Bronze age influences in Morocco. They also have a bearing on the rock art, especially that in the High Atlas (Zone 3).

From north to south these objects are as follows:

- Mers: bronze dagger or halberd blade (105x50 mm); small size probably indicates votive object (figure 5a); two other tombs each contained a small hafted bronze awl (Ponsich, 1970: 55, 58)
- Ain Dahlla: excavated necropolis yielded tanged lance or javelin point of bronze or copper (figure 5b), and awl of same material (lost) (Ponsich, 1970: 45)
- Gar Kahal: excavations produced small copper or bronze arrowhead (Souville, 1986) and a fragment of a flat axe blade (copper?) (Daugas, 1992: 17) (figure 5c)
- Kef-Taht-el Ghar : fragment of flat copper axe (Daugas, 1992: 17) (figure 5d)
- Larache: narrow, slightly trapezoidal bronze sword (56.8 cm long) found when dredging mouth of R Loukkos. Thought to be of Breton type, dating to the European Bronze Age (Coffyn, 1985: 29) (figure 5e)
- Tetouan museum : rectangular axe of doubtful origin, perhaps from Spain (Grébénart, 1988: 53)
- O Akrech (Rabat): surface find of flat bronze axe, "Argaric type" (Souville, 1973: 96) (figure 5f)
- Kef el Baroud: two square-sectioned copper objects, pointed at each end (c 15 cm long) and a flat copper axe, all lost (de Wailly, 1976: 47,48) (figure 5g, h)
- Sidi Messaoud (El Jadida): surface find of flat tanged copper point of Palmela type, which could belong to the "Beaker civilisation or more probably the Argaric culture" (Souville, 1973: 266) (lost), associated with Mousterian and Epipalaeolithic lithic material (figure 5i)
- Ain Smene (Fes): Palmela type copper point and copper pin with 6-row terminal coil found in excavated cave (Grébénart, 1988: 44) (figure 5j, k)

Outside Zone 1, signs of direct links with the European Copper and Bronze Ages are even rarer.

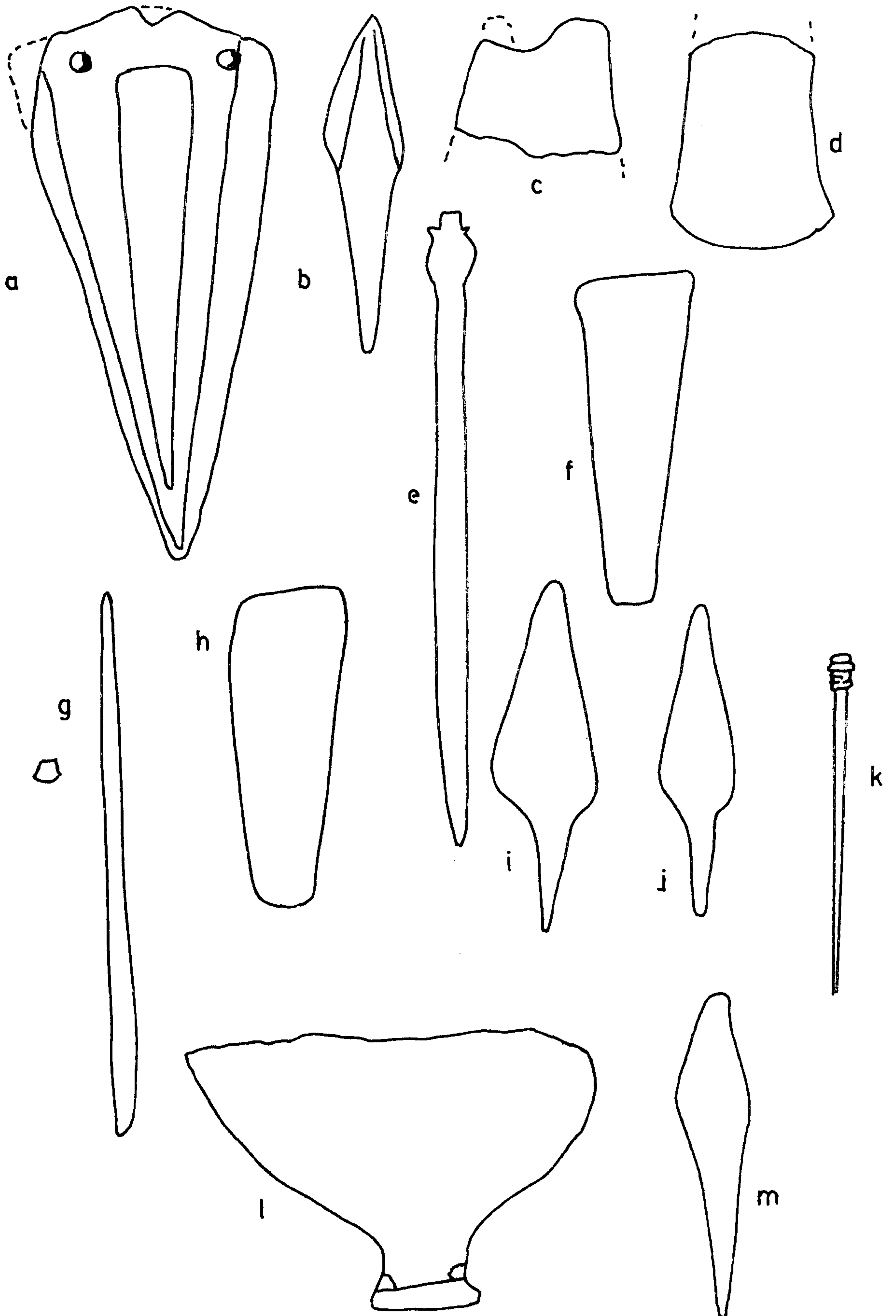


Figure 5. Copper and bronze items found in Morocco

Zone 2: among the funerary monuments in this zone, the dolmen of Jbel Zabel (Beni Snassen, Oujda), now destroyed, is similar to the coastal dolmens of Algeria and Tunisia, thought to be of copper or bronze age (Wengler *et al*, 1989: 509). From the same Beni Snassen area (exact provenance unknown) came a unique, broken, possibly fan-shaped bronze axe blade (Souville, 1964) (figure 5 l). El Heriga cave produced a Palmela type copper point (unstratified but posterior to 2500 bc) (no associated Beaker pottery) (Wengler *et al*, 1989: 522) (figure 5m).

Zone 3: Malhomme excavated five small tumuli at Oukaimeden (Malhomme, 1953), and carried out a trial excavation in La Caze rock shelter (Malhomme, 1954). La Caze only yielded three unclassifiable copper objects - a crescent, a ring made up of a rolled copper strip, and a small hollow ball - associated with unclassifiable flint artefacts (Malhomme, 1954) (it has recently been said that the flints belong to the Neolithic Toulkine industry (see above) and that the pottery fragments had a decoration recalling Beaker ware (Salih *et al*, 1998).

Post-European Beaker/Bronze Age and pre-Islamic

During the European Bronze Age, contact between Morocco and the western Mediterranean countries continued to increase. From the 8th century bc, the Phoenicians installed themselves at points along the Mediterranean and Atlantic coasts of Morocco. With their arrival, Morocco's prehistory could be said to have ended, in the sense that the Phoenicians introduced an alphabet and writing. But as some of the rock art may belong to this 1st millennium bc and thus likely to have been affected by the presence of the newcomers, a brief review of this period is included.

The weapons and tools brought in by the Phoenicians, along with other more fanciful items likely to attract the local population, may not have immediately altered the material aspects of life very much. But contact with Phoenician traders and their successors, the Carthaginians, led the local chiefs in north-west Morocco to copy, in many respects, their habits and social organisation. Twenty-seven inscriptions in an ancient Libyan script, strongly affected by Punic and Roman influences, have been found in north Morocco; all but one are on steles considered to be probably funerary (Galand *et al*, 1966: 11). Excavations have shown that Phoenician and Carthaginian influences slowly worked their way through the country. A number of sites have been excavated in NW Morocco, many of a funerary nature. Their construction and contents are sufficiently clear for them to be attributed to this Phoenico-Carthaginian civilisation, even if some may in fact be closely linked to local Mauritanian populations. Phoenician tombs are numerous in the Tangier region, with undoubted Phoenician grave goods, mainly pottery. Bronze jewellery was abundant (for instance, almost 50 bracelets from Ain Dalhia, and 20 from another site); gold and silver was also widely used but not iron (Ponsich, 1970: 154). Although the Phoenicians

introduced the first iron objects into Morocco, iron tools and weapons were very rare in the tombs: a total of six sickles, two knife-blades and a few lance or javelin heads (Ponsich, 1970: 157).

The date of the first formation of small Berber - "Mauritanian" - kingdoms in NW Africa is unknown. The existence of a Mauritanian kingdom (probably not in Morocco) by the 4th century bc was noted by the Roman historian Justinus. In Morocco, the first Berber king to be mentioned by name was Bocchus, who reigned from 118-81 bc (El Khatib-Boujibar, 1983b: 151). However, small, probably autonomous, geographically-limited groups under a chief must have existed, in one form or another, throughout much of the prehistoric period. Wars between these Berber kingdoms and Rome led in 25 bc to a Roman protectorate over Morocco. The Roman occupation lasted until the 5th century AD.

The numerous tumuli, often organised into extensive cemeteries, which are a characteristic feature in the south and east, do not seem to have direct links with these newcomers. Although the rare grave goods revealed by excavation do show, from time to time, "oriental" influences - Phoenician or Carthaginian - they are considered to be the result of trade rather than penetration. These tumuli are called, rather simply, "pre-Islamic". Only a few will be mentioned here, where they have been excavated and published. The majority have been broken into and robbed.

Zone 1: it is useful to include the necropolis of Tayadirt (Midelt), situated at an altitude of 1,400 m in the Middle Atlas, at the limit between Zones 1, 2 and 3, since little archaeological attention has been directed to the mountain regions (Lambert and Souville, 1970). The necropolis was made up of 35 monuments: tumuli or stone circles. Two skeletons were recovered from a cist in the middle of the stone circle, along with two copper bracelets, two copper earrings and a fragment of a blue glass bead. Grave goods from the other tumuli excavated consisted of a gold earring, a large bronze earring, a bronze bracelet, fragments of an iron bracelet, 10 bronze spirals, two bronze rings, a bronze crescent, a copper and lead amulet representing a male head, numerous beads, a fragment of ostrich eggshell and a small, badly-worked flint arrowhead. The jewellery and beads were thought to be of Phoenician inspiration, the result of long-distance trade reaching an unevolved, "doubtless nomadic", mountain community (Lambert and Souville, 1970: 74). Recent excavations in the Eastern Rif, at the extreme limit of this zone, have revealed that the tumuli here were uniform in construction, with very poor grave goods limited to a few earrings, nose rings and bracelets "reflecting a clear Phoenician-Punic influence" (Musée Archéologique, Rabat, 1998).

Zone 2: tumuli are very frequent in the Monts d'Oujda, where various types have been identified. Grave goods collected from 25 tumuli included two socketted iron lance-heads, two copper beads and three small copper pendants. These monuments are considered not to be 'prehistoric' but

'Berber', pre-dating the Arab colonisation: the lance-head was compared to the javelin used by the Numidians, early Berber people (Wengler *et al*, 1989: 510). Excavation of two tumuli near Ain Benimathar (70 km south of Oujda) in 1953 produced pottery, ostrich egg fragments, three iron lance-heads and a small copper bracelet (Paskoff, 1960: 296). The lance-heads, decorated and deliberately bent over, were said to be ritual (Souville, 1997: 17).

Zone 4: the Tafilalet plain is one of the richest areas of the Moroccan Sahara for "pre-Islamic" funerary monuments. Cemeteries consist of hundreds, sometimes thousands of tumuli. In a necropolis SE of Erfoud, the tumuli are so concentrated that they almost touch each other. Excavation (Ruhlmann, 1939: 44) showed that each roughly conical mound of heaped stones covered a more or less rectangular funerary chamber composed of four slabs supporting a corbelled roof. Only two of the five excavated tumuli yielded grave goods: a few fragments of wood and iron, the latter the remains of a lance or javelin head. The tumuli were considered to have been constructed by "Berber" populations, and not to be earlier than the 2nd century AD (*idem*: 50).

At J Bouia (10 km NNW of Erfoud), almost 1,200 tumuli were counted; three which were more or less intact were excavated (Margat and Camus, 1958/59). Their construction was similar to the Erfoud tumuli, but the funerary chamber was larger and sometimes preceded by a short corridor roofed with flat slabs. Items recovered included four bronze rings (one broken), an iron trap similar to those used by present-day nomads ("probably intrusive") (*idem*: 351), a broken bronze tube, two small bronze rings, a twisted strip of bronze and a number of coloured stone beads. The excavators noted (*idem*: 370) that the grave goods were almost exclusively objects of personal decoration. While there was no possibility of securely dating these tumuli, they felt that they were probably the work of sedentary agriculturalists rather than nomads, tentatively thought to be white Berber populations of the first centuries AD rather than negroid populations who "doubtless" preceded them in these regions. The use of these tumuli was likely to have been abandoned after the expansion of Islam (*idem*: 370).

Approximately similar funerary constructions exist at Taouz (60 km S of Erfoud) on the right bank of the River Ziz. One was excavated and four others cleared sufficiently for their construction to be noted (Meunié and Allain, 1956). A few personal ornaments were recovered: a bronze ring, two rolled bronze tubes, numerous shell fragments as from a necklace, a small piece of iron like a nail, a glass bead and some 60 small pierced ostrich egg disks, again as for a necklace (*idem*: 75). A second group of tumuli at Bereber (60 km NE of Taouz, c 50 km east of Erfoud) was also investigated by the same researchers and found to be roughly similar in conception (Meunié and Allain, 1956). Again, no date was advanced for the tumuli of Taouz and Bereber, but it was noted

that similar monuments existed in south Algeria and their origin may have been there (Meunié and Allain, 1956: 84).

Zone 5: four out of several dozen tumuli were excavated at Tazzarine, comparable to those at Fom er Rjam (see below) in their general construction but smaller (Jacques-Meunié, 1958). A bronze bracelet was found in one of them (Jacques-Meunié, 1958: 125).

Strictly within Zone 7, but included here for convenience, the tumuli of Fom er Rjam (60 km S of Zagora), on the right bank of the River Draa, extend over a number of kilometres and are estimated to contain several thousand tombs; six were excavated (Jacques-Meunié, 1958). Small funerary chambers within the tumuli had corbelled roofs but no corridor or ancillary chambers. Some contained multiple burials. Two skeletons but no grave goods were recovered and no date ascribed to the necropolis (*idem*: 135). In 1974, Simoneau said that a date of 410 bc had been obtained from one of the skeletons (no details) (Milburn, pers.comm., 1996). The excavator, who compared the necropolis to that of Erfoud, reviewed the different hypotheses concerning the builders of these monuments: sedentary cultivators, negro or negroid; nomads, perhaps Berbers; both populations at the same time or successively. She came to the conclusion that they were probably the work of sedentary negroes or negroids (*idem*: 140).

This period of Morocco's past is badly known and difficult to assess. It has been suggested that the position of the southern and eastern tumuli along natural communication routes could show that they were the work of nomadic herders (Musée Archéologique, Rabat, 1998). The relationship between tumuli and rock engravings is obscure, but few rock art sites in south Morocco are without tumuli in their immediate vicinity, sometimes incorporating engraved rocks. Whatever their age, it is generally admitted that the practice of burying the dead under tumuli ended when Islam became well implanted.

Conclusion

Morocco has been continuously occupied since Lower Palaeolithic times. Aterian tools (approximately Middle Palaeolithic) have been found scattered on the surface over much of northern Africa, giving rise to the hypothesis that their descendants were perhaps responsible for the rock art. The Aterian industries were followed by new, microlithic (Epipalaeolithic) industries introduced into east Morocco. Epipalaeolithic sites are mainly coastal and the last representatives of this period probably moved south along the Atlantic coast. Contact with Iberia intensified from the Neolithic onwards. These contacts become increasingly numerous during the Copper and Bronze Ages and Iberian influences marked many aspects of Moroccan life. Apart from the introduction of more efficient metal weapons and tools, it seems probable, though, that the

general way of life of the population altered very little. Very few copper or bronze items have been found. At the beginning of the 1st millennium bc, Phoenician traders from the eastern Mediterranean made their appearance along the Moroccan coasts. Contact with these newcomers also brought Morocco increasingly into the Mediterranean sphere, a movement that was accentuated by the arrival of the Romans around the beginning of Christian times.

CHAPTER 5. NEOLITHIC AND LATER FAUNA AS REVEALED BY EXCAVATION AND TEXTS

Considerable palaeontological research has been carried out in Morocco on Miocene and Pleistocene animals. For the Holocene, rock engravings have been considered useful indicators of the past existence of many animals now extinct in Morocco, such as the rhinoceros and giraffe (Aulagnier and Thevenot, 1986: 2). In this chapter, however, the aim is not to fill in the history of Morocco's animals through a study of rock art, but rather to see to what extent animal remains recovered in archaeological excavation can bring light to bear on rock art and the environment in which it evolved. Examination of excavated fauna is thus used to provide a faunal setting for the rock art and a tool with which to compare the hunted reality with the engraved image. While knowledge of the animal remains recovered from archaeological sites is important for rock art studies it is not without its limitations. It will be seen later to what extent Moroccan prehistoric artists covered the range of animal subjects available.

Advantages and limitations of faunal remains

While faunal remains do not represent all the possible species present in the vicinity of the site, they are reliable indicators of at least some of the animals that frequented the neighbourhood or were within hunting distance. On the other hand, animals absent from the archaeological record were not necessarily absent from the area.

Animals can also provide information on the climate and natural environment in which human communities evolved. Representations of the oryx in the rock art have been taken to indicate arid conditions, this antelope being "characteristic of a semi-desert steppe" (Muzzolini, 1995b: 113). However, some species are very adaptable and deductions concerning the prehistoric landscape and climate from animal remains are limited. For Shaw (1976: 143), it is better to use faunal evidence "with considerable caution" and "in a supporting role to the more readily measurable record of the stratigraphy and the pollens".

Animal bones in an archaeological deposit do not automatically mean that the animal was hunted, and thus of interest to man. Where cave sites are concerned, the porcupine, hyena, small rodents and small birds recorded in archaeological levels were most probably independent occupiers or visitors rather than food items. Small animals may have been brought in by other animals.

Other factors intervene to distort the picture obtained from lists of wild animal remains recovered from archaeological sites compared with rock art representations. Discussing European Palaeolithic art, Bahn underlined that "depicted species ... should not be taken simply as a tally of

what was available outside" (Bahn and Vertut, 1988: 56). Discrepancies between the animal content of European Palaeolithic parietal art and the animal bones found in actual habitation debris were noted by Ucko and Rosenfeld (1967: 193). In a study on cultural filters, Camps too underlined (1992) that an excavation does not record exactly what was killed by man: selective hunting intervenes, as do culinary taboos and off-site slaughtering and eating. Remarking on the rarity of elephant bones in North African Neolithic sites, although the animal was widespread, he noted (Camps, 1992: 211) that modern ethnological studies showed that the animal was probably cut up, distributed and even eaten on the kill-spot. Differential conditions of bone preservation and adverse soil conditions also play a role.

Independently of these factors, archaeozoological data in Morocco are in many cases not entirely satisfactory. For one thing insufficient assemblages have been studied - overall, for the whole of Morocco, published data on faunal assemblages are available from only 21 sites (though some have several occupation layers). Where information on animal remains is available, it comes generally from the extensively excavated Zones 1 and 2, where rock art is practically absent. Many sites were excavated some time ago. Recovery techniques in these early excavations (for instance large-mesh sieves or no sieves at all) combined with selective bone collecting introduced sampling bias. In some cases, external events prevented excavated sites from being adequately studied (preliminary lists supplied with no published follow-up). Understandably, early faunal identifications are not always accepted by more recent researchers, who have a larger supply of comparative material to hand. Sample sizes are frequently very small, or figures not given. The minimum number of individual per species was not always calculated (or not published), so it is often not possible to know the *quantity* of any species involved.

Neolithic or proto-historic Moroccan sites yielding faunal remains

Appendix 6 gives the common and Latin names of the animals to be discussed and more detailed information on the excavations, including the number of bones/animals identified. The status of *Equus* is also discussed in Appendix 6. The pig, *Sus scrofa*, is sometimes clearly identified as wild, sometimes as uncertain; in other cases, *Sus scrofa* refers certainly to the domestic pig. In the lists here, *Sus scrofa* is simply called 'pig', unless its status is clear.

The animals present in Morocco during the millennia covered by the present study show a continuation of two faunal groups of different origins, already established during the Pleistocene: one Eurasiatic, the other tropical (*faune soudanienne* or *éthiopienne*, in French texts). The European or Eurasiatic elements are represented by the wild pig, the wild ox, the brown bear and the fox. Among the tropical fauna are giraffes (not present in the archaeological record, but

recorded in the rock art), antelopes (including gnus and elands), gazelles, quaggas, rhinoceroses, elephants, hyenas and, among the birds, ostriches (Mauny, 1956; Thomas, 1979).

The excavated sites yielding faunal remains (all caves or rock-shelters with the exception of

Species	Mugharet el Khall	Mugharet es Saifiya	Mugharet el 'Aliya	Grotte des Idoles	El Khrii	Kaf-Taht-el Neo.	Ghar Protoh.
Pig	26	11	+	-	-	4*	2*
Oryx	-	-	-	-	-	1	1
Hartebeest	5	3	+	-	-	1	-
Gnu	-	1	-	-	-	-	-
Atlantic gazelle	-	-	1	-	-	-	-
Tingitane gazelle	-	1	+	-	-	-	-
Gazelle, Edmi	-	-	-	-	-	4	-
Gazelle, unsp.	2	1	-	-	-	-	-
Bohor reedbuck	-	-	-	-	-	2	-
Barbary sheep	-	-	-	-	-	4	-
Sheep	26	12	+	+	+	} 4	} 2
Goat	-	-	-	+	+	}	}
Wild ox	1	1	+	-	-	4	2
Domestic ox	3	2	+	-	+	3	2
Wild ass, unsp.	-	-	1	-	-	-	-
Quagga	1	-	-	-	-	1	-
Porcupine	6	-	+	-	-	-	-
Rabbit	2	-	+	+	-	-	-
Hare	2	3	-	+	-	-	-
Seal	1	1	-	-	-	-	-
Fox	2	-	+	+	-	-	-
Jackal	5	1	+	-	-	-	-
Canid, unsp.	-	-	-	-	-	1	-
Ratel	1	-	-	-	-	-	-
Spotted hyena	1	1	-	-	-	-	-
Leopard	1	-	-	-	-	3	-
Wild cat, unsp.	-	-	+	-	-	-	1
Wild cat	1	1	+	-	-	-	-
Genet	-	-	-	-	-	1	-
Brown bear	-	-	-	-	-	4	-
Hedgehog	2	-	+	-	-	-	-

Table 3. Faunal remains from five Tangier caves and one Tetouan cave

The figures in each column show the number of times the species was mentioned - trenches, levels and spits taken together. They do not refer to the total number of bones nor the minimum number of animals represented. The sign '+' indicates that the species was simply mentioned in the one Neolithic level; * indicates that five levels of Kaf-Taht-el Ghar also contained a pig specifically indicated as domestic (*Sus domesticus*) (Ouchaou and Amani, 1997: 56). The report on this site only concerned large mammals. The quantity of pig bones and teeth led Gilman to infer that "pigs had been brought under human control" (1975: 92), but wild and domestic specimens were not separated in his lists.

Tarfaya/Laayoune) are as follows (dates given in Chapter 4). For sites with more than one occupation layer, only the Neolithic or post-Neolithic layers have been considered.

Zone 1: Tangier and Tetouan: Table 3 gives the faunal remains recovered from the following excavations: Mugharet el Khail, Mugharet es Saifiya, Mugharet el 'Aliya (Gilman, 1975), Grotte des Idoles (Koehler, 1931), El Khrl (Jodin, 1958/59), Kaf-Taht-el Ghar (Ouchaou and Amani, 1997). **Rabat/Casablanca and Atlantic coast:** Table 4 gives the faunal remains recovered from

Species	Dar es Soltane	Kef el Baroud	O Merzeg	Grotte Velozzo	Ma Izza
Pig, wild	+	+	-	+	+
Pig, unsp.	-	-	+	-	-
Eland	-	-	-	-	+
Oryx, unsp.	-	-	-	+	-
Hartebeest	+	+	-	-	+
Gnu	-	-	-	-	+
Gazelle, Dorcas	-	+	-	-	-
Gazelle, Atlantic	-	+	-	-	+
Gazelle, Edmi	-	-	-	+	-
Gazelle, unsp.	+	-	+	-	-
Barbary sheep	+	-	-	-	-
Sheep	-	-	+	+	-
Wild ox	+	-	-	-	+
Domestic ox	+	-	-	+	+
Ox, unsp.	-	-	+	-	-
Quagga	+	-	-	-	+
Equid sp	-	-	+	-	-
Rhinoceros	+	+	-	-	-
Elephant	+	+	-	-	-
Porcupine	+	+	+	+	+
Gerbil	-	+	-	-	-
Mouse	-	+	-	-	-
Vole	-	-	-	+	-
Hare	-	-	-	-	+
Spotted hyena	-	+	-	+	-
Fox	+	-	+	-	+
Jackal	+	+	-	-	+
Dog, domestic	-	-	-	+	-
Canid, unsp.	-	-	+	-	-
Mongoose	-	-	-	+	-
Wolf	-	-	-	?	-
Wild cat, unsp.	+	+	-	+	-
Brown bear	-	+	-	-	-
Hedgehog	+	-	-	-	+
Ostrich	-	-	+	+	+

Table 4. Faunal remains from five caves in the Rabat/Casablanca region and Atlantic coast

four excavations in the Rabat/Casablanca region: Dar es Soltane 1 (Gilman, 1975); Grotte des Contrabandiers (Souville, 1973); Kef el Baroud (Amani, 1995: oral comm.); El Kiffen (Bailloud and Mieg de Boofzheim, 1964); Oued Merzeg (Capitant and Mieg de Boofzheim, 1954); Grotte Velozzo (Treinen, 1973/75); Ma Izza (Berthélémy, 1987), Atlantic coast near Safi. Ostrich eggs were reported in what was probably a Copper Age level of the much-occupied Grotte des Contrabandiers (Souville, 1973: 115). The only remains of an animal found in the El Kiffen necropolis was a deliberately-sectioned tusk of an elephant lying on the inhumation surface of the cave (Bailloud and Mieg de Boofzheim, 1964: 96). It may have been brought in as an item of prestige, or as a potential ivory export (Searight, 1995).

Zone 2: Eastern Morocco: Table 5 gives the faunal remains from five Oujda excavations: Rhafas, El Heriga, Abri Rhirane, Abri Bou Guennouna (all Wengler *et al*, 1989) and Jorf el Angra

Level	Rhafas	El Heriga						Abri Rhirane			Abri Bou Guennouna	Jorf el Angra
	1	4	3c	3b	3a	2	1	4	3	1		
Wild pig	+	-	+	-	+	-	-	-	+	+	+	-
Barbary stag	-	-	-	-	-	-	-	-	-	+	-	-
Hartebeest	-	-	+	+	+	-	+	+	-	-	+	-
Sheep/goat	+	-	+	+	+	+	-	+	+	+	+	+
Gazelle unsp.	-	+	+	+	+	-	-	-	+	+	-	-
Ox, unsp.	-	-	+	+	+	-	-	+	+	+	+	+
Dromedary	-	-	+	-	-	-	-	-	-	-	-	-
Equid, unsp.	+	-	+	+	+	-	+	+	-	+	+	+
African wild ass	-	-	+	+	-	-	-	+	+	+	+	-
Porcupine	+	-	+	-	+	-	+	-	+	+	+	+
Rabbit	-	-	-	-	-	-	-	-	+	+	-	-
Hare	+	+	+	+	+	-	-	+	+	+	+	-
Fox	+	-	-	+	+	-	-	-	-	-	-	-
Jackal	+	-	+	+	-	-	-	+	-	-	-	-
Domestic dog	+	-	+	+	+	-	-	+	+	+	+	-
Canid, unsp.	-	-	-	-	-	-	-	-	-	-	-	+
Hunting dog	-	-	-	-	-	-	-	-	+	+	-	-
Spotted hyena	-	-	-	+	-	-	-	-	?	?	-	-
Lion	-	-	-	-	-	-	-	+	?	?	-	-
Caracal	-	-	+	-	-	-	-	-	-	+	-	-
Carnivore unsp.	-	-	-	-	-	-	-	-	-	-	-	+
Alg.hedgehog	+	-	-	-	-	-	-	+	-	-	-	-
Ostrich	+	-	+	+	+	+	+	+	+	+	+	+

Table 5. Faunal remains from five Oujda sites
(See Appendix 6 for quantification)

(Michel, pers.comm). Faunal remains from Terrasse de l'Oued el Haij, in the same area, showed a site occupied by herders (35% sheep and goats, 5% cattle) who were also hunters (hartebeest, African wild ass, giant buffalo, hare) (dates from about 1340 bc (3290 bp) to about 470 AD (1480±120 bp) (Michel, pers.comm.). Tendrara: Kheneg Kenadsa: ostrich bones were numerous. Long bones of a deer species and quagga/wild ass were noted, with a leopard phalanx in each layer (Jodin, 1956: 150, 151).

Zone 3: High Atlas: Table 6 gives the faunal remains from Toulkine rock-shelter. A first list was published (Ennouchi, 1954: 140, 141) shortly after the initial excavations (Glory, 1955). Some 30 years later, a further study of 87 mammalian bones was published, representing only "a very small part of the total excavated"; 66 were identified (Bayle des Hermens *et al*, 1984: 434). Traces of porcupine action on bones were noted (*idem*: 436). The ostrich-egg beads found in the site may only indicate trade circuits.

Species	Ennouchi, 1984	Bayle des Hermens <i>et al</i> , 1984	
		N° of items	Min.n° individuals
Domestic pig	-	5	1
Wild pig	+	-	-
Stag, unsp.	-	1	1
Hartebeest	-	25	4
Dorcas gazelle	+	2	1
Edmi gazelle	+	1	1
Atlantic gazelle	+	-	-
Gazelle, unsp.	-	16	6
Barbary sheep	+	7	3
Domestic sheep	+	-	-
Wild ox	+	-	-
Domestic ox	+	4	1
African wild ass	+	-	-
Quagga	+	-	-
Rhinoceros	+	-	-
Porcupine	+	-	-
Mouse, unsp.	+	-	-
Hare	+	-	-
Red fox	+	1	1
Jackal	+	1	1
Carnivore, unsp.	-	3	1
Striped hyena	+	-	-
Spotted hyena	+	-	-
Brown bear	+	-	-
Wild cat	+	-	-
Algerian hedgehog	+	-	-

Table 6. Faunal remains from Toulkine rock-shelter

Zones 8 and 9: Table 7 gives the rare faunal remains recovered from 2 sites near Tarfaya, Zone 8, Site 19 (Grébénart, 1972, 162) and Izriten (Petit-Maire *et al*, 1980: 18) and one near Laayoune, Zone 9 : Laasailia (Petit-Maire *et al*, 1980: 35).

Species	Site 19	Izriten	Laasailia
Dorcas gazelle	-	-	+
Goat	-	-	+
Dromedary	-	-	+
Hunting dog	-	+	-
Ostrich (eggs)	+	-	-

Table 7. Faunal remains from Site 19 and Izriten (Zone 8) and Laasailia (Zone 9)

Spatial and chronological distribution of Neolithic and protohistorical faunal remains

The very limited excavated material comes almost entirely from sites north of the High Atlas (Zones 1 and 2). Table 8 shows the number of sites (and layers when more than one period is involved) where specific species were found (quantity of individuals not available).

Faunal presence in early historical times

It is proposed in Chapter 11 that some of Morocco's rock art was done during the 1st millennium bc. Information on wild animals dating from the 6th century bc up to the 1st and 2nd centuries AD is included here to shed light on the faunal environment of this period. Data come from excavation and texts by the geographers and historians of antiquity and early historical times (table 9). Excavations at Essaouira (Zone 1) revealed elephant bones which seemed to correspond to a period when the Phoenicians had abandoned the site, towards the 4th or 3rd century bc (Jodin, 1957:19). Written information comes from the following sources: the voyage of the Carthaginian admiral Hanno (c 500 bc), the Greek historian Herodotus (c 484-424 bc), the exploration of the Greek Pseudo-Scylax (367 bc), the Greek geographer Strabo (58 bc-21 AD) and the Roman Pliny the Elder (23-79 AD) (all references from Rogot, 1924, except for Herodotus, trans. Larcher, 1980). In general, these early writers only mentioned large and dangerous animals, or those that seemed curious. They were not attempting to describe all the existing species, so here, as in excavation, filters prevent a thorough coverage of the subject.

Conclusion

The faunal remains revealed that the hunting of game animals continued everywhere to be an important activity, despite the evidence for animal control. In NW Morocco, around Tangier

Dates bc	c 3500-2500				c 2500-1500				c 400?	TOTAL
	Zone 1		Zone 2	Zone 8	Zone 1		Zone 2	Zone 3	Zone 1 Ma lzza	
Species	NW	R/C			NW	R/C				
Pig	4	4	2	-	1	-	1	1	1	14
Sheep/goat	6	1	3	-	3	-	-	1	-	14*
Gazelle	4	4	1	-	-	-	2	1	1	13*
Porcupine	2	4	3	-	-	-	2	1	1	13
Equid/ass	3	2	4	-	-	-	2	1	1	13
Domestic ox	5	2	2	-	1	1	-	1	-	12
Hartebeest	4	2	1	-	-	-	3	1	1	12
Jackal	3	2	2	-	-	-	1	1	1	10
Wild cat	3	3	1	-	1	-	1	1	-	10
Ostrich	-	1	4	1	-	1	2	-	1	10
Fox	3	2	2	-	-	-	-	1	1	9
Hare	3	-	2	-	-	1	1	1	1	9
Wild ox	4	1	-	-	1	-	-	1	1	8
Hedgehog	2	1	1	-	-	1	-	1	1	7
Spotted hyena	2	2	1	-	-	-	?	-	1	6
Ox, unsp.	-	1	2	-	-	-	2	-	-	5
Domestic dog	-	1	2	-	-	-	2	-	-	5
Leopard	2	-	1	-	-	-	-	-	-	3
Brown bear	1	1	-	-	-	-	-	1	-	3
Rhinoceros	-	2	-	-	-	-	-	1	-	3
Oryx	1	1	-	-	1	-	-	-	-	3
Gnu	1	-	-	-	-	-	-	-	1	2
Elephant	-	3	-	-	-	-	-	-	-	3
Barbary sheep	1	-	-	-	-	-	-	1	-	2
Canid, unsp.	-	1	-	-	-	-	1	-	-	2
Hunting dog	-	-	-	1	-	-	1	-	-	2
Eland	-	-	-	-	-	-	-	-	1	1
Buffalo	-	-	-	-	-	-	1	-	-	1
Striped hyena	-	-	-	-	-	-	-	1	-	1
Dromedary	-	1	-	-	-	-	-	-	-	1*
Rabbit	-	-	-	-	-	-	1	-	-	1
Lion	-	-	-	-	-	-	1	-	-	1
Mongoose	-	-	-	-	-	-	-	-	1	1

Table 8. Number of Neolithic and protohistorical sites/layers producing faunal remains (* gazelle, goat and dromedary were also recorded in Zone 9 (c 2500-1500 bc)).

(Zone 1), the domesticated animals were pigs, sheep and cattle, with pig-keeping predominant. Wild herbivores such as antelopes, Barbary sheep and equids were hunted, but were numerically a less important economic resource. The same domestic animals were kept in the Tetouan site (Zone 1), but here sheep/goats were dominant. Further south in this zone, around Rabat and Casablanca and down the Atlantic coast, the pig was still important, but considered to be wild. Sheep/goats and cattle were raised and various species of antelope hunted. Remains of wild pig were found in east Morocco (Zone 2). Evidence from El Heriga and Abri Rhirane (Zone 2) suggested that these sites were occupied in a discontinuous fashion, probably by nomadic herders, raising sheep and goats and a few cattle. Game animals - antelopes and equids - were hunted. The mountain site of Toulkine (High Atlas, Zone 3) had both domestic and wild pigs;

domestic sheep and cattle were kept and antelopes - especially gazelles - were hunted. In the far south (Zones 8 and 9), the only trace of domestication was that of the goat at a late date - but only three small excavations yielded animal bones.

Species	centuries BC						AD	
	6th Hanno Zone 8 (coast)	5th Herodotus NW Africa	4th Pseudo-Scylax Zone 1 (coast)	4th/3rd Jodin Zone 1 (coast)	1st Strabo Zone 1 Z.8/9		1st century Pliny Zone 1	Zone 8
Hippopotamus	+	-	-	-	-	-	-	+
Deer, unsp.	-	-	?	-	-	-	-	-
Giraffe	-	-	-	-	-	+	-	-
Hartebeest	-	+	-	-	+	-	-	-
Dorcas gazelle	-	-	-	-	+	-	-	-
Elephant	+	+	+	+	+	+	+	-
Lion	-	+	+	-	+	+	?	-
Leopard	-	-	+	-	+	-	-	-
Bear	-	+	-	-	-	-	-	-
Barbary ape	-	+	-	-	+(Rif)	-	-	-

Table 9. Faunal data from excavations and Punic, Greek and Roman sources

Punic, Greek and Roman sources also provided information on some of the fauna of the first millennium bc. The most universally recorded animal was the elephant (perhaps merely because of its size), followed by the big cats (lion and leopard). Antelopes, which were certainly more abundant, aroused little interest.

Faunal data from eastern Morocco and the High Atlas also provided climatic and vegetational information. In the former area (Zone 2), the faunal list showed the presence of species living generally in a semi-open, steppe environment and others preferring wooded surroundings. This semi-arid, wooded landscape probably differed little from that of preceding dry periods (Wengler *et al*, 1989: 525). The report on the Toulkine shelter (High Atlas, Zone 3) underlined the fact that the wild animals killed were warm climate species, corresponding to two different biotopes: the Barbary sheep and the Edmi gazelle frequenting a semi-barren, rugged environment, the Dorcas gazelle, the hartebeest, the fox and the hare preferring the grassier plains (Bayle des Hermens *et al*, 1984: 435).

PART II - THE ROCK ART

This section looks more closely into the rock art itself. Chapter 6 lists briefly the themes encountered on the sites. The correlation between the faunal remains listed in Chapter 5 and the engraved animals indicated in this chapter is considered. Chapter 7 reviews the rock art sites in the nine zones used in this work. The situation of the sites, their size and their contents are noted. This review section shows the existence of different types of engraving. To clarify this observation, four rock art sites are examined in Chapter 8: one in the High Atlas, one in the Anti-Atlas and two in south Morocco.

Chapter 9 starts with a review of the extent of rock art in Morocco. While engraved (or painted) sites extend from north to south and from east to west of the country, distribution is uneven, a clear majority being in the High Atlas mountains and in the pre-Saharan south, with very few in the north and north-east. This factor is discussed, before the observations of Chapters 7 and 8 are analysed. Four distinct groups of engravings are identified and rock art sites classified according to the type of engraving dominant on the site. Their distribution is plotted. This distribution showed concentrations of sites belonging to the three main groups, while engravings of the fourth group were more widespread throughout the country. Engravings of two secondary groups were also geographically more scattered.

This part of the study concentrates on the rock art sites themselves. Interpretation of the data and considerations of the people responsible for the rock art and their place in the climatic, faunal and archaeological environment follow in Part III.

CHAPTER 6. THEMES REPRESENTED IN MOROCCAN ROCK ART

Introduction

Researchers have been criticised for their preoccupation "with identifying objects depicted in rock art" (Bednarik, 1993: 4). However this is difficult to avoid. Without an attempt to identify what has been engraved or painted, it is hard to advance towards a knowledge of past populations. This chapter gives therefore a brief description of the themes encountered on Moroccan rock art sites, bearing in mind Bahn's warning that the "identification of figures in art can never become an exact science" (Bahn and Vertut, 1988: 116). Some identifications, often made by people with little experience of rock art, are in fact extremely doubtful, particularly if very unusual.

Published reports and site visits enable a general inventory of the themes engraved to be established. Unfortunately, many of the sites forming the basis of the present study have not been published in sufficient detail for an attempt to be made to indicate the number of times any theme has been engraved, nor, indeed, would such an exercise be very useful, in view of the variability of the contents of rock art sites in the different zones, as is shown in Chapter 7. However, it is possible, using published material and personal knowledge, to make some sort of assessment of the frequency of certain themes (bibliographical references are only given in unusual or particular cases). The figures are minimum and not comparable among themselves: some refer to the number of sites where the motif has been noted while others refer to the number of times a subject has been represented (although this was very rarely given in published reports). Where no precise data are available, the entry has the indication 'rare' if under five certain examples are known to the present researcher, 'fairly rare' if between five and 20, 'fairly frequent' between 20 and 50, 'frequent' between 50 and 100 and 'very frequent' if over 100. It is underlined that these figures are based on current knowledge and thus cannot in most cases be taken as a definite and final assessment of the number of times any particular motif is engraved.

Excavated fauna (references given in Chapter 5) provide a link between the rock art and the material life of the prehistoric and later populations. The number of sites which have yielded animal remains are therefore indicated in this chapter.

Animal themes

A) Mammals - the most frequently engraved theme in Moroccan rock art. The order follows the guide to the mammals of Africa (Halterorth and Diller, 1980).

Pig: two wild boars have been recorded in Zone 7 (Wolff, 1978/79). Twelve excavated sites, all in north and east Morocco (Zones 1 and 2), have yielded pig (unspecified) remains.

Hippopotamus: a site in south-west Morocco (Zone 8) was said (Douls, 1888) to contain this animal, but the site has never been clearly located.

Giraffe: at least 20 sites in southern Morocco (Zones 5,7,8,9) have giraffe engravings. An extremely unrealistic engraving of two giraffes is noted in the High Atlas (Zone 3) (possibly symbolic, but see Chapter 13). Identification is not always easy, the Tazina style, involving excessive elongation of the legs, tails and necks of animals, sometimes leading researchers to interpret a long-necked antelope as a giraffe. Identification here is based on the long neck, sloping back and very short, straight horns. Coat markings are rarely shown. The animals are usually single. Giraffe remains have never been found on any excavated site.

Antelopes - Oryx, Addax, Hartebeeste, Gazelle: antelopes of one species or another, together with cattle, come into the 'very frequent' category and are by far the most engraved animals. Study has shown their presence on 90 sites (minimum figure). The hartebeeste and the gazelle are present on all sites south of the High Atlas where the polished line technique is used. The former is recognizable by its long, hanging head, prominent withers and sloping back, while the slender body and angular horns of the latter are very characteristic. The oryx is easily identified by the long, straight backward-flowing horns and is fairly frequent. The addax, with horns directed upwards and outwards, is more difficult to identify in an engraving, and seems to have been less often represented. The animals are often depicted in natural attitudes - stretching their necks or running. In north and eastern Morocco (Zones 1,2), 12 excavated sites have produced remains of various species of gazelle and 10 have yielded hartebeeste remains.

Barbary sheep: recognizable by its large, backward and outward curving horns (figure 17b), these animals are fairly rare, except in hunting scenes with the small Libyco-Berber horsemen. Their remains were recovered from two archaeological excavations.

Domestic sheep: engravings of these animals are also fairly rare. Four with "helmets" (*bélier casqué*) were noted in the east (Zone 2) (Russo, 1926) (figure 6a), and three in the south-east (Zone 5) (Simoneau, 1972) (figure 15a). A more normal sheep was recorded in the Western Sahara (Zone 9) (Almagro Basch, 1946). Two were engraved with two shepherds in Zone 7 (Simoneau, 1971) (figure 35e, after partial destruction). Sheep remains were found in archaeological deposits in north and eastern Morocco (respectively Zones 1 and 2) and in the High Atlas (Zone 3).

Domestic goat: goat engravings are fairly rare. A herd of possible goats and one certain specimen were noted by Simoneau (1977) in Zone 7 and 13 were noted in the High Atlas (Zone 3) (Rodrigue (1999a: 62). But a Western Saharan site (Zone 9) was said to contain 54 engravings of caprids (Balbin Behrmann, 1975) (an identification here considered doubtful).

Cattle: engravings of cattle are very frequent. They are the most engraved subject along with antelopes, occurring in all zones except Zone 1. The vast majority of the animals depicted are



Figure 6. Selection of themes represented
 (no scale) (uninterrupted lines indicate a polished engraving, dotted lines indicate pecking)
 a) "Ram with helmet" (after Gautier, 1927) b) Probable stone axe (after Simoneau, 1971b)
 c) Bird (after Simoneau, 1975b) d) Club (after Malhomme, 1959) e) Boomerang (after
 Malhomme, 1959) f) Southern Moroccan axe (after Lhote, 1964) g) Southern Moroccan axe
 (after Simoneau, 1972b) h) and i) *Hache-pelle* (after Malhomme, 1959)

domestic, but it is possible that a few engravings show wild specimens. Particular care has often been taken with cattle engravings. The horn forms are varied: lyre-shaped, pincer-shaped, drooping, forward-pointing. In this last case, only one horn is shown, often disproportionately thick (to indicate the presence of a second horn) (figure 17a). Coat markings are indicated by reserved patches or compartments (figure 32b). Hooves and leg articulations are very rarely indicated (figure 32b is a rare example), but the tuft at the end of the tail is sometimes indicated by a few short lines. Udders are not shown, but male sexual organs are sometimes depicted.

Buffalo: this is a fairly rare theme in Morocco, about 10 examples having been noted. Engravings of the buffalo can be distinguished from wild or domestic cattle by the lowered head - the neck forming an angle with the back - and heavy, outspread, semi-circular horns. Moroccan figurations are less realistic than those of Algeria, where the horn ridges, for instance, are clearly shown, a detail lacking in Moroccan images (Lhote, 1970). Its remains have been noted only once in Morocco, from a site in Zone 2.

Equids - Asses, Zebras, Quaggas, Domestic Horse: the status of horse-like animals is discussed in Appendix 6. Wild asses/quaggas in Tazina style are fairly rare (figure 14a). Short stiff manes are often depicted. The domestic mounted horse, however, is frequently represented in battle or hunting scenes in Libyco-Berber style (figure 11d). Despite the relative rarity of engraved examples (22 sites), the remains of wild equids have been found on 13 archaeological sites/levels (all in the north, east and High Atlas: Zones 1, 2, 3).

Dromedary (referred to as 'camel' in rock art literature): this animal occurs fairly frequently, but only on sites in Libyco-Berber style. It is often shown ridden. Modern engravings also feature camels.

Rhinoceros: engravings of this animal are very frequent: more than 150 specimens were noted in south Morocco (Zones 5, 6, 7, 8) (Simoneau, 1976), but the figure is certainly too low (minimum 70 sites). They are shown, surprisingly, in the High Atlas mountains (Zone 3), on sites situated at over 2,000 m. They are sometimes depicted in pairs (figure 37b). Generally very well engraved, they are shown in a dynamic, forward-moving position, occasionally attacked in the rear by a hunter (figure 6b). It is possible that engravings represent both black and white species, but too much reliance cannot be placed on anatomical details in these images.

Elephant: this is another animal that is very frequently engraved. A minimum total of around 240 images (increased recently to 77 sites) has been recorded throughout most of Morocco, except in Zone 1 (Searight, 1995), including 21 in the High Atlas (Zone 3). They are usually solitary and depicted in movement, sometimes attacked by a hunter. Animals defecating (their faeces indicated by three or four cupules under the tail) are relatively common in other North African countries (Libya, for instance, see Le Quellec, 1998: 91) but have only once been recorded in Morocco (Zone 3) (Rodrigue, 1987). Elephant remains (bones or tusks) have been found in five archaeological deposits in Zone 1.

Domestic Dog: dogs are fairly rare, and generally depicted in Libyco-Berber hunting scenes.

Fox, Jackal, Fennec: these may occasionally have been engraved, but their identification remains uncertain. A fennec was noted once in Zone 7 (Wolff, 1978/79). Fox and jackal remains have been uncovered in archaeological excavation (Toukine, for instance, Zone 3).

Hyena: this animal is extremely rare. One was noted in south Morocco (Zone 7) by Senones and du Puigauveau (1941b: 162) (the identification of this animal as a hyena appears doubtful). A spotted hyena was engraved in the High Atlas (Zone 3). Its remains were recovered from five sites/levels (all in north or eastern Morocco, Zones 1 and 2).

Lion, Leopard: it is difficult to distinguish these two members of the cat family from engravings (figure 30a). The representation of both is distinctive: small round ears, cupules for the paws, long, up-curving tail. Five spots often engraved below the paws probably indicate the marks left on the ground by the animal. The lion's mane is never shown, though it seems hard to believe that only female lions were depicted; the leopard's spots are very rarely indicated (two examples known in the High Atlas, Zone 3). Representations of lions/lioness (or spot-less leopards) are frequent throughout Morocco (except for Zones 1 and 4) (minimum 35 sites). A sub-species of lion, the Atlas lion, with a very thick coat and conspicuous mane, existed in the High Atlas (Zone 3) until the beginning of the 20th century. Remains of lion and/or leopard were found on excavated sites in northern and eastern Morocco (Zones 1 and 2).

Wild cats and similar: engravings of small members of the cat family are extremely rare (figure 26a), although the remains of a species of wild cat were found on nine excavated sites (Zones 1 and 2).

Baboon: two possible baboons were noted in south Morocco (Zone 7) (figure 37a).

Miscellaneous mammals: unusual animals (squirrel, hedgehog, porcupine) have been recorded on one or two sites, but the identification is highly doubtful.

'Fantastic' animals: creatures with combinations of clearly animal features (tails, ears, hooves and so on) are not a feature of Moroccan rock art. However, two possible examples were noted in the High Atlas (Zone 3) (Rodrigue, 1998).

Unidentifiable animals: fairly frequently, engravings were recognisably animals, but their assignment to a species impossible (figure 35d, for instance).

B) Birds - there appears to be little variety in the species engraved.

Ostrich: this bird (figure 24b) is very frequently engraved in south Morocco (particularly in Zones 5, 7 and 9) but is also depicted in the High Atlas (Zone 3) (minimum 71 sites).

Bustard: clearly distinguishable from the ostrich by its heavier, squatter form, it is fairly rare, being engraved on a few sites only in south Morocco (Zone 5 and 7).

Other birds: flamingos, waders and similar have been occasionally engraved, but are fairly rare. Their exact identification is difficult (figure 6c).

C) Reptiles, insects, amphibians and fish - Engravings of all these creatures are rare or fairly rare.

Snake: all wavy lines are not necessarily snakes and genuine snakes - identified as such only if showing a clear head - are fairly rare. Engravings of this type exist in east and south Morocco (Zones 2,5,7,8 and 9).

Scorpion: extremely rare.

Lizard: these reptiles, rarely engraved, are often difficult to distinguish from a highly stylised anthropomorph. One, or possibly two specimens are engraved in the High Atlas (Zone 3).

Tortoise or Frog: rare and so far only noted in the High Atlas (Zone 3), where two engravings might be frogs or tortoises and two other engravings were more certainly tortoises (Rodrigue, 1999a: 67).

Crocodile: very rarely engraved. Two possible examples were noted in Zone 9 (Almagro Basch, 1944; Balbin Behrmann, 1975).

Fish: not a rock art theme in Morocco, except for a very doubtful specimen engraved once in east Morocco (Zone 2).

Anthropomorphs

Anthropomorphic representations vary in frequency throughout the country. In northern and eastern Morocco (Zones 1 and 2) they are fairly rare. In southern Morocco (Zones 5-9) they are fairly frequent. In the High Atlas (Zone 3) and on all sites which depict the stick-figures of Libyco-Berber style (all zones) they are very frequent. The prehistoric and protohistoric engravers produced images of themselves in a variety of attitudes. In south Morocco, the anthropomorphs (clearly men) are often shown in profile armed with axes or bows, attacking a rhinoceros or elephant (figure 6d). They appear to be naked though head-dresses, belts and false tails are sometimes shown. In the High Atlas (Zone 3), on the contrary, anthropomorphic figures (men or gods - see Chapter 12) are portrayed full-face, generally not holding any weapon but surrounded by a menacing collection of daggers and other weapons. Their dress and ornaments (bracelets, necklaces, belts, possible leather clothes) are often indicated, as well as facial features and penis (see figure 44b). Engravings clearly identifiable as women are rare (but see below for sexual scenes). Engravings in the Libyco-Berber style show stick-figure horsemen and foot-soldiers in battle or hunting scenes.

The 'imploring' figure called an *orant*, probably human (see Appendix 2 for discussion and definition) is fairly frequent and features in all zones. *Orants* are very rarely associated with weapons.

Human hands and feet

Human hands on their own are rare and have only been noted in the High Atlas (Zone 3). Human feet, either bare (with or without toes) or wearing sandals, are frequently engraved, usually in small quantities but exceptionally 493 on one Anti-Atlas site (Zone 6) (Searight, 1987).

Idols

This group of motifs falls into the "fairly rare" category. Vaguely anthropomorphic images engraved in the High Atlas (Zone 3) have been called "fiddle-idols". This term was used by Malhomme (1959: 69) to refer to engravings recalling, by their shape, the marble idols of the 3rd millennium bc Bronze Age of the Cycladic islands. Oukaimeden (Zone 3) is the only High Atlas site where they figure, and at Oukaimeden they are only present at Tizi n'Tifina (see Chapter 8). The general description is of a small head (with two eyes) poised on a long thin neck, large 'swollen' arms at right angles to the body, no breasts or sexual signs, a rounded base to the body, with or without thin, outspread legs and, generally, a series of short perpendicular lines (fringes?) at the base of the body (figure 26c). It must be said here that despite their name of 'fiddle-idol' they have no direct cultural or chronological link with the 3rd millennium Cycladic Islands. Similar figures exist around the whole Mediterranean and have even been found (undated) in the Canary Islands (Mercer, 1980). In Morocco, the small terracotta figurines found in the Achakar caves (Zone 1), considered to be female and in the "mother goddess" tradition (see Chapter 4), can be doubtfully compared to the Oukaimeden engravings. A closer comparison can be drawn with the flat "Neolithic idol" found in Rabat (Boube, 1983/84) (see Chapter 4). A few mythological or cult figures have been engraved on two sites in the Jbel Rat (Zone 3) (figure 11c). They take the form of an oval, with a tail, a series of semi-circles for the head, cupules presumably indicating eyes and nose, and interior lines representing, perhaps, fringed clothing and, possibly, hands.

Weapons

Bows and arrows: bows figure occasionally on sites in southern Morocco (Zone 7,9); they are extremely rare in the High Atlas (Zone 3). Weapon-heads (see below) which figure frequently on High Atlas sites (Zone 3) may be arrow-heads and are almost certainly of metal.

Clubs, throwing sticks and "boomerangs": straight objects brandished by a human, particularly in southern Morocco (Zone 7) may be wooden clubs or throwing sticks (figure 20a). They are rare. Similar objects in the High Atlas (Zone 3), but with the head made up of a clear knob (sometimes sub-rectangular), in a direct continuation of the shaft (figure 6d), generally not in close association with a human, are also considered by some researchers to be clubs or bludgeons (for

instance, Malhomme, 1959; Salih *et al* 1998: 282). This is the position adopted in the present study. They are fairly frequent. Limited to the High Atlas, banana-shaped objects - also fairly frequent - probably not metallic but wooden, and not necessarily a weapon, were considered by Malhomme (1959: 36) to be "boomerangs" (figure 6e). Their efficacy as hunting weapons is not obvious, none have ever been found in Morocco and no boomerang tradition exists in the country. However, in the absence of a better explanation, the boomerang is retained here.

Stone axes: the general shape of a number of hafted objects may indicate polished stone axes with wooden shafts. However, the method of fixation is never shown and it is not possible to be absolutely sure that such weapons are not wooden clubs with a hooked shaft.

Metal axes: an engraving of a possible flat metal axe (blade only) has been noted in the High Atlas (Zone 3) (Rodrigue, 1999a: 176) but nowhere else. Another type of engraved axe, not to be confused with the flat copper axes, has a large, approximately fan-shaped blade, narrowing clearly before the hafting point, and a marked convex cutting edge. For the sake of clarity, this type of axe is called here the "southern Moroccan axe", since several engravings of this weapon have been found in the south but none in the High Atlas (Zone 3) (figure 6f,g). A second group of axes, of very varied aspect, has received the name of *hache-pelle* (for instance, Chenorkian, 1988: 187) (figure 6h,i). While recognising the considerable variety of their representation, and the smooth transition from the category "axe" to that of "bludgeon", Chenorkian (1988: 187), considered that the oval/ rectangular head was undoubtedly metallic and grouped all these objects under the heading "*hache-pelle*". For him, the High Atlas examples were versions of the socketed metal axes engraved in south Morocco (*idem*: 322). No metal (or stone) object of this type has ever been found, except for a vaguely similar, fan-shaped bronze axe found in Zone 2 (see Chapter 4, figure 5,l). In this group, the blades vary from oval or sub-rectangular to thin crescentic. The sharply bent shaft is set in the middle of one of the long sides of the blade (producing, in the case of the thin crescentic-blade version, an umbrella-shape). For the oval or sub-rectangular version, the short edge is presumably the cutting edge, though in most cases it is difficult to see its functional efficacy. When the sub-rectangular head is set at the end of a straight shaft, some researchers prefer to see a club or bludgeon rather than an axe (see above). The second group is frequent in the High Atlas (Zone 3), less so elsewhere. They are called oval or sub-rectangular axes here, though the term is far from satisfactory.

Straight daggers and halberds: these are obviously of metal (rivets are occasionally shown) but it is of course not possible to tell from a simple engraving whether they are of copper, bronze or iron. In the High Atlas (Zone 3) daggers are very frequent and halberds frequent, but elsewhere they are rare. The daggers take a variety of shapes (figure 27a,b), some unlikely to be very functional (saw-edge blade, or twisted, for example). The halberd was defined by O'Riordain

(1936: 240) as "a pointed metal blade affixed at or near the end of a shaft and transversely to it". The term was used by Malhomme at the beginning of his work in the High Atlas (1950: 15) and has been accepted by almost all researchers. However, Muzzolini refers to these weapons as "so-called" halberds, claiming they are no more than "banal" hafted axes or daggers and that the use of the evocative and "incorrect" word "halberd" has led to errors in interpretation (1995b: 378). Moroccan specimens are often reinforced by a central longitudinal ridge (figure 13b). Without the shaft, it is difficult to distinguish a halberd from a dagger. A small, possible halberd blade was discovered during excavations in Zone 1 (see Chapter 4 and figure 5a).

Engravings of the curved Arab dagger are fairly frequent.

Arrow-, lance- or spear-heads: certainly of metal rather than stone, they appear either as a simple weapon-head or mounted on a shaft. Their shape varies from triangular to foliform. This motif is frequent in the High Atlas (Zone 3), occasional elsewhere.

Lances or spears: clearly one or the other of these weapons are carried by the horsemen and foot-soldiers of Libyco-Berber style (figure 17b) and are frequently depicted.

Shields: these can be rectangular or round, the latter outnumbering the former. Rarely seen in sites in southern Morocco (except in engravings of Libyco-Berber style, see below), they are frequent in the High Atlas (Zone 3) (figure 27c). Divergence exists among those who have studied the High Atlas engravings (for instance Jodin, 1964; Rodrigue, 1997) as to whether the numerous internally-decorated circles are sun-symbols or round shields. While the significance of simple circles or ovals, generally small (10-15 cm), with or without a 'tail' or other appendix, is obscure, the internally decorated circles in Zone 3 are very convincingly explained as shields. These shields were probably of leather, with the small external cupules representing fringes; the internal designs were considered by Glory (1953: 177) to be distinctive tribal markings. Discussing the Zone 3 engravings, Chenorkian pointed out (1988: 176), that the context of these internally decorated circles is essentially belligerent and their close association with weapons, particularly lance or spear points, is frequent. However, they are never seen brandished by a human, except in Libyco-Berber engravings throughout the country where small round shields, held in the hand, figure prominently but are never decorated or fringed.

Agricultural tools

It has been claimed (Rodrigue, 1995/96) that a few engravings in the High Atlas (Zone 3) represent agricultural tools: hoes, sickles and billhooks. The present researcher remains doubtful about these identifications.

Trapping equipment

Bag-shaped objects with crescentic "horns": these occur very frequently on sites in southern Morocco (figure 15b). They were first described as leaves and plants (Senones and du Puigauveau, 1941b: 166) but most rock art researchers consider them to be traps (for instance, Wolff, 1997, and Masy, 1998). In support of this theory, Wolff (1997) notes that many of these objects are closely associated with wild animals, principally antelopes. Unfortunately, there is no ethnological support for this theory, no similar objects having been found or reported by ethnologists. However, as no better proposal has been put forward, this identification is retained.

Circle with spokes: an image composed of a small central circle and a number of radiating spokes ending in a loop (a sort of rosette of simple coils) occurs very occasionally on southern Moroccan sites (figure 15c). It could be some sort of bolas, or a trap, but proof is lacking.

Two concentric circles, a small central one and a larger outer one joined by a number of spokes: this image occurs fairly frequently in the Sahara and very occasionally in south Morocco. They have been called *Radnetze*, "circular nets". It is generally accepted (for instance Le Quellec, 1993: 455) that they represent radial traps, still in use in the Sahara, in which an animal (generally an antelope) traps its foot and is entangled in a network of spines.

Nets: these may possibly be represented by a variety of motifs made up of interlacing lines, in lattice form, engraved fairly frequently in south Morocco but not closely associated with animals.

Chariots

Images representing a chariot, seen in plan, with the two wheels flattened, sometimes with spokes, platform for the driver, shaft and yoke figure on 49 sites in various parts of the country (absent in Zone 1) (figure 24d). Depictions of four-wheeled versions are rare; the animal or animals that were harnessed to them are not depicted. Unlike painted, horse-drawn chariots in Algeria, the driver is never shown. The function of the Saharan single-shaft chariot was considered to be neither a means of transport nor a war vehicle, but an object of prestige allowing "a dominant class to affirm its supremacy" (Camps, 1989: 40).

Inscriptions

Inscriptions in the old Libyan alphabet (here called *tifinars*, but see Chapter 9 for discussion and Appendix 2 for definition) (figures 11a,29c,30b) are fairly frequent. They are found on 11 sites in

Zones 3, 4,6,7,8 and 9). Inscriptions in Arabic can occur on almost any site frequented by local people. In general the inscription is limited to a single phrase *Allah el-kbar* (God is great) or the name of the person doing the engraving. Such inscriptions are fairly frequent.

Geometric forms

Simple circles, concentric circles, circles with a variety of appendices, semi-circles, triangles and spirals occur very frequently on sites throughout the country. More complex motifs such as concentric arcs, motifs made up of two or three wavy lines or lines of chevrons, curvilinear whorls, "fern leaf" designs, horned spirals, simple and complex crosses are fairly frequent on sites in southern Morocco (notably Zones 5,7, 8 and 9).

Miscellaneous

'Forked rectangle' : this enigmatic image occurs occasionally on High Atlas sites, notably Oukaimeden (figure 27b) and the Yagour Plateau (Zone 3). They were called *oriflammes* by Malhomme (1959: 65) : banners or standards. This is not likely. They are more probably some sort of bag, possibly of leather - a quiver could be suggested had there been any sign of associated arrows or the use of the bow (though some points may be arrowheads, see above). It can be divided into sections or fringed, and is either engraved on its own, with no apparent connection with nearby engravings, or placed on the chest or close to an anthropomorph.

Jewellery: a few, fairly rare sites have isolated engraved images of jewellery, in particular the fibula worn by Berber women, or bracelets.

Two, three or four lines of small engraved cups : lines of engraved cups (between eight and 15) are fairly frequent in the High Atlas (Zone 3). They are probably a count-and-capture game on the lines of that known under the generic term "malcala", made up of two, three or four rows of holes into which players manoeuvre a pebble, fruit pip or other suitable counter. Malcala can be played on portable boards but also in rows of holes dug in the ground or cut into rock surfaces. It is known in many parts of the world and is still played today in the Sahara.

Masks: very rare engravings in Zones 5, 7 and 9 have been identified as masks (for instance, Simoneau, 1969 and 1971).

Sailing-ship: an engraving clearly representing a ship with sails was noted in SW Morocco (Martinet, 1996) (Zone 8) (figure 22b).

Uneven squares or rectangles, divided into a number of sections of different sizes: sometimes with a dot in one of the sections, these have been called "reticules" or "cadastral plans" (Malhomme, 1959). The interpretation of this type of image as a map has been put forward in relation to rather similar engravings in Europe, and has been criticised by Bradley (1997: 51) on the grounds that the prehistoric engravers are unlikely to have seen their environment in this way.

These images are relatively frequent on some High Atlas sites (Zone 3). "Labyrinths" (rather similar designs but with a clear opening) occur occasionally.

Cup-marks: cup-marks, in the British sense of the term, are rarely engraved.

Scenes

Scenes with sexual connotations: these are rare. They involve either a male and what can be presumed to be a female figure (but see above under Anthropomorphs), or a male figure with an animal. The former have been noted in the High Atlas (Zone 3), the latter in Zone 7.

Battle scenes: a feature of sites with engravings of Libyco-Berber style where they are frequently depicted. They are unknown elsewhere.

Hunting scenes: these are also a characteristic of Libyco-Berber sites and are frequent (see figure 11d). Elsewhere they are rare. It may be supposed that engravings showing a man attacking an animal, seen in south Morocco (Zones 5 and 7, for example), indicate a hunt (figure 6d). Two groups of engravings in the High Atlas (Zone 3) representing an elephant surrounded by a number of men mounted on what appear to be cattle may not be hunting scenes, but it is hard to envisage another possibility.

Humans attacked by a wild animal: such scenes exist but are rare.

Animal engravings and excavated faunal remains

The above survey of the themes engraved showed that animals figured largely in the repertoire. Where appropriate, mention was made of archaeological excavations that had yielded remains of the animals in question. This short section examines to what extent animals that were the most frequently engraved in Morocco corresponded to those whose excavated remains were also the most frequent. Looking at the European Palaeolithic, Ucko and Rosenfeld (1967) have recalled that discrepancies between the animal content of this parietal art and the animal bones found in actual habitation debris were already apparent to the Abbé Breuil at the beginning of the last century.

The general limitations of faunal lists were exposed in Chapter 5. Additional problems are encountered when attempting to see to what extent engraved images and faunal remains coincided among early Moroccan populations: the geographical disparity between sites with information on animal remains (for the most part north of the High Atlas, Zone 3) and those with engraved animals (mostly south of the High Atlas); and the uncertain dating of the rock art sites (this question is discussed in Chapter 11). The geographical disparity is overcome by considering only those animals that occur frequently across most of the area for which data are available. The dating problem concerning the rock art is lessened by using only those animal bones that have a large chronological span, as shown in Chapter 5, Table 8.

The very limited excavation data show that the same species often lived in different parts of the country at the same time. Four species that were very probably eaten (other possibilities were evoked in Chapter 5) occur on the greatest number of sites: pigs and gazelles each on 12 sites; hartebeestes and equids/asses each on 10 sites. Jackal remains were also found on 10 sites; foxes, porcupines, hares, wild cats and ostriches each on nine sites. Other species were less well represented. Sixteen sites were caves, which could account for the presence of the porcupine and various other predators such as the wild cat (nine sites) and the hyena (five sites), which were probably visitors or temporary residents.

As already stated, Moroccan rock art studies are handicapped by a lack of precision concerning the contents of many sites. However, minimum figures based on 258 sites for which some data are available show that the animal most frequently engraved is the antelope (including the gazelle), present on 90 sites. These herbivores are followed by the elephant (77 sites), the ostrich (71 sites) and the rhinoceros (70 sites). Lions are much lower down the list (35 sites), followed by equids/asses (excluding domestic horses) (22 sites).

A simple conclusion to be drawn from this short study is that antelopes (including gazelles) were the most eaten and the most engraved. On the other hand, pigs, top of the list of faunal remains, were practically never engraved. Climatic factors are probably responsible for its absence in southern Morocco where most of the rock art is concentrated (see Chapter 9). Elephants and rhinoceroses, favourite images in the rock art, are almost completely absent from the faunal record. Here again, the reasons are probably climatic, although elephants (and rhinoceroses) have been engraved in the High Atlas (Zone 3). It was suggested in Chapter 5 that the populations of northern Morocco were more interested in elephant ivory than in elephant flesh (elephant remains in three of the four sites consisted of ivory). The low position of equids/asses in the list of rock art sites is difficult to account for, in view of their frequency on excavated sites. However, as shown in Chapter 5, equid/ass remains were particularly common in that part of Zone 2 devoid of rock art.

Concordance between engraved images and faunal remains thus only concerns what must have been a prime game animal, the antelope. Other factors intervened in the choice of animals to depict, and it is again emphasised that neither engravings nor faunal remains necessarily represent a cross-section of the animals present in a particular area, nor that all animal remains on a site were inevitably the result of human activity.

Conclusion

This short survey of the themes illustrated in Moroccan engravings and paintings has shown that mammals - and one bird, the ostrich - presented the greatest interest to the engravers in almost all parts of the country (an exception was Zone 1). In the High Atlas (Zone 3), metal weapons and anthropomorphic figures were an important element of the iconography. Apart from a possible bag-shaped trap, trapping equipment in general was poorly represented. Chariots were a frequent theme everywhere except in the north (Zone 1). Writing, either in the ancient Libyan alphabet or in Arabic occurred on a number of sites. Geometric engravings, either simple or complex, were widespread.

A few specific motifs occurred in small quantities, often only noted in particular areas: possible quivers; Berber jewellery; a count-and-capture game; masks; a sailing-ship (only recorded once); "cadastral plans" and cup marks.

Apart from the fights and hunts of Libyco-Berber style, few scenes were depicted by the engravers. Hunters were sometimes portrayed attacking an animal - or being attacked - and anthropomorphs were very occasionally shown indulging in sexual activities.

It is emphasised again that the indications of the frequency of these themes are only approximations, in view of the incomplete nature of the basic data. The actual number of *times* an animal was engraved remains speculative in the absence of full reports. For instance, engravings of antelopes far outnumber engravings of elephants, although each species figured on approximately the same number of sites.

A comparison of the engraved themes with the faunal remains recorded in Chapter 5 showed that only antelopes figured at the top of both lists. The other animals engraved were rarely found during archaeological excavation while, on the contrary, excavations brought to light remains of animals very rarely engraved.

As stated in Chapter 1, it is assumed in this work that the engravings and paintings done by the prehistoric and protohistoric populations of Morocco were done with a purpose. The list of themes indicated above shows a preoccupation with animals as a source of food or danger, and an interest in material objects such as weapons, chariots or trapping equipment. The relative importance of these themes is apparent in the next chapter, which contains data on the contents on the sites in each zone. Chapter 12 also discusses the importance and significance of the choice of motif engraved or painted.

CHAPTER 7. REVIEW OF MOROCCAN ROCK ART SITES

The following review summarises the salient features of Moroccan rock art sites in each zone. While theories based on the present distribution and composition of sites are inevitably weakened by uncontrollable factors, principally destruction - either past or on-going - it is possible to form a certain idea of the extension and composition of sites using data available today.

A total of 243 sites was recorded in 1977 (Simoneau, 1977). In the present study, 53 uncatalogued sites have been added, and seven sites removed as being double or incorrect entries. This gives 289 sites scattered throughout the country. Appendix 11 contains details, where available, on all these sites. Although the discovery of a site has rarely led to the publication of a complete inventory recording the exact number of engravings per theme, the essentials of a site - its characteristics and its peculiarities - have generally been correctly noted by the discoverer.

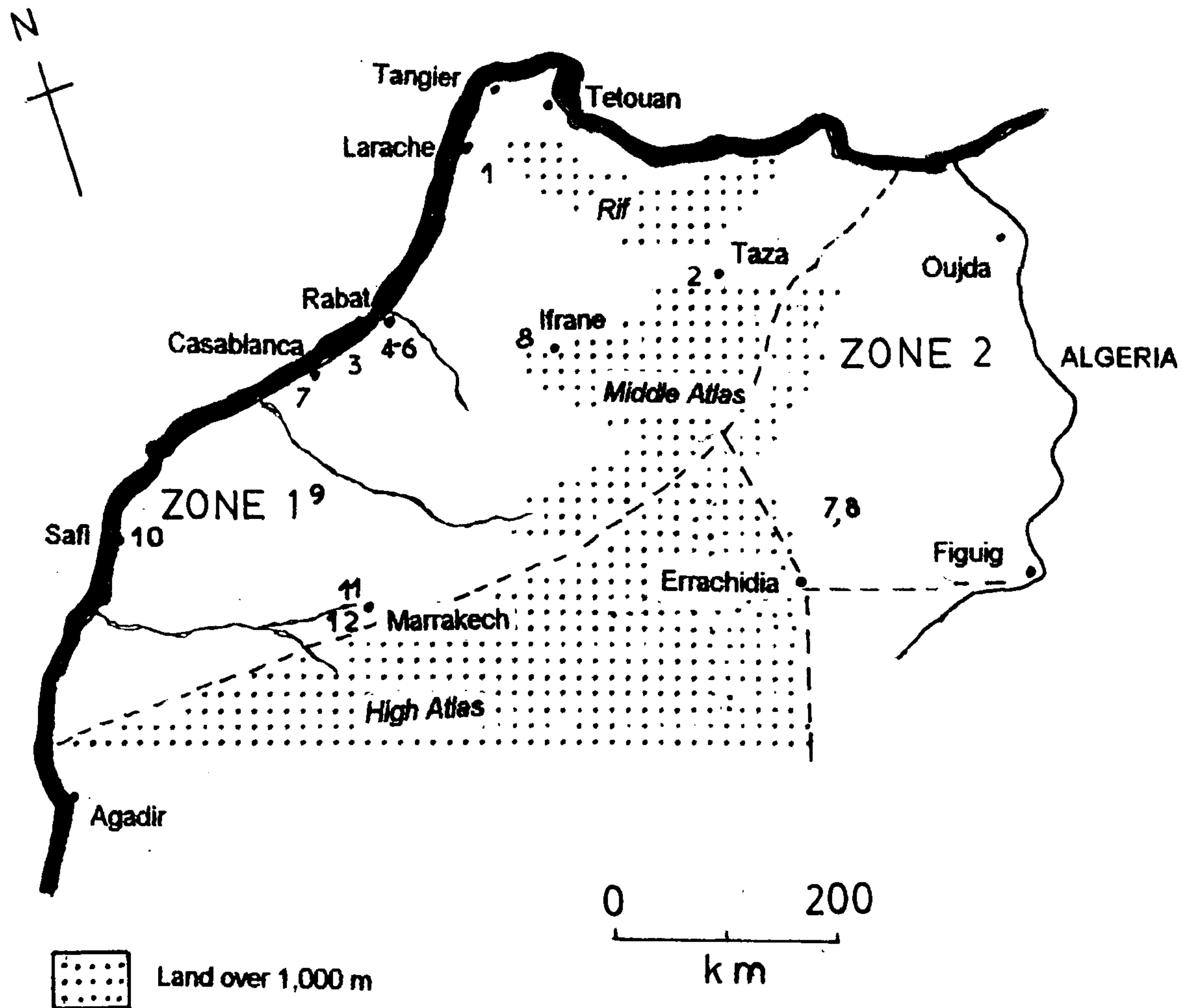
A belief that even if more data become available the character of a site is unlikely to be fundamentally changed is confirmed by unpublished research undertaken during the last 15 years. A researcher has noted about 1,000 engravings on the 11 Tazzarine sites (SE13-23, Zone 5), whereas published figures are vague and only allow an estimate of several hundred (Bozon, pers.comm. 14.7.1996). But significantly, there is confirmation that doubling the number of engravings on these sites has not changed the character of the site.

New discoveries can only fill in gaps, they cannot eliminate what already exists, although they may modify distribution maps. Physical elimination of existing sites, however, is occurring today in the form of massive destruction. In cases where almost nothing remains of a site (manifestly the subject of much depredation), the present study has had to rely entirely on original reports. Data are from published reports or personal knowledge.

Zone 1 - North and centre (figures 7,8)

Information is available on all the 12 rock art sites in this zone, none of which were catalogued (Simoneau, 1977).

Situation of the engravings and paintings: NC1,5,7,8,10 are caves or rock-shelters; NC2,3 are very close to a cave or rock-shelter. NC3,7 are near the sea, NC5,9 have very good views over the surroundings, NC10 is totally underground. NC4,6 are localities where three anthropomorphically-engraved steles were recovered (original position unclear) (figure 8a). In all the other cases, the engravings are on rock faces, sheets of rock or boulders.



Zone 1 (north and centre)

- NC 1 Magara Sanar
- NC 2 Oued Zireg
- NC 3 Grotte des Contrabandiers
- NC 4 Maaziz
- NC 5 Kef el Baroud
- NC 6 N'Keila
- NC 7 Kef el Kerma
- NC 8 Ifrane
- NC 9 Koudiat el Mouneb
- NC 10 Grotte Goran
- NC 11 Ram-Ram
- NC 12 Koudiat el Mouissiera

Zone 2 (east)

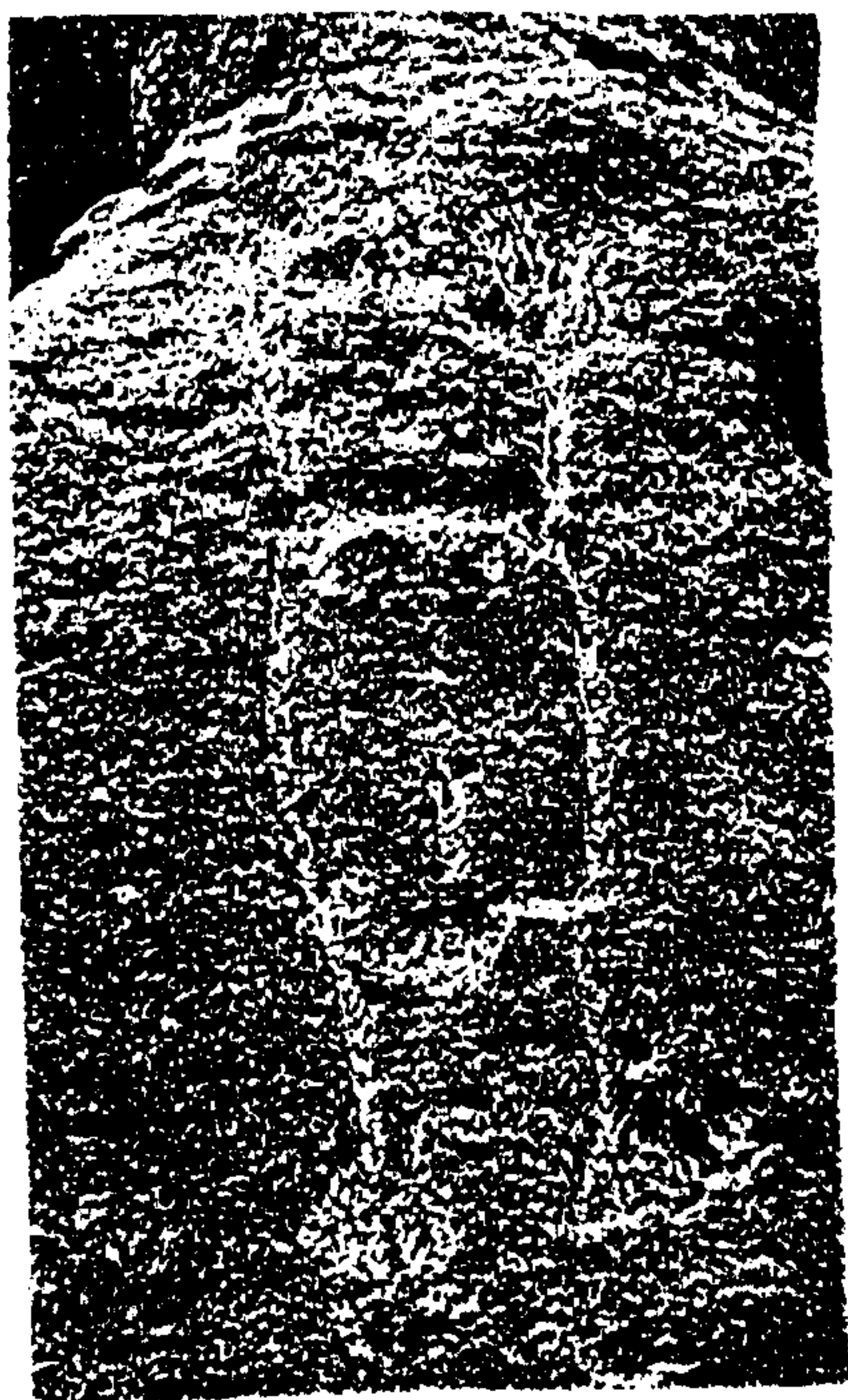
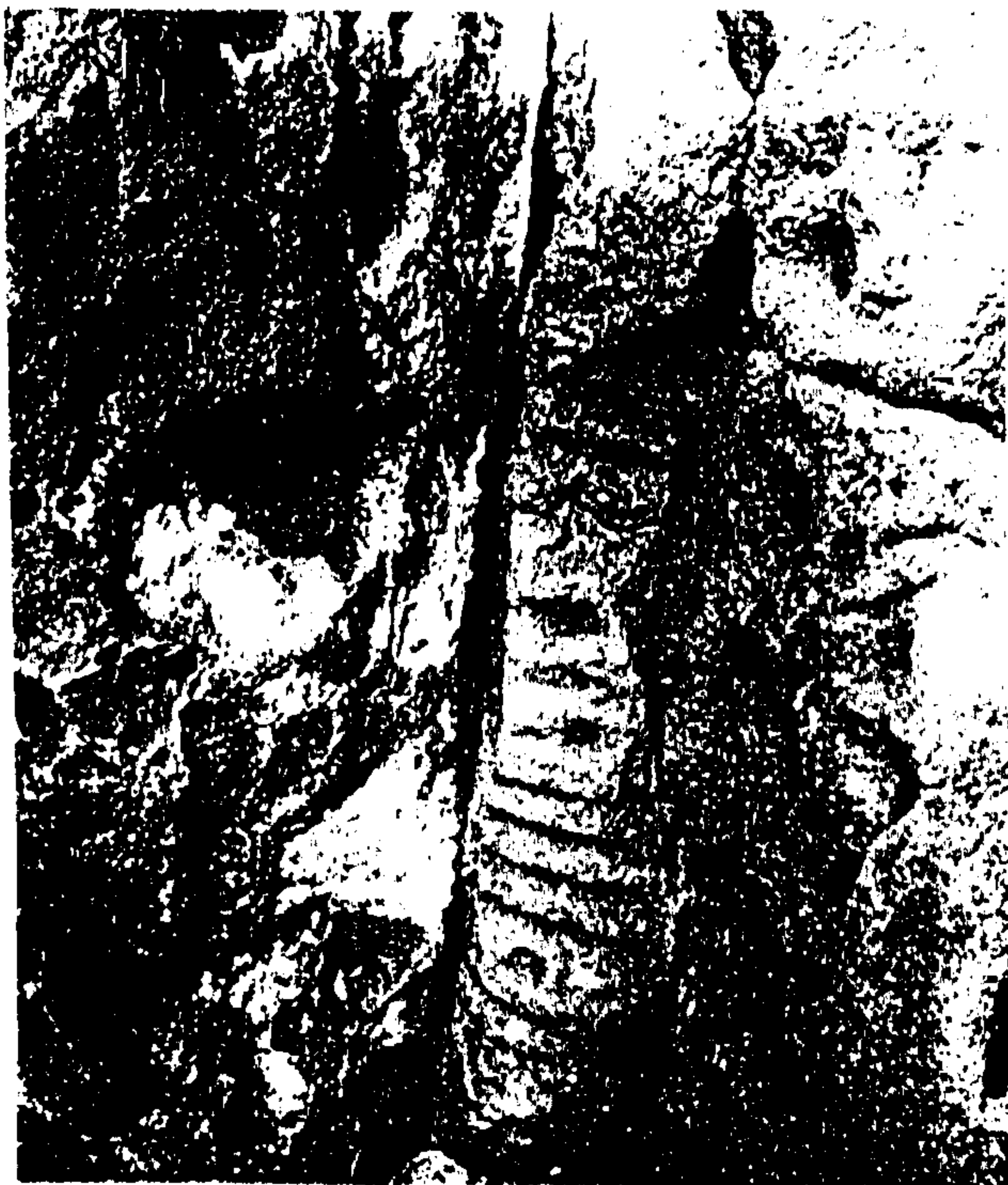
- E 1 Jbel Youssef
- E 2 Oued Tisserfine (situation not known)
- E 3 Zenaga
- E 4 Jbel Mellias
- E 5 Gara Mellias
- E 6 Garet el Hamra
- E 7 Hassi Rhilane
- E 8 Assif Metlili

Figure 7. Zones 1 and 2: situation of the rock art sites

a



b



c



d



e

Figure 8. Selection of images from Zone 1
 a) Stele from N'Keila (NC6) b) Cup-marks
 and c) Anthropomorph, Kef el Kerma (NC7)
 d) Libyco-Berber horseman and Arab dagger,
 Koudiat el Mouneb (NC9) e) Libyco-Berber
 horseman, Ram-Ram (NC11)

<u>Size of site:</u>	1 engraving.....	NC3	6 engravings.....	NC10
	1 stele.....	NC4	9 paintings, 4 engravings	NC5
	2 steles.....	NC6	88 engravings.....	NC12
	a few engravings...	NC7	141 engravings	NC9
	several paintings...	NC1,8	434 engravings.....	NC11
	several engravings ...	NC2		

Table 10. Size of site in Zone 1

Contents and technique: three caves or shelters had red/orange paintings (NC1,5,8), mainly lines and dots (NC1), horned spirals (NC5), or curvilinear whorls and concentric arcs (NC8). All the engravings were pecked, except for NC2, containing short polished lines generally forming lattice patterns ("Caspian traits"), isolated cup-marks and hammered dots, and NC10. Anthropomorphs figured at NC3, 7 (also cup-marks at NC7) (figure 8b,c), the four engravings at NC 5 were unidentifiable. A few Libyco-Berber horsemen figured on NC9 (figure 8d), along with 27 Arab-type daggers and numerous circles, semi-circles and miscellaneous items. At least three *haches-pâtes* were incised on the roof of the underground cave NC10. Site NC11 was characterised by a large majority of horsemen and foot-soldiers, with some dogs, birds, unmounted horses, sheep/goats, all in Libyco-Berber style (180 unidentifiable, including circles) (figure 8e). The much-damaged NC12 site, with many recent images, contained a mixture of engravings, including Arab-type daggers.

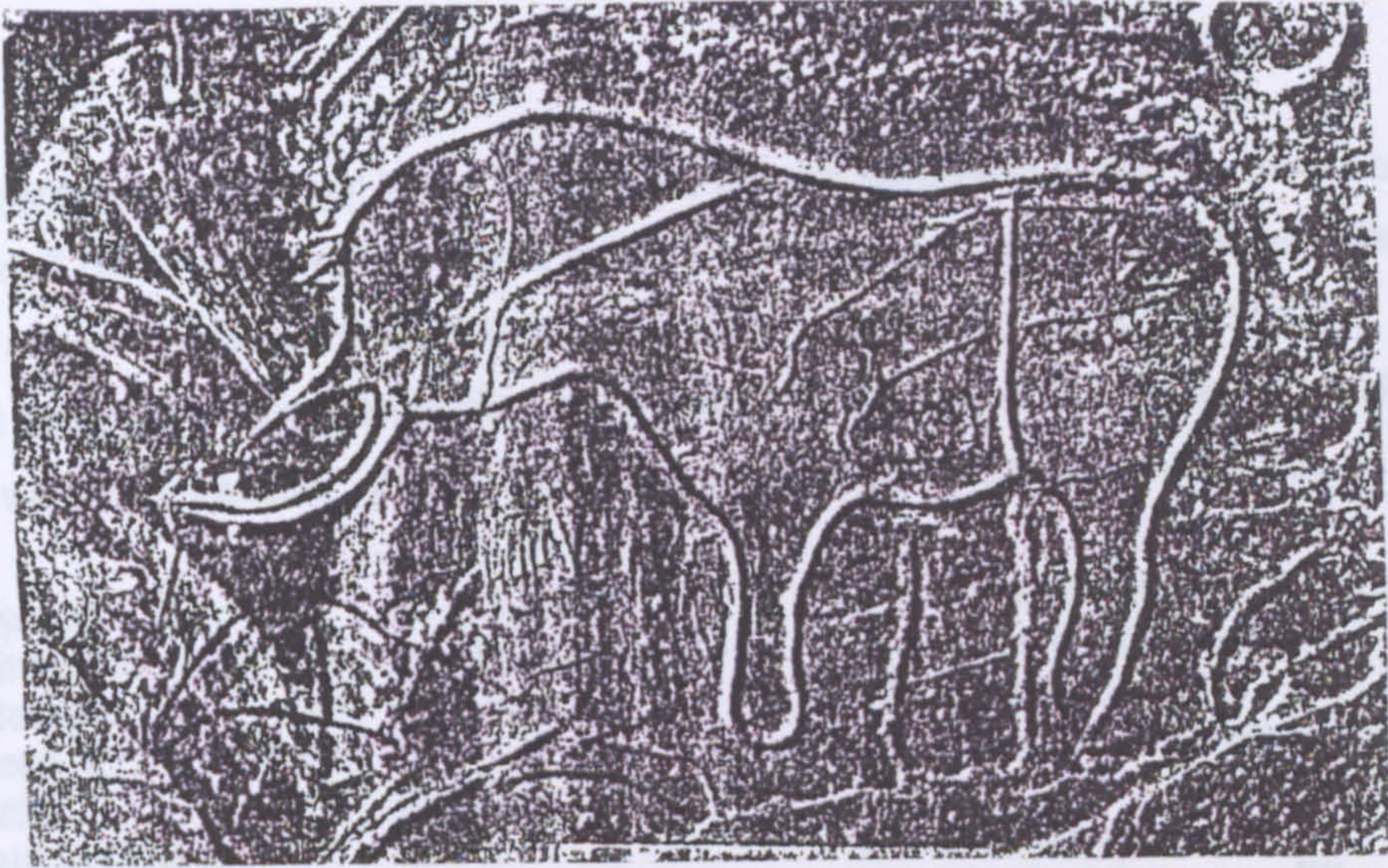
Archaeological material nearby: surface finds of Lower and Middle Palaeolithic and Epipalaeolithic tools were found near NC3,7; Neolithic and Chalcolithic material was excavated from NC5. In none of these cases is any light thrown on the date of the engravings. At the most, it can be noted that Neolithic and Copper Age people used cave NC5 and could, possibly, have been the authors of the paintings and engravings. Several rock faces at NC9 had been grooved as polishers or sharpeners (date unknown).

Zone 2 - East (figures 7,9)

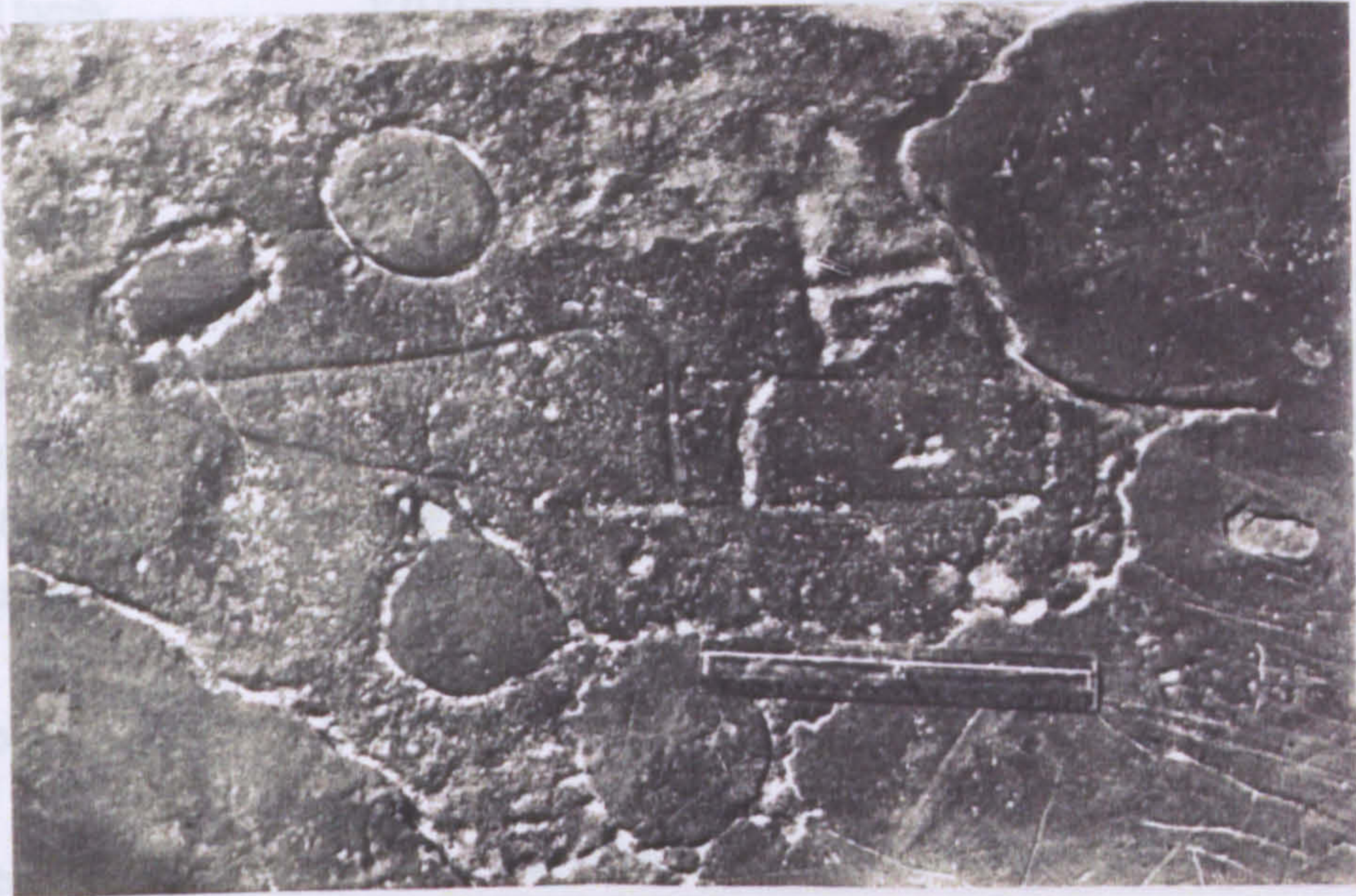
Unlike archaeological excavation which has taken place in the NE corner of this zone (see Chapter 4), work on rock art has been concentrated on the south and south-east: six sites reported around Figuig, two in the region of Talsinnt. Early interest in the Figuig area - it was first noted in 1902 - arose because it was at that time part of French Algeria, where rock art studies were being actively pursued. Only limited data are available for E2.

Situation of the engravings: sites E1,4,5 are rock-shelters, E3,6,8 are on ridges or boulders, E7 has engravings in shelters and in the open air.

Size of site: at least one engraving on E2; > 17 on E4; several on E6,8; "numerous" on E1; 44 on E3; several hundred on E5,7.



a



b



c

Figure 9. Selection of engravings from Zone 2
 a) Rhinoceros and b) Dagger, Gara Mellas (photo Simoneau, 1977) c) Ostriches, camel and Libyco-Berber horseman, Hassi Ghilane (Photo Greisson, 1973/75)

Contents and technique: in the Figuig area, it is not surprising to find the theme of the "ram with helmet" (*bélier casqué*) (see figure 6a) in the Zenaga pass site (E3) in view of its importance in the adjoining Algerian Atlas (Monts des Ksour) (see Chapter 12 for discussion). But it seems that none of the other Figuig sites show this particular type of engraving. The identifications on E3 were very doubtful. Table 11 indicates the principal contents of these sites.

Elephant	E1,2,3,4,6,7	Libyco-Berber camel	E1,7 (figure 9c),8
Rhinoceros.....	E4, 5 (figure 9a)	Libyco-Berber horseman	E6,7 (figure 9c),8
Antelope.....	E1,3,4,5	Anthropomorph.....	E3,4,5,6,7 (with
Sheep.....	E3	<i>hache-pôte</i> , prostrate	behind an elephant)
Cattle	E3,4,7	Dagger	E5 (figure 9b)
Giant Buffalo....	E3	Riveted halberd	E7
Cat family.....	E1(?),3,6,7,8	Possible chariot	E7
Dog	E1,3		
Ostrich	E1,4,7(figure 9c),8		

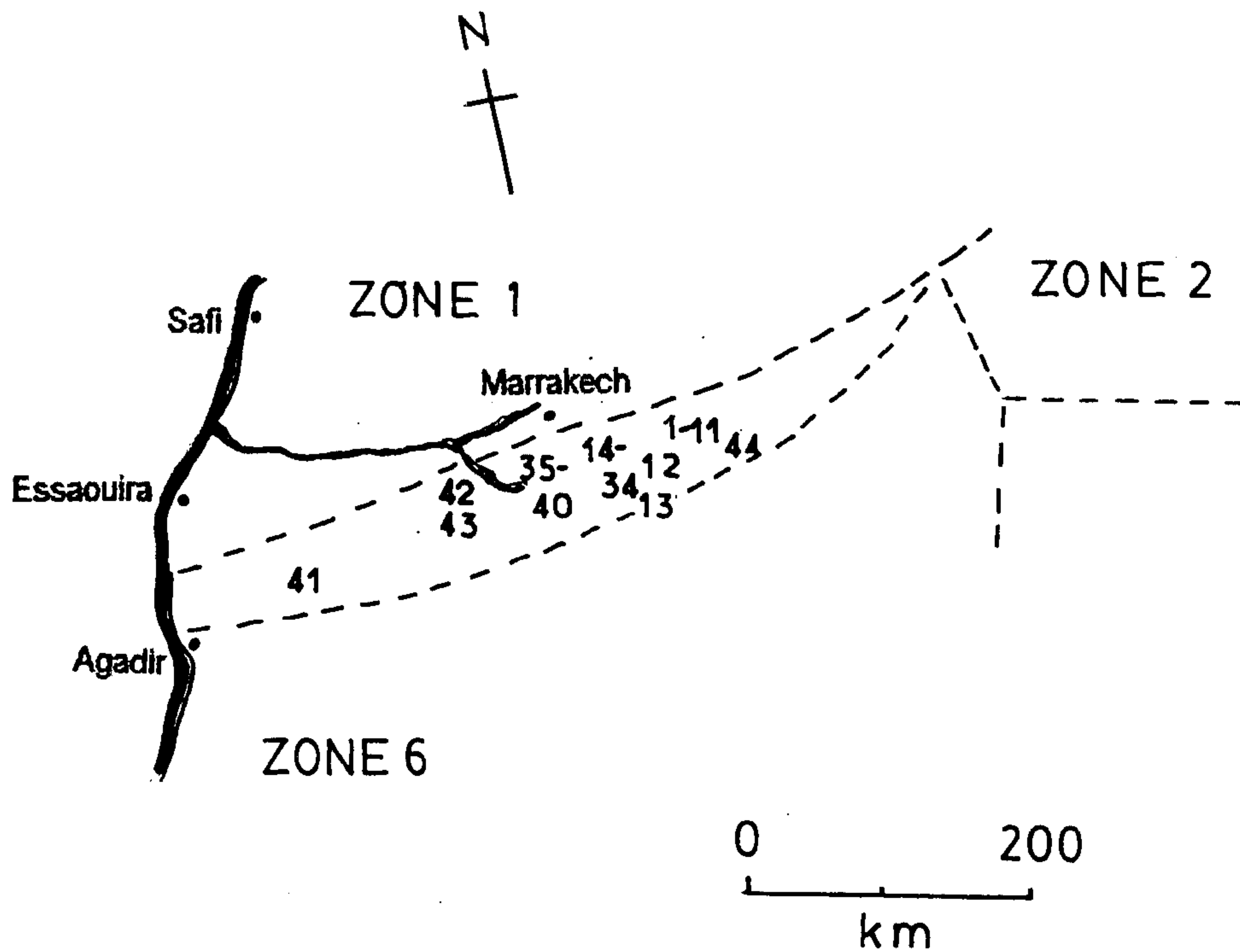
Table 11. Principal contents of Zone 2 sites

All the engravings in this zone for which data are available were pecked, with the exception of E5 (polished) and some in E3,7. Two periods of patination were noted on E4, more than two on E7,8. Archaeological material nearby: tumuli were visible from E3. Flints, ostrich egg fragments and pottery were scattered on the floor of the E5 rock-shelter. Lithic scatters but no polished stone artefacts or pottery were noted at E7.

Zone 3 - High Atlas (figures 10,11)

The High Atlas mountains are one of Morocco's two most important areas for rock engravings. The number of sites, 44, is not particularly large but overall they contain several thousand engravings (38 sites catalogued (Simoneau, 1977), six new sites added). Data are lacking on two sites (HA1,40).

Situation of the sites and engravings: so far, sites have only been found in the central part of the chain. All are in the open air, lying at over 2,000 m, well within the winter snow-line, with the exception of HA42,43, only slightly lower at 1,800 m. The three main concentrations - Oukaimeden, the Yagour plateau and the J Rat - each form a geographical unit that can be considered as a whole. They are separated from each other and from the remaining High Atlas sites by natural landscape features. The four main Oukaimeden sites, HA36-39 (HA35, outside the main group, has only one engraving), are contained within an area of approximately 4.5 x 1.0 km. The 21 Yagour sites, HA14-34, are all situated on the plateau itself, some 12 km from E to W and never separated from each other by more than a few kilometres. The J Rat sites, HA1-11, circle the foot of the mountain, with a concentration on the NE. Only four out of the 44 known High Atlas sites lie on the southern side of the watershed (HA12,HA13,HA41,HA44). All the sites are near to pasture land but not necessarily very close to all-the-year-round water,



Zone 3 (High Atlas)

J Rat

HA 1 Azib Tinzourine
 HA 2 Assif Anamrou
 HA 3 Assif n'Ifrane
 HA 4 Aougdal Tamrij
 HA 5 Tizi n'Tirlist
 HA 6 Igoudmane
 HA 7 Tizi n'Zaout
 HA 8 Azib Asserdoun
 HA 9 Amdrouss
 HA 10 Tizi Ougna
 HA 11 Tizi n'Iblouzen

HA 12 Aougdal n'Oumghar

HA 13 Azibs de Tainant

Yagour plateau

HA 14 Talat n'Toukkourt
 HA 15 Talat n'Ilsk
 HA 16 Adrar n'Tulmelt
 HA 17 Azibs n'Ikkis
 HA 18 Tifert n'Ourgou
 HA 19 Aougdal n'Ouagouns
 HA 20 Aougdal n'Issoun
 HA 21 Assif Aloss
 HA 22 Bou Oudruc
 HA 23 Aguerd n'Tircht
 HA 24 Tizi n'Rhellis
 HA 25 Aougdal n'Tichki
 HA 26 Lalla Mina Hamou
 HA 27 Ifgane
 HA 28 Asrouan
 HA 29 Igoudmane
 HA 30 Azib Tighdouine
 HA 31 Fif Gaguine
 HA 32 Talat n'Ilsk II
 HA 33 Talat n'Iguir
 HA 34 Ifar

Oukaimeden

HA 35 Alt el Qaq
 HA 36 Azib Tiferguine
 HA 37 Ifgane
 HA 38 Abri
 HA 39 Village

HA 40 Tighremt Tidili
 (no information)

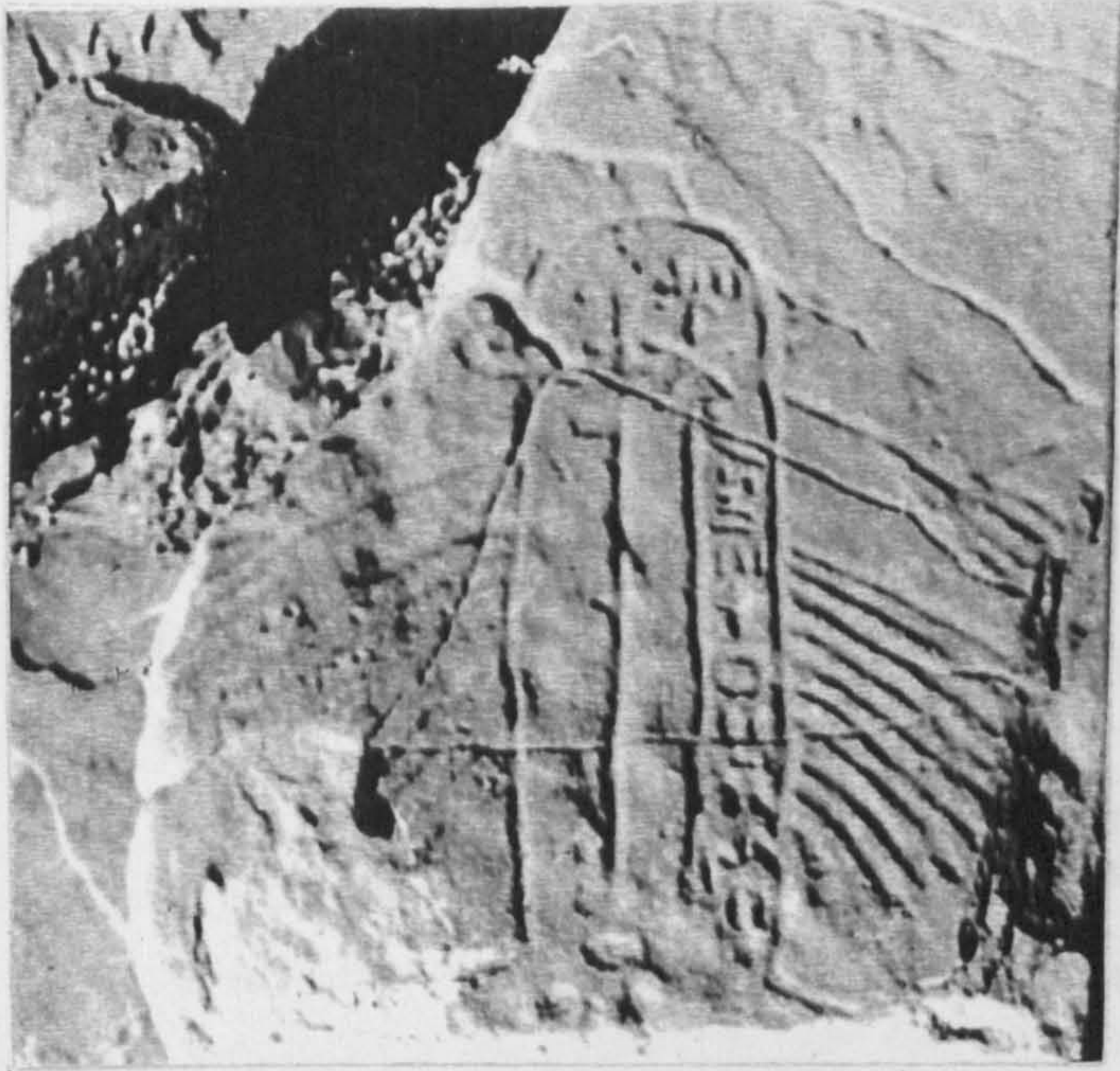
HA 41 Amrdoul

HA 42 Toulkine

HA 43 Imi Ouzerwane

HA 44 Oussikis

Figure 10. Situation of rock art sites in Zone 3



b



c



d

Figure 11. Selection of engravings from Zone 3
 a) Anthropomorph and inscription (HA17)
 b) Halberd (HA36) c) "Idol" and d) Libyco-Berber hunting scene , J Rat (HA5)

although numerous streams and springs exist. Six sites are on or near a pass (HA5,7,10, 11,24,36), two consist of paintings on a ledge above rock-shelters (HA42,43). The open-air engravings have been made on sloping sandstone sheets, almost horizontal sandstone outcrops, very occasionally on isolated sandstone boulders or vertical faces.

<u>Size of site:</u>	1 image	HA35	c 100	HA11
	c 10	HA33	500-1,000	HA2-10
	49	HA34	502	HA41
	50-60	HA12	930	HA36-39 (all together)
	72	HA44	'numerous' ...	HA42
	50-100	HA13	several thousand	HA14-32 (all together)

Table 12. Number of engravings in Zone 3

Contents and technique: an undoubted unity of content exists among these sites, despite differences between individual sites. Notable exceptions are HA42 (Toulkine rock-shelter) and HA43, two of only twelve known sites with painted images, with red ochre dots, curves, finger-tracings, zigzags and combs. The technique used for the majority of the engravings is the pecked line, frequently followed by careful polishing. The High Atlas sites are characterised by the importance accorded to metal weapons - daggers, halberds (figure 11b) and weapon-heads - and round shields. Large, full-face human figures (Oukaimeden and Yagour only), are another characteristic. Rare sexual scenes figure on sites on the Yagour plateau and the J Rat, but are absent from Oukaimeden. Libyco-Berber mounted warriors and foot-soldiers are present on some J Rat sites (HA2,4,5,10,11) (figure 11d), and on HA41, but are absent from Oukaimeden (HA35-39) and little represented on the Yagour plateau (sites HA17,19,32). One Oukaimeden site (HA36) is unique for its fiddle-idol engravings. Two J Rat sites (HA4,5) also have engravings of what seem to be mythological or cult figures (figure 11c). These two series stand out among Moroccan rock art manifestations. Domestic cattle are numerous on High Atlas sites and in fact outnumber engravings of weapons. Wild animals are represented principally by elephants (eight in Oukaimeden, 13 on the Yagour plateau, absent from the J Rat). Two rhinoceroses were engraved on the Yagour plateau. Camels figure on HA11. Chariot engravings occur on nine sites (HA6,8,12,13,15,17,19,26,32). They are totally absent from all Oukaimeden sites (HA35-39) and from HA41 and HA44. Libyco-Berber inscriptions occur twice in Oukaimeden (HA36,39) (a third was destroyed by road-building), once on the Yagour plateau (HA17) (figure 11a before destruction) and twice at HA44. This latter site defies the general rule and contains no weapons, though it has 70 circles, identified as shields.

Archaeological material or features: scattered flints collected from the surface at Oukaimeden in the 1950s were felt to be Neolithic (Antoine, 1954: 20). A recent collection of 350 items indicated that all these artefacts could be linked to a known Neolithic industry, the Toulkinian (Rodrigue, 1996: 98) (see Chapter 4). A small rock-shelter, La Caze, was excavated in Oukaimeden and produced undiagnostic metal objects (see Chapter 4). Five tumuli were investigated in the same locality; other tumuli exist on the Yagour plateau, near HA12, HA13 and HA41. None of this

material can be associated with the rock art. An ochre-bearing palette revealed in a Neolithic deposit dated to 2020-2420 bc (Ousmoi, 1989) lying below the painted ledge at Toulkine rock-shelter (HA42) can reasonably be associated with the paintings (see Chapter 4).

Zone 4 - Extreme south-east (figures 12,13)

Only two sites (ESE1,2) have been recorded in this Saharan zone, both within a few kilometres of each other, close to the military post of Taouz and the Algerian frontier. Full and reliable data are available on both. Rock engravings are marked on the 1/100 000 map some 20 km east of Taouz; they are not in the official catalogue, nor published, and were probably notified by mineral prospectors working in the nearby lead mines.

Situation of the engravings: both are open-air sites a few hundred metres from the generally-dry O.Ziz. Engravings are on the summit and slopes of J Ouafilal (ESE1) (785 m) and on the slightly inclined slopes of two locations both known simply as Taouz (ESE2a,b). The rock support in every case is sloping sandstone sheets or blocks.

Size of site: about 20 engravings: ESE2b; at least 30: ESE1; at least 40: ESE2a.

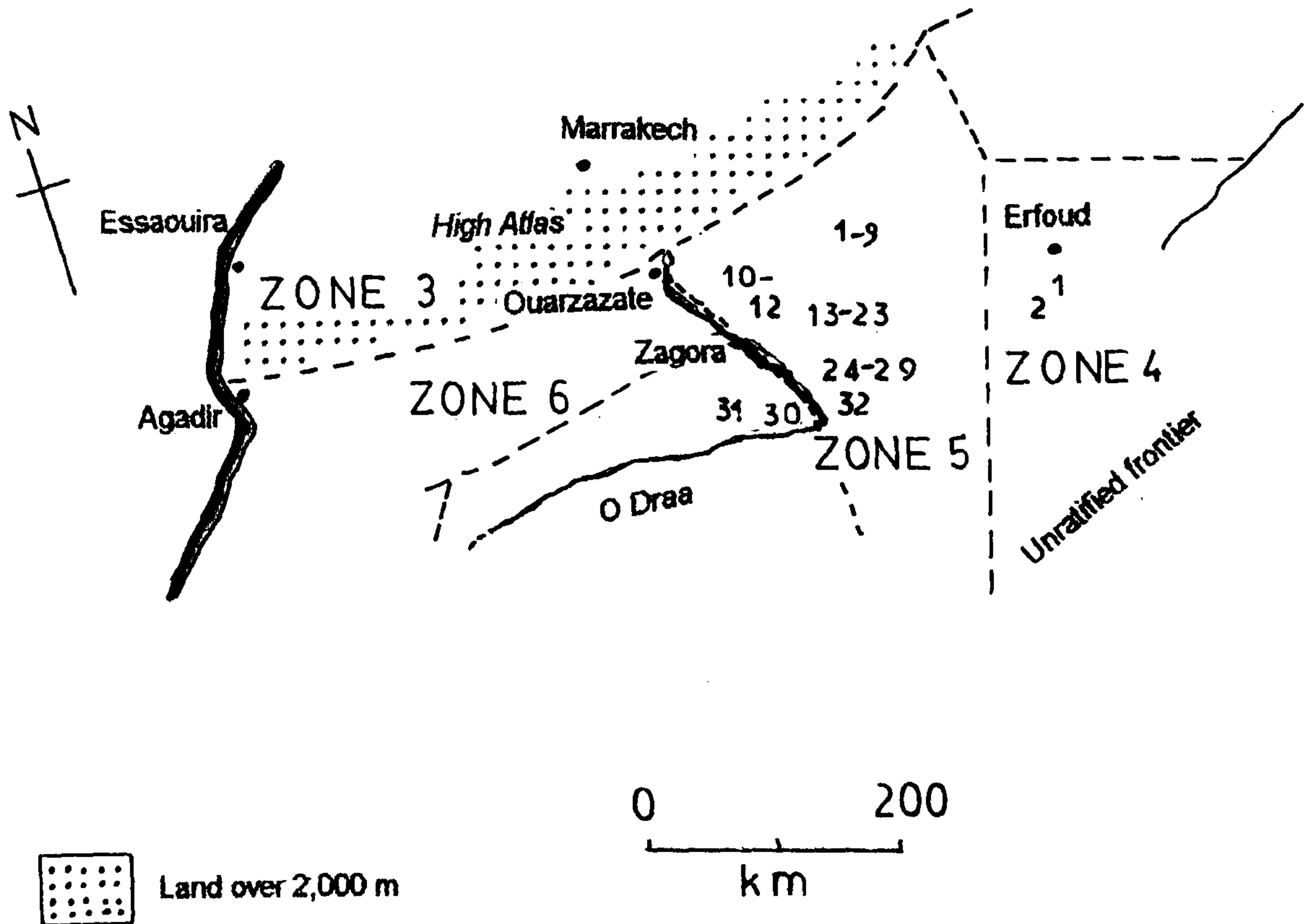
Contents and technique: the two sites are notable for their pecked chariots, of which at least 26 lie on ESE1 (figure 13a), including a "convoy" of ten joined vehicles. Chariots are also represented on ESE2a,b. Three Libyco-Berber inscriptions figure on ESE1 only, while ESE2a,b contain some 50 pecked cattle (absent from ESE1) (figure 13b). The majority of the ESE2a cattle are grouped on sheets some 25m from the most prominent tumulus. A few minute human figures are standing on the backs of the cattle. Wild animals are absent from all locations, except for one antelope at ESE2a. The style used for the cattle is unusual, the endoperigraphic surface being filled with scattered dots.

Visible archaeological features: ESE2a is surrounded by several dozen tumuli, with low dry-stone walling at the base, more elaborate than the tumuli common in Morocco. No engravings deliberately broken for the construction of the tumuli were noted by the excavators (see Chapter 4 for an account of this necropolis).

Zone 5 - South-east (figures 12,14,15)

Thirty-two sites were catalogued (Simoneau, 1977). One (SE33) is an error and is in fact part of another site (SE31) and a new one (SE32) was added. A total of 32 sites is thus potentially available for analysis, but information is lacking on SE14,22, 30.

Situation of the sites and engravings: three concentrations of engravings can be discerned. The most northerly is around Msissi/Alnif (SE3-11), all the sites lying in a more or less straight E-W



Zone 4 (extreme south-east)

ESE 1 Jbel Ouafilal
ESE 2 Taouz

Zone 5 (south-east)

SE 1 Hassi Kraouia
SE 2 Assif Tikertouachène
SE 3 Assif Msissi
SE 4 Jbel Boukerkour 1
SE 5 Jbel Boukerkour 2
SE 6 Jbel Boukerkour 3
SE 7 Jbel Boukerkour 4
SE 8 Azag
SE 9 Jbel Iourarhane

SE 10 Tagouramt
SE 11 Tamrerhout
SE 12 Ait Saadane

Zone 5 (contd)

SE 13 Ouaougout
SE 14 Amergou (no information)
SE 15 Anou n'Ouamersemlal
SE 16 Tazzarine NO
SE 17 Tamsahelt SE
SE 18 Tamsahelt E
SE 19 Ait Ouazik S
SE 20 Ait Ouazik O
SE 21 SE Abdi n'Ilemchane
SE 22 Zalou S (no information)
SE 23 Tanoumrit

SE 24 Ikhf n'Ouaroun (Ouzdine)
SE 25 Ikhf n'Ouaroun (Azigzaou ou Semlal)
SE 26 Ikhf n'Ouaroun (Asguine)
SE 27 Ikhf n'Ouaroun (Azigzaou Brahim)
SE 28 Hassi Bou Halara (Ouakhir)
SE 29 Ikhf n'Ouaroun (Tafenna)

SE 30 Foug Takkat (no information)
SE 31 Tidri
SE 32 Jbel Tibasksoutine
SE 33 Foug Larjam (eliminated)

Figure 12. Situation of rock art sites in Zones 4 and 5



a



b

Figure 13. Selection of engravings from Zone 4
 a) Chariots, J Ouafial (ESE1) (photo Meunié and Allain, 1956)
 b) Cattle, Taouz (ESE2)

line in a low-lying area at the foot of the J Sarhro and J Ougate, with an extension east formed by the separate sites of SE1 and 2. A clear passage (followed by the present-day road) unites it, via SE12, to the second concentration around Tazzarine (SE13-23). The most westerly of these sites, SE23, forms a pivotal point, where sites SE15,19,29,22 follow the dry valley of O Tisrit, hemmed in by two mountain chains, southwards to the third group of Ikhf n'Ouaroun/Hassi Tafenna (SE24-29), lying SE of Zagora. Three isolated sites (SE30-32) are situated further south. Engravings on 25 sites have been done on sandstone sheets or boulders on ridges or hillocks (SE3,4-7,9,12,13, 15-29,31,32); on three sites (SE8,10,11) they are on isolated boulders; on two sites on a sandstone rock face (SE1,2). Sixteen sites are beside, close to or overlook a river (SE1-9,13,16-20,22); five lie within a network of small watercourses (SE24-28); one is situated close to a spring (SE29).

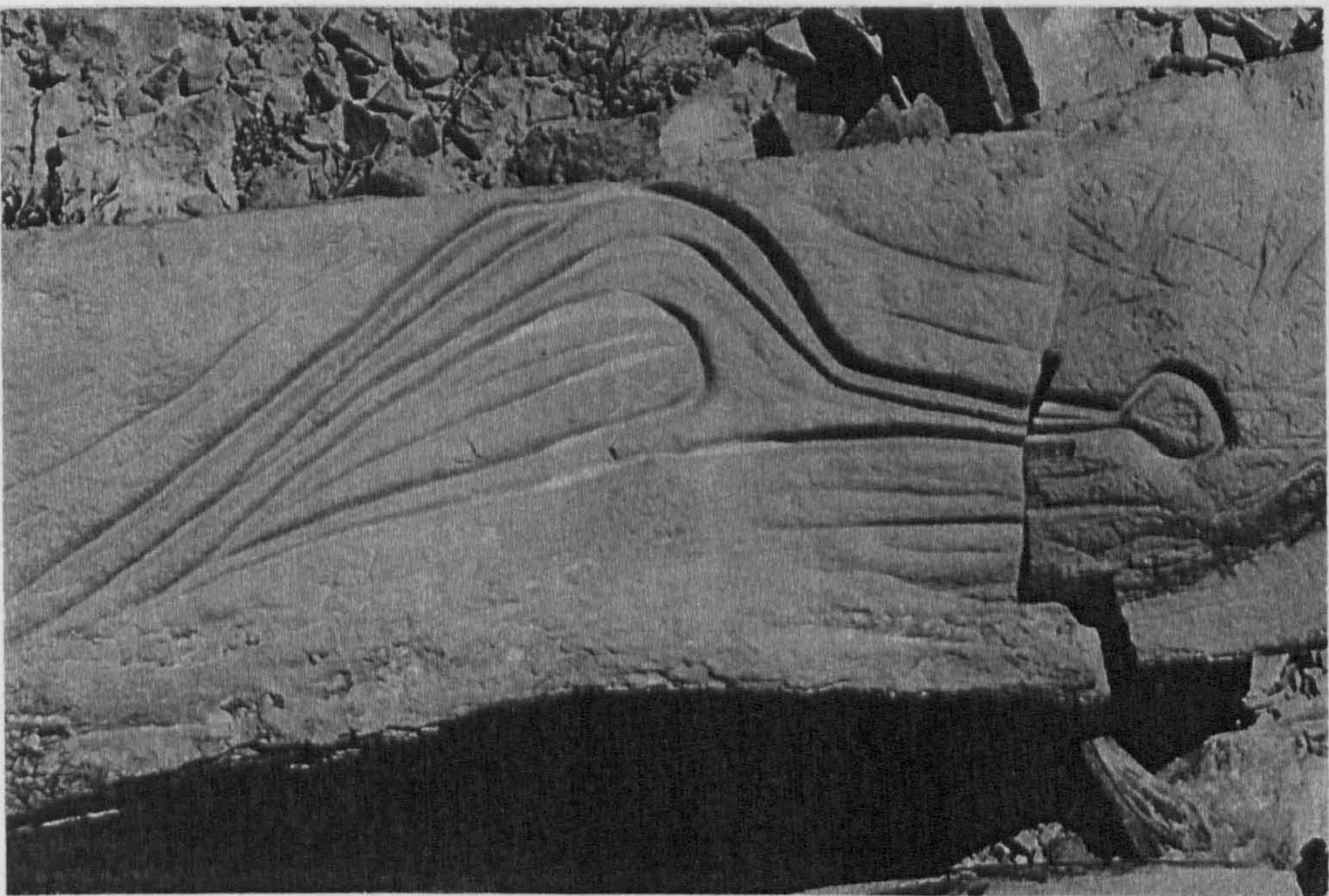
<u>Size of site:</u>	1 image	SE10	several	7,9,11
	2 images	SE2	c 50	SE5,12,32
	7-11.....	SE1,3,6	60	SE29
	19.....	SE4	c 200	SE24-28 (together)
	some	8,31	400 (?)	SE13-23 (together)

Table 13. Number of engravings in Zone 5

Contents and technique: with the exception of SE2, which contains only 2 horned spirals, wild animals are represented in all these sites in the form of small polished engravings of Tazina style. From north to south an overall homogeneity of style and theme is clearly apparent. The familiar faunal range is present, though not always on every site: elephants, rhinoceroses, antelopes (figure 14a), lions, giraffes, equids (figure 14b). Generally, antelopes and ostriches (occasionally with other birds) dominate on all sites (40-50% of all animal engravings). Domestic cattle in the same Tazina style but also pecked are found on almost every site, sometimes with pendants hanging from their necks. They are intimately associated with the wild animals. Three possible "rams with helmets" (*béliers casqués*) (figure 15a) were recorded on SE24 5 (not personally found). Other sites contain a possible fox, a dog chasing an antelope and two rather poor representations of the giant buffalo. A variety of images considered to represent traps exist on many sites: the bag shape (figure 15b), the "spoked wheel" (figure 15c), the lattice-work design. A possible mask was noted on SE23 (see figure 47c). Anthropomorphs, visibly male, figure on a number of sites. Naked, in profile, they sometimes brandish axes or clubs and menace a wild animal. One, behind a lion, seems to wear a belt (SE6), another has a false tail. Stone axes and a few metal axes close to the "Southern Moroccan" axe figure on some sites (see Chapter 6 for discussion). A straight, High Atlas type dagger is carved at SE17 and an Atlas type rectangular shield and anthropomorph at SE19 (see figure 44c). Pecked spirals, zigzags, serpentiforms, circles and other similar forms can be found on most sites. A complex zigzag design at SE8 has its near equivalent at SE11. SE12 and 13 both have a roughly similar complex spiral design. Two lightly patinated fibulas were engraved on SE5. A very small "scratched" chariot was noted on SE13 and three others, polished, recorded (one at SE19-20,



a

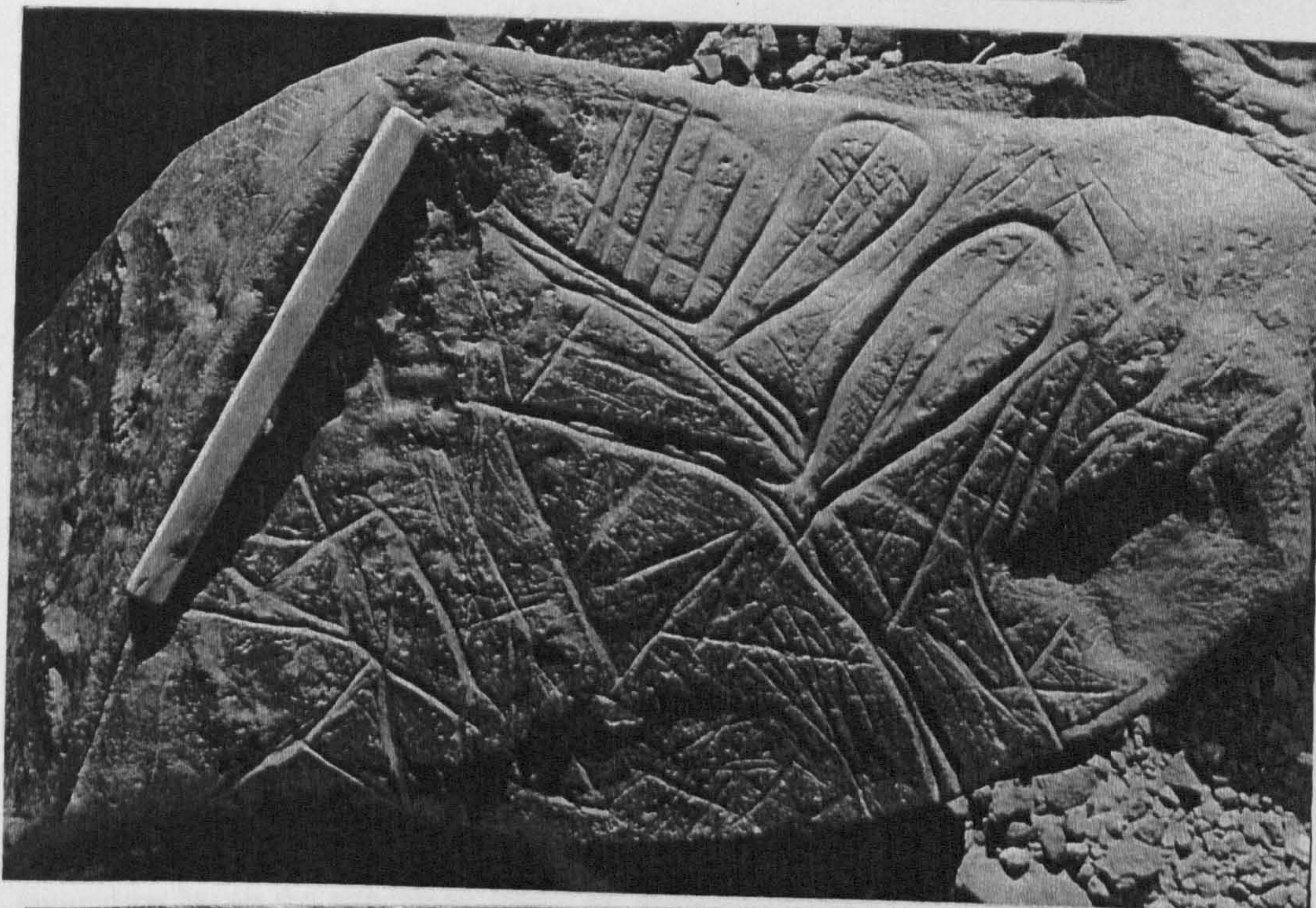


b

Figure 14. Selection of engravings from Zone 5
a) Equid, Tamsahelt (SE17) b) Non-identified animal, Ait Ouazik (SE19)



a



b



c

Figure 15. Selection of engravings from Zone 5
 a) "Ram with helmet", Ikhf n'Ouaroun (SE27) (photo Simoneau, 1972a) b) "Bag" trap, J Boukerkour, SE7 (photo Bozon, unpublished) c) "Spoked wheel" trap and non-identified animal, Ikhf n'Ouaroun (SE27) (photo Simoneau, 1971a)

two at SE24-28) (none personally seen). Small, stiff Libyco-Berber engravings of camels are shown at SE11,12. SE32 has small polished representations of horses, sometimes mounted by very small humans (a favourite theme in Libyco-Berber engravings but the style here is more fluid).

Visible archaeological features: Lower Palaeolithic artefacts lie thickly scattered on the plain below SE32. "Pre-islamic" tumuli are a feature in the vicinity of 13 sites (SE3,6,9,16,19,20,23,24-28,32). Four out of several dozen were excavated at SE16 (Jacques-Meunié, 1958). At the same site, an engraved stone was incorporated in the construction of a tumulus, another placed upright in the middle of a tumulus at SE31, certainly after the construction of the mound.

Zone 6 - Anti-Atlas (figures 16,17)

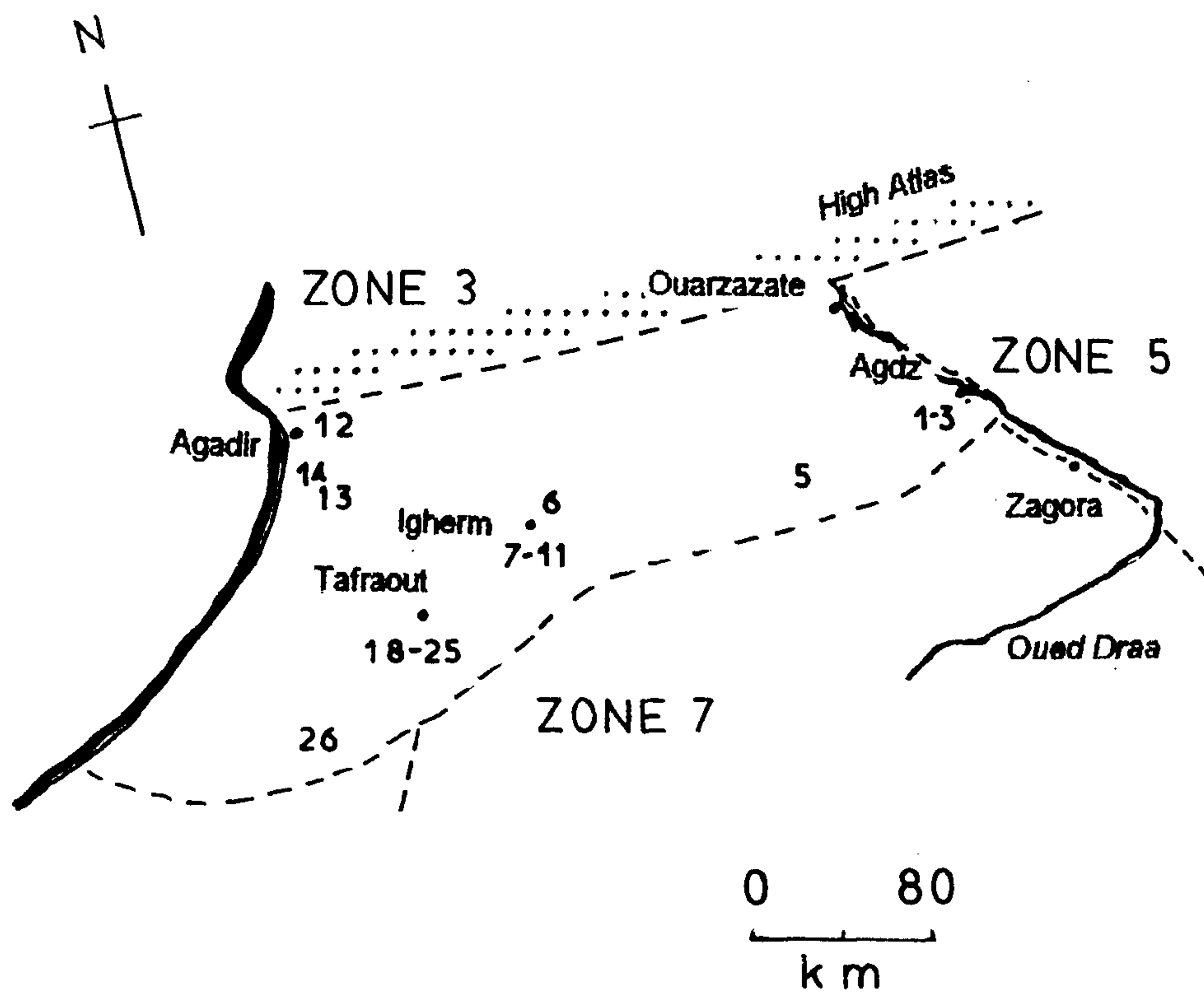
The rock art sites in the Anti-Atlas mountains are as varied in their composition as the geography of this zone. A complex hydrological system has led to the creation of isolated valleys and basins, giving a fragmented character to the region. A total of 26 sites was recorded (Simoneau, 1977), but one (AA17) is probably an error and is not included here, and one not recorded (AA11) is added. Data were lacking on five sites (AA4,15,16,25,27), leaving a total of 21 sites for analysis, but data on three (AA14,18,26) were limited.

Situation of the sites and engravings: three geographically coherent groups can be distinguished. The most easterly group (three sites) lies on a N-S axis at the eastern limit of the zone, more or less parallel to the O Draa (AA1-3). To the west, six sites cluster round Igherm, at altitudes around 1,800 m (AA6-11). A third group of eight sites is centred on the town of Tafraout (AA18-25). The nine remaining sites are scattered throughout the zone (AA4,5,12-16,26,27). No engravings lay on the sandstone ridges so familiar in Zone 5. Table 14 shows the situation of engravings on 20 sites.

On sloping sheets beside a track (no water)	AA11
On boulders on a plateau.....	AA3
On sandstone blocks and rock faces in now dry valley	AA1,2
On sloping sheets by dry river-bed.....	AA6 (sandstone), AA7 (gabbro), AA8-10 (unspecified)
On vertical faces of blocks by generally-dry river	AA13,22,23
On vertical rock face beside river.....	AA24
On vertical rock face (no river).....	AA21
On slabs or boulders in village.....	AA12,14
On isolated boulder.....	AA5,20
On rock faces and boulders near high pasturage	AA19
No information, except near river.....	AA18

Table 14. Situation of the engravings in Zone 6

Contents and technique: the contents of these sites are as varied as their situations. The first group (AA1,2,3) all contains much the same material: pecked Libyco-Berber horsemen and foot-soldiers (figure 16b). In addition, AA3 has fibulas and bracelets, AA1 Libyco-Berber inscriptions



Zone 6 (Anti-Atlas)

- | | |
|-------------------------------------|--|
| AA 1 Foug Chenna | AA 15 Ghératoum (no information) |
| AA 2 Assif Ouiggane | AA 16 Irhouz (no information) |
| AA 3 Djorf el Rhil | AA 17 Tazalarht (eliminated) |
| AA 4 Azrou Klanine (no information) | AA 18 Assif el-Kbalt |
| AA 5 Imin Magous | AA 19 Amziou |
| AA 6 Assif Tiwandal | AA 20 Imzilen |
| AA 7 Cheikh Iminirfi | AA 21 Tazka |
| AA 8 Waramdaz | AA 22 Taguenza |
| AA 9 N Waramdaz | AA 23 Tirhemmat |
| AA 10 S Waramdaz | AA 24 Douar Anezi |
| AA 11 Jbel Boukioud | AA 25 Souk Larba n'ait Hammed
(information on situation only) |
| AA 12 Bigoudine | AA 26 Timoulay |
| AA 13 Tamegdoutt | AA 27 Iharrar (no information) |
| AA 14 Blougra | |

Figure 16. Situation of rock art sites in Zone 6



a



b

Figure 17. Selection of engravings from Zone 6
a) Bovid, Tazka (AA21) b) Libyco-Berber horseman, Fourn Chenna (AA1)

<u>Size of site:</u>	1 image	AA5,12	several	AA3,11,14
	at least 1	AA26	numerous...	AA2,7,8-10 together
	2	AA20,21,22	1,560	AA6
	at least 3	AA18	over 3,000 .	AA1
	9-12	AA13,19,23,24		

Table 15. Number of engravings in Zone 6

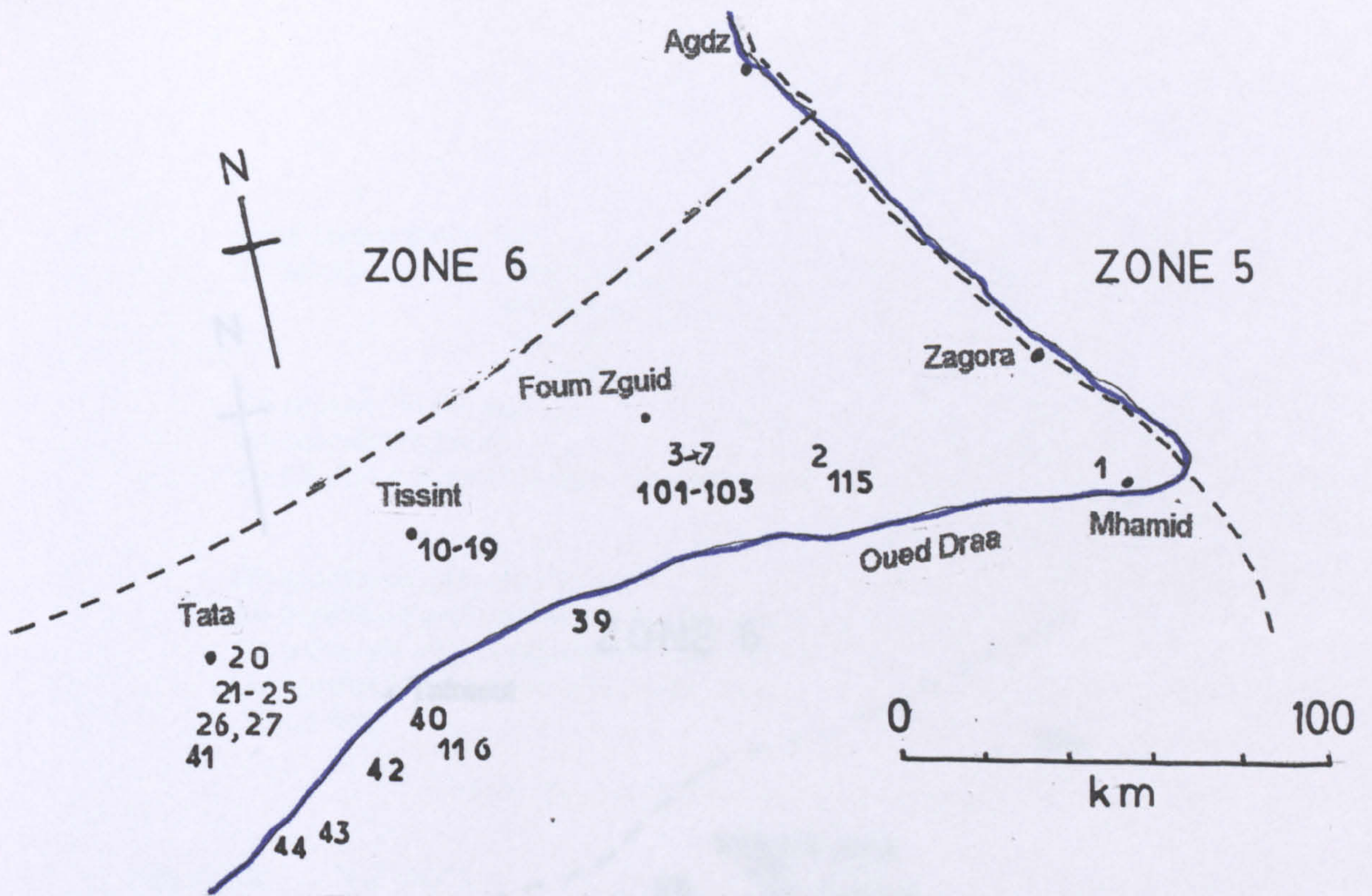
and camels. The second group (AA6-11) is more varied in its composition, while retaining basic similarities. All contain Libyco-Berber horsemen and foot-soldiers, together with chariots. A few camels were recorded on all sites except for AA11. AA6 includes representations of round shields and daggers, some nondescript animals and nearly 500 engravings of feet/sandals. Many curved Arab daggers were noted at AA11 and some at AA7; a "game" ("malcala", see Chapter 6) was engraved at AA10. The Tafraout group (AA18-25) is in complete contrast, although less than 100 km of rough track separates the Tafraout valley from Igherm. Cattle, so conspicuously absent from the first two groups, are important in sites AA19,21,22,23,24 (figure 16a). None of these sites contain wild animals, Libyco-Berber warriors or chariots, except for AA18, where a chariot is closely associated with a bovid. A doubtful stick-figure was noted at AA11 and "two solar wheels" (?) (the only engravings) recorded at AA20. The isolated sites are varied in their contents: a complex design was engraved on a recumbent granite block at AA5, an anthropomorph with upraised arms was the only engraving on a boulder in the AA12 village, one or more chariots were engraved at AA14 (confused by a mass of modern graffiti), at least one rhinoceros was noted at AA26. A richer site is AA13, showing eight cattle and one elephant. Archaeological features: an undated oppidum was recorded at AA2 and a tumulus at AA5.

Zone 7 - South (figures 18,19,20)

A total of 95 sites were catalogued (Simoneau, 1977) in this large pre-Saharan area stretching NE to SW across south Morocco for 400 km. Four sites were listed by mistake (here S9,16, 37,82), and 21 added (here S20,40,70,99-116) giving a total of 112 sites potentially available for analysis. Data are lacking on 20 sites (S4,5,6,8,12,28,31,45,47,51,52, 54,56,57,60,76, 78,79, 81,94). This leaves 92 sites effectively providing some data, though sometimes limited.

Situation of the engravings: the map sheet on which all the sites are located is known, but the situation of the engravings was not always indicated in the published reports. Table 16 indicates the situation of the engravings where this is known.

It can be noted that some 80% of the sites for which data are available are situated near water.



Zone 7 (south)

- | | | |
|-----------------------------------|---|---|
| S 1 Rich de Mbidia | S 41 Za Sidi el-Mahdaoui | S 76 Tidrarine (no info.) |
| S 2 Zaoula Sidi En-Nabi | S 42 Kheneg Ben Zerhim | S 77 Adrar Ounar |
| S 3 El Ghoula | | S 78 Fom Assif n'Wanou-Inif
(no information) |
| S 4 Wiggane | S 43 Fom Alguim | S 79 Tizgul n'Cheikh (no info.) |
| S 5 Oued Neffid | S 44 Tazout Sidi Adnane | S 80 Irhir Oullouin |
| S 6 O Oum-Echanna | S 45 Gara El-Ghans (no info.) | S 81 Adrar Yousguert
(no information) |
| S 7 J Lahmar | S 46 Maarda | S 82 Tebsist (eliminated) |
| S 8 O Mrah (no information) | S 47 N Mou Tbane (no info.) | S 83 Tizgul-Tagoulgait |
| S 9 J n'Ourkour (eliminated) | S 48 Gara Sud Mlaieg | S 84 Wazzouzount |
| S 10 Oued Naga | S 49 S El-Glara | S 85 Wawkinkht |
| S 11 Oued Amsallikh | S 50 Tiouzfouine | S 86 Zerzem |
| S 12 Assif Zguit (no information) | S 51 Assif Ikhf ou Akhf
(no information) | S 87 Amtoundi |
| S 13 Glab es Seghir | S 52 Tazaki n'Zida (no info.) | S 88 Assif Kelmt |
| S 14 Mrimima | S 53 Taheouacht | S 89 Waday |
| S 15 Fom Timellouka | S 54 Mouh El-Gherib
(no information) | S 90 Bou ifecht |
| S 16 N Tizi Iguidi (eliminated) | S 55 Ait Ouabelli | S 91 Idmissane |
| S 17 Rive droite O Malah | S 56 Assif n'Tadakoust
(no information) | S 92 Tanzirt N |
| S 18 Oued Fergoussat | S 57 Moumersal (no info.) | S 93 Anou el Hajj |
| S 19 Oued Kraoua | S 58 Assif Youmkat | S 94 Aghs Mimoun (no info.) |
| S 20 Kasbat n'Zolit | S 59 Tissenrhaf | S 95 J Tarchkoun |
| S 21 Oued Tata | S 60 Anou n'Ait ben Yassine
(no information) | S 96 Tan Zega |
| S 22 Sidi Bouadar | S 61 Douroudi | S 97 Tachoukent |
| S 23 Tabanit | S 62 Guelta Grinkane | S 98 Tirhert |
| S 24 Jorf Lhammam | S 63 Oukkas | S 99 Kheneg Tafagount |
| S 25 S Toug Er-Rih | S 64 Tissifriouine | S 100 Merkala |
| S 26 Tiggane | S 65 Tasselbe | S 101 Oued El Kebch |
| S 27 Ouest Mahdaoui | S 66 Assif n'Tadrout | S 102 Site AR |
| S 28 Kheneg Brahim (no info.) | S 67 Leksbat | S 103 Site FJ |
| S 29 Akka Arhib | S 68 Tircht | S 104 Tamzarar |
| S 30 Akka Issil | S 69 Ighir Ighnain | S 105, 106 Blouafen 1,2 |
| S 31 O Imitek (no info.) | S 70 Ighir Ighnain II | S 107 Taouraght |
| S 32 Imaoun Assif Touna | S 71 Aguerd | S 108-110 Imaoun/O lmi Tek
1, 2, 3 |
| S 33 Adrar Temgard Issardine | S 72 Irhir Oullouin | S 111-114 Imaoun/O Akka, A-D |
| S 34 Adrar n'Metgourine | S 73 Kasba Ait Herbil | S 115 Ifrane n'Taska |
| S 35 Imgrad Tayaline | S 74 Imin Tart | S 116 Hassi el Haoueira |
| S 36 Guelta Targent | S 75 Tebsiste | |
| S 37 SO Tougounine (elim.) | | |
| S 38 Ouine el-Khir | | |
| S 39 Khaoul el Kleban | | |
| S 40 Sidi Bou Lanouar | | |

Figure 18a. Situation of rock art sites in Zone 7 (eastern end)

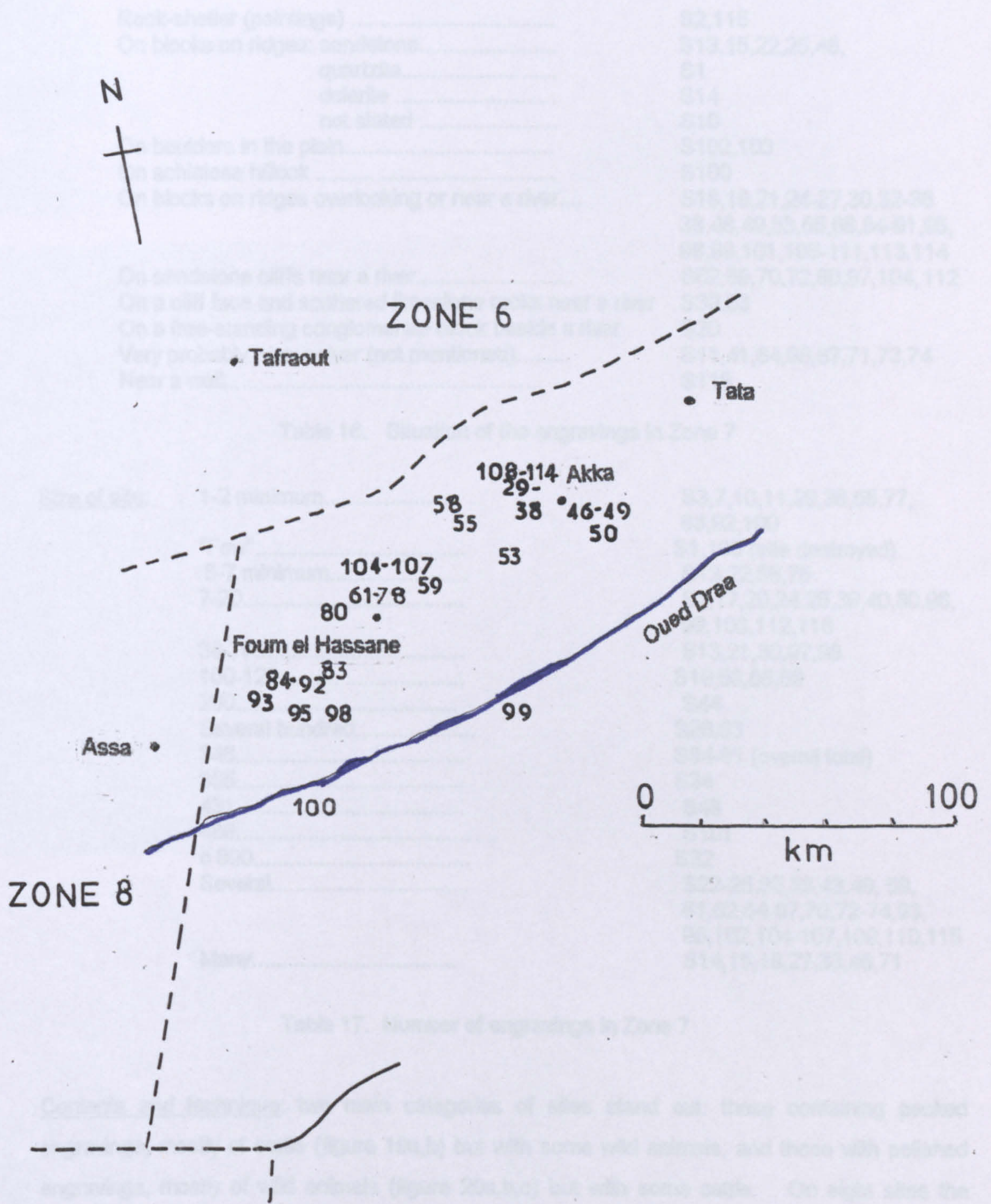


Figure 18b. Situation of rock art sites in Zone 7 (western end)

Rock-shelter (paintings)	S2,115
On blocks on ridges: sandstone.....	S13,15,22,25,46,
quartzite.....	S1
dolerite	S14
not stated	S10
On boulders in the plain.....	S102,103
On schistose hillock	S100
On blocks on ridges overlooking or near a river....	S18,19,21,24-27,30,32-36
	38,48,49,53,65,68,84-91,95,
	98,99,101,105-111,113,114
On sandstone cliffs near a river.....	S62,69,70,72,80,97,104, 112
On a cliff face and scattered limestone rocks near a river	S39,63
On a free-standing conglomerate block beside a river	S20
Very probably near a river (not mentioned).....	S11,41,64,66,67,71,73,74
Near a well.....	S116

Table 16. Situation of the engravings in Zone 7

<u>Size of site:</u> 1-2 minimum.....	S3,7,10,11,29,36,55,77, 83,92,100
"Few"	S1,108 (site destroyed)
5-7 minimum.....	S13,22,58,75
7-20.....	S2,17,20,24,25,39,40,80,96, 99,103,112,116
36-70.....	S13,21,30,97,98
100-120.....	S19,53,68,69
200.....	S44
Several hundred.....	S26,63
346.....	S84-91 (overall total)
365.....	S34
431.....	S48
486.....	S101
c 800.....	S32
Several.....	S22-25,35,38,43,49, 59, 61,62,64-67,70,72-74,93, 95,102,104-107,109,110,115
Many.....	S14,15,18,27,33,46,71

Table 17. Number of engravings in Zone 7

Contents and technique: two main categories of sites stand out: those containing pecked engravings, mostly of cattle (figure 19a,b) but with some wild animals, and those with polished engravings, mostly of wild animals (figure 20a,b,c) but with some cattle. On eight sites the engraving technique was not indicated in the published reports.

Sites with a majority of pecked images outnumber the polished group and will be treated first. A total of 33 sites contained a majority of pecked cattle (see Appendix 10 for references). Wild animals such as ostriches, lions and antelopes were also depicted on these sites. In many cases the different horn forms and coat markings of the cattle were clearly indicated (see figure 19b, for instance). Other sites with pecked images had unusual combinations, such as S18 with wild animals but no cattle, the very small S20 with one large elephant, three ostriches, one



a



b



c

Figure 19. Selection of engravings from Zone 7
 a) Bovid, Akka Issil (S30) b) Bovid, Adrar n'Melgouring (S34) c) Hunter and Barbary sheep, Taheouacht (S53)

anthropomorph and one bovid, and S32 with pecked cattle but a majority of curvilinear images (see figure 46). On S113 the majority of the pecked engravings were also abstract (geometric forms). Degrees of patination varied for all these engravings.

A total of 19 sites were the opposite, containing a majority of polished animals, generally wild but including cattle (see Appendix 10 for references). The wild animals were antelopes (gazelles, oryx and hartebeest), elephants, rhinoceroses and ostriches. Giraffes were very rare and engravings certainly representing equids were absent.

Three sites contained both pecked and polished images in more or less equal proportions (S22, 33,68). Other sites contained a majority of pecked images with a handful of polished items, and pecked cattle were also represented on sites with a majority of polished wild animals (see Appendix 10 for details).

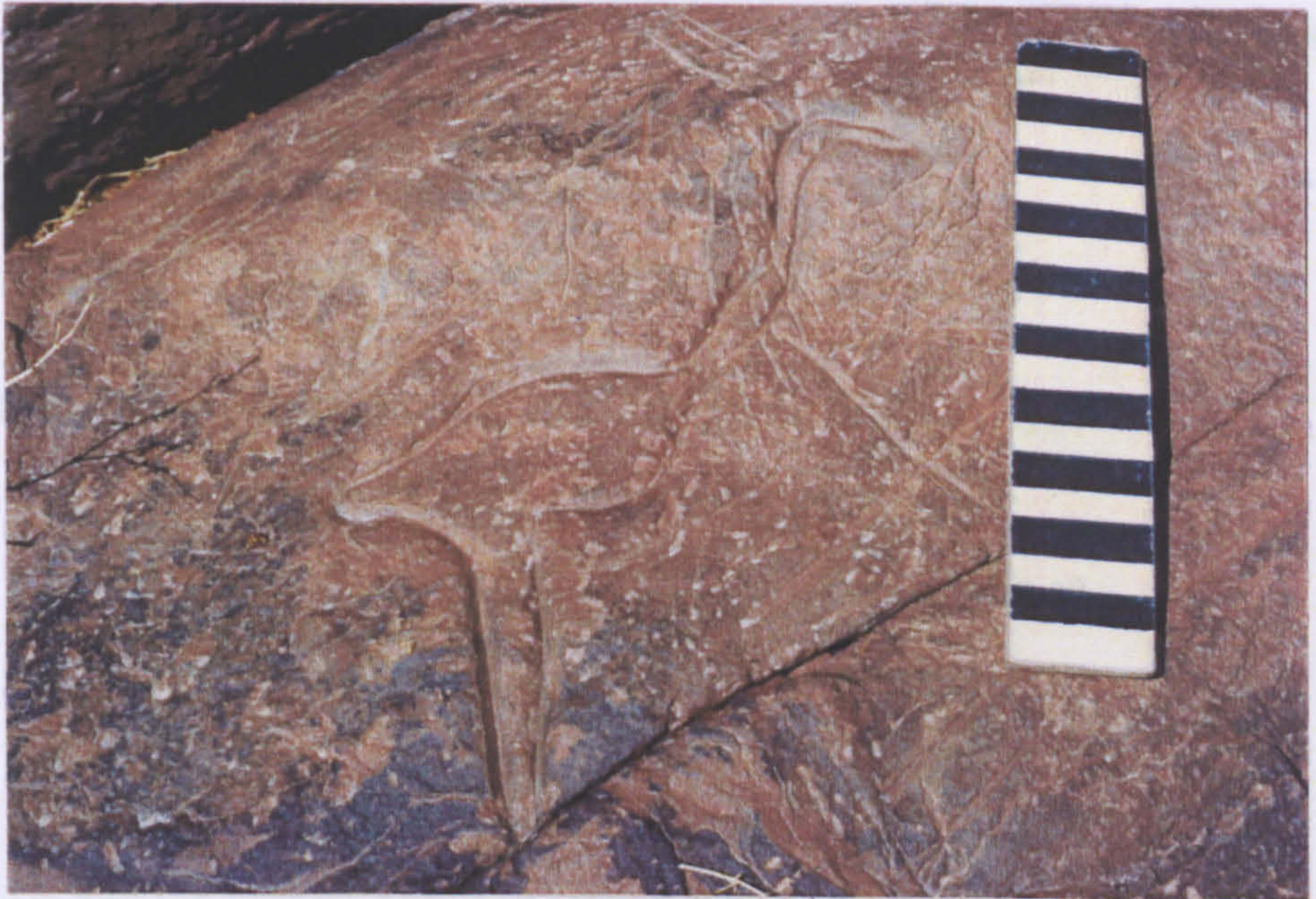
As well as engravings of wild animals and cattle, a number of other subjects were represented in these south Moroccan sites. Miscellaneous images (pecked or polished), circles, spirals and other non-figurative motifs featured on most sites. Anthropomorphs (pecked or polished) were frequently depicted attacking an elephant or a rhinoceros with an axe, armed with sticks (figure 20a) or carrying a bow (and once a quiver). Many seemed to have belts (on S27,43, for instance) and the man behind a Barbary sheep on S53 had a false tail, triangular feathered hat and carried a bow (figure 19c). On S34 a small, unarmed anthropomorph faced a large lion. Several men had an excessively large penis. Particularly large pecked anthropomorphs were noted on S104. On four sites (S32,33,34,58) a man is shown sitting or standing on a bovid (*boeuf porteur*) (see Chapter 13 for discussion).

Bag traps were very numerous, *Radnetze* and "spoked wheel" traps rare. Chariots were noted on 18 sites (one doubtful) (see Appendix 10 for references). Pecked fibulas, bracelets and curved daggers occurred on site S1. Sites S2,39,58,115 had painted images: Libyco-Berber horsemen, *tifinars*, geometric designs and, on S115, a giraffe and a horse; S58 had a white-painted bovid and an anthropomorph. A possible *tifinar* inscription was also recorded on site S48. Libyco-Berber hunting scenes were engraved on S32,39,58,87,101,115. Axes, metallic or otherwise, figured on at least 20 sites: S13 ("southern Moroccan" type),23,25,27,30,32,35, 38,44,53,68,70,71,74,84 (one held by an anthropomorph), 89,91,97,106,107. A polished dagger was recorded on S3.

Archaeological material nearby: simple tumuli were a feature on almost every engraved site situated on a ridge. A ruined citadel was recorded near S1 and ruined fortified granaries at S70. Scatters of Neolithic stone tools found on S18,34, 40; S34 also yielded numerous pottery sherds.



a



b



c

Figure 20. Selection of engravings from Zone 7
 a) Ostrich, man, gazelle, O Kraoua (S19) b) Ostrich, Tiggane (S 26) c) 2 gazelle, Oum Aleg (S48)

Zone 8 - South-west (figures 21,22)

A total of 24 sites were recorded in this zone (Simoneau, 1977). One, SW5, has here been eliminated because it was confused with another. Site SW12 has also possibly been confused with SW11, but has been kept. Two old, unrecorded sites (SW4,11) and one new site (SW27) have been added. Information is lacking on four sites (SW18,22,24,25). This leaves data available on 22 sites.

Situation of the sites: the known situation of 17 sites is given below.

On sloping sheets beside a spring.....	SW3,11,12,26
On sandstone rocks beside a river.....	SW6,7 (SW7 also beside spring)
Near a river.....	SW2,13,20,27
Vertical sandstone rock faces.....	SW8,9,10
On free-standing boulders.....	SW4,16
On sandstone outcrops in the plain.....	SW14,15

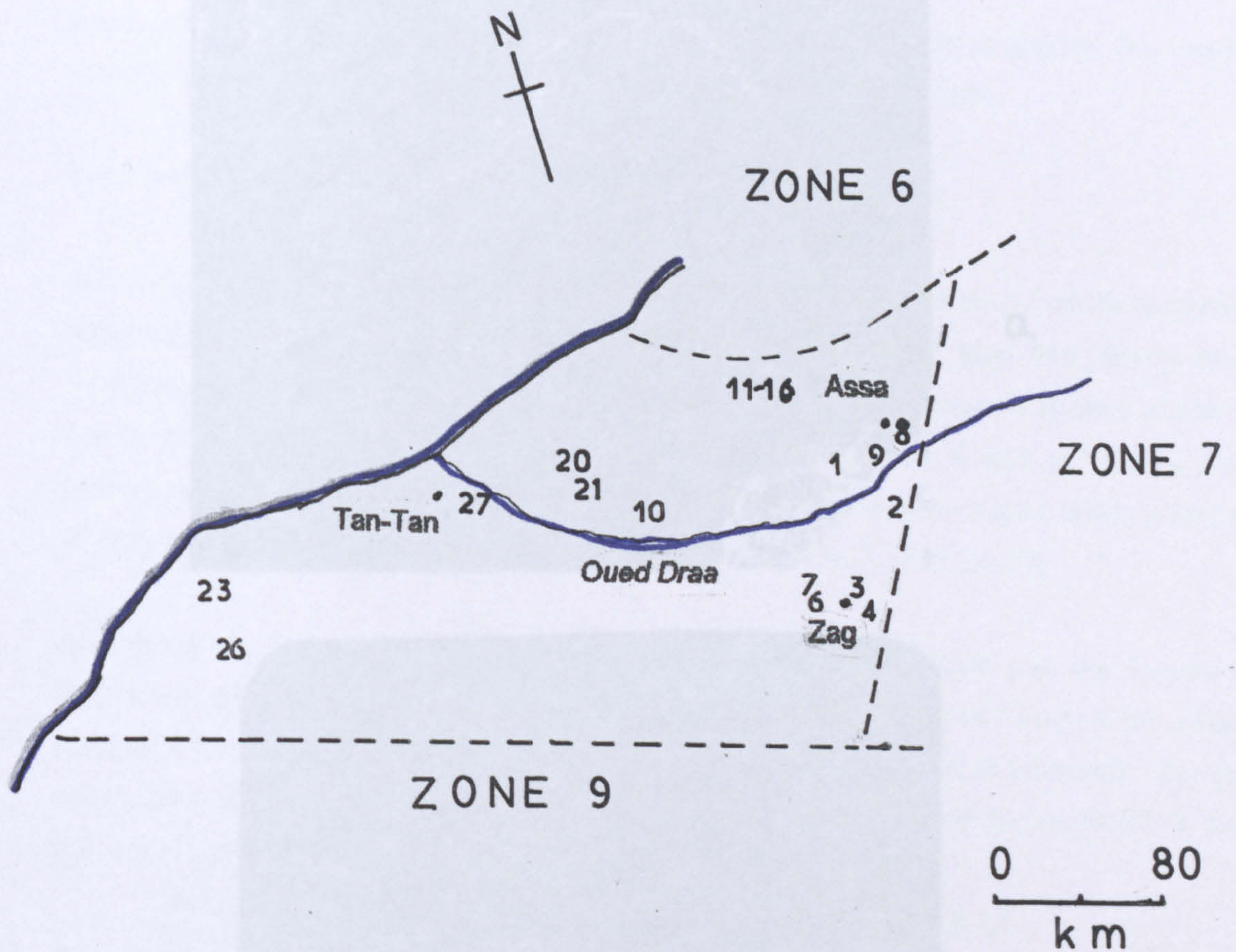
Table 18. Situation of the engravings in Zone 8

<u>Size of site:</u>	5 images and under.....	SW1,4,11,16,21
	c 10-15.....	SW7,12,13,14,15
	35.....	SW3
	54.....	SW6
	"Several".....	SW2,8,17,19,26
	c 100.....	SW10
	c.400.....	SW20

Table 19. Number of engravings in Zone 8

Contents and technique: wild animals were engraved on 10 sites: rhinoceroses (SW1,7,21); elephants (SW2,3,11 (four specimens), SW12 (five specimens), SW27 (five specimens)); lions (SW3, probably SW7); antelopes (SW3,14,15); Barbary sheep (SW12); ostriches (SW7,12). Cattle were engraved on 12 sites: SW2,3,4,7,8,10,12,13,14,15,16 (one specimen), SW27. A collection of wild animals, including unusual species such as fish, squirrel, hedgehog and porcupine, and one bovid, possibly polished, was described on site SW6. Camels figured on SW8,20. Sites SW12-15 had chariots. Libyco-Berber horsemen were shown on SW8,20,26, this last site also with *tifinar* inscriptions. Site SW20 also had a unique engraving of a boat (figure 22b), along with lightly patinated Arabic writing and Berber jewellery. The images on SW17 and 19 were recent, including *kasbahs*, clocks, suns, fibulas, swastikas.

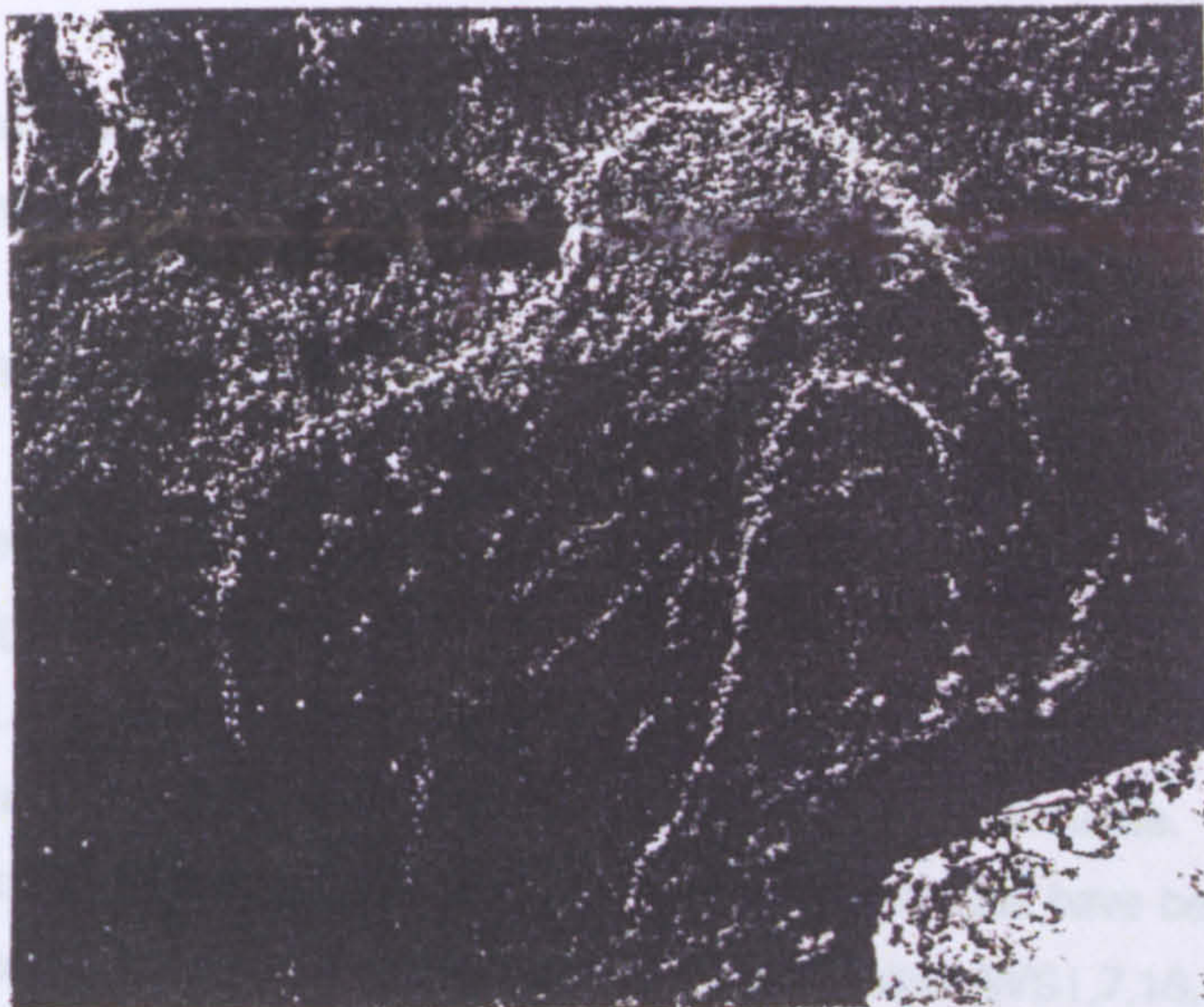
Both pecked and polished images occurred on SW3, where a small majority were domestic cattle with a few wild animals (figure 22a). The five engravings on a large block making up site SW4



Zone 8 (south-west)

- | | |
|-----------------------------------|---|
| SW 1 Tazout | SW 17 Sidi Bourja (no information) |
| SW 2 Kheneg Lakahal | SW 18 Acouinet n'Ait Oussa (no information) |
| SW 3 Ain Enbeibiga | SW 19 Oued Ech Cheikh (no information) |
| SW 4 Oued Zak | SW 20 Azrou Klan |
| SW 5 Sidi Bou Lasrar (eliminated) | SW 21 Teglite |
| SW 6 Guelb-Ouday-Sfa | SW 22 Fahra (no information) |
| SW 7 Ain Smaiera | SW 23 Oued Chbeika |
| SW 8 Palmeraie Assa | SW 24 Oued Louar (no information) |
| SW 9 Oued Tizgui-Remt | SW 25 Oued Umma Fatma (no information) |
| SW 10 Mou-Loucham | SW 26 Timatkor |
| SW 11 Tiderdar | SW 27 Tilemsen |
| SW 12 Anou Tirardourène | |
| SW 13 Kheneg Tiflet | |
| SW 14,15 Mader Tiflet | |
| SW 16 Tihremt | |

Figure 21. Situation of rock art sites in Zone 8



a



b

Figure 22. Selection of engravings from Zone 8
 a) Elephant, Ain Enbeigiga (SW3) (photo Baier, 1974/75) b) Boat and miscellaneous images, Azrou Klan (SW20)

were made with a fine, shallow pecked technique ("punched" according to the original researcher). Sites SW7,8,10, 13,14,15,20 had exclusively pecked images.

Zone 9 - Western Sahara (figures 23,24)

Many researchers have published reports on this area, but not all knew exactly where they were. Many judged "their" site to be totally new, whereas in fact part at least had already been published. Some data are therefore doubtful. Despite these shortcomings the general picture of this zone's rock art may be considered to be reasonably accurate. A total of 18 sites were catalogued (Simoneau, 1977); nine sites not in the catalogue have been added, giving a total of 27 sites for this study, with data incomplete on seven sites (WS1,7,16,17,24-26).

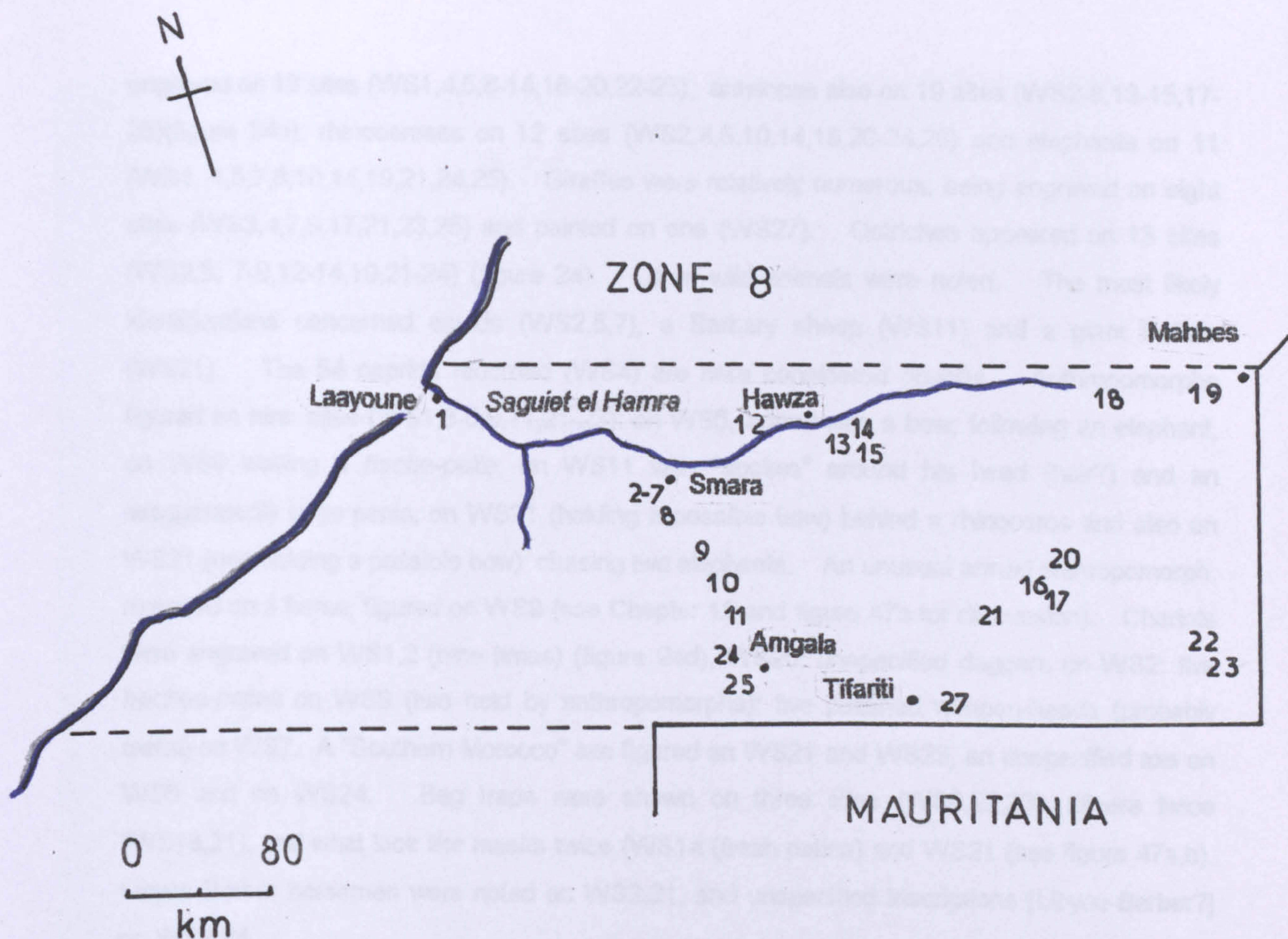
Situation of the sites: understandably, many sites are closely connected with the Saguiet el Hamra river and its numerous tributaries. The densest group is centred on Smara, in the middle reaches of the Saguiet el Hamra. An excentric site, WS1 used to exist at Laayoune, near the coast, but it was destroyed in the 1940s. Eight sites lie within 25 km of Smara (WS2-9), two further east (WS10,11), the remainder rather more isolated.

On low, dark slaty outcrops near dry river-bed.....	WS2,3,4,5
Destroyed.....	WS6
Much destroyed, beside river.....	WS7,8,9 (sandstone ridges)
Much destroyed.....	WS24,25
Beside or near river.....	WS10,11,13 (sandstone slabs), 14,16,17 (all 3 slaty hillocks),15,19,22,23
Slabs on small hill (apparently not near water).....	WS12
Rock-shelters opposite well.....	WS18
Near well.....	WS20,21 (slate slabs)
Rock-shelters.....	WS27

Table 20. Situation of the engravings in Zone 9

Size of site: so much destruction has taken place on these Zone 9 sites that it would be misleading to attempt to indicate the number of engravings that remain. As far as can be seen, sites contained from five to around 100 engravings (for instance, reliable figures give one engraving on WS16, about 100 on WS2, 102 on WS23).

Contents and technique: as was said above, too much confidence cannot be placed on all published work in this area, since researchers have used different methods and criteria for identifying images and seem often to have worked oblivious of interpretations of rock art representations elsewhere, leading to site inventories of rather strange animals and objects. The present study has been cautious, relying on photographs, tracings or drawings by reliable researchers rather than texts. Two sites with paintings are known in this zone : site WS18 contained red-painted inscriptions and WS27 had paintings of hand-stencils, humans and wild animals, particularly giraffes, reminiscent of the central Sahara (see Chapter 13). Cattle were



Zone 9 (Western Sahara)

- | | |
|---------------------------------|---|
| WS 1 Safia de El Aiun | WS 16 Gart Temar |
| WS 2 Lomo de Asli | WS 17 Gar Carfarsiat |
| WS 3 Asli Richies | WS 18 Pozo de El Farsia |
| WS 4 Asli Gardega | WS 19 Fet-Saccuna |
| WS 5 Cerro de El Aslein Bukerch | WS 20 Chelja Mairat |
| WS 6 Smara | WS 21 Pozo Mecaiteb |
| WS 7 Guera del Uad Zeluan | WS 22 Sidi Mulud |
| WS 8 Oued Tasua | WS 23 Ras Lentareg |
| WS 9 Oued Miran | WS 24 Cerro Noroeste de Amgala |
| WS 10 Oued Sfa | WS 25 Proa Sur de Amgala |
| WS 11 Odoloa Amgala | WS 26 Koudia Haratani (situation unknown) |
| WS 12 Hauza | WS 27 Tifariti |
| WS 13 Tucaat en Haila | |
| WS 14 Suiel | |
| WS 15 Fum Uad Ben Daka | |

Figure 23. Situation of rock art sites in Zone 9

engraved on 19 sites (WS1,4,5,8-14,16-20,22-25), antelopes also on 19 sites (WS2-8,13-15,17-25)(figure 24a), rhinoceroses on 12 sites (WS2,4,5,10,14,18,20-24,26) and elephants on 11 (WS1, 4,5,7,8,10,14,19,21,24,25). Giraffes were relatively numerous, being engraved on eight sites (WS3,4,7,9,17,21,23,25) and painted on one (WS27). Ostriches appeared on 13 sites (WS2,3, 7-9,12-14,19,21-24) (figure 24). Other wild animals were noted. The most likely identifications concerned equids (WS2,5,7), a Barbary sheep (WS11) and a giant buffalo (WS21). The 54 caprids recorded (WS4) are here considered doubtful. Anthropomorphs figured on nine sites (WS1,3-5,9,11,21-23): on WS5, armed with a bow, following an elephant, on WS9 waving a *hache-pelte*, on WS11 with "spokes" around his head (hair?) and an exaggeratedly large penis, on WS21 (holding a possible bow) behind a rhinoceros and also on WS21 (one holding a possible bow) chasing two elephants. An unusual armed anthropomorph, mounted on a horse, figured on WS9 (see Chapter 12 and figure 47e for discussion). Chariots were engraved on WS1,2 (nine times) (figure 24d), WS26; unspecified daggers on WS2; five *haches-peltes* on WS9 (two held by anthropomorphs); five polished weapon-heads (probably metal) on WS7. A "Southern Morocco" axe figured on WS21 and WS23, an unspecified axe on WS5 and on WS24. Bag traps were shown on three sites (WS9,22,23), *tiffinars* twice (WS18,21), and what look like masks twice (WS14 (fresh patina) and WS21 (see figure 47a,b). Libyco-Berber horsemen were noted on WS2,21, and unspecified inscriptions [Libyco-Berber?] on WS2,24.

Although the technique was often not indicated in the published reports, it was possible to identify 15 sites containing polished engravings (WS5-8,10,12-16,19-23) and seven with pecked engravings (WS1-5,7,12) (polished and pecked images often occurred on the same site). On some sites the technique was described as "punching", and this is apparent from published photographs (WS3,6 for instance).

Archaeological features: material is limited to tumuli which were noted at eight sites: WS7,8,9,13, 15,16,23 and 24.

General conclusions

This review has shown that no simple, single picture emerges from a study of Moroccan rock art sites. Differences exist both between and within zones, while at the same time recurrences of theme and technique are frequent.

Zone 1 (North and Central Morocco) is characterised by the extreme diversity of its few, rather small, sites, with regard to both situation and contents. Three of the 12 Moroccan sites with paintings are to be found here, without any apparent typological link between the images. Only

a



b



c



d

Figure 24. Selection of engravings from Zone 9

a) Gazelle, Smara (WS6) b) Ostriches and animals, Pozo Mecalteb (WS1) (photo Basel Museum) c) Elephant and d) Chariot, Lomo de Asil (WS2) (photo Nowak et al, 1975)

two sites had engravings of a type found elsewhere, although the crude anthropomorphs have their counterpart in Zone 3. Zone 2 (eastern Morocco) also presents a variety of facets, some sites being pecked, others polished in Tazina style, others in use over a long period and consequently containing a mixture of themes, styles and techniques.

The High Atlas (Zone 3) shows an overall stylistic uniformity, characterised by weapons and, to a lesser degree, anthropomorphic figures. Engravings are mostly pecked, often subsequently polished. Three major areas account for almost all the sites and although differences existed between them, mainly concerning the proportions of certain categories of engravings, it is possible to say that the High Atlas rock art forms a coherent whole. This was the only zone to show what have conveniently been called "idols" - mythological or ideological figures.

Zone 4 (Extreme South-east), south of the High Atlas, is already climatically in the Saharan zone of influence. The two sites here, although their engravings - chariots, inscriptions, pecked cattle - have counterparts elsewhere, stand apart from their neighbours in Zones 2 and 5. This latter zone (South-east) is extremely homogeneous, containing Tazina style polished engravings throughout, with a very small number of pecked images.

The Anti-Atlas (Zone 6) contains two main groups of engravings, clearly separated: Libyco-Berber images to the east and centre, pecked cattle to the west. The separation is not watertight, however, chariots being represented both in the centre and west. Polished Tazina style animals are lacking. This is not the case in Zone 7 (South), where this type of engraving is particularly numerous in the east, thinning out towards the middle and western end of the zone. The typological similarity with the Zone 5 engravings is striking. This Saharan zone is also remarkable for its many sites depicting pecked cattle, often in some detail. In Zone 8 (south-west), no site containing typical examples of wild animals in polished Tazina style was noted. Sites are predominately made up of pecked domestic cattle, with a few wild animals, though chariots and Libyco-Berber horsemen and foot-soldiers were noted. Finally, sites in Zone 9 (Western Sahara), although much destroyed, again show Tazina polished animals, along with mixed collections of pecked animals and objects.

This review of Moroccan rock art sites shows that several different modes of existence and ideologies influenced the populations responsible for the paintings and engravings. Differences in theme, style and patination indicate that the engravings are not all contemporary and that a number of sites experienced several periods of occupation.

CHAPTER 8. DETAILED STUDIES OF FOUR ROCK ART SITES

Aim of the detailed studies and choice of site

The overall review of the rock art sites through the literature, completed by fieldwork, showed that the sites did not all contain the same type of material and that four main groups of images could be distinguished, differing in theme, technique and style. In order to verify this observation, sites felt to be representative of each group were chosen for closer study. The aim was not to produce a corpus of engravings for each site but to obtain a sufficiently representative selection of engravings to enable certain major deductions to be made. Four sites were selected: one in the High Atlas, one in the Anti-Atlas and two in southern Morocco. Their study confirmed impressions resulting from the general review of sites.

I - A High Atlas site: Oukaimeden - Tizi n'Tifina (part of HA36 in this study)

Name of site

The catalogue of rock art sites (Simoneau, 1977) lists five for Oukaimeden: 'Ait El-Qaq' (c.12 km from Oukaimeden) (catalogue reference 150.087); 'Azib Abadsan' (catalogue reference 150.089), a kilometre to the NE of the Tizi n'Tifina; 'Oukaimeden' (catalogue reference 150.091), clearly referring to the village; 'Abri' (reference 150.090) felt by Chenorkian (1988: 28) to be an engraved rock-shelter on the Tizerag slopes; 'Assif Tiferguine' (reference 150.088), probably the zone between the Assif Tiferguine and 'Azib Abadsan'. Later researchers reduced Oukaimeden to four zones (Chenorkian, 1988: 26, 28; Searight and Hourbette, 1992: 35).

Previous research

No research has been directed specifically towards the engravings located at Tizi n'Tifina. On the other hand, many articles have been written on the Oukaimeden sites as a whole. The basic work is the first volume of the *Corpus des Gravures Rupêstres du Grand Atlas* (Mathomme, 1959). References to the Corpus are indicated thus: M..... A doctoral thesis on the rock art of Oukaimeden and the Yagour plateau, essentially a new corpus of engravings, was published in November 1999 (Rodrigue, 1999a).

Situation

The locality known as Oukaimeden is one of the three major rock art locations in the High Atlas mountains. The village itself is a well-known ski resort lying some 70 km south of Marrakech

(see figure 10). The present tarmaced road winds its way up in hairpin bends, to come to an end in the village. Exits to the south-west and south-east are by mule-tracks. The former was the traditional route to Oukaimeden's high pastures before the construction of the road.

Oukaimeden owes its name to the 3,273 m high summit to the south that dominates a wide valley, Aougdal Sidi n'Fars, 4 km long from the Tizi n'Oukaimeden in the SW (2,682 m) to the Tizi n'Tifina in the NE (figure 25a). This prairie, at an altitude of 2,600 m, is also enclosed to the SE by the Adrar Angour (3,616 m) and to the east by the Adrar n'Ouhattar (3,082 m). To the NW, the Adrar n'Tizerag forms a 5-km long sandstone ridge, its northern facade inaccessible (2,285 m at its northern extremity), its south-facing slopes descending steeply in a series of superimposed strata to the valley and the Assif n'Ait Irene. The buildings making up the village lie on its lower slopes, NW of the Aougdal n'Sidi Fars. A second, much lower, sandstone ridge, 3 km long and parallel to the Tizerag, rises steeply from the right bank of the Assif n'Ait Irene before sloping down to the prairie at its foot.

Understandably, in view of its altitude, Oukaimeden has numerous streams, providing water all the year round. The Assif n'Ait Irene runs between the Tizerag and its secondary ridge, its waters captured slightly downstream of the village by a small dam. A second watercourse, the Assif Tiferguine, cuts through this latter ridge to join the Assif n'Ait Irene at right angles some two kilometres NE of the village. The combined rivers, now known as the Assif n'Oukaimeden, continue their descent to the NE through a narrow gorge. The Assif Talasaine runs intermittently in the prairie, parallel to the Assif n'Ait Irene. In summer, from July to October/November, neighbouring tribes bring their herds up to graze on the rich pastures and to escape from the heat of the plain. Apart from grass, vegetation is sparse, limited to a few high-altitude plants and very rare juniper trees on the Tizerag.

Choice of present study area

This study focuses on the group of engravings clustered around the Tizi n'Tifina, within a rectangle some 300x150 m (figure 25b). This zone, coming within the official site reference 150.088, contains a relatively high number of engravings in a small area, compared to the other sectors where the engravings are widely scattered. The images in this stretch of open land are also easy to situate in their natural surroundings, unlike those of the village whose environment has been completely altered by roads, buildings, walls, drains, holes for tree-planting and general rubble. While no one part of the extensive site known overall as Oukaimeden - 5 km long by about 1 km wide - can be said to truly represent the whole, Tizi n'Tifina contains representations of all the Oukaimeden themes and allows the essential features of the site to be noted.

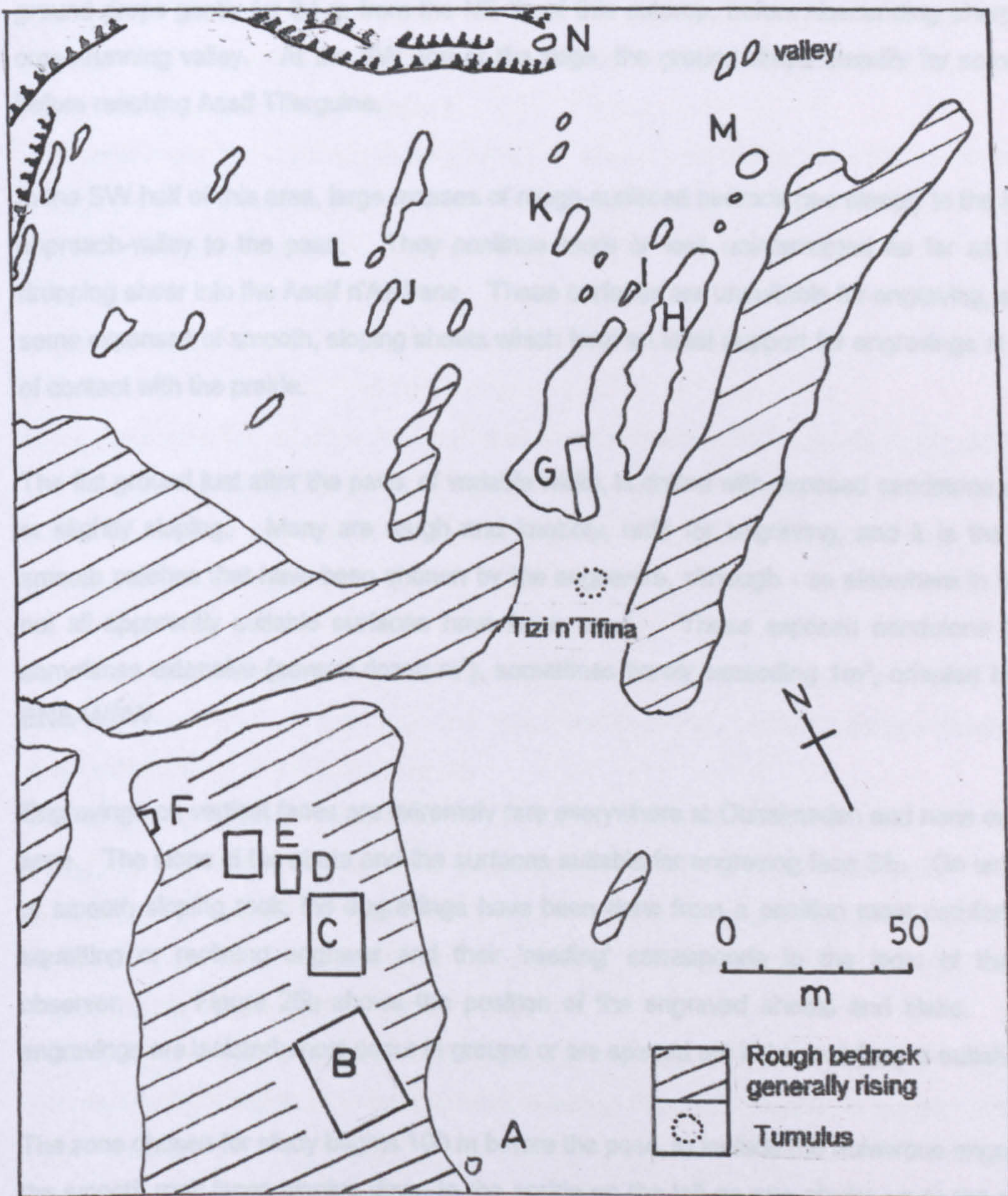
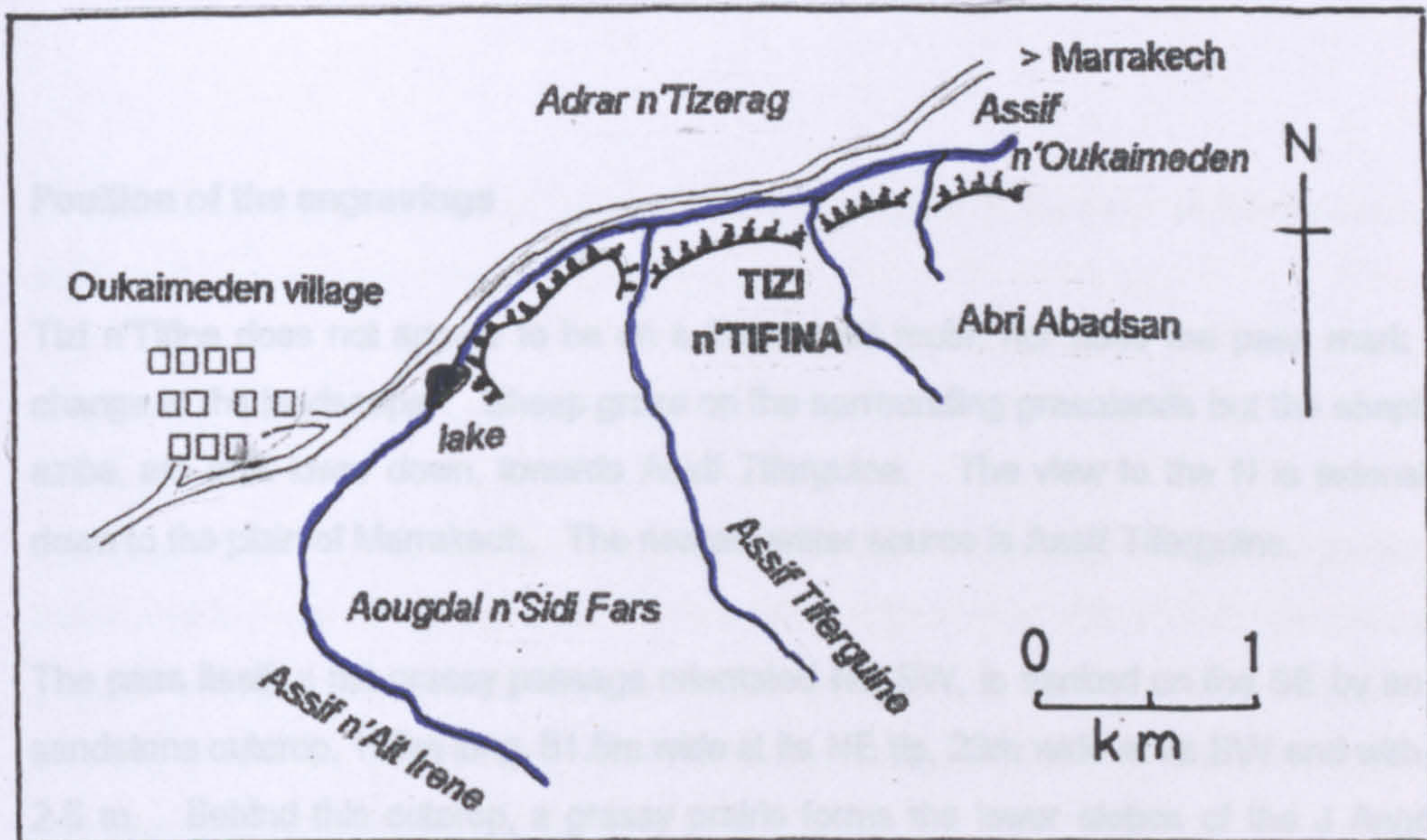


Figure 25. a) General map of Oukaimeden b) Tizi n'Tifina study area, with position of engraved rocks

Position of the engravings

Tizi n'Tifina does not appear to be on a frequented route, nor does the pass mark a profound change in the landscape. Sheep graze on the surrounding grasslands but the shepherds' huts, *azibs*, are built lower down, towards Assif Tiferguine. The view to the N is extensive, looking down to the plain of Marrakech. The nearest water source is Assif Tiferguine.

The pass itself, a flat grassy passage orientated NE-SW, is flanked on the SE by an undulating sandstone outcrop, 165m long, 51.5m wide at its NE tip, 23m wide at its SW end with a height of 2-5 m. Behind this outcrop, a grassy prairie forms the lower slopes of the J Angour. The ground drops gently for 34 m from the NE tip of this outcrop, before descending sharply into a cross-running valley. At the SW end of the ridge, the ground drops steadily for some 700 m before reaching Assif Tiferguine.

In the SW half of this area, large masses of rough-surfaced bedrock rise steeply to the left of the approach-valley to the pass. They continue more or less uninterrupted as far as the cliffs dropping sheer into the Assif n'Ait Irene. These surfaces are unsuitable for engraving, except for some expanses of smooth, sloping sheets which form an ideal support for engravings at the point of contact with the prairie.

The flat ground just after the pass, of variable width, is dotted with exposed sandstone slabs, flat or slightly sloping. Many are rough and knobby, unfit for engraving, and it is the available smooth patches that have been chosen by the engravers, although - as elsewhere in Morocco - not all apparently suitable surfaces have been used. These exposed sandstone slabs are sometimes extensive (several dozen m²), sometimes barely exceeding 1m², oriented NE-SW or ENE-WSW.

Engravings on vertical faces are extremely rare everywhere at Oukaimeden and none exist in this zone. The slope of the strata and the surfaces suitable for engraving face SE. On large sheets of smooth sloping rock, the engravings have been done from a position most comfortable to a squatting or reclining engraver and their 'reading' corresponds to the logic of the modern observer. Figure 25b shows the position of the engraved sheets and slabs. Very few engravings are isolated: most occur in groups or are spaced out if the rock face is suitable.

The zone chosen for study begins 100 m before the pass, to include the numerous engravings on the smooth rock faces sloping down to the prairie on the left as one climbs up to the pass, and continues some 34 m from the NE tip of the main ridge, on ground already sloping down to the

cross-running valley mentioned above. This extension from the pass strictly speaking allows the study of the greatest number of engravings.

Engraving techniques, size, patination and style

Technique and size: at Oukaïmeden, taken as a whole, engravings uniquely polished, without an initial pecking, are not discernible. In the Tizi n'Tifina zone, the engravings have visibly been pecked, possibly with a metal tool, though a stone one is not to be excluded, and then often carefully polished. The average size of the engravings is between 30 and 50 cm; the smallest anthropomorph measures 55 cm, the largest 1.50 m.

Patination: patination is sometimes total, the engraved lines being of the same colour as their rock support. Some engravings have suffered extreme degradation from natural causes; one or two others have been deliberately damaged.

Style: stylistically, the Oukaïmeden engravings, of which those of the Tizi n'Tifina form an integral part, give a general impression of a crude realism. Very occasionally, the interior surface of the engraving is entirely pecked and polished.

Engraved rocks

Completely enigmatic engravings, often a mass of imbricated lines, barely distinguishable from the rock support, have generally been ignored since the aim of the study was to bring out the salient features of the site to enable comparison with other sites, and these unidentifiable engravings did not advance this aim.

Details of the engravings are given in Appendix 7. In the following list, a semi-colon separates groups of engravings. At this stage, the objects are described, without a definite identification.

A: detached rock, 1.50x1.50 m; 1 dagger

B: sloping sheet, 35x20 m, backed by rough, steeply rising rock; 2 points, 1 axe, 1 curved object, 2 daggers, 1 halberd, 1 very damaged anthropomorph, 1 enigmatic, 1 hafted object

C: sloping sheet, 20x15 m; 2 members of the cat family (one damaged) (figure 26a), 1 hafted object, 1 tailed circle; 3 curved objects (1 incomplete), 3 daggers, 1 halberd, 1 forked rectangle, 3 angled objects, 1 stick (broken) (halberd shaft?)

D: rock, 8x5.5 m, poised on bedrock; 2 fiddle-idols (damaged), 1 forked rectangle; 1 dagger; 1 anthropomorph, 1 dagger; 1 anthropomorph, 3 angled objects, 1 dagger, 11 points; 1 divided circle; 1 fiddle-idol

E: sloping sheet, 10x12 m; 1 halberd (figure 26b), 1 hafted object; 1 dagger; 1 fiddle-idol, 1 angled object; 1 dagger; 1 fiddle-idol; 2 daggers, 1 hafted object, 1 point, 1 fiddle-idol (figure 26c); 1 curved object



a



b



c

Figure 26. Selection of engravings from Tizi n'Tifina
 a) Two members of cat family, Rock C b) Halberd, Rock E c) Upper part of fiddle-idol, Rock E

F: smooth rock face, 3x2 m; 1 equid (ass/quagga)

G: irregular outcrop, broken up but 55x20 m overall; 1 dagger; 1 enigmatic; 1 quadruped, 1 oval; 1 hafted object with rivets; 1 bovid, 4 daggers, 1 forked rectangle (figure 27b); 1 enigmatic, 1 curved object; 1 hafted object; 1 foot; 1 enigmatic, 1 circle; 1 halberd, 4 daggers, 1 hafted object (all heavily eroded) (figure 27a); 1 hafted object, 1 curved object (heavily eroded)

H: outcrop, 64x14 m; 1 "decapitated" anthropomorph (slab containing head broken and slipped slightly to the right), 3 daggers (1 with serrated edges), 1 hafted object, 2 enigmatics, 2 cattle, 1 broken circle, 1 foot, 1 doubtful wild pig

I: outcrop, 5x2.5 m; 2 daggers, 1 possible axe, 1 enigmatic

J: outcrop, 15x5 m; 3 daggers, 1 enigmatic

K: outcrop, 11x2.5 m; 3 daggers; 1 circle; 2 daggers, 1 halberd; 1 circle; 1 enigmatic, 1 oval, 1 hafted point; 2 daggers, 1 point, 1 round decorated shield (figure 27c)

L: outcrop: 6x4 m; 1 dagger

M: outcrop, 10mx10 m; 1 doubtful dagger; 1 fiddle-idol, 2 hafted objects filling surface of small rock overlying the bedrock slab; 3 enigmatics

N: rock, 3x4 m; 2 hafted points, 1 game, 1 curved object, 1 point, 1 oval

Themes

Table 21 gives the engravings retained for study here. Detailed information is contained in Appendix 7.

Comments on the engravings

Daggers: the 39 daggers are easily recognisable, even when incomplete (figure 27a,b). It is unlikely that they are faithful copies of real objects - their size alone militates against this possibility. Some are twisted, or have serrated edges (Ref.H/2), and cannot represent real daggers.

Points: this entry covers a number of objects, some merely triangles, others definitely spear-, lance- or javelin-heads (figure 27c). Some have shafts.

Axe: one engraving undoubtedly represents a stone or metal axe with its bindings (Ref.B/2).

Hafted objects: a considerable number of roughly-similar objects represent an oval or a rectangle mounted on a centrally-placed shaft, which can either be slightly or extremely bent. As seen in Chapter 6, when the head lies in a continuation of the shaft they have been considered as clubs (Ref.B/8); in other cases they are treated as axes. Certainly rivets can be seen in a specimen on Rock G (M.155.21) (Ref.G/4).

Halberd (figure 26b): the basic form of this weapon is constant, though the hafting details vary.



a



b



c

Figure 27. Selection of engravings from Tizi n'Tifina
 a) Halberd and daggers, heavily eroded, Rock G b) Bovid, daggers and forked rectangle, Rock G c) Weapon-head and round shield, Rock K

Object	Rock reference														Total
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
Dagger	1	2	3	3	4		9	3	2	3	7	1	1?		39
Point		2		11	1						2			3	19
Axe		1							1						2
Hafted object		1	1		2		4	1					2		11
Halberd		1	1		1		1				1				5
Angled object			3	3	1										7
Curved object		1	3		1		2							1	8
Stick			1												1
Round shield											1				1
Forked rectangle			1	1			1								3
Anthropomorph		1		2				1							4
Foot							1	1							2
Cattle							1	2							3
Cat family			2												2
Wild pig (?)								1							1
Wild ass						1									1
Non-identified animal							1								1
Circle/oval			1	1			2	1			3			1	9
Game														1	1
Fiddle-idol				3	3								1		7
Enigmatic		1					3	2	1	1	1		3		12
	1	10	16	24	13	1	25	12	4	4	15	1	7	6	139

Table 21. Themes represented at Tizi n'Tifina

Angled object: this object, from its context, is obviously a weapon. It is possible to see it as a socketted axe, although the examples found around the head of the anthropomorph on rock D show the pointed handle closer to the victim than the supposed cutting edge. Furthermore, no line separates the 'head' from the 'staff' and the angle is often very obtuse.

Curved object: it is accepted here that this object may be a boomerang (see Chapter 6).

Stick: the stick engraved on the slopes of rock C is broken. It could be the shaft of a halberd. Or it may represent a genuine stick, for beating or for throwing (if the missing end was weighed). Weighted throwing sticks are used by present-day Moroccan shepherds.

Round shield and circle: as pointed out in Chapter 6, researchers are divided as to whether the numerous internally decorated circles of the High Atlas (Zone 3) are sun-symbols or round shields (for instance Jodin, 1965; Rodrigue, 1997). In this chapter, internally decorated circles are considered to be shields (figure 27c, the only example in this part of the site).

Forked rectangle: this object (figure 27b), described in Chapter 6, is considered to be a bag.

Anthropomorph, feet: the four anthropomorphs retained here are all considerably bigger than the other engravings, the largest reaching 1.5 m. One (M.153 h.2) (reference here: rock D/6) is visibly attacked: 15 weapons of various kinds (18 in Malhomme, 1959: 73) surround what is left of the very damaged body (deliberate damage, according to Malhomme, *idem*). The largest figure has four to five bracelets round his wrists, wears a double pendant round his neck and may also be wearing

some form of footgear (not now visible) (M.153 h.i) (Ref.D/5). Another carries a pendant on his chest (M.155 4) (Ref.H/1). Short lines perpendicular to the body are usually interpreted as the fringes of a leather tunic: one anthropomorph here has such lines (M.153 a.i) (Ref.B/6). Ears are visible on three figures, hair, facial details and fingers on two. The two engravings considered to represent feet have no toes and only the general form of the image leads to the conclusion that they do in fact show feet.

Cattle, cat family, wild ass, wild pig, non-identified animal : cattle, while not by any means absent from Oukaïmeden sites, are a very minor theme compared to weapons. They appear to be the only domestic animal. One here is closely associated with a dagger; none have any connection with a human. Only two members of the cat family have been recorded in Oukaïmeden sites and both occur, together, here. They are represented with short ears, round paws and uplifted tail. They do not appear to be male lions (absence of mane) but could be females (one seems to be pregnant), leopards or some form of wild cat (M.153 d.1) (figure 26a). Only one wild ass has been noted at Oukaïmeden (M.153 m.), and it too is to be found here. The large pointed ears and short mane are clearly represented (Ref.F/1) A possible wild pig, or perhaps a wart hog, one specimen having been recorded at Oukaïmeden (Rodrigue, 1987: 43), has short, rather pointed ears and seems to have an open mouth. The unidentified animal is not an ox, dog, cat or ass; it has long ears - or horns - and is shown in a dynamic position.

Game: only one example of this fairly popular Oukaïmeden theme (about 20 for Oukaïmeden as a whole) has been engraved in this part of the site. Identified as "malcala", it consists here of three irregular lines made up respectively of 12, 15 and 13 small cupules.

Fiddle-idol: this type of image is only present at Tizi n'Tifina (figure 26c). One is closely associated with a dagger.

Enigmatic: little comment is possible here, since these enigmatic, unidentifiable, engravings are extremely variable, often made up of a mass of imbricated lines. As was said earlier, only a few have been reported here.

Spatial distribution of the engravings

A primary factor in the choice of location for an engraving was the suitability of the rock surface. After this first constraint, the engraver was free to position the engraving and to create associations of engravings as determined by the motivation behind this art. A study of the contents of the 14 engraved zones studied in this chapter reveals some interesting facts :

- the only equid and felidae engraved in Oukaïmeden are on slabs close to each other at the beginning of the Tizi n'Tifina (Rocks C and F)
- more interestingly because more significant, six out of seven fiddle-idols are grouped on the slopes leading to the pass itself (3 on Rock D, 3 on Rock E). The seventh is at the very end of the pass (Rock M). They appear to mark the beginning and end of this zone

- the two largest anthropomorphs (one attacked) are side by side, adjacent to the fiddle-idols, at the beginning of the pass (Rock D). A third anthropomorph is also in this area (Rock B), while the fourth lies towards the end of the pass (Rock H). The placing of the large human figures is thus almost identical to that of the fiddle-idols
- two of the bovids are close to each other (Rock H), but apparently independent of all the other nearby engravings; the third is in a frieze with five daggers and a bag, the engraved lines of one of the daggers merging with the throat and chest of the bovid

Chronology

The date or dates of this type of engraving are not discussed at this stage. The question of the chronology of Moroccan rock art is taken as a whole and forms Chapters 10 and 11.

Conclusion

The general features of the Tizi n'Tifina site were the overwhelming importance of metal weapons (daggers, halberds and spear-, lance- or javelin heads), and a significant number of other weapons, some of which may also have been metallic. Large-size anthropomorphs were present. The striking 'fiddle-idols', have only been found in Oukaïmeden, and are in fact limited to the Tizi n'Tifina zone. They cannot therefore be taken as representative of the High Atlas. The engravings were pecked, the outline being then polished. The style could be considered 'realistic', according to the standards established in this study. Despite a certain variety of theme, the engravings taken as a whole presented a homogenous aspect, although they may not all have been engraved at the same time.

It is thus possible to affirm the existence of a specific group of engravings. Further research proved that other sites had characteristics similar to Tizi n'Tifina.

II - An Anti-Atlas site: Foug Chenna (AA1 in this study)

The site of Foug Chenna, in the Anti-Atlas, was selected because the review of rock art sites in the previous chapter, and a preliminary visit to the site, had revealed a distinctive type of engraving, bearing no resemblance to the Tizi n'Tifina engravings of Oukaïmeden.

Name of the site and previous research

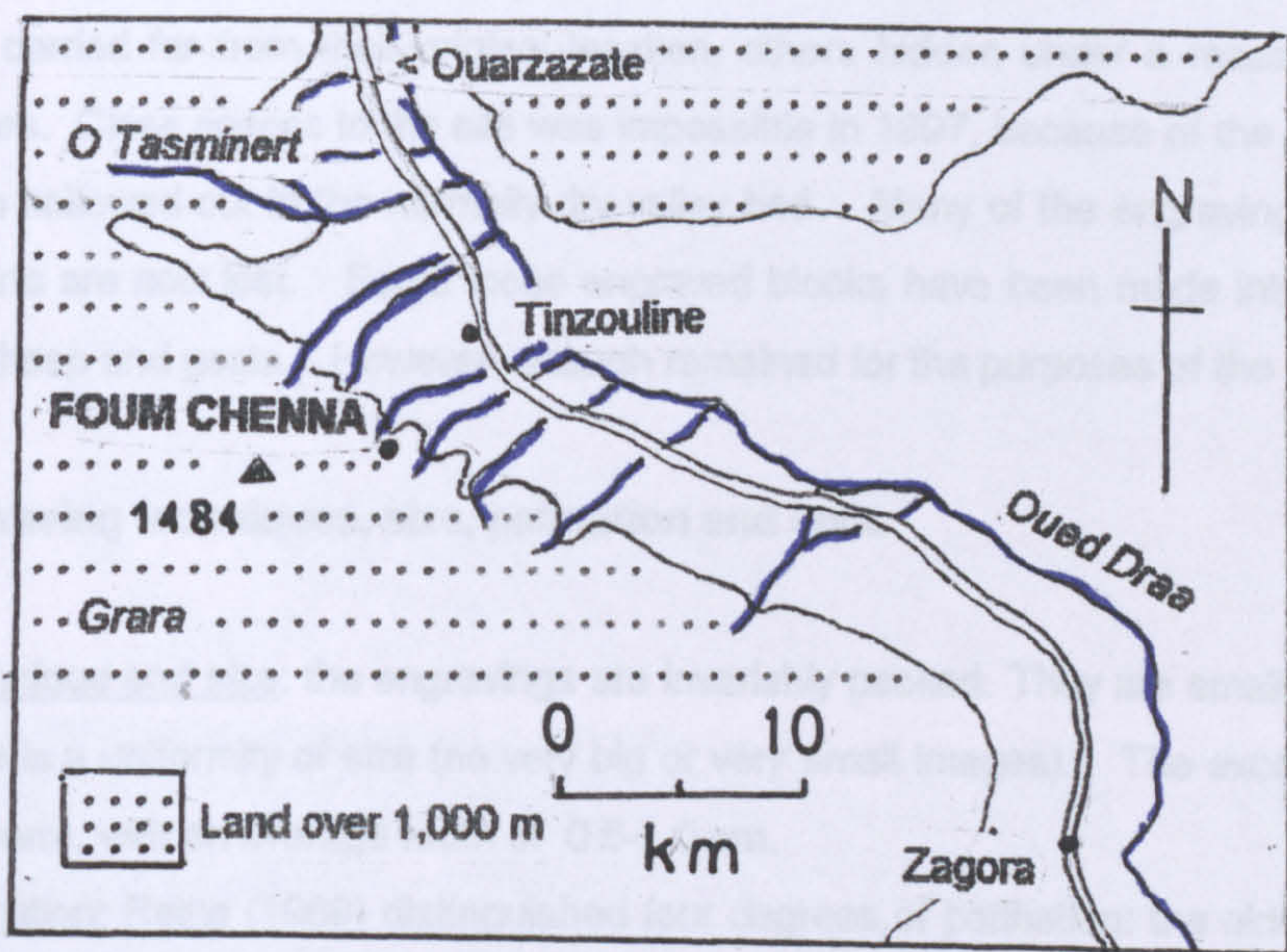
The site had been known since 1942 and was first reported at the 1952 Panafrican Prehistoric Congress (Glory *et al*, 1955) under the name of 'Oumchena'. The site was later briefly mentioned by Simoneau and the name corrected to 'Foumchena' (Simoneau, 1968/72: 27). It figures as 'Foum Chenna' in the *Catalogue des Gravures Rupestres du Sud Marocain* (Simoneau, 1977) under the reference 150.044. A second report was published by Reine (1969), one of the members of the first expedition. In the initial report, it was estimated that the site contained more than 3,000 images, in over 300 groups, the majority of which were qualified as "Libyco-Berber" (Glory *et al*, 1955: 715).

Situation

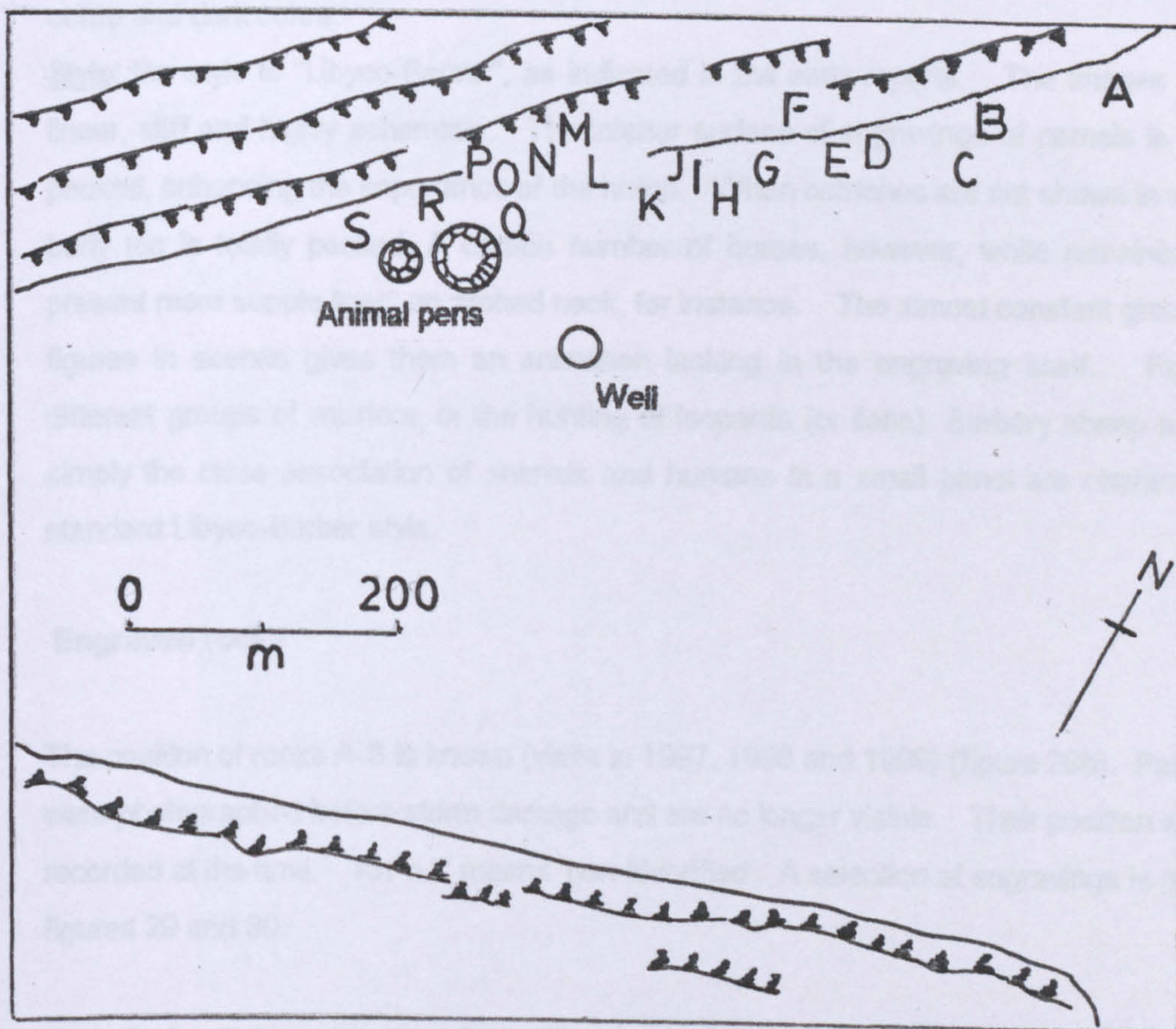
The site of Foum Chenna is situated some 8 km south-west of the village of Tinzouline, 30 km north of Zagora (figure 28a). The site, at an altitude slightly under 1,100m OD, lies in a valley, oriented NE/SW, on the western fringe of the plain of the N/S flowing River Draa. Peaks in the Anti-Atlas massif immediately behind the site rise to heights between 1,484 and 1,541m. Numerous streams have in the past cut through the massif, to join the main River Draa. The most important, Oued Tasminert (to the north of Foum Chenna), forms a convenient passage from the Draa valley to the rugged Grara region behind, rich in copper and nickel mines. From the Grara a route also leads south towards the now E/W flowing River Draa. A track up the Foum Chenna valley allows penetration into the massif. A well has been dug in the now-dry river bed. Despite the present desolate aspect of this whole area - access to the Foum Chenna site is across a flat, stony plain, the only vegetation being a few drought-supporting plants and a scattering of acacias - the area seems at one time to have been more favoured. The engraving site is one of four roughly comparable sites all within a few kilometres of each other.

Position of the engravings

The engravings start at the mouth of the valley, approximately 700 m wide at this spot; a few scattered images continue to be engraved for about 1,000 m up-valley (figure 28b). The majority have been made on the lower levels of the sandstone strata that rise, fractured, in step-formation, to form the valley walls, or on the chaos of detached rocks at the base of the walls (figure 29a). A few are found on the upper strata, at heights around 15 m. Practically all the engravings are on the left bank, a few only on the right bank. Engravings are on any available rock face, irrespective of orientation. Unfortunately, some time between 1992 and 1997 (probably in 1994/95, when rainfall recorded in Ouarzazate increased by almost 60%), heavy storms brought raging torrents of rain down the valley. Big boulders were displaced, engraved blocks overturned



a



b

Figure 28. a) Draa Valley, Tinzouline and site of Foum Chenna
 b) FOU M CHENNA valley: position of engravings

and carried far from their original location, others hidden under a mass of alluvia and smaller stones. Close access to the site was impossible in 1997, because of the deep channels that had been hollowed out in the normally-dry valley bed. Many of the engravings recorded in the early reports are now lost. Some loose engraved blocks have been made into temporary enclosures for sheep and goats. However, enough remained for the purposes of the present work.

Engraving techniques, size, patination and style

Technique and size: the engravings are invariably pecked. They are small: 25-30 cm. In addition, there is a uniformity of size (no very big or very small images). The excavated line is shallow (a few mm), with an average width of 0.5-1.0 cm.

Patination: Reine (1969) distinguished four degrees of patination: the oldest, the same colour as the support, the others progressively lighter. In this work, three patinas are noted, all standing out very clearly against the dark-coloured rock surfaces: very pale ochre, almost white; medium ochre and dark ochre.

Style: the style is "Libyco-Berber", as indicated in the early reports. The images are stick-like, linear, stiff and highly schematic. The interior surface of engravings of camels is always totally pecked, enhancing the importance of the hump. When ostriches are not shown in stick form, the body too is totally pecked. A certain number of horses, however, while remaining schematic, present more supple lines: an arched neck, for instance. The almost constant grouping of these figures in scenes gives them an animation lacking in the engraving itself. Fights between different groups of warriors, or the hunting of leopards (or lions), Barbary sheep and ostrich, or simply the close association of animals and humans in a small panel are characteristic of the standard Libyco-Berber style.

Engraved rocks

The position of rocks A-S is known (visits in 1997, 1998 and 1999) (figure 28b). Panels 1-51 were photographed before storm damage and are no longer visible. Their position was not recorded at the time. An 'n.i.' means 'non-identified'. A selection of engravings is given in figures 29 and 30.

A: vertical rock face: 1 man on foot, with small round shield and possible weapon

B: detached rock, vertical face: 2 horsemen, 2 leopards/lions, 4 enigmatics

C: detached rock under B: 5 horsemen, 2 men on foot with round shields (1 also with unknown weapon), 1 possible Barbary sheep, 1 leopard/lion, 3 n.i. animals

D: detached block: 1 n.i. animal

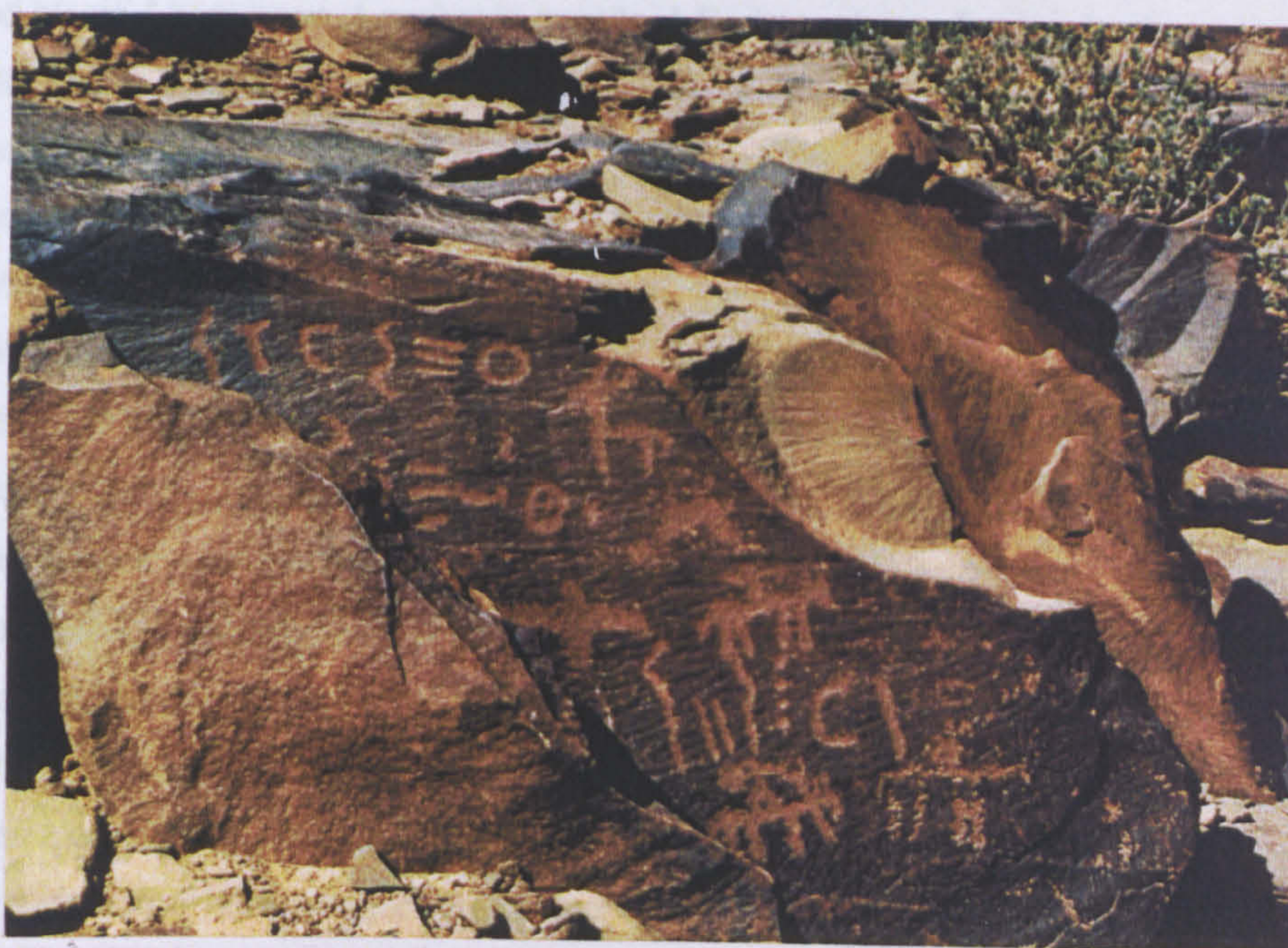
E: embedded block: 2 horsemen, 1 leopard/lion, 5 n.i. animals



a



b



c

Figure 29. View of site of Fom Chenna and selection of engravings
 a) View of site, looking up-valley b) Rock R: horseman, 2 non-identified animals
 c) Rock I: 3 horsemen, 2 lines of Libyco-Berber letters, 2 non-identified animals

F: embedded block: 1 Barbary sheep

G: embedded block: 3 horsemen, 1 camel, 5 n.i. animals

H: detached block, broken: 1 horseman, 1 Barbary sheep, 1 ostrich, 6 n.i. animals

I: detached block: 1 horseman, 4 n.i. animals

J: embedded block: 13 ostriches, 3 n.i. animals

K: embedded block: 1 horseman, 2 Barbary sheep, 3 n.i. animals

L: detached block: 1 horseman, 2 camels, 5 n.i. animals, 1 serpentiform, 2 lines of Libyco-Berber letters

M: embedded block: 1 n.i. animal, 2 lines of Libyco-Berber letters, 1 enigmatic

N: detached block: 2 horseman, 1 probable oryx, 1 leopard/lion, 2 ostriches, 4 n.i. animals

O: broken embedded block: 1 horseman, 2 leopards/lions, 2 n.i. animals

P: detached block: 1 horseman, 1 leopard/lion, 1 enigmatic

Q: detached block, incorporated into enclosure wall: 1 horseman (no shield or weapon?)

R: fractured block, now in the middle of an enclosure: 1 horseman; 2 n.i. animals (figure 29b)

S: detached block, incorporated into enclosure wall: 2 n.i. animals

1: detached block: 3 horsemen, 2 lines of Libyco-Berber letters, 2 n.i. animals (figure 29c)

2: detached block: 1 probable gazelle

3: detached block next to n°2: 1 horseman

4: detached block; 2 horsemen, 1 Barbary sheep, 1 leopard/lion, 2 n.i. animals

5: detached block; 4 horsemen, 1 probable gazelle, 1 Barbary sheep, 3 n.i. animals

6: embedded block: 2 horsemen, 1 n.i. animal

7: detached block: 1 horseman

8: detached block: 1 horseman, 1 man on foot with shield and lance/javelin, 8 lines of Libyco-Berber letters

9: embedded block: 2 horsemen, 2 enigmatics

10: embedded block: 2 horsemen, 1 Barbary sheep, 2 n.i. animals

11: embedded block: 3 horsemen, 2 enigmatics

12: embedded block: 3 horsemen

13: detached block: 2 horsemen, 1 addax (?), 1 Barbary sheep, 2 leopards/lions, 2 n.i. animals

14: embedded block: 2 horseman, 1 leopard/lion, 1 n.i. animal

15: adjacent embedded block: 1 horseman, 15 n.i. animals, 2 lines of Libyco-Berber letters

16: detached block: 1 horseman, 1 leopard/lion (figure 30a)

17: vertical rock face: 2 horsemen, 2 men on foot with shield and lance/javelin, 6 mounted camels, 1 Barbary sheep, 4 n.i. animals

18: vertical rock face: 4 horsemen, 1 man, 1 mounted camel, 1 probable gazelle, 9 n.i. animals, 2 enigmatics



a

b



c



Figure 30. Selection of engravings from Fourn Chenna
 a) Rock 16: horseman, leopard/lion
 b) Rock 22: 4 horsemen, 1 enigmatic
 c) Panels 31, 32, 33, 34:
 horsemen, animals, Libyco-Berber
 letters, miscellaneous

- 19: sloping rock face: 3 horsemen, 1 foot soldier, 3 Barbary sheep, 1 leopard/lion, 1 ostrich, 5 n.i. animals
- 20: detached block: 3 horsemen, 1 man on foot with lance/javelin, 2 dogs, 3 Barbary sheep, 2 leopards/lions, 1 horse, 1 camel, 1 ostrich, 1 n.i. animal
- 21: detached block: 4 horsemen, 1 man on foot with lance/javelin, 1 ostrich, 2 n.i. animals
- 22: sloping rock face: 4 horsemen, 1 enigmatic (figure 30b)
- 23: small detached rock lying on n°24: 1 horseman, 1 man on foot with shield and lance/javelin
- 24: small detached rock lying under n° 23 and on n° 25: 1 horseman, 1 ostrich
- 25: embedded block: 2 horsemen, 2 ostriches or bustards, 2 n.i. animals
- 26: embedded block in sloping rock face: 1 dog, 4 Barbary sheep, 2 leopards/lions
- 27: detached block: 4 horsemen, 1 man on foot, 1 Barbary sheep, 1 leopard/lion, 1 camel, 1 circle
- 28: detached block: 1 horseman, 1 mounted camel, 1 n.i. animal
- 29: detached block: 2 leopards/lions, 1 probable gazelle
- 30: detached block: 1 horseman
- 31: detached block: 1 dog, 1 Barbary sheep, 1 leopard/lion (figure 30c)
- 32: vertical rock face: 1 horseman, 1 mounted camel, 1 dog, 1 Barbary sheep, 1 ostrich, 3 n.i. animals (figure 30c)
- 33: vertical rock face (strata just below n°32): 1 horseman, 1 Barbary sheep, 3 lines of Libyco-Berber letters, 1 serpentiform (figure 30c)
- 34: vertical rock face (strata just below n°33): 3 horsemen, 1 man on foot, 2 leopards/lions, 4 n.i. animals, 2 bustards, 1 line of Libyco-Berber letters, 1 oval, 1 enigmatic (figure 30c)
- 35: vertical rock face, near top of valley wall: 1 horseman, 2 n.i. animals
- 36: sloping rock face (strata just below n° 35): 1 n.i. animal, 2 lines of Libyco-Berber letters
- 37: embedded block (below n° 36): 2 horsemen, 1 n.i. animal, 1 oval, 1 enigmatic
- 38: sloping rock face: 2 horsemen, 1 man on foot with shield and lance/javelin, 1 leopard/lion, 1 camel, 1 bustard, 2 n.i. animals, 1 cup-and-ring, 4 enigmatics
- 39: sloping rock face: 2 horsemen, 3 possible addax, 1 n.i. animal, 2 enigmatics
- 40: sloping rock face: 1 man on foot with camel
- 41: vertical rock face, near top of valley wall: 2 horsemen, 1 Barbary sheep, 1 camel, 4 n.i. animals
- 42: vertical rock face (strata just below n° 41): 2 horsemen, 1 man on foot, 3 n.i. animals
- 43: embedded block: 3 horsemen, 1 mounted camel, 2 unmounted horses, 1 leopard/lion
- 44: detached block lying on n°45: 4 horsemen, 1 ostrich or bustard
- 45: embedded block: 3 horsemen, 1 Barbary sheep, 1 probable gazelle, 2 n.i. animals, 1 serpentiform, 1 enigmatic
- 46: detached block: 1 ostrich, 2 n.i. animals
- 47: embedded block: 1 line of Libyco-Berber letters
- 48: detached block: 1 leopard/lion, 4 n.i. animals
- 49: detached block: 2 horsemen

50: detached block: 1 horseman, 1 n.i. animal

51: detached block: 3 horsemen, 1 Barbary sheep, 1 n.i. animal, 2 enigmatics

Themes

A breakdown of the images is given in Table 22.

Subject	Number of units	Number of panels
Non-identified animal	130	42
Horseman	113	54
Leopard/lion	27	20
Barbary sheep	24	16
Ostrich	23	11
Camels	18	11
Man on foot	16	14
Domestic dog	5	4
Horse	3	2
Bustards	3	2
Ostrich or bustard	3	2
Probable gazelle	5	5
Possible addax	4	2
Probable oryx	1	1
Possible Barbary sheep	1	1
Libyco-Berber lines of letters	21	9
Enigmatic or confused	21	13
Circles, ovals, cup-and-ring	4	4
Serpentiforms	3	3
	425	216

Table 22. Themes represented at Fourn Chenna

Comments on the engravings

Horseman: all are armed with a small round shield and a javelin/lance, unless otherwise stated.

The great majority are shown mounted barebacked.

Barbary sheep, oryx: it is very difficult to distinguish between a Barbary sheep and an oryx in these rather rough engravings (see Chapter 6 for identification criteria).

Leopard/lion: two members of the cat family could figure in the engravings : lion and leopard. As usual, the engravings do not allow the species to be clearly differentiated.

Dogs: they accompany hunters on their expeditions.

Gazelle, Addax: identification suggested by length of neck for the gazelle, horn shape for the addax (see Chapter 6)

Camels: nine of the 18 camels were mounted.

Non-identified animals: the high number of non-identified animals is due to the fact that this very schematic style only allows species identifications when the nose, ears, horns or tails are clearly represented. Otherwise, the body and legs allow them to be identified as animals but no further breakdown is possible.

Libyco-Berber lines of letters: this term is defined in Appendix 2.

Enigmatic: the few engravings classified as enigmatic consisted of confused images.

Fights and hunts

In a number of cases, the engravings are sufficiently close to each other for a fight or a hunt to be proposed, although the large number of engravings fitted into a small space tends to obscure specific scenes and may have led to unintentional associations. Fighting and hunting scenes are as follows:

- 2 horsemen hunt 2 leopards/lions (panel B)
- 1 horseman attacks possible oryx with lance or javelin (panel N)
- 1 horseman pursues 2 leopards/lions (panel O)
- 1 horseman and 1 man on foot close to leopard/lion and Barbary sheep (panel 19)
- 2 horsemen fight armed man on foot (panel 21)
- 2 horsemen confront each other (panel 22)
- 1 horseman confronts an armed man on foot (panel 23)
- 1 horseman touches an ostrich (panel 24)
- 2 horsemen surround an ostrich or bustard (panel 25)
- 3 horsemen and man on foot are closely associated with 2 leopards/lions and 2 bustards (panel 34)
- 2 horsemen chase 3 possible addax (panel 39)
- 1 horseman chases a Barbary sheep (panel 41)
- 2 horsemen surround a mounted camel, 1 horseman follows a leopard/lion (panel 43)
- 2 horsemen attack a third horseman (panel 44)

Conclusion

The outstanding feature of the site was the compression on a limited rock surface of a quantity of small engravings of men and animals. In a few cases, only a few images occupied the available space, but in general the whole engravable surface was used. The engravings, unlike those of the Tizi n'Tifina site, were very often arranged in scenes - fights or hunts. The images were schematic, pecked and their degree of patination varied, indicating the use of the site over a period of time. Some engravings showed horses less stiffly engraved. Libyco-Berber inscriptions were also present. Taken as a whole the site was thematically very homogeneous.

The mounted horse and the ancient Libyen alphabet are important elements for the establishment of a chronology of Moroccan rock art. This is discussed in Chapters 10 and 11.

The site of Foug Chenna confirms the existence of a specific group of engravings with its own particularities. Other sites are known to have the same characteristics.

III - A southern Moroccan site: Adrar n'Metgourine (S34 in the present study)

Choice of site

The third site chosen for closer study to test the hypothesis of the existence of different groups of engravings was Adrar n'Metgourine, in south Morocco. Visits to the site had shown that the engravings were distinct from those of the two previously studied sites. Again, the aim was not to produce a complete inventory of the site, but to examine its general characteristics and see to what extent the engravings were homogeneous and different from those of Tizi n'Tifina, in the High Atlas, and Foug Chenna, in the Anti-Atlas.

Previous research

The site was briefly mentioned by Simoneau (1972b: 267; 1993: 230; 1975c: 164). Seven photographs were published in the *Catalogue des sites rupestres du sud-marocain*, where it is classified under the reference 150.132 (Simoneau, 1977). A more complete study was produced by Rodrigue (1993), who recorded a total of 365 engravings. The ceramics and lithics from the site, with a brief mention of the engravings, were published by Grébénart (1995).

Situation

Adrar n'Metgourine lies about a dozen kilometres NW of Akka (figure 31a). It is one of a series of discontinuous sandstone ridges in the alluvial plain (*fejja*) between the main Anti-Atlas massif and the 500 km long Jbel Bani. These ridges are oriented NE/SW and lie roughly parallel to the Jbel Bani. The now barren plain is criss-crossed by a network of channels draining the rare rain falling in the Anti-Atlas massif towards the bed of the river Akka. In the past, this river cut its way through the J Bani north of Akka, to form one of the numerous *foug*.

Adrar n'Metgourine ridge, 400 m long by about 50 m wide, rises steeply from the plain to a height of about 50m (figure 31c). Its crest undulates but never drops to plain level. On the western side, the strata, in step-formation, provide smooth, vertical panels particularly suitable for engravings; the east-facing facade rises more smoothly. Loose rocks and rounded boulders lie scattered at the base and along the crest of the ridge. The remains of a tumulus are visible on the crest of the ridge.

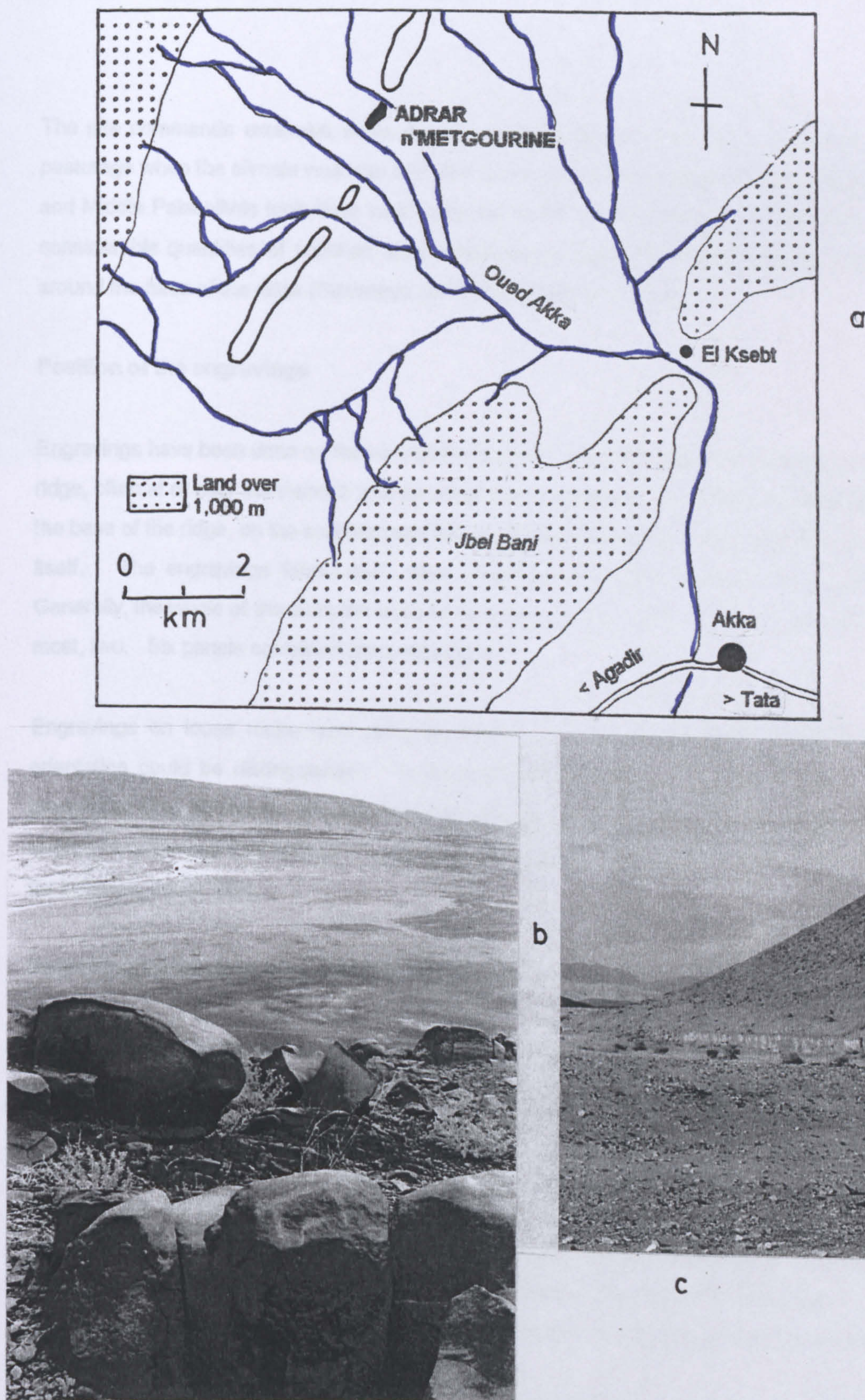


Figure 31. a) General situation of site of Adrar n'Metgourine
 b) View SE from the crest of the ridge (engraving C11 in foreground)
 c) View of the site, southern slope (river-bed in foreground)

The site commands extensive views across the plain (figure 31b), which must have provided pasturage when the climate was less arid, and is one of a series of sites all within 4-5 km. Lower and Middle Palaeolithic tools have been collected in the surrounding plain (Rodrigue, 1987) and considerable quantities of polished axes, arrow-heads, pottery and grinding stones were noted around the base of the ridge (Simoneau, 1977: 55; Grébénart, 1995).

Position of the engravings

Engravings have been done on the vertical faces of the fractured strata on the western side of the ridge, often at or near the summit, and on small, free-standing sharp rocks or rounded boulders at the base of the ridge, on the southern and eastern slopes leading up to the ridge and on the ridge itself. The engravings follow each other closely in this relatively small site (c 400x50 m). Generally, the whole of the available surface (block or panel) is filled with one engraving or, at the most, two. Six panels contained grouped images.

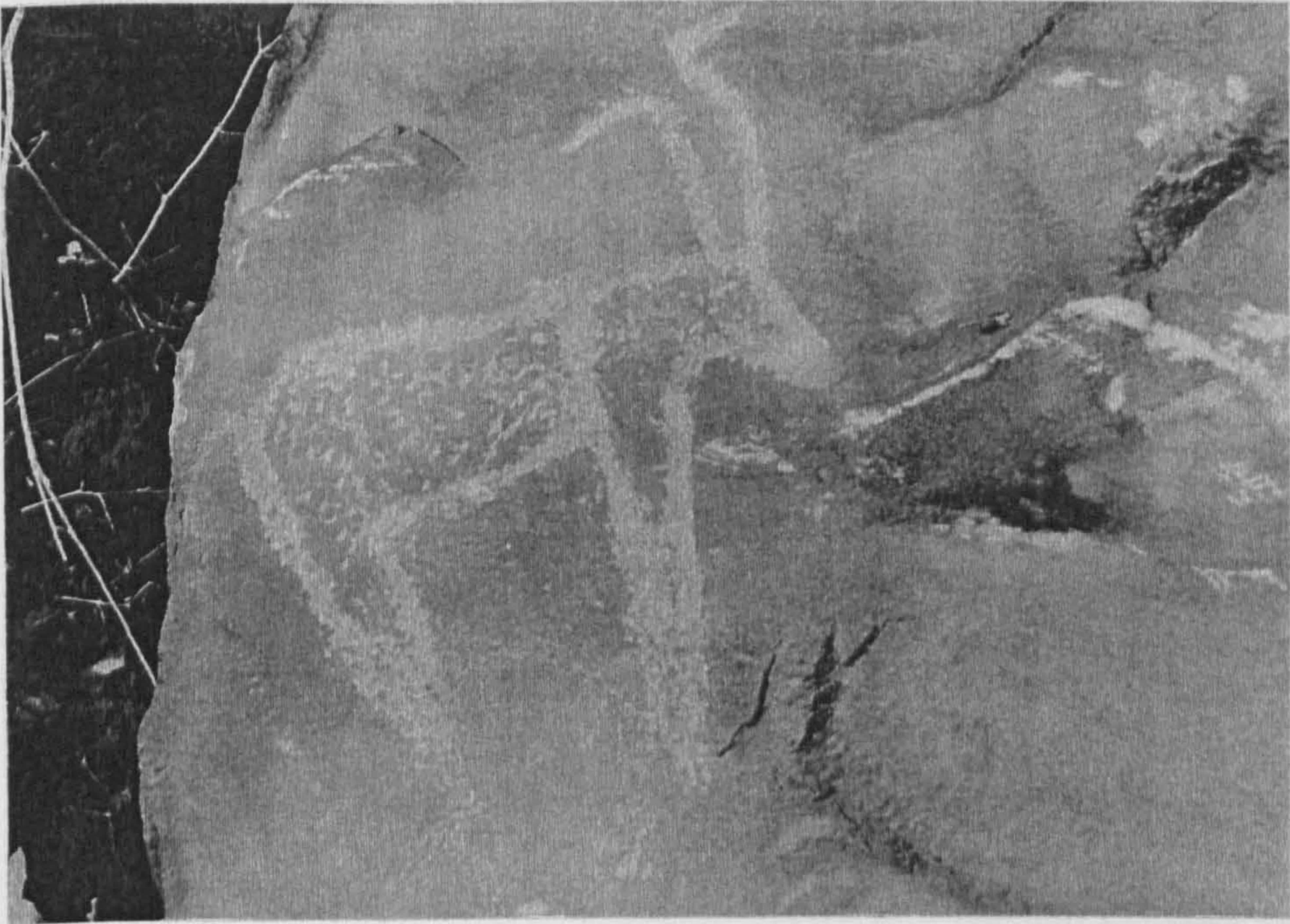
Engravings on loose rocks were done on any of the suitable surfaces and no preferential orientation could be distinguished. In the case of engravings on round boulders, however, preference was shown for the flat fractured side that was available on many of them. The engravers organised their design in such a way as to fit completely into the available space (see, for instance, figure 33a).

Engraving techniques, size, patination and style

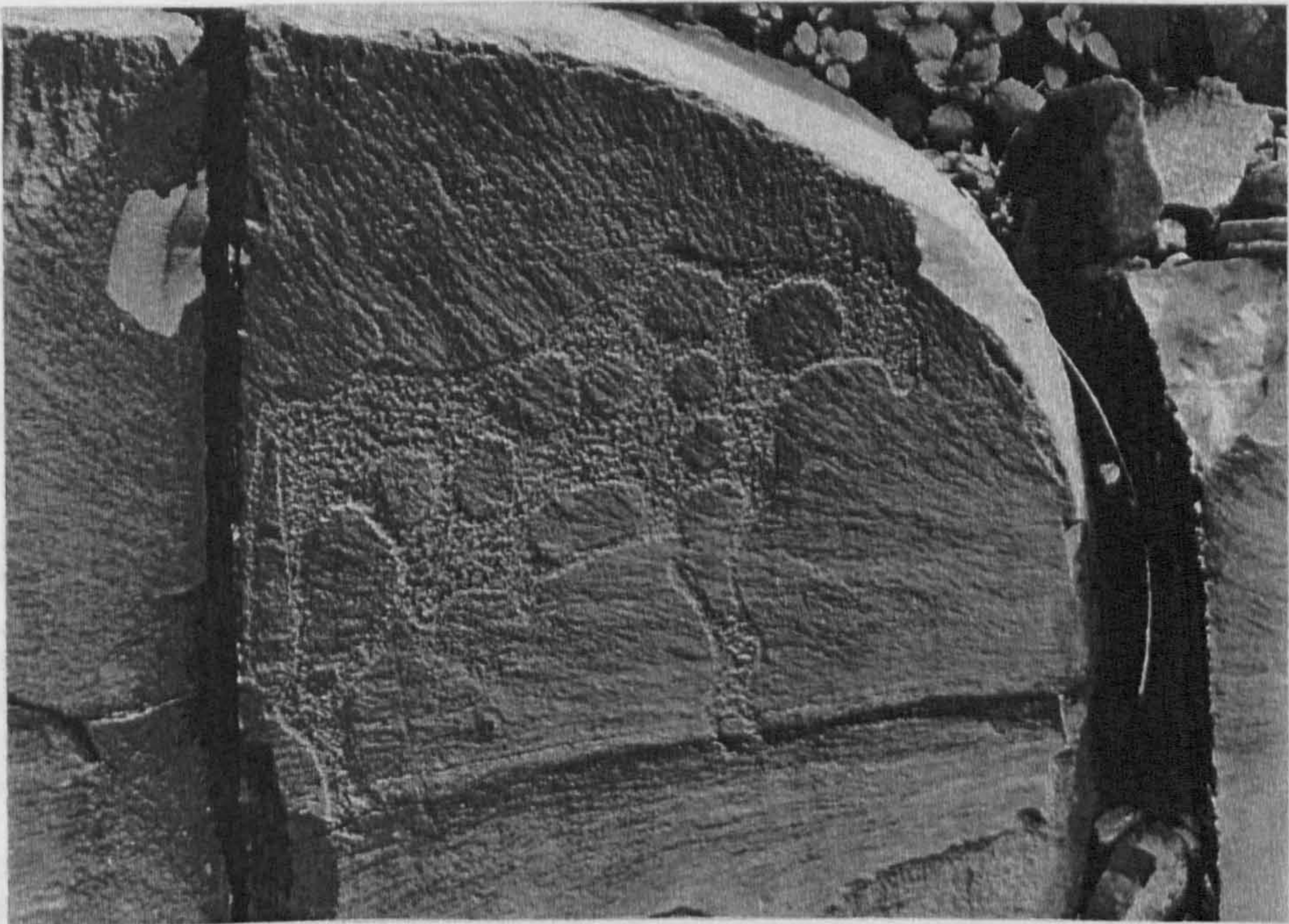
Technique: the majority of the engravings were pecked. Several had first been pecked, then carefully polished, the trace of the initial pecking still visible. The interior surface of the engraving was often completely pecked except for patches which, in the case of cattle, are considered to represent coat markings (figure 32a,b). On the whole, the pecked line was firm and continuous, generally only 2-3 mm deep, and up to 1 cm wide. The pecked outline of some lightly-patinated engravings was more hesitant and superficial (figure 32c). Careful polishing of the horns or tails (initial pecking not visible) could be noted on some of the pecked cattle and on two oryx.

Size: the average size varied from about 20-40 cm, although two particularly large bulls measured 77 cm and 92 cm.

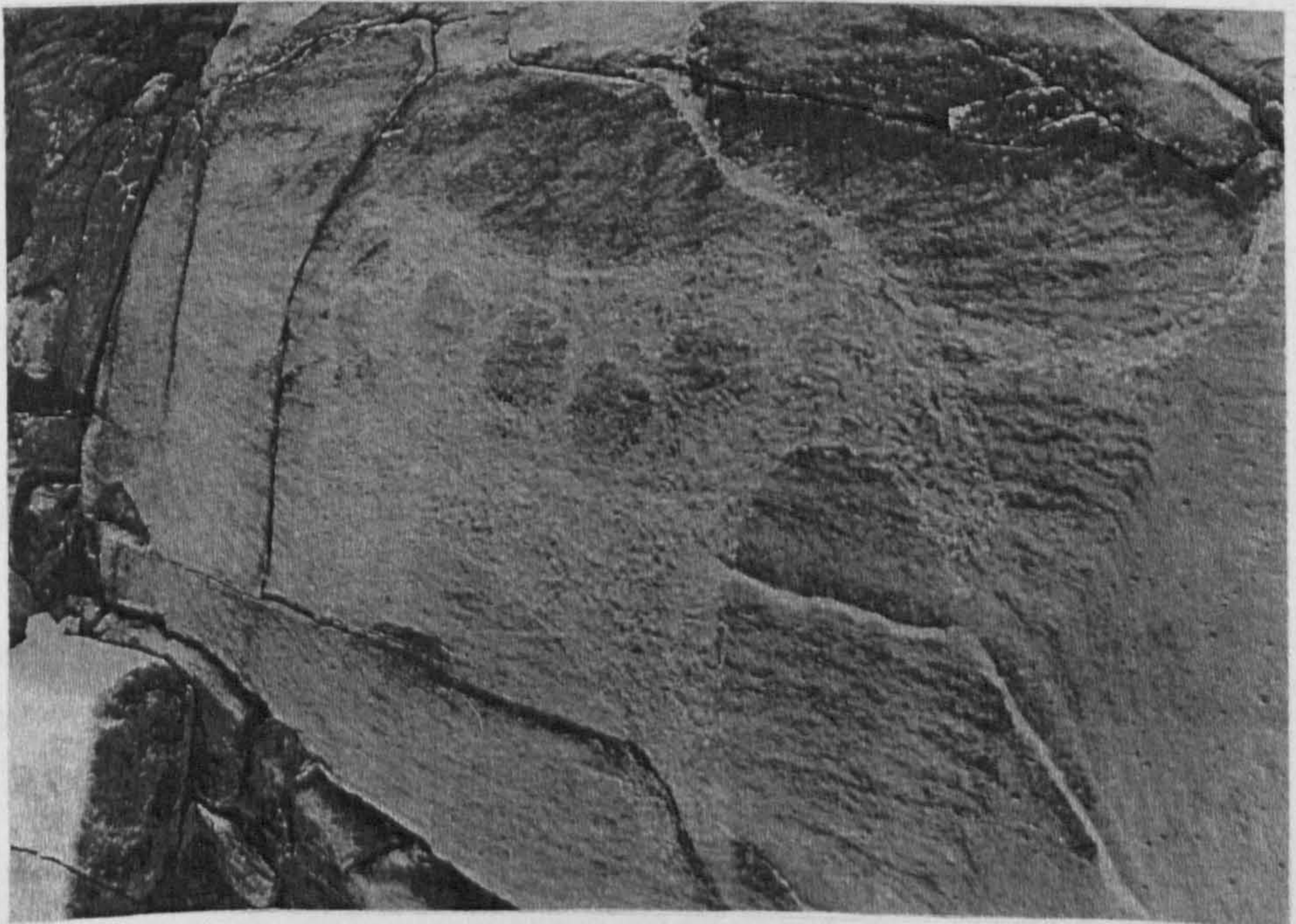
Patination: patination was total - the excavated pecked line being the same colour as the rock - or slightly less intense. This may be due to different exposure, for style and subject were the same in all cases. A small number of engravings were definitely more lightly patinated and are more recent.



a



b



c

Figure 32. Selection of engravings from Adrar n'Metgourine
a) b) and c) Cattle, respectively. C14 1412-1415

Style and theme: it is difficult to describe these engravings without introducing an element of subjectivity. It has been called "the finest bovidian site of southern Morocco" (Simoneau, 1972: 267) and it is hard not to share this opinion. The vast majority of engravings represent domestic cattle, carefully executed with a firm, continuous, pecked line. Details of coat markings are a characteristic, as is the large range of horn forms. Wild animals are treated in the same style as the cattle.

Engraved rocks

In view of the large number of engraved rocks in a relatively compact area, the site was not divided into sectors or panels. Five broad divisions were used: the southern slope up to the crest of the ridge, the crest itself, the northern descent, the west and east facades. Reference numbers refer to the inventory in Appendix 8.

Themes

A breakdown of the images and their general position on the site is given in Table 23.

Subject	S slope	Crest	N slope	W side	E side	TOTAL	%
Cattle	12	29	-	45	14	100	56.8
Non-identified animal	-	6	-	3	2	11	6.2
Elephant	1	2	-	3	1	7	3.9
Rhinoceros	-	6	-	-	1	7	3.9
Oryx	-	-	-	-	2	2	1.1
Antelope	1	-	-	1	1	3	1.7
Leopard/lion	-	1	-	-	2	3	1.7
Ostrich	-	1	-	-	7	8	4.5
Bird not ostrich	-	-	-	1	-	1	-
Anthropomorph	-	5	-	2	2	9	5.1
Miscellaneous	2	10	1	1	1	15	8.5
Enigmatic	-	6	-	4	-	10	5.6
TOTAL	16	66	1	60	33	176	99.0

Table 23. Engravings by subject and sector at Adrar n'Metgourine

Comments on the engravings (reference numbers refer to the inventory in Appendix 8)

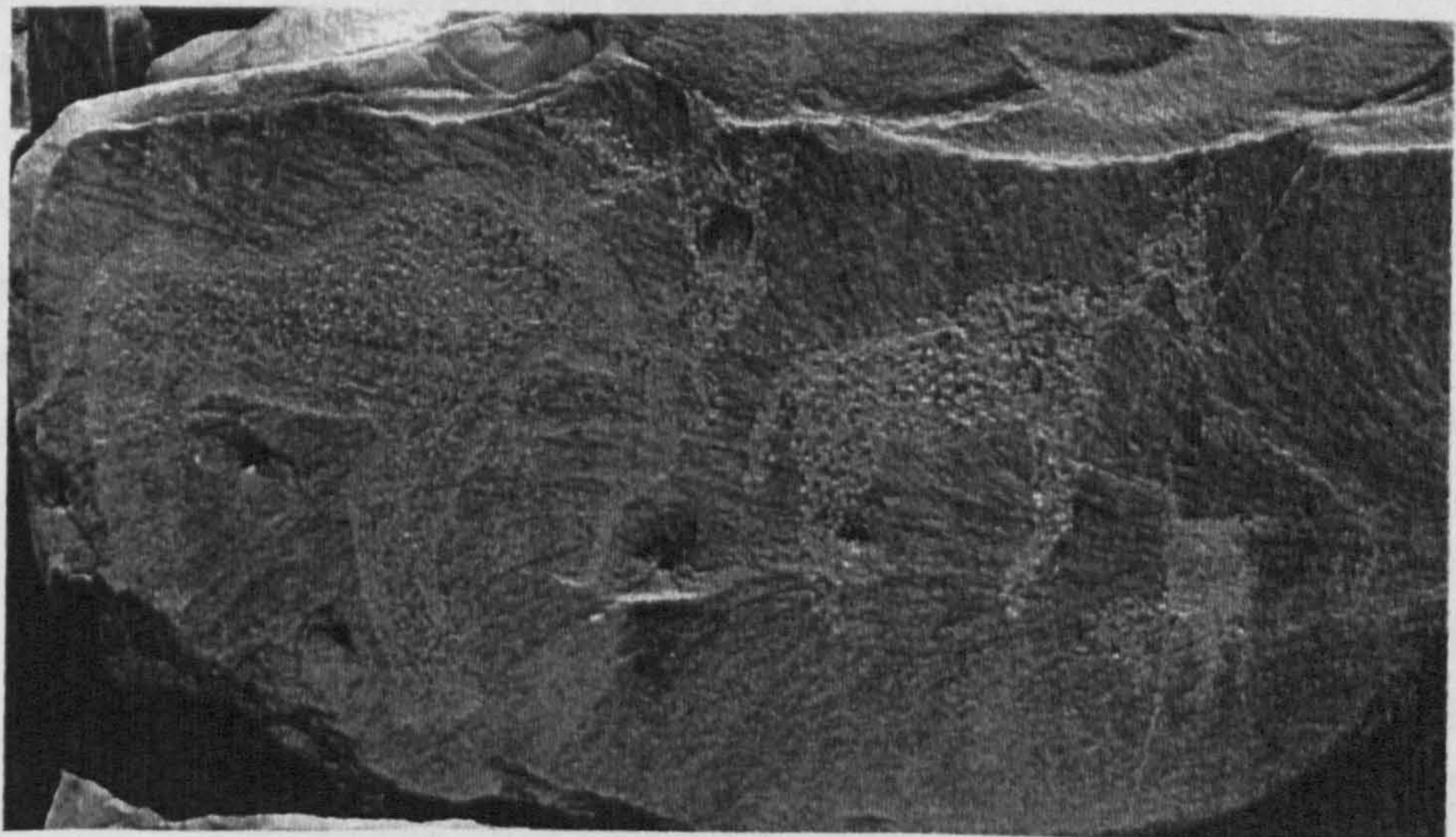
Cattle: almost 57% of the engravings represented domestic cattle (figure 32a,b,c). If the miscellaneous and enigmatic categories were removed from the count, cattle engravings would



a



b



c

Figure 33. Selection of engravings from Adrar n'Metgourine
 a) Elephant overlying bovid, W48 b) Gazelle superimposed on bovid, W19
 c) Leopard, anthropomorph, antelope, E3

represent 66% of the total. Bulls have been identified by clear sexual traits. Obvious cows (with udders) were not recognised. Horns were of all types: forward-pointing, widespread, curving outwards and upwards in lyre-shape, drooping, joining to form a circle. Lines separating the body into segments denote different coloured coats, reserved spots also indicating mottled animals. Variable horn forms and black and white coats in domestic cattle are considered to be "signs of a repetition of cross-breeding between animals of different origins and of a lack of fixedness in their descendants" (Aumassip *et al*, 1988: 137). They denote an early stage in domestication. In a number of cases, a line under the chin perhaps indicates a halter (W17). Short lines under the chin may be bells, amulets or simply a sort of beard (S3). Hind leg articulations and hooves figured twice (S3 and W16) and one bull appeared to have toes (W15). Two animals seemed to be carrying something between their horns (S7, C19).

Non-identified animals: these were engravings which clearly figured an animal, but to which it was not possible to ascribe a species.

Elephants: the massive silhouette of the animal has been clearly rendered by the engravers (figure 33a) but ears, eyes and tusks are often missing (S10, W7).

Rhinoceroses: two of the rhinoceros identifications are uncertain (both on the crest of the ridge). In one case, only the head has been engraved (C22).

Oryx and other antelopes: the two oryx, one above the other on the same rock, were carefully executed, with fine polished horns (E2). The antelope figure in the above table includes one gazelle (W19, figure 33b) and one animal possibly an antelope (S8).

Leopards and lions: where the animal has been completely pecked, the distinction between leopard and lion has not been attempted. In one case, however (E3, fig. 33c), the speckled body seems sufficiently intentional to indicate a leopard; the animal is shown face to face with a small man with bent knees.

Ostriches and other birds: ostriches are rare on the site, and the frieze of seven (E17), small and polished, is quite exceptional. An ostrich (C4), roughly scratched, with a light patination, seems to be confronting a man, arms above his head, done in the same technique. The bird not an ostrich (W20) may be a bustard.

Anthropomorphs: these were associated with an mammal (figure 33c) or bird (C4, E3). In one case, two were together (C31), full-face, arms outstretched, sexual organs clearly indicated; one held an enigmatic object. One man was armed with a bow (C42). Two possible anthropomorphs are included in the total.

Miscellaneous: the 15 miscellaneous engravings included one "spoked wheel" trap (S6), one zigzag (S4), three serpentiforms (C12, W10), three series of cupules (C1, C22, E9), one rectangle (C19), two complex crosses (C34), two circles (C27), 13 contiguous circles (C35), and two linked spirals (N1).

Enigmatics: 10 engravings defied identification with any known object, either because they were damaged or simply confused (C25 - possible scorpion?).

Conclusion

Adrar n'Metgourine is an outstanding example of a third type of site, characterised by pecked engravings, mostly cattle. These are often shown with lines or reserved patches representing different coat markings. Horn forms are very varied. Cattle are not the only animals represented: among the wild fauna figure elephants, rhinoceroses and lions. Antelopes and ostriches are rare. In general, each engraved boulder contains only one or, at the most, two images. Panels of complex scenes as at Foug Chenna are absent, although groups of animals were shown together. Polished engravings as at Oum el Aleg (see below) and the weapons and large anthropomorphs of Tizi n'Tifina are not represented on this site.

IV - A second southern Moroccan site: Oum el Aleg (S48 in this study)

Choice of site

As before, this site was chosen for closer study because the literature used in the overall review of rock art sites, combined with many personal visits, had shown that the engravings here were totally different from those on many of the other sites in south Morocco.

Name of the site and previous research

On the current 1/100 000 map produced by the Moroccan Cartographic Service, the village of Oum el Aleg is shown as 'Mla'leg'. The 1988 Michelin road map gives 'Oum El Alek', whereas the current road signs read 'Oum el Aalag'. The official catalogue of rock art sites (Simoneau, 1977) lists it as 'Gara S Mla'leg', reference 150.127. Preference is given in this study to the name under which the site was first published (Simoneau, 1969): Oum el Aleg.

The ridge which holds the engravings is shown as 'Tiounziouine' on the 1/100 000 map. This name has in fact been officially attributed to another rock engraving site (reference 150.129), in the same region. A local informant called the first ridge encountered 4 km south of the village of Oum el Aleg 'Lakber el Khourchi' ('Khourchi's tomb', someone of that name having been buried there), and the second, considerably lower ridge, containing the engravings, by the same name. The site was first mentioned by Simoneau (1969: 99), who noted "more than 200 engravings...on the U-shaped ridge south of Oum el Aleg". The article included a sketch map, drawings of eight engravings and five photographs. A further article referred simply to an engraved rock with a dozen antelopes and two unarmed humans and commented briefly on the characteristics of the site (Simoneau, 1971: 88). Finally, a short overall study of the site was published in 1996 (Searight, 1996b).

Situation

The rock engravings of Oum el Aleg lie on a low, U-shaped sandstone ridge, 3½ km south of the village of Oum el Aleg, itself on the main road leading from Agadir to Tata (figure 34a). Slightly to the north stretch the 500 km long sandstone heights of the J Bani (around 1,000 metres high in this sector). The previous site of Adrar n'Metgourine lies some 20 km to the NW. The J Bani, the last upheaval of the Anti-Atlas massif, dominates to north and south a number of narrow plains (*fejja*), where the occasional torrential rains have left alluvial deposits. Rivers from the Anti-Atlas probably ran regularly when the climate was wetter, and the now barren plains around the site could have supported a grass steppe, as at Adrar n'Metgourine.

The northern branch of the ridge is some 3 km long, aligned SW-NE. The southern branch of the U, about 2 km long, is also aligned SW-NE but curves at the western end of the two branches cause the distance between them, which was some 700-800 m at their open end, to decrease to about 200m. The width of the ridge varies from an initial 15 m to some 50 m at its widest. The northern branch of the ridge is lowest at its opening in the NE, where an important track leads south-east from the village of Oum el Aleg, rising progressively to reach 50-60 m at its highest point. Its profile is undulating. Some 600 m from its NE extremity, the ridge drops down to plain level, allowing vehicles to pass through the 20 m gap; a second passage, 80 m wide, occurs 1.2 km further west where a well-used track joins the village of Oum el Aleg to other localities further south. The southern branch of the ridge is cut by this second track before rising steeply but smoothly to join the northern branch at the U-bend. The short western stretch, forming the U-bend itself, is of uniform height, about 60 m above the plain.

The site commands wide views to the east and south. To the north, however, the plain is limited by relatively high massifs (569m OD). The generally-dry Assif Ikebbaben, a tributary of Oued Akka, lies in the plain to the west of the ridge but is only visible from the U-bend, where good views are possible over a distance of many kilometres. Acacia trees are scattered, individually, throughout the plain and at the foot of the southern edge of the northern branch of the ridge, very occasionally on the ridge itself. From the vantage point at the western part of the ridge, palm trees can be seen to line the banks of the Assif Ikebbaben, where ground water is obviously available. An examination of the sediments making up the plain between the two branches of the ridge shows it to have been a palaeolake. Indeed, the local informant confirmed that in times of heavy rain, this area still becomes a 'lake', albeit a small, temporary one.

Thick deposits of blow sand have accumulated along the southern face of the northern ridge (figure 34b). In some cases sand masks engravings at the base of rocks on this side of the ridge.

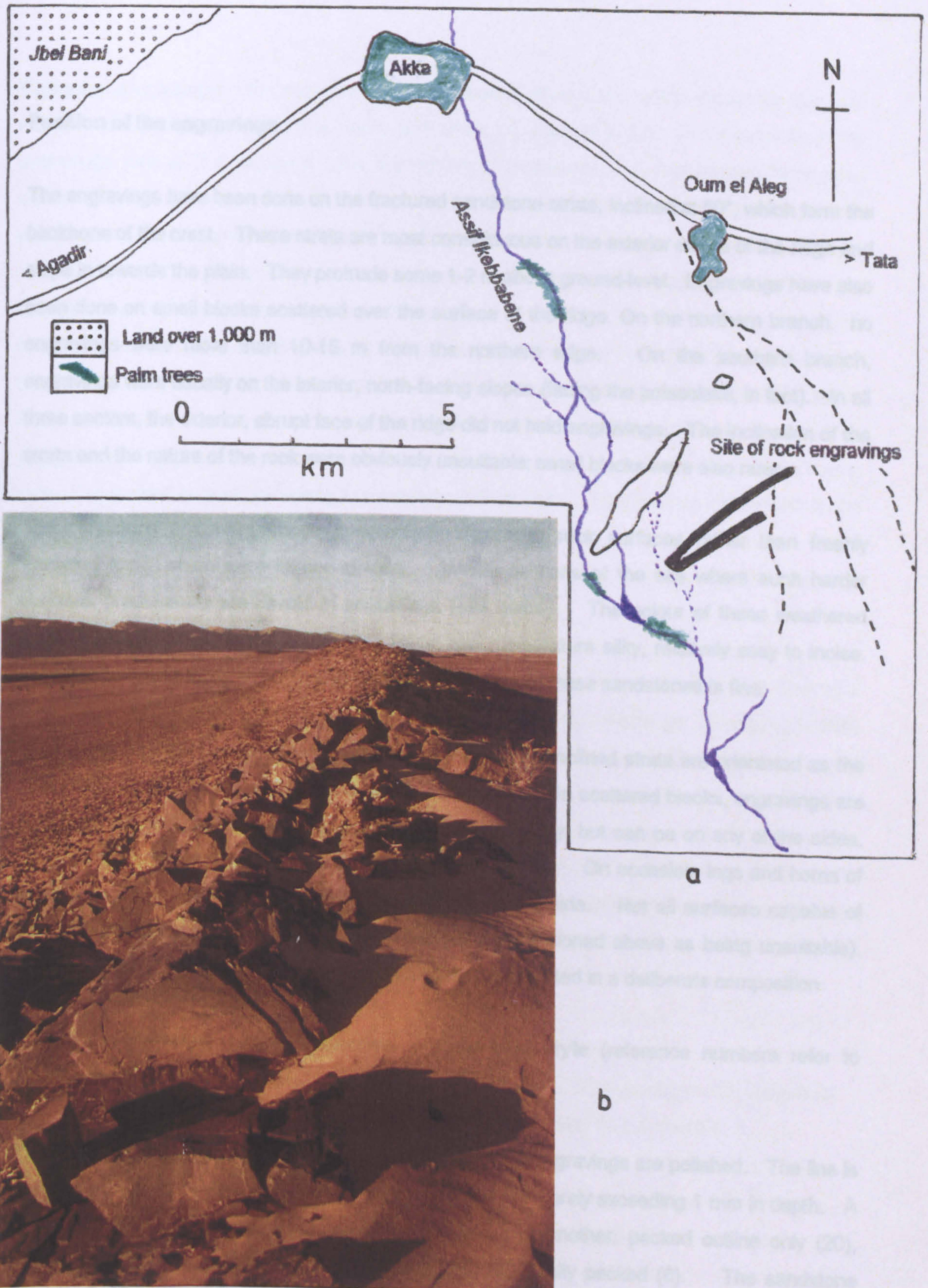


Figure 34. a) General situation of site of Oum el Aleg
 b) Deposits of blown sand on southern face of northern ridge

Position of the engravings

The engravings have been done on the fractured sandstone strata, inclined at 50°, which form the backbone of the crest. These strata are most conspicuous on the exterior edges of the ridge and slope in towards the plain. They protrude some 1-2 m above ground-level. Engravings have also been done on small blocks scattered over the surface of the ridge. On the northern branch, no engravings were more than 10-15 m from the northern edge. On the southern branch, engravings were usually on the interior, north-facing slopes (facing the palaeolake, in fact). In all three sectors, the exterior, abrupt face of the ridge did not hold engravings. The inclination of the strata and the nature of the rock were obviously unsuitable; small blocks were also rarer.

The prehistoric engravers chose preferentially weathered rock surfaces rather than freshly fractured rocks which were harder to work. Whole sections of the site where such harder surfaces predominate are devoid of engravings (see below). The colour of these weathered rocks is usually ochre/pale pink, but also black, and their texture silky, relatively easy to incise. Whether they are weathered or freshly fractured, the grain of these sandstones is fine.

Orientation: on all sectors of the ridge, engravings made on inclined strata are orientated as the strata themselves, the easiest position in which to engrave. On scattered blocks, engravings are on the generally slightly inclined upper surface, facing the sky, but can be on any of the sides. No particular orientation has been preferred in this latter case. On occasion, legs and horns of animals engraved on the top curve over to continue on the side. Not all surfaces capable of receiving engravings have been used (excluding those mentioned above as being unsuitable). A rock may contain one or more images, sometimes concentrated in a deliberate composition.

Engraving techniques, size, patination, erosion and style (reference numbers refer to inventory in Appendix 9).

Techniques and size: the great majority of the 431 recorded engravings are polished. The line is firm, 3-4 mm deep. A few are very finely engraved, the line barely exceeding 1 mm in depth. A total of 32 engravings have been pecked in some way or another: pecked outline only (20), pecked and polished outline (3), partially pecked (3) and totally pecked (6). The sandstone preferred by the engravers is sufficiently soft for a stone tool to make the desired incisions. The engravings are small: 20-30 cm on average, excluding tails. The largest are a roughly pecked bovid, measuring 60x36 cm, a gazelle, 47x22 cm, a bovid, 40x28 cm. and an elephant, 40x26 cm. The smallest is an oryx, measuring only 6x6 cm. This very small size is however unusual.

Patination and erosion: the engraved lines are almost always the same colour as the rock support: black when the support is black, pink when the support is pink; in the latter case the engravings give at first glance a false impression of freshness. A few images have been touched up, the more recent lines being clearly visible (figure 36d). Thirteen engravings also stand out by the freshness of their patina and by their theme: they have been indicated by the remark 'modern?'. Thirty-five very faint and eroded polished engravings can be discerned, sometimes overlain by clearer examples. They appear to show the same wild fauna as the bulk of the material, and their style is identical. They have been included here, probably in insufficient numbers. They are certainly older than the majority of the engravings, since their orientation, identical with other engravings, cannot account for their almost total disappearance.

Style: the vast majority of the engravings are small polished representations of animals in Tazina style. The pecked engravings belong to no clearly defined style. They are not comparable to the pecked cattle of the Adrar n'Metgourine site previously studied.

Engraved rocks

Distribution: for the first 225 m, the northern branch of the ridge rises slowly from the plain at a point marked by the passage of the modern track. There are no engravings, the inclined strata are not visible and there are almost no suitable loose rocks. Beginning with the first engraved rocks, the northern branch of the ridge was divided into sections 10 m long and of variable width. The short western end and the southern branch, where the engravings were relatively few (respectively 18 and 41) and more or less evenly spaced, were not divided into sections. As shown below, the spatial distribution of the engravings along the ridge shows considerable differences in density. Some of these differences (unsuitable nature of the rock) are understandable to the modern observer, others are difficult to explain.

North branch

Sections N.1-35 (360 m) (one section 20 m): 31 engraved rocks, 50 engravings: 8 antelopes, 6 gazelles, 1 oryx, 1 hartebeest, 6 bovids, 2 rhinoceroses, 1 elephant, 15 n.i. animals, 2 anthropomorphs, 1 possible anthropomorph, 7 miscellaneous

End of first major division of the ridge: flat passage way for vehicles (20 m)

Sections N.36-44 (90 m): 2 engraved rocks, 2 engravings: 1 rhinoceros, 1 giraffe (both Section 41)

Section N.45 (10 m): 5 engraved rocks, 11 engravings: 4 antelopes, 1 gazelle, 1 oryx, 5 bovids

Sections N.46-113 (680 m): 29 engraved rocks, 43 engravings: 10 antelopes, 2 gazelles, 1 hartebeest, 8 bovids, 10 n.i. animals, 2 ostriches, 1 possible anthropomorph, 9 miscellaneous

(thick deposits of wind-blown sand, very fractured strata and their harder texture, and the steep slope may explain the small number of engravings) (figure 34b)

Section N.114 (10 m): 5 engraved rocks, 15 engravings: 4 antelopes, 2 gazelles, 1 hartebeest, 1 oryx, 4 bovids, 1 rhinoceros, 1 possible caprid, 1 possible canid

Sections 115-120 (60 m) covered with sand

Sections N.121-151 (310 m): 15 engraved rocks, 19 engravings: 4 antelopes, 2 gazelles, 1 hartebeest, 1 oryx, 4 bovids, 1 rhinoceros, 4 n.i. animals, 2 miscellaneous (1 modern) (thick sand deposits - an antelope engraving almost totally covered by sand may indicate that others remain completely hidden)

End of second major division of the ridge; flat passage way for vehicles

Sections N.152-166 (150 m): 15 engraved rocks, 22 engravings: 5 antelopes, 2 oryx, 2 elephants, 1 camel (modern), 1 n.i. animal, 3 ostriches, 2 birds not ostriches, 1 anthropomorph, 5 miscellaneous (4 modern?)

Sections N.167-185 (190 m): 13 engraved rocks, 18 engravings: 3 antelopes, 1 gazelle, 5 bovids, 4 n.i. animals, 2 ostriches, 1 bird not ostrich, 2 miscellaneous

Sections N.186-196 (110 m): 52 engraved rocks, 81 engravings: 24 antelopes, 5 gazelles, 2 oryx, 1 hartebeest, 7 bovids, 1 sheep, 1 elephant, 2 monkeys, 1 canid, 14 n.i. animals, 15 ostriches, 1 anthropomorph, 1 possible anthropomorph, 6 miscellaneous

Sections N.197-230 (340 m): 33 engraved rocks, 57 engravings: 20 antelopes, 4 gazelles, 1 oryx, 9 bovids, 2 elephants, 2 rhinoceroses, 1 giraffe, 7 n.i. animals, 1 possible canid, 4 ostriches, 6 miscellaneous (by now the nature of the ridge has changed, becoming broader and more broken up, with the softer rocks preferred by the engravers harder to find among the less attractive hard, black rocks)

Sections N.231-268 (380 m): 36 engraved rocks, 53 engravings: 10 antelopes, 5 gazelles, 3 oryx, 1 giant buffalo, 4 bovids, 1 rhinoceros, 1 camel, 12 n.i. animals, 3 ostriches, 1 possible anthropomorph, 12 miscellaneous

West branch (U-bend) (c 200 m)

11 engraved rocks, 18 engravings: 2 antelopes, 3 gazelles, 6 bovids, 1 rhinoceros, 1 elephant, 1 n.i. animal, 1 anthropomorph, 3 miscellaneous

South branch (c 2,000 m)

32 engraved rocks, 42 engravings: 9 antelopes, 5 gazelles, 1 oryx, 6 bovids, 2 rhinoceroses, 7 n.i. animals, 6 ostriches, 1 anthropomorph, 5 miscellaneous

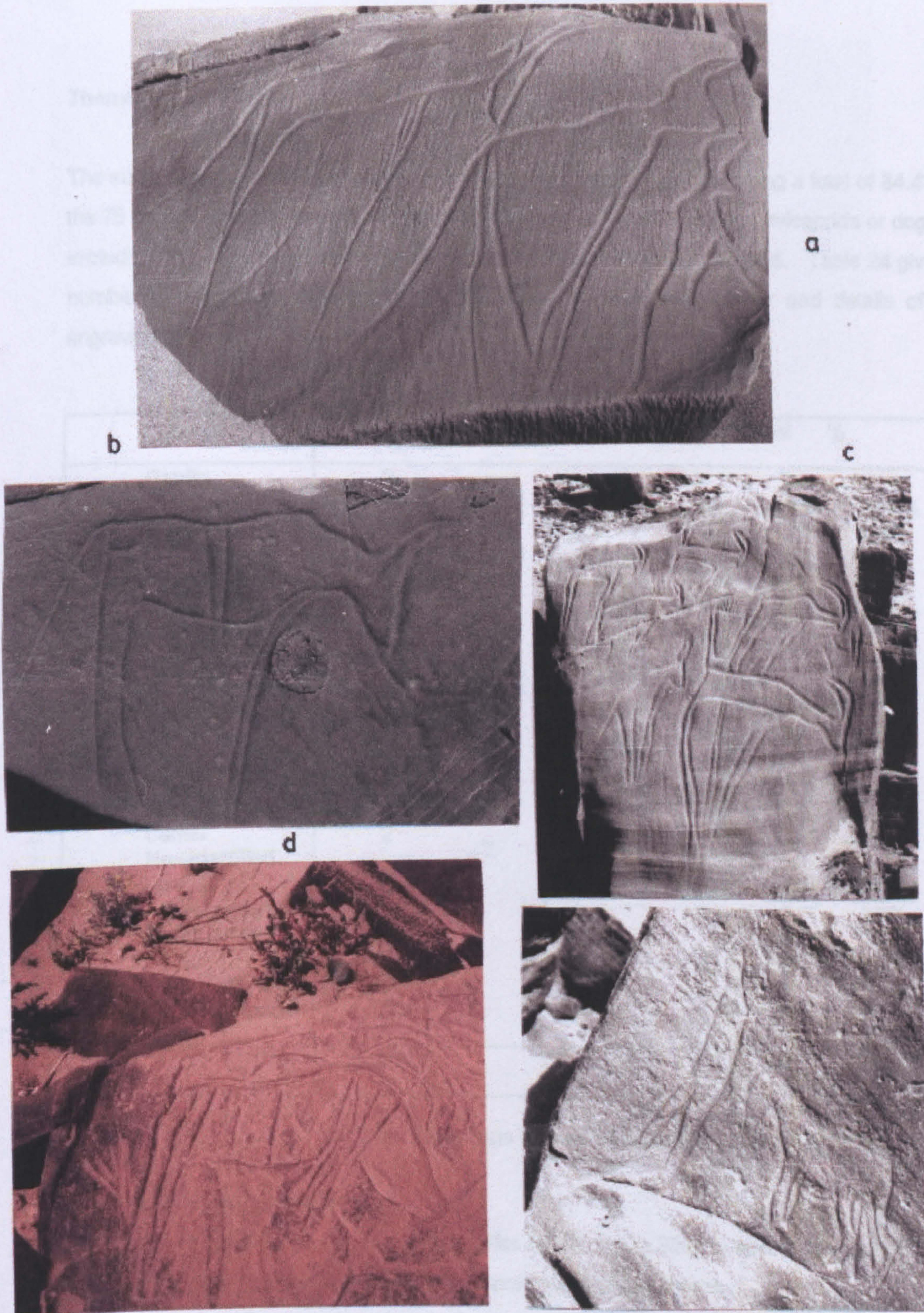


Figure 35. Selection of engravings from Oum el Aleg
a) Antelope and 2 bovids, N°69 b) Bovid, N°114 c) Antelopes with mask or trap, N°175
d) Non-identified animal, N°141 e) Man with sheep, N°155

Themes

The subjects are essentially animals: 364 engravings, including birds, giving a total of 84.4%. If the 75 non-identified animals (none whom are likely to be domestic cattle, ovicaprids or dogs) are excluded, 218 (50.5%) of these animals (including birds) are seen to be wild. Table 24 gives the number of engravings recorded for each theme. Reference number and details of each engraving are listed in Appendix 9.

	N. branch	W.branch	S.branch	Total	%
Giraffe	2	-	-	2	
Antelope sp.	92	2	9	103	23.8%
Gazelle	28	3	5	36	8.3%
Oryx	12	-	1	13	3.0%
Hartebeest	5	-	-	5	1.1%
Cattle	52	6	6	64	14.8%
Giant buffalo	1	-	-	1	
Sheep	1	-	-	1	
Possible caprid	1	-	-	1	
Rhinoceros	8	1	2	11	2.5%
Elephant	6	1	-	7	1.6%
Monkey	2	-	-	2	
Canid	1	-	-	1	
Possible canid	2	-	-	2	
Camel	2	-	-	2	
Non-identified animal	67	1	7	75	17.4%
Anthropomorph	4	1	1	6	1.3%
Possible anthrop.	4	-	-	4	0.9%
Ostrich	29	-	6	35	8.1%
Bird not ostrich	3	-	-	3	
Miscellaneous	49	3	5	57	13.2%
TOTAL	371	18	42	431	

Table 24. Engravings by subject and sector at Oum Aleg

Comments on the engravings

Giraffe: two engraved animals are clearly giraffes (n° 32, figure 36c), in spite of the rarity of representations of this animal in Morocco. Coat markings are absent.

Antelope sp., gazelle, oryx, hartebeest: these animals together make up the largest group of engravings on the site: 36.2%. As explained in Chapter 6, exact identification of different species of antelope is extremely difficult, based as it is on horn shape, not always clear in an engraving; the term 'antelope' refers to these non-specific forms (n° 69, n° 175, figure 35a,c; n° 202, n° 198, figure 36a,b) (see n° 273, figure 20, for two gazelles.)

Cattle: the 64 recorded specimens all have forward-pointing horns, whether they are pecked or polished (n° 69, n° 114, figure 35a,b). They are often closely associated with antelopes. There

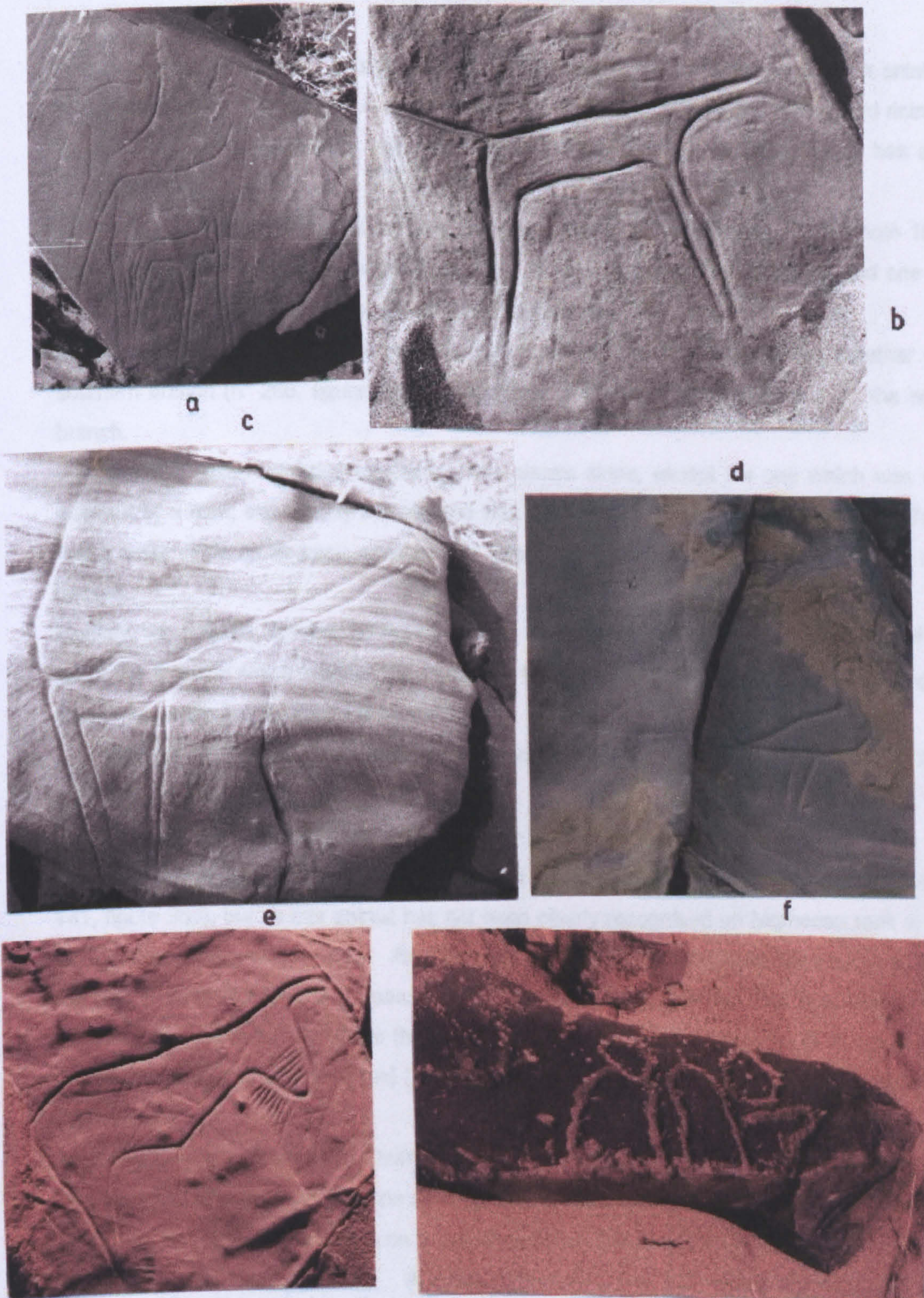


Figure 36. Selection of engravings from Oum el Aleg

- a) Ostrich, gazelle, antelope, N°202 b) Antelope, N°198 c) Giraffe, N°32 d) Bird not ostrich, N°95
 e) Non-identified animal, N°95 e) Miscellaneous pecked motif, N°63

is no indication of the sex. A large pecked horn has been added to the head of an antelope to turn it into a bovid. One bovid is attached to a short stake by a cord, one has a cord rising from its muzzle (n° 114, figure 35b), one has a cord dropping from its muzzle, another has an oval behind its horn.

Sheep: the engraving of "two shepherds and small livestock" (Simoneau, 1969: photo 10) was said by an informant to have been still in place in 1987; in 1994 only one man and one sheep remained, the rest had been removed (n° 155, figure 35e).

Rhinoceros: the 11 rhinoceroses recorded were always alone, except for two together on the southern branch (n° 266, figure 37b) and one with a group of three antelopes on the northern branch.

Elephant: the seven recorded elephants were always alone, except for one which was closely followed by a man; one overlay a bovid and was itself heavily re-worked (n° 93, figure 37c), one had a small circle on its back, another had large "butterfly" ears; a fifth was small and crudely pecked.

Monkey: two animals, one behind the other, with rounded muzzles and no ears, are joined by the tail of the first one which touches the muzzle of the second (n° 140, figure 37a). Their general attitude gives the impression of two monkeys.

Dog family: the three recorded canids could be dogs or jackals. In one case, the claws of the back legs are clearly indicated.

Camel: the two camels are recent (light patination).

Non-identified animal: four of the 75 unidentified animals vaguely resemble hippopotamuses (n° 141, figure 35d), but as this animal has not been clearly recognised on Moroccan rock art sites, the identification is very doubtful. An animal with lines strongly marked on the muzzle and under the chin (a form of trap?), what seems to be a forward-pointing horn, front legs looking like an afterthought, and a muzzle unlike that of a bovid, also defies identification (it is not the usual Tazina representation of a wild ass) (n° 254, figure 36e). Most of the unidentified animals were incomplete.

Anthropomorphs: only six certain humans were recorded, four others were vague filiform shapes. Two were just behind elephants, one accompanied a sheep (n° 155, figure 35e).

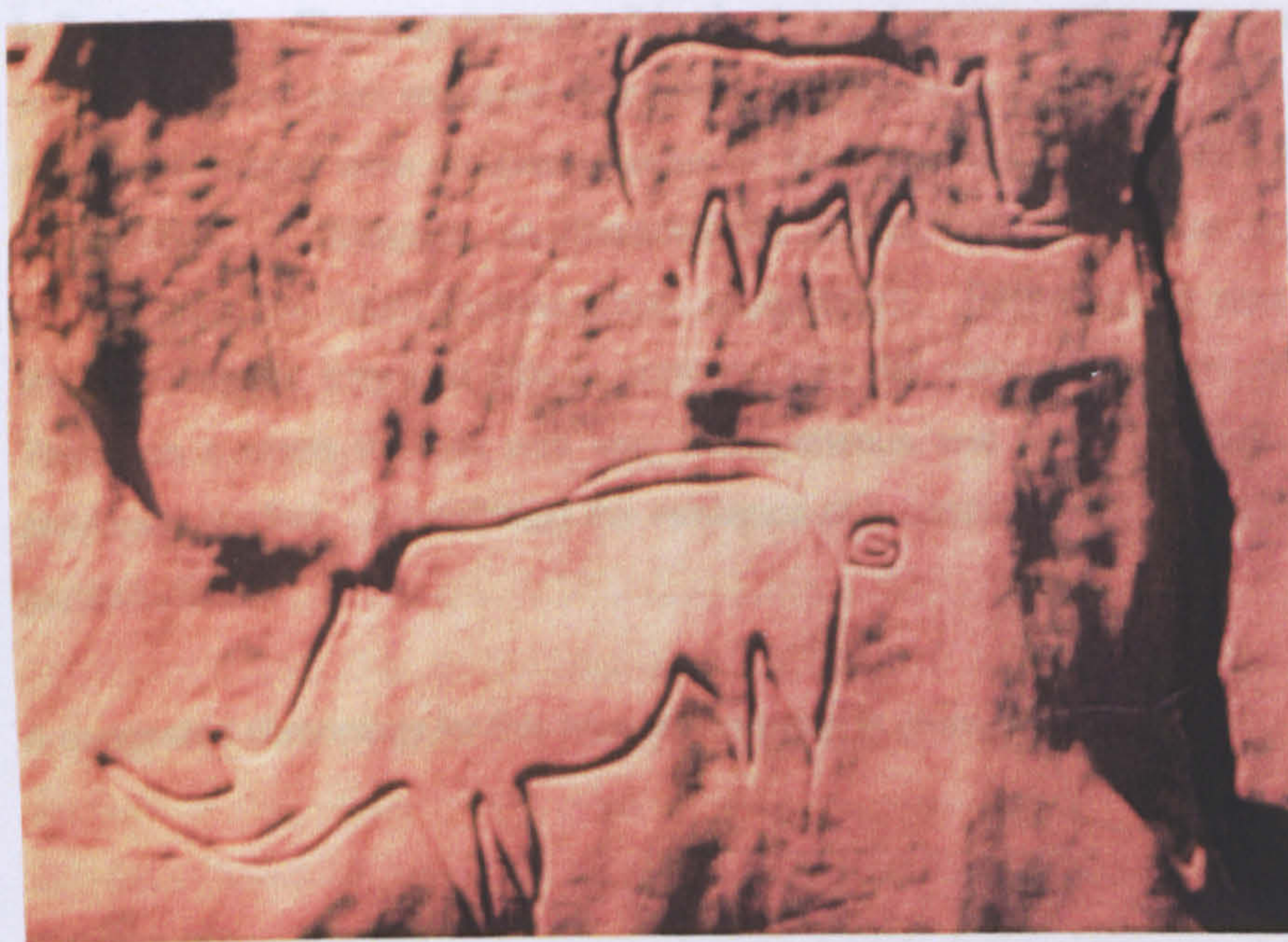
Ostriches: one of the six ostriches on the southern branch is very crudely pecked (interior surface fully pecked) and seen full-face. A striking composition on the north branch involved at least eight birds closely packed on a rock surface 1.5x1.5 m. An ostrich behind a gazelle and an antelope is shown in figure 36a (n° 202).

Birds, excluding ostriches: occasionally birds other than ostriches are noted on sites. The three noted here may well be bustards, though the proximity of water makes a water-loving species possible (n° 95, figure 36d).

Miscellaneous: these 57 very mixed engravings were made up as follows: 12 series of lines (simple and complex) (five modern?); nine rectangles/triangles (six segmented); seven feet



a



b



c

Figure 37. Selection of engravings from Oum el Aleg
 a) 2 monkeys, N°140 b) 2 rhinoceros, N°266 c) Elephant, N°93

(without toes); six spirals; five circles (simple and complex); three U-motifs; two serpentiforms; two meanders; one open oval with two short lines; one flat slab with five pecked oval/circular motifs (n° 63, figure 36f); one probable herd mark (modern); one block filled with lines of small pecked points; one double spiral with lines; one crescent with striped oval; one possible *tifinar* inscription (modern?); one mask or trap (?) in the middle of a herd of antelopes (n° 175, figure 35c); one continuous loop coil motif; one spoked-circle trap; one bag trap.

Conclusion

A striking feature of the site was the fact that it was almost totally composed of animals engraved in Tazina style. The majority were wild animals but domestic cattle were also treated in the same way. In general, each engraved rock contained only one or two images, but on some occasions a number of images were grouped together on the same rock surface, forming a frieze or vertical composition. Weapons so characteristic of the Tizi n'Tifina site and the Libyco-Berber engravings of the Foug Chenna group were absent. Pecked cattle were present, but in very limited numbers; they had little in common with the cattle engravings of Adrar n'Metgourine. Taken as a whole the site was very homogeneous and totally different from the three sites previously studied. It confirmed the existence of a specific group of engravings having its own particularities.

A suggested chronology for this type of engraving is given in Chapter 11.

CHAPTER 9 . EXTENT OF MOROCCAN ROCK ART, IDENTIFICATION OF DISTINCT TYPES OF ENGRAVINGS, CLASSIFICATION OF SITES AND THEIR DISTRIBUTION

Extent of Moroccan rock art

Rock art manifestations exist throughout the country, from the Atlantic coast in the west to the Algerian frontier in the east, and from near the Mediterranean in the north to the pre-Saharan desert in the south. However, as has been seen in Chapter 7, sites are very unequally distributed. This may reflect a real difference in territorial occupation, uneven research, or destruction by intensive human or vegetational occupation. These distribution disparities are clearly visible in figure 38, which shows the number of sites per map sheet of the Cartographic Division's 1/100 000 series. Each sheet covers approximately 47x55 km.

Only 12 sites have so far been recorded north-west of the High Atlas mountains (Zone 1) (figure 7), including two localities from which sculptured steles have been recovered. Eastern Morocco (Zone 2) (figure 7) and the extreme south-east (Zone 4) (figure 12) are not rich quantitatively (8 and 2 sites respectively) but their engravings are numerous and informative. In the High Atlas (Zone 3) (figure 13), the sites are mainly clustered in three groups: around the Jbel Rat (11 sites), on the Yagour Plateau (21 sites) and at Oukaimeden (5 sites). These three locations account for 37 of the 44 known sites in the High Atlas; all are over 2,000 m in altitude. In the Anti-Atlas mountains (Zone 6) (figure 15), the 26 sites are loosely scattered throughout the length and breadth of this chain. The remaining 197 recorded sites are all concentrated in southern Morocco (Zones 5,7,8) (figures 12,15,21) and the Western Sahara (Zone 9) (figure 23).

As was shown in Chapter 7, site sizes vary. Some sites have only a few engravings, others several hundred. Zone 1 sites are particularly notable for their small size: two sites with three engraved steles between them, another with one engraving only, another with six (see table 10). Zone 3 sites also range from 'very small' (one engraving) to those containing over 100 images (see table 12). The other zones also have sites of varying size (see tables 13,15,17,19).

On the whole, it can be said that the largest sites occur in areas where the density of sites is greatest. But a strict correlation is not possible, since the zones are not themselves of equal size. The area covered by Zone 1, for instance, is far larger than that covered by Zone 2.

Identification of distinct types of engravings

The overall review of the Moroccan rock art sites in Chapter 7 showed that the engravings varied considerably throughout the country and that no one site could be taken as representative of the

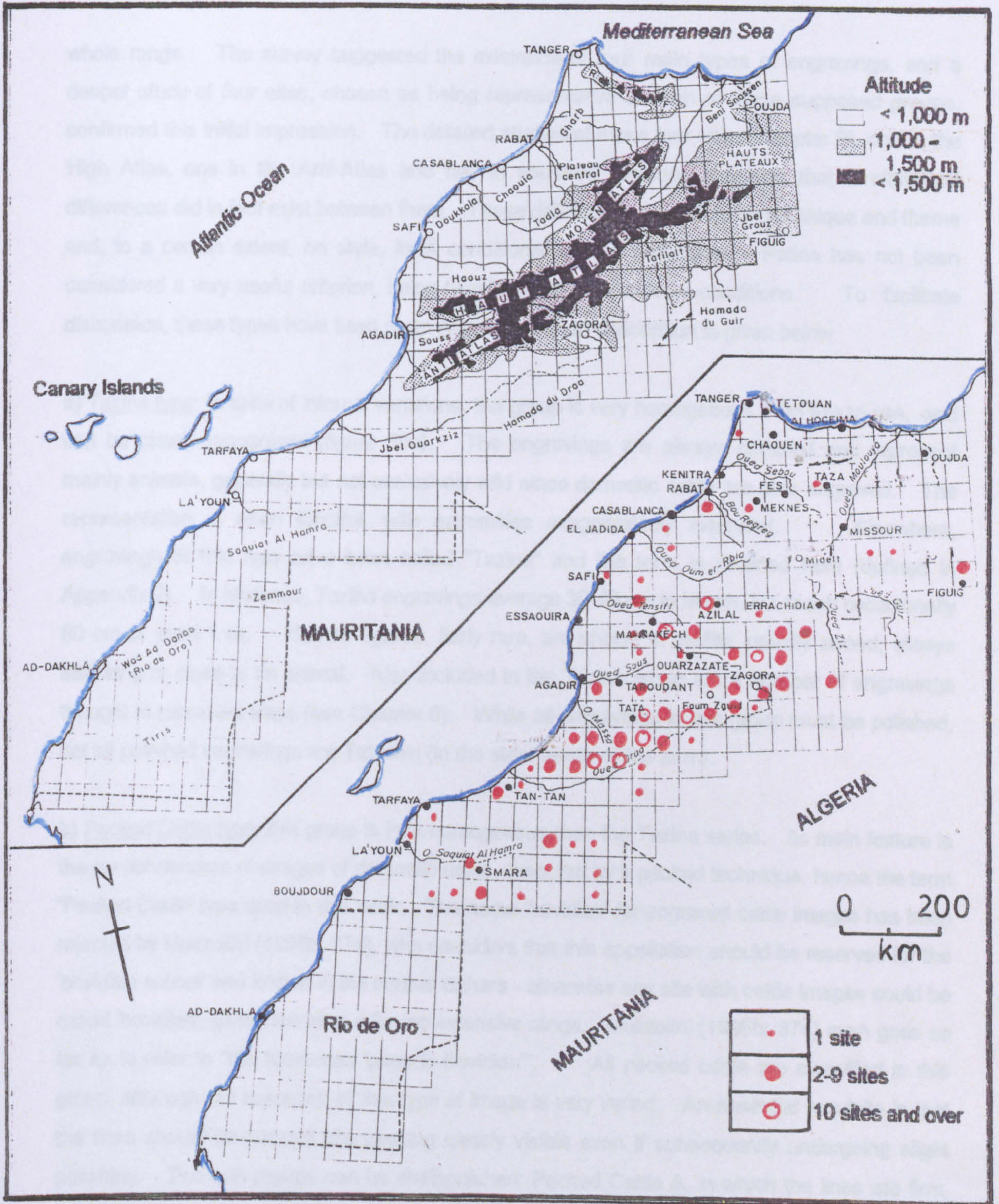


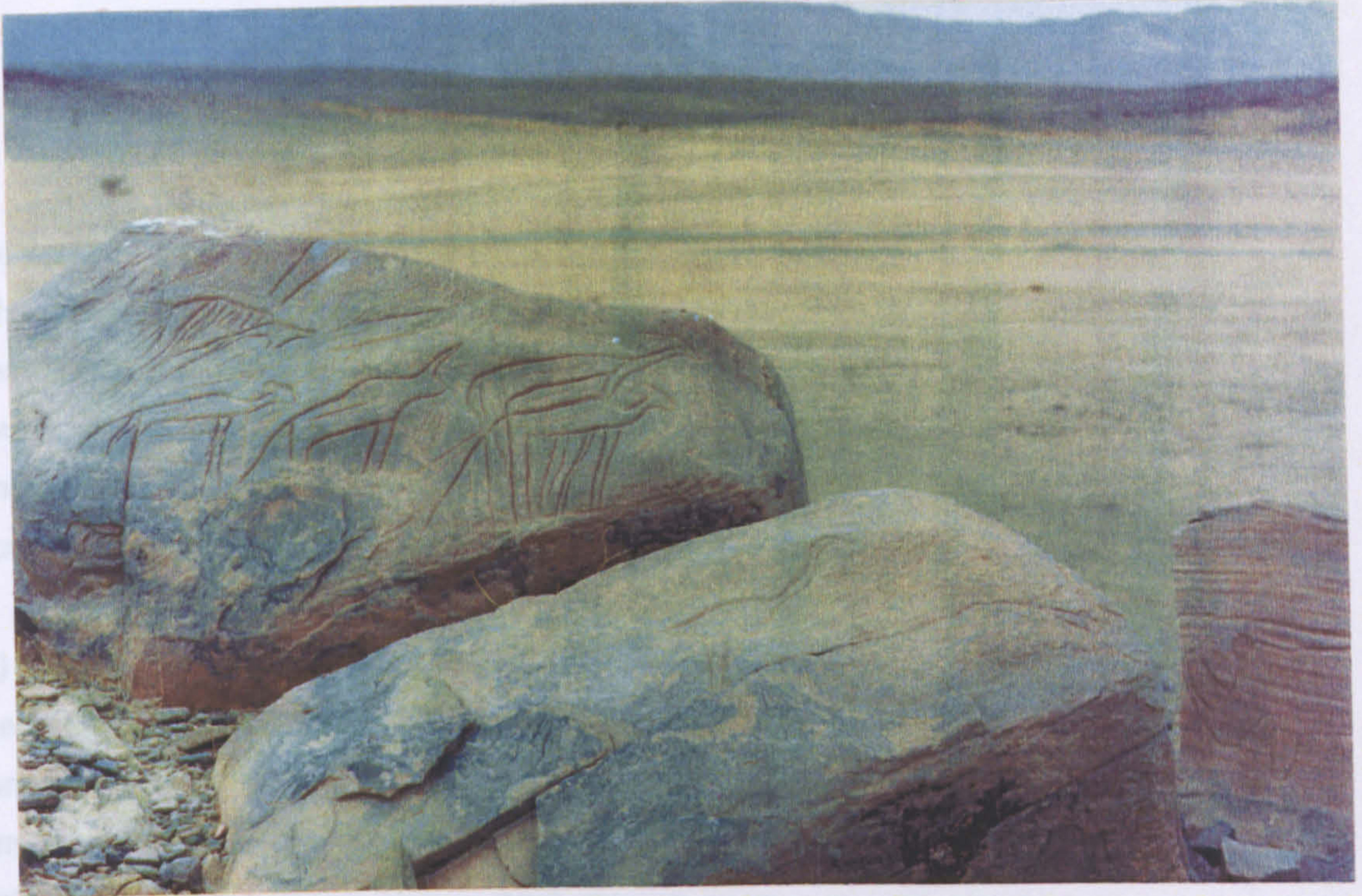
Figure 38. Distribution of rock art sites in Morocco (map from Aulagnier and Thevenot, 1986, using the map-sheet divisions drawn up by the Moroccan cartographic service)

whole range. The survey suggested the existence of four main types of engravings, and a deeper study of four sites, chosen as being representative of each of these supposed groups, confirmed this initial impression. The detailed studies of these four sites (Chapter 8), one in the High Atlas, one in the Anti-Atlas and two in southern Morocco indicated that fundamental differences did in fact exist between them. These differences are based on technique and theme and, to a certain extent, on style, itself conditioned by the technique. Patina has not been considered a very useful criterion, being heavily influenced by local conditions. To facilitate discussion, these types have been given names. A short description is given below.

a) Tazina type: in spite of internal variations, the group is very homogenous from site to site, and can be clearly recognised (figure 39a). The engravings are *always* polished and represent mainly animals, generally but not exclusively wild since domestic cattle are also engraved. The representation is often fanciful, with extremities exaggeratedly extended. Elsewhere, engravings of this type have been called "Tazina" and the term is retained here (defined in Appendix 2). In Morocco, Tazina engravings average 30-40 cm in length, but reach occasionally 80 cm or even 1 m. Human figures, fairly rare, are shown in profile, usually armed, always attacking or close to an animal. Also included in the Tazina group are a number of engravings thought to represent traps (see Chapter 6). While all engravings in this group must be polished, not all polished engravings are Tazinian (in the strict sense of the term).

b) Pecked Cattle type: this group is less homogenous than the Tazina series. Its main feature is the preponderance of images of domestic cattle, executed by a pecked technique, hence the term 'Pecked Cattle' type used in this work. The name 'bovidian' for engraved cattle images has been rejected by Muzzolini (1995b: 374), who considers that this appellation should be reserved for the 'bovidian school' well known in the central Sahara - otherwise any site with cattle images could be called 'bovidian', giving the term a far too extensive range. Muzzolini (1995b: 374) even goes so far as to refer to "the Moroccan 'pseudo-Bovidian'". All pecked cattle are classified in this group, although the execution of this type of image is very varied. An essential requisite is that the lines should be pecked, the pecking clearly visible even if subsequently undergoing slight polishing. Two sub-groups can be distinguished: Pecked Cattle A, in which the lines are firm, formed by continuous, even pecking (figure 39b); Pecked Cattle B, in which the lines are hesitant, frequently discontinuous (figure 39c). No chronological deductions are made from these differences, which may simply be due to bad workmanship or less interest in the subject.

While cattle are the dominant theme, wild animals also figure in this group. Antelopes, gazelles and ostriches are frequent (but less so than in the Tazina group), elephants and rhinoceroses are still more popular than lions. Many of these images can reach 1 m and over in size, though the majority are considerably smaller. Coat markings of cattle are often indicated by partial pecking



a



b



c

Figure 39. Examples of engravings characteristic of two main groups

- a) Tazina group (S26, Zone 7)
- b) Pecked Cattle A group (S34, Zone 7)
- c) Pecked Cattle B group (S34, Zone 7)

of the body or its division into sections (see figure 39b). Both cattle and wild animals can have the whole endoperigraphic zone pecked. A variety of horn shapes is depicted for the cattle: pointing forwards (only one horn shown in this case), curving upwards in lyre-shape, curving outwards and, very occasionally, drooping down. Cattle are occasionally shown in herds, but more often singly or in groups of two or three. Humans are often stick-figures (see Appendix 2 for definition) or as in the Tazina group (but pecked).

c) Dagger/Halberd/Anthropomorph type: this group is characterised by polished, pecked, or pecked and polished weapons - daggers (figure 40a), halberds, round and rectangular shields, lance- or arrow-heads (figure 39a) and anthropomorphic figures. Images are rarely under 30 cm, reaching life-size for the larger anthropomorphs and, quite exceptionally, 5 m for a pair of unique cows on the Yagour plateau (High Atlas, Zone 3). A striking feature of this type is the presence of large, realistic male figures, shown full-face. They are often closely associated with weapons, and frequently appear to be attacked by weapon-heads. Details of clothing or ornamentation (belts, bracelets, pendants) are often rendered, as are eyes, mouth and sometimes ears. While these images characterise the group, domestic cattle are in fact the subject most frequently engraved.

d) Libyco-Berber type: the origin of this term, widely used in North African rock art circles, is explained in Appendix 2. The engravings are invariably pecked, small (25-30 cm), and show horsemen and foot soldiers carrying round shields and javelins or lances, often fighting or hunting. Barbary sheep, leopards or lions and antelopes (apparently oryx), occasional unmounted horses and ostriches make up the remainder of the images. Camels representations are also included in this group. Animals and humans are linear, stiff and stick-like, but their frequent grouping in scenes gives them an animation otherwise lacking (figure 40c).

Engravings not forming recognisable groups

Two distinctive, recognisable themes are not included in these four main divisions of Moroccan rock art images: chariots (figure 24d) and Libyco-Berber inscriptions (figures 29c and 30c). While both are important in many ways, notably as chronological pegs (see Chapter 10), they do not make up a formal category, as do the above images, since they usually only occur in very small numbers on a site.

Many engravings do not fall into any of these groups. They may be:

a) easily identified animals or anthropomorphs that do not fit into the Tazina group nor the Pecked Cattle group. The animals may be relatively large (up to 1 m), with a shallow, polished but non-Tazinian line, or pecked wild animals not associated with cattle. The anthropomorphs



a



b



c

Figure 40. Examples of engravings characteristic of two further main groups
 a) Dagger/Halberd/Anthropomorph group (HA17, Zone 3) b) Dagger/Halberd/
 Anthropomorph group (HA19, Zone 3) c) Libyco-Berber group (HA5, Zone 3)

are usually isolated stick-figures, generally coming into the category of *orants* (see Chapter 6 and Appendix 2 for description). Other anthropomorphic elements are isolated hands (very rare) and feet/sandals (not necessarily recent).

b) unidentifiable, abstract, geometric or totally confused (to modern eyes). They include circles, concentric circles, spirals, zigzags, meanders and so on, polished or pecked. Only one site is at present known where this type of image is dominant (see below).

Classification of a site according to the type of engravings present

The overall appearance of any rock art site is immediately discernible. It will generally present one of three possibilities:

- one of the four defined types of engravings just described will be dominant
- clearly identifiable animals are present, but are not of the Tazina or Pecked Cattle group
- the engravings are very varied

Even a site with a defined group (Tazina or Pecked Cattle, for instance) clearly dominant generally contains other types of engravings. "Pure" sites - sites containing engravings of one type only - do exist, but they are rare. Many sites contain images of at least two groups - engravings of Libyco-Berber type on the same site as the Pecked Cattle type, for example. As yet, no site has been found containing representations of all the four groups listed.

Without prejudging the chronology of these various types of engravings, which is discussed in Chapters 10 and 11, and without as yet considering the different populations responsible, an analysis of the distribution of rock art sites requires a decision to be made concerning the salient features of the engravings on each site. A method has therefore been chosen upon which to base the attribution of a label which concentrates on significant elements.

This site classification - essential if some pattern or order is to be found - is based on the dominance of a certain type of engraving. The choice of a number to express dominance on a site is of course somewhat subjective. It is here considered that a minimum absolute majority (51%) of one type of engraving on a site is insufficient to justify a 'one-type label', when a large minority is of a different type (in reality, such a marginal difference only occurs on very small sites). For all types except the Dagger/Halberd/Anthropomorph (D/H/A) type, 70% has been chosen to express a 'dominance'. This allows for three out of 10 engravings to be of another type (or types) or unclassifiable. A site classified as 'Tazina' means therefore that at least 70% of the engravings are of this type.

The D/H/A type is excluded from this '70% dominance' requirement because it generally shares a site more or less evenly with other engravings (cattle and wild animals for instance) while still retaining its very specific and characteristic nature. The chronological element in the D/H/A type (see Chapter 9) makes it important for its presence to be clearly indicated, even when it fails to constitute an important majority of engravings on a site. Accordingly sites where this type of engraving makes up a minimum of 30% of the total engravings have been classified as D/H/A.

As was stated in Chapter 7, data were not available for all the 289 rock art sites forming the basis of this study. Nevertheless, it was possible to assign 138 sites to one of the four main groups or a secondary group, using the percentages outlined above. Three further sites, in which two groups were equally divided, have been added to this figure, giving a total of 141 classified sites. (in the relevant tables these three sites have been listed as "Mixed"). Table 25 gives a summary total number of these sites; Table 26 provides the same information by zone (site references are given in Appendix 10).

Tazina	63
Pecked Cattle	46
Dagger/Halberd/Anthropomorph	23
Libyco-Berber	5
Chariot	1
"Mixed"	3
Total	141

Table 25. Number of sites containing a dominant group (sites divided equally between Tazina and Pecked Cattle engravings are listed as "Mixed")

Engravings belonging to one of the five groups listed above may well be present on sites while not being dominant and not falling into the "Mixed" category listed above.

Correlation of typology with distribution

Before discussing the correlation between the typology of the engravings and the geographical location of sites, it is underlined that distribution maps and the resulting hypotheses have obvious well-known limitations. It may be objected that the present state of knowledge does not allow conclusions to be formulated which may be altered by new discoveries. However, no new discoveries can alter the position of known sites. New knowledge may fill in areas at present apparently devoid of sites, and thus alter the details of their distribution put forward here. But a sufficiently large number of sites has been included in the present study for the conclusions in this chapter to be generally valid.

It would have been agreeable to have been able to draw up distribution maps in which the 289 sites figured according to the classification established here, thereby indicating clearly the

extension of each group. However, this has not been possible. A handicap is the frequent absence of photographs or details of the technique used, the initial researcher having limited his remarks to the subjects represented. In spite of these drawbacks, it is felt that a sufficiently good data-base exists for the zones of influence of each type to be determined in the light of today's knowledge. As stated, 138 sites could be classified according to the group of engravings dominant, three sites shared the dominance and 148 sites could not be classified. Table 26 indicates the distribution by zone of the classified and unclassified sites. The total of 289 sites used throughout this study has been exceptionally increased by one in south Morocco (50a, Zone 7), to include a Tazina site seen but destroyed before recording (Simoneau, 1969: 99).

	Z o n e									total
	1	2	3	4	5	6	7	8	9	
Tazina		3			28		19 (+1)		13	63
Pecked Cattle		1	2	1		6	33	3		46
D/H/A			23							23
Libyco-Berber	1		2			2				5
Chariot				1						1
"Mixed"							3			3
TOTAL	1	4	27	2	28	8	55 (+1)	3	13	141
Unclassifiable	11	4	17		4	18	57	23	14	148
TOTAL	12	8	44	2	32	26	112(+1)	26	27	289

Table 26. Number of classified and unclassified sites by zone

The reasons for the non-classification of 148 sites are indicated below in Table 27 (site details are given in Appendix 10).

Contents very mixed.....	42
Contents unusual.....	29
Contents recent.....	2
Published data incomplete or inexploitable	44
Data lacking.....	31
TOTAL.....	148

Table 27. Reasons for the non-classification of sites

The presence of minority elements on classified sites (i.e. on sites where more than 70% of the engravings belong to another specific group) is important for distribution plotting. This concerns principally engravings of the Libyco-Berber group, chariots and *tifinars*, since, as noted above, the first group are in the majority on only five sites, chariots on one site, *tifinars* never. The number of sites where minority elements occur is given in Table 28.

	Zone									total
	1	2	3	4	5	6	7	8	9	
Libyco-Berber	1	4	6	1	3	7	7	4	1	34
Chariot		2	10	1	2	7	18(+1?)	4	4	48
<i>Tifinars</i>			4	1		2	1	1	1(+1?)	10
Tazina					1		5		3	9
Pecked Cattle		1	7			1	8		19	36
D/H/A		2	4		2	1	1			10

Table 28. Number of sites where engravings belonging to an identifiable group are present but not dominant

Engraving typology and site distribution

The correlation of typology with distribution shows that rock art sites are not only distributed unevenly throughout the country, but their contents also show an uneven distribution. Figure 41 gives in map form the general distribution of the four main types of engraving, together with chariots (*tifinars* are excluded because only 10 sites are concerned and their situation is clearly brought out in Table 28). Figure 41 does not show those sites listed in Table 28 where the groups of Tazina, Pecked Cattle and D/H/A engravings occur as minority elements.

Taking zone by zone, not much can be said about the North and Centre (Zone 1), where the sites are scattered and the images - painted or engraved - very varied in theme and style, probably indicating different ages and influences. In the East (Zone 2), the picture that emerges is also one of mixed influences, where all four major groups were represented and only *tifinar* inscriptions absent. The contents of the numerous sites in the High Atlas (Zone 3) indicate the dominance in this mountain range of the D/H/A type of engraving, although five sites could not be classified as they contained a mixture of groups, and the contents of 12 others were too varied or data were missing. Libyco-Berber images were engraved on eight sites, inscriptions in *tifinar* on four sites (the greatest number of sites of any zone but not the greatest number of inscriptions).

Only two sites figure in the Extreme South-east (Zone 4), but one was particularly interesting as over 70% of the engravings were of chariots, not seen in such numbers elsewhere, and the only site yet known in Morocco where chariots are the principal theme. The South-east (Zone 5) contained mainly Tazina sites, but a small intrusion of D/H/A elements best known in the High Atlas cannot be overlooked (on 2 of the 32 sites making up this zone). Tazina engravings in fact monopolise an area starting some 100 km north of Zagora and going about 50 km south of this town. This concentration of Tazina-group sites is followed by a gap west of Zagora as far as the region of Tissint (Zone 7), except for traces of the Tazina style on two sites east of Fourn

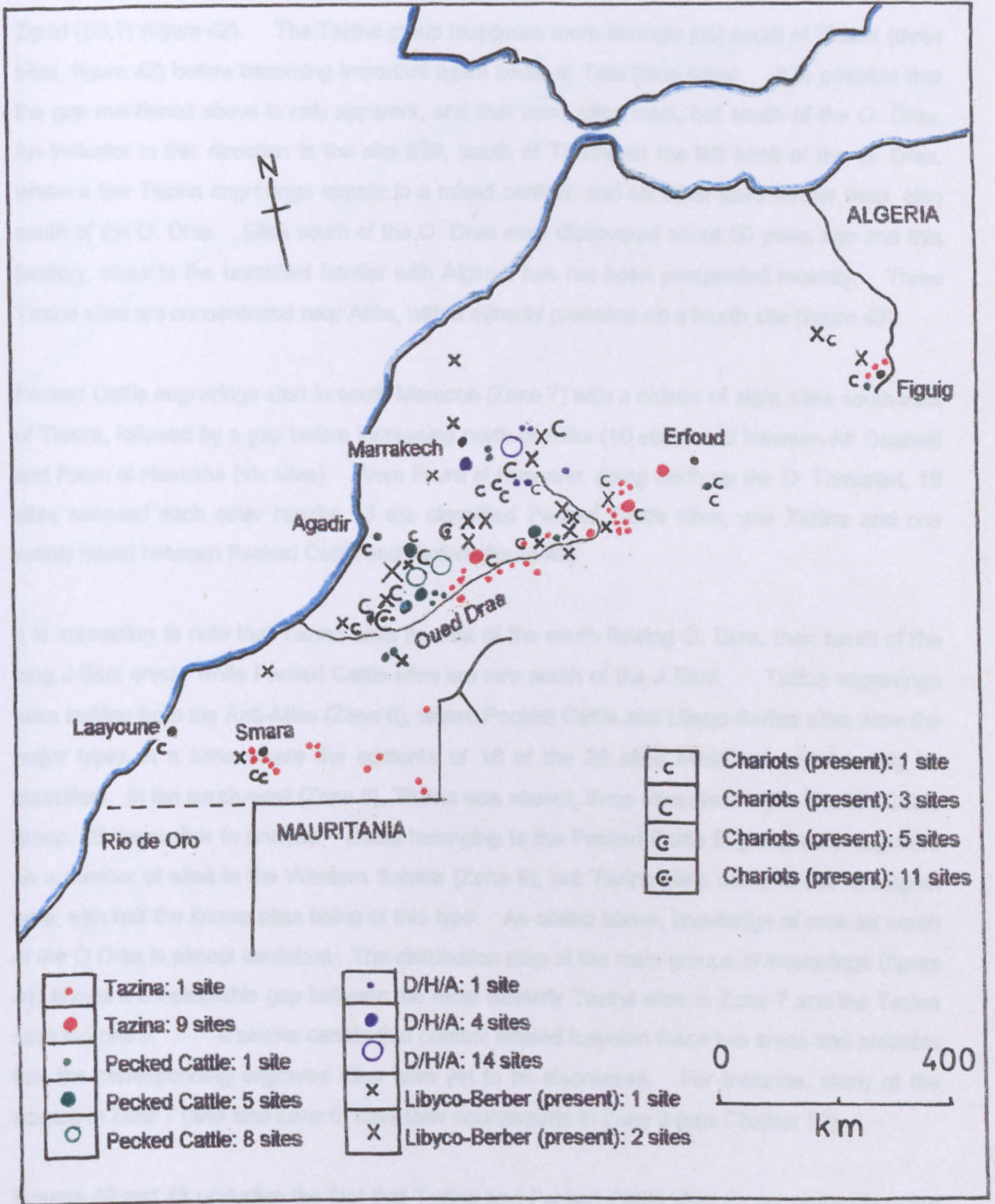


Figure 41. Distribution of main types of engraving

Zguid (S3,7) (figure 42). The Tazina group reappears more strongly just south of Tissint (three sites, figure 42) before becoming important again south of Tata (nine sites). It is possible that the gap mentioned above is only apparent, and that more sites exist, but south of the O. Draa. An indicator in this direction is the site S39, south of Tissint on the left bank of the O. Draa, where a few Tazina engravings appear in a mixed context, and six other sites further west, also south of the O. Draa. Sites south of the O. Draa were discovered about 50 years ago and this territory, close to the unratified frontier with Algeria, has not been prospected recently. Three Tazina sites are concentrated near Akka, with a minority presence on a fourth site (figure 43).

Pecked Cattle engravings start in south Morocco (Zone 7) with a cluster of eight sites south-east of Tissint, followed by a gap before increasing north of Akka (10 sites) and between Ait Ouabelli and Fom el Hassane (six sites). From Fom el Hassane, going north up the O. Tamanart, 15 sites succeed each other rapidly: 13 are classified Pecked Cattle sites, one Tazina and one evenly mixed between Pecked Cattle and Tazina (figure 43).

It is interesting to note that Tazina sites lie east of the south-flowing O. Draa, then south of the long J Bani crest, while Pecked Cattle sites are rare south of the J Bani. Tazina engravings were lacking from the Anti-Atlas (Zone 6), where Pecked Cattle and Libyco-Berber sites were the major types in a zone where the contents of 18 of the 26 sites could not unfortunately be classified. In the south-west (Zone 8), Tazina was absent, three sites were of the Pecked Cattle group, 23 impossible to analyse. Cattle belonging to the Pecked Cattle B group were engraved on a number of sites in the Western Sahara (Zone 9), but Tazina sites came to the fore again here, with half the known sites being of this type. As stated above, knowledge of rock art south of the O Draa is almost inexistant. The distribution map of the main groups of engravings (figure 41) shows a considerable gap between the most westerly Tazina sites in Zone 7 and the Tazina sites in Zone 9. It seems certain that contact existed between these two areas and probable that the corresponding engraved sites have yet to be discovered. For instance, many of the scenes in Zone 7 (and also Zone 5) have their counterparts in Zone 9 (see Chapter 12).

Figures 42 and 43 underline the fact that Tazina and Pecked Cattle sites do not generally occur side by side. As noted above, the area where these two different styles do occur close together is along the densely occupied O. Tamanart. Here, one Tazina site stands out in a region dominated by Pecked Cattle, and one site is divided between Pecked Cattle and Tazina engravings. As has been noted (Rodrigue, 1992a), the number of Tazina sites becomes progressively less from south to north. O. Tamanart forms a natural passage between south Morocco (Zone 7) and the Anti-Atlas region of Tafraout (Zone 6), again noted for its Pecked Cattle sites. This area seems to have been a contact point between two very different styles.

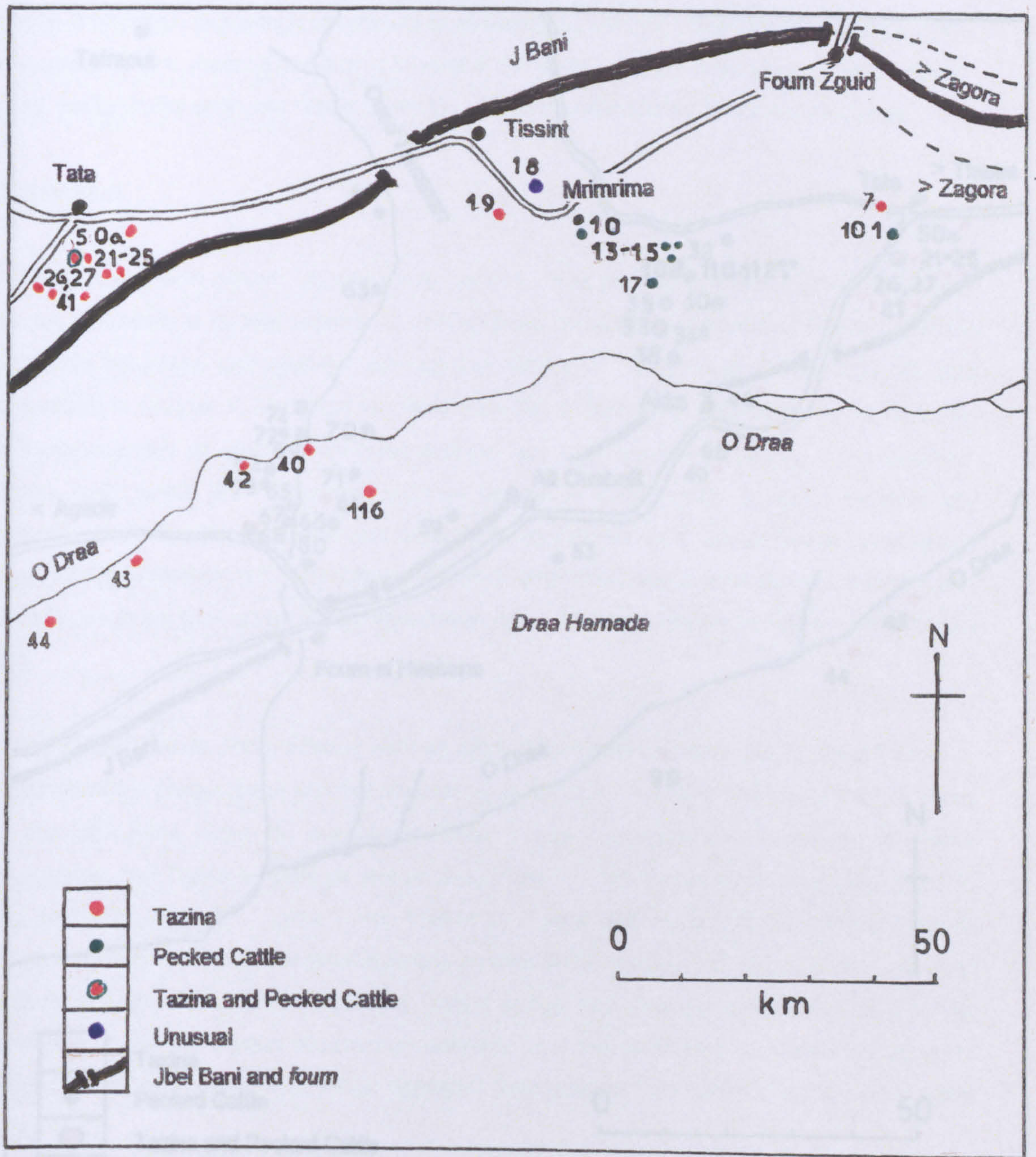


Figure 42. Sites around Fourn Zguid, Tissint and Tata

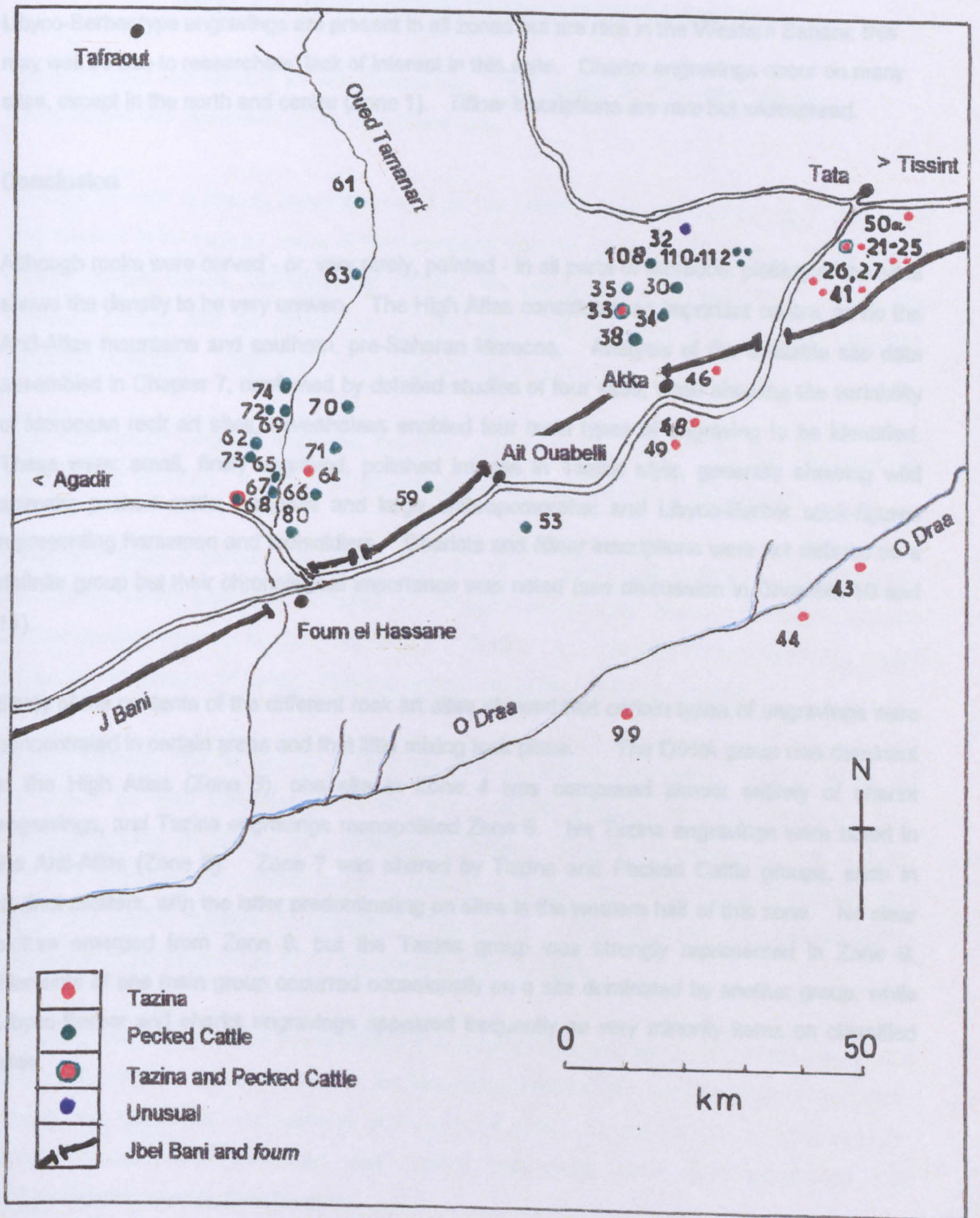


Figure 43. Sites between Tata and Fourn el Hassane

Libyco-Berber type engravings are present in all zones but are rare in the Western Sahara; this may well be due to researchers' lack of interest in this style. Chariot engravings occur on many sites, except in the north and centre (Zone 1). *Tifinar* inscriptions are rare but widespread.

Conclusion

Although rocks were carved - or, very rarely, painted - in all parts of Morocco, plotting of the sites shows the density to be very uneven. The High Atlas constitutes an important centre, as do the Anti-Atlas mountains and southern, pre-Saharan Morocco. Analysis of the available site data assembled in Chapter 7, confirmed by detailed studies of four sites, while showing the variability of Moroccan rock art sites, nevertheless enabled four main types of engraving to be identified. These were: small, finely engraved, polished images in Tazina style, generally showing wild animals; pecked cattle; weapons and large anthropomorphs; and Libyco-Berber stick-figures representing horsemen and footsoldiers. Chariots and *tifinar* inscriptions were not defined as a definite group but their chronological importance was noted (see discussion in Chapters 10 and 11).

Study of the contents of the different rock art sites showed that certain types of engravings were concentrated in certain areas and that little mixing took place. The D/H/A group was dominant in the High Atlas (Zone 3), one site in Zone 4 was composed almost entirely of chariot engravings, and Tazina engravings monopolised Zone 5. No Tazina engravings were noted in the Anti-Atlas (Zone 6). Zone 7 was shared by Tazina and Pecked Cattle groups, each in distinct clusters, with the latter predominating on sites in the western half of this zone. No clear picture emerged from Zone 8, but the Tazina group was strongly represented in Zone 9. Elements of one main group occurred occasionally on a site dominated by another group, while Libyco-Berber and chariot engravings appeared frequently as very minority items on classified sites.

PART III - INTERPRETATION AND DISCUSSION

Section II dealt with the rock art sites themselves. This section is concerned with the interpretation and discussion of the assembled data.

Chapter 10 looks at factors potentially useful for the establishment of a chronological framework into which to fit the rock art, many of them involving material external to Morocco. These factors include climatic events, archaeological material, the appearance or disappearance of wild and domestic animals and the introduction of material or cultural items such as metal weapons, chariots and writing. Style used as a dating method is discussed.

The next chapter critically examines the data put forward in Chapter 10 and discusses its application to Morocco. A proposed chronology for Moroccan rock art is put forward.

It had been noted in earlier chapters that rock art was not placed haphazardly in the landscape, but followed certain principles. Chapter 12 considers the choices made by the early engravers and the possible reasons for these locations. Rock art as a medium of communication is also studied in this chapter, involving reflexions on the symbolism behind the images.

Chapter 13 notes that the rock art of Morocco is not an isolated phenomenon. In NW Africa and the Sahara the early Holocene period was one of artistic creativity, with rock faces and free-standing boulders the support for a multitude of images. A short comparison is made with the rock art of neighbouring countries such as Algeria and Libya; south of Morocco, Mauritania, with a less rich artistic tradition, is included in this survey. The influence of historically-known populations in the second half of the 1st millennium bc is noted.

Chapter 14 brings together all the threads of the present work, and places Moroccan rock art in a climatic and archaeological framework. Archaeological knowledge is used to support information coming from the location and contents of the rock art sites. In turn the rock art sites fill in the picture obtained from excavation and provide information about past populations that archaeological research cannot supply.

The final pages recall the aims of the research and assess to what extent they have been achieved.

CHAPTER 10. ELEMENTS FOR THE ESTABLISHMENT OF A CHRONOLOGICAL FRAMEWORK FOR THE ROCK ART

The problem

A total of 138 sites have been shown to contain engravings belonging, in the majority, to one of four main typological groups or one secondary group; on three sites the engravings were more or less equally divided between two main groups. When did these types of engravings start? Were the populations responsible contemporary or successive? If the latter, which came first? Without a preliminary chronological setting, any attempt at understanding the way of life of the engravers or interpreting their work runs the risk of mixing incompatible elements. As Rosenfeld and Smith have pointed out (1997: 409): "the problem of securely dating rock-art has been a major impediment to its acceptance as useful archaeological data".

No painting or engraving has been directly dated in Morocco. At the moment, the best that can be hoped for is a relative chronology, based on events or material objects of known date which can be linked to the rock art. Even in this domain, a consensus is by no means assured. Among the elements relevant to Moroccan rock art are the following: climatic events, material from archaeological excavations, the predominance/disappearance of certain animal species, the introduction of other species, the appearance of new technology, such as metal weapons, the mounted horse, chariots and writing.

Elements for the establishment of a chronology

Climatic events. There is general agreement here among specialists, with only minor variations in the dates proposed. Climatic change in northern Africa, outlined in Chapter 3, inevitably affected animal and human populations in Morocco, though to a lesser degree than in the Sahara. For areas north of the High Atlas, climate and vegetation changes were never so extreme as to provide any useful dating information. In southern Morocco, however, the situation was different and the increasing aridity more severely felt, although the O Draa certainly offered a refuge zone.

As was explained in Chapter 1, it is assumed here that the thousands of animals depicted on the rocks had actually been seen in the area at the time they were engraved. While this is only a hypothesis, there is no reason why people should have drawn, so often, accurate representations of animals not visible around them. This being so, it can be supposed that the wild animals and herds of cattle depicted in the rock art needed water and pasturage and thus lived during a period when the present-day desert was more hospitable. Two main humid periods were noted for northern Africa: from about 10000-5500 bc (the 'Major Humid') and again about 5000-2500 bc (the 'Neolithic Humid'). These two wet periods were also noted for Morocco in general: the first

from about 6500-5000 bc, the second from 4500-2500 bc (Ballouche *et al.*, 1990: 1). From about 2500 bc desertification progressed steadily in south Morocco.

Paradoxically, in the Sahara, the second humid period, with a lower rainfall than during the preceding humid, saw the peak of pastoral populations (Muzzolini, 1995b: 51), thanks to ground water accumulated during the previous humid period. A short return of increased rainfall was envisaged for the Sahara around 1000 bc (± 500) (Muzzolini, 1995b: 52). Vernet, too, saw a humid remission during the 2nd millennium bc, and humid episodes made cattle-raising still possible in northern Mauritania in the 1st millennium bc (Vernet, 1995: 149). For Morocco, a humid interval occurred on the coast around the beginning of Christian times (Ballouche *et al.*, 1990: 1).

Archaeological material. Only one archaeological site in all Morocco can claim to be both dated and to contain a undoubted link with rock art: Toulkine (HA42, Zone 3). A Neolithic level in this rock-shelter produced a stone palette with traces of red ochre similar to that used in the paintings situated on a ledge overhanging the shelter. The TL dating obtained from three pottery sherds from this palette-bearing level can justifiably be considered to apply to the paintings. They indicated a period ranging between 2420 and 2020 bc (4400-4000 bp) (Ousmoi, 1989). Unfortunately, these paintings cannot be attached to any definable rock art group, nor to any other rock art site. In Morocco, no dated archaeological level has been found to cover an engraved rock face.

Not rock art, but included here for the sake of completeness, are the 112 ostrich egg fragments engraved with geometric designs found on the epipalaeolithic Site 19 (Zone 8), dated to around 4400 and 4200 bc (6350 ± 120 bp and 6150 ± 120 bp) (Grébénart 1972: 162). A total of 64 similarly decorated ostrich egg fragments were found on another late epipalaeolithic site, also in Zone 8, dated to around 2450 and 1240 bc (4400 ± 90 bp and 3290 ± 70 bp) (Searight, 1998: 109). On the same theme of decorated ostrich eggs, a shell fragment with an engraved oryx, collected from the surface in the region of Tarfaya (Zone 8), was dated to around 840 bc (2790 ± 105 bp) (Grébénart, 1974: 461).

The presence, in the vicinity of rock engravings, even at the foot of an engraved rock, of flints, pottery, dated hearths, dated burials or funerary monuments is often used to date the engravings. Vaufray, in his *Préhistoire de l'Afrique*, considered that the V-shaped engraved lines in a rock-shelter in Algeria were the work of Capsian (Epipalaeolithic) people since he had collected Capsian tools in the shelter (Vaufray, 1955: 188). On another occasion, he affirmed that the proximity of "Neolithic" engravings "proved" the Neolithic age of the nearby worked flints (*idem*: 314) (a rather circular argument).

It is clear that the mere presence of a dated object near a rock art site cannot be taken as indicative of the age of the engravings. At the best it imparts the rather banal but not unuseful information that people of such a period were present in the area. Worked flints have been picked up around many engraving sites in Morocco. They are often of Neolithic age, which would place them in concordance with the supposed age of the engravings. Aterian and even Lower Palaeolithic tools have also been found in the same close relation to engraved rocks (as have modern broken glass and sardine tins). As was noted in Chapter 4, it has been suggested that the descendants of populations using the Aterian-type tools could have been responsible for engravings in the Sahara. One can but insist on the fact that no rock engraving site can be dated by the presence nearby of prehistoric artefacts, which can as easily be later or earlier than the rock art and not necessarily contemporary.

The numerous tumuli found frequently in the vicinity of Moroccan rock art sites can, on the other hand, be of some use in the establishment of a relative chronology if they are constructed on engraved bedrock or have incorporated engraved stones in their construction. The latter case is known but unfortunately, as has been shown in Chapter 4, these tombs have rarely been dated as they seldom contain dateable grave goods. Considered to be 'pre-Islamic', they can only indicate - when covering or using engraved slabs - that the engravings are earlier than their construction.

Wild animal species. Wild animals represent a high proportion of the engravings in Algeria and the Sahara. It is not surprising therefore that the representation of animal species among the engravings has for long been used to establish a relative chronology in rock art. The giant buffalo (*Pelorovis antiquus*, ex-*Homoioceras antiquus*, ex-*Bubalus antiquus*) was such a striking and characteristic animal in the engravings of the Sahara that its name was applied to what was considered the oldest North African rock art, the Naturalistic Bubaline period, particularly studied in Algeria and the Sahara (see Chapter 13). Researchers are divided over the dates attributable to this period: Upper Pleistocene for Mori (1974), Neolithic for Flamand (1921), Camps (1974) and Muzzolini (1995b). The rarity of giant buffalo engravings after this early period led to the idea of its subsequent extinction, thus providing a convenient end for this period. However, controversy and confusion surrounds this animal and its possible extinction (or phyletic change into the African buffalo, *Syncerus caffer*). Some researchers (Camps, 1974: 328) are in favour of its survival into historic times, while others consider it was extinct by the end of the Neolithic. It is certain that both excavated bones and graphic representations of the giant buffalo become scarce throughout the Sahara and the Maghreb after the Post-Neolithic Arid phase, starting around 2000 bc (Gautier and Muzzolini, 1991: 57). Despite the considerable uncertainty concerning its disappearance, it is nevertheless probable that figurations of the giant buffalo, an

animal requiring marshy or soft ground underfoot, are a sign of a certain antiquity, or of an exceptional micro-environment.

Representations of water-loving species such as hippopotamus or crocodiles are indicative of wet conditions or at least of permanent water sources. No certain examples of either of these animals have been recorded in Morocco.

Another wild animal claimed to be a useful chronological indicator is the oryx (*Oryx dammah*). On the basis of a distribution map established from recordings of excavated oryx bones and rock art representations, Muzzolini (1995a: 223) states that "Before the Post-Neolithic Arid [starting 2000 bc in this context] the oryx is absent in the whole of north Africa, except in the deserts near the Nile valley". This enables him to place sites containing oryx engravings as post-2000 bc. The animal's capacity to live in the desert or semi-desert is undoubted.

Giraffes and ostriches were used by Muzzolini in his paper on Tazina-style engravings as indicators of a late date for this type of engraving: "The proliferation of giraffes and ostriches here also constitutes an undoubted sign of a recent age" (Muzzolini, 1988: 195). No explanation was given for this choice of giraffe and ostrich.

Domestic cattle. Cattle engravings are widely present in south and south-eastern Morocco and are also known in the High Atlas mountains. For long thought to have been brought into the African continent from regions east of Suez, domestic cattle are now considered as possibly domesticated by North African populations from the endemic wild aurochs, *Bos primigenius* (Clutton-Brock, 1993: 66). Early cattle remains (in very small quantities) come from the lowest excavated levels of the Grotte Capeletti (Aurès, NE Algeria), dated to around 4580 bc (6530±250 bp), but the cattle may well not have been domesticated; the upper level, where domestic cattle predominated, gave a date of around 3150 bc (5100±150 bp) (Clutton-Brock, 1989: 201). At Uan Telocat (Acacus, Libya), where an archaeological deposit had been dated to around 4795 bc (6745±175 bp), a new trench revealed numerous faunal remains, with many domesticated ovicaprids but only a few rare specimens of domesticated cattle; C14 dates indicated an occupation ranging from the beginning of 4th to the first half of the 3rd millennium bc (Garcea, 1995: 36). Also in the Acacus, at Uan Muhuggiag, a level containing a few domestic cattle bones was dated to around 4002 bc (5952±120 bp) (Smith, 1980: 489). These dates are sufficiently concordant for there to be general agreement (Clutton-Brock, 1993, Muzzolini, 1995b) that by about 4000 bc cattle pastoralists were probably well established throughout North Africa.

The nomenclature problem concerning *Bos ibericus*, *B. africanus* and *B. brachyceros*, where considerable divergence exists, is not discussed here, nor is the question of the zebu (*B.*

indicus). The wild ox, *Bos primigenius*, could possibly have overlapped with domestic cattle and been represented in the rock art in Morocco. As indicated in Chapter 5, its remains have been found in excavations in the north, for instance, in Neolithic levels in the Ashakar complex near Tangier (Gilman, 1975:87) and in Kaf-Taht-el Ghar near Tetouan (Zone 1) (all levels) (Ouchaou and Amani, 1997: 58). However, engravings in Morocco are not sufficiently specific to allow identification of cattle species, and all cattle engravings have been considered to represent domestic animals.

Domestic ovicaprids. For Clutton-Brock (1993: 68, 69), both domestic sheep and goats were introduced into Africa from Asia, wild ancestors never having inhabited any part of this continent. For Muzzolini (1993: 169), this "traditional thesis" is debatable, a natural migration not being impossible. Whatever their origin, the earliest dates lie in the 5th millennium bc, as for cattle. The ovicaprid remains at Uan Telocat (Libya) were dated to the beginning of the 4th and first half of the 3rd millennium bc (Garcea, 1995: 36). The situation is summarised by Aumassip (1993:15): "In North Africa and the Sahara, as far as is known today, sheep were flourishing in the 5th and 4th millennium bc."

Horses. The domestic horse, *Equus caballus*, is absent in north Africa throughout the greater part of the Holocene. Engravings and equid bones found in excavations generally concern the wild ass (see Appendix 6 for discussion). In central Europe, the main spread of horse-riding apparently took place during the later Earlier Bronze Age, with evidence from south-east Europe suggesting that the practice was becoming common by 1600 bc (Coles and Harding, 1979: 99). Recent studies have in fact shown that horses were being ridden with bits in the Kazakhstan steppes nearly 500 years earlier (4630±75 bp) (Anthony and Brown, 2000). The first representations - rare - of mounted horses are Babylonian, dated to 2000 bc; the horse was ridden bareback and the equipment very rudimentary (Digard, 1994: 46). The use of horses as cavalry units in times of war only became current in the 1st millennium bc (Moorey, 1986: 198). According to Digard, the cavalry idea spread widely and rapidly, towards Egypt and North Africa on the one hand, and towards the central Asia of the Scythes and the Greek world on the other (Digard, 1994: 46).

Camps (1993b: 1909) points out that the horse and chariot were known in Pharaonic Egypt by 1580 bc; subsequently, a peaceful diffusion from Egypt introduced the horse into the Maghreb and the Sahara, where they cannot pre-date the earliest horses noted in Egypt, since both the North African and Saharan horses originated in the distant steppes of Asia (*idem*: 1909-1910). Camps admits that European horses could have reached North Africa from Iberia, relations between the two sides of the Mediterranean being sufficiently important to imagine a possible European origin for a very small part of the North African equine stock (*idem*: 1908). However,

for this researcher, although the African barb (pictured in the earliest horse paintings in North Africa) has affinities with the Andalusian and Camargue horse, it belongs "uncontestably to the eastern type" (*idem*: 1909).

Hachid calls the last Saharan and North African rock art phase the "Libyco-Berber period" (Hachid, 1982/83: 143). It introduces the horseman armed with lance and shield, starting around 1000 bc (Aumassip, 1993: 4). Hachid divides this period into two: in the first, the engravings are naturalistic and the camel absent; in the second, the engravings are schematic and the camel is also represented. Both stages can be accompanied by inscriptions (Hachid, 1982/83: 161).

Horses, ridden by men armed with small round shields and lances, are engraved in many parts of Morocco. They form the Libyco-Berber group identified in this work (see Chapter 9). Chenorkian places these armed horsemen in his third phase, following the Later Bronze Age, that is to say, somewhere in the 1st millennium bc (Chenorkian, 1988: 338).

Combining engravings of ridden horses, lances and chariots, Muzzolini (1995b: 173) assigns a date no earlier than the first half of the 1st millennium bc for the ridden horse in the Saharan regions. However, for Morocco, he groups the pecked Libyco-Berber horsemen carrying round shields and lances along with camel engravings, dated to around 200 bc (*idem*: 377).

Early texts, however, indicate that horse-riding was practised in Morocco at least by the 4th century bc. Scylax, a Greek, in his account of a journey down the Atlantic coast of Morocco in 361-357 bc, noted that the Moroccans were "good horsemen", used lances and were good archers (Roget, 1924: 20). During the Second Punic War (218-201 bc), the Carthaginian general Hannibal was greatly aided by his cavalry, among which figured Numidian (Tunisian) horsemen, riding barebacked. It has been pointed out (Spruytte, 1978/79) that the excellence of the Numidian horsemen during this war, using neither bridle nor bit, presupposed a long experience of riding, well before the arrival of the chariot in their country, an experience they could have acquired from the Phoenicians during the early part of the 1st millennium bc. Somewhat later, in the 1st century bc, according to Strabo (Roget, 1924: 25, 26), the Numidians still rode bareback with a bridle made of vegetable matter, and fought mostly on horseback with an iron lance and small round leather shield. These descriptions by early writers correspond closely to the Libyco-Berber engravings of armed horsemen known in Morocco.

Two short vertical lines on either side of the rider, clearly show in some Moroccan Libyco-Berber engravings, may indicate a saddle. After a long period of bareback riding, the Romans introduced a simple saddle with two short pommels at the front and back (Nouveau Larousse

illustré, 1901: 7/633). Roman military forces were present in Morocco from the middle of the 1st century bc and it is unlikely that engravings showing saddles could predate this period.

Camels (dromadaries). A wild species of camel, *Camelus thomasi*, lived in North Africa in pre-Holocene times. It then disappeared completely to be replaced by the domestic species (*Camelus dromedarius*). Radiocarbon dates show the presence of a domestic camel near Abu Simbel, southern Egypt, around 520 bc (2470±160 bp, cal.BC 920-190) (mandible) and around 740 bc (2690±90 bp, cal.BC 1040-770) (dung pellets) (Rowley-Conwy, 1988: 93). Bulliet (1975: 111) pointed out that an important trade in camels between the Nile and the Red Sea existed in the 1st and 2nd centuries bc.

The first, often-quoted, text concerning this animal in the Maghreb does not occur until Salluste's *Bellum africanum*, where it was stated that 22 camels were captured from the Mauretanian king Juba I in 46 bc (Muzzolini, 1995b: 180). However, in view of the great number of camel representations in the Sahara (probably on account of its obvious use in desert conditions), Muzzolini feels it could have been introduced into the Maghreb via Cyrenaica in the 5th century bc and into the Sahara perhaps around 250 bc (± 100) (Muzzolini, 1995b: 180). Engravings of pecked camels, with riders, occur in association with Libyco-Berber horsemen on a number of Moroccan sites.

Metal weapons. Daggers, halberds, and some axes probably of metal were engraved on many Moroccan sites, particularly in the High Atlas mountains (Zone 3). Looking towards Spain and Portugal has understandably been the most fruitful line of research so far, since elements of the Iberian copper and bronze civilisations, notably pottery, were known to have reached NW Morocco by the middle of the 3rd millennium bc (see Chapter 4).

Attempts to link High Atlas engravings to a known Bronze Age Iberian chronology were started by Malhomme (1953). Typological studies of halberds and daggers from Early Bronze Age sites in Spain and Portugal have confirmed a Bronze Age date for some apparently similar weapons engraved in the High Atlas (Zone 3) (Chenorkian, 1988). The analysis was based essentially on a study of the blades of the daggers and halberds and the method of hafting revealed by the engravings (but not by the objects themselves, since the shafts have very rarely been recovered during excavation). This researcher, underlining the heterogeneity of the High Atlas engravings, identified three periods for the High Atlas engravings. The earliest comprised the leaf-shaped weapon-heads (arrow or lance) similar to the Palmela point current in Iberia at the beginning of the 2nd millennium bc; guardless daggers and two types of halberd, all considered to be morphologically close to those of the Iberian cultures of El Argar and Carrapatos, with a suggested date from the middle of the 2nd millennium bc; and engraved rectangular shields

(Chenorkian, 1988: 336). A miniature halberd was found in a cist burial near Tangier (Zone 1) and leaf-shaped points (unstratified) in various parts of north and eastern Morocco (Zones 1 and 2) (see Chapter 4). A second period was characterised by round, internally-decorated fringed shields, narrow-bladed weapon-heads - the latter comparable to lance-heads engraved on Late Bronze Age steles in Spain - and daggers with conspicuous guards, probably of local inspiration, indicating "a further degree in the integration of Mediterranean Bronze Age material into the High Atlas" (*idem*, 1988: 338). Halberds with long thin blades fixed at the very end of the shaft, with no Iberian counterpart or affiliations with other European cultures might also be later and of local inspiration (*idem*, 1988: 322). The third period comprised the Libyco-Berber engravings of pecked horsemen and footsoldiers armed with lances and round shields (*idem*, 1988: 338). Understandably, no precise dates are attributed to these periods. The diffusion rate of these Iberian-inspired weapons is recognised by Chenorkian to be an unknown factor (*idem*: 339). The question was discussed (and unanswered) by the same author: is a weapon represented in the iconography when it has become very common, or when it is rare and its symbolic value great? (Chenorkian, 1989: 192). A recent study of the rock art of the High Atlas sites of Oukaimeden and the Yagour Plateau proposed a division of the sites here into two periods: a first Bronze Age, under Iberian influence, from about 1500 bc to 1200 bc, followed by a local production from 1200 bc to 600 bc, when contact with the Iberian peninsula ceased (Rodrigue, 1999a: 137).

As was stated in Chapter 4, 22 copper or bronze objects have so far been found in Morocco in pre-Phoenician contexts. Only two of these, a fragment of a flat copper axe from an excavated level in Kef-Taht-el Ghar and another fragment from Gar Kahal (both Zone 1), have been securely dated and felt to be of the same age. In Gar Kahal, the copper age level was estimated to start at around 2350 bc (4300 bp); the oldest bronze level is dated by TL to around 1900 bc (3880±300 bp) (Daugas *et al.*, in press). Exceptionally early dates at Kef el Baroud (de Wailly, 1976: 51) for a level including three metal objects are uncertain (see Chapter 4). While the other copper or bronze items found in Morocco are considered to have affinities with the Iberian copper or bronze age, none have a scientifically-established date.

Chenorkian's analysis outlined above has been rejected by Muzzolini (1995b: 380-383). While not disputing the presence of Copper or Bronze Age objects in Morocco, this author claims that the High Atlas daggers and halberds have no relation to El Argar and the Early Spanish Bronze Age, but are much later and belong towards the end of the 1st millennium bc. Muzzolini's objections are based on several factors: the widespread distribution of this type of weapon around the Mediterranean during the Bronze and Iron Ages; Chenorkian's analysis was based on the shapes of the daggers and halberds which reveals very little, since there are not many ways of hafting a metal axe or dagger; the limited production of the Argaric group, incapable of maintaining commercial contacts or of exercising a cultural influence as far as the High Atlas; and

the presence of letters in an ancient Libyan alphabet, which cannot be earlier than the middle or end of the 1st millennium bc (see below), engraved within an anthropomorph, typologically similar to many other nearby High Atlas anthropomorphs with their associated weapons. This inscription also posed a chronological problem for Chenorkian (1988: 339).

A much more serious problem surrounds the engraving of axes, concerning both their identification, nomenclature and chronology. As stated above, the only copper or bronze items securely dated in Morocco are the broken flat axe blades. Chenorkian proposed, tentatively, the identification of six engravings in the High Atlas as belonging to this type (Chenorkian, 1988: 183). Two other types of engraved axe, not to be confused with the flat copper axes, have been the object of various hypotheses concerning their origin and chronology. One is called here a "southern Morocco" axe, (elsewhere in the literature referred to as the "Adrar n'Metgourine" axe) the other (of very varied appearance) a *hache-pelle* (see Chapter 6). Chenorkian could find no Mediterranean counterpart for the first group (absent in the High Atlas), which he felt could be "local" or at any rate "African" (Chenorkian, 1988: 320). High Atlas examples of the second group (*haches-pelles*) were considered to be a High Atlas version of the southern Moroccan group (*idem*: 322). The superficial resemblance of the Moroccan *haches-pelles* with the Iberian *haches-idoles* engraved on funerary steles was dismissed on morphological grounds (*idem*: 321). Chenorkian noted the chronological problem lying in the fact that these southern axes are found in contexts "exclusively zoomorph, identified as Neolithic" (Chenorkian, 1988: 337). The implication was that this type of axe was amongst the oldest components of the High Atlas inventory of engravings, possibly pre-Bronze Age. Chenorkian's opinion found an echo in Rodrigue (1994b: 29,30). Noting that axes with fan-shaped blades are fairly widespread in southern Morocco, he affirmed that their "Saharan origin seems no longer to be contested", and that the *hache-pelle*, figuring on "Bronze Age sites in the High Atlas", was their latest schematic development (*idem*: 29,30). This position has recently been abandoned by the same author in favour of a High Atlas origin for both types, and a diffusion to the south (Rodrigue, 1999a: 78).

In his study of Algerian rock art, Lhote recognised that the numerous axes in close association with engravings he considered as Neolithic "posed a worrying problem", but concluded that the hypothesis of metal blades to these axes should be "absolutely rejected" (Lhote, 1970b: 185). In a relative chronology proposed for the High Atlas engravings, Jodin (1964: 108) drew attention to representations of this type of axe in Denmark (brandished by the warriors on the Westrup razor), Brittany and Portugal at a period from the 10th to the 7th centuries bc.

Moving into more recent times, iron was known to the Phoenicians from the beginning of the 1st millennium bc and the presence of these merchant-sailors along the North African coast is attested early in this period (Tauveron, 1992: 8). The Phoenicians' iron weapons and, in

particular, tools, were first diffused in a limited area around Tangier, in north-west Morocco (Zone 1), although very few items have been found (Ponsich, 1970). As Phillipson has pointed out (1993: 161), metal was a very scarce commodity among the indigenous North Africans throughout most of the 1st millennium bc, and although copper and bronze ornaments were occasionally obtained by trade, metal objects generally were very rare.

At the end of the 7th century AD, a curved dagger was introduced into Morocco by the Arabs, though no actual dagger of this date has been found. An earlier arrival is perhaps possible, but no dates are known. It is engraved on a number of sites.

Chariots. Chariots are engraved both in the High Atlas mountains and in south Morocco. They are shown in plan, the draught animals being practically never depicted.

Concerning their introduction into North Africa, it was noted above that horses and chariots were used in the Egyptian army from 1580 bc (Camps, 1993b: 1909). According to Camps, nothing prevented their rapid extension westwards and they could have progressively reached Libya: "One can thus affirm that the eastern Libyans owned chariots and raised horses in the 13th century bc, if not two centuries earlier" (Camps, 1993a: 1887). The last mention of war chariots was in 310 bc, when they were engaged in Carthaginian military operations, but it is not known when they were given up (*idem*, 1993a: 1887). Spruytte, an expert on experimental archaeology concerning the Saharan chariot (1996: 115), recalled that Herodotus, describing the known world in the 5th century bc, wrote that the Libyans [all the populations then living in northern Africa] were skilled chariot drivers who had learnt the art of driving four-horse chariots from the Greeks. Chariots seem to have still been in use four centuries later, since Strabo, writing at the end of the 1st century bc, stated that the Pharusians of southern Morocco used chariots armed with sickles to chase their enemies (Roget, 1924: 26); this statement is rejected by Camps as being merely a legend (Camps, 1993a: 1887). The time span for the use of chariots thus covers fifteen centuries.

This long period is vigorously contested by Muzzolini (eg 1988a, 1990, 1994). He firmly excludes an Egyptian origin for the Saharan chariots and puts their introduction into the Sahara much later, after 700 bc, linked both to the "orientalising wave" that surged through the Mediterranean around the 7th and 6th centuries bc and to the Greek town of Cyrene (Libya), famous above all for its chariot races (Muzzolini, 1994: 207). He bases his argument on the presence in the Saharan paintings of chariots drawn by four horses and others with a double shaft: the former were not known in the Middle East before 800-750 bc and later still in Egypt, and the double-shafted chariots were not known before 700 bc. The Saharan populations could not have invented the wheel and the chariot independently of the Mediterranean users, so their appearance in the Sahara is inevitably later (*idem*: 207). The introduction of the chariot from the

Sahara into Morocco would also date to around 700-600 bc (Muzzolini, 1988: 385). For Muzzolini (1996: 64), the "flying gallop" horse-and-chariot paintings of the central Sahara are the oldest chariot representations here. This author rules out an Iberian origin for the Moroccan chariots since the chariot engravings on the 1st millennium bc funerary steles in Iberia are too different from those of Morocco for any direct link between them to be envisaged (Muzzolini, 1988a: 383). The date of their gradual disappearance from the North African scene is also, for this author, difficult to determine (Muzzolini, 1990: 115).

Hachid (1992: 128), without discussing the date of arrival of the chariot in NW Africa, notes their presence, in one form or another, from the Mediterranean to the central Sahara and from the Atlantic to the Nile. She points out that the chariot appeared progressively at different periods, and that the painted "flying gallop" horse-and-chariot paintings in the Tassili n'Ajjer are older than the chariots engraved in the Algerian Atlas. The latter have strong affinities with the Moroccan versions (see Chapter 13).

Vernet, in his study of the prehistory of Mauritania, affirms that chariots were "undoubtedly" introduced into the Sahara by the Protoberbers as they pushed southwards, between 1000 and 500 bc (Vernet, 1993: 313, 324).

Spruytte (1996: 122) points out pertinently that several different types of chariot were depicted in Saharan rock art and they should not, therefore, be treated as one homogenous group. For this author, chariots with two shafts - in opposition to those with one shaft - were introduced into North Africa and south Morocco (via the Atlantic coast) by the Phoenicians around the 7th and 6th centuries bc (Spruytte, 1978/1979). In addition, his experiments have convinced him of the existence, towards the middle of the 1st millennium bc, of a sedentary group in the Libyan hinterland specialised in the dressage of chariot-drawing horses (Spruytte, 1996: 121).

Some 74 ornamental or functional bronze elements belonging to the chariots used by the Romans for ceremonial or religious purposes during their occupation of north Morocco in the 1st and 2nd centuries AD have been brought to light in excavation (Boube-Piccot, 1980: ii). However, these Roman chariots bear no resemblance to the chariot engravings known in the High Atlas and southern Morocco.

Inscriptions. The earliest writing used by the inhabitants of the Sahara and Morocco consisted of inscriptions to which the name "Libyan", "Libyco-Berber" or *tifinars* has been applied, the last name being generally reserved for the modern inscriptions used by the Touaregs (see Appendix 2). With the exception of the *tifinars*, these inscriptions remain for the most part undeciphered and use an alphabet the exact origin of which is unknown. However, according to Muzzolini,

they belong to the large family of alphabets which appeared around the Mediterranean during the 1st millennium bc, which were derived from the Phoenician Linear alphabet (1995b: 178). Despite the absence of an immediate ancestor, the form of the Libyan alphabet and its emergence in the Saharan desert make it unlikely that it predates these alphabets, known in Greece from the 9th and 8th centuries bc, a little later in Carthage, towards the 5th and 4th centuries bc in Andalusia and later still in Morocco and the Sahara (Muzzolini, 1995b: 381). A slightly earlier date is given by Aghali-Zakara, a member of the team working in Paris on an inventory of Libyco-Berber inscriptions, who considers that this alphabet was probably known since the 6th century bc (Aghali-Zakara, 1997: 2).

Twenty-seven inscriptions in a Libyan alphabet (five bilingual) have been found in Morocco, all in the north (Zone 1) : 26 are on steles, probably funerary, including one from Lixus (Galand *et al*, 1966: 11,12), dated to the 2nd century bc (El Khatib-Boujibar, 1983a: 136). It is interesting to note that one such inscribed stele comes from the same area, Maaziz, as one of the anthropomorph-bearing steles discussed in Chapter 7 (NC 4). According to Galand, it is impossible to link the inscriptions from north Morocco, often affected by Punic or Latin influences, with the rock engravings further south; the latter, whether simple graffiti or well executed, "defy any chronology" and the only element the two groups have in common is the use of the same type of writing (Galand *et al*, 1966: 10). The question is further complicated by the extreme variability of these alphabets.

Arabic writing reached Morocco with the Arab invaders in 682 AD. Its use was certainly very limited at first and only became generalised many centuries later.

Attempts at dating by style

Far less widely accepted are attempts to date rock art by the style of the representation. Amongst severe critics of stylistic analysis is Bednarik, who refers to the "ambiguity" of such analyses (Bednarik, 1991: 157) (see also Appendix 2). Speakers at the international congress of rock art in Australia in 1988 also pointed out that western concepts of style are often simply examples of "Euro-centricity" (Lorblanchet, 1988: 230). The problem is posed by Rosenfeld and Smith who explain that in rock art studies, stylistic methods of dating art are based on "the notion that 'style' is specific to a particular place and time"; it follows therefore that style can be used as a chronological or geographic marker since different people in different places produce art in different ways (Rosenfeld and Smith, 1997: 407). However, while pointing out that the value of stylistic methods of dating rock art has recently been seriously reassessed (*idem*: 407), they continue to believe that "stylistic chronologies need not be derived through 'intuition'," although they recognise the problem of defining criteria of style in a satisfactory manner (*idem*: 407). As

style has formed an important chronological element in north African rock art, some pertinent opinions are given below.

'Imploring' human figures. It has been suggested that anthropomorphs in the Moroccan High Atlas known as *orants* (see Appendix 2 for definition) are stylistically close to the Carthaginian 'imploring' anthropomorphs carved on Punic funerary steles from the second half of the 1st millennium bc (Jodin, 1964: 114).

Tazina style. Tazina style engravings have a wide distribution in NW Africa, with some rare examples known in the Fezzan and the Tassili (Muzzolini, 1988b: 180). The aesthetic qualities of this type of engraving have for long struck modern observers. Lhote put Tazina engravings in the second oldest phase of his rock art chronology, calling it the phase of "Small engravings in naturalistic style, or small-size ancient buffalo phase" (Lhote, 1970b: 172), following naturally on his "Large engravings in monumental naturalistic style" (*idem*: 170) (Naturalistic Bubaline style, see Chapter 13 and Appendix 2). Lhote suggested the phase started in the Algerian Atlas around 7000 bc (Lhote, in Aumassip, 1993: 4). This early date, for long accepted in Saharan rock art circles (for instance Hachid, 1992; Aumassip, 1993), requires no explanation. It fits in well with climatic conditions and is supported - to the satisfaction of most researchers - by the situation of this type of image on the engraved rocks and rock faces. Muzzolini, on the other hand, interpreting the Tazina style in a very wide sense, considered this type of engraving to be late, appearing at the end of the Neolithic Humid period, slightly before 2000 bc, continuing during the succeeding arid phase, to overlap with chariots and end in the Maghreb in the middle of the 1st millennium bc (1988b: 197). The late age he attributed to Tazina engravings is based on many "chronological markers" (*idem*: 195). These included, in particular, the presence of numerous oryx, a drought-tolerant animal well represented in even later periods (themselves characterised by the mounted horse and the camel) (see above), a "proliferation of giraffes and ostriches" (*idem*: 195) and, notably, the association of Tazina images alongside engraved chariots, themselves dated to the mid-1st millennium bc. However, Muzzolini somewhat modified his position in a later publication by suggesting that the Tazina "school" might not correspond to a real period, but be simply a very original mode of expression. He noted that its chronological markers did not follow a harmonious evolution and its mixture of archaic and modern traits might indicate a long life, and probable contemporaneity with several other groups. Muzzolini finally conceded that the chronological position he accorded to Tazina type engravings was "simply the least discordant" (Muzzolini, 1995b: 161).

Pecked Cattle group. The dating of the Pecked Cattle group is as problematic as that of the Tazina group. Discussing the engravings of the Algerian Atlas, Lhote described well-executed, regularly-pecked engravings of cattle that he placed shortly after his Tazina group (Lhote, 1970b:

175). His description corresponds well to the Pecked Cattle group identified in this study (see Chapter 13 for further discussion). For his part, Muzzolini, ending his comments on what he called the 'Moroccan pseudo-"Bovidien"' (i.e. the Pecked Cattle group of this study), could only conclude that these "sub-naturalist figurations" could be as recent as the Tazina or chariot engravings, in view of the presence of *haches-pelles*. In his opinion, their heterogeneity prevented them from constituting a school and he was unable to link them to any known style (Muzzolini, 1995b: 374).

Summary of the above chronological elements

Opinions have thus varied concerning the dates of the above chronological "pegs" on which to anchor rock art representations. Table 29 gives a summary of these views.

Climate favourable for animals	
Sahara	.. c 10000-6500 bc; c 5000-2500 bc (general agreement)
Morocco	.. c 6500-5000 bc; 4500-2500 bc; c 0 bc (on the coast)
Presence of wild animals	
giant buffalo	Upper Pleistocene (Mori) Neolithic (Camps, Muzzolini)
oryx ..	Especially after 2000 bc (Muzzolini)
Domestic cattle Well established by around 4000 bc (general agreement)
Domestic ovicaprids	.. Flourishing in 5th and 4th millennium bc (general agreement)
Horses Introduced into Egypt 1580 bc, from there to Sahara and Maghreb (Camps) Introduced first half of 1st millennium bc (Muzzolini) Noted early 4th century bc on Atlantic coast (Roget)
Beginning of Libyco-Berber period	c 1000 bc, North Africa and Sahara (Aumassip) 1st millennium bc (Chenorkian) Early 1st millennium bc (Spruytte) c 200 bc (Muzzolini)
Camels	Known in south Egypt .. Middle 1st millennium bc Introduced into Maghreb 5th century bc (Muzzolini) Introduced into Sahara .. c 250±100 bc (Muzzolini)
Metal weapons (copper and bronze) (engravings)	Earliest type: Mid-2nd millennium bc Later type: Late Bronze Age (Chenorkian) Towards end of 1st millennium bc (Muzzolini)
Iron tools and weapons	.. 1st millennium bc (general agreement)
Arabic curved dagger	.. Earliest introduction: end 7th century AD
Chariots	
Introduced into NW Africa.....	At least by 13th century bc (Camps)
Introduced into Sahara and Africa	1000-500 bc (Vernet)
Introduced into Morocco.....	c 700-600 bc (Muzzolini)
Introduced into Sahara.....	Post 700 bc (Muzzolini)
Libyco-Berber inscriptions	.. Used in N.Africa from 6th century bc (Aghali-Zakara) .. Post 5th century bc in Morocco (Muzzolini)

Arabic writing	.. Not before arrival of Arabs end 7th century AD
Stylistic criteria: 'Imploring figures'	After 500 bc (Jodin)
Tazina	.. c 7000 bc (Lhote, Hachid, Aumassip) slightly before 2000 bc (Muzzolini)

Table 29. Summary of proposed chronological elements

A fairly universal consensus affects some of the chronological elements outlined above: the humid/arid climatic cycle, the introduction of domestic cattle, sheep, goats and camels, the introduction of iron tools and weapons and the Arabic curved dagger, the appearance of inscriptions written in the ancient Libyan alphabet, and Arabic writing. On the other hand, serious divergences concern the introduction of the domestic horse and consequently the position of the Libyco-Berber armed horsemen; the arrival of copper and bronze weapons and the use of chariots. For some researchers, the naturalistic style of the Tazina engravings led to the attribution of an early date for this type of engraving, while, on the contrary, the themes engraved were used to support a much later date. The appearance (style) of the praying anthropomorphs suggested a comparison with the Carthaginian Punic civilisation.

It must be pointed out that even when there is considerable agreement as to the date of introduction of a new element, a site cannot be dated by one engraving to which an approximate date can be ascribed, unless it is its sole engraving (a *tifinar* inscription, for instance). The whole site needs to be very largely composed of one dateable type of engraving for conclusions to be drawn concerning the *majority* of the engravings. With this proviso, these chronological "pegs" are useful elements for a general tentative arrangement of rock art sites, in the absence of more accurate possibilities, remembering always that some sites were occupied at different periods. It is underlined that the chronological structure that follows in the next chapter is flimsy but a best-fit hypothesis in the light of current knowledge.

CHAPTER 11. CHRONOLOGY ADOPTED IN THE PRESENT STUDY, AND ITS IMPLICATIONS

Chronology adopted

Taking into account the elements put forward in the preceding chapter, the following chronological framework has been adopted in this study.

Climate. Researchers agree on the overall sequence of climatic change, with slight differences in the dates proposed. These changes provides two, if not three, periods when pastoral communities could have flourished in southern Morocco: 6500-5000 bc, 4500-2500 bc, and again around the end of the first millennium bc. In addition, micro-environments - along rivers such as the Draa, on higher ground such as the Anti-Atlas, or near the coast - provided refuge zones in periods of increasing drought.

Archaeological material. As was noted in Chapter 9, the paintings associated with an excavated and dated archaeological site (Toulkine rock-shelter, HA42, Zone 3) are atypical and provide no overall dating information. No excavated tumulus overlay a rock art site, and in any case tumuli are as yet undated.

Wild animal species. The animals used in Algeria and the Sahara as chronological markers either have not been noted in Morocco (hippopotamus and crocodile) or are not felt to be useful (giant buffalo and oryx). As was seen in Chapter 5, late dates between approximately 1340 bc and 470 AD were obtained for giant buffalo remains in eastern Morocco (Zone 2), and although engraved representations are rare, they cannot necessarily be taken as very old. Engravings of the oryx may post-date 2000 bc (Muzzolini, 1995a: 223), but bones of this animal were found at Kaf-Taht-el Ghar (Zone 1) in a Neolithic level dated to around 4050 bc (Daugas *et al*, 1989: 683) (see Chapters 3 and 5). While the oryx is represented in a late, Libyco-Berber phase of Moroccan rock art as defined by the mounted horse (see below), it is by no means common and is greatly outnumbered by the Barbary sheep: one certain oryx for 24 certain Barbary sheep (see detailed study of Fom Chenna, Chapter 8). The proposal of a late date for representations of the oryx is kept in mind but not unconditionally supported.

Domestic cattle. There is no difficulty in accepting that by around 4000 bc cattle raising was established in North Africa. In N.W. Morocco, traces of stockbreeding, including bovids, was recorded from Kaf-Taht-el Ghar, near Tetouan (Zone 1), in an archaeological level dated to around 4050 bc (Daugas *et al*, 1989: 683) (see Chapters 3 and 5).

Domestic sheep and goats. Approximately the same dates as for cattle are acceptable for sheep and goats: the 5th millennium bc (see Chapters 3 and 5). In the Kef-Taht-el Ghar cave (Zone 1), ovicaprid remains were rare in the archaeological levels dated to around 4050 bc (Daugas *et al.*, 1989: 683), becoming more abundant in later levels (Ouchaou and Amani, 1997: 57). In eastern Moroccan sites, ovicaprid remains were numerous but younger: from around 2600 bc at El Heriga and from 2100 bc at Abri Rhirane (Wengler *et al.*, 1989: 524).

Domestic horses. The position adopted here is that of Aumassip (1993). The mounted horse, ridden by a warrior armed with lance and shield, was probably introduced into Morocco early in the 1st millennium bc. Following the opinion of Hachid (1982/83), a later phase saw these horsemen accompanied by representations of camels (see below). This type of depiction (with or without camels) seems to have lasted for many hundreds of years in Morocco (to judge by the saddles shown in some representations), certainly into historical times. A long period of use of this type of engraving is not surprising, considering the use of armed horsemen in modern times in Morocco and the Sahara. The very late introduction of the horse for riding proposed by Muzzolini (1995b) is not considered to be likely.

Camels. The second half of the 1st millennium bc is felt to be an acceptable date for the introduction of the camel into Morocco.

Metal weapons. After careful consideration of museum material and the literature, it is accepted here that links with the Iberian Bronze Age are possible for some of the High Atlas engravings. The most simple daggers (the guardless type) and some halberds could have Iberian prototypes and date to the middle of the 2nd millennium bc. The rest are of 1st millennium bc age, with indigenous models becoming current (as suggested by Chenorkian, 1988). It is quite reasonable to envisage a local production, since there are many copper-bearing deposits in Morocco (Rosenberger, 1970), including a considerable number in the High Atlas. Salih *et al.* (1998: 254) have pointed out the existence of three small tin mines in the neighbourhood of Oukaimeden (High Atlas, Zone 3). The leaf-shaped weapon-heads (spear or arrow) do not necessarily have to be linked to the Iberian Copper or Early Bronze Age; the typology of all the weapon-heads is sufficiently generalised for them to be attributed to almost any period. For instance, the painting in the funerary cave of Kef-el-Blida in Tunisia, with a probable date at the end of the 6th or beginning of the 5th centuries bc, shows eight Phoenician warriors, armed with round shields and triangular spear-heads similar to some of those engraved in the High Atlas (Ferron, 1988: 52) (and see below under 'Shields').

The few engravings cautiously identified as flat axes (and thus of Copper or Bronze Age) (Chenorkian, 1988: 183) are not considered here to be very conclusive - these engravings could

equally well show polished stone axes. However, two groups of certainly metal axes require close attention: those called "southern Morocco" in this study, and those called *haches-pelles*. Axes of the first group (figure 6f,g) have not been found engraved in the High Atlas or north of this chain; *haches-pelles* are engraved in the High Atlas and in the south (figure 6h,i). An African or Saharan origin is a feasible proposition for both groups (Chenorkian, 1988: 322). However, without wishing to find analogies worldwide, it is interesting to note that Chenorkian himself (1988: 241) illustrates axes very similar to the southern Morocco group, with short, broad, fan-shaped blades engraved in Valcamonica, Italy, and dated to the "end of the Second Iron Age" (ie La Tène). It is possible that such axes were known around the Mediterranean in the first half of the 1st millennium bc, and introduced into Morocco (but not into the High Atlas) via the Atlantic coast. It is tempting to envisage a direct Phoenician influence in southern Morocco, since the Phoenicians are known to have frequented the Atlantic coast from the beginning of the 1st millennium, where they traded with the local populations. Unfortunately, suitable Phoenician prototypes are lacking (but little is known of their weapons). More pertinently, perhaps, Phoenician iconography shows these people characteristically armed with a sword - never found engraved in Morocco.

Considering the hypothesis of a Saharan origin, no evidence of prehistoric mining has yet been found in south Morocco, although copper deposits (not tin) are abundant, particularly within a rough triangle from Taroudant (Zone 6) south to Akka (Zone 7) and west for 125 km (Rosenberger, 1970). Small copper and even tin deposits may have existed and been exploited in prehistoric times and are simply unknown today. The nearest copper mine known to have been exploited in prehistoric times is at Akjoujt, in Mauritania, some 1,100 km south of the River Draa, where rudimentary furnaces and simple metallurgical tools have been under investigation from the middle of the 20th century (Vernet, 1993: 327 *et seq*). According to Vernet, radiocarbon determinations on charcoal showed that copper metallurgy started around 850 bc, to stop at the end of the 1st millennium bc (although exploitation of the copper-bearing deposits probably started earlier). Some 500 copper objects have been picked up from the surface, some as far away as the Atlantic coast (200 km). They consist of various weapons including arrow-heads, flat axes and spear-heads, 'currency bars' and items of jewelry. The raw material was not always worked at the mine but transported, for transformation, to other centres, sometimes over 100 km away. Other mining installations and metallurgical workshops are known to exist within the nuclear region of Akjoujt and even beyond. It was felt by Vernet (*idem*: 329) that this Copper Age activity was a regional facies of the local Neolithic, altered by a rapid mutation, with no external influences as yet being perceptible. However, Mauny (Vernet, 1993: 340) was of the opinion that the miners "working these mines around 500 bc ... were the same as those exploiting the mines of south Morocco at the same period: Libyco-Berber Saharans in contact

with the Carthaginians" trading on the Atlantic coast. While Mauny's proposition may be correct, no proof exists of southern Moroccan mines being exploited at this time.

Akjoujt is the most important prehistoric metallurgical centre yet known. A second very active metallurgical centre existed at Agadez (Niger), some 2,500 km east of Akjoujt. According to Grébénart (1988), native copper was melted here on a small scale at the end of the 3rd millennium bc, to be followed by the appearance of new techniques corresponding to authentic metal-working at the beginning of the 1st millennium (radiocarbon dating from oven charcoal (*idem*: 155). Metal objects, mainly jewellery, were considerably fewer than at Akjoujt.

In the light of the above factors, it is proposed in this study that the southern Morocco, fan-bladed metal axes do not necessarily have a Saharan or African origin, but were in fact produced by populations living in south Morocco at the beginning of the 1st millennium bc, very possibly influenced by mining activities at Akjoujt and its surrounding area. However, as no furnaces or traces of any mineral transformation have yet been found, it is suggested that the raw copper may have been hammered into shape. A well-known trans-saharan route from Tamdult in south Morocco (Zone 7) (13 km SW of Akka, an area rich in copper-bearing deposits) to southern Mauritania, passing close to Akjoujt, was recorded in the 11th century AD (Robert *et al*, 1970: 33,34). A modern vehicle track follows approximately the same route, skirting the eastern frontier of the ex-Spanish Sahara. Surface conditions and the presence of wells are important factors in all trans-saharan itineraries and there is every reason to suppose that this route was also used by mobile populations in the 1st millennium bc. According to Phillipson (1993: 162), the Phoenician colonies "provided a stimulus and end-point for the Berbers' trade with the central Saharan highlands and, perhaps, with West Africa", so it is perhaps legitimate to envisage an exchange of technology between Akjoujt and southern Morocco in the early 1st millennium bc.

The axe was the preferred weapon/tool for these southern metal-workers, judging from the fact that *haches-peltes* and the southern Morocco type were engraved at least 46 times, compared to only seven daggers (of High Atlas type). There seems little doubt that they date from no earlier than the 1st millennium bc.

The curved, Arab dagger is undoubtedly a late-7th century AD introduction and presents no chronological problem.

Shields. Rectangular shields which formed part of Chenorkian's first period and round, internally-decorated fringed shields characterising his second period (Chenorkian, 1988: 336) are not felt here to be convincing chronological markers. The former are represented in undoubtedly Neolithic, non-metal, contexts in Algeria (Ain Marshal, for instance) (Lhote, 1970b: 119) (see

Chapter 13) and may indicate an early tradition - but not necessarily an early date. Engravings in the Tibesti (Chad) show rectangular shields held by warriors armed with spears with leaf-shaped points apparently of iron (Grébénart, 1988: 101).

Chariots. After careful consideration of the various arguments proposed for dating the appearance of the chariot in north-west Africa, it is felt that this cannot be earlier than the 1st millennium bc, probably in the first half of this period. The long chronology proposed by Camps (1993a) is thus rejected in favour of that adopted by Muzzolini (1994: 207). The arguments of the latter researcher are felt here to be convincing: the impossibility of chariots from Egypt crossing the 2,000 km of desert to reach the Sahara; the absence of traces of chariots (real or engraved) along a possible coastal route; and the unlikelihood of Saharan populations inventing the wheel or the different types of chariots independently of the models used in the Mediterranean worlds, particularly those used by the Greeks for chariot races in northern Libya around the 7th and 6th centuries bc (Muzzolini, 1994). It can reasonably be accepted that the use of the two-wheeled chariot, for whatever purpose, ended during the first centuries AD and thus ceased to be engraved.

Inscriptions. Little controversy surrounds the Libyco-Berber inscriptions, and the rare ones noted in Morocco can be accepted as appearing around the middle of the 1st millennium bc.

Arabic writing. A date no earlier than the arrival of the first Arab contingent in Morocco at the end of the 7th century AD is evident. In fact, the vast majority of Arabic writing found on rock engraving sites is contemporary or sub-contemporary.

Discussion on dating by style

'Imploring' human figures. The suggestion of Punic influences at the end of the 1st millennium bc is noted (Jodin, 1964). It is difficult to follow this reasoning very far, in view of the widespread distribution of this type of figure.

Tazina and Pecked Cattle groups. As established in Chapter 9, polished engravings in Tazina style formed one of the four groups identified as being distinctive. Two chronological possibilities have been suggested for Tazina engravings in the Algerian Atlas: an early start, from about 7000 bc (Lhote, in Aumassip 1993: 4), and a late one, from about 2500 bc (Muzzolini, 1988b).

At this stage, the chronological position of a second major group, Pecked Cattle, will be discussed, although no researchers have as yet put forward firm theories concerning its age. To a certain extent, both groups present the same profile: the majority of the engravings depict

animals (domestic and wild), although in very different proportions, in different techniques and different styles. As has been shown in Chapter 9, Tazina and Pecked Cattle engravings are seldom equally mixed on the same site. They are to be found, however, occupying territories in southern Morocco (Zones 4-9) often not far one from the other (see figures 42,43).

Factors to be considered when attempting to establish a date for Tazina and Pecked Cattle engravings are as follows:

a) climate: after a period of severe aridity, climatic conditions in southern Morocco became favorable for both wild and domestic animals from around 4500 bc (see Chapter 3).

b) ecological niches: despite increasing aridity from 2500 bc, a reasonably extensive hydraulic network - including the still important River Draa - could have enabled herders and hunters to continue living in south Morocco well after this period. As noted in Chapter 3, a short humid phase occurred in the Sahara around 1500 or 1000 bc; Vernet (1995: 149) indicated that cattle raising was still possible in Mauritania during the 1st millennium bc.

c) domestication of cattle: cattle-herding was well established throughout northern Africa by 4000 bc (see Chapter 10)

d) occupation of the territory: it appears highly unlikely that southern Morocco (Zones 4,5,7 and 8) and the Western Sahara (Zone 9) were not occupied during the humid period starting around 4500 bc, at any rate by the 4th millennium. Lithic assemblages typologically close to the Neolithic industries of the Algerian Atlas and the northern Sahara, known collectively as the "West Saharan NTC" (Lubell *et al*, 1989: 257) have been found in southern Morocco (Zone 7) (for instance, Lafanechère, 1952). Typical Neolithic arrow-heads, polished axes and pottery sherds were found scattered around an important rock art site in Zone 7 (S34) (Grébénart, 1995). A Neolithic site along the Moroccan Atlantic coast (Zone 8), showing a "convergence" of Saharan and northern influences, was dated to approximately 3000 bc (Grébénart, 1972: 182). Three other sites gave dates of 2500 bc (Charon *et al*, 1973: 409); 2450 bc and 1340 bc (Searight, 1998: 115); and 2370 bc (Grébénart 1972: 182) (see Chapter 4 and Appendix 5). Pottery and lithic artefacts recovered from other sites in the region were said to be characteristic of the southern Moroccan Neolithic (Bensimon and Martineau, 1987b: 63). Further north, Saharan affinities were noted in the pottery excavated in a site on the Atlantic coast in NW Morocco (Zone 1), dated to around 2450 bc (Daugas *et al*, 1989: 685). As shown in Chapter 4, the arrival in south Morocco of a Neolithic way of life coming from the Sahara and based on cattle herding is recognised.

e) artistic manifestations: two of the above Zone 8 sites produced between them nearly 200 engraved ostrich egg fragments, dated between the 5th and 2nd millennium bc (Grébénart, 1972: 162; Searight, 1998: 109). The ostrich eggshell fragment engraved with an oryx, a surface find in the region of Tarfaya (Zone 8), which was dated to around 840 bc, was said by its style to be attached to the finest Neolithic rock art period, but its date is late (Grébénart, 1974: 461).

Another antelope engraving on an ostrich egg, undated, was also found near Tarfaya (Camps, 1974: 326).

The above considerations give a maximum beginning for the production of Tazina and Pecked Cattle engravings in Morocco from around 4000 bc, with increasing aridity from around 2500 bc probably having no serious effect on the occupation of southern Morocco by hunters or herders. Lhote's 8th millennium date for the Tazina engravings is thus rejected as far as Morocco is concerned, without prejudicing their age in northern Algeria (see Chapter 13).

Questions raised by the above factors:

- a) if the engravings (either group) started around 4000 bc (when southern Morocco was occupied by Neolithic people), these styles must have lasted a long time, to incorporate the metal weapons represented on some sites, which cannot be earlier than 1000 bc.
- b) if the engravings (either group) did not start around 4000 bc, but about 2,000 years later - the date proposed by Muzzolini for the Tazina engravings (1988b), which corresponded to a marked cleavage in North African rock art in the opinion of Le Quellec (1998: 190) - were the earlier populations totally aniconic?

In the present state of our knowledge, it is impossible to answer these questions with any degree of certainty. Two major models are thus envisageable, applicable to both the Tazina and the Pecked Cattle groups: the long chronology and the short one. In either case, a question remains to be answered: were the two groups contemporary?

Model 1: the long chronology. The Tazina group, visibly more interested in hunting than in herding - but practising both - engraved the wild animals forming the bulk of their imagery over a long period. The engravings, in at least two phases (see Chapter 8 for a study of a Tazina group site in Zone 7 for on-site confirmation), started around 3000 bc (see above for justification). The presence of the giant buffalo, even if rare, reveals a certain humidity, at least in favoured niches. Sites showing Pecked Cattle are also not all contemporary (although no sites of this group contain such clear proof of an earlier occupation as the above-mentioned Tazina site). This style also started around 3000 bc, when cattle-raising - the main preoccupation of this group - had been established in the Sahara and, probably, in southern Morocco. Remains of domestic cattle have been found in Tangier caves (Zone 1), dated to about 2750 bc (see Chapters 4 and 5). The increasing desertification from about 2500 bc not being as extreme in south Morocco as in the Sahara, a reasonably extensive hydraulic network enabled herds of wild and domestic animals to survive in southern Morocco into the late 2nd or early 1st millennium bc, when a few metal weapons, of local manufacture or introduced, appeared on some Tazina and Pecked Cattle sites. The distribution of Pecked Cattle sites seems to indicate a northward

movement up the River Tamanart, towards higher ground around Taфраout, in the Anti-Atlas (Zone 6) (see Chapter 9 and figure 43), and from there into the High Atlas (Zone 3), where Pecked Cattle engravings are also known (see Chapter 9). Both types of engraving continued until the climatic or cultural environment put an end to their production, perhaps around 500 or 400 bc (increasing aridity, a change in ideology or the presence of Libyco-Berber armed horsemen). As was noted above, an engraved ostrich eggshell fragment, from Zone 8, was dated to around 840 bc (Grébénart, 1974: 461).

Model 2: the short chronology. Tazina and Pecked Cattle engravings were all produced over a short period. This period could have started as late as the middle of the 2nd millennium bc, when slightly better climatic conditions concurred with a short humid phase in the Sahara (see Chapter 3). Favoured environments provided grazing for herds of wild and domestic animals and were still sufficiently humid to support the occasional giant buffalo. The introduction of a few metal weapons into some sites during the late 2nd or early 1st millennium bc would have occurred not long after the beginning of these two stylistic groups. The terminal date for both groups would be the same as for model 1.

Chronology adopted in this work. The chronology preferred in this work for both the Tazina and Pecked Cattle groups of engravings is a compromise between Model 1, the long chronology - felt to be unsubstantiated - and Model 2, the short one. A starting date of around 2500 bc is proposed, based essentially on the micro-environment of southern Morocco, the animals depicted (both wild and domestic) and the fact that a late 2nd or 1st millennium date involves a concentration of too many different elements (chariots, Libyco-Berber horsemen, inscriptions). This chronology is supported by the Tazinian site studied in Chapter 8, showing undoubted proof of an occupation earlier than the bulk of the engravings, and by another Tazinian site (SE16, Zone 5), which also had very weathered engravings in the same style. An unclassified site in Zone 7 (S32), where the contents were unusual but Pecked Cattle well represented, also contained very eroded engravings (non-figurative), denoting an occupation of the site earlier than the Pecked Cattle. However, no date can be attributed to these non-figurative images.

Finally, it is proposed that all Tazina and Pecked Cattle sites, while covering approximately the same period, are not absolutely contemporary and that the Tazina group started shortly before the Pecked Cattle group. This hypothesis is based on three arguments:

- the presence on Tazina sites of engraved axes that are most probably of stone, less evident on Pecked Cattle sites where the engravings clearly showed metal axes
- the Tazina group is widely represented in the neighbouring Algerian Atlas (see Chapter 13)

- if the Tazina group was more recent than the Pecked Cattle group, it is necessary to envisage prehistoric people living in south Morocco inventing the idea of engraving rocks in Pecked Cattle style independently of any previous artistic tradition, since it was noted in Chapter 10 that this style was considered to be specifically Moroccan. While both Lhote (1970b: 175) and Muzzolini (1995b: 378) recognised that certain Moroccan pecked cattle engravings had *affinities* with Saharan groups (see Chapter 13), so could conceivably have reached Morocco before the Tazina style, Lhote's opinion was that this type of engraving was later (Lhote, 1970b: 175)

- if the Pecked Cattle group slightly preceded the Tazina group, the latter would then represent a return to a preference for hunting over herding (to judge from the preponderance of wild animals among the engraved themes), possibly as a response to changing circumstances rendering cattle herding more precarious. However, no significant climatic change was noted in southern Morocco at the time of the proposed beginning of this group (see Chapter 3)

No cases are yet known where engravings of one of these groups overlies those of the other.

Taking all these factors into account, it is therefore proposed that the Tazina group slightly predates the Pecked Cattle group and that both appeared towards the middle of the 3rd millennium bc. It is emphasised that the above hypothesis is felt to be no more than plausible, in view of the absence of any data from excavation or scientifically-based dating.

Implications of the above chronological position and conclusion

It is therefore proposed in this chapter that the earliest engravings are those of the Tazina group, which could have started somewhere around 2500 bc. Possibly slightly later, but generally contemporary, are the engravings of the Pecked Cattle group. By the middle of the 2nd millennium, engravings of the Dagger/Halberd/Anthropomorph group became dominant in the High Atlas (Zone 3), continuing into the beginning of the 1st millennium bc. Tazina and Pecked Cattle groups continued engraving in their respective styles during the 2nd millennium bc. Around the beginning or middle of the 1st millennium bc, engravings of metal daggers and axes showed that people engraving in this way had come into contact with metal-using populations or traders of the High Atlas (Zone 3), and were also producing their own particular type of metal weapon: the south Moroccan axe.

The first millennium bc was particularly active and saw the introduction of numerous novelties. Chariots and inscriptions in an old Libyan alphabet appeared around 600 or 500 bc. Early in this period too, the mounted horse arrived in Morocco, introducing the Libyco-Berber group of engravings which later incorporated camels into its iconography (saddles for horses were not used before Roman times).

A total of 148 sites could not be classified for various reasons (see Chapter 9). It is impossible to suggest any date for the 75 sites for which data were lacking or incomplete. The two sites noted as "recent" belong certainly to historical times. It is extremely difficult to hazard a guess as to the age of the remaining 71 sites, where the images were either too varied or too unusual to be classified. The very nature of their contents - for instance, polished but not in Tazina style, pecked but with no cattle - affords little clues concerning their age.

The chronological situation of the four main groups and the two secondary groups described in Chapter 9, together with those of three items whose date of introduction into Morocco is relatively clear, are given in tabular form in Table 30. As was shown in Chapter 10, not all researchers agree on the dates to be attributed to particular rock art manifestations that have formed the basis of the chronology proposed here - the Tazina style or the arrival of the chariot, for instance. It is once again emphasised that the hypotheses proposed here are only "best-fits" in the light of current knowledge.

Group or subject	bc						AD		
	3000	2500	2000	1500	1000	500	0	500	1000
Tazina	---	-----	-----	-----	-----	---			
Pecked Cattle	---	-----	-----	-----	-----	---			
D/H/A				-----	-----	---			
Chariots					-----	-----			
Libyco-Berber horsemen					-----	-----			
Libyco-Berber inscriptions					-----	-----			
Camels							-----	-----	
Horse saddles							-----	-----	
Arab daggers									-----
Arabic inscriptions									-----

Table 30. Suggested approximate dates for Moroccan engravings

CHAPTER 12. THE ROCK ART SITES: THEIR PLACE IN THE LANDSCAPE AND AN INTERPRETATION OF THEIR CONTENTS

Rock art and the landscape

Many researchers have in recent years studied the prehistoric landscape in terms of the settlements, boundaries and fields of sedentary farmers. Bradley (1997:14) has pointed out the limitations of this form of landscape archaeology and has suggested that students of rock art, who tend to concentrate on discovery and documentation, could profitably incorporate landscape studies in their research (*idem*: 7). This chapter attempts to follow this proposal and looks at the position of rock art sites in the landscape to see to what extent geographical features influenced the choice of site and what information the rock art sites can supply on past populations.

Rock art as a medium of communication

Rock art is also a medium of communication (Davis, 1984: 7). Since the contents of engraved or painted sites are as essential an element of their communication capacity as their situation, an attempt is made here to interpret the meaning of the images. Whatever the message, this information is not placed haphazardly in the landscape. It is important to recall that this art is "precisely where the prehistoric artists put it and meant it to be" (Bahn, 1998: 99). A first remark can be made at this point: almost without exception, all Moroccan engravings were made to be seen, generally not from a great distance, but clearly and distinctly. On the other hand, paintings, at the moment known only in rock-shelters, had limited visibility.

Communication is used here to refer to exchanges within the framework of a social organisation. Amongst other possibilities, the information exchanged by means of engravings or paintings can identify the sender, furnish information on the environment (presence of water supplies, food or predators), indicate traditional transhumance routes or territorial rights. In the 1930s, in southern Morocco, for instance, it was noted that passing nomads engraved their tribal marks near wells (Monteil, 1940: 26; Senones and du Puigaudeau, 1941b: 166). Clottes, however, feels that the transmitted information lies at a higher level: "All over the globe, rock art was chosen as the vehicle of the myths about the Creation of the World" (Clottes, 1997: 13). This seems to be behind much of the rock art of the Australian aborigines (Flood, 1989: 258).

Pessimistically, it has been said that "in the absence of the artists, nobody today can read prehistoric art" (Bahn, 1998: 171), so many researchers have decided to give up the "fruitless search for meaning" (*idem*: 171). More optimistically, the same author concedes that "it is unsatisfying to shrug one's shoulders and dismiss almost the whole of humankind's past artistic output as simply illegible markings..." (*idem*: 172). As many of the images in Moroccan rock art

are clearly identifiable, it seems not only reasonable but essential to attempt to "read" the message conveyed by these engravings and paintings.

At this stage arises the delicate question of the symbolism behind an engraving, the difficult recognition that a concrete image (a dagger) may well stand for abstract idea (power), or perhaps for both at the same time. The problem is indeed to know whether an engraved image is symbolic or not. As one specialist in the rock art of central Sahara has put it: "any image can be symbolic. But it can also be not symbolic, simply have, for example, a functional aim" (Muzzolini, 1995b:183). The problem of symbols is also posed by Davis (1989: 179): "Because it *looks like* a picture does not mean it *is*; because it *seems* to depict my dog does not mean it *does*." As even the most simple images lend themselves to a symbolic interpretation, one runs the risk of seeing symbols everywhere. Even if the modern observer detects a symbolic value in an image, it is doubted (Firth, 1973: 15) that our modern interpretations of symbolism actually conformed to what the original artists or craftsmen meant. This opinion is shared by Bahn, who recognised that while ethnographic information has shown that some art and the motivation behind it are more complex than would appear at first glance, literal interpretations of prehistoric art are far safer where such evidence is absent (Bahn, 1998: 221). Ethnographic evidence, so widely used in the interpretation of the rock art of southern Africa for instance, is missing from Morocco.

A literal reading of all rock art, excluding their possible symbolic charge, has been found unsatisfactory by many researchers and most have attempted some sort of deeper interpretation. While remaining doubtful of the capacity of present-day researchers to understand the symbolism of past populations, a symbolic interpretation of the images has been introduced into the present work when circumstances seem to warrant it. Given the inevitable lack of insight into the minds of the engravers, and the lack of archaeological data associated with the rock art, many of the proposals presented here are necessarily speculative.

North and central Morocco (Zone 1)

As noted in Chapter 3, the territory north of the High Atlas mountains, since the Holocene at least, has been fertile, enjoying favorable climatic conditions and consequently an uninterrupted human occupation (see Chapter 4). The 12 rock art sites in north and central Morocco (see Chapter 7) are extremely varied and only two enter into the classification system used in the present study (Chapter 9). Little is known about the contents or situation of the NC1 cave, and the paintings in the cave NC5 are enigmatic (and hard to see); the site commands wide views. The curvilinear paintings of NC8 in a rock-shelter looking onto pasture-land and may be linked to grazing rights. The three anthropomorphic steles (sites NC4,6) are clearly funerary monuments and mark either the burial of an individual, or a sacred place consecrated to important deceased persons. The

best preserved shows a figure in bas-relief, enclosed within an undulating line and a series of concentric arcs (figure 8a). The three steles were considered to belong to the Bronze Atlantic (Souville, 1973: 293) but a funerary stele from the same locality as the NC4 anthropomorphic steles was inscribed with letters in a Libyan alphabet, implying a date later than the Bronze Age (see Chapter 10) and reinforcing its interpretation as a funerary monument.

The polished lines (known as "Capsian traits", see Appendix 2) and cup-marks near Taza (NC2) were compared by the researchers (Grébénart and Pierret, 1966) to similar signs known in Algeria, since Taza lies in a passage zone between Algeria and Morocco. However, no trace of the Neolithic-of-Capsian-tradition have been found in NE Morocco (see Chapter 4), so while they could certainly be considered as some sort of "signpost" for people taking this route, the connection with the Neolithic-of-Capsian-tradition is unlikely. No reason can be proposed for the location and meaning of the anthropomorphic figures outside the cave NC3 (which can in no way be connected to the Aterian and Iberomaurusian occupation of the cave), and in the rock-shelter NC7 (figure 8c). The position of the *hache-pelte* engravings found on the roof of an underground cave near the Atlantic coast (NC10), completely isolated from the examples known in the High Atlas (Zone 3), is also obscure, though it could be suggested that they represent signs of ownership or mark a place of religious significance (considerable quantities of undated pottery were found in the cave). No reason can be proposed for the siting of the much-damaged site in the plain just outside Marrakech (NC12). The remaining identifiable contents included numerous Arab daggers (of historical age), which can most easily be interpreted as symbols of power or simply of interest. More informative are the two sites NC9 and 11, featuring horsemen in Libyco-Berber style. Both sites are on rocky eminences, the former commanding very good views of the surrounding plains. The horsemen of NC9, however, are not armed with the lance and shield characteristic of this group, nor are they engaged in hunting or fighting - popular pastimes on Libyco-Berber scenes elsewhere. The remarks concerning the Arab daggers on NC12 above apply equally to this site. On NC11, on the other hand, the horsemen are armed with lance and shield (figure 8e) and the site has the usual wild animals associated with this type of engraving (lions/leopards, ostriches, antelopes and Barbary sheep) but no camels or Libyco-Berber inscriptions. It is perhaps not by chance that both these sites are situated within a few kilometres of the present main road and railway from Marrakech to the north, although this is not the only route from the High Atlas to the northern plains, where no particular geographical obstacles prevent a free passage almost anywhere. However, it is postulated that Libyco-Berber horsemen whose engravings are found scattered throughout south Morocco and in the High Atlas, found this a convenient route for occasional northern excursions. As stated in Chapters 10 and 11, the time-span for this type of engraving is long: from early in the 1st millennium bc to a date perhaps around the middle of the 1st millennium AD. But this in no way reduces the strategic importance of the two sites.

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Eastern Morocco (Zone 2)

Six of the eight sites in this zone are grouped together near Figuig and the Zenaga pass between Algeria and Morocco, at the very limit of the frontier between these two countries. Algerian influences are very strong in this part of Morocco and the Zenaga pass must always have been an obvious passage to and from Algeria. Engravings belonging to all four of the main groups identified in Chapter 8 have been recorded on the sites: Tazina, Pecked Cattle, Dagger/Halberd/Anthropomorph and Libyco-Berber. The Tazina style, but not the Pecked Cattle group, has been found in Algeria, the engraved dagger on E5 shows obvious contact with the High Atlas where the Dagger/Halberd/Anthropomorph group is dominant (engravings of similar daggers are present in Algeria), engraved horsemen of the Libyco-Berber group (on E1,6) are widespread in Morocco (see figure 41), but rare in Algeria. The "ram with helmet" engravings (E3) (see figure 6a) have Algerian counterparts (see Chapter 13 for discussion on all these points).

It was thought at one time that these North African rams (sometimes ewes) carried on their heads the solar disc of the Egyptian god Amon, but this theory has been abandoned; the lines interpreted as solar rays are considered to represent feathers, plant stems or leaves (see for instance, Muzzolini, 1995b: 344-346). In some cases the animals are accompanied by a human (an *orant* in a site in the Monts des Ksour, Lhote, 1970b: 66). For Aumassip (1986: 59), these sheep undoubtedly participated in some ritual, cult or sacrifice. The engraving of a dagger - appreciated for its undoubted functional improvement over earlier weapons and still a rarity - is here taken as a probable symbol of the new power of metal-users, in an area relatively far from the Bronze Age metallurgy established in the High Atlas (Zone 3). However, the axe held by a man following an elephant on E6 is considered by Lhote (1970b: 184) not to be symbolic but to represent a real weapon, this way of aiming at the external part of the leg joint being a well-known technique used by hunters to immobilise elephants.

Briefly, these six sites owe their situation and a part of their contents to the proximity of an important pass allowing the passage of different cultural influences.

The two remaining east Moroccan sites (E 7,8), north-west of the preceding Figuig sites, are situated at the base of the eastern end of the High Atlas mountains. Site E8 and the six scattered groups of engravings making up E7 enclose a roughly triangular area of 35x40x30 km. The engravings are situated in a number of rock-shelters and on boulders in a rocky chaos of sandstone blocks and corridors. The mixture of engravings of cattle, sheep/goats, wild animals, metal weapons, Libyco-Berber horsemen, camels, a great variety of miscellaneous engravings, including Arabic inscriptions and modern graffiti, indicate a constant frequentation of the site, indicated also by numerous unclassifiable lithic scatters.

The area is today treeless and rainfall low but springs and wells supply water from underground reserves. Sources of water can account for the presence of these sites, which seem to represent the exploitation of the area by pastoralists who were also hunters. These people engraved their herds of sheep and cattle, wild animals and rare metal weapons (riveted halberd and *hache-pelle*) on convenient surfaces. The original report considered that these sites were a "cul-de-sac, close to the major route running south of the Atlas mountains from north-west Algeria to south-west Morocco" (Greisson, 1973/75: 123). More pertinently, perhaps, it can be noted that the sites lie less than 100 km west of the traditional route still followed by the Beni Guil sheep-raising nomads in their north/south seasonal movement. After spending the winter around the oasis of Figuig, this important Berber tribe moves north in the spring to the well-watered depressions of the high plateaux and on in the summer up to the High Atlas, a distance of some 300 km (Martin *et al*, 1970: 188) (see also Appendix 1, Zone 3). The pastoralist's exploitation strategy being driven by "a single overriding preoccupation - the search for pasture for his flocks" (Cribb, 1991: 21) - two possibilities can explain the presence of this cluster of sites: they were part of a pastoral migration movement, visited only when grazing was good and wild animals abundant, or they provided a sufficiently attractive environment to sustain continued occupation. The absence of similar sites in the area to which these engravings can be linked - but little research for rock art sites has been made in this region - makes the latter explanation perhaps the most credible. The engravings would mark presence or ownership. There is no evidence of prehistoric camps or settlements in the area, but this is not surprising since the only traces of the passage of present-day nomads are stones marking a rough circle where a tent has been pitched. In addition, it has been noted in Chapter 4 that no open-air habitation sites of any kind have been found in Morocco. Chariot-drivers, Libyco-Berber horsemen, camel owners and later passers-by found the confusion of rocks, corridors and rock-shelters suitable places in which to add their engravings to the existing ones. An engraving on E7 shows a disproportionately small man, brandishing a *hache-pelle*, being trampled by a very large elephant followed by a smaller one (figure 44a). This minimization of the human figure is widespread in north African rock art; according to Le Quellec (1993: 96), it derives perhaps from a sense of inferiority with regard to a wild animal or underlines the precarity of hunting. This particular engraving could be read as a "cautionary tale", a message of warning about the dangers of elephant-hunting, perhaps even marking a real event in the life of the group.

The High Atlas (Zone 3)

The High Atlas mountains and, to a lesser degree, the Middle Atlas, divide what is called "useful Morocco" from the rest of the country. While the High Atlas, with over 400 peaks exceeding 3,000 m in altitude, forms a serious barrier, it has also been a refuge zone. Its north-western facade, relatively well watered by rain and rivers, supports smallholders driven to the hills in the

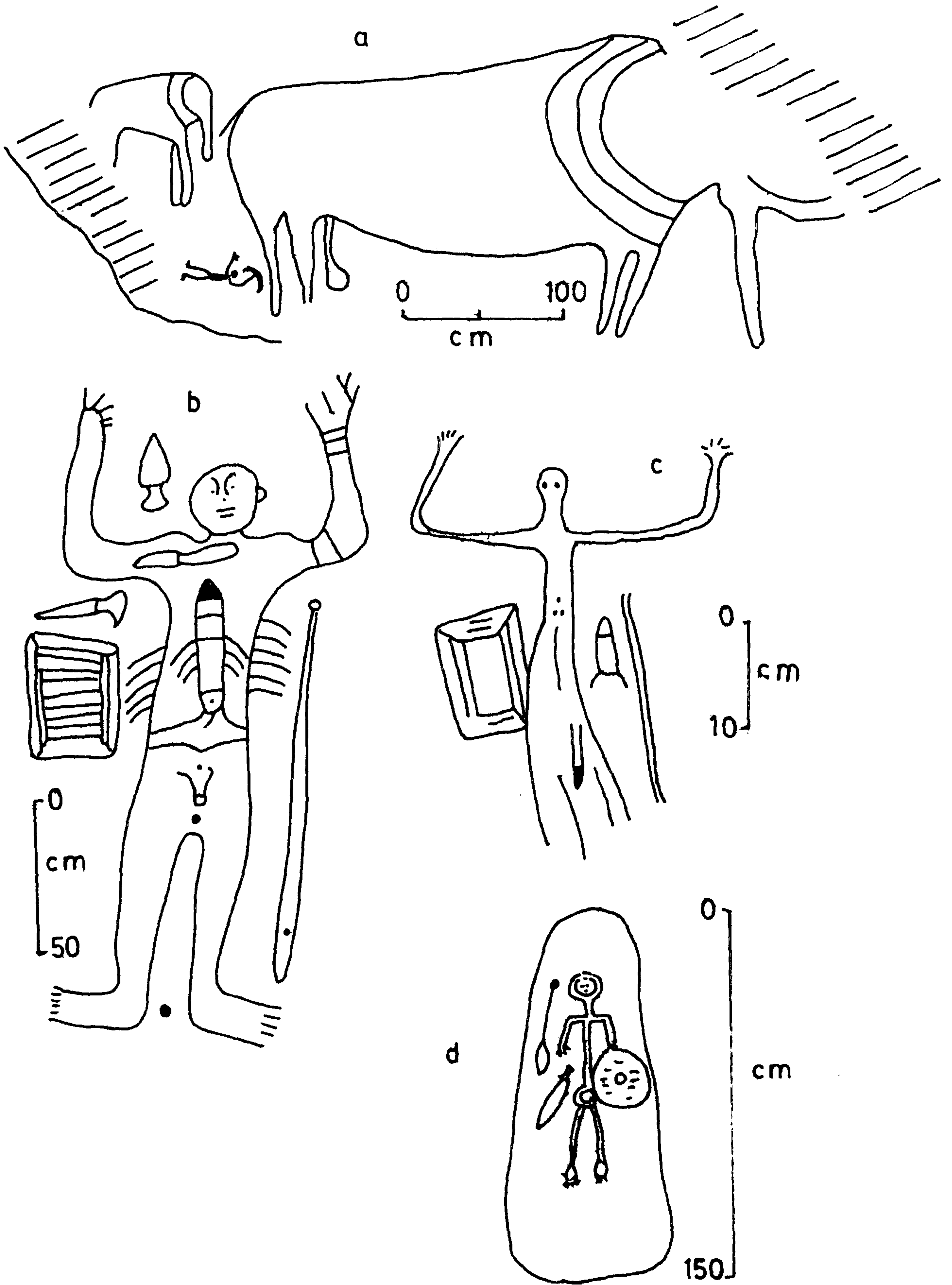


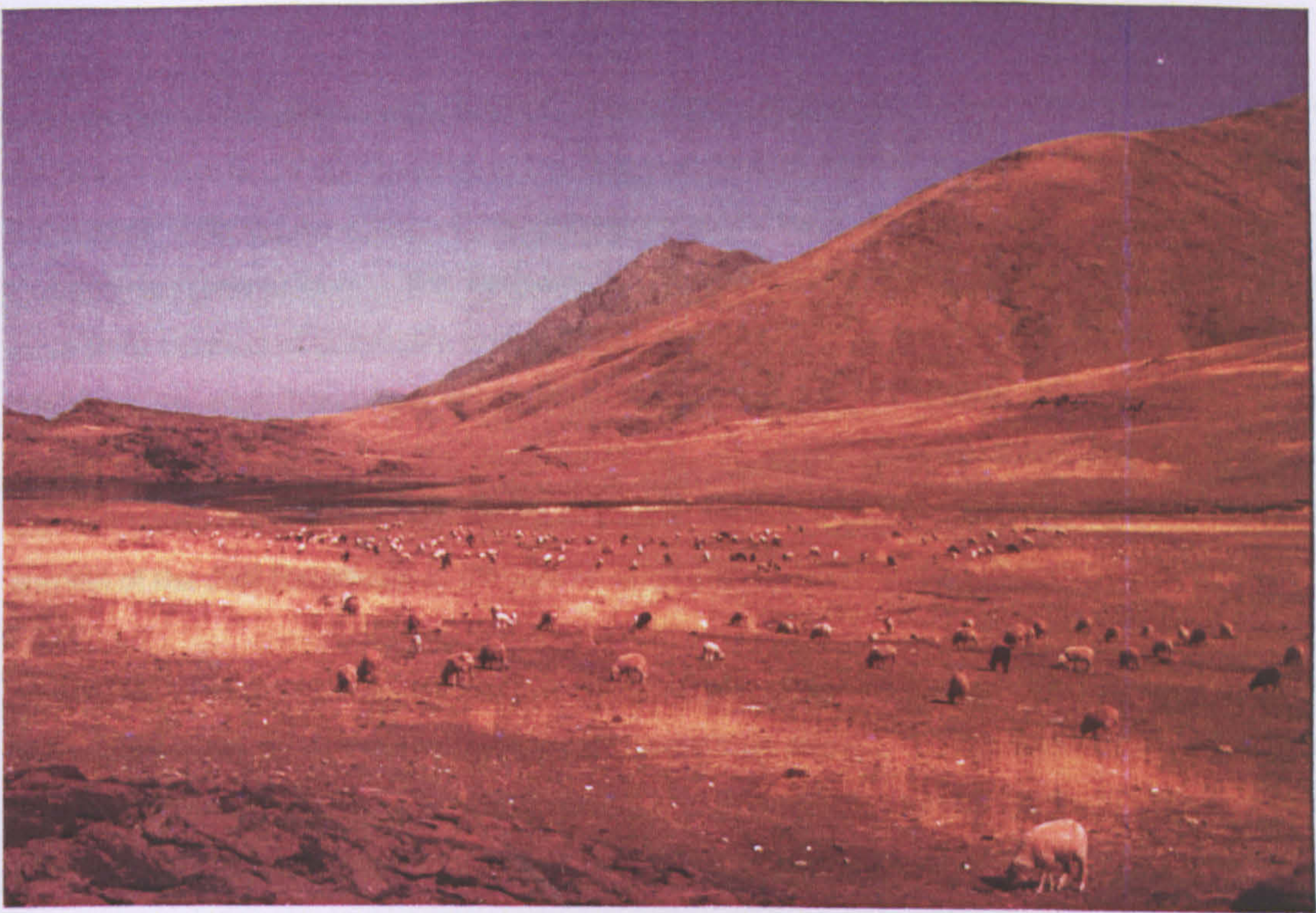
Figure 44. Engravings with possible symbolic meanings
 a) Man trampled by elephant (Zone 2, E7) (after Greissson, 1973/75) b) Anthropomorph (Zone 3, HA20) (after Malhomme, 1959) c) Anthropomorph (Zone 5, SE19) (after Simoneau, 1971b) d) Funerary stele from Extremadura, Spain (after Chenorkian, 1988)

distant past by population pressure and invasions, and its high central plateaux continue to provide good grazing for the transhumants' herds in the summer months ('transhumance' used here to mean "livestock management making use of seasonal variations in the availability of pasture" (Cribb, 1991: 19)). Its south-eastern facade on the other hand presages the Saharan climate and vegetation to the south. Consequently, population movements from the south have been - and still are - a feature of the High Atlas.

High Atlas sites (with the exception of those listed below) are linked to grazing grounds at altitudes of 2,000 m or over (figure 45a). Some sites are also at passes (*tizi*) (for instance, Tizi n'Tirlist (HA 1), Tizi n'Zaouit (HA7) or Tizi n'Rhellis (HA24)). These localities are indeed passes, but they are also adjacent to pasture land: it is probable that both features combined to determine the choice of the slabs to be engraved. Exceptions are HA35 (one engraving only), HA41-43 (no information on HA1,40). Of these, HA 41 is reached by a track crossing the High Atlas at a pass at an altitude of 2,100 m, in an area known for its numerous mines of copper, lead or silver. The site would seem to be directly connected to this High Atlas crossing and the nearby mines. HA 42 has paintings on a ledge overlooking the Toulkine rock-shelter, not particularly noted for its grazing grounds today. However, faunal remains recovered from excavations in the rock-shelter showed that domestic cattle were kept though wild animal remains predominated (see Chapter 5). HA44, close to HA42, also has undiagnostic paintings. HA43, not apparently associated with grazing grounds, is beside a current track leading further up into the mountains and may therefore mark a passage.

Access to the grazing grounds in the three main engraving areas in the High Atlas is today strictly controlled and the division of the pasturages follows an old tradition. No research has been done on the High Atlas pasture-associated sites to determine whether the motifs on a site can be linked to the use of a particular area by a particular population, and thus, to a certain extent, be a sign of ownership. A study of the designs on the numerous decorated shields might reveal groupings, but a first examination shows that they are all slightly different.

Sites HA1-11 (Jbel Rat) are all close to pasture-land and varied in their contents. Daggers, shields, metal weapons, chariots, cattle, wild animals, Libyco-Berber horsemen, "idols" are among the themes represented (not on all sites). Site (HA7) has engraved sandals and HA9 has an unusual sexual scene. Local people today often explain engravings of feet or sandals as an attempt to cure an illness by outlining the foot in the rock and this is probably an old tradition. The most easily identifiable engravings are those of the Libyco-Berber group, in fighting and hunting scenes, three of which have been called "The Great Battle", "The Little Battle" and "The Leopard Hunt" (figure 11d) (all HA5), all considered to illustrate glorious episodes of Berber history (Glory, 1953). This is a perfectly plausible explanation and is the one adopted in the present study. The



a



b

Figure 45. Landscapes

a) Grazing grounds in the High Atlas (Zone 3)

b) Sandstone ridge overlooking extensive plain (Zone 7)

oral versions of real events were thus accompanied by illustrations to be clearly seen by users of the pass. The usual components of the Dagger/Halberd/ Anthropomorph group are present on some sites, with the exception of the anthropomorphic "hero" figures of the Yagour plateau and Oukaimeden (see below). The weapons are always isolated and it is suggested that they are most likely symbols of ownership and/or power, their possession conferring a certain status. The "idols" on the other hand (see figure 11c), limited to two adjacent sites (HA4,5), could be cult figures closely connected to the Jbel Rat (3,397 m), at the base of which they are engraved. Mountain cults are still a strong feature of Berber life and a yearly pilgrimage to a cave near the summit of the Jbel Rat attests to the sacred character of this mountain (Simoneau, 1975a: 335).

Sites HA12 and HA13 overlook pasture-land. Their engraved daggers and round shields are considered here to represent symbols of ownership/power. The chariots on both sites, corresponding to a slightly later period, are likely to be prestige objects, hardly functional in these two mountainous areas (particularly as far as HA12 is concerned, difficult of access).

On the Yagour plateau (HA14-34) and at Oukaimeden (HA35-39) approximately the same selection of engravings appears on most sites (but not in the same proportions). Many of the numerous engraved daggers are more than life-size, which underlines their probable symbolic charge. An engraving on HA17 showing a male figure prostrate under a lion/leopard, apparently a victim, can best be read as another cautionary tale. The site HA15 is remarkable for its large decorated circle, engraved on a prominent block standing slightly higher than the others. The contents of this site (numerous circles and chariots) led the archaeologist Jodin to state that they were proof of a solar cult and that the orientation of the large circle, "facing south, directly lit by the midday sun, could only be intentional" (Jodin, 1964: 66). While the author of the present study does not agree with the solar cult theory, preferring (along with most students of the High Atlas engravings) to consider these circles as shields, the remarkably prominent position of the big "circle" makes it perfectly possible to suggest that this site was a special place, perhaps a meeting or rallying point for the different users of the grazing grounds. This hypothesis is supported by the presence of numerous more mundane engravings (wild and domestic animals) on a site (HA22), separated from the above by a dry ravine. HA18, some distance from the main sites, has two life-size anthropomorphic figures (with sexual connotations), a few wild animals and only one weapon (a halberd). The site looks more likely to be connected with a mythological or hero-figure than with any pastoral activities. Its situation on the hillside is inconspicuous.

The mythological or hero-figure is in fact an outstanding feature of the Yagour Plateau and Oukaimeden. Some of these life-size figures may not indeed be heroes but enemies or traitors: the theme of the "human sacrifice" to describe the High Atlas anthropomorphs has figured frequently in the literature (for instance Malhomme, 1958/59; Souville, 1991). These large-size

males are indeed seldom depicted holding a weapon, but rather assailed from all sides by daggers and other weapons. However no tradition of human sacrifice is known in the High Atlas, and the position preferred here is that such engravings denote the new Bronze Age cult of the individual, a commemoration of a powerful chief - the "inegalitarian ideology of individual differentiation" which became established in the Early Bronze Age (Champion *et al*, 1984: 224). For instance, an engraving on HA20 (one of only six on the site), represents a life-size man (sex shown) wearing a fringed garment, a bag on his chest, accompanied by three daggers (pointing away from his body), a rectangular shield and a club (figure 44b). It is proposed here that the scene represents a dead chief, buried with all his weapons, an engraved Moroccan version of the Iberian funerary steles showing a warrior surrounded by his weapons (Chenorkian, 1988: 50,55) (figure 44d). As was shown in Chapter 4, contacts between Iberia and Morocco increased during the Bronze Age. It was accepted in Chapter 11 of this study that Bronze Age Iberian daggers and halberds served as models for some of the weapons engraved in the High Atlas.

It has also been suggested (Simoneau, 1967b: 73) that some of these large anthropomorphic figures are gods, not humans, and that some apparent animals are goddesses (benevolent or destructive), but these affirmations are unconvincing, drawing as they do on a Near Eastern cosmology whose connection with the High Atlas is in no way justified. The fiddle-idols (see figure 26c), on the other hand, limited to one small area of the Oukaimeden site HA36 (see Chapter 8) do seem best assimilated to the remnants of a Neolithic mother-goddess tradition, lingering on in a Bronze Age setting (see Chapter 4 for a small "idol" found during excavations in Zone 1 and Chapter 6 for discussion).

The extreme south-east (Zone 4)

Only two sites have been recorded here. One (ESE1) is situated on the summit and slopes of a rocky hill, the other on the slopes of two lower hills. Both sites are near the Algerian frontier and appear - as far as present knowledge goes - to be isolated, both from a geographical and contents point of view. The concentration of chariots on ESE1 (figure 13a) is unique, and the pecked cattle on ESE2b (figure 13b) have no affinities with the nearest sites in the adjacent south-eastern Zone 5. The inscriptions in the old Libyan alphabet on ESE1 have not been deciphered. Both ESE1 and ESE2 are within a few hundred metres of the Oued Ziz (generally dry) but a string of oases a few kilometres to the south indicate the presence of ground water which was certainly more abundant in the past. The area surrounding the sites is remarkable for the number of undated, well-constructed, dry-stone wall tumuli.

No satisfactory suggestion can be put forward concerning the place occupied by these sites in the landscape. The hill on which is situated ESE1 is the highest point in the neighbourhood,

which may account for its choice as a suitable engraving location, but the *raison d'être* for the general situation of the two sites remains uncertain in the absence of similar sites nearby. In this connection, the author of the present study has been told that sites with chariot engravings do in fact exist slightly further westwards (Bozon, pers.comm.) Pending further study, it can only be proposed that engravings and tombs were focal points for the populations living along the Oued Ziz - though not necessarily at the same time. Considering the "convoy" of linked chariots on ESE1, it is probable that Camps was right when he stated that "it is difficult to believe in the reality of these assemblies which seem to be born of the artist's fantasy or the wish to multiply a symbolic sign" (Camps, 1989: 28). In any event, the well-known theory of a "Chariot Route" (Mauny, 1947), of which Lhote was a fervent supporter, along which "populations equipped with war chariots had crossed the Sahara as far as the banks of the Niger River" (Lhote, 1982: 47), bringing back to Europe the gold of West Africa, is now rejected.

South-east Morocco (Zone 5)

As was noted in Chapter 6, three clusters of sites can be noted, all belonging to the Tazina group. Some 75% of the sites are on low ridges or hillocks commanding very mediocre views of the surrounding plains, but within close distance of rivers (now generally dry) or, in the case of the third group, surrounded by a network of small watercourses (present-day wells indicate the existence of ground-water). Although not placed at any great altitude, the situation of the sites enabled a watch to be kept over the wild animals coming in to drink or threatening the herds of domestic cattle.

The great majority of the engravings represents wild animals, with antelopes and ostriches predominant, together with objects considered to be traps (see Chapter 6 and figure 17b) and some enigmatic items. Some domestic cattle and a few sheep are present (including "rams with helmets" (figure 15a), see discussion on Zone 2 above). Humans are depicted on a number of sites, attacking a large wild animal (rhinoceros or elephant) with axes. This is a recurrent theme on rock art sites of the Tazina group (see also Zone 7 below), and may represent real events or express, more symbolically, wishful thoughts of domination (see discussion below, under Zone 7). For Lhote (1970b: 185), axes - particularly those unassociated with an animal - were undoubtedly "votive", engraved with the aim of neutralising dangerous animals.

Two shields (one round and one rectangular) (SE19), and one dagger (SE17) are elements of the D/H/A group, best known in the High Atlas. The rectangular shield is associated with a human figure and a club, all engraved with a very shallow incision, unlike the other engravings on the site. This scene is a small version of an engraving on the High Atlas site HA20 (see section on Zone 3 above and compare figures 44b and 44c). As was tentatively proposed for the High Atlas

engraving (based on its affinities with Iberian funerary steles), it is again speculated that this engraving could represent a dead chief from the High Atlas, perhaps killed on a foray from the mountains, or a local chief who had acquired these prestige items during the group's nomadising in the High Atlas (see below). The dagger on the nearby SE17 is also of the D/H/A group, and may be connected to the same event. The other axes engraved in this zone are either of stone or of the southern Moroccan type (see Chapter 6), compatible with the proposed age of the Tazina style in which they are engraved (see Chapter 11).

It is suggested that this series of Tazina group sites, very homogeneous despite individual differences, is the work of a group of nomadic hunter-pastoralists belonging to the same tribe (used here in the sense of an aggregate of persons considering themselves to be descended from the same ancestor and occupying a well-defined territory), probably broken down into small communities sharing a common culture. As it is felt in this work that these people were more hunters than herders, they may well fall into the category of "hunter-gatherers... whose... relations of production are tied to territories or significant sites" (Cribb, 1991: 21). They therefore defined their territory by engraving the animals and objects that were their main preoccupation. It has indeed been suggested that rock art may have been important in the territorial organisation of mobile people (Bradley *et al*, 1995: 354). The territory thus marked out by these engraved sites stretches in a triangle some 110 km from north to south and 100 km from east to west, from the foothills of the eastern end of the Anti-Atlas in the north to the unratified frontier with Algeria in the south, and from the R Rheris in the east to the R Draa in the west. When the J Saghro and J Ougate in the north are included, this triangle corresponds very closely to the whole of Zone 5 as defined in Chapter 1, and in fact also corresponds to the territory of today's Berber Ait Atta tribe, established in the region from at least the 11th century AD (Martinet, 1997: 26). These semi-nomads take their herds of goats and sheep north to the mountain pasturages in the J Saghro, J Ougate and even as far as the High Atlas (Zone 3) in the spring and early summer, returning at the beginning of winter to the oases of the south (see also figure A2a). It is suggested here that the prehistoric inhabitants of this same region followed an identical seasonal movement, as herds of wild animals migrated according to available resources. The absence of territorial markers in the shape of rock engravings in the J Saghro and J Ougate can be explained by the hardness of the granite formations of these mountains. It was proposed in Chapter 11 that the Tazina style had a long life: territorial marking by means of engravings was therefore also spaced out in time. Very eroded engravings in the same Tazina style support this hypothesis.

Anti-Atlas (Zone 6)

It was noted in Chapter 7 that three different groups of engravings could be identified in this zone, which is itself geomorphologically very fragmented, with summits over 2,000 m, and narrow

mountain valleys contrasting with wide, low-lying plains. The three most easterly sites (AA1-3), just west of the O Draa, lie in what are now barren, stony valleys. In the past, however, they must have been better watered, with streams coming down from the mountains behind the sites to the west. As was seen in the detailed study of one of these sites (AA1, Chapter 8), the many valleys cut into these mountains allow a passage from the Draa valley to the area behind, noted for its copper and nickel mines. Two of the sites were dominated by the Libyco-Berber group.

A study of the situation of Libyco-Berber sites in general shows that many are close to mines, generally copper. This relates well to the statement in a study of Galician rock art that there may be "a close relationship between the siting of the petroglyphs and the location of key resources in the landscape" (Bradley *et al*, 1995: 368). The first site (AA1), with over 3,000 engravings initially recorded (Glory *et al*, 1955), seems to be an undoubted stronghold or rallying point for Libyco-Berber groups, indicating at the same time that they guarded the route from the Draa valley to the copper mines in the hinterland. Undated, ruined fortifications are still visible on the surrounding hilltops. A similar, smaller site (AA2), 7 km away, lies on a hillock forming a natural fortress (also with ruined fortifications). As was the case with the Libyco-Berber site in the Jbel Rat referred to above (HA5, High Atlas, Zone 3), the images on these three sites seem to perpetuate hunts and fights involving members of the group - an historical record carved in stone. Inscriptions also occur on the same rock faces, but as they have not been deciphered, it is impossible to say whether they refer to the hunting and fighting scenes or not.

Common features of the second group (AA 6-11) are their situation in the mountains, at altitudes of nearly 1,800 m, and their engravings of the Libyco-Berber group. Sites AA7-10 are close to a dry river valley and the modern road, which follows a long-standing route through the Anti-Atlas from the north to the sub-Saharan south; site AA6 is only a short distance away, in a valley providing a NE/NW passage through the mountains. An E/W track starts from here too, producing a strategic crossroads. In short, all five sites are on good communication lines, the pivotal point being the village of Igherm. More important, however, is the fact of their proximity to copper mines (AA7 was in fact destroyed to facilitate exploitation of a mine (Letan, 1966)). All the copper mines within a 10 km radius of Igherm show traces of "ancient" exploitation (Rosenberger, 1970: 75).

Understandably in view of their situation, these sites contain a variety of images in addition to the Libyco-Berber group. Two had curved Arab daggers (AA7,11), and 19 chariots figured on AA6, which also contained round shields and daggers of the High Atlas D/H/A group (Zone 3) - and 493 engravings of feet/sandals (see Zone 3 above for the reason for these engravings). Apart from indicating the presence (or ownership) of the copper mines, the situation of all these sites clearly relates to their strategic position at the centre of a series of routes through the Anti-Atlas.

mountain valleys contrasting with wide, low-lying plains. The three most easterly sites (AA1-3), just west of the O Draa, lie in what are now barren, stony valleys. In the past, however, they must have been better watered, with streams coming down from the mountains behind the sites to the west. As was seen in the detailed study of one of these sites (AA1, Chapter 8), the many valleys cut into these mountains allow a passage from the Draa valley to the area behind, noted for its copper and nickel mines. Two of the sites were dominated by the Libyco-Berber group.

A study of the situation of Libyco-Berber sites in general shows that many are close to mines, generally copper. This relates well to the statement in a study of Galician rock art that there may be "a close relationship between the siting of the petroglyphs and the location of key resources in the landscape" (Bradley *et al*, 1995: 368). The first site (AA1), with over 3,000 engravings initially recorded (Glory *et al*, 1955), seems to be an undoubted stronghold or rallying point for Libyco-Berber groups, indicating at the same time that they guarded the route from the Draa valley to the copper mines in the hinterland. Undated, ruined fortifications are still visible on the surrounding hilltops. A similar, smaller site (AA2), 7 km away, lies on a hillock forming a natural fortress (also with ruined fortifications). As was the case with the Libyco-Berber site in the Jbel Rat referred to above (HA5, High Atlas, Zone 3), the images on these three sites seem to perpetuate hunts and fights involving members of the group - an historical record carved in stone. Inscriptions also occur on the same rock faces, but as they have not been deciphered, it is impossible to say whether they refer to the hunting and fighting scenes or not.

Common features of the second group (AA 6-11) are their situation in the mountains, at altitudes of nearly 1,800 m, and their engravings of the Libyco-Berber group. Sites AA7-10 are close to a dry river valley and the modern road, which follows a long-standing route through the Anti-Atlas from the north to the sub-Saharan south; site AA6 is only a short distance away, in a valley providing a NE/NW passage through the mountains. An E/W track starts from here too, producing a strategic crossroads. In short, all five sites are on good communication lines, the pivotal point being the village of Igherm. More important, however, is the fact of their proximity to copper mines (AA7 was in fact destroyed to facilitate exploitation of a mine (Letan, 1966)). All the copper mines within a 10 km radius of Igherm show traces of "ancient" exploitation (Rosenberger, 1970: 75).

Understandably in view of their situation, these sites contain a variety of images in addition to the Libyco-Berber group. Two had curved Arab daggers (AA7,11), and 19 chariots figured on AA6, which also contained round shields and daggers of the High Atlas D/H/A group (Zone 3) - and 493 engravings of feet/sandals (see Zone 3 above for the reason for these engravings). Apart from indicating the presence (or ownership) of the copper mines, the situation of all these sites clearly relates to their strategic position at the centre of a series of routes through the Anti-Atlas.

The position and contents of the sites of the third group (AA17-25), in and around the high Taфраout valley, are totally different from the two preceding groups. The principal engravings are of domestic cattle. Libyco-Berber horsemen are absent but a chariot was recorded on AA18, on the upper reaches of the O. Tamanart, close to the limits between Zones 6 and 7. Two sites occupy significant if fairly discreet positions in the landscape: on AA21, 1.5 km from the present centre of the town of Taфраout, a large (1.20m) bovid (see figure 17a), engraved on a vertical rock face some two metres above ground level, is clearly visible from a distance of about 100 m; a slightly larger (1.50m), similar bovid was placed on the flat upper surface of a large rock at the base of the above engraving (not visible without standing on the rock). These are the site's only images. On AA19, four of the nine bovinds (out of the 12 engravings of the site) are neatly fitted into the space available on the face of a small isolated, triangular rock (1x1x1m), one above the other. Three other bovinds are also placed one above the other on an adjacent rock face. The site stands near a pass at the foot of a 1,700m peak, surrounded by grazing grounds. In the case of both these sites, the position of the engravings shows that they were meant to be seen. Three other sites of this group (AA 22,23,24) contain a total of 21 cattle engravings, strung out along the banks of small rivers, unconnected with extensive pasturage. It is difficult to suggest why they are there, or to propose an interpretation of the contents other than suggesting that they represent the herds of the people living in the area, attracted there by the water supply.

Little can be hazarded concerning the situation and explanation of the contents of the remaining, geographically scattered sites in Zone 6. The single engraving on AA12, an *orant* on a boulder in the village, is open to several interpretations (invocation to a divine power, expression of gratitude for gifts bestowed ...), none of them plausible enough to explain its continued presence in a modern Moslem village where Islam does not allow the pictorial representation of human beings.

South (Zone 7)

Little can be said about the most easterly of the Zone 7 sites (S1), except that the few, relatively-recent engravings (fibulas, bracelets, pendants) lie on the edge of a rocky terrace overlooking a plain. The rock-shelters S2 and 115 contain red-ochre paintings. The first is one of a number of cavities at the base of a gorge cut into the J Bani, the second is a group of five shelters overlooking an interior *fejja* of the J Bani, about 10 km from the first. As the authors of the report on the second group remarked (Heckendorf and Salih, 1999: 243), the richness of the area in water (numerous wells) and pasturage makes it a zone much frequented today by nomads and their flocks. Most of the red-ochre paintings are made up of lines of dots difficult to interpret. Several horsemen in Libyco-Berber style, and a number of schematic wild animals and cattle complete the group. The area would seem to have represented in the past, as today, a privileged

pasturage zone, with the paintings perhaps being signs of ownership. Heckendorf and Salih (1999: 251) suggested, rightly, that the repetition on several sites of certain geometrical signs might indicate that they were part of a identification system linked to the pastoral tradition and the management of the pasture-lands, on the lines of the engravings of modern tribal marks recorded by Senones and du Puigaudeau in southern Morocco (1941b: 166).

The next sites to be considered in Zone 7 are those at the eastern limit, as far as the village of Tissint (see figures 18a, 42, A2b) (S7,10-19,39,101-103) (data on S3-6 and 11 are insufficient; lacking on S8,12; S9,16 were eliminated). They form a rough triangle 80 km from east to west and 30km from north to south (again, these imaginary lines are not supposed to represent real limits). The undoubted attraction of this area is the presence of O Draa, some 15 km to the south of site S103 and just north of S39, Lake Iriqui, about 20 km from the most easterly site (S10) and numerous salt-pans along the northern limit. Lake Iriqui today is generally dry and salty, but a local inhabitant said that 10-15 years ago, in wet years, herds of cattle were brought here to graze. The area is basically a plain, broken constantly by low hills and (now dry) watercourses. The engravings are on rocks and boulders on these low ridges, sometimes with good views over plains. The sites contain a majority of Pecked Cattle engravings, although two sites are dominated by Tazina engravings (S7,19). Tazina engravings also occur on two Pecked Cattle sites (S13,17). A chariot was engraved on S11 and a southern Moroccan metal axe and probable *hache-pelte* on S13 - symbols of prestige or power? In the case of S13, this interpretation is reinforced by the fact that the man touching the axe with his hand is half its size, and that the axe is slightly bigger than the two accompanying bovids; in his other hand the man holds the *hache-pelte*, of normal proportions. An exception, both for situation and contents, is S18, where the engravings are on the summit of a hill, 200 m above the surrounding plain and river, and show wild animals, mainly ostriches (14 out of 22 images), and one human, apparently an ostrich-hunter. It is proposed that the site, both on account of its dominant situation and unusual contents, represents an affirmation of the importance of ostrich hunting for the local economy. As was seen in Chapter 6, ostrich engravings are very frequent in south Morocco. The bird itself was common in southern Morocco until hunted out of existence in the middle of the 20th century. Site S39 is made up of engravings and paintings clearly visible on a cliff face in a corridor between two mountain chains, as if to mark the passage. Apart from this site and S18, which appears to be a lookout post for ostrich hunters, the situation of the other sites is best explained as points from which the herds of cattle and wild animals could be observed. As has been pointed out, water is vital for the maintenance of cattle (Brandt and Carder, 1987: 204); despite increasing aridity from around 2500 bc, this particular area would have been one of the more favoured regions of southern Morocco.

The next series of sites are those to the west of Tissint as far as Akka and south of the Jbel Bani (S20-27,40-44,46,48,49,99) with six south of O Draa (S40,42,43,44,99,116) (S44 and 99 are in fact west of Akka) (see figure 43). Sites S42 and S99 are situated in narrow, cliff-lined passages. The engravings on S49 are at the top of a circular hill rising some 100 m above the surrounding plain. The site was thought to be a lookout post for hunters, and perhaps a sacred place (on account of a dancing figure) (Simoneau, 1969: 101). The vast majority of the other sites are on low sandstone ridges no more than 50 m in height, but nevertheless commanding wide views often across flood-plains (figure 45b) (see also the detailed study on S48, Chapter 8). All are near a water source, generally a river.

With the exception of S20, these sites are of the Tazina group: the majority of the engravings are of wild animals (mainly antelopes and ostriches) but polished domestic cattle also figure. As for Zone 5 above, it is suggested that these engravings are the work of nomadic hunter-pastoralists sharing a common culture and artistic tradition with other groups using the Tazina style of engravings. It was noted above that rock art may have played an important part in the territorial organisation of mobile people (Bradley *et al*, 1995: 354), more interested in "paths and places" than were agricultural societies (Ingold, quoted by Bradley, 1997: 6). The distance from the two isolated Tazina outlyers in the east (S19 and 39, included in the previous section) to the most westerly of the group (S99) is some 125 km, the maximum distance from north to south about 90 km. The territory thus defined forms a band of unequal width, lying approximately NE/SW. While the overall environment of this territory is very similar, the area is sufficiently large to allow migrations according to available resources - for instance south of O Draa.

These hunter-pastoralists marked their territory by engraving the animals and objects that formed part of their daily life. Although less material considerations certainly played a role, an interpretation of the engravings beyond noting the predominance of game animals and their obvious importance simply as food is not easy. It is difficult to understand the message on site S 43, where a very small man with a very large erect penis - symbolic virility? - has his arms raised above his head, which almost touches the muzzle of a disproportionately large bovid. On several sites, a hunter is shown attacking a large, potentially dangerous animal - elephant or rhinoceros. But as Le Quellec has pointed out in his study on symbolism in Saharan rock art, is such a man really a hunter, is he a particular hunter, does he represent metaphorically the group of hunters or is he just "a hunter in general"? (Le Quellec, 1993: 22). The axe may be a real weapon (see discussion under Zone 5 above for the efficiency of this type of approach) or simply "votive", to obtain power over an animal. On S46, a scene described as "masked archers followed by an antelope" (Simoneau, 1977: 47) appears unlikely to refer to a real event, since the antelope is on its feet, apparently alive (though hunters may well have worn masks, see Chapter 13). It cannot

be affirmed either that the men were archers, since the identification of bows is uncertain. In the opinion of the present writer, the so-called masks are just as likely to represent traps.

The fourth series refers to a concentration of sites lying north of Akka and north of the J Bani (S 30,32-35,38,102-112). They are of the Pecked Cattle group (except for S32,102-107,109 where the cattle are only present, not dominant, and S33 where Pecked Cattle and Tazina are equally represented). As on the great majority of Pecked Cattle sites, wild animals are also represented. These 17 sites are grouped together here because the territory they define is a more or less self-contained rectangular *fejja*, oriented NE/SW, some 25x10 km, hemmed in by the foothills of the Anti-Atlas to the north and west and by the J Bani south and east, but they must be attached culturally and geographically to Pecked Cattle groups further west (see figure 43). Most of the sandstone ridges on which the sites are situated appear as 'islands' dominating the *fejja*, crisscrossed by a network of small watercourses as well as by the O Imi Tek and the O Akka. When fed by rainwater from the Anti-Atlas, the latter becomes a raging torrent as it races through the *foum* cut in the J Bani north of Akka (see figure A2b). The sites are natural vantage points from which to observe the surroundings and the good grazing available in the *fejja*.

Beyond the general similarity in the situation of these sites, two stand out as being exceptional: S 32 and S34. The latter is one of the most striking of the Pecked Cattle sites for the quantity and quality of its engravings (see detailed study in Chapter 8), while the former is unique for the quantity of its curvilinear images (over 700) (figure 46), making up 56% of the engravings, and their position on the top of the ridge, clearly separated from the cattle engravings on the western facade. An explanation proposed for this exceptional configuration is that the top of the ridge, open to the sky, was a more propitious location for sacred, ideological or symbolic signs represented by the curvilinear motifs, while the more mundane cattle were mainly engraved on the vertical blocks facing their grazing grounds (Searight, 1996a). Geometric motifs were also noted on four smaller neighbouring sites (S110-114) (Salih and Heckendorf, 2000), but the quantity and variety of these forms does not compare to S32. As it is the most important of its kind in the territory delimited above, it is suggested that site S32 did in fact represent a sacred site for the pastoralists of this group, a focal point for their religious beliefs and, perhaps also, on the lines of Morocco's present-day religious festivals, a social and commercial event at the same time. While the present author doubts the validity of shamanism to explain aspects of Moroccan rock art, it is certain that many of the signs on this site are similar to those obtained by shamans when in an altered state of consciousness (see for instance Lewis-Williams and Dowson, 1988; Bradley, 1989). However, among his objections to the theory of altered state of consciousness put forward by Lewis-Williams and Dowson in relation to Upper Palaeolithic art, Bradley underlined the difficulty of testing its plausibility against the wider characteristics of Upper Palaeolithic society, noting how little was known about these populations apart from their food



Figure 46. Curvilinear images on site S32 (Zone 7)

production activities (Bradley, 1989: 69). These objections apply equally to site S32. In addition, as has been pointed out (Searight, 1997: 54), none of the writers of antiquity mentioned trances, ecstatic dances or hallucinations among the ancient populations of North Africa. Unlike Lewis Williams' South African informants, no oral tradition on these lines exists in Morocco. Differential patination on these sites suggests activity over a long period.

The fifth and last series includes sites from Akka to the western limit of this zone (S53,58,59,62-75,80,84-92,104-107). Sites S53 and 59 lie south of the J Bani; the remainder on which data are available are situated north of the J Bani, the majority either beside the N/S flowing O Tamanart (see figure 43) or in the plains to the west. As indicated above, many sites are situated on low-lying ridges from which the domestic cattle and wild animals could be watched; other engravings are on vertical faces overlooking riverbeds, often clearly visible but difficult to reach. Water sources were never far. The sites clustered heavily on both sides of the O Tamanart, north of Foug el Hassane, are too close together to indicate pasturage ownership or even a form of signposting. Could they indicate places to which certain families or groups had access for watering their cattle? Whatever the signification of this concentration of sites, they show intense activity along this watercourse providing penetration from sub-Saharan Morocco to the high valleys of the Anti-Atlas (Zone 6).

Questions concerning the interpretation of the contents of these sites are easier to raise than to answer, even speculatively. Engravings of domestic cattle dominate, the usual wild animals (antelopes, rhinoceroses, members of the big cat family) are present. At a primary level, these images are obvious choices for cattle pastoralists. But, as questioned above, do the archer and a Barbary sheep on S53 (figure 19c), or the dancing figure brandishing a *hache-pette* behind a domestic bovid on S84, for instance, represent particular individuals or a generality? Is the group on S67, involving a large bovid and 8 much smaller humans (one possibly a child, another a woman), one standing on the back of the bovid, some ritual scene? On S105, is the engraving of the two anthropomorphs, one apparently female, associated with a possible dog, an example of a family group or has it a deeper meaning? On S53, an engraving of a man with an erect phallus apparently attempting sexual intercourse with an elephant was described as a scene of "bestiality" (Simoneau, 1972a: 33). However, Le Quellec, discussing human-animal contacts in Saharan rock art, not only condemned the moralising tone of the word "bestiality", but preferred to see such contacts as a form of magical control or a wish to dominate, rather than a physical reality (Le Quellec, 1993: 438). The extremely large size of the contact animal in most cases - buffalos, elephants, rhinoceroses or giraffes - makes physical reality unlikely.

South-west (Zone 8)

The sites in this zone (SW1-27) are scattered and present data do not show any particular links between them. Eleven sites were close to water, either rivers or springs. The oasis of Assa (SW8) lies at an important junction of routes leading from the Anti-Atlas in the north (Zone 6) south-east across the O Draa to a gap in the J Ouarkziz and down to the Western Sahara (Zone 9), and linking with an east-west route along the right bank of the O Draa; the two groups of engravings here (overlain by images of Libyco-Berber horsemen) were clearly visible, on vertical cliff faces overlooking the oasis. Five sites are situated along this south-easterly route from Assa: SW2 occupies a strategic position at the narrow passage through the mountains, level with the O Draa, SW9 follows closely, and south of the O Draa, sites SW3,4 and 7 continue to mark the south-going track following the River Zag. Their position seems clearly linked to a line of trans-Saharan communication. Site SW10, beside a well, is also situated on a N/S route in a mountainous region; the numerous layers of engravings testify to its frequentation. The importance of a well is also indicated by the many engravings of all ages on site SW26.

Recorded motifs are cattle, wild animals (see figure 22a) and a number of chariots. The plains around SW13 and 14 could certainly have provided pasturage for herds of cattle in good years, and are flat enough for chariots to have been used. A site which refutes the assumption made in Chapter 1 that the animal or object engraved had actually been seen in the area by the engraver is SW20. Here an engraved sailing ship (see figure 22b), dated to between the 2nd century bc and the 1st century AD (Martinet, 1996) could certainly not have been seen in this narrow valley, 80 km from the Atlantic, but was probably a nostalgic souvenir by a shipwrecked sailor or explorer.

Western Sahara (Zone 9)

As was stated in Chapter 7, this zone has suffered from the destruction of a number of sites and a certain confusion on the part of researchers as to whether they were working on a new site or one already recorded.

The great majority of known sites in this zone are near water, along the Saguiet el Hamra river or its tributaries. Their situation follows the general pattern noted for the zones described above: the engravings lie on low ridges overlooking plains that can be supposed to have supported a vegetational cover during humid periods, or at any rate to have benefitted from the presence of rivers or groundwater. An exception is WS25, where the engravings were on a prominent rock on a high hillock.

As far as can be judged from published data, the Tazina group of polished engravings is firmly implanted in this zone (WS 5,6,8-10,13-15,19-23, plus WS 7,12 and 16 where the Tazina group was in the minority (see figure 41). The area defined by the sites extends in a rough triangle some 280x300x120 km, from WS5 and 6, near Smara, eastwards to WS19 and south-eastwards to WS22 and 23. As for Zone 5 and parts of Zone 7, it is suggested that this series of Tazina sites, very homogeneous despite individual differences, lies within the territory of a group of nomadic hunter-pastoralists, probably linked by a common culture to the other communities using this style, established to the north-east of the zone under discussion here. Like them, they defined their territory by engraving the animals, both wild and domestic, and the objects that were their main preoccupation.

Antelopes, ostriches, giraffes, elephants and domestic cattle formed the bulk of the animals represented on these Tazina sites. Bag traps common to this group also featured. Three axes (two on WS23, one on WS24), four polished barbed-and-tanged arrowheads on WS7 and a *hache-pelle* on WS9 were recorded. One of the arrowheads seems to pierce the side of an antelope, the *hache-pelle* was held by an anthropomorph. The arrowheads could be purely narrative, but these and the axes could also be considered as symbolic symbols: power over animals or prestige/power in general. Two approximately identical masks on WS14 and 21 (the latter incorporating an antelope in the design) (figure 47a,b) have their counterpart on SE24 (Zone 5) (figure 47c), without it being possible to propose any meaning or function, nor to suggest they were made at the same time. Other engravings show similarities with Zones 5 and 7: for instance, a small man with an axe attacking a large animal (rhinoceros?) from behind on WS22 (the symbolic potential of such scenes was discussed above in Zones 5 and 7). Site WS9 contains a unique engraving: a rectangular-bodied, leg-less man (seen face on), holding a lance or javelin in one hand and a round shield and three other possible lances or javelins in the other, is placed in the middle of a horse (seen in profile) with rounded neck and hindquarters (figure 47d). This engraving is described in some detail since it has no connection at all with the usual Libyco-Berber horsemen (also present on a site in this zone) but fairly close affinities with "Libyan Warrior" style of engravings known in Mali and the Niger (figure 47e) (see Chapter 13 and Appendix 2). This unusual engraving might be a record of an incursion into the area by a foreign group (raiding party?).

The remaining sites in this zone contain pecked animals, both domestic and wild, but they cannot be classified in the Pecked Cattle group as defined in Chapter 9. The engraving technique used on WS2 and 3 for instance, was 'punching' rather than 'pecking'; as was the case for the non-Tazina animals on WS5. In addition, the animals that were 'pecked' were wild and not domestic cattle. Consequently, it is difficult to draw conclusions concerning the activities of the occupants of these sites, except that they were certainly interested in the wild fauna and probably used the



Figure 47. Engravings of possible masks and "Libyan Warriors"
 a) and b) Possible masks from Zone 9 (WS14, WS21) (after Nowak *et al*, 1975) c) Possible mask from Zone 5 (SE23) (after Simoneau, 1971b) d) "Libyan Warrior" from Zone 9 (WS9) (after Nowak *et al*, 1975) e) "Libyan Warrior" from Mali (after Dupuy, 1996)

ridges they engraved as points from which to watch these animals as they came in to drink. The small site WS11 figures two schematic anthropomorphs, one with a false tail, outsize phallus and 'spoked' head (possibly hair or feathers?), the meaning of which is totally abstruse to the modern observer.

The red-ochre paintings in the rock-shelters of WS27 show wild animals, positive hand stencils and human figures. It has been suggested (Soleilhavoup, 1998: 62) that these paintings are very close to the Round Head and Abaniora groups, well known in the Tassili n'Ajjer (Algeria) (see Appendix 2 for description), and that the positive hand-prints were perhaps votive or propitiary, the site being possibly a cultural or ceremonial centre. Whatever the meaning of the paintings, the situation of this Western Saharan site poses a problem. The Round Head and Abaniora styles are too distinctive for an independent creation to be envisaged, but a distance of some 2,000 km, much of it sand desert, separates the Round Head paintings of the Tassili heartland from the very similar paintings of WS27, with no relays as yet known.

Conclusion

The two-fold aspects of this chapter concerned the place of the rock art sites in the landscape and the contents of these sites, which may have played an important role in their localisation. Although all the 300-odd rock art sites at present known in Morocco have not been discussed in detail, it is clear from the foregoing that the engraved sites were situated on visible features and formed an integral part of the landscape. Their visual impact was certain. It has been pointed out that the long life of engravings, and their siting at certain locations selected from a large choice, indicated a "deliberate and meaningful attempt to mark the landscape" (Bahn, 1998: 130). Sites with paintings, on the other hand, were often less noticeable, being almost always in rock-shelters.

In most cases, the rock art sites were associated with 'useful' places: high-altitude pasturages and passes in the mountains, passages between mountain chains, ridges providing vantage-places from which to observe the surrounding plains, or water sources. Rocks near wells were frequently covered with engravings of all ages. It was proposed that the engravings could define territories, proclaim ownership, indicate the presence of water (not always immediately visible), commemorate heroes or battles. In a few cases, it was suggested that the motifs engraved or painted marked sacred or ceremonial places. Bahn has recalled that some rock art images could have been dedicatory, engraved when the land was first claimed, or ritual renewal of boundaries (Bahn, 1998: 134). The long duration of certain styles of engraving makes this very possible. It was noticeable too that chronologically later populations - users of chariots or the old Libyan alphabet, horse-riding Libyco-Berbers, camel-drivers - often engraved their motifs on the same

sites as their predecessors, as though the same landscape features were as important and significant to them as they had been to earlier people. In other words, the organisation of the landscape generally remained unchanged through the ages (see Chapters 10 and 11 for a discussion on chronology).

The above landscape studies have looked at places where the rock art was made. A negative aspect that has not been attempted is why apparently suitable places were not engraved or painted, why certain passes and ridges were chosen and not others? All field researchers have encountered a frustrating lack of images in potentially fruitful areas. It can only be suggested at this stage that the populations concerned did not feel it necessary to use every available landscape feature to mark out their territory.

As stated in Chapter 4, no prehistoric or protohistoric open-air settlements have as yet been found in Morocco. North of the High Atlas, excavations and surface finds of lithic artefacts and pottery have shown an extensive occupation of the land. Burial sites have also been revealed but the habitations, fields and boundaries of past sedentary farmers are missing, although surface finds of stone agricultural implements imply the practice of agriculture. The nearest to a habitation site yet found is fortified hill site in Zone 1.

Surface finds of flint artefacts at Oukaimeden (Zone 3) were shown in Chapter 4 to belong typologically to the Neolithic Toulkinian industry found in the excavated Toulkine rock-shelter (HA 42) and in the plain around Marrakech, to the north of the High Atlas. But apart from these artefacts and numerous tumuli, the rock engravings are, as yet, the only proof that the High Atlas was frequented during and after the Bronze Age - even if only seasonally.

The situation is no better south of the High Atlas, where the only excavations that have been carried out have been directed towards some of the numerous tumuli. Potential sources of information on past settlement patterns, these tumuli - most of them robbed in the past - have yielded practically no data, in the almost total absence of grave-goods, skeletal matter and signs of funerary rituals. But this chapter has suggested that the location of the rock art sites throws light on the activities of the mobile populations inhabiting these regions: defined territories exploited by nomadic herders, routes followed by these and later populations, possible exploitation of mineral resources by Libyco-Berber horsemen. The wide distribution of rock art sites and thus of human occupation of the territory was also shown in Chapter 9. Without the rock engravings, only occasional surface scatters of pottery and lithic artefacts would indicate this occupation (for instance flint artefacts, typologically Neolithic, near S26 (Lafanechère, 1952), and large quantities of polished axes, flint arrowheads and pottery on the plain surrounding S32 (Grébénart, 1995).

But rock art sites supply more than information on the movements of past populations. "Rock art provides evidence ... that the landscape was permeated by meanings and was not simply a source of provisions" (Bradley *et al*, 1994: 387). However, while rock art as a medium of communication is an evidence, the messages conveyed often seem beyond the comprehension of today's observer, who can only apply modern logic to ideological and symbolic systems of a very different age.

Applying this modern logic, some engravings can be read as messages of warning about the potential danger of wild animals (elephants or lions). Others seem to immortalise great events - battles and hunts - or great chiefs or enemies. Scenes where a small man is depicted attacking a large animal (elephant or rhinoceros) with an axe may symbolise male courage, the group's desire to master a dangerous animal, the exploits of a particular hunter or hunting in general. They could also be recording an efficient way of immobilising an elephant or rhinoceros by cutting a muscle or tendon of a hind leg. Other engravings show a man with an exaggeratedly large phallus; it is tempting here to see a symbolism of male virility or of procreation. It is accepted in this study that sheep with cephalic decorations participate in some ritual or sacrifice. As discussed in Chapter 6, two-wheeled chariots were felt to be objects of prestige in North Africa and the Sahara rather than a functional method of transport; it is easy to suppose therefore that their engraved versions are the symbols of this prestige. On the other hand, the "idols" of the High Atlas (Zone 3) are not necessarily symbolic but could be the representations of an ideology particular to the region (not evidently linked to any myth about the creation of the world - see the opening paragraph of this chapter).

It was proposed that one site (S32, Zone 7) might have been a spiritual centre for the area, on account of the concentration of abstract images and their position on the site. The similarity of many motifs to those produced by shamans when in an altered state of consciousness was noted. However, the absence of any early supporting texts and lack of living informants made it difficult to follow this hypothesis very far. The "informed methods" of study, discussed by Taçon and Chippindale (1998: 6) requiring insight directly or indirectly through ethnography, ethnohistory and history or "modern understanding known with good cause to perpetuate ancient knowledge", are not available to the modern student of Moroccan rock art.

An aspect of the communicative value of rock art that has only been implicitly indicated in this chapter is: who was expected to read the messages? Bradley has underlined that not all rock art needs to have been accessible to everyone (Bradley, 1997: 11). Unfortunately, it is impossible to say whether Moroccan rock art images were coded for a few initiates, readily available to all members of the group, or easily understood by all passers-by. If the rock art images were

intended to communicate territorial rights, it can be supposed that all contemporary populations received the message. Likewise engravings by paths, passages and springs must have been easily understood. It can also be hazarded that an understanding of the image at primary level was clear to everyone: a lion was a lion, an antelope was an antelope, and that the first was a sign of potential danger, the second of a valuable game animal. But further understanding of the messages was probably not universally available. Engravings of mythological or hero figures, battles and hunting scenes for instance may only have been accessible to the people immediately concerned - unless they were intended to impress the neighbours.

Today's local inhabitants are generally aware of the presence of the rock engravings and can identify certain motifs if asked. In this connection, it is interesting to note that the elephant engraving in Zone 7 (S20) was identified as a lion by the local children, two small calcite incrustations effectively giving a lion-like look to the animal, the lion being very present in the popular imagination (Searight, 1994b: 211). But, unlike the aborigines of Australia, or certain populations of southern Africa, the local people have no idea of the meaning of the engravings or paintings and, if questioned, suppose them to be the work of the "Bortugus" (Portuguese), a generic name applied to anything old and non-Islamic. So many movements of population have taken place in Morocco in historical times alone, that none of the present occupants of the land consider themselves to be "guardians" or even descended from the engravers. Hachid, studying rock art sites and current popular beliefs in the Algerian Atlas, also noted that few legends were attached to these sites, but that at the beginning of the 20th century the inhabitants near one such site had explained the engravings by saying that long ago the people had become so irreligious that they deserved punishment and God had taken their souls and transformed them into the engraved animals (Hachid, 1992: 151). This picturesque explanation for the engravings does not help modern researchers in their quest for meaning.

This consideration of the place of rock art sites in the landscape and the attempt to interpret their contents is a new approach in the study of Moroccan rock art and is recognised to be speculative in many respects. It has touched on a subject that can be treated reasonably objectively - the place of rock art in the landscape - and one that is inevitably subjective - the meaning of the images. As was said at the beginning of the chapter, one runs the risk of seeing symbols everywhere and Bahn has warned against non-literal interpretations of rock art, which risk being "flights of fancy" (Bahn, 1998: 221). But a study which refuses all symbolic meaning to the engravings or paintings risks missing out on part of the richness of the subject.

CHAPTER 13. THE ROCK ART OF MOROCCO IN A NORTH-WEST AFRICAN CONTEXT

Introduction

Many aspects of Moroccan rock art exist in other North African countries. Conversely, Morocco lacks themes represented elsewhere. As one of the aims of this study was to compare the rock art of Morocco with that of the neighbouring countries, especially Algeria and Mauritania, this chapter highlights the features these countries have in common with Morocco, and to note those aspects of their rock art repertoire lacking in Morocco. It is not a complete review of all the rock art of the region. The countries concerned are Algeria, Libya and Mauritania (there is practically no rock art in Tunisia) (figure 48). The Rio de Oro province of the ex-Spanish Sahara is briefly included (see Chapter 1 for status of this region). The rock art of Morocco's northern neighbours, Spain and Portugal, is not studied here. Iberian archaeological discoveries have been used to date the engravings in the High Atlas (Zone 3) (see Chapters 10 and 11), but post-Palaeolithic rock art in the Iberian peninsula seems not to have influenced Morocco.

Themes

The themes encountered on Moroccan rock art sites were enumerated in Chapter 6. It was noted that wild animals were a favourite subject. The same remark applies to the other North African countries under discussion. The range of **wild and domestic animals** is approximately the same in all these countries, though not always in the same proportions. An example is the giant buffalo, frequently depicted in Algeria and Libya but rare in Morocco (its role as a chronological marker is discussed in Chapters 10 and 11). The aurochs is also represented more frequently in Algeria and Libya than in Morocco. This observation is based on the fact that in Morocco only a few published reports give the total number of engravings on a site, and fewer still give a break-down of the themes represented; none of these sites contain figurations of the giant buffalo or the aurochs. In addition, fieldwork and published reports show that while these animals have indeed been engraved on Moroccan sites, their appearance is rare (see Chapter 6). On the other hand a quick examination of the material from Algeria and Libya (where several very complete studies have been published) indicates that they are frequent: 260 buffalos in the Algerian Atlas, the Tassili and the Libyan Messak, and 149 aurochs in the Libyan Messak (Le Quellec, 1998: 69,72). Crocodiles, hippopotamuses and cats figure on sites in the Libyan Messak (absent from Morocco).

'Fantastic' animal representations, scarcely present in Moroccan rock art, exist in the Libyan Messak. A unicorn, a kind of centaur (human head and arm on bovid body), an ostrich-gazelle

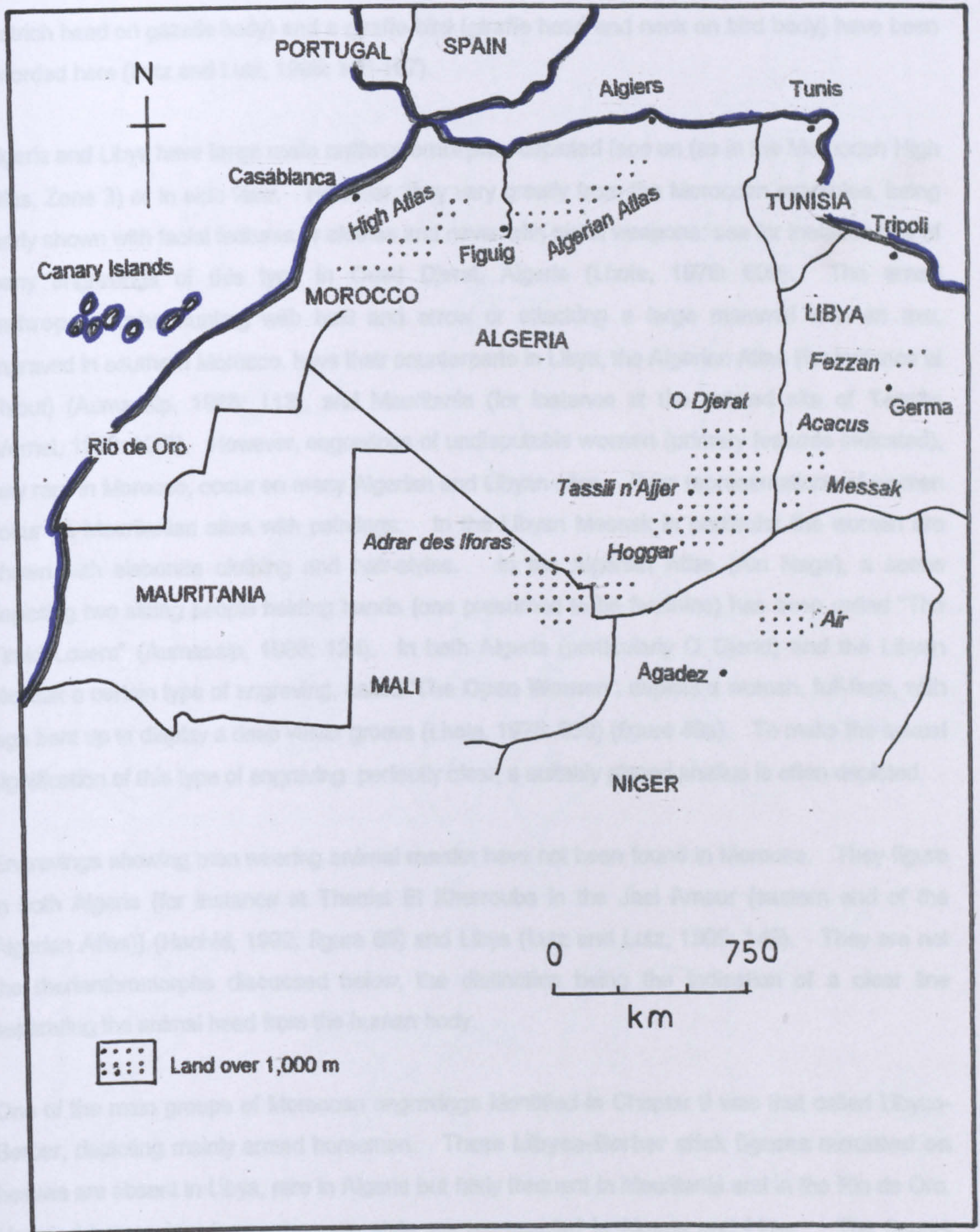


Figure 48. Map of north-west Africa

(ostrich head on gazelle body) and a giraffe-bird (giraffe head and neck on bird body) have been recorded here (Lutz and Lutz, 1995: 165-167).

Algeria and Libya have **large male anthropomorphs**, depicted face on (as in the Moroccan High Atlas, Zone 3) or in side view. However, they vary greatly from the Moroccan examples, being rarely shown with facial features or clothes and never with metal weapons: see for instance one of many engravings of this type in Oued Djerat, Algeria (Lhote, 1976: 609). The **small anthropomorphs** hunting with bow and arrow or attacking a large mammal with an axe, engraved in southern Morocco, have their counterparts in Libya, the Algerian Atlas (for instance at Thlout) (Aumassip, 1986: 113), and Mauritania (for instance at the painted site of Tensès (Vernet, 1993: 129)). However, engravings of undisputable women (primary features indicated), very rare in Morocco, occur on many Algerian and Libyan sites. Rare representations of women occur on Mauritanian sites with paintings. In the Libyan Messak in particular the women are shown with elaborate clothing and hair-styles. In the Algerian Atlas (Ain Naga), a scene depicting two sitting people holding hands (one presumed to be feminine) has been called "The Timid Lovers" (Aumassip, 1986: 124). In both Algeria (particularly O Djerat) and the Libyan Messak a certain type of engraving, called 'The Open Woman', depicts a woman, full-face, with legs bent up to display a deep vulvar groove (Lhote, 1976: 639) (figure 49a). To make the sexual signification of this type of engraving perfectly clear, a suitably placed phallus is often depicted.

Engravings showing men wearing **animal masks** have not been found in Morocco. They figure in both Algeria (for instance at Theniet El Kherrouba in the Jbel Amour (eastern end of the Algerian Atlas)) (Hachid, 1992: figure 69) and Libya (Lutz and Lutz, 1995: 149). They are not the therianthromorphs discussed below, the distinction being the indication of a clear line separating the animal head from the human body.

One of the main groups of Moroccan engravings identified in Chapter 9 was that called Libyco-Berber, depicting mainly armed horsemen. These **Libyco-Berber stick figures mounted on horses** are absent in Libya, rare in Algeria but fairly frequent in Mauritania and in the Rio de Oro. Mounted horses in a less schematic style are represented in Algeria and Libya. The figures called *orants* are widespread in Algeria. **Human hands and feet** (the former rare but the latter numerous on some Moroccan sites - for instance about 500 on AA6 (Zone 6)), are found in Algeria. An unusual panel with some 60 pecked hands was noted at Hadjrat Sidi Boubakeur, in the Monts des Ksour (Algerian Atlas) (Aumassip, 1986: 110), and 84 probable feet or sandals and two hands were engraved at Hadjar Berrick, also in the Monts des Ksour (Lhote, 1970b: 139).

The **fiddle-idols** of Oukaimeden (Zone 3) (figure 26c) and the **idols** of the Jbel Rat (figure 11c), limited in Morocco to the High Atlas, are totally absent from the countries considered here.

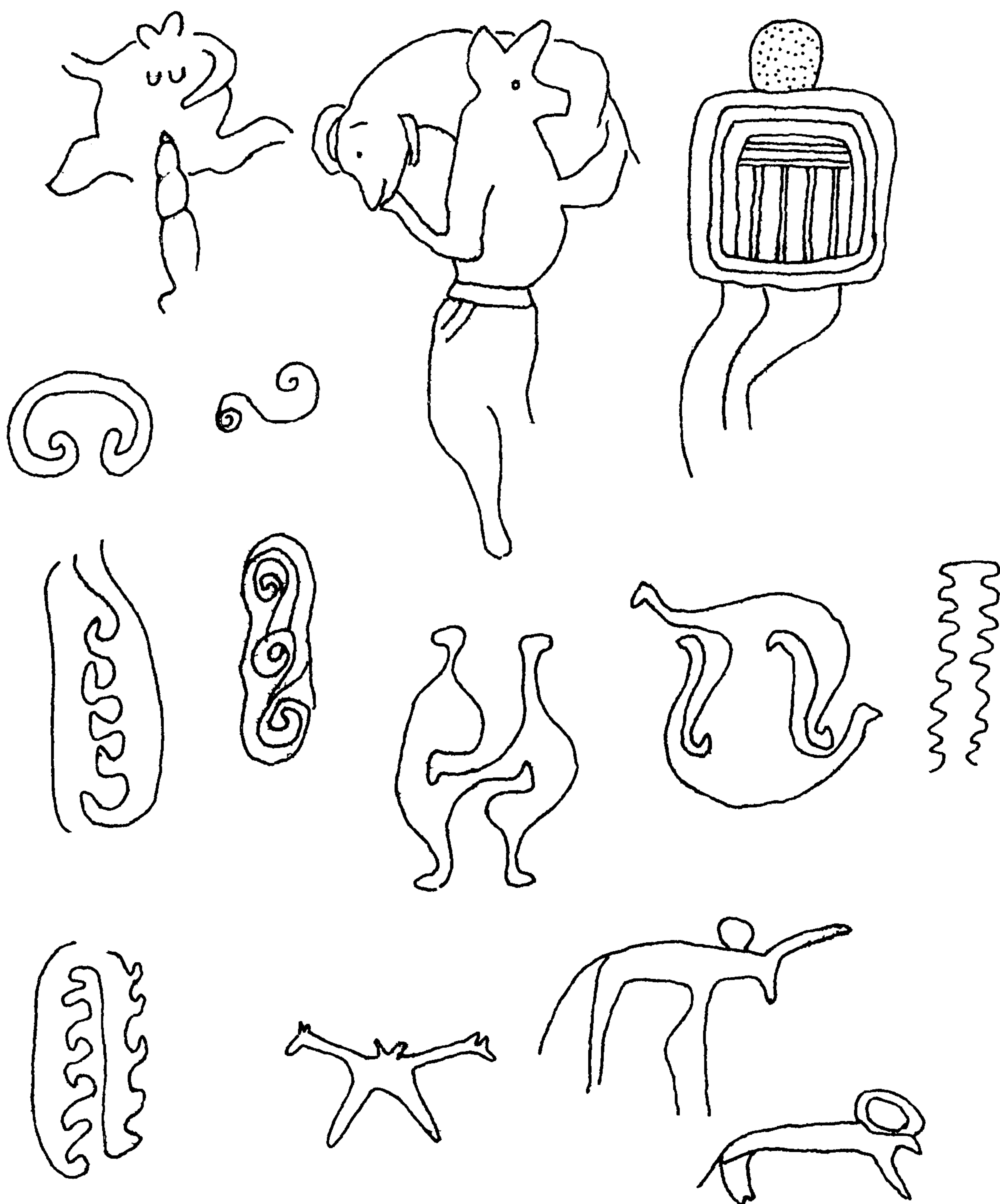


Figure 49. Selection of Moroccan and Algerian engravings showing similarities
 a) "Open Woman", O Djerat, Algeria (after Lhote, 1976) b) Theriomorph, Messak, Libya (after Le Quellec, 1998) c) Man behind shield, Algerian Atlas (after Lhote, 1970b) d) Double spiral, Zone 5, Morocco e) Double spiral, O Djerat, Algeria (after Lhote, 1975) f) Complex spiral, Zone 5, Morocco g) Complex spiral, Hoggar, Algeria (after Le Quellec, 1993) h) Heads and necks of 6 ostriches, Zone 5, Morocco i) Similar design, Algerian Atlas (after Le Quellec, 1993) j) Leaf-shaped design, Zone 7, Morocco k) Similar design, Hoggar, Algeria (after Le Quellec, 1993) l) "Double animals", Zone 3, Morocco m) Bovid with head attribute, Zone 7, Morocco n) Bovid with head attribute, Algerian Atlas (after Le Quellec, 1993)

However, **therianthromorphic, mythological creatures** are a feature of the rock art of the Libyan Messak (140 examples) (Le Quellec, 1998: 336). They are very rare in Algeria. These theriomorphs - part man, part animal - usually have an animal head placed on a human body; they are not to be confused with a masked hunter mentioned above. These creatures seem endowed with supernatural strength, often casually carrying a large animal (aurochs or rhinoceros) under an arm or across the shoulders (Le Quellec, 1998: 337) (figure 49b). A large (1.40 m) engraving of an 'Open Woman' (see above) has been called a "**Fertility Goddess**" by Lutz and Lutz (1995: 172), who underline that the special care used to engrave this figure distinguishes it from the other, human 'Open Women'. But there is no way of knowing whether the figure really represents a goddess, a venerated woman or simply the work of a particularly gifted artist.

Bows and arrows, clubs, sticks and stone axes figure in Algeria and Libya, as in Morocco (see Chapter 6). **Boomerangs** are represented only in the Moroccan High Atlas (Zone 3), but hooked objects in Algerian engravings are very similar. **Weapon-heads** (probably of metal), **metal daggers, axes and *hache-pelles***, comparable to Moroccan examples, are engraved in Algeria but not in Libya. It is recalled that no actual prehistoric or protohistoric metal objects have been found east of Algiers (see Chapter 4). An exhaustive survey of engraved weapons in Algeria is not intended, but a few examples are given below. The 12 daggers, one axe of southern Moroccan type and one *hache pelle*, illustrated by Hachid (1992: figures 243-253), all come from the Monts des Ksour in the Algerian Atlas. A few possible **halberds** were engraved in the Monts des Ksour (for instance, Lhote, 1970b: 84,126). Here also (site of Hadjar Berrick) one, if not two, of the four axes illustrated (Lhote, 1970b: 131) are of the southern Moroccan type. Numerous actual copper tools and weapons were found in Mauritania (see Chapter 11), but none seem to have been engraved or painted.

Engraved **rectangular or square shields**, as in the High Atlas (Zone 3), are found in Algeria. For instance, two internally decorated square shields on the site of Ain Marshal (Monts des Ksour) (Lhote, 1970b: 119) (figure 49d) are very similar to those on HA 17 in the Moroccan High Atlas (Zone 3). **Round, internally decorated shields**, frequent in the High Atlas (see figure 27c), are absent from Algeria, Libya, Mauritania and the Rio de Oro.

It is not surprising to find that **trapping equipment** in the shape of **bag traps** (see figure 15b), common in Morocco, are known practically throughout the Sahara, including Algeria and Libya (apparently absent from Mauritania and the Rio de Oro). **Radiating spoke traps** (see figure 15c) and **Radnetze**, both rare in Morocco, are found in Algeria and Libya. Another trapping device, known as a **Ben Barur stone**, well known in the Sahara and the Libyan Messak, is not depicted in Morocco, nor have the objects themselves been found. This is an ovoid stone with a central groove weighing from a few kilograms to several hundred, used to slow down game

animals caught in a noose running round the groove. Engravings show the stone actually attached to the leg of an animal (about 50 examples in the Libyan Messak) (Le Quellec, 1998: 137), and the objects themselves have been found on the present-day surface.

Engravings of flattened chariots, common in Morocco (see figures 13a,24d), are present in Algeria, Libya, Mauritania, the Rio de Oro and several other North African countries. The site of Oued Lazaar, in the Monts des Ksour (Algerian Atlas), contained no less than 112 engraved chariots and 104 were engraved on the Mauritanian site of Aouineght (Lhote, 1982). Variations in the design exist, but as Lhote has pointed out (Lhote, 1982: 234) a "family likeness" links the different sites of south Morocco, the Rio de Oro, the Algerian Atlas and Mauritania. The painted, horse-drawn chariot, seen in profile, of the "flying gallop" Horse-and-Chariot stage (see below), frequent in Algeria, is absent from Morocco.

Inscriptions in the old Libyan alphabet or the more recent *tifinars*, found on 10 sites (possibly 11) in Morocco (see Chapter 9) are widespread in Algeria, Libya, Mauritania and the Rio de Oro, both engraved and painted. Arabic inscriptions have also been made on many sites.

Geometric forms such as simple, concentric and complex circles, semi-circles, triangles, spirals and so on are as frequent in all north African countries as they are in Morocco. Some more complex designs found on Moroccan sites have their counterparts in Algeria. Among many possible examples are the double spirals on SE2 (Zone 5) (figure 49d) and those in the Oued Djerat (Lhote, 1975: 413) (figure 49e) and the complex spiral on SE20 (Zone 5) (figure 49f) and that in the Hoggar (Le Quellec, 1993: 488) (figure 49g). An interwoven design showing the heads and necks of six ostriches on SE16 (Zone 5) (figure 49h) is almost identical to the "meander" design at the site of Brezina (Monts des Ksour) which seems the result of the "extreme schematisation" of a frieze of six ostriches, in which only the heads and necks have been engraved (Le Quellec, 1993: 505) (figure 49i). A complex plait motif on SE20 (Zone 5) (attached to the tail of an elephant and perhaps therefore a trap) can be compared to the large plaited motif in the Oued Djerat (Lhote, 1975: 503). Finally the leaf-shaped designs frequently engraved in south Morocco (Zone 7) (figure 49j) are similar to those in the Hoggar (Le Quellec, 1993: 506) (figure 49k).

A number of miscellaneous motifs noted in Morocco are rare or absent in the other countries studied here. The Malcala game (2-4 lines of some dozen cups), known in the High Atlas (Zone 3), has been noted twice at Hadjar Berrik (Monts des Ksour) (the site containing the axes described above); it has been compared to the game, Keradat, played by Saharan nomads (Lhote, 1970: 138). The 'forked rectangle', probably a bag or quiver (see figure 27b), common in the Moroccan High Atlas (Zone 3), but apparently limited to this area, is absent from the other

countries considered here. **Uneven squares or rectangles divided into sections**, again particularly known in the High Atlas (Zone 3), seem absent from Libya and Mauritania, but one has been recorded in the Oued Djerat, in Algeria (Lhote, 1975: 179).

As has been noted above, **scenes with sexual connotations**, rare in Morocco and absent in Mauritania and the Rio de Oro, figure in Algeria and Libya. They are particularly numerous in the Oued Djerat. **Scenes of pastoral and family life (non-sexual)**, showing groups of people, women with children, or men and women attending to cattle are a feature of the engravings in the Libyan Messak. Such scenes seem to be absent from the Algerian Atlas but a few are present in painted rock-shelters in Mauritania. **Battles between groups of horsemen and footsoldiers**, well-known on Moroccan Libyco-Berber sites, are also absent from the Algerian Atlas, although a few scenes of this type have been recorded in the Oued Djerat (for instance, Lhote, 1975: 111). They are present in Mauritania. **Hunting scenes**, where groups of Libyco-Berber horsemen attack a wild animal, are common in Mauritania, but are rare in Algeria: see for instance an ostrich hunt in the Monts des Ksour, Algerian Atlas (Hachid, 1992: fig.280), and a scene involving a man armed with a javelin hunting a Barbary sheep with the aid of two dogs in the Oued Djerat (Lhote, 1975: 77). Scenes involving an armed man, probably a hunter, associated with a wild animal, were discussed under 'Anthropomorphs' above. Humans having problems with a wild animal (see figure 44a), rare in Morocco, are depicted in Algeria and Libya.

Table 31 indicates themes engraved in Morocco and in the four countries considered here. No quantitative assessment is made except to indicate 'rare' by an R, 'present' by a P; known absences - in the light of present knowledge - are indicated by an A and insufficient data by a blank. Letters in bold characters highlight notable absences or rarity.

This list of themes common or absent in the five countries under consideration could be considerably extended. But, as was stated above, the aim of the study is not an exhaustive review, only an appreciation of some of the main themes which Morocco shares with its neighbours or, on the contrary, where it differs. In this connection, it is underlined that the publication of a new site can often destroy theories built up from empty spaces on distribution maps.

Leaving the broad outline and turning now to details, a few of the peculiarities of Saharan and North African rock art images will be reviewed, to see to what extent Morocco shares in these peculiarities. Most of them have allegedly symbolic connotations, and have been analysed by Le Quellec in his study of symbolism and rock art in the Sahara (Le Quellec, 1993).

- "Double Animals", that is animals with two heads sharing the same body or part of the same

Theme	Morocco	Algeria	Libya	Mauritania	Rio de Oro
Wild and domestic animals	P	P	P	P	P
Fantastic animals	R	R	P	A	A
Large male anthropomorphs	P	P	P	A	A
Small male anthropomorphs	P	P	P	P	P
Women	A	P	P	P	A
Men wearing masks	A	P	P	A	A
Libyco-Berber stick figures	P	R	A	P	P
Orants	P	P	P		
Hands and feet	P	P	R		
Fiddle-idols and J Rat type idols	R	A	A	A	A
Therianthromorphs	A	R	P	A	A
Bows and arrows, clubs, sticks, stone axes	P	P	P	P	
Weapon-heads (probably of metal)	P	P	A	P	
Boomerangs or similar	P	P			
Metal daggers, axes, <i>haches-peltes</i> , javelins	P	P	A	P	
Rectangular or square shields	P	P		A	A
Round shields	P	A	A	A	A
Bag traps	P	P	P	P	
Radiating spoke traps	R	P	P		
Radnetze	R	P	P		
Ben Barur trapping stone	A	P	P	A	A
Chariots	P	P	R	P	P
Inscriptions	P	P	P	P	P
Simple geometric forms	P	P	P	P	P
Complex designs	P	P			
Games	P	P	A	A	A
'Forked rectangles'	P	A	A	A	A
Unevenly divided squares and rectangles	P	R			A
Scenes with sexual connotations	R	P	P	A	A
Scenes of pastoral and family life	A	A	P	P	A
Battle scenes	P	R	A	P	
Hunting scenes	P	R	A	P	
Humans attacked by a wild animal	R	P	P	A	A

Table 31. Summary of main themes engraved in Morocco, Algeria, Libya, Mauritania and the Rio de Oro

body. This type of image is fairly widespread in Algeria and Libya and is usually interpreted as a search for perspective; it may also have a more subtle meaning - the desire for symmetry, for instance, or be what Le Quellec has called "a graphic pun" (Le Quellec, 1993: 103). Examples exist in Morocco in Zone 5 (SE16) and on several sites in Zone 7 (S34 and S48, for instance). The image, apparently representing two giraffes, engraved in the High Atlas (Zone 3, HA19) (figure 49 I) is so unrealistic (by any standards) that it is thought here to be in fact one of these "graphic puns" - particularly as giraffes are unlikely to have been seen in the High Atlas.

- Head attributes (*attributs céphaliques*): animals with "closed" horns (generally antelopes or cattle) were considered by some researchers to be carrying a solar disk, while others saw these circles as a purely utilitarian objects transported between the animals' horns; they are frequent in

NW Africa and the Sahara (for discussion see Le Quellec, 1993: 125) (figure 49n). In Morocco, such animals are known on sites in Zones 5 (for instance SE23), and 7 (S96) (figure 49m).

- Cattle carrying a human (*boeuf porteur*) are another feature of Saharan and north African engravings. In Morocco they have been noted, for example, on sites in southern Morocco (Zone 7, S34 and S 58) and in Mauritania (Vernet, 1993: 139).

- Sheep with head ornaments ("rams with helmets"), often with a collar, are well known on a number of sites in the Algerian Monts des Ksour (for instance R'cheg Dirhem, Merdoufa and Bou Alem) (Lhote, 1970b: 33, 107; Hachid, 1992: figure 15) and the Djebel Amour (Hachid, 1992: figure 14). In Morocco they have been recorded on a site in Zone 2, near the Algerian border (see figure 6a) and in Zone 5 (the meaning of this type of image is discussed in Chapter 12).

- Engravings of a small animal inside another, not necessarily of the same species, occur in Algeria (Monts des Ksour, sites of Merdoufa, Ain Marshal and Tiout) (Lhote, 1970b: 107, 114; Hachid, 1992: figure 75), the Libyan Messak (Lutz and Lutz, 1995: 58) and in Morocco (for instance SE16, SE20 and S48).

- Engravings showing an unarmed human touching an animal are numerous in the Sahara and northern Africa. Many concern a wild animal - elephant, rhinoceros, giraffe or antelope. When domestic cattle are touched, the striking resemblance to actions concerning a wild animal has led Le Quellec to postulate a continuous tradition between the two categories (Le Quellec, 1993: 429). On a Moroccan site in Zone 7, the animal touched by the human is a domestic bovid.

This list constitutes only a small sample of of the possible range of subjects, but enough has been presented to show the affinities existing between the different Saharan and north African regions and, in particular, between Morocco and the Algerian Atlas.

Style and chronology

The term 'style' used here is defined in Appendix 2. As stylistic considerations have been very largely used to arrange Saharan and North African rock art into periods, style and chronology are linked in this section. The relative position of the different styles/periods in Saharan and North African rock art given below is the one put forward by Muzzolini (1995b: 164,166). This is followed by the chronology proposed for Morocco, already given in Chapter 11. Although Mauritania has an impoverished rock art repertoire, it is undoubtedly thematically and stylistically close to Morocco, and represents, to a certain extent, an extension southwards of Morocco and the ex-Spanish Sahara. Its long frontier with Mali as well as with Algeria brings it into close

contact with the Saharan desert. The chronology for Mauritania is based on Vernet's study of the prehistory of Mauritania (Vernet, 1993).

The relative position of the different styles proposed by Muzzolini (1995b: 164, 166) is as follows:

- In the Algerian Atlas, a Naturalistic Bubaline style of engravings is followed by the Tazina (see Appendix 2 for both terms), which slightly overlaps its final stage. Tazina sites are particularly numerous in the Algerian Atlas. This succession is followed by schematic chariots, then by more recent horsemen with round shields (Libyco-Berbers, see below), camels and *tifinars*
- In the Fezzan, the Naturalistic Bubaline style starts the series, followed by the Tazina style and then the Camel period
- In the Tassili n'Ajjer massif and the Libyan Acacus, a Naturalistic Bubaline engraved style is contemporary with the paintings of the Sefar-Ozaneare (Early Bovidian) style and both are contemporary with the Round Head style of paintings (see Appendix 2 for both terms). Three other groups of paintings follow (Abaniora, Iheren-Tahilahi and Ouan Amil), all belonging to the Final Bovidian period. Then comes the Horse and Chariot period, followed by *tifinars*, then the Camel period.
- In the Hoggar, the end of the Naturalistic engravings overlaps with Chariots (painted and engraved), which in turn overlap with *tifinars* and engravings of the Libyan Warrior stage (see Appendix 2)

It is underlined that this relative chronology for Saharan and North African rock art does not imply a break between the different periods, but smooth transitions and overlaps. It has been necessary to give it in some detail, in order to see the relationship with Morocco. Whatever the chronology adopted - long or short - all researchers agree that the Naturalistic Bubaline style and the Round Head style are the oldest.

For Morocco, the date proposed in Chapter 11 for the first rock art manifestations was around the middle of the 3rd millennium bc, starting with the Tazina group. The Pecked Cattle group probably started slightly later but was very largely contemporary. Engravings of the Dagger/Halberd/Anthropomorph group, installed notably in the High Atlas (Zone 3) (see Chapter 9) came later, towards the middle of the 2nd millennium bc, being closely linked with the Iberian Bronze Age. Chariots, the mounted horse, Libyco-Berber inscriptions and the camel followed progressively during the 1st millennium bc.

According to Vernet (1993: 229), rock art manifestations in Mauritania started with pastoralists during the 2nd millennium bc; hunting still remained the principal activity. Humid periods enabled the continuation of cattle-raising in the 1st millennium bc (see Appendix 3 for details on

the climate). Around 550 bc, Proto-Berbers with chariots made their appearance. At the very end of the 1st millennium, a new wave of Proto-Berbers started to produce inscriptions. The rock art of these groups [known in this work as Libyco-Berbers] - horsemen and camel-riders who arrived during this 1st millennium bc - was widespread (*idem*: 148). On a more general level, Vernet remarked that naturalistic engravings were extremely rare and schematisation the main characteristic of the region. Three groups of sites with paintings have been localised: a few present a certain degree of naturalism and could be relatively old (perhaps Bovidian, before 2000 bc), but on the whole all the paintings are younger than the engravings (*idem*: 125). Vernet concluded that this absence was probably due to the distance between Mauritania and the rock art centres of the Saharan Atlas and the central massifs which did not allow the development of a similarly rich art, and that these manifestations of the "human genius" were late in reaching Mauritania (Vernet, 1993: 122).

Implications

An analysis of the above data reveals a number of important factors.

Themes: while the same animals, wild and domestic, formed the subsistence basis of the populations living in the Sahara and NW Africa in late prehistoric and protohistoric times - no certain engravings of agricultural tools or scenes have been recorded - not all were present everywhere. Chronological or ecological considerations certainly account, for instance, for the absence from Morocco, the Rio de Oro and Mauritania of water-loving species such as the hippopotamus and crocodile. The giant buffalo, well represented in the Libyan Messak and in the Algerian Atlas, was rare in Morocco and absent from the Rio de Oro and Mauritania. Hunting and trapping equipment was much the same everywhere, but the Ben Barur trapping stone does not seem to have been used in these last three countries.

The absence in Morocco of several elements common in Algeria and Libya indicates that direct cultural relations with the central Sahara were practically inexistent. As Le Quellec has pointed out, Morocco belongs to another world (Le Quellec, 1998: 514). Therianthromorphs, masked hunters, women in general and the sexuality/fertility images so abundantly depicted in the Oued Djerat (Algeria) and Libyan Messak did not form part of the Moroccan or Mauritanian imagery. Scenes of pastoral and family life, also a feature of engravings in the Messak, are absent except for a painted rock-shelter in Mauritania, possibly of Final Bovidian date but more probably recent (Vernet, 1993: 128). Only one Moroccan site (Zone 9, WS27) has affinities with the Round Head or Final Bovidian paintings of the Tassili n'Ajjer. No sites with paintings comparable to those of the Tassilian "flying gallop" Horse-and-Chariot stage have been found in Morocco. As Vernet has suggested for Mauritania (1993: 122), this absence may have been due to the

distance between the two areas (some 1,500 km separate the nearest point of Morocco from the Tassili). Lack of a suitable support is not responsible: there are rock-shelters in southern Morocco (and in Mauritania) which contain paintings, but all are much younger. It has been noted (Heckendorf and Salih, 1999: 251) that the paintings of these Moroccan rock-shelters are stylistically and thematically close to those in the region of Constantine (Lefebvre and Lefebvre, 1967) and Kabylla (Poyto and Musso, 1969) in north-eastern Algeria. Poyto and Musso considered the authors of the Kabylia paintings to have been Libyans of the 1st millennium bc.

Styles: there is an almost total absence of engravings belonging to the Naturalistic Bubaline style (see Appendix 2 for definition), represented in the Algerian Atlas not only by numerous giant buffalos (rare in Morocco) but also by elephants, leopards, wild asses and "rams with helmets". This is all the more surprising since the Monts des Ksour, part of the Algerian Atlas, stretch some 300 km NE from the Moroccan oasis of Figuig (Zone 2), where one site (E3) does in fact contain a single remarkable example of a "ram with helmet" engraved in Naturalistic Bubaline style, out of a total of four "rams with helmets". Two possible reasons for this absence are proposed here: the first is chronological, the second cultural.

- It was shown above that Muzzolini's chronology (Muzzolini, 1995b: 166) envisaged an overlap between the end of the Naturalistic Bubaline style and the beginning of the Tazina style. The Naturalistic Bubaline "ram with helmet" engraving on the Figuig site could perhaps represent a late stage of this style, contemporary with the Tazina style used for two of the other "rams with helmets". The Tazina style is well represented in the Algerian Atlas, on other sites around Figuig and elsewhere in Morocco (see below and Chapter 9).
- A cultural explanation can also be proposed for this unique engraving. It was noted in Chapter 12 that Aumassip (1985: 59) considered that these animals participated in some ritual, cult or sacrifice. The "ram with helmet" on E3 could perhaps be a survivor of a religious belief that flourished in the Naturalistic Bubaline stage but which was tending to die out. In support of this theory, three other examples of "rams with helmets" in an area further south (Zone 5), are in the later Tazina style. The cultural survival theory is further supported by the fact that the fourth "ram with helmet" on E3 was engraved in a pecked, not polished technique - that is, not in Tazina style, felt in this work to be slightly earlier than pecked engravings (see Chapter 11).

It is not until the later appearance of small engravings of Tazina style that links between Morocco and Algeria become evident (whatever the chronology adopted for Algerian and Saharan rock art - long or short - the Tazina stage follows the Naturalistic Bubaline stage). Tazina style engraved sites are numerous in the Algerian Atlas (although the site of Tazina, in the Monts des Ksour,

which gave its name to this style, is not necessarily at the origin of this type of engraving - see Appendix 2). As stated above, the western extremity of the Algerian Atlas starts at the Moroccan oasis of Figuig (Zone 2), where this style figures on two sites (E3,5). It is therefore not surprising that Tazina engravings should be present in both countries. The "influence" of the Algerian Atlas "hunters" on Moroccan Tazina engravings was noted by Simoneau (1975b: 69).

Numerous in southern Morocco and the Western Sahara (Zones 5, 7 and 9) (see Chapter 9 and figure 41), Tazina sites are also found in the Rio de Oro province of the ex-Spanish Sahara and in Mauritania. One could propose a transmission of ideas or movements of hunter-herders moving through the Zenaga pass at Figuig south-west towards Zones 5 and 7, were it not for the fact that some 400 km separates the Figuig sites and the nearest Tazina sites in Zone 5, with no intermediate Tazina sites as yet known. Even if the movement was west-east - with an origin for this style in the Western Sahara, for instance (Zone 9) - the distribution gap would remain the same. Pending the discovery of Tazina sites between Figuig (Zone 2) and Zone 5, no explanation can be proposed here.

The Pecked Cattle group, identified in Morocco (see Chapter 9), is absent from Algeria but is present in Mauritania. Moroccan sites with Pecked Cattle engravings, such as, for example, the exceptionally well engraved S34 (Zone 7), were nevertheless recognised by Muzzolini (1995b: 378) as having a certain resemblance to the Saharan groups. This absence in Algeria was used, tentatively, in Chapter 11, to suggest that the Pecked Cattle group was a local creation, slightly younger than the Tazina group, whose rock art they adopted but with a different technique (pecking and not polishing). Engravings of pecked cattle in Mauritania were estimated by Vernet to have started during the 2nd millennium bc (Vernet, 1993: 121), a date which supports the proposed chronology for the Moroccan Pecked Cattle group. In Chapter 9 it was shown that three sites where Pecked Cattle are dominant are known in south-west Morocco (Zone 8). Further south, in Zone 9, 19 sites contain a few engravings in the Pecked Cattle B style.

The Moroccan Bronze Age: the Mediterranean, Bronze Age world represented by the daggers and halberds engraved in the Moroccan High Atlas (Zone 3) affected Algeria very little, Libya and Mauritania not at all. Certainly, as has been noted, engravings of the Dagger/ Halberd/ Anthropomorph group, defined in Chapter 9, have been found outside the High Atlas, in Zones 2, 5, 7 and 9. The halberd and dagger engravings on E7 (Zone 2), some 200 km north-west of Figuig, towards the High Atlas, and the dagger engraving on another Figuig site (Zone 2, E5) seem to indicate a route for the new metal-weapon imagery originating in the High Atlas to reach the Monts des Ksour in the Algerian Atlas, where many of the daggers and other metal weapons were engraved (Hachid, 1992). Nevertheless, the engraved indications of a metal age in Algeria

are slight. The round, Bronze Age shields of the Moroccan High Atlas have not been recorded in Algeria.

The High Atlas ideology, expressed by engraved fiddle-idols and J Rat idols, was not exported either: no examples have been found in Algeria, the Rio de Oro or Mauritania. This is not so surprising since these motifs are not found elsewhere in Morocco either. But even the Malcala or Keradat game, fairly frequent in the High Atlas (21 examples at Oukaimeden, 5 on the Yagour Plateau) (Rodrigue, 1999: 86), known to be played by Saharan nomads, only figures twice in Algeria - both times in the Monts des Ksour.

Chariots: it was seen in Chapter 10 that images of chariots were widespread throughout northern Africa, from the Atlantic to the Nile and from the Mediterranean to the central Sahara. Not all were of the same date, nor represented in the same fashion. The "flying gallop" horse-and-chariot paintings of the central Sahara are absent from Morocco and Mauritania. But flattened, engraved chariots are common to Morocco, Mauritania and the Monts des Ksour of western Algeria. According to Hachid (1992: 132), chariot engravings are almost totally absent from eastern Algeria (pending new discoveries, of course), implying "logically" a progression from east to west in view of the widespread distribution of chariot engravings in Morocco (see Chapter 9 and figure 41), the Rio de Oro and Mauritania. As the "flying gallop" horse-and-chariot paintings of the Libyan Garamantes are held to be older than the engraved versions (see Chapter 10), Hachid (1992: 132) has posed the question: were the Garamantes of the central Sahara responsible for the introduction of the chariot to their western neighbours, the Getules - "more nomad than sedentary, more African than Mediterranean" - and the Pharusians, or was there no link? (*idem*: 127). The Garamantes, with their capital in Germa (Libyan Fezzan), were a powerful people well known in antiquity. Herodotus, writing in the 5th century bc, said that the Garamantes chased the "Ethiopian Troglodytes" (black people) in their four-horse chariots, having learnt from the Greeks how to harness four horses to their chariots (Herodotus, trans.Larcher, 1980: 256, 258). Recent excavations in Germa by a combined British-Libyan team have confirmed the emergence of the Garamantes around the middle of the 1st millennium bc, if not earlier (Mattingly *et al*, 1999: 143). The Getules lived in an area corresponding approximately to Morocco and western Algeria, the Numidians occupied a territory approximately equivalent to present-day Tunisia and eastern Algeria and the Pharusians inhabited countries south of the Getules. These are vast areas, which do not correspond neatly to the zones established for this study.

The presence of all these chariots implies a common "chariot culture", the dissemination of which is in fact difficult to explain. The two main groups - the painted chariots of the central Sahara and those engraved in the Algerian Atlas, Morocco, Rio de Oro and Mauritania - are separated by zones in which no figurations of chariots have as yet been discovered. But for Muzzolini, the

diversity of the chariot engravings indicated that the *idea* of a wheeled platform drawn by an animal became widely [and relatively quickly] diffused, and that different populations, having decided to provide themselves with chariots, then created their own versions, appropriate to their needs, using the technology at their disposal (Muzzolini, 1982: 54). Hachid too (1992: 133), while recognising that the arrival of chariots, both in the central Sahara and the Algerian Atlas, constituted an innovation, definitely rejects any idea of an invasion or even a human migration, affirming that the chariot period presented no break with the preceding bovidian period (implying presumably that the local populations simply adopted a new idea).

Other researchers saw definite movements of population in the propagation of these new techniques into the Sahara and the Maghreb. Camps, remarking on the fact that the extension of chariots in NW Africa corresponds exactly to the Berber-speaking regions (1993: 1885), saw in the appearance of these vehicles a progression southwards of populations already living along the Mediterranean coast, probably white-skinned Palaeo-Berbers (*idem*: 1886). Vernet also considered that chariots were introduced into the Sahara by southward-moving Proto-Berbers (1993: 313).

In the absence of dated funerary monuments - as was seen in Chapter 4, none of the numerous "pre-islamic" tumuli have been dated - which could be related to the arrival of new populations, it is impossible to know for certain whether chariots were introduced into Morocco by outsiders, Palaeo-Berbers from the Mediterranean coast, or adopted by the local populations. After much consideration, the model retained in this study is the one favoured by Hachid (see above): the adoption from the Garamantes of a novelty by local people. It is accepted that the oldest chariots are those represented in the "flying gallop" horse-and-chariot paintings known in the central Sahara in the first half of the 1st millennium bc (see Chapter 11), and that this new prestige item reached north-western Algeria, where chariots were reproduced, now engraved and seen in plan, with no animal traction indicated. Their dissemination from the western end of the Algerian Atlas into Morocco passed by the important transit oasis of Figuig (Zone 2), where two sites contain chariot engravings, and from there rapidly gained both southern Morocco and the High Atlas. The movement of populations from the north towards south Morocco and Mauritania in the first half of the 1st millennium bc is rejected for several reasons. If Palaeo-Berbers from the Mediterranean area introduced chariots into Morocco and Mauritania, how did these people travel? The chariots are not considered to have been utility vehicles (Camps, 1989: 40). Slightly later populations, the Libyco-Berbers, used the horse as a means of transport (see below). But chariots and Libyco-Berber horsemen are not associated on Moroccan sites and nothing indicates that the Moroccan chariot-users employed horses as draught animals. Muzzolini (1995b: 377) also noted Libyco-Berber horse and camel riders do not seem to be connected to the engraved chariot group since they are not usually found together.

Libyco-Berber horsemen: the Libyco-Berber group was recognised as an important typological group in this study. Its links with Algeria are considered in this section. Once again, hypotheses concerning the origin of this style - established as a period in the rock art chronology (see above) - divide researchers. In Chapter 10 it was shown that an Iberian origin for the domestic horse is excluded (Camps, 1993b: 1909-1910), so the ridden horse must have been introduced into Morocco from Algeria. The list of themes given at the beginning of this chapter shows that these Libyco-Berber stick figures are much more frequent in Morocco and Mauritania than in Algeria, although engravings show them indulging in the same activities: hunting or fighting, on horses, on camels or on foot. The earlier style of representing horses, with rounded neck and croup and filled-in body, is more common in Algeria than in Morocco. Numerous examples of the latter have been noted in the Algerian Atlas (Hachid, 1992: figures 263, 265-267, 269 and 270 for example). To summarise: in Algeria the domestic horse was represented more naturalistically than in Morocco, where the stick-figure style largely outnumbers the rare examples of domestic horses engraved in a more supple style. Everything points to a separation between the artistic canons followed by the horse-riding populations in Algeria (semi-naturalistic paintings and engravings) and those adopted in Morocco (stick-figures). This separation seems to have taken place in the Algerian Atlas, where images of the Moroccan type appear on a few sites.

It is proposed in this study that horse-riding, like chariots, again penetrated Morocco from the western end of the Algerian Atlas. The present researcher cannot share the opinion of Hachid (1992: 137), who saw the Libyco-Berber period prolonging, without a break, the period when chariots were dominant. In this study, the introduction of the ridden horse into Morocco involved movements of people, with a new style of engraving, called Libyco-Berber, and new themes. In Mauritania, these Libyco-Berber horsemen were also considered to be intrusive. According to Vernet (1993: 125) they were "the latest arrivals in a Sahara becoming progressively a desert, direct ancestors of the white-skinned Saharan nomads". They inherited the way of life of their predecessors, whom they absorbed or chased further south, and later adopted the camel.

In spite of the stylistic differences and local particularities in the technique or the themes, this "Libyco-Berber" world must be attached to the "Libyan Warrior" group very active well to the east of Morocco and Mauritania, in the Hoggar (Algeria), the Adrar des Iforas (Algerian/Mali frontiers), and the Air (Niger) (Muzzolini, 1995b: 385). Only one engraving approximating to this style has been recorded in Morocco (see Chapter 12, Zone 9, for discussion).

Inscriptions: inscriptions in the old Libyan alphabet are widespread in all the countries studied, but the more recent *tifinars* are rare in Morocco. In Morocco they are generally engraved. This

supposes a common knowledge of this form of writing (with local variants), from the Mediterranean to the central Sahara and from the Atlantic to the central Sahara.

Possibly symbolic traits: it only remains to consider the implications of the numerous traits, often symbolic, which are common to Morocco, the Algerian Atlas and the central Sahara, as indicated above. This sharing of unusual features has already been remarked on by one of Morocco's most active rock art researchers, Simoneau. In an article published posthumously (Simoneau, 1995: 143-157), he evoked - amongst other images - small animals engraved inside others, the *boeuf porteur*, complex spirals, imbricated ostrich heads, rams with helmets and double animals, all of which were shown above to have their counterparts in the Algerian Atlas or the Sahara.

The position of the present researcher is well expressed by Le Quellec in the concluding chapter of his study on symbolism and rock art in the Sahara (Le Quellec, 1993). While being fully aware of the objections that can be made concerning the linking of particular features coming from different sources, and the risk of associating works having no chronological relationship, Le Quellec (*idem*: 572, 573) estimated that the existence of these features showed the continuation of certain traditions. Underlining that the grouping together of cultural traits should not lead to the drawing up of distribution areas much too vast to have been occupied by a single population, or a single culture, he felt, however, that many themes seem to correspond to different representations within a common heritage (which does not exclude local peculiarities).

This study rejects the theory of a unified, pan-Saharan culture, on the lines of the "Hunters' Culture" propounded by Huard (see for instance Huard, Leclant and Allard-Huard, 1980), uniform from the Nile to the Atlantic. But it seems reasonable to accept the existence of a common heritage, passed down through the millennia, as shown by the use of certain shared themes in the central Sahara and NW Africa.

Conclusions

The above survey of rock art manifestations in the countries close to Morocco shows overall similarities in the rock art of the countries covered and, at the same time, great differences in specific themes. Animals, humans, weapons, hunting equipment and geometric motifs of all kinds are common elements, but not always in the same proportions. Animals such as the giant buffalo or the aurochs, for instance, plentiful in Algeria and Libya, are rare in Morocco. Real examples - or engravings - of the trapping device known as the Ben Barur stone, found elsewhere, are not known in Morocco. In the more specific areas, notably ideology, the differences between Morocco on the one hand and Mauritania, Algeria and Libya on the other, are striking. The hero (or enemy) figure, associated with metal weapons, the fiddle idols and the J

Rat idols, all elements of Morocco's metal age ideology, are not found elsewhere. Indeed, Bronze Age metallurgy, so evident in the engravings of the Moroccan High Atlas (Zone 3), had little or no impact on the rock art of Algeria and Libya. This is not so surprising, in view of the paucity of real proto-historic copper or bronze items in Algeria, for instance. Scenes of family or pastoral life are absent from Morocco, but battles and hunts of protohistorical times were more frequent than in neighbouring Algeria.

At a deeper, less evident level, a number of traits, some functional, others probably symbolic - "double" animals, unarmed humans touching an animal, small animals engraved within a larger one - show the persistence of a common heritage among these North African countries.

The early part of the 1st millennium bc was a period of intense activity, with profound changes affecting Morocco and its neighbours. With the appearance of chariots and horsemen in the first half of the 1st millennium bc, historically known people begin to appear: the Garamantes of Germa, the Pharusians, Getules and Numidians. In the absence of datable material, in the shape of tombs for instance, the diffusionist roles played by these people can only be suggested. In this respect, it is accepted in this study that the "flying gallop" horse-and-chariot paintings of the Garamantes in the central Sahara are the oldest known chariot representations. Chariots were then adopted by the neighbouring people (Numidians, Getules and Pharusians), without involving invasions or migrations. These chariots were introduced as prestige items into an impoverished cattle culture in southern Morocco and further south, although a climatic improvement in Mauritania in the 1st millennium bc revitalised cattle-breeding.

The succeeding Libyco-Berber horsemen were in all probability newcomers to Morocco, probably coming into the country from the Mediterranean region of Algeria no further north than by the Zenaga pass at Figuig (a perennial passage). They spread widely and left engravings of themselves fighting and hunting on horseback or on foot. In Algeria, engravings and paintings of the domestic horse differ somewhat from those of Morocco, but the affinities are clear. Then writing, in the form of inscriptions in the ancient Libyan alphabet, became widespread, both in Morocco and its neighbours. In the last centuries before Christian times, rock engravings and paintings show that the camel, an ideal Saharan animal, was introduced into all the countries of northern Africa and the Sahara, becoming a necessity for survival in desert conditions.

In brief, Morocco has much in common with its neighbours, but each has its particularities. These shared features and specific orientations are visible in the rock art.

CHAPTER 14. ROCK ART, EXCAVATION AND ENVIRONMENT

Introduction

The overall aim of this study was to place Morocco's rock art in a wider archaeological and environmental context. To this end the prehistoric climate was examined, the country's prehistory reviewed and excavation reports on the fauna studied. This background established, a coherent model in which rock art is shown to play a part in the "production process" (Davis, 1984: 7) of the Neolithic and later populations of Morocco is put forward. There can be little doubt that engravings and paintings on the rocks are important evidence of the human past. While archaeological data help to situate rock art in a more rigorous chronological framework than is possible with the undated images themselves, these images in turn inform archaeological research on territorial occupation and "perishable and non-material phenomena" (Striedter, 1982: 185), such as clothing, hunting methods, preoccupations and ideology.

A chronological approach, bringing together the whole country, is used in this chapter. This method *ipso facto* underlines the wealth of information available from archaeological excavation in north-west and eastern Morocco (Zones 1 and 2) and the almost total lack of such information elsewhere. This picture is reversed where rock art is concerned, where north-west and north-east Morocco are strikingly poor and the large area south of the High Atlas relatively rich. These inequalities hinder fine comparisons but underline the part engraved or painted images can play as archaeological data-providers when other elements are lacking.

Chronological data from archaeological and climatic studies form a reliable framework. As has been stated earlier in this work, the chronology proposed for the rock art manifestations is only a working hypothesis. The earlier stages are subject to revision if new data come to light; in the protohistorical period, relatively clearly dated events render the hypothesis less open to discussion.

Neolithic beginnings in the 5th millennium bc

The beginning of the Holocene was marked, around 10000 bc, by the start of a major humid period in the Sahara and north Africa in general (see Chapter 3). Conditions were generally favourable for the Epipalaeolithic populations living in Morocco at this time, but despite claims by some researchers (for instance, Mori, 1974) that these populations were responsible for the rock art, this is not the position adopted here.

After a short arid period, a renewal of humid conditions from about 5000/4500 bc allowed an extension of the Mediterranean environment in north-west Africa far further south than today.

Northern Morocco (Zones 1 and 2) enjoyed a Mediterranean vegetational cover, and the sub-Mediterranean zone extended well south of the O Draa (see figure 4). The increase in humidity encouraged the growth of woodlands. The Saharan desert diminished in size. Despite lower rainfall than during the first major Holocene humid period, researchers have noted that paradoxically this period saw "the peak of pastoral Saharan societies" (Muzzolini, 1995b: 51).

In Chapter 4 it was noted that radiocarbon dates situate the earliest Neolithic industries in north-western Morocco, from the Straits of Gibraltar down to the Casablanca region, at around 4100 bc. Neolithic innovations such as pottery and polished axes started to be used by the inhabitants, probably local people rather than invaders, although the objects themselves undoubtedly had their origin in the neighbouring Iberian peninsula. Sheep, goats and cattle were kept and cereals were possibly cultivated. Nothing is known about the settlements of this period, though caves continued to be occupied. Caves were also used for burials. The 12 very varied rock art sites in this zone (Zone 1) cannot be associated with any of the activities of these populations.

Southern Morocco, south of the High Atlas mountains, was more affected by cultural influences from the Sahara than by those coming from the Mediterranean area. Stone tools, bifacially flaked and often barbed and tanged, are found in great quantities on the present-day surface. They belong to a Western Saharan Neolithic-of-Capsian-Tradition, known from Algeria to the Atlantic coast. Unfortunately, while this material attests to a human presence in southern Morocco, the date of occupation is unknown. Although cattle, sheep and goats were known throughout North Africa by about 4000 bc (see, for instance, Clutton-Brock, 1993; Muzzolini, 1995b), the lack of excavated material makes it impossible to say whether the populations of southern Morocco were in fact pastoralists. Although cattle engravings are numerous in this area, the present researcher has rejected such an early date for the engravings, as explained in Chapter 11.

The widespread establishment of Neolithic practices from the 4th millennium bc

In north-west and central Morocco (Zone 1), the climate at the beginning of this period was still sufficiently wet to allow the growth of woodlands, often stands of oak, which enabled domestic animals, game animals and predators to thrive. From about 2500 bc, the tendency towards more arid conditions became perceptible, with forests regressing, but the overall effect was unimportant (see Chapter 3). The local people kept cattle, sheep and goats, and in the Tangier area, domestic pigs were an important animal resource. Pigs were also kept by the populations living around Casablanca and Rabat (see Chapter 5). Material goods such as pottery, flint weaponheads and polished axes were in common use throughout north-west Morocco. More unusual items - stone vases, bone tools, containers and bracelets of ivory, decorated ostrich eggshells found as grave goods in a necropolis near Rabat dated to around 2610 bc - may only

have had a limited distribution. It has been suggested (Searight, 1995) that the presence of elephant ivory could imply contact and trade with the inhabitants of southern Morocco, where representations of elephants are engraved on over 77 sites. Simple agriculture was probably widely practised, although it is only around Taza and on the plains north of Marrakech that stone hoes, of unknown date, have been found. Some 40 small terracotta objects brought to light in caves near Tangier, and a small cruciform object found during excavations in Rabat, may be cult figures. Inhumation in caves continued: the grave goods in a Casablanca cave consisted of over 40 almost complete pottery vessels showing clear Saharan affinities. Near Rabat, the extensive necropolis mentioned above contained the remains of over 100 individuals and showed a variety of burial rites.

In north-eastern Morocco (Zone 2), a wetter and slightly cooler climate than today prevailed until about 2500 bc, when some arboreal species started to disappear. Faunal lists show that a semi-open, steppe environment alternated with wooded surroundings. Poor soil rather than climate probably accounted for the more austere life led by the local people. Excavated sites near Oujda, with dates from 3240 bc to about 2000 bc, have shown that pottery, polished axes, grinding material and personal ornaments (pierced shells and necklaces of ostrich eggshell discs) were relatively rare. The ceramics indicated more contact with Algeria than with north-western Morocco. The inhabitants of the northern part of this zone seem to have been nomadic shepherds, basically raising sheep and goats, moving around with their herds according to available food and water resources (see Chapter 4). They hunted wild animals, particularly the wild ass and an unspecified equid. Cattle remains were also recovered from a number of sites, but may not have been domesticated (see Chapter 5). Agriculture was not practised.

The nearest rock art sites lie some 150 km to the south-west, around Talsinnt, where cattle, sheep and goats, along with elephants, lions or leopards, antelopes and ostriches were engraved in scattered rock shelters and on boulders (E7 and 8). The lithic material was indeterminate, polished axes and pottery absent. In this study, the engravings are considered to have been the work of pastoralists, either practising a seasonal transhumance or settled more or less permanently in a favorable environment (see Chapter 12). The system used here did not allow these sites to be classified and thus attributed to a chronological period, but it is suggested that the oldest engravings on these much frequented sites may have been done by the people using the caves further north towards the end of the 3rd millennium, or by contemporary local groups practising the same economy. Material from two undated caves, at Tendrara and Tazzougent, respectively about 150 km NE and 60 km SE of Talsinnt, indicated an occupation by people using Neolithic stone-working techniques of unspecified date (see Chapter 4).

Around Figuig, in the SE corner of Zone 2, on the Morocco-Algerian frontier, six rock-shelter and open-air sites contained engravings of a very informative nature (E1-6). Confirming the data from the north of this zone, they testify to Algerian influences in this part of Morocco; they also indicate the importance of Figuig as a passage-way between the two countries. Influences or groups from the adjoining Algerian Atlas mountains came into Morocco through the Zenaga pass at Figuig, where a polished "ram with helmet" in the oldest Algerian rock art tradition - the Naturalistic Bubaline style - was engraved on site E3. Engravings on two other Figuig sites were in the Tazina style, well represented in the Algerian Atlas, and featured elephants, antelopes and ostriches. It was suggested in Chapter 12 that the "ram with helmet" image, probably part of a ritual or cult, was engraved at a late stage of this style, contemporary with two of the other "rams with helmets" on the site, themselves in the Tazina style. They are the only indications of an ideology or religion. The Tazina style is thought in this study to begin around 2500 bc (see Chapter 11).

Little is known about the climate in the High Atlas mountains (Zone 3) during this period, though the tendency here too was towards aridity. Data on prehistoric life comes from Toulkine rock-shelter, situated at an altitude of 1,800 m on the northern slopes of the High Atlas, dated by thermoluminescence to between 2020 and 2420 bc (see Chapter 4). The site (HA 42) has produced abstract red-ochre paintings on a ledge overlooking the shelter. Similar abstract motifs were painted on a ledge opposite the rock-shelter. The purpose and meaning of these paintings is difficult to surmise. The people using the rock-shelter kept sheep and goats, but the pigs were wild and the cattle may have been wild or domestic. Hunting was an important activity and two different biotopes were exploited: a semi-barren, rugged environment for the Barbary sheep and the Edmi gazelle, the grassier plains for the Dorcas gazelle, the hartebeest, the fox and the hare (see Chapter 5). Toulkine's inhabitants added a new type of flint arrowhead, the Toulkinian point, to their lithic baggage. Judging from finds of this particular point, the group, or affiliates, also frequented the plains around Marrakech, as well as the Oukaimeden prairies of the High Atlas, at an altitude of 2,500 m, presumably to hunt Barbary sheep and Edmi gazelle (see Chapter 4). But these people were not responsible for Oukaimeden's rock engravings, which were done later (see Chapter 11). If they left paintings similar to those at Toulkine rock-shelter, these have not survived, although suitable shelters were available.

As if the High Atlas mountains were impassable - which they never were - a different world evolved south of this chain. The climate until around 2500 bc still remained wet and relatively warm, with the sub-Mediterranean vegetational zone extending well south of the O Draa (see figure 4). From about 2500 bc, aridity began to be felt in the Sahara, although its impact on southern Morocco was relatively slight at first, due to the mountain masses of the High Atlas and the Anti-Atlas which continued to supply water to the O Draa and its tributaries.

It is unlikely that southern Morocco was empty in the 4th millennium bc. Surface finds of lithic material, pottery and ostrich egg beads of a distinctly Saharan nature are widespread from the Algerian frontier to the Atlantic. While part of this material, undated, may belong to the 5th millennium (see above), part almost certainly belongs to the 4th and 3rd millennium bc. It is not possible to associate this material directly to the numerous rock engravings, thought here to have begun around 2500 bc or a few centuries earlier, but the proximity of Neolithic lithic artefacts and pottery to rock art sites makes their contemporaneity a possibility. People with artefacts of Saharan type and pottery showing influences from northern Morocco occupied a coastal site near Tarfaya (Zone 8) around 3000 bc. Other pottery-users camped along the coast between 2500 bc and 1350 bc. Camp-sites without pottery but with Saharan type tools showed a coastal occupation at about the same time (2450-1340 bc) (see Chapter 4). Many sites along the coast in both Zones 8 and 9 produced quantities of ostrich bones (and some decorated egg-shells), indicating the importance of this bird in the local economy. Apart from confirming the movement from east to west of people conveying the new Neolithic techniques - or more probably a simple transmission of these ideas to existing populations still living as hunter-gatherers - these sites supply little information. It is left to the engraved and painted images to fill in the gap.

From about 2500 bc, two more or less contemporary populations, using engravings on the rocks to express themselves, lived in southern Morocco. One group produced polished images (Tazina group), the other practised exclusively a pecking technique (Pecked Cattle group). On the whole, they occupied different areas, each exploiting carefully defined territories. Engravings in neither the Tazina nor the Pecked Cattle styles, as defined in Chapter 9, seem to be the work of other groups which defy identification. The distribution of rock art sites, from Algeria in the east to the Atlantic Ocean in the west, show more clearly than flint scatters the considerable extent of the human occupation of southern Morocco.

The Tazina and Pecked Cattle groups both hunted wild animals and kept domestic cattle (sheep and goats were rare), but the very different proportions of engravings of these animals indicate different preoccupations. The users of the polished images of Tazina style engraved mainly the wild animals that seem to have been their major interest, while the Pecked Cattle group concentrated on their herds of cattle, with fewer wild animals. Both groups were mobile, moving around within their territories according to resources available. It is possible that they engraved periodically to mark out these territories and indicate possession (see Chapter 12). Certainly sites were occupied over a long period. The engravings can be considered to represent messages to be read by members of their group or by others, since the images are clearly visible on the sandstone ridges or cliff faces on which they were engraved. Although uniformity of style and subject matter characterise each of these groups of hunter-pastoralists, it is not to be

supposed that each formed a massive, united block. On a Tazina site in Zone 5, for instance (SE16) bag traps were frequent, while on another Tazina site in Zone 7 (S48) there was only one. It is likely that many tribes, clans or simply extended families existed within each major group, coming together on special occasions.

The Tazina groups invariably depicted their cattle with forward-pointing horns and no coat markings. The Pecked Cattle groups, on the other hand, had herds of cattle with a variety of horn forms - forward-pointing, widespread, lyre-shaped - and often with mottled coats. Both groups sometimes showed their cattle attached to a stake; the Pecked Cattle groups also rode on their animals, held them by a tether or showed them with a collar.

Trapping and hunting techniques are shown in the engravings. The Tazina group used a bag trap, often shown closely associated with the side, tail, head or legs of an animal, generally an antelope, but also rhinoceroses, elephants and ostriches (Wolff, 1997: 61-120). An object, probably either a trap or a bolas, made up of a small central circle and radiating spokes ending in a loop, was used by the Tazina group. Various lattice designs probably represent nets. The Pecked Cattle group seemed to have preferred a radial trap, shown as two concentric pecked circles joined by spokes, in which an animal, generally an antelope, trapped its foot in a network of spines. Hunters of both groups were shown attacking rhinoceroses and elephants from the rear with an axe, which may be a symbol but is just as likely here to represent a real weapon, as this is a well-known technique used by hunters to immobilise elephants (Lhote, 1970b: 184). Bows and arrows were used, and a quiver occasionally shown on the back of a hunter. Sticks or clubs were also employed.

The rock art of this period is not particularly informative about the clothing worn. Most of the anthropomorphs appear not to be wearing anything at all, with only accessories shown. These are belts, false tails, head feathers and feathered head-dresses. Manifestations of virility - or the desire to be sexually powerful - were common to both these groups of hunter-pastoralists, in the form of exaggerated large phalli (see Chapter 12). Apart from scenes showing one or several hunters involved with rhinoceroses, elephants, lions, antelopes and ostriches, few images of their daily life were left by these populations, unlike the rich iconography of Algeria or Libya.

The arrival of metal weapons in the 2nd millennium bc

In the 2nd millennium bc, increasing aridity affected southern Morocco, but the north was still a Mediterranean climatic zone, presenting little hardship for the inhabitants. Indeed, the vegetation of the Middle Atlas, for instance, remained much as before (see Chapter 3). Tangible evidence of metal-using in Morocco is rare and mainly confined to north and central Morocco (Zone 1). A

few Bell Beakers and associated material arrived from Spain in the middle of the 3rd millennium, and some copper axes and weaponheads, most of them undated, are also thought to be of Iberian origin. The inhabitants of NW Morocco started to be buried in cists, with simple grave goods of copper and bronze, but their general way of life changed little, better equipment simply enabling them to move further into the interior (see Chapter 4). Excavated copper or bronze objects being extremely rare, it is the several thousand rock engravings of the High Atlas (Zone 3), particularly at Oukaimeden (HA 35-39) and on the Yagour plateau (HA 14-34), that furnish the proof of a metal age in Morocco that archaeology is scarcely able to provide.

The introduction of copper and bronze probably did not imply an influx of newcomers into Morocco, although metal prospectors from Iberia may have begun exploring the mineral resources of the country. The daggers and halberds of Iberian Bronze Age type, which could have started to be engraved in the High Atlas (Zone 3) around the middle of the 2nd millennium bc, are more likely to be the result of trade with the north-west, the point of contact with Iberia. The people responsible for the engravings were unlikely to have lived all the year round in the High Atlas, at heights of 2,500 m, but came up seasonally from their villages with their herds to exploit the summer pasturages. The situation of the rock engravings in the High Atlas suggests that they were intimately connected with pasturages. That these people had contact, perhaps peaceful trading or serious battles, with people living to the east and south-east is shown by the engravings of High Atlas type daggers in sites around Figuig (Zone 2) and Tazzarine (Zone 5). An engraving of an anthropomorph with shield and club, in Zone 5, is a simplified copy of one in the High Atlas, and can only be the result of contact of one kind or another (see Chapter 12).

The engravings show not only the weapons used by the people who frequented the High Atlas - halberds, daggers, weapon-heads, shields, clubs, boomerangs, *haches-pelles* - but also their clothing. Although most representations showed figures without clothing, but invariably clearly sexed, men (women were rarely engraved) can be seen to have worn fringed tunics, what look like bands of material (probably leather) sewn together, belts and footgear (once). They had arm bracelets, necklaces and pendants and two people seem to be wearing a hair-net sprinkled with small shells. A bag frequently formed part of their accessories.

The engravings also throw light on the beliefs of these mountain communities. The numerous plain or decorated circles have been taken as signs of a solar cult, but this theory is rejected here. On the other hand, it is very possible that one site on the Yagour Plateau (HA 15), where a large decorated shield was engraved in a prominent position, was a special place, secular or religious. But the cult of the individual, the mythological or hero-figure, seems apparent from the numerous engravings of large anthropomorphic figures, surrounded by a panoply of weapons (this reading of such engravings is preferred to the "human sacrifice" explanation proposed, for instance, by

Malhomme (1958/59)). Engravings close to the Cycladic fiddle-idols, found only at Oukaimeden (HA 36), seem to be the remains of an old cult lingering on. Ovoid, tailed, semi-human figurations with spiralled heads, present only on two sites on the J Rat (HA 4 and 5), also testify to beliefs of the local people.

South of the High Atlas, the occupation of the coastal regions of south-west Morocco (Zone 8) continued during the 2nd millennium, often leaving only lithic material, ostrich egg-shells and a few hearths. Further south in the Western Sahara (Zone 9), shell-middens (generally undated), with much pottery and faunal remains, revealed considerable activity along the coast, including a burial with human remains dated to around 1150 and 790 bc. The climate slowly deteriorated, but the aridity was less felt than in the Sahara, due to exceptional local conditions (the High Atlas and Anti-Atlas mountains, and the O Draa). In these regions, the arrival of copper and bronze weapons had at first little effect. As stated above, some metal objects of High Atlas type, mainly daggers, were engraved on sites at Figuig, near the Algerian frontier (Zone 2), and in the northern part of Zone 5. Contact between the High Atlas, with its concentration of engraved weapons, and these outlying regions may have taken the form of an organised trade circuit, or have been of a more casual, even hostile, nature. Metal weapons, however, never became an important element in the life of these hunter-pastoralists, nor did the new Bronze Age ideology take root south of the High Atlas.

The 1st millennium bc: Phoenicians, Carthaginians, horsemen, chariots, writing and camels

The 1st millennium bc was a period of much change. The contrast between north and south Morocco became more marked and north Morocco entered definitely into the Mediterranean sphere of influence. Moroccan populations living in north-western Morocco (Zone 1) came into contact with the Phoenicians and the Carthaginians, who established trading centres and even important settlements along the Mediterranean and Atlantic coasts. The local people, known to historians as Mauritians, adopted progressively Phoenician and Carthaginian customs, and their settlements became larger and better constructed. The Phoenicians introduced iron weapons and tools (probably few in number). Phoenician and Carthaginian jewellery (or jewellery of Phoenician and Carthaginian inspiration) was buried with the deceased, even when the earlier style of burial under a tumulus continued. Funerary steles were inscribed with letters in a Phoenico-Punic alphabet. The Phoenician colonies are thought to have stimulated the Berbers' trade with the central Saharan highlands and, perhaps, with West Africa (Phillipson, 1993: 162). The pecked *orant* on site NC3 and the rather similar anthropomorphs on NC7, both close to the 'imploring' anthropomorphs carved on Punic funerary steles from the second half of the 1st

millennium bc (Jodin, 1964: 114) may show the weight of new influences on the habits and beliefs of the indigenous people, but this seems unlikely to the present researcher.

In the High Atlas (Zone 3), an increasingly dry climate caused a decline in the tree coverage but caused no serious upheavals. The imported prototypes of halberds and daggers were followed around the beginning of the 1st millennium bc by the manufacture and engraving of original, local types of daggers, implying that the inhabitants of the area were capable of exploiting the local copper and tin mines.

In southern Morocco, the inhabitants developed and engraved a weapon unknown in the High Atlas: the fan-bladed axe. It was suggested in Chapter 11 that these populations produced this particular type of metal axe (the "southern Moroccan" axe of this study) independently of the metallurgy in the north. This development occurred early in the 1st millennium bc, either spontaneously or through exchange and contact along a trans-saharan route from southern Morocco to the metallurgical centre of Akjouit in Mauritania, where copper metallurgy started around 850 bc (Vernet, 1993).

Another innovation particularly noted in southern Morocco was the chariot. It was seen in Chapter 10 that chariots were known throughout northern Africa, and Chapter 13 suggested that the vehicle itself reached Morocco from Algeria in the first half of the 1st millennium bc, perhaps via the oasis of Figuig (two sites here had engraved chariots). No chariot itself, or element connected to chariot-driving, has been found in Morocco before Roman times, so the engraved images are the only evidence of their presence in the country.

By this time, increasing aridity may have been making life difficult for the hunter-pastoralists of southern Morocco. Numerous engraved sites along the O Tamanart (Zone 7), leading to the climatically more favoured valleys of the Anti-Atlas around Tafraout, at an altitude of 1,200 m (Zone 8) suggest that some Pecked Cattle groups moved north. In Mauritania, a humid remission allowed cattle-raising in the first millennium bc, and other Pecked Cattle groups may have been attracted south-west. Chariots are found engraved sporadically in all zones of southern Morocco, showing their adoption by the local populations. Generally, only one or two of these vehicles were engraved on any site, underlining their rarity, but on one abnormal site in the extreme south-east (Zone 4), some 26 examples were depicted.

Chariots may have been directly introduced by the chariot-using Libyan Garamantes, considered to be responsible for the oldest, horse-drawn, painted chariot representations in northern Africa, dated to the first half of the 1st millennium. On the other hand, they may simply have been copied by the Moroccans. It is this latter hypothesis that is retained here. The reasons for

rejecting movements of populations using this novelty were given in Chapter 13. It is generally considered that the chariot was not a means of transport, but an object of prestige for races or displays by the local aristocracy (see for instance Camps, 1989: 40) The chariot seems to have been unknown north of the High Atlas until the arrival of the Romans, at the beginning of Christian times. In the High Atlas, the presence of engraved chariots indicates that this status symbol also affected the mountain tribes.

Apart from showing the vehicle itself, with its two wheels (sometimes spoked), small platform, single shaft and yoke, the engravings convey no information. Unlike the Algerian paintings, no driver nor draught animal are figured. It is proposed here that the early chariots in Morocco, introduced into a world of pastoralists, were drawn by cattle (according to Aumassip (1993: 23), chariots engraved in the Algerian Atlas were often drawn by cattle), since the domestic horse probably arrived in the country slightly later, with a rider and is never engraved harnessed to a chariot. Chariots and the Libyco-Berber horsemen described below are never closely associated on Moroccan sites. It is difficult to imagine a prestige object drawn by cattle, nor such animals engaged in chariot races. As a best-fit answer to this problem, it is proposed here that the object itself was sufficiently prestigious, and the cattle sufficiently highly esteemed, for the local chiefs to see no anomaly in uniting them.

If the introduction of the chariot caused little upheaval, the arrival of armed horsemen in southern Morocco around the middle of the 1st millennium bc may well have been conflictual. In contrast to the dissemination of the chariot, the mobility implied for the first time by the use of the horse lends weight to the hypothesis of an intrusion of these horsemen into a southern Moroccan world occupied by scattered groups of pastoralists. It was seen above, and in Chapter 13, that the Libyan Garamantes were horse-owners, particularly noted for their use of horse-drawn chariots. It is unlikely that the Garamantes themselves invaded Morocco, which was too far from their homeland. But rock engravings in neighbouring Algeria showed the spread of horse-riders (see Chapter 13), giving rise to a "Horse Period" in the periodisation used by Saharan rock art specialists (Lhote, quoted by Aumassip, 1993: 4). It is proposed in this study that it was these armed horse-riders, known as Libyco-Berbers, visibly bellicose, who 'invaded' Morocco around the middle of the first millennium bc.

They engraved their fights and hunts in a new, simplified, schematic style known as the "Libyco-Berber" style, using the pecking technique. Their engravings provide little information, except to indicate that they used long spears or lances, probably metal-headed, and carried small round shields. Some sort of saddle is occasionally depicted, otherwise they rode bareback. Their distribution is more informative, since they engraved images of themselves throughout southern Morocco, although they seem to have been less active in the Western Sahara (Zone 9). They

penetrated into the High Atlas where high altitude pasturages allowed cattle pastoralists to graze their herds in summer. The two engraved panels in the J Rat (Zone 3, HA3), known as "The Great Battle" and the "Little Battle" (see Chapter 12) may represent fights between Libyco-Berber raiders and the local pastoralists defending their herds, or they may represent rivalry between two contending Libyco-Berber groups. In Chapter 12, the link between the Libyco-Berbers and copper mines, some of them known to have been exploited in the past, was clearly shown. In fact, Mauny (quoted by Vernet, 1993: 340) felt that the Libyco-Berbers, in contact with Carthaginian coastal traders, themselves exploited the mines in southern Morocco.

Apart from showing the considerable activity going on in southern Morocco, the Libyco-Berber engravings do not supply data on past populations that escape archaeological research, but rather confirm information given by early texts. For instance, the Greek traveller, Scylax, writing in the 4th century bc, described the inhabitants of the coastal region around Agadir (Zone 6) - who exchanged animal skins for goods proposed by Phoenician traders - as being good horsemen, armed with lances (Roget, 1924: 19). More descriptive is the 1st century AD text of Strabo, which also corresponds closely to the engraved images. Strabo wrote that these 'Libyans' (ie North Africans) were armed with round shields and lances, and rode small horses which they directed by means of a bridle made of plant fibre; more specifically he described the Pharusians (ie the populations living south of the present-day Morocco) who crossed the desert with skin gourds filled with water attached under their horses' stomach (Roget, 1924: 25, 26).

The Libyco-Berber populations often engraved letters in the ancient Libyan alphabet close to the images of themselves hunting or fighting (see for instance the Zone 6 site studied in Chapter 8). Towards the end of the 1st millennium bc, they adopted the camel. Although populations continued to engrave in Libyco-Berber style during the early centuries AD, and Arab daggers and Arabic inscriptions are certainly more recent additions to the rock art repertoire, the practise of engraving messages on the rocks slowly stopped playing the primary role it had played in the past.

Conclusion

The first signs of Neolithic influences in Morocco were revealed by archaeological research in the north-west of the country, at the end of the 5th millennium bc, in the shape of pottery, polished axes and the raising of cattle, sheep and goats. No rock art is associated with this early period, although cattle were known throughout North Africa by about 4000 bc and sites with cattle engravings are numerous in south Morocco.

From the 4th millennium bc, Neolithic practices became consolidated. The climate was favourable until around 2500 bc, when progressive aridity in the Sahara and northern Africa began to make itself felt. Populations in the north and centre (Zone 1) kept cattle, sheep and goats, sometimes pigs. The use of pottery and polished stone implements spread, simple agriculture probably practised and wild animals were hunted. Grave goods included objects in ivory as well as pottery. No settlements are known, and caves continued to be occupied. In north-eastern Morocco (Zone 2), the climate also started to deteriorate from about 2500 bc. The inhabitants lived in a semi-open, steppic environment with patches of woodland, raised sheep and goats and hunted wild animals. Probably nomadic, they lived a culturally poorer life, moving around with their flocks, and may have had links with the groups of cattle pastoralists who engraved their cattle on a number of sites further to the south. In the south-east corner of this Zone 2, engravings of sheep with head ornaments imply contact with cultures of the neighbouring Algerian Atlas, where similar engravings mark an early, naturalistic, style of engraving. Rock art adds little to archaeological knowledge in these two zones, except for indications of a ritual or cult involving a sheep, coming into Morocco from Algeria.

Communities living on the northern side of the High Atlas mountains (Zone 3) around the middle of the 3rd millennium bc produced a distinctive flint weapon-head and painted the cliff face above their rock-shelter with enigmatic red-ochre abstract designs. These people went up to the High Atlas, presumably to hunt, as their flint tools have been found there. They are not responsible for the rock engravings, which were done by later groups, and they do not seem to have left any paintings either.

It is in Morocco south of the High Atlas where rock art can supply information lacking in the archaeological record. The only excavations have been in a narrow coastal belt in Zones 8 and 9 (see Chapter 4). Widespread scatters of tools belonging to the Western Saharan Neolithic prove that this vast territory was not empty. Excavations on the coast show that populations living here around 3000 bc, 2500 bc and later used pottery influenced both by the north and by the Sahara and decorated ostrich egg-shells. Apart from this sparse data, nothing would be known of the human occupation of the land were it not for the thousands of rock engravings. These show that the local people kept cattle and hunted wild animals. Two groups seem to have coexisted, occupying slightly different areas. To judge from the engravings, one group was more concerned with wild game animals, although they kept cattle; the other focused on their herds of cattle. Engravings show that they used a variety of trapping equipment, and hunted wild animals with axes, bows and arrows and sticks. Different hunting techniques were also indicated by the engravings. Information on their clothing was sparse, limited to depictions of belts, false tails, feathers in their hair and feathered headgear. Excessively large phalli were engraved by both groups.

Rock art in southern Morocco takes the place of archaeological research in supplying information on territorial occupation and non-material phenomena. But in the High Atlas (Zone 3), rock art does more than this - it provides the proof of a genuine metal age in Morocco, by means of the thousands of engravings of halberds, daggers and metal weapon-heads, when almost none of the real objects have been found either accidentally or through excavation. Excavation in north and central Morocco (Zone 1) had certainly revealed Copper and Bronze Age influences in the shape of burial rites and pottery, but signs of metallurgy were minimal. Comparison with Iberian weapons has shown that the indigenous people at first adopted imported models, around 1500 bc, before producing their own local versions, thereby proving their ability to exploit mineral resources and master founding techniques. The High Atlas rock engravings also show the inhabitants' clothing and accessories, and, to a certain extent, their ideology.

A few elements of the High Atlas metal imagery reached southern Morocco, but the populations here also produce their own type of metal weapon - the fan-bladed axe. This development probably occurred towards the beginning of the 1st millennium bc, possibly influenced by metal-using populations in Mauritania rather than the High Atlas, where axes of this type are unknown. The High Atlas ideology did not travel south to these regions.

The 1st millennium bc was one of much change and activity. The local communities in north-west and central Morocco (Zone 1) came into contact with Phoenician and Carthaginian traders and settlers, and adopted a number of their customs, including writing. Archaeology provides much information on this period, but rock art is almost absent from this zone, and what exists is uninformative.

In southern Morocco and the Western Sahara, on the other hand (Zones 4-9), rock art indicates the arrival from Algeria of the chariot, the Libyco-Berber horseman and the camel. The Libyco-Berbers were seen to be fighters, armed with lances and round shields, and hunters chasing antelopes, Barbary sheep, lions or leopards. None of these phenomena are visible in the archaeological record. Rock art thus helps to provide a more complete coverage of Morocco's prehistoric and protohistoric periods than archaeological excavation on its own.

CONCLUSION

Introduction

A survey in the 1980s, commissioned by UNESCO, included Morocco among the countries with an important rock art heritage (Anati, 1984). Despite being widespread and varied, Morocco's rock art - almost entirely represented by engravings - is not well-known and has in the past attracted only limited attention from researchers. Indeed, it is only recently that rock paintings and engravings have been recognised as a valuable source of information about the past. The present research is a contribution to information about Morocco's prehistoric and later populations.

Review of the aims of the research and the results obtained

The overall aim of the research was to examine Morocco's rock art and to place it in a wider archaeological and environmental context. The first step was to provide an up-to-date review of previous research into Moroccan rock art. A study of the published literature showed that discoveries of engravings, generally fortuitous rather than the result of deliberate research, started in the second half of the 19th century and continued spasmodically until the Second World War. From the 1950s, research became more organised, many new sites were found, and specific areas progressively became the focus for systematic investigation.

The study aimed to treat rock art as an integral part of archaeological research and, at the same time, to provide a climatic and ecological background. To this end, a survey of the data on the climatic fluctuations of the Sahara and North Africa, with particular emphasis on Morocco, showed that a humid period, after an extremely arid episode, started around 5000/ 4500 bc. This 'climatic optimum', providing pasturage and water for herds of wild and domestic animals, led to the prosperity and extension of pastoral societies throughout the Sahara and North Africa. A review of the archaeological data revealed that Morocco had been inhabited for about a million years. These early populations are not thought to have been responsible for the rock art, although some researchers have proposed an Upper Palaeolithic age for the first manifestations (for instance, Mori, 1974: 81) (a point of view which is not followed in the present work). The 5th millennium saw the arrival of Neolithic elements in north-west Morocco, where a Neolithic cultural sequence has been established, starting around 4100 bc. North-west Morocco continued to be well documented archaeologically right through the protohistorical periods until the installation of the Romans around the beginning of Christian times. An analysis of the faunal data from excavated sites threw light on the animal species killed, although it was recognised that the remains excavated did not necessarily represent all the animals living in the area. Animal species also helped to establish the environment in which the prehistoric people lived.

The establishment of the environmental, archaeological and faunal background having been achieved, the study turned towards its aim of ascertaining the distribution and contents of the rock art sites. This was achieved by combining a survey of the literature with numerous field visits. The result was an overall view of the distribution of the sites, together with a summary of the images engraved or painted on the sites. Nearly 250 sites were recorded in the official catalogue of Moroccan rock art sites (Simoneau, 1977). In the present work, this figure has been increased to 289 by the addition of new sites and old ones not included in the catalogue.

With regard to the engraved or painted images themselves, the present research aimed to find out whether all the sites contained the same type of material. The overall survey revealed the fact that the rock art sites did not all contain the same type of material and that four main groups of images could be distinguished. In-depth studies of four sites, one in the High Atlas, one in the Anti-Atlas and two in southern Morocco, confirmed the undoubted presence of four different types of image. These four groups differed in technique, subject matter and style. Once these groups had been individualised, sites were classified according to which group was dominant on a site (dominance being taken to be at least 70% of the identifiable material) and their distribution was noted. This approach enabled the initial aim of ascertaining the distribution of rock art site to be refined by a breakdown of the distribution according to the sites' dominant contents. This field of enquiry led to the observation that little mixing took place in the field between the three principal groups, while the fourth type of engraving appeared as a very minority element on numerous sites.

Without some form of chronology, "there is too great a risk of mixing up elements that have no relation to each other" (Muzzolini, 1995b: 64). Proposing a chronology of Moroccan rock art and providing possible dates for the sites was an important aim of this research. As absolute dating of Moroccan rock art was not available, events reasonably dated in the Sahara and north Africa were examined, to see to what extent they helped with the dating of Moroccan engravings or paintings. Elements used included climatic changes, archaeological excavation, the presence or disappearance of wild animal species, animal domestication, the introduction of the domestic horse and the camel, the arrival of metal weapons, chariots and inscriptions. A critical analysis of the data resulted in a proposed chronology for Moroccan rock art. The earliest engravings were thought to have started around 2500 bc in southern Morocco, and to have been the work of nomadic pastoralists still predominately interested in hunting. Wild animals represented the majority of images represented, but domestic cattle were also depicted. More or less contemporary, but perhaps starting slightly later, other pastoralists engraved their herds of cattle, with less emphasis on wild animals, although these were still an important element in the iconography. Bronze Age influences coming from Iberia were responsible for the engravings of

daggers and halberds in the High Atlas mountains in the middle of the 2nd millennium bc. In the 1st millennium bc, an acceleration of events saw the introduction of the two-wheeled chariot, the mounted horse, inscriptions in an old Libyan alphabet and finally the camel in the last centuries preceding Christian times. A few sites showed a curved Arab dagger and inscriptions in Arabic, which date to some time after the arrival of the Arab invaders at the end of the 7th century AD.

Rock art has been considered to be "a medium of communication" for past populations (Davis, 1984: 7). With this in mind, this research aimed to fit the rock art into the local topography and study its potential as a form of signposting. As another of the aims of this work was to investigate the possible symbolic content of the images, two lines of enquiry were conducted simultaneously: the significance of the choice of site in the landscape and the message contained in the engraved or painted images. The localisation of the rock art was studied in detail, and revealed that the choice of site was carefully planned and the site generally clearly visible. In the High Atlas, sites lay close to summer pasturages or mountain passes; elsewhere, low ridges offering good vantage points from which to survey wild and domestic animals, the presence of water in the form of rivers or springs or obligatory passages between mountain chains were favourite locations. While the choice of site was relatively easy for a modern observer to understand, the message conveyed by the engravings was more difficult to interpret. As Firth has pointed out, it is doubtful if we are able today to understand the symbolism of the original artists or craftsmen (Firth, 1973: 15). Combining location with the subjects engraved or painted, it was proposed that the rock art sites defined territories, indicated ownership, showed the proximity of water, commemorated heroes or battles or marked sacred or ceremonial places. Engraved hunting scenes may commemorate real events or be symbolic representations of human supremacy, exaggerated large phalli were felt to be symbols of male virility (or wishful thinking), daggers and halberds, characteristic of the High Atlas but also engraved in a few sites in southern Morocco, were interpreted as symbolic representations of the new power of metal over stone weapons, chariots were felt to be prestige items rather than utility vehicles.

As Moroccan rock art is not an isolated phenomenon in north Africa, a short review of the rock engravings and paintings of Algeria, Libya and Mauritania was also undertaken. The aim of this review was to see which themes were common throughout the region and which were specifically Moroccan. The comparative study showed overall similarities and, at the same time, conspicuous differences. Certain styles of engraving or painting commonplace in Algeria and Libya, for instance, were almost totally lacking in Morocco. On the other hand, the metallurgy and ideology of the Moroccan High Atlas had very little echo in Algeria and none in Libya, where other themes predominated. Despite this, the study showed that the sharing of a certain number of traits denoted an underlying cultural unity.

Finally, an important aim of this research into Moroccan rock art was to insert it into the tissue of Neolithic and later life and to underline that rock art can contribute to archaeological knowledge on the "perishable and non-material phenomena" which excavation cannot reveal (Striedter, 1982: 185). The engravings in fact supplied information on hunting and trapping methods, weapons, clothing, personal ornamentation, accessories and, to a certain degree, beliefs and ideologies. In addition, the metal weapons engraved in considerable numbers in the High Atlas mountains provided proof of a Moroccan Bronze Age, otherwise little evident. In southern Morocco, where excavation is almost entirely lacking, the distribution of rock art sites showed that the area was at one time occupied by active cattle pastoralists. Later, engravings show that chariots were introduced, although no actual chariot nor any of its components have yet been found. Armed horsemen who were hunters and fighters, and possibly metal prospectors at the same time, travelled widely, both in the High Atlas and in southern Morocco, leaving engravings of themselves and their activities. None of this information appears in the archaeological record and would have been unknown without the rock art.

The aims of the research, as laid out in Chapter 1, were directed towards providing a comprehensive study of Moroccan rock art itself and situating it in a wider context. The results obtained lead to the conclusion that these aims may be considered to have been achieved.

The contribution of this research

This research is original in that it provides fresh perspectives on Moroccan rock art and focuses for the first time on the importance of placing rock art in the mainstream of archaeological research. It is the first comprehensive treatment of the subject, which has hitherto been limited to short site descriptions or very general regional syntheses. Many fields of research - climatic, archaeological and faunal - have been brought together to help see rock art as a vital component of current knowledge on prehistoric life. The recognition of different groups of engravings and the plotting of their spatial differences is an important advance towards an understanding of the territorial occupation of Morocco in prehistoric and protohistoric times. A logical, best-fit, chronology has been proposed and population movements - nomadic, transhumant or invasive - have been envisaged for the first time.

Concluding remarks

Despite certain handicaps, mentioned throughout the text, the broad lines of the evolution of Moroccan rock art are considered to have been established in the present, innovative study. It is nevertheless hoped that the work will provide a basis for further research. In particular, excavation directly linked to the rock art of southern Morocco should provide a firmer base for the

chronological suggestions presented here. In the course of research, it was noted that a number of sites were only briefly recorded, making an analysis of their contents impossible. Further work on the production of complete reports on sites, before they are destroyed, is also an essential task for the future.

APPENDIX 1. ZONAL DIVISION OF MOROCCO

These divisions, designed to facilitate the analysis of the rock art, are based mainly on geographical considerations. Rivers and mountains provide suitable dividing lines. It is underlined that these zones represent convenient study areas rather than distinctive and impermeable sectors (figure A1). Figures quoted come from *La Grande Encyclopédie du Maroc: Géographie Physique* (1987), unless otherwise stated.

North and centre - Zone 1

This zone extends from the Mediterranean coast in the north to the High Atlas foothills just south of Marrakech. The western limit is the Atlantic Ocean, the eastern the R Moulouya. The zone comprises the Rif mountains in the north (altitude 2,548 m), the extensive coastal and inland plains, the Central Plateau (reaching 1,600 m in altitude) and the Middle Atlas mountains (250 km long, 3,340 m altitude in the north-east).

The climate obviously varies over this vast area (153,850 sq km). The average annual temperature in the northern coastal area is around 18.8°C. The annual rainfall over the three years 1993-94 to 1995-96 was extremely erratic here, as in the rest of Morocco, ranging from a minimum 210 mm in 1994-95 to a maximum 1,329 mm in 1995-96 (Banque Marocaine du Commerce Extérieur, 1997, 6). Along the Atlantic coast, the average temperature is 19.7°C and the annual rainfall for the 3-year period ranged from a minimum 148 mm (1994-95) to a maximum 1,282 mm (1995-96) (Banque Marocaine du Commerce Extérieur, 1997, 6). Inland areas register an average temperature of 17.7°C, and the annual rainfall for the 3-year period varied from 148 to 731 mm, with the Middle Atlas showing figures of 483-1,602 mm (Banque Marocaine du Commerce Extérieur, 1997, 6).

Good climatic and soil conditions have caused a large part of this zone to be intensively cultivated, much of it since the Neolithic. The natural vegetation - cork oaks and Mediterranean-type scrub - is consequently rare except in the mountain areas, steep valleys and where the soil coverage is too thin to support crops. At higher altitudes the evergreen oak, thuya, pine and cedar survive in spite of human activity. The high inland plateaux provide natural pasturage for cattle, sheep and goats.

Under the Roman occupation, around the beginning of the Christian era, the central area was renowned for its olive groves and olive oil. Wild animals were hunted in the uncultivated areas. Progressively, after the principal arrival of Arab tribes in the 12th and 13th centuries, stock breeding took over from agriculture, except in the plains of the Atlantic coast. In the 20th

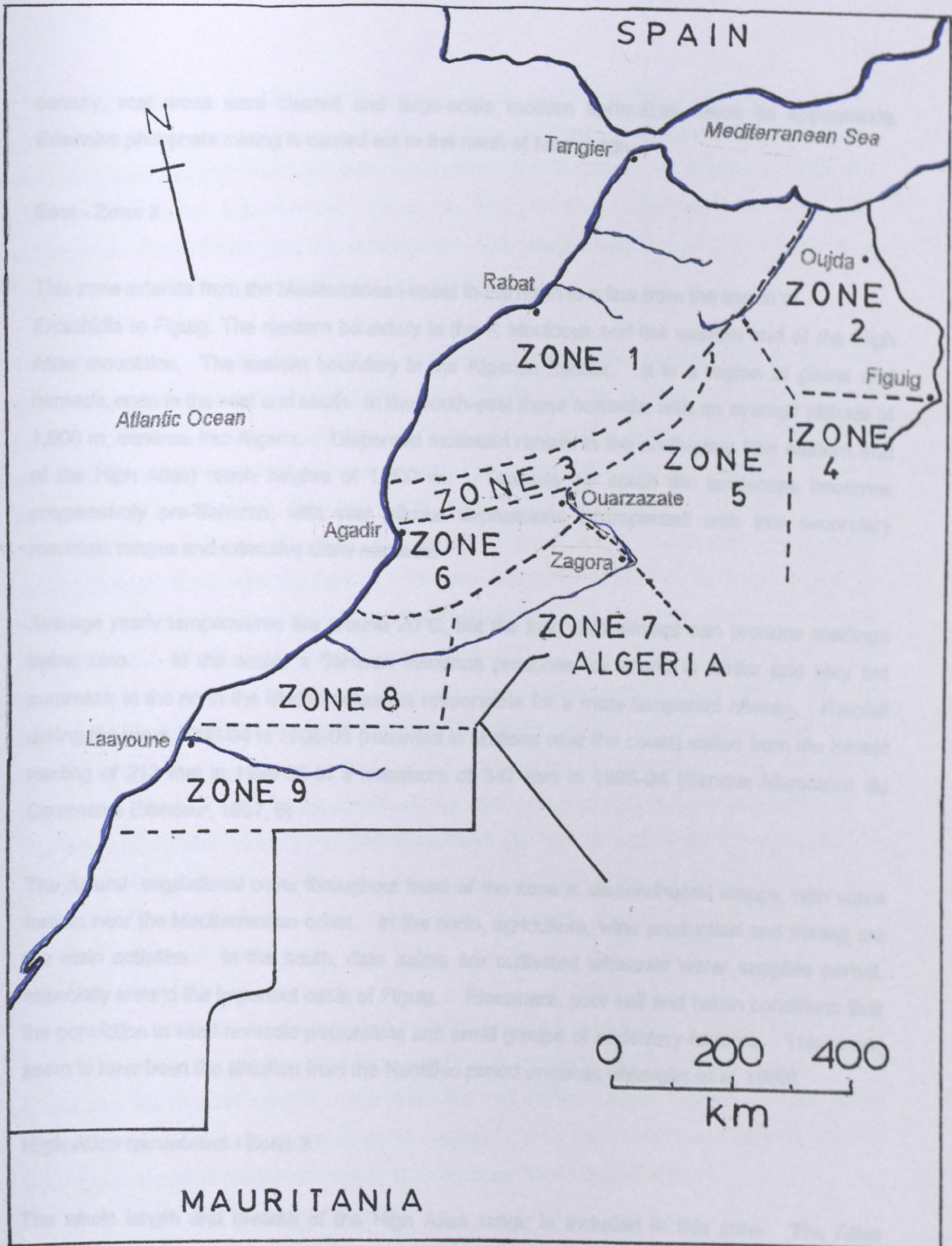


Figure A1. Morocco divided into the nine zones used in this study

- | | | | |
|---------------------------|-------------------------|---------------------|-----------------------------|
| Zone 1 - North and Centre | Zone 2 - East | Zone 3 - High Atlas | Zone 4 - Extreme south-east |
| Zone 5 - South-east | Zone 6 - Anti-Atlas | Zone 7 - South | Zone 8 - South-west |
| | Zone 9 - Western Sahara | | |

century, vast areas were cleared and large-scale modern agriculture made its appearance. Extensive phosphate mining is carried out to the north of Marrakech.

East - Zone 2

This zone extends from the Mediterranean coast in the north to a line from the towns of Errachidia to Figuig. The western boundary is the R Moulouya and the eastern end of the High Atlas mountains. The eastern boundary is the Algerian frontier. It is a region of plains and *hamada*, open to the east and south. In the south-east these *hamada*, with an average altitude of 1,000 m, continue into Algeria. Dispersed mountain ranges in the north-west (the eastern end of the High Atlas) reach heights of 1,600 m. Towards the south the landscape becomes progressively pre-Saharan, with vast alluvial depressions interspersed with low secondary mountain ranges and extensive stony *hamada*.

Average yearly temperatures are around 20°C, but the long cold winters can produce readings below zero. In the south, a Saharan influence produces icy winds in winter and very hot summers; in the north the Mediterranean is responsible for a more temperate climate. Rainfall during the years 1993-94 to 1995-96 (recorded in stations near the coast) varied from the lowest reading of 213 mm in 1995-96 to a maximum of 347 mm in 1993-94 (Banque Marocaine du Commerce Extérieur, 1997, 6)

The natural vegetational cover throughout most of the zone is discontinuous steppe, with some forests near the Mediterranean coast. In the north, agriculture, wine production and mining are the main activities. In the south, date palms are cultivated wherever water supplies permit, especially around the important oasis of Figuig. Elsewhere, poor soil and harsh conditions limit the population to semi-nomadic pastoralists and small groups of sedentary farmers. This would seem to have been the situation from the Neolithic period onwards (Wengler *et al*, 1989).

High Atlas mountains - Zone 3

The whole length and breadth of the High Atlas range is included in this zone. The Atlas mountains stretch on a SW/NE axis over some 700 km. Ten summits reach 4,000 m in altitude, and more than 400 exceed 3,000 m. The highest of the three passes used by modern traffic lies at 2,200 m. Secondary passes suitable for mules are still used by the local people when weather conditions allow; some can also be used by 4-wheel drive vehicles. Interior plateaux, deep valleys and powerful limestone ridges are characteristic features.

The opposition between the NW, Atlantic-oriented facade, and that of the south and south-east, marked by Saharan influences, has produced considerable climatic and vegetational differences. High, cold, snow-covered mountains contrast with the temperate valleys, hot in summer. Day and night temperatures are often extreme. Winds can bring more than 900 mm of rain to the NW slopes, while those of the south only receive some 130 mm (Banque Marocaine du Commerce Extérieur, 1997, 6). Aridity also increases from west to east.

The NW facade is wooded with evergreen oaks, Aleppo pines, some scarce junipers and even cedars towards the east. At high altitudes, these forests give way to an alpine stage of thorny plants and prairies. South-facing flanks are sparsely wooded, mainly with junipers and thuyas, and carry a steppic vegetation. Farmers practise an intensive irrigated-terrace cultivation on a small scale at low altitudes in the western and central part of the range. In summer they lead their herds of cows, sheep and goats to the rich mountain pasturages, where they spend several months in rough stone-built huts (*azibs*). The excellent grazing here has for long tempted not only the local tribes but also those of southern Morocco. From the 11th century, populations originating south of the Atlas are known to have crossed the Atlas and to have installed themselves in the plains to the north. Other groups of southern origin have settled in the High Atlas valleys. Migratory movements of flocks and herds have always been an essential element in High Atlas life. In the eastern end of the chain, where irregular rainfall and poor soil require flocks and even families to be constantly on the move, stock breeding is the principal activity. The life-style of these nomads and semi-nomads of the eastern High Atlas contrasts with the sedentary smallholders of the west.

Extreme south-east - Zone 4

This zone lies south of Zone 2 and extends southwards from the line Errachidia-Figuig as far as the undefined Algerian frontier. To the west its limit is the R Rheris (just west of the R Ziz) and to the east the Algerian frontier. The rivers Ziz and Rheris irrigate numerous oases before disappearing into the sandy wastes to the south-east. To the south, flat barren *hamada* continue into Algeria, sometimes stone-covered (*reg*), sometimes dune-covered (*erg*).

Extreme heat and aridity are the fundamental features of the climate. Temperatures can be below 0°C at night and over 50°C during the day. Rainfall is sparse, particularly in the south. The figure of 130 mm was recorded for the province as a whole in 1994-95, with a rise to 201 mm in 1995-96 (Banque Marocaine du Commerce Extérieur, 1997, 6). When rain does fall it is in the form of short, violent storms that turn normally dry river-beds into violent torrents.

Date palms are cultivated in the numerous oases benefitting from underground water. Strips of irrigated crops border the upper reaches of the R Ziz. Small herds of goats and camels make up the livestock, nomadising according to available food supplies. Stony plateaux and accumulations of sand-dunes create a naked landscape broken only by occasional acacias and ephemeral flowers and shrubs which come to life after the rare rains.

South-east - Zone 5

This zone comprises the area from the southern foothills of the High Atlas in the north - in part corresponding to the west-flowing R Dades - to the undefined frontier with Algeria in the south. Its western limit is the left bank of the south-flowing R Draa, its eastern is the R Rheris.

The landscape is varied. To the north, the R Dades flows along the depression separating the High Atlas from the Sarhro and Ougnaté massifs. These two mountain ranges, respectively 2,712 m and 1,720 m high, are in fact the tail end of the Anti-Atlas mountains (Zone 6), separated from the main chain by the south-east-flowing R Draa, now united with the R Dades south of the town of Ouarzazate. The Sarhro and Ougnaté, dissected by deep valleys, progressively give way to a dry, sub-Saharan *hamada* (figure A2a).

Temperature variation produces extremes of heat and cold. In the Jbel Sarhro snow can fall in winter, while in the south the town of Zagora registers average low temperatures, in December and January, of 4°C and average high temperatures, in July and August, of over 42°C. Rainfall in the Sarhro massif is under 100 mm a year; in the R Draa valley it falls to 74 mm.

The natural vegetation is sparse everywhere. Junipers and Aleppo pines survive in the Sarhro. Intensive irrigated cultivation is practised in the river valleys and particularly on both sides of the R Draa. Date palm oases are a familiar feature in the Draa valley and wherever ground-water permits. The mountains and *hamada* are frequented by nomadic herdsmen, driving sheep, goats and camels from pasturage to pasturage. Sedentary smallholders work the oases and irrigated plots. For centuries these representatives of two different ways of life have been on conflicting terms, but increasingly many of the nomads have taken to living in the oases, entrusting their herds and flocks to shepherds. Others have evolved towards a semi-nomadic existence, passing part of the year in the oases.

Anti-Atlas mountains - Zone 6

Starting at the Atlantic Ocean, the whole length of the chain (400 km) is included in this zone, with the exception of the eastern end, separated from the main mass by the R Draa and included

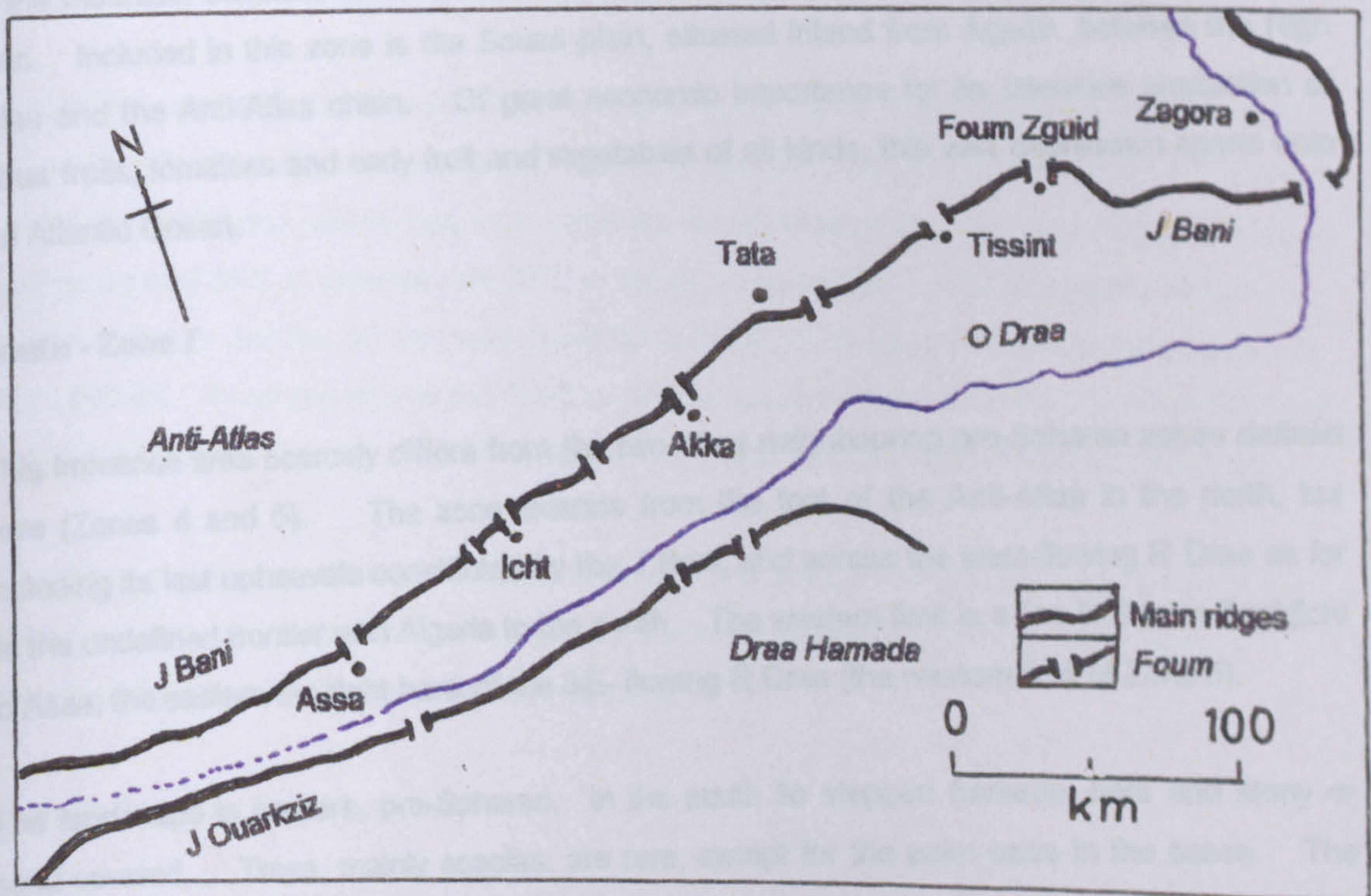
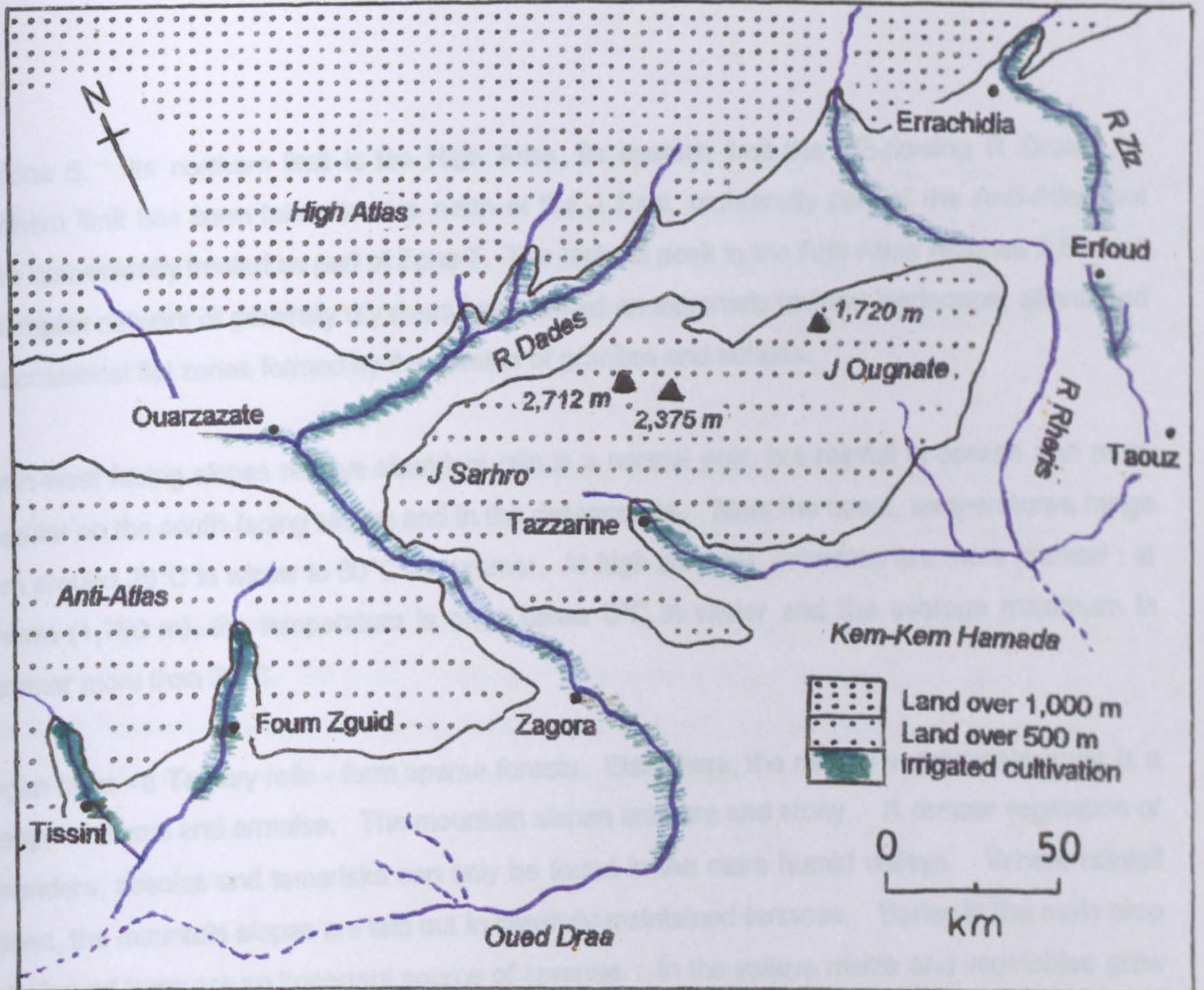


Figure A2. a) Relief, main rivers and irrigated cultivation, Zones 4, 5 and part of 7
 b) Main ridges and foun, Zones 5, 7 and 8 (from Martin *et al.*, 1970)

in Zone 5. Its northern limit is the High Atlas, its eastern limit the SE-flowing R Draa. Its southern limit has been taken to stop north of the J Bani, technically part of the Anti-Atlas but more conveniently treated as part of Zone 7. The highest peak in the Anti-Atlas reaches 2,531 m. A complex network of generally dry rivers has created an extremely ravined landscape, attenuated by occasional flat zones formed by the erosion of granites and schists.

North-west facing slopes receive abundant rain in a normal year, but rainfall is sparse and more irregular on the south-facing slopes and in the depressions. Near the coast, temperatures range from around 20°C in winter to 30°C in summer. At high altitudes, extremes are more marked : at Igherm (1,750 m), the temperature is often below 0°C in winter and the average maximum in summer more than 30°C.

Argan trees - a Tertiary relic - form sparse forests. Elsewhere, the natural vegetational cover is a steppe of thyme and *armoise*. The mountain slopes are bare and stony. A denser vegetation of oleanders, acacias and tamarisks can only be found in the more humid valleys. Where rainfall allows, the mountain slopes are laid out in carefully maintained terraces. Barley is the main crop but almond trees are an important source of revenue. In the valleys maize and vegetables grow in the shade of a variety of fruit trees. Sheep and goats graze around the villages or are taken up to the mountain summits in summer. Mining (including copper) employs a certain number of men. Included in this zone is the Souss plain, situated inland from Agadir, between the High Atlas and the Anti-Atlas chain. Of great economic importance for its intensive production of citrus fruits, tomatoes and early fruit and vegetables of all kinds, this vast depression opens onto the Atlantic Ocean.

South - Zone 7

This immense area scarcely differs from the two other neighbouring pre-Saharan zones defined here (Zones 4 and 5). The zone extends from the foot of the Anti-Atlas in the north, but including its last upheavals constituted by the J Bani, and across the west-flowing R Draa as far as the undefined frontier with Algeria to the south. The western limit is a line N/S from Taghlicht to Assa, the eastern the right bank of the SE-flowing R Draa (the western limit of Zone 5).

The landscape is austere, pre-Saharan. In the south lie stepped *hamada*, bare and stony or sand-covered. Trees, mainly acacias, are rare, except for the palm trees in the oases. The most striking feature of this landscape is the J Bani (1,630 m at its highest point), running from west to east for over 500 km north of the R Draa (geologically forming the last outpost of the Anti-Atlas, its pre-Saharan character predisposes its inclusion in this zone). The quartzite and sandstone crests of the Bani dominate the narrow plains (*fejja*), lying to north and south. They

are cut by numerous rivers taking their source in the Anti-Atlas. These rivers have formed gorges (*foum*) through which they pass to spread their alluvia in the plains to the south (figure A2b). Today, these watercourses are dry, except when exceptionally heavy rains fall, which can then cause severe flooding. After Zagora, the R Draa itself flows only intermittently in years of heavy rainfall, before reaching the Atlantic.

Extreme aridity and temperature variations characterise the area. Daytime temperatures in summer can reach over 40°C and at night in winter can drop to 0°C. Rainfall is sparse.

A sedentary population cultivates extensively the oases which flourish around the *foums*. Cereals and dates are the main products. Oases exist along the R Draa and in periods of exceptional rainfall, temporary, humid depressions are cultivated by nomads or the inhabitants of distant settlements. Camels and goats make up the livestock.

South-west - Zone 8

This zone extends south from the foot of the Anti-Atlas, to the northern limit of Zone 9 - the old frontier with the ex-Spanish Sahara - in the south. To the east it shares a common boundary with Zone 8, of which it is an extension, with the Atlantic Ocean as its western limit.

The landscape is still stark, pre-Saharan, bare and stony. Sand dunes and *sebkha*, depressions in the *hamada* which form temporary salt lakes, are features near the Atlantic coast. The coast is relatively humid and suffers less from extremes of temperature than inland areas: temperatures average around 30°C in summer and 20°C in winter. Everywhere rainfall is sparse. At the coastal station of Sidi Ifni, 80 mm were recorded in 1994-95, rising to 253 mm in the exceptional year 1995-96. Recorded figures for Tan-Tan, further south and about 30 km inland, were 67 mm for 1993-94 and 187 mm for 1995-96 (Banque Marocaine du Commerce Extérieur, 1997: 6)

The natural vegetation consists of scattered acacias and drought-resisting plants, though some argan trees can still be found in the north. Fishing is the principal activity along the coast. Camels and goats are still raised by semi-nomads.

Western Sahara - Zone 9

The territory that was once the Spanish Sahara was made up two provinces: Saguiet el Hamra and Rio de Oro. Zone 9 in this work is composed only of the former, since this corresponds to the area covered by the official Moroccan inventory of rock engraving sites (Simoneau, 1977).

To the north is the old frontier with Morocco, to the south the Oued Ed Dahab province (ex-Rio de Oro). The western boundary is the Atlantic, the eastern the frontier with Algeria and Mauritania.

The zone consists of a line of coastal dunes, followed inland by a vast *hamada*, cut by the Saguiet el Hamra. This river, some 400 km long and draining numerous affluents, has its source in the Zemmour massif to the east (518 m). Except in exceptionally wet years, it finally disappears in the sand dunes around the provincial capital of Laayoune, 30 km from the coast.

The climate is dry, tempered by cold, damp westerly winds on the coast. Average annual coastal temperatures are around 30°C in summer (rising occasionally to 50°C), and 20° in winter. Inland temperatures range from 0°C (winter nights) to over 50°C (summer daytime). Rainfall recorded at the Laayoune station was 26 mm in 1994-95 and 174 mm in 1995-96 (Banque Marocaine du Commerce Extérieur, 1997: 6). The natural vegetation is limited to rare acacias, jujubiers and gum-trees, together with drought-resisting bushes and flowers.

Sea-fishing plays an important role in the economy. Small plots of cereals (mainly barley) and leguminous plants are cultivated in the valleys of the Zemmour massif, along the watercourses and, after rain, in the *sebkha*. Date palms grow around Laayoune and Smara. Camels and goats constitute the main livestock. Important phosphate deposits are mined at Bou Kra.

APPENDIX 2. TERMINOLOGY USED IN THE PRESENT WORK

General

Rock art researchers use a number of terms and definitions to which they attach their own meanings. The sense given to various words is indicated below.

Association. The presence of two or more images close together on a rock surface does not of course justify the automatic assumption of an 'association'. It is considered here that images are deliberately 'associated' if they are very close to one another (a few centimetres); their linking logically possible (for the modern observer); they do not overlie one another; their patination is identical; and they are "sufficiently isolated from other representations to be recognisable as groups" (Ucko and Rosenfeld, 1967: 198).

Figuration/representation. A number of rock art researchers use the word 'representation' for an image that is fairly close to the real object, reserving the word 'figuration' for an image less close to the original. In the present work these two words are used indifferently to describe an image of something.

Realism, naturalism, schematisation. Paintings and engravings are referred to here as 'realistic' or 'naturalistic' if the object or animal depicted is represented in some detail over and above what is needed for its immediate recognition. A representation of an anthropomorph, for instance, is treated as 'realistic' if anatomical details such as eyes, nose, mouth, ears, fingers and so on are included, even if the overall result is about as 'realistic' as an attempt by a 5-year old. The same criterion has been adopted for animals and objects which show anatomical or technological details. The words 'realistic' or 'naturalistic' apply thus to an image that goes beyond the mere outline sufficient for identification.

According to Bahn, 'schematisation' "involves reducing a figure to its essential traits and leaving out the rest" (Bahn and Vertut, 1988: 117). The word is used in this way here. Schematic engravings can range from the highly simplified 'stick-figures' (see below) to images which only lack only a number of details to become 'realistic'. It is evident that a considerable degree of subjectivity comes into the use of these terms. For instance, the Tazina style engravings (see below) have been described as 'naturalistic' by Lhote (1970b: 172) and 'schematic' by Muzzolini (1988b: 179), both authors being specialists in Saharan rock art. No Moroccan engravings come up to the naturalism of the finest Algerian engravings of the 'Naturalistic Bubaline' group, but within the context of Moroccan rock art, slightly lower standards have been accepted here, and these Tazina engravings are described as 'semi-naturalistic', that is, halfway between 'naturalistic' and 'schematic'.

Stick-figure. The term is employed here to describe those images made up of single lines, the object represented having no 'body'. Many anthropomorphs, generally engraved full-face, are of this type (figure A3a), as are the highly schematic Libyco-Berber engravings (figure A3b).

Style. "Style: the collective characteristics of the writing or diction or artistic expression or way of presenting things or decorative methods proper to a person or school or period or subject, manner exhibiting these characteristics" (Concise Oxford Dictionary, 1929). The use of style in archaeology and in rock art studies has been widely discussed in the literature. Hodder takes a "colloquial view" that style is "a way of doing" (Hodder, 1990: 44), while Conkey (1990: 3) insists that "the use of style must remain flexible and problematic". Reviewing Conkey and Hastorf's book (1990), Bednarik goes further: "...The reader is left with the impressions that there are as many concepts of what style is, as there are writers"; that the "detection of style in archaeology" is best avoided and that "...it is in the field of rock art studies that the ambiguity of stylistic analyses has been perceived most clearly" (Bednarik, 1991:157).

Bradley also points out that more than one style of art can exist in the same society, playing different roles or used in different contexts (Bradley, 1997: 10). This possibility has been considered in the present work, especially in the light of Bradley's remarks on the apparent simplicity of geometric motifs that may at times have a special character (*idem*: 10).

Nevertheless, bearing in mind these warnings, it is difficult to discuss rock art without introducing the notion of style. Here, the word is used to denote the appearance of an engraving taking into account a collection of elements concerning essentially technique and the presence or absence of idiosyncrasies. The degree of realism or schematisation, being somewhat subjective notions, are included only secondarily when discussing the style of an engraving. In this study, no chronological inferences have been made from style alone.

Technique. This refers to the way in which an engraving was produced. Two basic techniques were used in Morocco: the polished line and the pecked line. An immediate glance at an engraving enables it to be placed in one of these broad categories. Closer examination often reveals greater complexity. The desired shape of an engraving was first drawn on the stone support by a thin incision or light pecking. The polished line technique involved a subsequent to-and-fro rubbing movement along the initial lines to produce a continuous, regular groove, of U- or V-shaped section, with no trace of the original "sketch". These grooves could be broad and deep (1 x 1 cm) or narrow and shallow (0.5-0.6 x 0.3-0.4 cm). In the pecked line technique, a series of sharp blows struck perpendicular to the rock surface along an incised outline resulted in the removal of flakes; the original line was thus covered by a series of small depressions, more or less continuous, broad, deep, shallow or spaced out. Combinations of these two basic methods were used by the prehistoric artists: a pecked line which was subsequently polished sometimes kept the trace of its original pecking. Indeed, many engravings appearing with a polished line

could be seen, on careful examination, to have been first outlined by a complete pecking. The interior surface of an engraving could also be completely or partially polished or pecked. Sometimes the pecking technique resembled more a shallow scratching: a close study showed the blows to have been light and oblique. A third technique, less frequently used, was the simple incision, with no subsequent work on the thin and shallow outline.

The tool used for these operations - stone, bone, wood or metal - produces different results, although it is generally impossible to determine the tool in question. Direct percussion by a stone tool has a rather crude effect. The use of a metal tool such as a hammer, directly on the rock surface, allows a more precise result though the line tends to be broad. Indirect percussion, whatever the nature of the tool in contact with the rock surface to be engraved, allows an even greater control over the work. After experimentation, Lefebvre suggested (1963: 147) that a stone axe polished only at its cutting extremity would be a most suitable tool for engraving. No tool has been found that could be indisputably considered to have been used for an engraving.

Specific to north African and Saharan rock art studies

Bovidian period. This term applies principally to paintings in the Central Sahara depicting scenes of pastoralists and domestic cattle. The group has been divided into three: the Sefar-Ozanérae group (probably negroids) (Early Bovidian), an Abaniora group (a black, non-negroid population comparable to the Fulani) and an Iheren-Tahilahi group (figuring exclusively Europeans), the last two groups representing a Final Bovidian period (Muzzolini, 1995b: 166).

Camel. Refers in fact to a dromedary, but current rock art terminology has preferred it to the more correct, one-hump dromedary.

Capsian traits (figure A3c). Refers to signs made up of a number of short parallel lines, crossed sometimes by other more or less perpendicular lines, to make up a lattice pattern. They are thought to be linked to the Neolithic-of-Capsian-Tradition.

"Flying gallop" horse-and-chariot. These painted images, known in the Tassili n'Aljer (Algeria) and Acacus (Libya) depict a chariot drawn by two horses with outstretched front and hind legs.

Hache-pelte (French term kept in view of wide use) (figure A3d). A sub-rectangular or crescent-shaped blade, certainly metallic, mounted centrally on a shaft which is generally bent at an angle.

Halberd (figure A3e). The definition of this weapon by O'Riordain (1936: 240) is perfectly applicable to Moroccan examples: the halberd "is a pointed metal blade affixed at or near the end of a shaft and transversely to it".

Idols. When referring to engravings, the term used here concerns only two types of image, both found in the High Atlas. One approximates to the Cycladic "fiddle-idols"; the other consists of an ovoid with a 'tail', 'head' and 'antennae'.

Libyan Warrior engravings. This is a stage (or school) of engravings known principally in the Adrar des Iforas (Mali) but also present in the Hoggar (Algeria) and Air (Niger). They show warriors, engraved in a schematic, geometric style, almost always seen face on, with round heads, headresses of various kinds, often on foot beside a horse and armed with a round shield and lance/javelin (Muzzolini, 1995b: 113-117) (see figure 47e).

Libyco-Berber. This term refers rather loosely to proto-historical populations inhabiting NW Africa who were called 'Libyans' in ancient texts and judged to be Berber-speaking. The term is also used to refer to a style of engraving thought to have been done by these populations (figure A3b).

Libyco-Berber inscriptions (figure A3f). This term is used to denote alphabets known in North Africa since pre-Roman antiquity. It includes *tifinars*, the characters of the Touareg alphabet, still used today. 'Eastern', 'Western' and 'Saharan' versions have been noted (Aghall-Zakara, 1997: 3). The older inscriptions have not been deciphered. These inscriptions can be read from left to right, from right to left, from top to bottom or from bottom to top.

Naturalistic Bubaline. Large engravings in naturalistic style, or Naturalistic Bubaline stage, are considered to represent the oldest rock art in the Algerian Atlas (Lhote, 1970b: 170). The "type animal" of this Naturalistic Bubaline stage was the ancient buffalo (*Bubalus antiquus* = *Homoiceras antiquus*), but elephants were also an important theme. The Bubaline period was divided by Lhote into three successive styles/stages (see Chapter 13 for discussion).

Orant (French term kept in view of wide use: "person praying"). A term applied to figures with arms upraised and, sometimes, bent knees, in an "imploring" position (figure A3a). The subject has been well covered by Le Quellec (1993: 299), who points out that the religious connotation of the term requires it to be used with prudence. Every anthropomorph with upraised arms is not necessarily "praying" - the position may indicate "sexual paroxysm", terror, dance, or protection of a smaller personage. The religious interpretation of all such figures out of any specific context, and those wielding a weapon (that has not been added later) is doubtful.

"Round Head" period. This expression refers to a group of paintings in the Tassili n'Ajjer (Algeria) discovered by Henri Lhote in 1956. It is characterised by the shape of the heads of the numerous humans depicted, which is round, without internal features (Lhote, 1989: 922-925). The group is considered to be the oldest rock art manifestation in northern Africa and the work of a negroid population

Tazina (figure A3g). The term was invented by Lhote to describe the rather particular "small engravings in a naturalistic style, or small-scale bubaline stage" that he had come across in the Algerian site of Tazina (Lhote, 1970b: 172). The engravings used a polished line technique, were "naturalistic" but in certain cases "very conventional", with the animals' legs, tails, horns and muzzles excessively prolonged. In this description, Lhote was taking up and formalising an observation already made by Frobenius (1937) and, before him, by Flamand (1921). The first appreciation of this kind of engraving and consequent adoption of the name of the Algerian type-site is due solely to the hazards of research: nothing indicates that the locality of Tazina, or even Algeria, is the origin of this type of engraving.

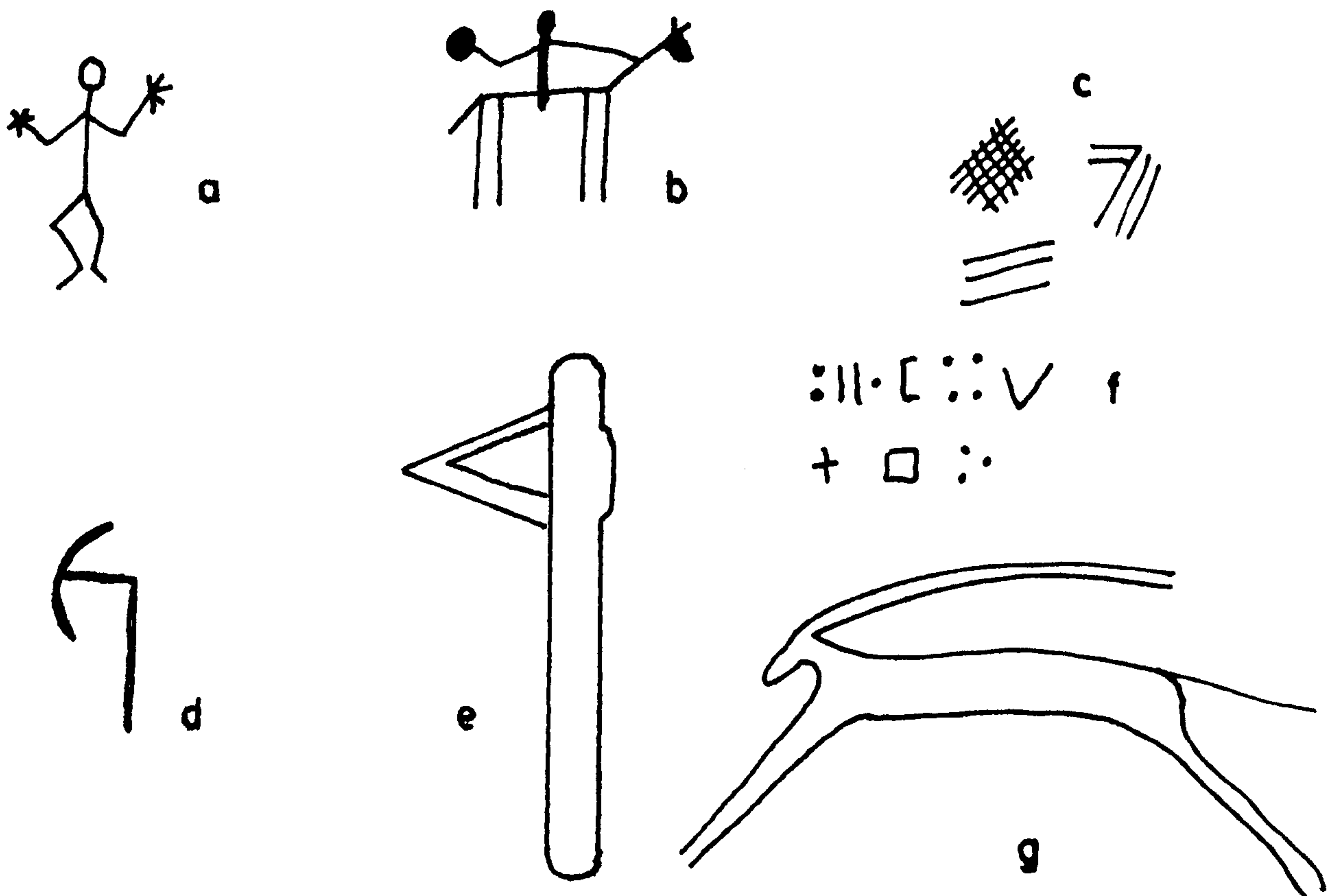


Figure A3. Illustrations of terms used with reference to rock art
(not to scale)

- | | | | | | |
|---|--------------------|---|------------------------|---|----------------------------|
| a | Stick-figure | b | Libyco-Berber horseman | c | Capsian traits |
| d | <i>Hache-pelle</i> | e | Halberd | f | Libyco-Berber inscriptions |
| | | | | g | Tazina style |

APPENDIX 3. ARID AND HUMID CYCLES IN THE SAHARA AND NORTHERN AFRICA

This appendix expands the proposals put forward by several researchers concerning the cycle of arid/humid periods in the Sahara and North Africa, summarised in Chapter 3. Three recent schemes are shown below.

The following dates for the Sahara (all bc) have been proposed by Muzzolini (for instance 1995b: 25,26). He insists that this outline only reflects general tendencies and that regional divergences are important.

c 12000-10000	End of a very long and severe Hyperarid Post-Aterian period
c 10000-5500±500	'Major Humid' period. Relatively very wet, especially towards the end, about 7000-6000
c 5500-4500±500	'Mid-Holocene Arid', badly defined, probably short, made of several oscillations difficult to discern
c 4500-2500±500	'Neolithic Humid'. Less rain than during the 'Major Humid' and temperatures higher. Peak of pastoral Saharan societies. The Sahara remains essentially an arid zone with a sub-desert steppe landscape. Trees at high altitude and perhaps strips of grass steppe enabled an extensive human population to survive
c 2500-1000±500	'Post-Neolithic Arid'. Progressive, not brutal. Human populations of the Sahara become rarer, or almost disappear. Effects less dramatic in the Saharan Atlas
c 1000±500	'Third Humid'. Return of some rain, but much less than during the previous Humid. Tropical fauna almost gone but springs and lakes continue to provide water. Animal grazing possible, but pasture-lands poor. Sheep and goats begin to replace cattle
During 1st millennium bc	Installation of today's arid conditions. The climatic deterioration increases, wells have to be dug, settlements are concentrated in the oases

The scheme put forward by Vernet for the Sahara and north Africa (1995: 148,149) takes into greater account regional differences (though still on a large scale, in view of the size of the area covered) (all dates bc):

13000-12500	(Pre-Holocene) Beginning of a certain humidity, almost everywhere except perhaps in the Egyptian Sahara. But still modest, particularly in the Moroccan and Algerian Sahara
c 8700	Arid episode, corresponding to European Younger Dryas
8000 (Early Holocene)	Very humid, but not homogeneously: Maghreb and southern Sahara humid, Egyptian and northern Sahara scarcely affected
c 6500	First maximum humid, with several arid pulsations
c 5500-5000	Very arid in the whole of northern Africa, including the Sahara and the Maghreb; mountainous regions continued to receive rains
c 5000 (Middle Holocene)	Humid, but variably so. Globally less humid than in Early Holocene
4000-3000	Most favourable period in Egyptian and northern Sahara. Several arid phases intervene but no trace of long mid-Holocene arid, as has been affirmed. Peak of human occupation
3000-2000	Definite return of arid conditions, in northern half of desert
2000-1000	Previous arid period followed by very favorable period in southern Sahara, although variable according to region

1st millennium bc	Humid remissions, sometimes strong (cattle raising still possible in northern Mauritania). But strong regional differences. Growing importance of local topological and morphological conditions
Beginning AD	Short remissions sometimes allowing human populations to re-occupy positions lost at end of Neolithic, especially c 1000 AD

A slightly different scheme of climatic change was presented by the Musée de l'Homme in its 1996 exhibition on the prehistory of the west of Africa (including the Sahara) (all dates bc):

10000-5500	Wet, interrupted by drier episodes. This wet period is scarcely noticeable in the northern and Egyptian Sahara, but is very important in the central and southern Sahara
5500-5000	Arid throughout the Sahara
5000-2000	Humid everywhere, but progressive reduction in rainfall
5000-3000	A climatic optimum helps the development of pastoralism. Some dry periods, one well indicated in 4500
2500	Humid period in south Sahara only
2000	Arid throughout the Sahara, becoming permanent in the north but less noticeable in the mountains (Air and Atlas)
1500-1000	Humid phase in the south. Southern Sahara enjoyed a Sahelian type environment
1000	Climatic degradation in the southern Sahara and in the Sahel
From 0	The southern Sahara has now become definitely arid in spite of a few humid episodes during the 1st millennium AD which did not succeed in stopping the installation of the desert

APPENDIX 4. LATIN AND ENGLISH NAMES FOR THE FLORA QUOTED

<u>Latin name</u>	<u>English name</u>
<i>Acacia radiana</i>	White-spined acacia
<i>Artemisia</i> , fam. <i>Compositae</i>	[Armoise (Fr)]
<i>Cedrus atlantica</i>	Cedar
<i>Chenopodiaceae</i>	
<i>Compositae</i>	Daisy family
<i>Cruciferae</i>	Crucifer family
<i>Cupressaceae</i>	Cypress family
<i>Cyprenaceae</i>	
<i>Ephedra</i>	Ephedra
<i>Ficus carica</i>	Fig
<i>Filicineae</i>	Ferns
<i>Fraxinus sp</i>	Ash
<i>Genista</i>	Broom
<i>Gramineae</i>	Grass family
<i>Juniperus</i>	Juniper
<i>J thurifera</i>	
<i>J oxycedrus</i>	
<i>Olea europea</i>	Olive
<i>Olea oleaster</i>	A sub-species of olive, probably the wild form, from which the cultivated tree has been derived (Polunin and Huxley, 1972)
<i>Papilionate</i>	Sub-division of pea family
<i>Phillyrea</i>	Phillyrea family
<i>Pinus halepensis</i>	Aleppo pine
<i>P pinaster</i>	Pine
<i>Pistacia atlantica</i>	Atlantic Pistachio
<i>P lentiscus</i>	Mastic tree, lentisc
<i>Quercus sp</i>	Oak sp.
<i>Q canariensis</i>	Canary oak
<i>Q coccifera</i>	Kermes oak
<i>Q faginea</i>	Deciduous oak
<i>Q ilex</i>	Holm oak, evergreen oak
<i>Q pyrenaica</i>	Pyrenean oak
<i>Q rotundifolia</i>	
<i>Q suber</i>	Cork oak
<i>Stipa tenacissima</i>	Esparto grass
<i>Tamarix</i>	Tamarisk
<i>Tetraclinia articulata</i>	
<i>Typha</i>	Typha
<i>Zizyphus</i>	Jujube

APPENDIX 5. PUBLISHED EPIPALAEOLITHIC SITES

Zone 1

- North:** El Krimda - unspecified Epipalaeolithic material (Souville, 1973: 37)
 El Khmiss - Iberomaurusian material (Souville, 1973: 38)
 Asjen) unspecified Epipalaeolithic microliths
 Souk Thrine de Sidi Yamani) from surface (Souville, 1973: 52)
- East:** Kifen bel Ghomari (Ruhlmann, 1945: 83)
 Guercif } show possible advance from Taforalt via Taza to Atlantic (Ruhlmann, 1945: 81)
 Gouttir }
- Rabat:** El Harhoura I (Debenath, 1979/80: 48)
 Dar es Soltane I (Ruhlmann, 1951)
 Dar es Soltane II (Debenath *et al*, 1983/84)
 Grotte des Contrabandiers - 14460±200 bp (Delibrias and Roche, 1976: 22)
- Casablanca:** Grotte Velozzo - first dug in 1956 (Mieg de Boofzheim, 1956) then 1970 (Treinen, 1973/75). Lithic material classified as Epipalaeolithic, dated to c 12000 bc, the 73 pottery sherds mixed in with earlier, disturbed material, not certainly Neolithic (Treinen, 1973/75: 32)
- El Jadida:** Sidi Moussa - unspecified Epipalaeolithic (Souville, 1973: 275)
 El Khenzira - Iberomaurusian (Ruhlmann, 1945: 84)
- Safi:** Ma Izza - Lower, undated level held to be Epipalaeolithic, 2 upper levels said to be Neolithic dated 2420±90 (Berthélémy, 1987: 76)
- Marrakech** - Surface collections of non-Iberomaurusian material in Haouz plain (Rodrigue, 1992b)
- Middle Atlas:** Aguelmane de Sidi Ali - Epipalaeolithic, possibly Iberomaurusian (Ruhlmann, 1945: 89)

- Zone 2:** Grotte des Pigeons - oldest Iberomaurusian site: 21900±400 bp (Debenath *et al*, 1983/84: 34) to 10800±400 bp (Delibrias and Roche, 1976: 14)
 Abri Rhirane - tentatively 6th or 7th millenium bc (Wengler and Wengler, 1979/80: 41)
 Kheneg Kenadsa - lowest level close to Keremian, Algeria, 10000 bp (Camps, 1974: 213)

- Zone 3:** Telouet - shows Iberomaurusian or similar penetration into Atlas (Antoine, 1936: 17-31)

- Zone 8:** Site 19 - surface collection, 6350±120 and 6150±120 bp, no links with any NW African Epipalaeolithic civilisations, perhaps facies of West Saharan Atlantic Epipalaeolithic (Grébénart, 1972: 167)
 Izriten - 10430±180 and 6100±120 bp (Grébénart, 1972: 182)
 Site D - undated Epipalaeolithic, similar to Site 19 (Bayle des Hermens and Vialou, 1979: 447)
 Site E - Epipalaeolithic, possibly close to Neolithic (Bayle des Hermens and Vialou, 1979: 447)
 Site Letan - late Epipalaeolithic, no pottery, close to Neolithic (4400±90 and 3290±70 bp) (Letan, 1967a; Searight, 1998: 116)
 Site M - undefined and undated Epipalaeolithic material including decorated ostrich eggshells (Bayle des Hermens and Vialou, 1979: 449)

- Zone 9:** a few surface finds of Epipalaeolithic material, not specifically Iberomaurusian (Almagro Basch, 1946)

**APPENDIX 6. COMMON AND LATIN NAMES OF THE FAUNA QUOTED,
DISCUSSION ON THE STATUS OF EQUUS,
AND NOTES ON THE ANIMALS AND EXCAVATIONS**

A) Latin and English names of the fauna

The Latin names in square brackets are those given in the excavation reports where they differ from the names used here (Haltenorth and Diller, 1980).

<u>Common name</u>	<u>Latin name</u>
Pig	<i>Sus scrofa</i>
Hippopotamus	<i>Hippopotamus amphibius</i>
Barbary deer	<i>Cervus elaphus barbarus</i> [<i>Cervus elaphus</i>]
Deer, unspecified	<i>Cervus sp.</i>
Giraffe	<i>Giraffa camelopardalis</i>
Eland	<i>Tragelaphus</i> [<i>Taurotragus derbianus Maroc</i>]
Oryx, unspecified	<i>Oryx sp.</i>
Hartebeest	<i>Alcelaphus buselaphus</i> [<i>A. probubalis</i> , <i>A. bubalis</i>]
Gnu	<i>Connochaetes taurinus</i> [<i>C. prognu</i>]
Dorcas gazelle	<i>Gazella dorcas</i>
Edmi gazelle	<i>Gazella gazella</i> [<i>G. cuvieri</i>]
Atlantic gazelle	[<i>Gazella atlantica</i>]
Tingitane gazelle	[<i>Gazella tingitana</i>]
Gazelle, unspecified	<i>Gazella sp.</i>
Barbary sheep	<i>Ammotragus lervia</i>
Bohor Reedbuck	<i>Redunca redunca</i>
Wild ox	<i>Bos primigenius</i>
Domesticated ox	<i>Bos ibericus</i> , <i>Bos taurus</i>
Ox, unspecified	<i>Bos sp.</i>
Giant buffalo	<i>Homoiceras antiquus</i>
Sheep	<i>Ovis aries</i>
Goat	<i>Capra hircus</i>
Dromedary	<i>Camelus dromedarius</i>
Equid, unspecified	<i>Equus sp.</i>
African wild ass	<i>Asinus africanus</i> [<i>Equus asinus</i>]
Wild ass, unspecified	<i>Asinus sp.</i>
Quagga (see note below)	[<i>Equus mauritanucus</i>]
Rhinoceros	<i>Ceratotherium simium</i>
Elephant	<i>Loxodonta africana</i>
Porcupine	<i>Hystrix cristata</i>
Gerbil, unspecified	<i>Gerbillus sp.</i>
Mouse, unspecified	<i>Mus sp.</i>
Vole, unspecified	<i>Arvicola sp.</i>
Rabbit	<i>Oryctolagus cuniculus</i>
Hare	<i>Lepus capensis</i> [<i>Lepus kabylicus</i>]
Seal	<i>Monachus monachus</i> [<i>Monachus albiventer</i>]
Red fox	<i>Vulpes vulpes</i> [<i>Vulpes vulpes atlantica</i>]
Common jackal	<i>Canis aureus</i> [<i>Canis anthus</i>]
Canid, unspecified	<i>Canis sp.</i>
Hunting dog	<i>Lycaon pictus</i>
Wolf	<i>Lupus sp.</i>
Ratel	<i>Mellivora</i> [<i>Mellivora sp.</i>]

Mongoose	<i>Herpestes ichneumon</i>
Striped hyena	<i>Hyaena hyaena</i> [<i>Hyaena striata</i>]
Spotted hyena	<i>Crocuta crocuta</i> [<i>Hyaena crocuta</i>]
Lion	<i>Panthera leo</i>
Leopard	<i>Panthera pardus</i> [<i>Felis pardus</i>]
Caracal	<i>Caracal caracal</i> [<i>Felis caracal</i> , <i>Lynx caracal</i>]
Wild cat	[<i>Felis caligata</i>]
Wild cat, unspecified	<i>Felis sp.</i>
Brown bear	<i>Ursus arctos</i>
Barbary ape	<i>Macaca sylvana</i>
Algerian hedgehog	<i>Erinaceus algirus</i> [<i>Aethechinus algirus</i>]
Ostrich	<i>Struthio camelus</i>
Bustard, unspecified	[<i>Ardeotis sp.</i>]

B) The status of *Equus*

Considerable confusion surrounds the *Equus* family. The subject has been discussed at length by Camps (1984a: 371-381), as follows: none of the prehistoric "horses" of North Africa are the real horse, *Equus caballus*. It would seem that only two species of Equid inhabited North Africa during Neolithic times: *Equus mauritanicus* and *Equus asinus africanus*. The former is a rather distant ancestor of the present quagga; the latter is the wild ass. The real domesticated horse, *Equus caballus*, was introduced into North Africa, probably during the first millennium bc.

C) Notes on excavated Neolithic and protohistorical sites, and data from texts

Zone 1

Tangier area: Mugharet el Khail: five trenches dug. The upper four levels were considered to be of 'historical' age or mixed. The lower layers were excavated in spits ranging from 5-25 cm in thickness, in this summary, 38 spits are used. Mugharet es Saifiya: two trenches dug. The lower three of the five recorded levels are retained here, represented by 17 spits, generally 10 cm thick. Mugharet el 'Aliya: only level 4 in this cave contained Neolithic material but the faunal identifications carried out (Howe, 1967: 184) covered all the first four levels, which explains the discrepancies between this list and that of Gilman (1975: 139). Sheep and pigs were "the only species to occur as more than single individuals in any of the Neolithic levels" of these three caves (Gilman, *idem*: 86): Mugharet el 'Aliya yielded the remains of a minimum of 22 sheep and 18 pigs" (*idem*: 87). Grotte des Idoles: the animal bones were very briefly mentioned (Koehler, 1931). El Khrii: a study of the fauna was planned (Jodin, 1958/59: 310) but not published. The absence of ostrich was noted.

Rabat/Casablanca: Dar es Soltane 1: according to Gilman (1975:115), the pig was not a domesticated sub-species and the rhinoceros bones could possibly be explained as a derived element from a lower, pre-Neolithic level. (The rhinoceros bones found at Kef el Baroud, *qv*, would seem, however, to authenticate a real rhinoceros presence in the area.) Grotte Velozzo: the Epipalaeolithic and undated Neolithic faunal remains were mixed, though the *Equus* was certainly Epipalaeolithic (Treinen, 1973/75:

37). Atlantic coast: Ma Izza: considerable amounts of faunal remains were recovered from the upper layers of the cave: 554 broken long bones and countless bone splinters (Berthélémy, 1987: 79,80). They were identified by Ennouchi at the time of the 1956 excavation (*idem*: 80). Numerous bones and eggshells of ostrich and bustard were recovered (*idem*: 80). (This fauna was quoted by Ballouch (1986: 49) as belonging to the lower Epipalaeolithic level, based on a preliminary report published in 1983 (Accart and Berthélémy) before the definite report in 1987.)

Zone 2

Oujda region (table 6): Rhafas : a total of 2,253 items were recovered, of which 600 were identified (Wengler *et al*, 1989: 524). Wild animal remains were few and very fragmented. There was a complete absence of antelope and gazelle, leading the excavator to feel that probably only certain parts of the carcasses of the game killed in the neighbourhood were brought back to the cave (*idem*: 524). El Heriga : a total of 2,178 items were recovered from level 3c (351 identified), 1,297 from 3b (107 identified), 884 from 3a (100 identified), 148 from level 2 (18 identified) and 149 from level 1 (10 identified) (Wengler *et al*, 1989: 524). Fragments of ostrich eggshells in the lowest Neolithic level (3c) were abundant; domestic animals were mainly sheep and goats, with some cattle. Level 2, not Neolithic from its dates (120 AD and 730 AD), is included here as an additional source of information. Abri Rhirane: carnivores were particularly abundant, a great quantity of material coming from the canid family, showing discontinuous use of the cave. Sheep, goats and cattle were also well represented (Wengler *et al*, 1989: 524, 525). Abri Bou Guennouna: a total of 3,635 items were recovered, of which 1,835 were identified (Wengler *et al*, 1989: 524). Wild animal remains were few and again it was thought that either only choice pieces were brought back or that the domestic animals (sheep, goats and cattle) supplied all the necessary meat intake (*idem*: 525).

Tendrara: Kheneg Kenadsa: both levels (undated) contained abundant fragments of ostrich eggshells: 4.940 kg in the lower, Epipalaeolithic level, 5.625 kg in the upper, Neolithic level, together with ostrich bones, notably femora. Several long bones of a deer species were noted (level not specified) and 16 from a quagga/wild ass (10 in the lower level, six in the upper). Two leopard phalanges were found, one in each layer (Jodin, 1956: 150,151).

Zones 8 and 9

Tarfaya: Site 19: the presence of ostrich in the neighbourhood is deduced from the 3,196 fragments of ostrich eggshells recovered from the site (Grébénart, 1972: 162). Izriten: part of a jawbone with 4 teeth of a hunting dog was revealed during the excavation of this dune containing a burial with Neolithic material on the surface (Petit-Maire *et al*, 1980: 18). The jawbone was in a hearth above the burial and its date is thus uncertain. No other animal bones were found on the site. The absence of ostrich eggshells was noted (Grébénart, 1972:176). Laayoune: Laasailia: remains of Dorcas gazelle, goat and dromedary

might be sub-modern, according to the excavators, but could also be associated with the nearby Neolithic material and burials (c 1150 and 790 bc) (Petit-Maire *et al*, 1980: 35).

D) Data from the last centuries BC and first centuries AD

The elephant tibia and vertebra found during excavations at Essaouira (Atlantic coast, Zone 1), were in a level which seemed to correspond to a period when the Phoenicians had abandoned the site, towards the 4th or 3rd century bc (Jodin, 1957:19). Only Hanno, Herodotus, Pseudo-Scylax, Strabo and Pliny the Elder provided data on the Moroccan fauna of this period. Other authors writing about African countries at around the same time gave no relevant information: Sataspes (460 bc), Aristotle (around 330 bc), Pomponius Mela (43 AD), Dion Cassius (155-240 AD). The African wild ass lived in North Africa until the beginning of historical times, since it figured in Algerian mosaics of the 4th or 5th century (Camps, 1984a: 375). Early texts on Moroccan fauna do not mention it.

Strabo also mentioned animals called 'rhizes' which "resembled bulls but whose way of life, size and fighting strength brings them close to elephants" (Roget, 1924: 24). For Camps (1974: 328), these 'rhizes' were giant buffalos (*Homoiceras antiquus*); for Lhote (1982: 248), they were rhinoceroses, particularly since Strabo situated them in the far south of Morocco, near the coast, in company with giraffes and elephants. Both interpretations are possible - both animals having lived in North Africa - though that of Lhote seems the most plausible.

APPENDIX 7. TIZI nTIFINA ENGRAVINGS

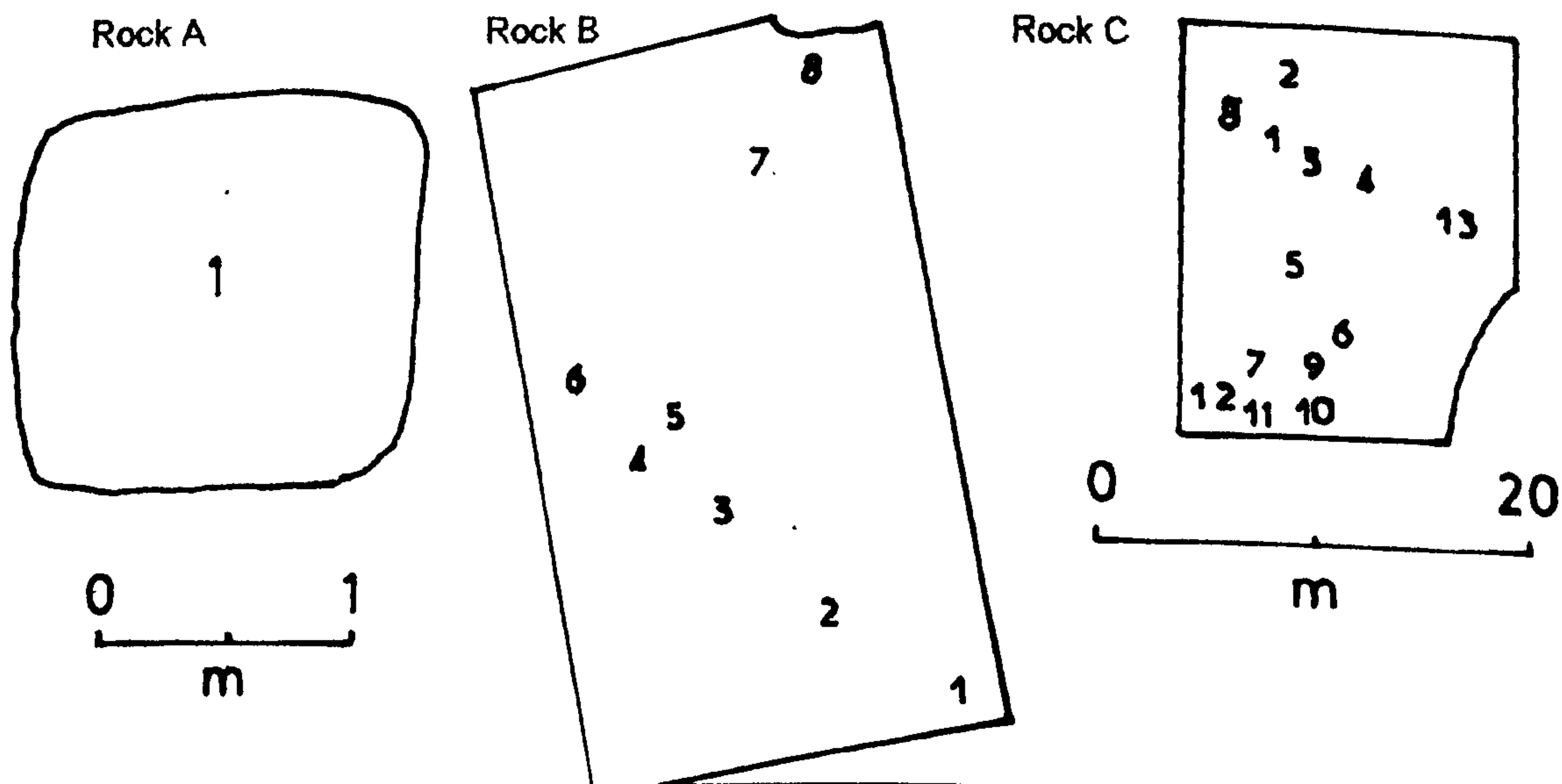
(All measurements in cm; dark patina unless otherwise stated)

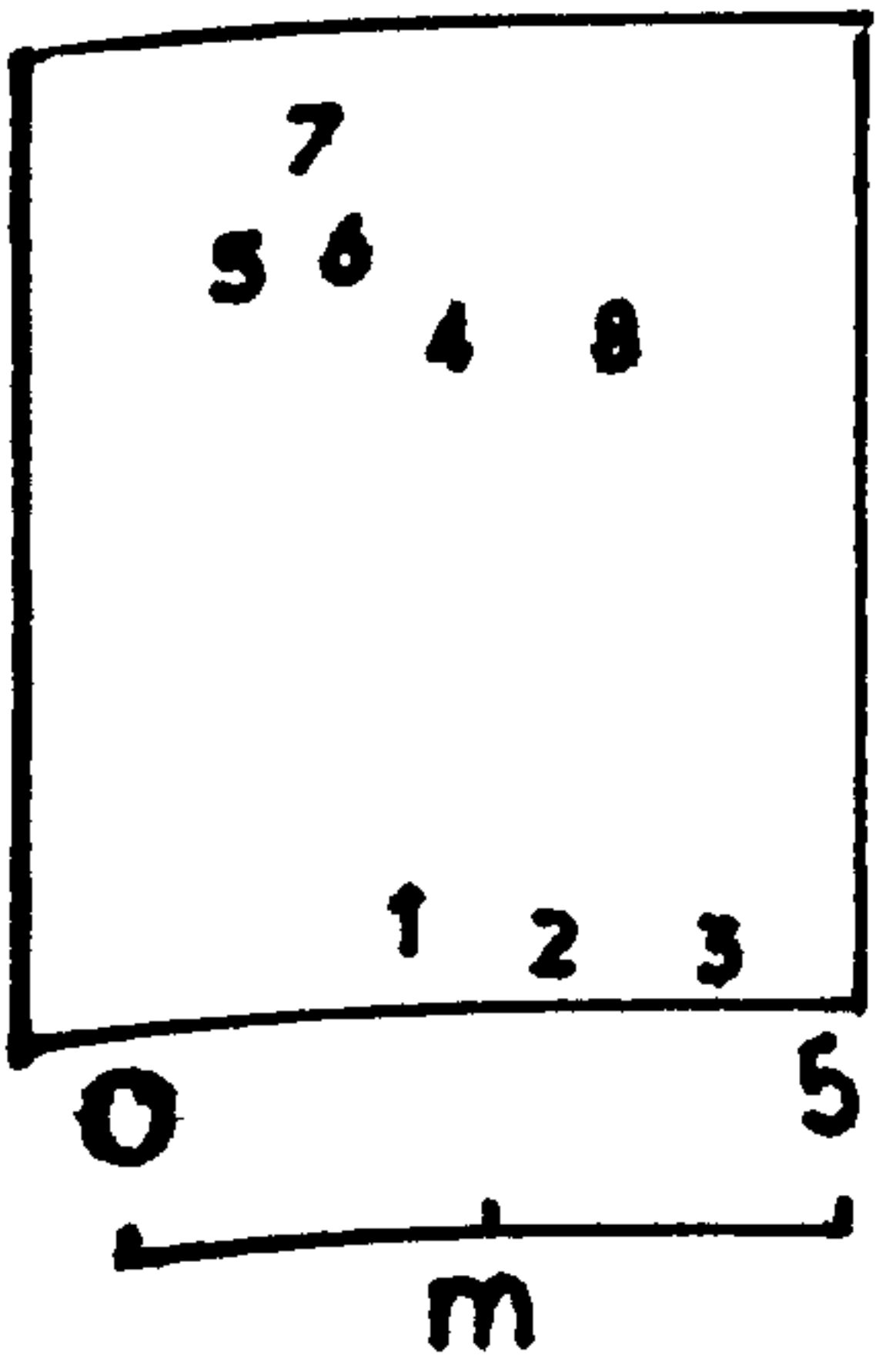
- Rock A:** 1) Dagger, pecked+polished, central rib loosely pecked, 31x10 cm
- Rock B:** 1) 2 hafted points, pecked, blade 32x12, shaft 28; blade 15x12, shaft 12, (M.153.b.1)
- 2) 1 axe, probably stone, with bindings, pecked+partially polished, overall 45x25, (M.153.a.4)
- 3) 1 boomerang, loosely pecked, chord of arc 35 cm, width 8
- 4) 2 daggers, one incomplete, loosely pecked+partially polished, 20x10, 37x13 with central rib
- 5) 1 halberd, pecked+polished, 3 central ribs, bulbous reinforcement at distal end of shaft, knob handle, 55x27 (M.153.a.1)
- 6) 1 anthropomorph, much degraded, pecked+polished, 90x75, 2 eyes, 2 ears, hair, fingers of left hand and 4 fringes on left side of torso visible (M.153.a.1)
- 7) 1 enigmatic (triangular form, with short appendix), pecked+polished, 21x15
- 8) 1 club with short handle, unevenly pecked, 31x30
- Rock C:** 1) 2 felids, unevenly pecked, 62x32 (overall, including tail), 30x20, apparently pregnant, upper half missing (slab broken); 1 boomerang in prolongation of upper felid's tail but not apparently joined, unevenly pecked, 28x4; 1 'oval axe' adjacent to hind legs of lower felid, unevenly pecked, width 15, shaft 15 (M.153.d.1)
- 2) 1 circle, 20x20, with two appendices, 8, pecked (M.153.d.2)
- 3) 1 dagger, blade only, pecked+polished, 30x5; 1 boomerang, pecked+polished, 20x4
- 4) 1 halberd, central rib, distal end of shaft curved, unevenly pecked, 45x30 overall, (M.153.c.5)
- 5) 1 dagger, twisted, broken, loosely pecked, 25x18
- 6) 1 'bag', divided into 4 sections, unevenly pecked, 45x10 (M.153.c.4)
- 7) 1 dagger, rounded pommel, central rib, unevenly pecked, broken tip, 32x10 (M.153.c.3); 1 boomerang, unevenly pecked, 20x4
- 8) 1 socketted axe, unevenly pecked, 35x25 overall (M.153.e.3.)
- 9) 1 stick or halberd shaft, rounded end, broken, pecked+polished, 60x8 (M.153.e.1)
- 10) 1 *hache-pötte*, 3 rivets visible, pecked+polished, maximum length 63 (tip of shaft broken) (M.153.e.2)
- 11) 1 socketted axe, pecked+polished, maximum length 60x7
- 12) 1 socketted axe, end broken, pecked+polished, maximum length 24x10
- Rock D:** 1) 1 fiddle-idol, deliberately damaged recently, pecked+polished, 65x35 (M.153.f)
- 2) 1 fiddle-idol, much damaged, pecked+polished, when recorded by Malhomme measured 130x70 (M.153.f)
- 3) 1 'bag', pecked+polished (polished lines clearly visible), divided into 6 sections, 57x15 (M.153.g)
- 4) 1 dagger, polished, central rib, 30x10 (M.153.h)
- 5) 1 anthropomorph, almost entirely destroyed, pecked+polished (pecking scarcely visible), 1.50x90 (as measured by Malhomme), head with hair and 2 ears still visible, parts of arms and wrists with bracelets, 2 necklaces still visible, feet (perhaps with footgear) noted by Malhomme; closely associated with 1 dagger, pecked+polished, 25x10 (M.153.h.1)
- 6) 1 anthropomorph, almost invisible (already very damaged - "intentionally" - before Malhomme's study), nicknamed "The Victim with the arrows", pecked+polished, from head to last visible part of leg: 90, from left side of body to remains of right wrist: 40, in close association (generally touching) with: 3 socketted axes, pecked+polished, maximum lengths 37, 35, 30 x 4-5 wide; 1 dagger, 4 central ribs, pecked+polished, 25x7; 11 points (all hafted except 1) (Malhomme noted 14), triangular and leaf-shaped, length from 25-10, width 4-5 (M.153.h.2)
- 7) 1 circle (shield?), divided into 6 unequal parts, pecked+polished (pecking scarcely visible), 49x40 (M.155.h.3)
- 8) 1 fiddle-idol, difficult to distinguish ("destroyed by hammering", noted Malhomme), polished lines only visible, 130x70 overall (M.153.f)

- Rock E**
- 1) 1 halberd, pecked+polished, no distinction between blade and shaft but three rivets indicated, shaft 45x5 (proximal end broken), blade 30x10; underlying head of halberd shaft, 1 *hache-pelte*, faint, pecked+polished, "blade" 30x16, shaft 40x5 (M.153.i.1)
 - 2) 1 dagger, unevenly pecked+polished, 4 central ribs, distal end broken, 47x20 (M.153.j.2)
 - 3) 1 fiddle-idol, pecked+polished, 2 eyes indicated, 2 "toes" on left foot (not shown in Malhomme's tracing), 115x75 (overall); 10 cm from head : 1 dagger, pecked+polished, blade entirely pecked, 22x12 (M.153.j.1)
 - 4) 1 fiddle-idol, pecked+polished, 100x55, overlaid by 1 socketted axe, pecked+polished, 70x8 overall (M.153.j.3)
 - 5) 1 dagger, pecked+polished, damaged, 38x12; 1 *hache-pelte*, pecked+polished, 38x32 (overall); 10 cm from axe: 1 dagger, pecked+polished, 2 transverse ribs, 50x10 (M.153.j.4); 1 point, pecked+polished, 29x17, bent shaft 20x12
 - 6) 1 fiddle-idol, pecked+polished, 2 eyes indicated, 2 toes on left foot, 130x75, overlaid by incomplete curved object, pecked+polished, 20x5 (M.153.k)
 - 7) 1 boomerang, pecked+polished, 32x11
- Rock F**
- 1) 1 equid, pecked+polished, eyes, ears, mane and sex indicated, 80x55 (M.153.m)
- Rock G**
- 1) 1 dagger, unevenly pecked, central rib, shaft incomplete, blade 37x20
 - 2) 1 enigmatic: reversed S, loosely pecked, 12x12
 - 3) 1 unidentified quadruped, entirely pecked, 30x25; 1 oval with tail, pecked, 15x8 (M.155.20)
 - 4) 1 *hache-pelte*, 3 rivets, crescent pommel, pecked+polished, "blade" 25x10, shaft 40x5 (M.155.21)
 - 5) 1 bovid, pecked+polished, pecked patch on back, neck area pecked, udder or scrotum lightly pecked, 35x32; 1 dagger, hilt overlapping chest of bovid, pecked+polished, 27x15; 1 dagger, pecked+polished, 33x17 (hilt); 1 oblong 'bag', pecked+polished, 5 sections, upper section entirely pecked, 58x20; 1 dagger, pecked+polished, 25x15; 1 dagger, pecked+polished, 33x15 (M.155.19b)
 - 6) 1 enigmatic (incomplete rectangle), pecked+polished, 40x30; 10 cm away, 1 boomerang, broken, unevenly pecked+polished, 30x5 (M.155.19a)
 - 7) 1 *hache-pelte*, divided into 6 sections, with hooked appendix, pecked+polished, 50x27, shaft 50x5; 1 foot, pecked+polished, 28x15; 1 enigmatic (oval with tail), pecked+polished, 12x18 (M.155.16)
 - 8) 1 circle, pecked, 16x20
 - 9) 1 halberd, blade heavily eroded, pecked+polished, 37x10, shaft 33x5; 1 dagger, heavily eroded, technique ?, 20x7; 1 dagger (blade eroded), pecked+polished, 27x7; 1 dagger (blade eroded), pecked+polished, 35x12; 1 dagger, pecked+polished, 27x8, 1 *hache-pelte*, pecked+polished, "blade" 38x15, shaft 20x5 (M.155.18)
 - 10) 1 *hache-pelte*, pecked+polished, "blade" 50x27, shaft 30x5; 1 boomerang, very heavy erosion, one side lost, 50x15 (M.155.17b)
- Rock H**
- 1) 1 anthropomorph (slab bearing head slightly displaced), ears, eyes, nose, mouth (?), right arm with bracelet, hand and fingers, pendant on chest, right leg with toes, pecked+polished, 90x75 (M.155.4)
 - 2) 1 dagger, serrated edges, pecked+polished, 66x17 (M.155.7)
 - 3) 1 *hache-pelte* "oval axe", "blade" crossed by two lines, pecked+polished, "blade" 15x10, shaft 25x3 (M.155.8)
 - 4) 1 enigmatic, pear-shaped, pecked, 15x20
 - 5) 1 bovid, oval on flank, horns within circle, miscellaneous sub-ventral lines, pecked+polished, overall 55x60 (M.155.9)
 - 6) 1 dagger, pecked+polished, 40x10 attached to circle 20x10, broken by slab displacement
 - 7) 1 dagger, pecked+polished, 57x12
 - 8) 1 foot, with tail, pecked+polished, 25x10, tail 24; almost touching a number of straight lines (M.155.5)
 - 9) 1 bovid, pecked, 42x25, horns prolonged by convoluted line: 60 (M.155.6)

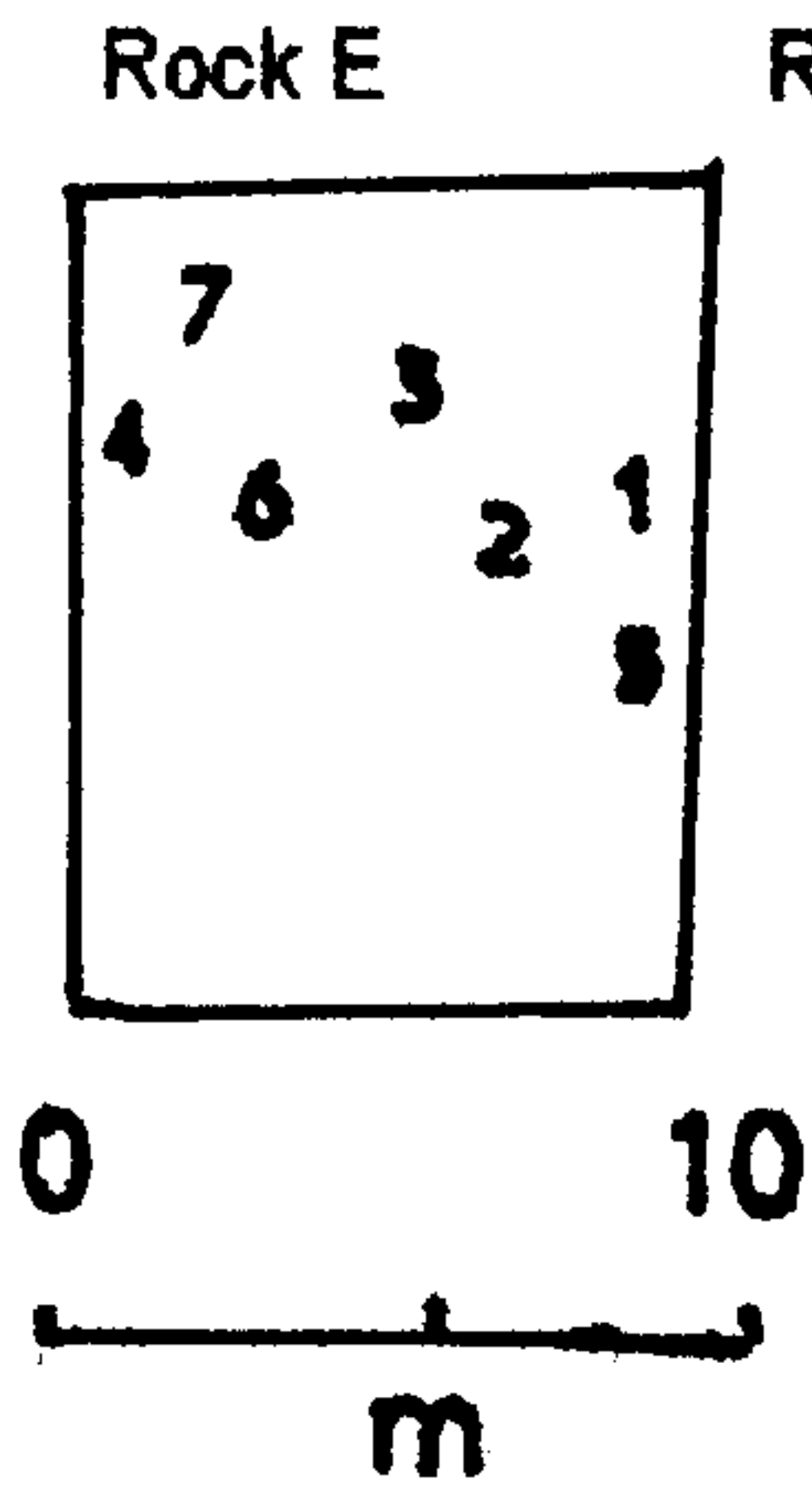
- 10) 1 doubtful wild pig, entirely pecked+partially polished, 27x13, in enigmatic maze of lines, pecked+polished, lighter patina in places, whole engraving : 65x55 (some lines noted by Malhomme not seen) (M.155.11)
- 11) 1 enigmatic, slightly damaged, pecked+polished, 47x23
- Rock I**
- 1) 1 dagger, pecked+polished, 35x12
 - 2) 1 possible socketted axe, pecked+polished, 27x10 (maximum) with angled line 10x15 (M.155.14.a)
 - 3) 1 dagger (or foot?), pecked+polished, 27x18; in enigmatic maze (with hand?), pecked+polished, possible hand entirely pecked, whole engraving 60x55 (M.155.14.b)
- Rock J**
- 1) 1 dagger, heavily eroded, pecked (+polished?), 18x4 (M.155.26.b)
 - 2) 1 dagger, heavily eroded, pecked+polished, 50x10 (M.155.26.a)
 - 3) 1 dagger (blade only?), 2 central ribs, pecked+polished; 1 enigmatic (circle with oblong), pecked, 30x13 (M.155.27)
- Rock K**
- 1) 1 dagger, pecked+polished, central rib, 40x10; 1 dagger (haft and faint beginning of blade), pecked, 8x10; 1 dagger, pecked+polished, 38x10 (M.155.22)
 - 2) 1 circle, pecked, 15x15
 - 3) 1 dagger, pecked+polished, 40x17; 1 dagger, pecked+polished, 40x20; 1 halberd, large lateral protuberance at top of shaft (or end of blade?), pecked+polished, 40x55 (M.155.23.a)
 - 4) 1 enigmatic (incomplete rectangle with spiral), pecked+polished, 50x40; 1 oval, pecked+polished, 14x7; 1 hafted point, pecked+polished, 13x7 (point), 17 (shaft), (M.155.23.b)
 - 5) 1 dagger, shaft incomplete, pecked+polished, 40x13; 1 dagger, shaft incomplete, pecked+polished, 50x15
 - 6) 1 point (or short-handled dagger?), 2 central ribs, pecked+polished, 32x20; almost touching, 1 round, internally decorated shield, pecked+polished, 45x45 (excluding 12 external cupules) (M.155.24b)
- Rock L**
- 1) 1 dagger, pecked+polished, 30x12 (M.155.29)
- Rock M**
- 1) 1 doubtful dagger, pecked+polished, 34x15
 - 2) 1 fiddle-idol, pecked+polished, 63x34; almost touching idol's head: 1 *hache-patte*, pecked+polished, 'blade' 32, shaft 52; 1 *hache-patte* superimposed on idol, 'blade' 36, shaft 24
 - 3) 1 enigmatic (tailed circle), pecked, 18x23; 1 incomplete oval, pecked, 17x5
 - 4) 2 enigmatic, pecked, together 22x32
- Rock N**
- 1) 1 hafted point, pecked+polished, 35x10 (overall)
 - 2) 1 game, made up of three irregular lines of 12, 15 and 13 small cupules respectively, pecked, 50x15 (overall); almost touching : 1 loosely pecked boomerang, 28x17
 - 3) 1 point (dagger blade?), incomplete, pecked, 27x10
 - 4) 1 hafted point, pecked, 35x7 overall; 1 oval, pecked, 15x7

Position of the engravings on the rocks



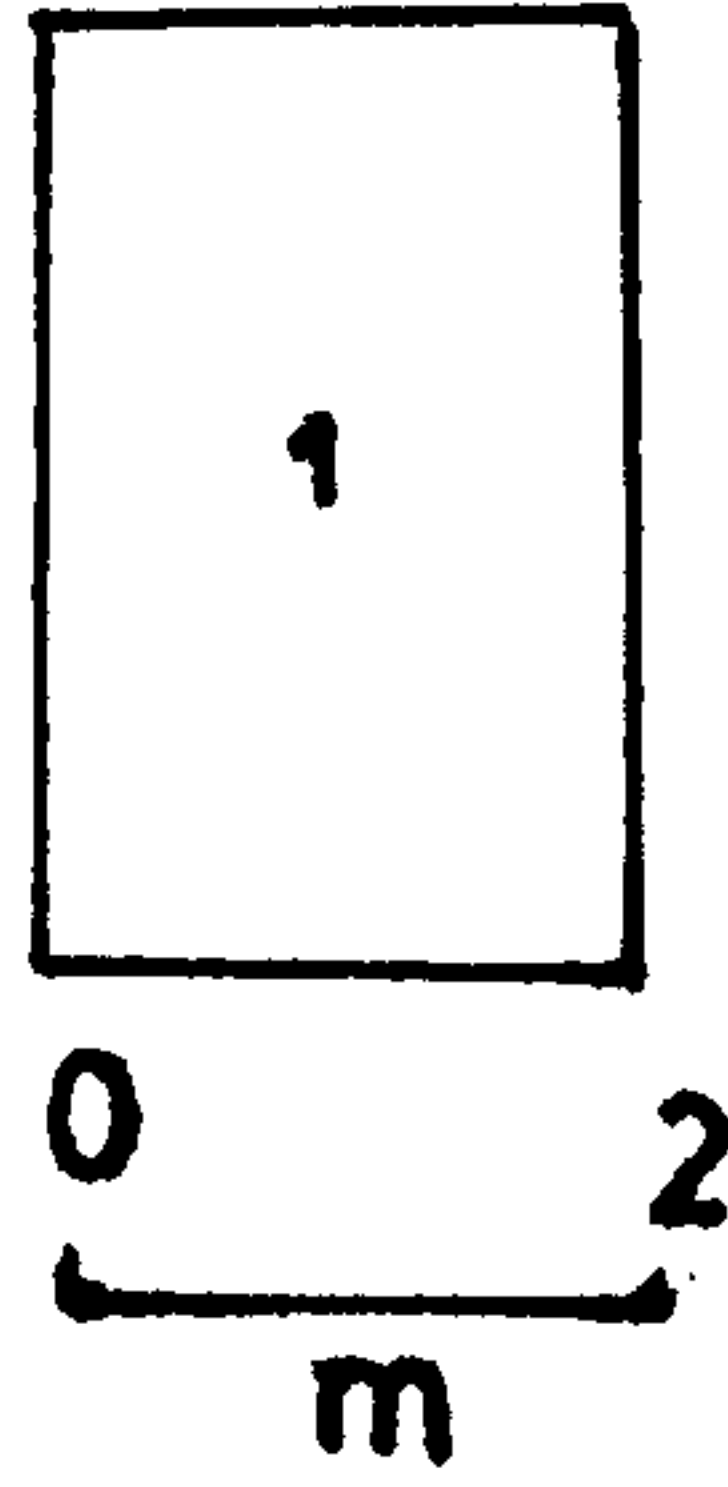


Rock D



Rock E

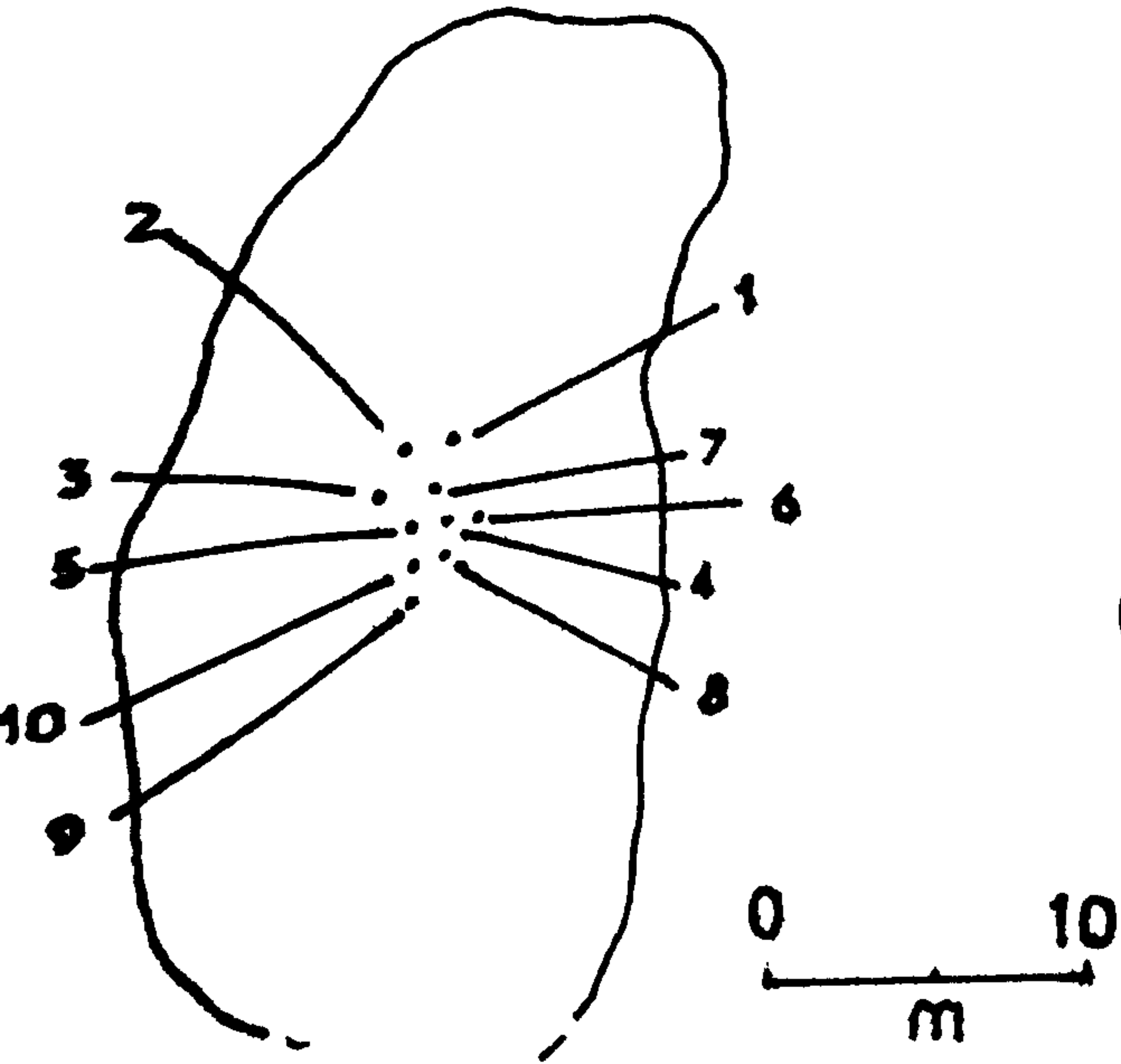
Rock F



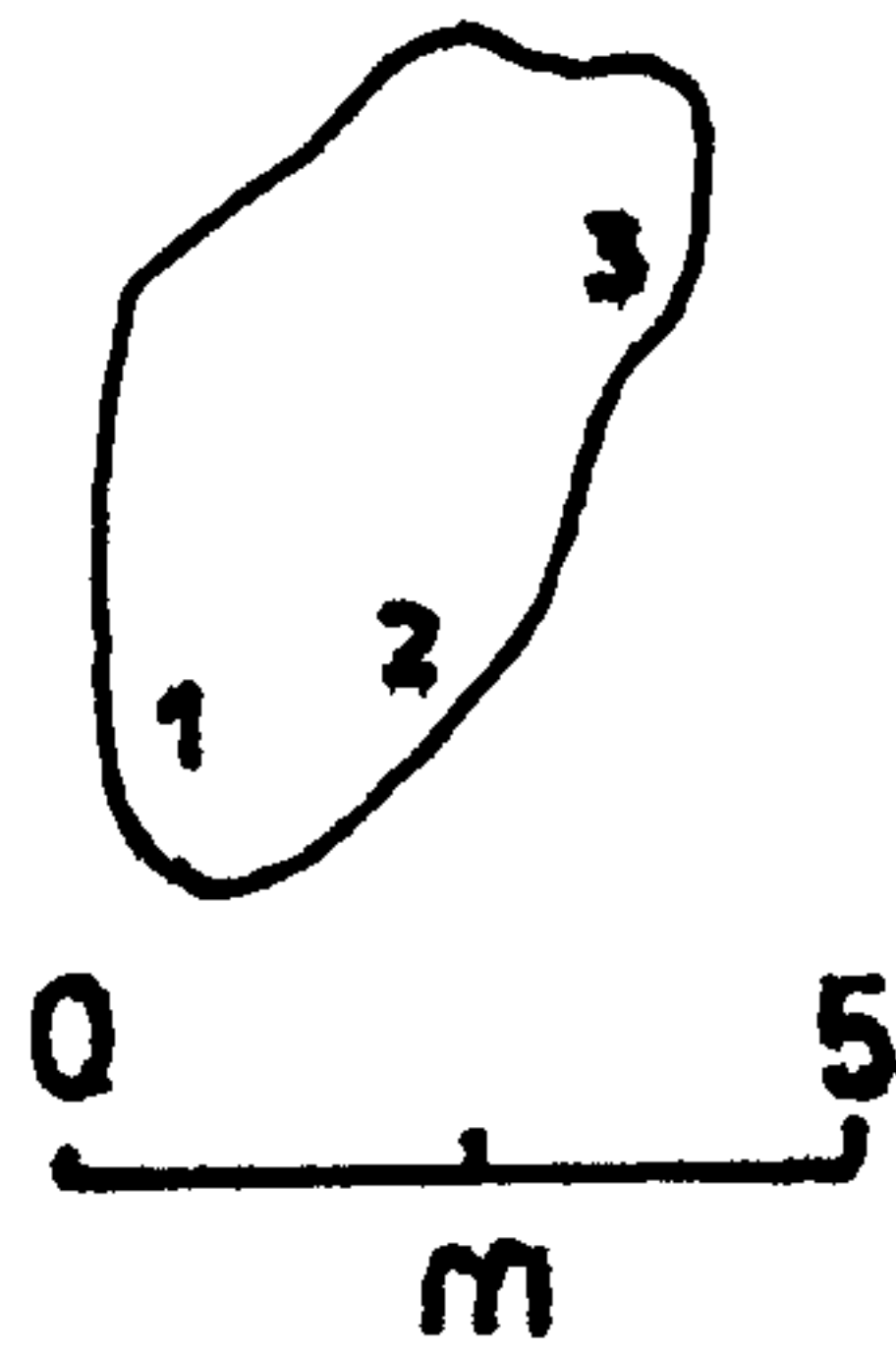
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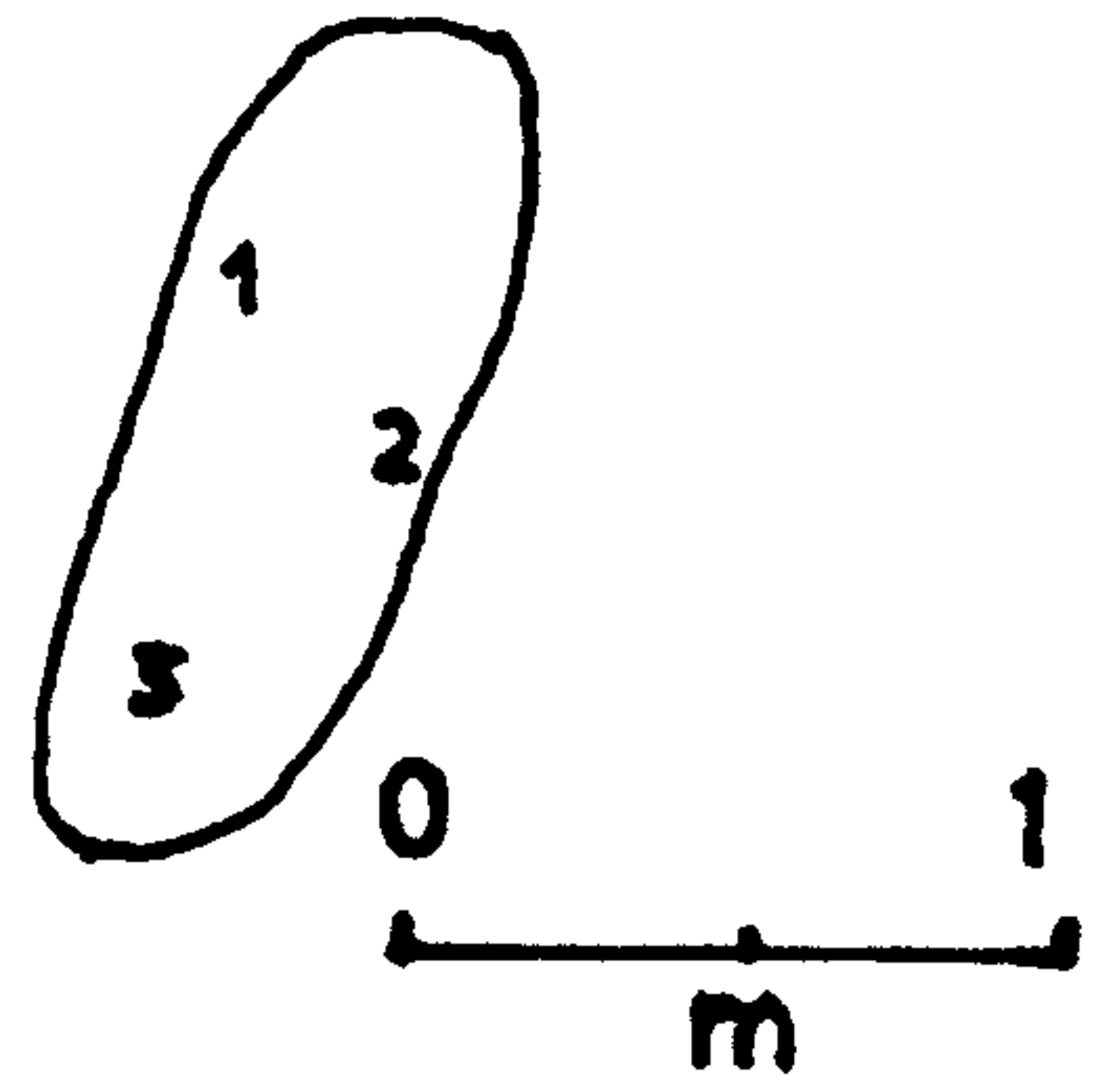
Rock H



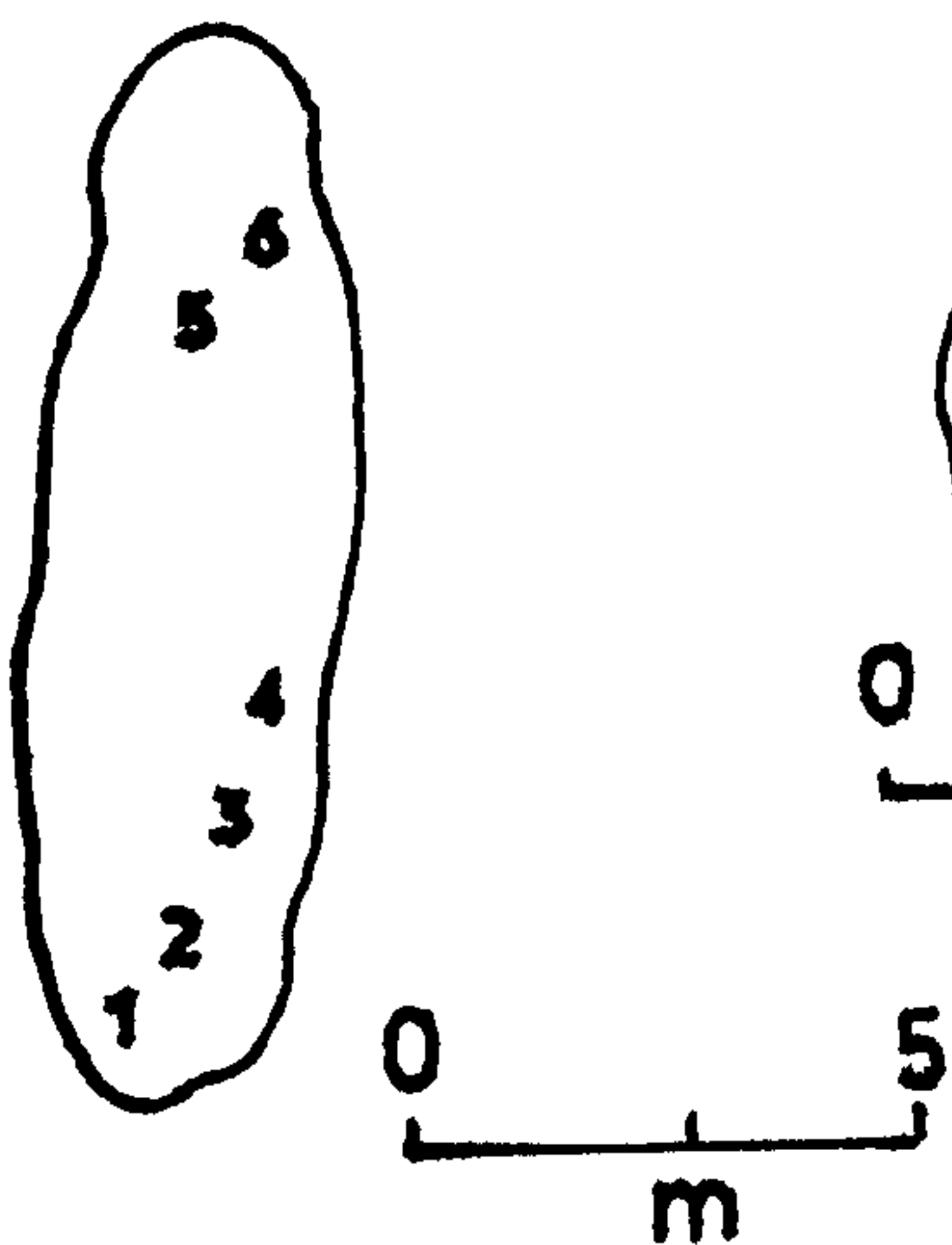
Rock I



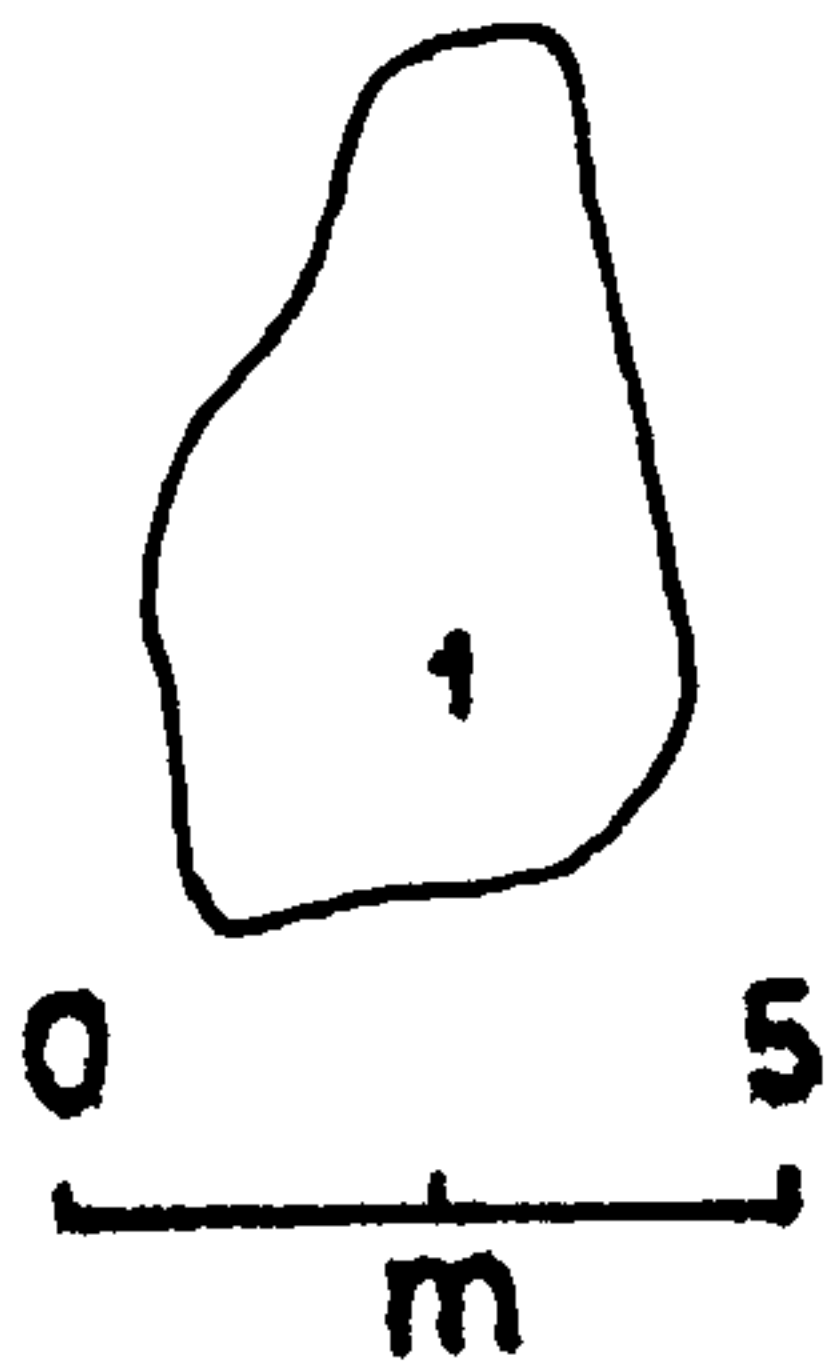
Rock J



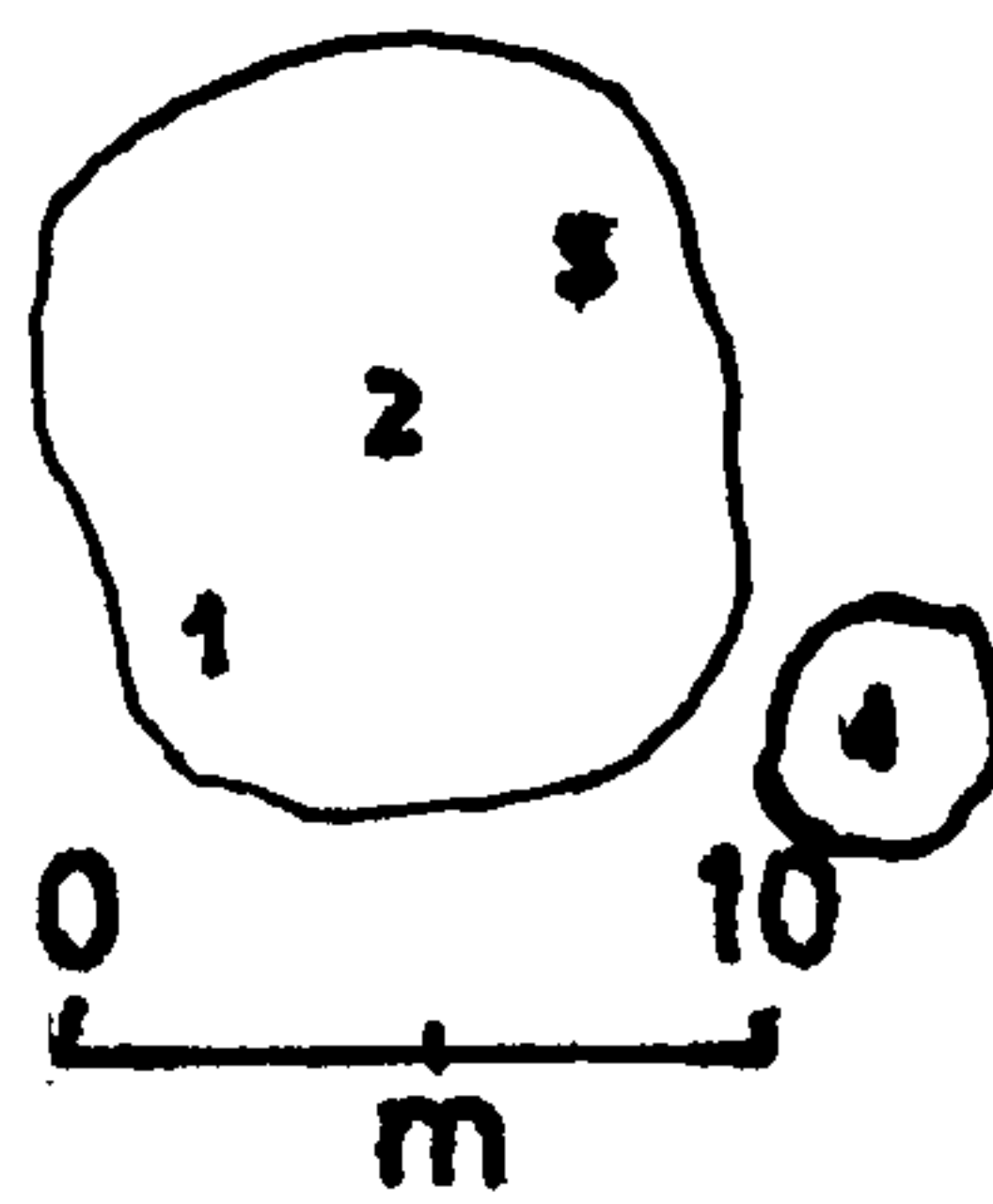
Rock K



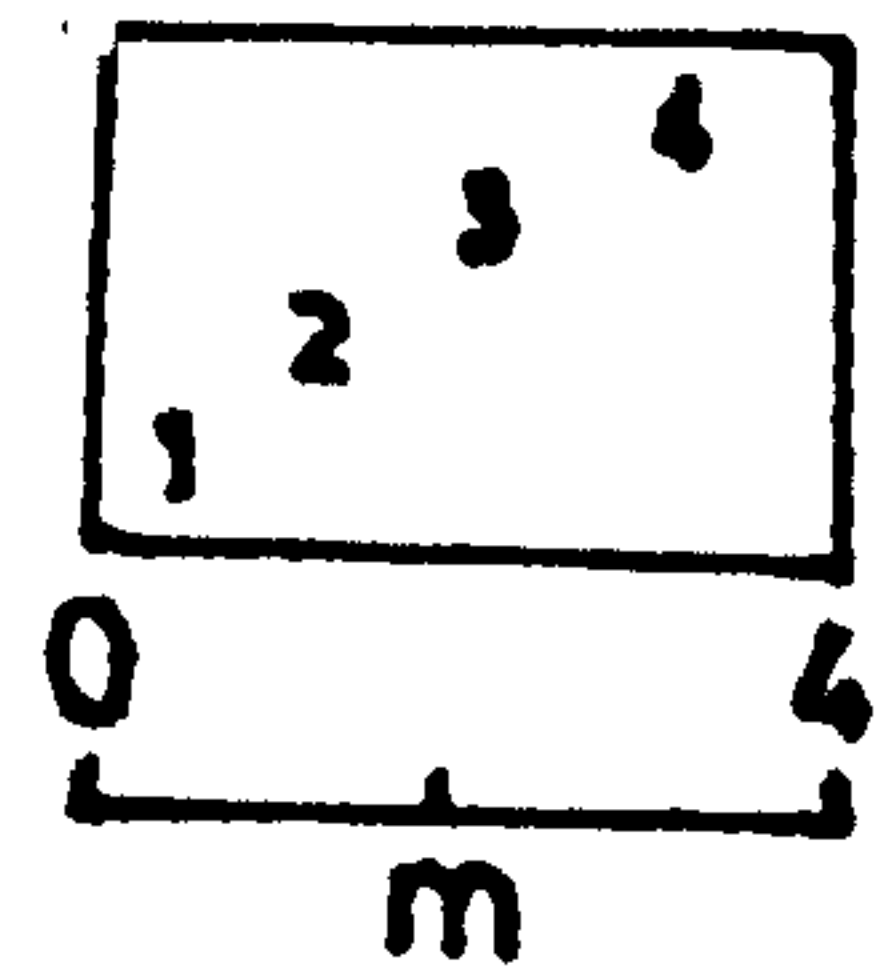
Rock L



Rock M



Rock N



APPENDIX 8. ADRAR n'METGOURINE: INVENTORY OF ENGRAVINGS

One reference number per rock. Size in cm (maximum unless otherwise stated, length given first); "n.i." = non identified; "segmented body" = lines divide the body; "mottled coat" = whole body pecked except for round spots

Southern slope

- S1) Detached rock: 1 bovid
- S2) Detached rock: 1 bovid, segmented body
- S3) Detached rock: 1 bull, 50x45, segmented body, 3 short lines under the chin, hind leg articulations and hooves indicated
- S4) Side and top of detached rock: 1 bovid, segmented body, spreading horns; 1 triple zigzag
- S5) Side of detached rock: 1 bovid, 20x20
- S6) Detached rock: 1 "spoked" trap, very faint
- S7) Detached rock: 1 bull, 40x40, segmented body, unknown object between horns
- S8) Detached rock: 1 bovid, segmented body; 1 possible antelope, upsidedown, superimposed on the bovid, sharing the same dorsal line
- S9) Detached rock: 1 bovid, very faint
- S10) Sloping side of detached rock: 1 elephant, 18x20
- S11) Vertical side of detached rock: 1 bull, articulations and hooves shown, lightly speckled, horn drooping forward
- S12) Vertical side of detached rock: 2 bulls, mottled coats, forward-pointing horns; 1 bovid, segmented body, forward drooping horn

Crest of the ridge

- C1) Sloping top of detached rock: 1 bull; 15 cupules
- C2) Sloping top of detached rock: 1 bovid, segmented body
- C3) Sloping top of detached rock: 2 bovids superimposed, each facing a different direction; 1 with spreading horns, one with forward-pointing horns
- C4) Sloping side of detached rock: 1 ostrich, completely pecked, scratched technique, confronting 1 man, arms lifted, same technique; patination light for both images
- C5) Sloping side of overturned rock: 1 bull, segmented body, forward-pointing horns
- C6) Side of detached rock: 2 bulls, 26x20 (excluding horns), forward-pointing horns, one with segmented body
- C7) Side of detached rock: 1 bovid, 24x19
- C8) Sloping top of detached rock: 1 enigmatic
- C9) Rounded top of detached rock: 1 n.i. animal; 1 enigmatic
- C10) Sloping top of broken, detached rock: 1 enigmatic
- C11) Sloping top of detached rock: 1 possible rhinoceros, 12x7
- C12) Sloping top of detached rock: 2 serpentiforms, 25x6
- C13) Side of detached rock: 1 bull, 40x35, mottled coat, coiled horns (squeezed awkwardly into all available space)
- C14) Side of embedded rock: 1 bovid, 30x15, 2 cm-wide pecked dorsal line
- C15) Top of detached, upsidedown rock: 1 bull, 40x25 (thin, forward-pointing horn: 8), segmented body
- C16) Side of detached rock broken after engraving (hindquarters missing, break between head and body): 1 bull, mottled coat, outward-curving horns
- C17) Sloping side of detached rock: 1 bull, 64x45 (vertical horn: 10)
- C18) Sloping side of broken detached rock: 1 elephant (head and back missing)
- C19) Side of detached rock: 1 bull, 40x40, spreading horns joined to form pot-like image; 1 n.i. animal; 1 curved line; 1 rectangle with rounded corners
- C20) Top of almost flat rock: 1 bull, 40x40, segmented body
- C21) Side of detached rock: 1 bovid, 19x19, completely pecked; 1 n.i. animal
- C22) Side of detached rock: 1 head only of rhinoceros, 25x23; 1 n.i. animal; 15 cupules

- C23) Side and sloping top of detached rock: 3 bovids
 C24) Sloping top of detached rock: 1 rhinoceros, 25x15
 C25) Sloping top of detached rock: 1 enigmatic, 20x20 (possible scorpion?)
 C26) Flat top of detached rock: 1 enigmatic
 C27) Side of detached rock: 1 bovid, completely pecked; 2 circles
 C28) Side of detached rock: 1 bovid, 25x25
 C29) Sloping top of detached rock: 2 rhinoceroses, one following the other, 20x15, 14x7, completely pecked
 C30) Sloping top of detached rock below C29: 1 rhinoceros, 52x30, facing different direction from C29
 C31) Vertical side of detached rock: 2 anthropomorphs, 12x10 (completely pecked), 30x15, the second holding enigmatic object, 18x12; on top of rock: 1 enigmatic
 C32) Sloping top of detached rock: 1 bull, 36x20, completely pecked, forward-pointing horn
 C33) Sloping side of detached rock: 1 elephant, lightly pecked line; 1 n.i. animal (possible lion)
 C34) Sloping side of detached rock: 2 complex crosses, 24x16, 18x14; 1 enigmatic
 C35) Flat top of embedded block: 13 contiguous circles
 C36) Side of detached rock: 2 bovids, completely pecked (outline clearly also polished)
 C37) Vertical side of detached rock: 1 bull, lightly pecked line, segmented body
 C38) Vertical side of detached rock: 1 bull, 38x38 (excluding horns), 1 horn widespread and hooked at the end, the other drooping, completely pecked
 C39) Detached rock: 1 leopard/lion, 13x9 (tail 8), completely pecked; 1 n.i. horned animal, 12x12
 C40) Sloping side of detached rock: 1 bull, 15x11, segmented body, forward pointing horn, facing 1 man, irregularly and lightly pecked, darker patination
 C41) Vertical side of detached rock: 1 bovid, 20x20, horns 8, rising and turning outwards at the tips, lightly speckled body
 C42) Side of detached rock: 1 anthropomorph, crouched, height 24, with bow

Northern slope

- N1) Top of detached rock: 2 joined spirals, 15x15, 6x6

West side

- W1) Vertical side of detached rock: 1 enigmatic (possible man mounted on animal)
 W2) Vertical rock face: 1 n.i. animal, 50x30, light patination of head and neck only (rest dark)
 W3) Side of detached rock: 1 bovid, 20x18, interior surface entirely pecked, forward-pointing horn
 W4) Side of detached rock; 1 bull, completely pecked except for one reserved spot, 2 horns rising and curling inwards in heart-shape
 W5) Side of detached rock just above W4: 1 bull, forward-pointing horn
 W6) Vertical side of detached rock: 1 bovid, 32x22, spreading horns joining above head; 1 n.i. animal
 W7) Vertical side of broken detached rock: 1 elephant, 36x65 (tusks 4, tail 4)
 W8) Vertical side of embedded rock: 1 elephant, completely pecked, followed by 1 possible anthropomorph, entirely pecked
 W9) Two vertical sides of embedded rock adjacent to W8: 2 bovids, segmented body
 W10) Flat top of detached rock near W8 and W10: 1 triple serpentiform
 W11) Side of detached rock: 1 bovid
 W12) Vertical side of detached rock: 1 bull, forward-pointing horn, segmented body
 W13) Sloping top of detached rock: 1 bull, 30x30, segmented coat, front-quarters completely pecked, upward-curving horns meeting in complete circle
 W14) Vertical side of detached rock: 1 bull, 32x20, completely pecked, forward-pointing horn
 W15) Vertical side of detached rock: 1 bull, entirely pecked, widespread horns, back hooves with "toes"; 1 bovid, forward-pointing horn
 W16) Vertical side of detached rock: 1 bull, 30x20, mottled coat, leg articulations and hooves clearly indicated
 W17) Vertical side of detached rock: 1 bull, 41x50, completely pecked in places, segmented body, widespread horns, one curling round at the end, halter under chin
 W18) Vertical side of detached rock: 1 bull, 45x55, mottled coat, widespread horns

- W19)** Vertical face of detached rock: 1 antelope, 32x40, superimposed on 1 bovid, mottled coat
W20) Vertical face of detached rock: 1 bird, not ostrich, 20x60, lightly pecked
W21) Vertical face of detached rock: 1 bull, segmented body, widespread horns, halter under chin
W22) Vertical side of adjacent detached rock: 3 bovids
W23) Vertical side of detached rock: 1 bull, segmented body, polished tail
W24) Vertical side of detached rock: 1 bovid; 1 n.i. animal
W25) Vertical side of detached rock: 1 bull, 26x20, segmented body, polished tail, forward and upward-pointing horn, held by 1 possible anthropomorph
W26) Vertical side of detached rock: 1 enigmatic
W27) Vertical side of detached rock: 1 bull, mottled coat, widespread horns, halter under chin (or drooping horn?)
W28) Vertical side of detached rock: 1 bull, 63x55, widespread horns, very faint, polished lines
W29) Vertical side of detached rock: 1 bull, 40x40, segmented body, widespread horns, head, chest and legs completely pecked
W30) Sloping side of detached rock: 1 bovid, 46x25
W31) Top of vertical rock face: 1 bull, 93x60, mottled coat, widespread polished horns curving and curling inwards at tips; just above 1st animal, 1 bull, 25x18, segmented body, forward-pointing horn
W32) Top of vertical rock face, next to W31: 1 bull, 77x60, segmented body, forward and upward-pointing horn; between legs of 1st animal: 1 bull, 40x35, segmented body, one backward and upward-pointing horn, one drooping
W33) Vertical side of adjacent rock face: 1 bull, 60x50, segmented body, upward-pointing horn
W34) Vertical side of detached rock: 1 bull, completely pecked except for reserved patch in the middle of the back, upward-pointing horn
W35) Vertical side of detached rock: 1 bull, neck, chest and hindquarters completely pecked, 2 upward-pointing horns
W36) Top of vertical rock face: 1 bull, 41x35
W37) Top of vertical rock face, next to W36: 1 bull, 36x30
W38) Vertical side of detached rock: 1 bull, forward-pointing horn, double serpentiform along body
W39) Vertical side of detached rock: 1 bull, 37x25, segmented body, lyre-shaped horns; behind, 1 enigmatic
W40) Top of vertical rock face: 1 bull, 50x45, segmented body, chest and fore-quarters completely pecked, horns curving upwards and inwards at tips
W41) Vertical rock face, adjacent to W40: 1 bull, 86x80, mottled coat, widespread horns, scrotum outlined 4 times
W42) Vertical side of detached rock: 1 bull, 46x35 (upward and forward-curving horns: 30)
W43) Sloping side of detached rock: 1 bull, 50x30, forward-pointing horn, dorsal line polished
W44) Vertical side of detached rock: 1 bull, 40x25, mottled coat, forward-pointing horn
W45) Vertical side of detached rock: 1 bull, 40x25, mottled coat, upward-pointing horn
W46) Vertical side of detached, broken rock: 1 elephant, 30x45
W47) Vertical side of detached, broken rock (originally part of W48?): 2 bovids, one above the other, segmented bodies
W48) Vertical side of fixed rock: 1 elephant, 45x60, overlying 1 bovid 27x20, speckled coat
W49) Top of vertical rock face: 1 bull, 70x55, faint
W50) Top of vertical face, next to W49: 1 bull, 70x50
W51) Sloping face of detached rock: enigmatic, 18x27 (possible bird)

East side

- E1)** Side of detached rock: 1 n.i. animal, 16x18
E2) Sloping side of detached rock: 2 oryx, 24x24, 16x16, one above the other, body completely pecked, horns polished
E3) Vertical side of detached rock: 1 leopard, 26x25, spotted body, confronting 1 anthropomorph 4x15; 1 antelope, 20x18, spotted body, slightly lighter patination
E4) Vertical side of detached rock, next to E3: 1 leopard/lion, 20x20 (no spots)
E5) Vertical side of detached rock, next to E4: 1 bull, 20x20, segmented body, upward-pointing horn
E6) Vertical side of detached rock: 1 bull, 60x50, segmented body, upward-pointing horn
E7) Detached rock: 1 bovid

- E8) Sloping side of detached rock: 1 elephant, 25x20**
- E9) Detached rock: series of cupules**
- E10) Vertical side of detached rock: 2 bovids, widespread horns**
- E11) Vertical side of detached rock next to E10: 1 bull, segmented body, widespread horns
curled at tips**
- E12) Sloping side of detached rock in front of E11: 1 stick-like anthropomorph**
- E13) Sloping side of detached rock: 2 bovids, segmented bodies, one with horns forward-pointing and
curling upwards, the other upward-pointing and joining to form oval**
- E14) Sloping side of detached rock: 1 bovid**
- E15) Sloping side of detached rock: 1 rhinoceros, almost entirely pecked**
- E16) Sloping side of detached rock: 1 bull, segmented body, circle touching chest**
- E17) Flat top of detached rock: line of at least 7 ostriches; 1 bovid**
- E18) Flat top of embedded rock: 2 bovids; 1 n.i. animal**

APPENDIX 9. OUM ALEG: INVENTORY OF ENGRAVINGS

One reference number per rock face. Numbering starts at the eastern end of the north branch and continues without interruption round the west end and down the south branch. All the engravings are polished unless otherwise stated; size in cm (maxima unless otherwise stated, length given first), n.i. = non-identified animal; patina is mentioned only when thought significant.

Ref. North branch

Vehicle track at beginning of ridge; 225 m with no engravings

Sections 1-35 (360 m) (one section 20 m instead of 10 m)

- | | |
|----|--|
| 1 | 2 gazelles, 22x18 (tail 3); 19x30 (tail 12) |
| 2 | 1 rhinoceros, 34x19, two tails 4, diagonal horn at end of snout 9, |
| 3 | 1 hartebeest, 12x22, long sinuous horn; 1 n.i., 10x6 |
| 4 | 1 rhinoceros, 25x17, two horns: 3, 7 |
| 5 | 1 n.i., 20x20 |
| 6 | 5 n.i. |
| 7 | 3 misc. (series of inverted triangles) |
| 8 | 3 misc. (divided rectangles: 6x5, 4x4, 7x6 - tribal marks for animals?) |
| 9 | 1 antelope |
| 10 | 1 misc. (foot), 20x10 |
| 11 | 1 anthropomorph, 6x10 (very faint); 1 gazelle, 12x18 (inc. legs 13), tail 6 |
| 12 | 1 headless antelope, 20x20 |
| 13 | 1 bovid, pecked+polished, interior surface all pecked, 35x25 (including horn) |
| 14 | 1 bovid, pecked+polished, interior surface all pecked, 25x18 (including horn) |
| 15 | 1 anthropomorph ? 6x17 |
| 16 | 1 bovid, 14x17 |
| 17 | 1 antelope, 18x22 (inc. front legs 16) |
| 18 | 2 antelopes, one above the other; body 27, tail 21, front legs 18; 28x12, tail 9 |
| 19 | 1 antelope, 22x28 (including front legs 21), diagonal horn 7 |
| 20 | 3 n.i. |
| 21 | 1 elephant, 40x26, followed by anthropomorph, 5x5; 1 bovid, 8x5 |
| 22 | 1 bovid, 26x10 (3 vertical lines on body) |
| 23 | 1 n.i. |
| 24 | 1 gazelle, 25x28 |
| 25 | 1 gazelle, 34x29 (4 vertical lines on body, heavy legs) |
| 26 | 1 n.i. 23x25, very faint (no hindquarters) |
| 27 | 1 n.i. |
| 28 | 1 antelope, 25x14 |
| 29 | 1 antelope, 1 oryx, 1 bovid, 1 n.i., overall length of group: 70 |
| 30 | 1 n.i. |
| 31 | 1 gazelle, 47x22 (rock broken at hind legs) |

End of first major division of the ridge: flat passage way for vehicles (20 m)

Sections 36-44 (90 m)

- | | |
|----|--|
| 32 | 1 giraffe, body 15, neck and head 47, front legs 20, tail 20 |
| 33 | 1 rhinoceros, 20x15 |

Section 45 (10 m)

- | | |
|----|--|
| 34 | 1 antelope, 12x21; 1 bovid, 12x23, tail 12 |
| 35 | 4 bovids, one alone on left, 24x16, other three one above the other, 27x41 (all together), longest tail 22 |

- 36 1 gazelle
 37 3 antelopes, 13x14; 18x26; 8x18 (inc.back legs 14)
 38 1 oryx, 29x49 (inc.legs 37), tail 20, longest horn 31

Sections 46-113 (680 m)

- 39 2 bovids
 40 2 antelopes, 12x27 (inc.front legs 15), head broken in half; 33x38, rock broken
 41 1 misc. (rectangle - animal?), pecked (line 1.5-2 cm wide), 22x10
 42 1 bovid, pecked and polished, 20x18
 43 1 antelope, 19x25 (inc.front legs 12, horn 8), 2 vertical lines on body; 1 n.i., 17x15
 44 1 bovid, 16x21 (inc.front legs 15), line from tip of horn 17; 1 antelope, 9x11
 45 1 misc. (segmented rectangle)
 46 3 misc. (pecked U motifs), total 33x16; faint animals (modern ?)
 47 1 striped antelope, 26x23 (rock broken at front legs) ; 1 incised n.i. (modern)
 48 1 bovid, 20x19, head represented in plan, pecked and polished, body speckled
 49 1 antelope, 26x30
 50 1 n.i., 23x10, headless
 51 1 misc., 10x4 (flattened rectangle)
 52 1 ostrich, 1 n.i.
 53 1 antelope, 8x12
 54 1 misc. (serpentine), pecked, 30x16
 55 1 antelope, 20x18; 1 n.i.
 56 2 n.i., one horizontal, 13x9; one vertical, upsidedown, head touching other head 5x16
 57 1 anthropomorph? 5x14, very faint
 58 1 misc. (two short lines within unfinished oval)
 59 1 n.i.animal, 9x6, hindquarters invisible
 60 1 ostrich, 15x21; 1 bovid, 12x10, tail 5
 61 2 gazelles, 12x17, tail 8; 10x9, tail 10; 1 antelope, 10x13
 62 1 bovid, 60x36, roughly pecked, lines not complete
 63 1 misc. (flat slab with 5 pecked oval/circular motifs, almost touching, 30x11)
 64 1 bovid, 33x30, attached to peg in ground, vertical lines on body
 65 1 antelope, 23x25 (rock broken), tail 13, polished vertical line in front of muzzle
 66 1 hartebeest, body 22 (inc.neck 11, front of head broken)x16 (rock broken)
 67 2 n.i., pecked

Section 114 (10 m)

- 68 1 rhinoceros, 30x23, tail 13, line in front of leg continued 20; 1 oryx, 22x12, tail 23; 1
 antelope, 26x19; 1 gazelle, 29x29; one above the other
 69 2 bovids, 1 antelope (antelope and bovid touching, 2nd bovid vertical), frieze 47x34
 70 1 gazelle, 20x20 (inc.tail 6, back legs 15, rock broken)
 71 1 bovid, 19x9) all on same block: on E face
 72 1 hartebeest, 27x19; 1 antelope, 18x16, 4 stripes on body) on W face
 73 1 caprid (?), 9x9; 1 canid (?), 13x7, tail 10) on top
 74 2 antelopes, 10x8, 8x6; 1 bovid, 8x10 (inc.back legs 8), tail 9) in line on N face

Sections 115-120 (60 m) covered with sand

Sections 121-151 (310 m)

- 75 1 gazelle, 15x15, line dropping from neck
 76 1 hartebeeste, 16x19, headless
 77 1 bovid, 35x15 (no front legs visible)
 78 1 headless antelope, 15x30
 79 1 antelope, 27x42
 80 1 oryx, 6x6; 1 n.i.
 81 1 antelope, 34x60 (inc.back legs 46)
 82 1 misc., 35x16, modern (6 lines)
 83 2 bovids, 24x20; 23x25

- 84 2 n.i., side by side, together 19x30, headless, very faint
 85 1 antelope, 30x25, very faint
 86 1 rhinoceros, 35x29
 87 1 gazelle, 20x37 (?), very faint; 1 n.i.
 88 1 n.i., 26x18, reworked; 1 misc. (lines) (modern)
 89 1 bovid, 44x28, front legs not clear

End of second major division of the ridge

Sections 152-166 (150 m)

- 90 1 misc. (herd markers?) (modern)
 91 1 oryx, 34x35 (inc. legs 27), horns 36, tail 19; 1 antelope, 32x23, tail 11; 1 ostrich, 25x18
 92 1 anthropomorph (pointed face) touching hindquarters of 1 elephant, 22x20 (see Simoneau, 1969, photo 7)
 93 1 elephant, 13x12, engraved over bovid (front leg=trunk, one leg added)
 94 2 ostriches, the two together 15x17, one very faint
 95 2 birds, not ostriches, 8x10; 30x9, beak 9
 96 1 antelope, 36x20 (one divided rectangle near head)
 97 1 antelope, 20x21 (head not clear)
 98 1 antelope, 30x20 (4 front legs?); 1 misc. (bag trap, 7x9, with fringes, 9); 1 misc. (2 groups of lines) (modern?)
 99 1 oryx, 16x22, horns 30
 100 1 antelope
 101 1 n.i., 22x19
 102 1 misc. (2 attached squares) (modern?)
 103 1 misc. (square divided into four, plus 2 sets of short lines) (modern?)
 104 1 camel, modern

Sections 167-185 (190 m)

- 105 1 bird, not ostrich, 28x12; 1 ostrich, 7x9; 1 n.i.
 106 1 n.i., 32x10, very faint
 107 1 antelope
 108 1 n.i.
 109 1 antelope, 30x46 (inc. front legs 30), tail 20; 1 bovid, 20x25 (inc. back legs 18), two lines from muzzle to edge of broken slab
 110 1 bovid, 24x12, pecked
 111 1 n.i., 28x32, two lines from muzzle to edge of broken slab, in front of 1 misc. (divided rectangle)
 112 1 gazelle, 25x23
 113 1 misc. (block, 49x29, almost entirely covered with lines of small pecked points)
 114 1 bovid, 20x20, two lines in middle of body, cord rising from muzzle
 115 1 bovid, 10x18 (hindquarters freshly broken)
 116 1 ostrich, 8x19 (2 vertical lines on body); 1 antelope, 21x21
 117 1 bovid, 38x28, muzzle and horn pecked

Sections 186-196 (110 m)

- 118 1 antelope (small)
 119 2 antelopes
 120 2 antelopes, very faint
 121 1 n.i., 23x12 (modern?), crudely engraved
 122 1 antelope, 22x27, back legs touching head of bovid; 1 bovid 26x25, body divided into three, tail fringed
 123 1 antelope, 37x22, longest of two tails 17, line dropping from muzzle
 124 1 n.i.
 125 1 oryx, 18x23, tail 20, horns touching hindquarters, semi-circle on back, double semi-circle under stomach (see Simoneau, 1967, fig. 7); ostrich, 11x29, unfinished, touching oryx horns

- 126 1 antelope
 127 1 bovid, 23x20, line dropping from muzzle; 1 ostrich, 17x30
 128 1 canid, 17x16, tail 11, two lines for back, toes clearly marked on back legs
 129 1 elephant, 29x19, small circle on back
 130 1 n.i., 18x13
 131 1 antelope.
 132 1 misc., 10x12 (crescent with striped oval set at right angles, trap?)
 133 1 n.i.; 1 misc. (series of lines)
 134 1 misc. (concentric circle), pecked, 13x13, very faint
 135 1 antelope
 136 1 bovid, very faint
 137 1 gazelle, unfinished, 11x35; 2 ostriches, the pair 20x41, legs of one ostrich on back of other
 138 1 antelope, 18x20, horns 14; 1 bovid, 30x30, at right angles (rock broken)
 139 1 bovid 34x32, oval on back behind horn
 140 2 monkeys, 12x10; 10x15, tail of one joined to muzzle of second
 141 1 n.i., 25x15, rounded snout, 2 lines on body, 3 semi-circles above head 25x15
 142 2 antelopes, one above the other
 143 1 misc., 35x31 (double spiral, 4 diagonal lines, 3 vertical lines, concentric circle)
 144 1 ostrich, 11x31
 145 1 bovid with zigzag on body
 146 1 n.i.
 147 1 hartebeest, 22x20; 1 antelope, 13x10; 1 n.i., 14x12, head hidden behind antelope
 148 1 gazelle, 26x14, tail 10, striped body
 149 3 antelopes
 150 1 antelope, 20x16
 151 1 antelope
 152 1 n.i., 14x14
 153 1 gazelle, 25x38 (inc.legs 26)
 154 1 antelope, 20x14
 155 1 anthropomorph, 7x12; 1 sheep, 9x5 (see Simoneau, 1969, photo 10)
 156 1 anthropomorph? 4x15
 157 2 antelopes, one, 10x20 (inc.legs 16) diagonal, touching stomach of other, 28x14
 158 1 bovid, 32x20, tail (frayed) 15
 159 1 ostrich, 13x18; 1 n.i. 35x18, 4 vertical lines dividing body; rear of ostrich covered by head of n.i.animal (perspective?)
 160 2 n.i., very faint
 161 8 ostriches, closely grouped on flat rock, 1.50x1.50 m, one reworked
 162 1 gazelle
 163 1 antelope, 17x20 (inc.front legs 15), 1 vertical line dividing body near shoulder, reworked
 164 1 misc., 18x5 (*tifinar* inscription?) pecked, light patina
 165 1 gazelle; 1 misc. (series of lines); 1 oryx
 166 1 n.i.
 167 1 antelope, very faint
 168 2 n.i., 10x10
 169 1 ostrich, 11x20, but head disappeared; 1 n.i.

Sections 197-230 (340 m)

- 170 1 antelope, 23x23 (inc.horn 8), tail 17
 171 1 misc., 18x14 (meander), pecked
 172 1 antelope
 173 1 gazelle, 15x13
 174 1 antelope; 1 misc., 10x10 (spiral)
 175 8 antelopes; 1 misc. (mask?, trap?), all together, 40x60 (see Simoneau, 1969, fig.9)
 176 1 bovid, 13x29
 177 1 bovid, 2 vertical lines on body
 178 1 misc., 12x18, pecked (concentric circle with tail); 1 n.i., 10x10
 179 1 rhinoceros, 32x24 but hindquarters effaced
 180 1 gazelle, 21x23; 1 ostrich, 8x18

- 181 2 antelopes, 18x20, 16x20, hindquarters almost touching; 1 misc., pecked (spiral)
 182 1 antelope, 20x30 (inc.front legs 19), line, 25, dropping from muzzle
 183 1 bovid
 184 1 elephant, 28x39 (front leg in trap?) (see Simoneau, 1969, photo 14)
 185 1 giraffe, 30x34, short curving line from muzzle
 186 1 elephant, 28x24, line on body just behind head
 187 1 antelope
 188 1 n.i., 21x33 (inc.wide curving horns), 3 lines dropping from muzzle, 1 from neck
 189 1 ostrich
 190 1 antelope, 14x31 (inc.neck 10)
 191 1 n.i., 24x17, with snout
 192 1 n.i., 10x9 (prob. modern); 1 misc., 3x6, pecked (circle with tail)
 193 1 antelope, 20x11 (inc.sloping front legs 10), tail 26; 1 oryx, 15x19 (inc.front legs 8), tail 16; 1 bovid, 22x31 (inc.back legs 14, horn 6), 2 lines from muzzle:10
 194 1 antelope, 20x30, very faint
 195 1 n.i., 24x26
 196 1 bovid, 11x8; 1 n.i., 34x20, very faint
 197 1 bovid, 37x20, 2 very short front legs reworked (16cm added); 1 ostrich, 9x19, no head
 198 1 antelope, 20x15
 199 1 rhinoceros, 25x14, but hindquarters and legs effaced
 200 1 bovid, 30x14, tail 15, oval on head (or horns joined); 1 bovid, 21x20, 4 short lines under chin; 1 gazelle, 18x55, multiple lines for body/legs; 1 bovid, 30x16 (rock broken); 1 n.i., 39x26 (inc.rectangle on head), body divided into 5 parts (the 5 animals form a frieze)
 201 1 canid?, 20x16
 202 1 ostrich, 17x35; 1 gazelle, 21x31; 1 antelope, 9x13, between the gazelle's legs

Sections 231-268 (380 m)

- 203 1 antelope
 204 1 n.i., 19x13
 205 1 antelope, 9x5
 206 2 n.i.
 207 1 antelope, 11x8
 208 1 n.i., 30x25, line from muzzle
 209 1 misc., 20x20, pecked (serpentine form)
 210 1 bovid, 30x32
 211 1 ostrich, 10x20
 212 1 anthropomorph?, 10x35
 213 1 misc. 10x10, (spiral)
 214 1 oryx, 14x10
 215 1 misc., 10x7, pecked (circle), patina total
 216 1 misc., 20x16, pecked (spiral)
 217 1 bovid, 20x20, line dropping from chin; 1 n.i.
 218 1 ostrich, 32x34; 1 gazelle, 14x16; 1 antelope, 37x39, horns widespread; 1 giant buffalo, 23x26 (series of short lines crossing tail - trap?) (see Simoneau, 1969, photo 9)
 219 1 antelope, 8x9; 1 bovid, 20x17; 1 antelope (all three very faint); 1 n.i. 17x15
 220 1 gazelle, 23x20
 221 1 antelope, 25x29
 222 1 antelope, 26x24
 223 1 misc., pecked, 68x30 (meander) (spaghetti-like mass covering whole slab)
 224 1 rhinoceros, 26x14, vertical line dividing body; 1 n.i., very faint
 225 1 oryx, 23x22, total patina, very faint
 226 3 misc. (feet, 4x7; 4x8; 5x10) (no toes), patina total
 227 1 antelope, 11x10; 1 gazelle, 22x16; 3 n.i.
 228 1 gazelle, 15x19, very, very faint
 229 1 n.i., 20x8, very faint
 230 1 n.i., very, very faint
 231 1 antelope, 15x15, faint
 232 1 misc., 12x9 (continuous loop coil motif), very faint
 233 1 ostrich, 17x32

- 234 1 camel, pecked, recent
 235 1 bovid, 14x16, circle on head (or horns joined?)
 236 1 misc., 10x5 (straight line, fringed with 11 verticals)
 237 1 gazelle, 15x25 (inc. front leg 15); 1 misc., 13x5 (series of lines); 1 oryx, 19x11
 238 1 misc., 8x8 (spiral), pecked and polished, very pale

Ref. Western end

- 239 1 bovid, 34x26, reworked
 240 1 bovid, 40x28, tail 26, reworked
 241 1 rhinoceros, 25x27, reworked
 242 2 misc. (feet), side by side, touching, together 9x20, middle-range patina
 243 1 elephant, 12x12, pecked, light patina
 244 2 gazelle heads, 8x6; 9x9; 1 anthropomorph, 5x13, stick-figure, light patina
 245 2 bovids, 25x21, 21x14, pecked + polished, total patina, heads all pecked
 246 1 gazelle, 11x18, very thin lines
 247 2 antelopes, 34x30; 10x17 (inc. front legs 9); 1 n.i. 40x53, head and hindquarters missing
 248 1 bovid, 22x13, pecked and polished, interior surface all pecked; 1 bovid, 18x16, pecked and polished (outline only), hindquarters not clear
 249 1 misc., 10x10 (2 parallel straight lines joined by a third)

Ref. South branch

- 250 1 antelope, 20x18, faint; 1 gazelle, 24x12
 251 2 n.i., 15x9, one faint
 252 1 n.i., very faint
 253 1 bovid, 21x28
 254 1 n.i., 32x32, front legs faint (uninterrupted line from throat to hindquarters), no tail, muzzle striped, 8 short lines under muzzle, small n.i. engraved within body
 255 1 ostrich
 256 1 antelope, 16x18
 257 1 bovid, 20x13
 258 1 bovid, 27x31, line across muzzle, hindquarters missing
 259 1 antelope, 14x10
 260 1 bovid, 32x32, fringed tail 32, body and hind legs of second animal, n.i., between front and back legs
 261 1 bovid, 29x17
 262 1 antelope, 14x20; 1 antelope, 12x16 but very faint, body incomplete; 1 gazelle 18x20
 263 1 misc., 20x20 ('spoked-circle' trap), very faint
 264 1 ostrich, 11x32
 265 1 misc. (spiral), polished, faint
 266 2 rhinoceros, one facing right, 27x20, one left, 45x28, one above the other
 267 1 anthropomorph, 7x13, angular form, shallow incision, full-face, total patina
 268 1 antelope, 30x28, tail 18; 1 misc. (series of lines) (modern)
 269 1 misc. (foot, 10x26) (no toes), total patina
 270 1 antelope, 34x36, with head ornament (or horns forming double circle), divided rectangle under neck
 271 1 ostrich, 18x45
 272 1 n.i., very faint
 273 2 gazelles, 18x24, tail 11; 16x21
 274 1 oryx, 27x28
 275 1 antelope, 26x25 (inc. back legs 19)
 276 1 ostrich, 20x46
 277 1 misc., pecked (circle?)
 278 2 ostriches, one full face, 18x26, 11x21, interior surface all pecked
 279 1 antelope, 32x21
 280 1 bovid, 21x17, three lines on body
 281 1 gazelle, 25x18, but back of body missing

APPENDIX 10. DETAILS OF SITES CLASSIFIED ACCORDING TO GROUP, NON-CLASSIFIED AND LACKING DATA

Listed below are the sites referred to in Chapter 9 (indicated by the reference numbers used in the review Chapter 7), where one of the four main groups is in the majority; it also includes the one site where exceptionally chariots (not one of the four main groups) represent the majority of the engravings. The figures in brackets indicate the number of sites classified, the total number of sites in the zone concerned, including those for which no information is available and those for which the information, though available, has been felt to be unreliable. The percentage figure for classified sites would of course be higher if only sites susceptible to analysis were used.

A. Sites classified (majority of the engravings belonging to one of the four main groups or the one secondary group)

Tazina type....	East (Zone 2): E1,3,5	(Total: 3/8, 37.5%)
	South-east (Zone 5): SE1-13,15-21,23-29,31	(Total: 28/32, 87.5%)
	South (Zone 7): S7,19,21,23-27,40-44,46,48,49,64, 99,116	(Total: 19/112, 16.9%)
	Western Sahara (Zone 9): WS5,6,8-10,13-15,19-23	(Total: 13/27, 48.1%)
Pecked Cattle	East (Zone 2): E4	(Total: 1/8, 12.5%)
	High Atlas (Zone 3): HA27,33	(Total: 2/44, 4.6%)
	Extreme South-east (Zone 4): ESE2	(Total: 1/2, 50%)
	Anti-Atlas (Zone 6): AA13,19,21-24	(Total: 6/26, 23%)
	South (Zone 7): S10,13-15,17,30,34,35,38,53,59, 61-63,65-67,69-72,74,80,87,90,92,93,96,101, 108,110-112	(Total: 33/112, 29.4%)
South-west (Zone 8): SW 3,4,13	(Total: 3/26, 11.5%)	
Dagger/Halberd/Anthropomorph	High Atlas (Zone 3): HA6,10,12,13,15, 16,17,18,19, 20,22-25,28,31,32,34-36,38,39,44	(Total 23/44, 52.2%)
Libyco-Berber	North/Centre (Zone 1): NC11	(Total: 1/12, 8.3%)
	High Atlas (Zone 3): HA5,11	(Total: 2/44, 4.5%)
	Anti-Atlas (Zone 6): AA1,2	(Total: 2/26, 7.6%)
Chariot	Extreme South-east (Zone 4): ESE1	(Total: 1/2, 50%)
Total classified:	Tazina..... 63 }	Total: 138
	Pecked Cattle 46 }	
	D/H/A..... 23 }	
	Libyco-Berber 5 }	
	Chariot..... 1 }	

Additional Tazina site: a site in south Morocco (Zone 7), which was noted to contain Tazina engravings, was destroyed before it could be recorded (Simoneau, 1969: 99). It does not figure in the overall total of sites forming the basis of this study, but is included here to complete the Tazina group distribution and given the number S50a. This gives a total of 64 Tazina sites.

B. Sites divided equally between the Tazina and Pecked Cattle groups

South (Zone 7): S22,33,68

Total: 3

C. Sites not classified

Contents very mixed	North/Centre (Zone 1): NC9,10,12 East (Zone 2): E6,7,8 High Atlas (Zone 3): HA2,4,9,26,41 South-east (Zone 5): SE32 Anti-Atlas (Zone 6): AA3,6,7,8,9,10,11 South (Zone 7): S1,20,39,85,86,91,97,98,102,103,115 South-west (Zone 8): SW2,7,8,10,12,20 Western Sahara (Zone 9): WS2,3,4,11,12,18																			
Contents unusual	North/Centre (Zone 1): NC1,2,3,4,5,6,7,8 High Atlas (Zone 3): HA3,7,8,29,30,37,42,43 Anti-Atlas (Zone 6): AA5,12,20 South (Zone 7): S18,32,58,88,100,113,114 South-west (Zone 8): SW6,27 Western Sahara (Zone 9): WS27																			
Contents recent	South-west (Zone 8): SW17,19																			
Published data incomplete, or inexploitable	East (Zone 2): E2 High Atlas (Zone 3): HA14,21 Anti-Atlas (Zone 6): AA14,18,26 South (Zone 7): 3,11,29,36,50,55,65,73,75, 77,83,84,89,95,104-107,109 South-west (Zone 8): SW1,9,11,14,15,16,21,23,26 Western Sahara (Zone 9): WS1,7,16,17,24,25,26																			
Data lacking	High Atlas (Zone 3): HA1,40 South-east (Zone 5): SE14,22,30 Anti-Atlas (Zone 6): AA4,15,16,25,27 South (Zone 7): S4,5,6,8,12,28,31,45,47,51,52, 54,56,57,60,76,78,79,81,94 South-west (Zone 8): SW18,22,24,25																			
Total not classified:	<table> <tbody> <tr> <td>contents very mixed.....</td> <td>42</td> <td>}</td> <td></td> </tr> <tr> <td>contents unusual.....</td> <td>29</td> <td>}</td> <td></td> </tr> <tr> <td>contents recent.....</td> <td>2</td> <td>}</td> <td></td> </tr> <tr> <td>published data incomplete</td> <td>41</td> <td>}</td> <td rowspan="2">Total: 148</td> </tr> <tr> <td>data lacking.....</td> <td>34</td> <td>}</td> </tr> </tbody> </table>	contents very mixed.....	42	}		contents unusual.....	29	}		contents recent.....	2	}		published data incomplete	41	}	Total: 148	data lacking.....	34	}
contents very mixed.....	42	}																		
contents unusual.....	29	}																		
contents recent.....	2	}																		
published data incomplete	41	}	Total: 148																	
data lacking.....	34	}																		

Non-classified sites by zone are given below.

	Zone									
	1	2	3	4	5	6	7	8	9	
Very mixed	3	3	5		1	7	11	6	6	42
Unusual	8		8			3	7	2	1	29
Recent								2		2
Data incom.		1	2			3	19	9	7	41
Data lacking			2		3	5	20	4		34
TOTAL	11	4	17		4	18	57	23	14	148

D. Sites where where Tazina, Pecked Cattle, D/H/A, Libyco-Berber, Chariots and *tifinar* images occur as minority elements in sites mentioned above

Tazina	South-east (Zone 5): SE32 South (Zone 7): S13,17,39,50,92 Western Sahara (Zone 9): WS7,12,16
Pecked Cattle	East (Zone 2): E3 High Atlas (Zone 3): HA2,10,16,17,19,31,36 Anti-Atlas (Zone 6): AA18 South (Zone 7): S32,102-107,109 Western Sahara (Zone 9): WS1,4,5,8-14,16-20,22-25
Dagger/Halberd/ Anthropomorph	East (Zone 2): E5,7 High Atlas (Zone 3): HA4,5,11,27 South-east (Zone 5): SE17,19 Anti-Atlas (Zone 6): AA 6 South (Zone 7): S3
Libyco-Berber	North and centre (Zone 1): NC9 East (Zone 2): E1 (camel),6,7,8 High Atlas (Zone 3): HA4,10,19,32,41 Extreme south-east (Zone 4): ESE2 South-east (Zone 5): SE11 (camel), 12,32 Anti-Atlas (Zone 6): AA3,6-11 South (Zone 7): S2,32,39,58,87,101,115 South-west (Zone 8): SW7,8,20,26 Western Sahara (Zone 9): WS5
Chariots	East (Zone 2): E3,7 High Atlas (Zone 3): HA 6,8,9,12,13,15,17,19,26,32 Extreme South-east (Zone 4): ESE2 South-east (Zone 5): SE13,19 Anti-Atlas (Zone 6): AA6-10,14,18 South (Zone 7): S 11,25,32,58,65(?),68,71,72,75,84-91,97,98 South-west (Zone 8): SW12-15 Western Sahara (Zone 9): WS1,2,9,26
<i>Tifinars</i>	High Atlas (Zone 3): HA17,35,36,43 Extreme South-East (Zone 4): ESE1 Anti-Atlas (Zone 6): AA1,8 South (Zone 7): S2 South-West (Zone 8): SW26 Western Sahara (Zone 9): WS2,18(?)
Total minorities:	Tazina group..... 9 Pecked Cattle group 36 D/H/A group..... 10 Libyco-Berber group 33 Chariots..... 48 (+1?) <i>Tifinars</i> 10 (+1?)

APPENDIX 11. BRIEF DESCRIPTION OF ROCK ART SITES

Information given here comes from published reports or personal knowledge. As only a small number of catalogued sites has been published, data are uneven. The first reference number is the one used in this study, the site name is as given by the first researcher, the name, number of the official rock art inventory (Simoneau, 1977) and map reference are in brackets. The grid reference, the number of engravings (E) or paintings (P) and the situation of each site are as given in published reports (sometimes a combination of several sources), unless other information is available. Few Moroccan rock art sites have been the object of a complete corpus. Researchers have generally tended to use vague terms such as "many" or "a few", so many sites cannot be quantified and figures given here will be minima. The select bibliography lists the first publication and others that add information, excluding analyses and syntheses. The contents of each site are as published; where several researchers noted different images on the same site, this is indicated. Interpretations felt to be doubtful by the researcher himself are shown by a (?), and unidentifiable animals given as 'animals n.i.'. Comments or queries by the present researcher are in italics within square brackets.

Once again it is emphasised that a site's contents only represent what researchers saw or felt worth recording. Destruction has taken place on many sites, others have only been superficially reported. However, in spite of these limitations, it is considered here that the general feel of a site has been appreciated and its peculiar features noted. The undoubted lack of precision concerning the actual number of images on a site is thus felt not to invalidate deductions.

Zone 1 - North and centre

- NC 1 - Magara Sanar, Larache (uncatalogued) numerous P
Situation: cave in the J Tasbet [J Kasba in original report], 50 km E of Larache [the site has never been re-discovered]. Bibliography: Garcia Hernandez (1941). Many articles published since, see Souville, 1973. Contents: red paintings, particularly concentrated on roof. Mainly dots and lines of dots in parallel lines, rectangles, circles, meanders, etc. Some schematic humans and animals (goats, deer, horses and aquatic birds), humans sometimes associated with animals, eg man on horseback [?].
- NC 2 - Oued Zireg, Taza (uncatalogued) several E
Situation: on large limestone blocks obstructing rock-shelter on left bank of O Zireg, c 30 km E of Taza. No engravings on walls of shelter. Bibliography: Grébenart and Pierret, 1966. Contents: short (10 cm), finely polished lines, tapering ends (maximum depth: 5 mm), generally forming lattice pattern (3-9 lines crossed by 2-3 others) but also isolated; cup-marks (average diameter 3-5 cm) mostly on horizontal slabs, sometimes associated with the lines; series of hammered dots making up circle of 20 cm diameter. Date proposed by researchers: "old". Compared with "Capsian traits" of Neolithic-of-Capsian-Tradition in Algeria [Taza is on the route from Algeria].
- NC 3 - Grotte des Contrabandiers, Rabat (uncatalogued) 1 E
Situation: on vertical rock face c 20 m N of mouth of cave in fossil sandstone cliff, 17 km SW of Rabat. Bibliography: Roche and Jodin, 1966. Contents: pecked orant (63 cm). Archaeological material: excavations yielded lithic material from Early Aterian to Iberomaurusian.
- NC 4 and 6 - Maaziz and N'Kheila, Rabat (uncatalogued) 3 steles
Bibliography: Souville, 1973. Contents: Three roughly worked steles found near Rabat at the beginning of the century, now in the Antiquities Museum in Rabat. Two from N'Kheila (84x52x11 cm for the best

preserved), one from the nearby village of Maaziz. One very damaged, one slightly so, the other in good condition. In the centre of the best preserved can be seen an anthropomorph in bas-relief surrounded by an undulating line and concentric arcs, with a third series of concentric arcs at the top.

NC 5 - Kef el Baroud, Ben Slimane (uncatalogued) 9 P; 4 E
Situation: paintings on roof of cave on E face of limestone massif (561 m), 10 km E of Ben Slimane, 30 km from coast, overlooking O Cherrat; 1 engraving near entrance, 2 c 400 m N of cave-mouth; group of cup-marks 100 m further on. *Bibliography:* de Wailly, 1973/75. *Contents:* 9 pale red non-figurative paintings (horned spirals the most frequent); engravings unidentifiable. *Archaeological material:* Neolithic and Chalcolithic material dated 4750±110 bp and 5160±110 bp [see Chapter 4].

NC 7 - Kef el Kerma, Casablanca (uncatalogued) a few E
Situation: on vertical face of rock-shelter in fossil sandstone cliff, c 250 m from sea, immediately SW of Casablanca. *Bibliography:* Antoine, 1935. *Contents:* all pecked; 2 groups: cup-marks, cup-and-ring marks, short furrows, 2 anthropomorphs. *Archaeological material:* Acheulean and Iberomaurusian lithics collected from vicinity.

NC 8 - Ifrane (uncatalogued) several P
Situation: mainly on walls, but some on roof, of rock-shelter in rocky outcrop 5 km from Ifrane, overlooking grassland. *Bibliography:* Choppy, 1952. *Contents:* Red-ochre, finger-wide, curvilinear abstract paintings close together: whorls, concentric arcs, short straight lines (no circles). *Archaeological material:* numerous grooved polishers, 3-25 cm long, 5 cm deep.

NC 9 - Koudiat el Mouneb, Skhour des Rehamna (uncatalogued) 141 E
Situation: 4 groups in small cavities and on flat surfaces around one of summits (581 m) of rocky conglomerate ridge. Extensive views. *Bibliography:* Searight, 1991. *Contents:* pecked, small (c 30 cm); 48 circles, concentric circles, semi-circles, triangles, 25 Arab daggers with shoulder belts, 2 Arab daggers without belt, 19 lines, 14 complex signs, 13 anthropomorphs, 7 Libyco-Berber horsemen, 7 other weapons, 5 animals n.i., 1 fibula. *Archaeological material:* rock faces grooved in 5 places as polishers.

NC 10 - Grotte Goran, Safi (uncatalogued) 6 E
Situation: on roof of extensive underground cave complex hollowed out in consolidated dune under thin calcareous crust, 36 km N of Safi, 1.5 km from sea (Cap Cantin). *Bibliography:* Antoine, 1952. *Contents:* 6 pecked and polished *haches-pelles*. *Archaeological material:* undated pottery.

NC 11 - Ram-Ram, Marrakech (uncatalogued) 434 E
Situation: isolated or grouped, on vertical and horizontal schist surfaces near summit of three low hills (c 476 m) on edge of Djebilet massif. *Bibliography:* Rodrigue, 1985 and corpus, 1987/88. *Contents:* pecked, small (10-20 cm), Libyco-Berber; 169 horsemen, 26 foot-soldiers, 23 felins, 10 dogs, 8 birds, 8 unmounted horses, 5 ovicaprids, 5 miscellaneous, 180 unidentifiable, including circles etc.

NC 12 - Koudiat el Mouissiera, Marrakech (uncatalogued) 88 E
Situation: on flat sandstone outcrop near summit of low hill, c 15 km SW of Marrakech. *Bibliography:* Malhomme, 1959. *Contents:* [considered to have been 4/5 destroyed at time of original research. Most of remaining images damaged or touched up, new (white patina) engravings added.] The remaining pecked engravings in corpus were : 24 curved Arab daggers, 35 circles, semi-circles, triangles, etc, 1 anthropomorph, 28 unidentified images.

Two engraved bedrock slabs found near Cap Cantin (Safi) (Herber and David, 1933) have been omitted. One (15x4m) was partially covered by c 200 images "reminiscent of horseshoes"; the other also contained horseshoes, a human hand, a human foot and a number of cup-marks. These engravings were considered by the authors of the article to be "religious" or belonging to the realm of "folklore".

Zone 2 - East

E 1 - Beni Ounif, Figuig (Jbel Youssef, 150.001, Figuig) numerous E
Situation: on walls of rock-shelter and nearby cliff, on flank of J Youssef, near Figuig. *Bibliography:* Russo and Pons, 1936; Pons and Vaufrey, 1938. *Contents* [both sources]: Capsian traits, elephant,

antelope or bovid, dog, "many" V-shaped incisions, "naturalistic animal sketches": small ruminants, ostrich, felin (?), Libyco-Berber camels, spiral.

E 2 - Oued Tisserfine Jachou, Figuig (150.002, Figuig) at least 1 E
Bibliography: Lhote, 1970a. Contents: 1 elephant [*at least*].

E 3 - Zenaga, Figuig (150.003, Figuig) 44 E
Situation: on walls of high sandstone rock just S of Col de Zenaga, near Figuig (frontier with Algeria).
Bibliography: Hamy, 1902; Flamand, 1921 [*mention only*]; Russo, 1926; Gautier, 1927. Contents [*mainly from Russo*]: 17 pecked, 13 polished. 8 elephants, 5 anthropomorphs, 3 bovids, 7 sheep (one with "helmet"), 5 antelopes, 5 horses, 2 dogs, 2 felids, 1 fish, 6 animals n.i. [*from the published sketches, some of these identifications look wrong, but have been left in the absence of a personal check*]. Date proposed by researcher: Aurignacian for the oldest [*wrong, influenced by current thinking*].

E 4 - Jbel Melias, Figuig (150.004, Figuig) > 17E
Situation: rock face, J Melias. Bibliography: Lhote, 1970a. Contents: pecked; 7 elephants, 4 rhinoceroses, 3 bovids, 1 antelope, 1 anthropomorph, 1 animal n.i. + other vague animals.

E 5 - Gara Melias, Figuig (150.005, Figuig) several hundred E
Situation: on 4 slabs inside rock-shelter to SSW of site E4. Bibliography: Simoneau, 1975d.
Contents: all polished: *orant*, small rhinoceros within larger one, antelopes, circles, dagger.
Archaeological material: snail shells, ostrich egg fragments, flints, pottery, charcoal on floor.

E 6 - Garet el Hamra, Figuig (150.006, Figuig) several E
Situation: low ridge. Bibliography: Lhote, 1970b. Contents: pecked; Libyco-Berber horsemen, elephant, man armed with axe, bovids, lion (?)

E 7 - Hassi Rhilane, Talsinnt (150.007, Bal Ghiada) Several hundred E
Situation: 6 groups of engravings some 60 km E of Talsinnt within a few dozen kilometres of each other: Kerma, Jbir (both rock shelters in sandstone ridges), Petit and Grand Ghilen (on rocky chaos of rounded sandstone blocks), Borj Ali ou Hadid (large sandstone slabs), Hassi Tinjamine (2 sloping limestone slabs). Bibliography: Gautier, 1916; Greisson, 1973/75. Contents (*from Greisson*): patination varied. Kerma: many pecked modern engravings, 2 bovids (1 polished), snake, *hache-pelte*, 3 polished antelopes; Jbir: unfinished lines, 1 "triangular-headed lance"; Petit and Grand Ghilen: many pecked modern, Arabic inscriptions, horsemen (*Libyco-Berber*), horses, camels, filiform animals [*probably Libyco-Berber*], polished animals n.i., ostriches, elephant with young, anthropomorphs, leopard, geometric compositions; Borj Ali ou Hadid: elephants, ovicaprids, bovids, serpentiforms; Hassi Tinjamine: pecked geometrics, camel (?), dagger, rivetted halberd, chariot, small (15cm) sexual scene. Archaeological material: numerous lithic scatters but no polished stone artefacts or pottery.

E 8 - Ain Metlili, Anoual (Assif Metlili, 150.008, Talsinnt) some E
Situation: on slabs of sandstone between Talsinnt and Anoual, c 40 km N of Talsinnt Bibliography: Greisson, 1973/75. Contents: horsemen, camels, dogs hunting [*all Libyco-Berber*], ostriches, foot with toes, possible axe, 2 felins, mounted ostrich [?], Arabic "graffiti" [*inscriptions?*]. Date proposed by researcher: relatively recent, judging by patina.

Zone 3 - High Atlas

HA 1-10 - Jbel Rat (150.047-056, Azilal) 500-1,000 E
Situation: 10 catalogued sites at c 2,000 m on or near grazing grounds round the base of the Jbel Rat (3,397 m), in a zone c 10 x 10 km. On flat sandstone slabs, except for Amdrouss (HA8), on large isolated block. Bibliography: Glory, 1953; Malhomme, 1961; Simoneau, 1967b, 1968/72, 1970, 1975a, 1977. Contents: polished, pecked, patina variable; Azib Tinzourine (HA1): no information; Assif Anamrou (HA2) (c 50 e): armed horsemen, daggers, cattle, *hache-pelte*; Assif n'Ifrane (HA3) (c 25 e): 20 pecked daggers associated with polished bovids; Aougdal Tamrij (HA4) (c 100 e): round shields, 2 anthropomorphs, Libyco-Berber horsemen, cattle, idols, hands; Tizi n'Tirlist (HA5) (the most important, minimum 300 engravings): round shields, daggers, idols, Libyco-Berber horsemen and footsoldiers in battle or hunting scenes, a few wild animals; Igoudmane (HA6) (c 30 e): rectangular shield, 20 daggers; halberd, chariots; Tizi n'Zaouit (HA7) (c 20 e): circles, sandals; Azib Asserdoun (HA8) (c 30 e): chariot,

2 *orants*, 2 daggers, 2 felids, other wild animals; Amdrouss (HA9) (minimum 3 e): sexual scene, third anthropomorph; Tizi Ougna (HA10) (c 30 e): daggers, rectangular shields, Libyco-Berber horsemen, cattle.

HA 11 - Tizi n'Iblouzen, Jbel Rat (uncatalogued)

c 100 E

Situation: on sandstone slabs on small plateau, NE side of J. Rat. Concentrations on N and E.

Bibliography: Searight, 1994a. Contents: small (c 20 cm) pecked images, patina total to light. 3 daggers, 1 rectangular shield, armed Libyco-Berber horsemen, horses, dogs, 1 oryx, 1 felid, 3 camels, feet, Arabic inscriptions (light patina), circles, zigzags etc.

HA 12 - Aougdal n-Oumghar, Telouet [*correct name n'Aougdal Oumzouar*] (150.057, Télouet) 50-60 E

Situation: on 3 sandstone slabs in centre of pasturage, at 2,500 m. Bibliography: Simoneau, 1970, 1977; Rodrigue, 1992c. Contents: 14 daggers, 5 round shields, 3 dogs, possible tortoise, 4 lizards, 5 chariots, 4 anthropomorphs, 2 lance or arrow heads, "a few sickle blades" [?], 2 hands, 2 "clubs" [details from AR]. All pecked, heavily patinated [*plus small polished bovid*]. Archaeological material: 2 tumuli.

HA 13 - Azibs de Tainant, Igherm n'Ougdalen (150.058, Télouet)

50-100 E

Situation: in 2 rock-shelters and scattered over 1 km on sandstone slabs on plateau overlooking prairie, on S face of Atlas mountains, at foot of Tizi n'Tainant (2,700 m). Bibliography: Simoneau, 1967b: 70; 1968: 642-645; 1970: 378-379; 1977: 100. Contents: pecked, polished, patina heavy to medium; 5 large (60 cm) round shields and numerous smaller ones, 2 chariots, 10 lance or spear heads, 1 bovid, 1 anthropomorph, crescents, spirals. Archaeological material: tumuli, microlithic flints.

HA 14-31 - Yagour Plateau (150.069-086, Oukaimeden-Toubkal)

several thousand E

Situation: 18 catalogued sites scattered over 15x10 km on 2,500 m high plateau. Most engravings on horizontal or sub-horizontal sandstone slabs near pasturages. Bibliography: Malhomme, 1959, 1961; Jodin, 1964; Simoneau, 1967b: 71-75; 1968/72; 1970: 369-379; 1977: 71-85; Rodrigue, 1994c: 82-83. Contents: pecked, polished, pecked+polished, patina heavy to medium. Talat n'Toukkourt (HA14) no information; Talat n'lisk (HA15): large (1 m) shield, smaller shields, daggers, halberds, "double-edged axe", chariots, anthropomorphs, wild animals; Adrar n'Tuimelt (HA16): anthropomorph, bovids, dagger, rectangular shield; Akibs n'lkkis (HA17): 2 giant bovids (5 x 4 m) and other cattle, daggers, *hache-pelles*, halberds, rectangular shields, chariots, anthropomorphs (3=1-2 m), elephant with Libyco-Berber horsemen, lions, rhinoceros, ostriches, sexual scene, anthropomorph with *tifinar* inscription [*almost destroyed*]; Tifert n'Ourgou (HA18) (grouped on slab 3.20 x 2.40 m) 2 big (1.90 and 1.60 m) anthropomorphs with smaller one, elephant, gazelles, halberd; Aougdal n'Ouagouns (HA19): daggers, *haches-pelles*, chariot, anthropomorphs, cattle, felin, elephant; Aougdal n'llssoun (HA20): dagger; Assif Aloss (HA21): anthropomorph, daggers; Bou Oudruc (HA22): daggers, big (1.10 m) anthropomorph [*almost destroyed*], cattle; Aguerd n'Tircht (HA23): rectangular and round shields, daggers, halberds, anthropomorphs, felins, sexual scene; Tizi n'Rhellis (HA24): round shields, circles, anthropomorphs (1=1.60 m), clubs, daggers; Aougdal n'Tichki (HA25): round shields; Lalla Mina Hammou (HA26): Arab daggers, straight dagger, labyrinths, reticules/cadastral plans, round shields, spear/lance heads, clubs, chariot, feet; Ilgane (HA27): bovids, dagger; Israoul [*Asserdoun n'Ouaman*] (HA28): single engraving of big (2 m) polished anthropomorph, 3 pecked daggers 100 m away; Igoudmane des Ait Inzel (HA29): complex circles, 2 stick anthropomorphs, 1 spear/lance head; Azib Tighdouine (HA30): circle, "fish" [?]; Fif Gaguine (HA31): daggers, *hache-pelle*, big (1.20 m) anthropomorph and smaller ones, felids, cattle; Archaeological material: tumuli.

HA 32 - Talat n'lisk II, Yagour plateau (uncatalogued)

50-100 E

Situation: c 300 m to W of Talat n'lisk site (qv), scattered over 1 km. Bibliography: Hourbette, 1992: 15-20. Contents: generally small (10-30 cm) and pecked; daggers, circular shields, anthropomorphs, bovids, Libyco-Berber horsemen, circles, spirals, chariots, spear/lance heads, *haches-pelles*, dogs, animals n.i. ostrich, caprids (?).

HA 33 - Talat n'lguir, Yagour plateau (uncatalogued)

c 10 E?

Situation: at W extremity of plateau on vertical rock face. Bibliography: Simoneau, 1967b: 73. Contents: line of bovids.

HA 34 - Ifar, Yagour plateau (uncatalogued)

49 E

Situation: on horizontal sandstone outcrop in middle of narrow prairie, 600 m SE of Lake Ifar, 1,500 m E of site of Aguerd n'Tircht (HA23). Bibliography: Rodrigue, 1994a: 215-223. Contents: 16 *haches-pelles*,

11 daggers, 2 halberds, 1 rectangular and 3 round shields, 1 game, 15 unidentifiable. Date proposed by researcher: "old" and "more recent" mixed.

HA 35-39 - Oukaïmeden (150.087-091, Oukaïmeden-Toubkal) c 1,000 E
Situation: engravings widely scattered over 4x2 km on the exposed sandstone slopes. The catalogued sites represent 5 geographical zones: Ait el Qaq (HA35) (large sandstone boulder N of Oukaïmeden), Azib Tiferguine (HA36) (prairie), Azib Abadsan (HA37) (rock-shelter), Oukaïmeden Abri (HA38) (slopes overlooking village), Oukaïmeden (HA39)(village) [*much damage*]. Bibliography: Malhomme, 1959; Jodin, 1966b: 29-54; Simoneau, 1967a: 569-577; 1970: 369-370; 1977: 102; Regagnon, 1978: 97-99; Rodrigue, 1987: 19-22; 1988; 1986: 179-191; 1999a. Contents: pecked, polished, pecked+polished; patination heavy to medium; sizes from 30 cm to 1 m; Ait el Qaq: 1 polished dagger. The 4 other sites taken together: daggers (192), shields (111), cattle (61), axes (59), spear/lance heads (58), "throwing weapons" (44), anthropomorphs (38), halberds (38), wild fauna (28), games (21), idols (10), *tifinar* inscriptions (2) unidentifiable (268) [*details from Rodrigue, 1999a*]. Archaeological material: surface collections of flint artefacts, rock-shelter and 5 tumuli excavated [*see Chapter 4*].

HA 40 - Tighremt Tidili, Tighremt n'Ouazdidèle (150.068, Oukaïmeden-Toubkal) no information

HA 41 - Amrdoul, Tizi n'Test (uncatalogued) 502 E
Situation: on granite ridge just S of pass (Tizi n'Oulaoune, 2,100 m) on S side of High Atlas, most on chaos of rocks, also on large horizontal slab, 10 m² (54 engravings), and large, flat slab at summit (84 engravings). Bibliography: Rodrigue, 1990: 3-10. Contents: lightly pecked, patination dark to light ocre, occasionally total; circles and reticules/cadastral plans (80%), armed Libyco-Berber horsemen and footsoldiers, spirals, serpentiformes. Archaeological material: 2 large tumuli. Date proposed by researcher: majority of Libyco-Berber age, but site used during long period, from transition end Bronze age to beginning of Libyco-Berber

HA 42 - Toulkine, Marrakech (150.141, Amizmiz) Grid ref: 215.8 x 66 numerous P
Situation: in 7 shallow cavities on ledges c 12 m above rock-shelter, 1,800 m alt. in limestone cliff. Bibliography: R Bayle des Hermens *et al*, 1984: 413-439. Contents: red ochre paintings of dots, curves, zigzags, combs, hand and finger traces. Archaeological material and date: Neolithic industry in underlying rock-shelter; red ochre found in an archaeological level dated 2120-2420 bc [*see Chapter 4*].

HA 43 - Imi Ouzerwane (150.142, Amizmiz) a few P
Situation: on sheltered ledge opposite Toulkine rock-shelter (HA42). Bibliography: Heckendorf and Salih, 1999: 233-257 [*mention only*]. Contents: paintings similar to HA42.

HA 44 - Oussikis, Msemrir (uncatalogued) 72 E
Situation: frieze c 4 m long on vertical sandstone rock face, Dadès valley, S side of Atlas
Bibliography: Rodrigue, 1989/90: 24-26. Contents: pecked, polished, pecked+polished; 70 round shields (circles) (max.38 cm diam.) + c 20 cupules (4-5 cm), 2 groups of *tifinar* inscriptions.
Date proposed by researcher: Late Bronze/beginning Iron Age (towards 8th century bc?)

Zone 4 - Extreme south-east

ESE 1 - J Ouafilal, Taouz (150.009, Taouz) about 50 E
Situation: on horizontal or vertical surfaces (sandstone) on J Ouafilal summit and especially SE slopes. A few hundred metres from O Ziz (lost in sands). Bibliography: Ruhlmann, 1939: 88-91; Meunier and Allain, 1956: 51-67. Contents: pecked except for 1 chariot (polished); 26 2-wheeled chariots, including a joined convoy of 10; 3 *tifinar* inscriptions; a few rare circles.

ESE 2 - Taouz (150.010, Taouz) 50-100 E
Situation: catalogue number covers 2 groups: a) on slightly inclined slabs on small isolated hillock; b) 200-300 m further west, on low hill, packed together on a slightly inclined slab but also a few isolated. Bibliography: Meunier and Allain, 1956, 51-67. Contents: a) c 30 pecked cattle, their interior surface covered with pecked dots, a few wild animals in same style, very small mounted stick anthropomorphs, a few chariots; b) pecked chariots. Archaeological material: several dozen well-constructed tumuli with low dry-stone walling [*see Chapter 4 for funerary goods*] including one within 25 m of principal engraved slab. Date proposed by researchers: cattle probably earlier than chariots, but both groups Libyco-

Berber. No engravings incorporated in tumuli nor broken by removal of their rock support for tumuli construction. Engravings and tumuli could be contemporary.

Zone 5 - South-east

SE 1 - Hassi Kraouia, Msissi (150.011, Msissi) Grid ref: 459 x 570 some E
Situation: on sandstone rock-face along W bank of Assif Tikertouachène, 19 km SE Msissi oasis.
Bibliography: Simoneau, 1974/75a: 310. Contents: polished antelopes, ostriches, cattle.

SE 2 - Assif Tikertouachène, Msissi (150.012, Msissi) Grid ref: 463 x 569 2 E
Situation: north of site SE 1 (qv), on same sandstone rock-face on W bank of Assif Tikertouachène.
Bibliography: Simoneau, 1974/75a: 310; 1977: 1. Contents: 2 small (c 10 cm), isolated, polished horned spirals, side by side, heavily patinated.

SE 3 - Assif Msissi, Msissi (150.013, Msissi) Grid ref: 465 x 556 a few E
Situation: on S side of Jbel Boukerkour, on left bank of Assif Msissi. Bibliography: Simoneau, 1974/75a: 309. Contents: a few antelopes. Archaeological material: Tumulus.

SE 4-7 - Jbel Boukerkour, Msissi (150.014-017, Msissi) Grid ref: 565x555, 465x554, 465x553, 465x551 50-100 E
Situation: group of 4 sites c 1 km one from another, on low sandstone ridges overlooking Assif Msissi on the west, a few km S of Msissi [*much destruction*]. Bibliography: Simoneau, 1974/75a: 309-12; 1977: 2-6. Contents: SE4) on right bank of Assif Msissi, all polished: man behind "trapped" elephant, ancient giant buffalo, ostriches, antelopes, cattle; SE5) further W, on cluster of large sandstone blocks: 2 finely incised *orants*) surrounded by antelopes and a Barbary sheep, 2 further anthropomorphs, 4 bovids, antelope with "spoked" head, followed by young, 2 ostriches, 2 large polished fibulas (more recent); SE6) on isolated slab on sandstone summit 1 km to W: polished lion followed by man with axe, ostrich nearby; SE7) 1 km to W: ostriches, concentric arcs, apparently metal axe behind 2 elephants "above a copper mine" (465 x 551). 10 km from site SE4: antelope (grid.ref: 563 x 546). Archaeological material: tumulus close to SE6.

SE 8 - Azag, Msissi (150.018, Msissi) Grid ref: 471x 553 c 10 E
Situation: on boulders to E of river running through Azag village, 2 km NW of Msissi. Isolated engravings slightly to E and N. Bibliography: Simoneau, 1974/75a: 309, 311. Contents: Equid, rhinoceros, a few zigzags. Further E: pecked bovid; to N: rhinoceros, ostrich

SE 9 - Jbel Iourarhane, Msissi (150.019, Msissi) Grid ref: 262x539, 463x541 c 100 E?
Situation: 2 groups: a) on summit of sandstone crest, E end of S face of J Iourarhane (c 20 km SW of Msissi), W of Assif n'Timerzit; b) c 2 km E of (a), on W edge of same *assif*. Bibliography: Simoneau, 1974/75a: 309, 311; 1977, pl 7-9. Contents: a) 4 superimposed polished cattle, finely incised, 1 rhinoceros, 2 "hunters", ostriches, other birds, antelopes, trap, metal javelins, *hache-pelles*, "double axes"; (b) panel of 4 antelopes under a lance, elephant, rhinoceros, humans, complex image of 2 *hache-pelles* and 2 bi-lobed axes. Archaeological material: large tumulus near (a). Date proposed by researcher: "Eneolithic" [*ie copper*] because of associated engravings of metal weapons.

SE 10 - Tagouramt, Alnif (Tagourranit 150.020, Alnif) some E
Situation: on 3 sides of isolated block beside road to Achbarou, c 4 km NE of Alnif. Bibliography: Ruhlmann, 1939: 63-64. Contents: "graffiti" and 1 deeply engraved polished antelope.

SE 11 - Tameghout, Alnif/Msissi (Tamrerhout 150.021, Alnif) Grid ref. 463 x 537 numerous E
Situation: on sandstone boulders, about halfway between Alnif and Msissi. Bibliography: Ruhlmann, 1939: figs. 28-34; Simoneau, 1974/75a: 309. Contents: giraffes [?], possible felid, antelopes, possible cattle, ostrich, all polished and much re-worked, numerous pecked complex zigzags, numerous "graffiti (camels)". Nearby: a few equids, ostriches, antelopes.

SE 12 - Ait Saadane, Tazzarine/Alnif (150.022, Taghbalt) numerous E
Situation: 2 distinct groups, halfway between Tazzarine and Alnif: (a) the most important, on horizontal sandstone slabs on plateau Taourirt n'Sidi Mohamed ou El Hadj, NE of Ait Saadane; (b) on blocks on nearby hill Talidat, N of Ait Saadane. Bibliography: Clariond, 1933: 90-95; Ruhlmann, 1939: 66. Contents: [*from Ruhlmann, 1939*] (a) 2 rhinoceros, antelopes, ostriches, possible cattle, all polished,

metal spear/javelin point, various Libyco-Berber "graffiti"; (b) elephant, antelopes, cattle, ostriches, Libyco-Berber "graffiti", dogs, 2 small complex spiral designs

SE 13 - SE Ououglout, Tazzarine (150.023, Taghbalt) numerous E
 Situation: on sandstone ridge 8 km NE of Tazzarine, S of oasis of Ououglout. Bibliography: Simoneau, 1971b: 117; 1977: 10,11. Contents: all polished; 2 anthropomorphs (different patina), antelopes, cattle, ostriches, elephant, axe, complex spiral design, very small scratched chariot; 5 km to E: spoked circle [possible trap], 4-petal design.

SE 14 - Amergou, Tazzarine (150.024, Tazzarine) no information

SE 15 - Anou n'Ouamersemlal, Tazzarine (150.025, Tazzarine) c 30 E
 Situation: on isolated sandstone mound, c 25 km SW of Tazzarine. Bibliography: Simoneau, 1971b: 107,108; 1977: 26. Contents: small, all polished. 1 human, 3 bovids, numerous antelopes, 3 rhinoceros, 2 elephants, ostriches, 3 equids, spoked circle [possible trap], [southern Morocco axe].

SE 16 - Tazzarine NO, Tazzarine (150.026, Tazzarine) many E
 Situation: on scattered blocks on sandstone mound, 4 km NW of Tazzarine oasis [much destruction] Bibliography: Simoneau, 1971b: 114-116; 1977: 12-16. Contents: most polished, small (average 30 cm) [many very eroded]. 3 anthropomorphs, several elephants, 2 giraffes, lion, 7 rhinoceros (1 menaced by axe-bearing man), 2 equids, camel [light patina], at least 5 bovids, at least 21 antelopes, 4 unidentified animals, "game", 9 bag traps, 3 spirals, spoked circle [possible trap]. Archaeological material: several tumuli, some excavated (see Chapter 4). 1 engraved stone incorporated in tumulus, another placed in tumulus centre. Several boulders grooved as polishers.

SE 17, 18 - Tamsahelt SE and E, Tazzarine (150.027, 028, Tazzarine) many E
 Situation: on small sandstone blocks on 2 ridges c 15 km W of Tazzarine. Bibliography: Simoneau, 1971b: 113,114. Contents: most polished, small (average 30 cm). Man with dog, rhinoceros with 3 bag-traps, elephant, equid, 6 bovids, several antelopes, animal n.i., ostrich, dagger, 2 spirals, 2 pecked meanders, 2 pecked concentric circles, [1 cup-mark], 5-petal design, [1 hache-pelte].

SE 19, 20 - Ait Ouazik S and O, Tazzarine (150.029, 030, Tazzarine) many E
 Situation: on boulders on sandstone ridges, in dry bed of O.Akka n'lfedzane c 15 km S of Tazzarine. Bibliography: Simoneau, 1971b: 109-112; 1977: pl 20-25. Contents: most polished, small (average 30-50 cm). Humans, giraffe, felids, rhinoceroses, elephants, equids, cattle, 1 or 2 ancient giant buffalos, animals n.i., great many antelopes and ostriches, other birds, bag-traps, spoked circle [possible trap], several pecked spirals and circles, complex polished spiral design, axes, pecked curvilinear zigzags, "game", 4 pecked+polished sandals, round and rectangular shield and anthropomorph, polished chariot. Archaeological material: tumuli; several boulders grooved as polishers.

SE 21 - SE Abdi n'llemchane, Tazzarine (150.031, Tazzarine) 1 E
 Situation: sandstone ridge SE of small oasis of same name, which continues as site of Tamsahelt (SE 17,18). [Only mentioned in Simoneau, 1977, with reference to Tamsahelt in Simoneau, 1971b. So probably part of Tamsahelt.]

SE 22 - Zalou S, Tazzarine (150.032, Tazzarine) no information
 Situation: 8 km NW of Ait Ouazik (SE 19,20) in dry bed of Assif n'Tarna.

SE 23 - Tanoumrit S, Tazzarine (150.033, Tazzarine) several E
 Situation: 2 groups of sandstone ridges, one just S of the village, the other 4 km SSW. Bibliography: Simoneau, 1971b: 112,113; 1977: 18,19. Contents: polished. Large rhinoceros (80 cm) with dug, frieze of equid-ostrich-rhinoceros (light patina), antelopes, ostriches, felid, equids, bovid, another rhinoceros, complex spiral "mask". Archaeological material: tumulus, including built-in slab with frieze of 3 ostriches.

SE 24-28 - lkhf n'Ouaroun, Zagora (150.035-039, Hassi Bou Hayara) Grid refs: 503x369, 503x375 [502x373], 503x365 [504x361], 503x363 [504x362], 504x361 c 200 E
 Situation: the 5 catalogued sites stretch for 10 km on a series of sandstone ridges, c 50 km E of Zagora: Azigzaou ou Semlal (SE24), Ouzdine (SE25), Asguine (SE26), Azigzaou Brahim (SE27), Ouakhir (SE28). Engravings on bedrock slabs or scattered boulders. Bibliography: Simoneau, 1971a: figs.

only:38-40,42,43; 1972a:15-16, 23-25; 1974/75b: 314; 1977: 27-32,34. Contents [all sites taken together]: small, polished: 2 ancient giant buffalos, 16 elephants, 6 lions, 9 rhinoceros, antelopes, ostriches, spirals (pecked), traps, equids, 3 animals with decorated "spoked" heads, anthropomorphs, chariots, spoked circle [possible trap], complex curvilinear design, unidentifiable signs. Traces of red and white paint on two engravings [?]. [Much current destruction, many recorded engravings missing.]
Archaeological material: tumuli.

SE 29 - Ikhf n'Ouaroun, Tafenna, Zagora (150.034, Hassi Bou Hayara) 60 E
Situation: most on sandstone ridges in southern part of Hassi Tafenna basin, 10 km E of Ktaoua.
Bibliography: Simoneau, 1972a: 15-16,26; 1977: 33. Contents: small, polished: lion hunted by 2 men, antelopes, ostriches, other birds, elephants, trapped rhinoceros, bovids, axe with semi-circular cutting edge [southern Morocco type?]; elephant, 2 lions, bovid on NE of basin.

SE 30 - Foum Takkat, Zagora (150.040, Zagora) no information ?
Situation: c 16km WNW of Hassi Tafenna, where Oued Draa cuts through the Jbel Bani.

SE 31 - Tidri, Zagora (150.041, Tagounite) several E
Situation: flat rock surfaces on edge of plateau containing part of Foum Larjam necropolis, right bank of O. Draa, c 50 km S of Zagora [should be in Zone 5 but included here because of proximity to preceding sites]. Bibliography: Simoneau, 1972a:16,27. Contents: polished. Chariot wheel [?], elephant, geometric designs, animals. Archaeological material: some engravings incorporated in tumuli (see Chapter 4); large engraved elephant and small antelope on vertical slab in middle of [robbed] tumulus; other engraved antelopes recovered from tombs [cattle and antelopes].

SE 32 - Jbel Tibasksoutine, Zagora (uncatalogued) c 50 E
Situation: on sandstone outcrops of Jbel Tibasksoutine, left bank O Draa, c 30 km SE of Zagora.
Bibliography: Rodrigue, 1989: 43-47. Contents: most polished; cattle, some entirely pecked, the most numerous; antelopes, 1 bustard, 1 elephant completely pecked, 1 possible fox, 1 possible rhinoceros, possible felin, horses (2 mounted, some Libyco-Berber), anthropomorphs, bag trap, "games", sandals, Arabic inscriptions [many polished antelopes]. Archaeological material: more than 100 tumuli; thick scatters of Lower Palaeolithic lithic material.

SE 33 - Foum Larjam, Zagora (150.042, Tagounite) Eliminated
Situation: necropolis just W of site Tidri (SE 31) [No mention of engravings in article on necropolis by Jacques-Meunier (1958) (see Chapter 4). Confusion with Tidri].

Zone 6 - Anti-Atlas mountains

AA 1 - Oumchena, Agdz (Foum Chenna 150.044, Tinzouline) Grid ref: 426.2x387.1 over 3,000 E
Situation: on sides of stepped sandstone blocks making up rocky walls of now-dry valley over distance of c 1 km; more than 300 groups of autonomous scenes [mostly on left bank]. Bibliography: Glory, Allain and Reine, 1955: 715-722; Reine, 1969: 35-54. Contents: small, pecked; a antelopes (a few), mostly armed Libyco-Berber horsemen and footsoldiers, battle and hunting scenes, camels, felins, dogs, ostriches, *tifinar* inscriptions. Date proposed by Reine (1969): black patina the oldest (antelopes)="metal age"; 2nd patina (horsemen and footsoldiers)=younger; 3rd patina (armed horsemen and footsoldiers, *tifinar* inscriptions)=pre-camel; 4th patina, lighter (camels, same horsemen, battle and hunting scenes)

AA 2 - Assif Ouiggane, Agdz (150.045, Tinzouline) numerous E
Situation: on rounded sandstone blocks scattered on surface of plateau (c 100 hectares) of small hillock forming natural fortress, c 7 km S of Oumchena (AA1). Bibliography: Simoneau, 1968/72: 27-31.
Contents: pecked, unpatinated, 20-30 cm. Essentially armed horsemen, comparable to Foum Chenna.
Archaeological material: oppidum on plateau (undated).

AA 3 - Djorf el rhil (Tasminerth 150.046, Tinzouline) Grid ref:413.2 x 494.3 some E
Situation: on sandstone blocks on banks of O. Tasminerth, c 15 km NW of Oumchena (AA 1).
Bibliography: Ruhlmann, 1939: 90; Glory, Allain and Reine, 1955: 715-722; Reine, 1969: 35-54.
Contents [mostly from Reine, 1969]: small, pecked; some combat scenes as at Oumchena (AA 1), oryx, unidentified animals; but also Berber jewellery:bracelets, fibulas. Date proposed by Reine (1969):

unidentified animals and oryx (dark patina) the oldest, former being overlaid by fibulas (lighter patina), the latter by hunting scene (light patina).

AA 4 - Azrou Klanine (150.066, Tazenakht) no information

AA 5 - Imin Maqous, J Siroua (150.067, Taliwine) Grid ref: 290x410 1 E

Situation: on upper face of recumbent, triangular, prepared granite block, 1.5x0.50x0.35 m.

Bibliography: Ruhlmann, 1935: 55-65. Contents: complex design "with continuous, smooth and fairly regular lines" [polished?] incorporating 7 parallel horizontal lines, a small central circle, 11 undulating lines, enigmatic sign. Archaeological material: tumulus covering dry stone walled burial chamber
Date proposed by researcher: a little before arrival of Islam [7th century AD]. Conception and technique links it to "Libyco-berber graffiti".

AA 6 - Assif Tiwandal, Igherm [prob.Imgoun 150.110, Igherm] Grid ref.222.6x364.5 1,558 E

Situation: 4 groups; most on sloping sheets of sandstone on left bank of Assif Tiwandal.

Bibliography: Searight, 1987: 3-33. Contents: pecked, small (20-40 cm), patination total to light; simple and complex circles and rectangles (375), lines (157), complex units (84), birds and animals (excluding horses and camels) (74), unmounted horses (15), camels (8), men on foot (17), round shields (2), daggers (25), hands (2), chariots (19), horsemen (124), sandals/feet (493), miscellaneous objects (4), Arabic writing (3) (156 engravings on 3rd site not categorised). Date proposed: 5 periods based on patination, from 1st millennium bc to present-day.

AA 7 - Cheik Iminirfi, Igherm (Cheikh Imi n'Irli, 150.111, Igherm) Grid ref: 341x205, 341x210 numerous E

Situation: on slopes (gabbro) in bed of Oued Cheikh Imi n'Irli, off road Igherm-Tata and at the copper mine [site destroyed]. Bibliography: Letan, 1966: 455-460. Contents: pecked, pecked+polished: "solar representations", horsemen, chariots, elephant, bull, numerous geometric compositions, camels, Arab swords and daggers, Arabic inscriptions. Patination from dark to light.

AA 8,9,10 - Waramdaz, N Waramdaz, S Waramdaz, Igherm (150.112-114, Igherm) numerous E

Situation: c 10 km S of Igherm, on slopes in Waramdaz village (AA8), just south of village and banks of (dry) O Wamsarda (AA9), 1 km S of Waramdaz village (AA10) [much destroyed]. Bibliography: Ruhlmann, 1934b: 59-64; R Wolff, 1982: 139,142. Contents: small (25-30 cm), pecked; many quadrupedes, feet, camels, a few Libyco-Berber horsemen, geometrical signs, simple and complex circles, "game", chariot; patina heavy to light.

AA 11 - Jbel Boukioud, Igherm (uncatalogued) several E

Situation: on two sloping bedrock slabs, on track from Igherm to Ida Ouzekri. Bibliography: Ruhlmann, 1934b: 62,63. Contents: small, pecked, patina light; scorpions, serpents (?), 2 horsemen [probably Libyco-Berber], many curved Arab daggers. Date proposed by researcher: 4th century AD.

AA 12 - Bigoudine, Agadir (150.143, El Menizla [?]) 1 E

Situation: on boulder in village

Bibliography: - Contents: Orant.

AA 13 - Tamegdoult, Agadir (150.144, Ait Baha) 11 E

Situation: on vertical faces of rocks near (dry) river-bed. Bibliography: Cornand, 1933: 142-143;

Ruhlmann, 1939: figs. 49,50,52. Contents: pecked. [The photographs published in 1939 by Ruhlmann showed 2 possible equids, 2 clear elephants, 2 possible bovids. However, visits to the site in 1994 and 1997 showed that the 2 "equids" (largest 102x72 cm) on left-hand boulder were bovids and the "elephants" (largest 90x73 cm) no longer looked like elephants (not the slightest trace of trunk) but were very clear bovids with forward-pointing horns, and only 1 of the bovids to the right was visible. One unrecorded elephant was noted elsewhere on the site].

AA 14 - Biougra, Inezgane (150.145, Ait Baha) many E

Situation: on flat, smooth bedrock surfaces round village (no water visible). Bibliography: de la Roche, 1952; du Puigauveau and M Senones, 1965: 285 [mention only]; Wolff, 1982: 139 [mention only]. Contents [from Puigauveau and Senones, 1965]: sacrificial rock [?], chariots, symbolic figures.

- AA 15 - Ghératoum (150.146, Agadir Melloul) no information
- AA 16 - Irhouz, Tagmoute (150.147, Taфраout) no information
- AA 17 - Tazalarht, Taфраout (150.148, Taфраout) Eliminated
[Confusion with site of Tazka, AA21]
- AA 18 - Assif El-Kbalt, Taфраout (150.149, Taфраout) at least 3 E
Situation: on banks of Assif El-Kbalt (upper reaches of O Tamanart). Bibliography: Wolff, 1982: 141 [mention only]. Contents: pecked; small man, bovid with forward-pointing horns "indisputably" connected to chariot.
- AA 19 - Amzlou, Taфраout (150.150, Taфраout) [Grid ref: 161x301] 12 E
Situation: on top and side of large rock, on small isolated triangular rock, and on rock faces, all at foot of Amzlou peak near pass at 1,700 m. Bibliography: Moyen, 1959; Mazel, 1971: 35-38 [site referred to as M'Gzerf]. Contents: pecked, patina medium: 9 bovids, 1 rectangle with 5 short attached lines, 1 unidentified filiform animal, 1 enigmatic [contrary to Mazel who saw 6 bovids, 2 roan antelopes, 1 deer, 1 solar symbol, 2 enigmatics and the flat-topped rock as "certainly" an altar where bulls were sacrificed ...]
- AA 20 - Imzilen, Taфраout (150.151, Taфраout) 2 E (1?)
Situation: on large basalt rock in middle of field near village of Imzilen [Anezarene on map]. Bibliography: Mazel, 1971: 41-43. Contents: "2 solar wheels ... human sacrifices to the Sun must have been made here" [the illustration looks like a flattened circle with two cupules...]
- AA 21 - Tazka, Taфраout (150.152, Taфраout) 2 E
Situation: 1.5 km from centre of Taфраout on vertical granite rock face and top of large block at foot of rock wall. Bibliography: Klug, 1939: 17-19. Contents: 1 large (1.20 m) pecked bovid with forward pointing horn, end of muzzle entirely pecked; 2nd similar bovid slightly larger (1.50m).
- AA 22 - Taguenza, Taфраout (150.153, Anezi) 2 E
Situation: on side of rock near small watercourse, 10km NNE of Souq el Had n'Tahala
Bibliography: - Contents: 2 pecked bovids [one damaged] [medium patina] and fresh engravings. [Inhabitant of Taфраout said inhabitants had destroyed the engravings to avoid visitors].
- AA 23 - Tirhemtmat, Taфраout (Douar Tighremt 150.154, Anezi) Grid ref: 141x306 11 E
Situation: 5 groups, on rocks (rhyolitic conglomerate) and vertical faces on right bank of Assif n'Tahala, 600 m downstream of village Tirhemtmat, over distance of c 400 m. Bibliography: Klug, 1939: 19-21. Contents: pecked; cattle [9 bovids (largest 46x28 cm), 1 certain anthropomorph, 1 doubtful].
- AA 24 - Douar Anezi, Taфраout (150.155, Anezi) 5 E
Situation: on rock faces beside river. Bibliography: Simoneau, 1969: 112 [mention only]
Contents: large (1.20 m) pecked bovid, 4 other bovids [in fact, 10 pecked cattle and 1 bird, not ostrich].
- AA 25 - Souk Larba n'ait Hammed (150.156, Anezi) no information
- AA 26 - Timoulay, Bou Izakarn (150.194, Bou Izakarn) at least 1 E
Situation: probably 10-12 km E of Bouizakarn, on road to Foug el Hassane. Bibliography: Simoneau, 1976: 31 [mention only in appendix]. Contents: at least one rhinoceros.
- AA 27 - Irharrar, Bou Izakarn (150.195, Bou Izakarn) no information

Zone 8 - South

- S 1 - Rich de Mbidia, Mhamid (150.043, Mhamid) a few E
Situation: on rocks on N edge of W end of longest of several quartzite ridges, 20 km S of Mhamid.
Bibliography: Glory, Allain and Reine, 1955: 715-722. Contents: pecked, patinated; fibula-pendants, bracelets, curved daggers, feet/sandals. Archaeological material: undated ruined citadel. Date proposed by researchers: "not modern"; most recent of artistic stages: "Arabo-Berber".

- S 2 - Zaouia Sidi Abd En-Nabi, Zagora (150.059, Zawyat Sidi Abdenbi) c.20 P
Situation: in a group of rock shelters. Bibliography: Simoneau, 1969 [*mention only*]; Salih, 1995: 3.
Contents: Red-ochre paintings; hands, geometric signs, anthropomorphic and zoomorphic representations, Libyco-Berber inscriptions.
- S 3 - El-Ghoula (150.060, El Gloa) at least 1 E
Situation: near Zagora. Bibliography: Rodrigue, 1999a: 126 [*mention only*]. Contents: 1 dagger.
- S 4 - Wiggane (150.061, El Gloa) Grid ref: 433x348.15 no information
- S 5 - Oued Neffid (150.062, El Gloa) Grid ref: 436x383 no information
- S 6 - Oued Oum Ech-Channa (150.063, El Gloa) Grid ref: 426x387 no information
- S 7 - J Lahmar, Foum Zguid (150.064, Foum Zguid) Grid ref: 383x368 at least 1 E
Situation: downstream of the palm grove. Bibliography: - [Contents: *Complex spiral design*].
- S 8 - O Mrah, Foum Zguid (150.065, Foum Zguid) Grid ref: 370x384 no information
Situation: 4 km NE of site J Lahmar.
- S 9 - J n'Ourkour (150.092, Mdawer) Eliminated
- S 10 - Oued Naga, Mrimrima (150.093, Mdawer) numerous E
Situation: SE of Mrimrima. Bibliography: Simoneau, 1969: 97-116; 1976 [*mention only*]. Contents: At least 2 pecked rhinoceros. Archeological material: tumulus. [*Probably the site called J Mhajjiba by Viñas Vallverdu (1981:115-139), a few km E of Mrimrima, parallel to Assif Zguid, not catalogued. The engravings lie on the upper part of the NW face of the hill, to summit. The site said to be large, with mainly pecked cattle and gazelles; a few rhinoceros, 1 elephant, some ostriches, feet, labyrinths*].
- S 11 - Oued Amsailikh, Tissint (150.094, Tissint) at least 1 E
Situation: on very hard gabbros, c 30 km east of Tissint, 10 km de l'O Draa. Bibliography: Wolff, 1982 [*mention only*]. Contents: at least one pecked chariot.
- S 12 - Assif Zquit, Mrimrima (150.095, Tissint) no information
Situation: c 5 km NE Mrimrima, on track to Foum Zguid.
- S 13 - Glab es Seghir, Mrimrima (150.096, Tissint) 73 E
Situation: c 9 km NE of Mrimrima, on track to Foum Zguid. Bibliography: Rodrigue, 1994 [*mention only*].
Contents: at least one axe associated with 4 bovids [6 polished, the rest pecked: anthropomorphs, bovids, ostriches, giraffe, circles, spirals, geometric figures]. [Archeological material: tumuli.]
- S 14 - Mrimrima (150.097, Tissint) numerous E
Situation: in village and on summit and slopes of low dolerite hills nearby. Bibliography: Letan, 1967: 549-551; Simoneau, 1976; Viñas Vallverdu, 1981: 115-139. Contents: [*from Viñas Vallverdu, 1981*]: pecked, patination varied; mainly cattle; antelopes, gazelles, rhinoceros, an equid, a camel, goats (?), ostriches and other birds, humans, feet, labyrinths, solar symbols [*traps*], chariots [?].
- S 15 - Foum Timellouka, Mrimrima (150.098, Tissint) (Grid ref: Simoneau, 1974/75b: 320.5x327) numerous E
Situation: scattered localities on ridges, c 7km E of J Fergoussat (S 18). Bibliography: Simoneau, 1974/75b: 313-320; Viñas Vallverdu, 1981: 115-139. Contents: pecked, patination varied; mainly cattle, antelopes, caprids [*? more like Barbary sheep*], donkeys [?], elephant, giraffe, camel, humans, feet, numerous labyrinths and geometric forms.
- S 16 - Nord Tizi Iguidi, Tissint (150.099, Tissint) Eliminated
Situation: c 4 km E of site J Fagoussat (S 18), halfway to Foum Timellouka (S 15).
- S 17 - Rive Droite O Malah (150.100, Tissint) at least 19 E
Situation: on right bank of O Malah. Bibliography: - [Contents: *5 polished antelopes, pecked bovids*].

serpents, geometric forms, spiral].

- S 18 - J Fagoussat, Tissint (150.101, Tissint) (AS: 319x325) numerous E
Situation: on blocks on ridge and sides of W and SW end of hill, left bank O Tissint; very hard, fine-grained sandstone. *Bibliography*: Lafanechère, 1952; Simoneau, 1969 [*mention only*]; Viñas Vallverdu, 1981. *Contents* [*from Viñas Vallverdu, 1981*]: pecked, patination varied; predominance of ostriches, also elephants, antelopes, gazelles, giraffes [*antelopes*], felids, canids, humans, 2 chariots (?), serpentiforms, cercles, labyrinths, inscription [*tifinar ?*]. *Archaeological material*: [*from Lafanechère, 1952*]: engravings overlook Neolithic lithic site.
- S 19 - Oued Kraoua, Tissint (150.102, Tissint) Grid ref: 313x308 at least 110 E
Situation: on 10 km long sandstone ridge; main group opposite palm grove Sidi Ali bou Azza. *Bibliography*: Milburn, 1973 [*mention only*]; Simoneau, 1974/75b. *Contents*: polished; antelopes and ostriches dominant, 7 rhinoceros, humans, traps [3 elephants, 39 antelopes, 5 rhinoceroses, 1 giraffe, 13 bovids, 5 bag traps, 27 animals n.i., 11 ostriches, 1 anthropomorph, 1 felin, 3 spirals, 2 enigmatic]
- S 20 - Kasbat n'Zolit, Tata (uncatalogued) grid ref: 311.5x250.5 5 E
Situation: on side of free-standing conglomerate boulder at base of rocky outcrop, left bank Assif n'Ouissef, 4 km N of Tata. *Bibliography*: Searight, 1994: 211-213. *Contents*: pecked; 1 elephant, 2 ostriches; anthropomorph and bovid (both lightly pecked).
- S 21 - Oued Tata, Tata (150.104, Tata Tagmoute) c 50 E
Situation: on blocks on ridge on left bank of O Tata. *Bibliography*: Simoneau, 1972b [*mention only*]; 1976 [*mention only*]. *Contents*: polished; antelopes, ostriches, elephants, 5 rhinoceros.
- S 22 - Sidi Bouadar, Tata (150.115, Tata) Grid ref: 300x256 4 E
Situation: on blocks on sandstone ridge, 10 km SSE of Tata, S of marabout of Sidi Bouadar [*much destruction*]. *Bibliography*: Simoneau, 1974/75b [*mention only*]. *Contents*: polished; [2 antelopes, 2 bovids].
- S 23 - Tabanit, Tata (150.116, Tata) (AS: 304x255) Some E
Situation: 5 km SSE of Tata. *Bibliography*: Simoneau, 1974/75b [*mention only*]. *Contents*: polished; 2 rhinoceros (removed to municipal offices at Tata), one between an axe and an angled weapon; on the site: antelopes, elephant. *Archaeological material*: tumuli.
- S 24 - Jorf Lhammam, Tata (150.117, Tata) Grid ref: 297x250 at least 20 E
Situation: low sandstone ridge, 11 km S of Tata, on O Akka [*much destruction*]. *Bibliography*: Milburn, 1973 [*mention only*]; Simoneau, 1974/75b [*mention only*]; 1975c [*mention only*]. *Contents*: polished; hunter with bow in front of animal, antelopes, elephant, ostriches, traps. *Archaeological material*: tumuli incorporating engravings.
- S 25 - S Toug Er-Rih, Tata (150.118, Tata) Grid ref: 298x251 at least 10 E
Situation: ridge 1 km NW of Jorf Lhammam (S 24) [*neighbouring site of El Aioun (S 50a), grid ref: 297x258, destroyed*]. *Bibliography*: Simoneau, 1974/75b [*mention only*]. *Contents*: polished; [antelopes, elephant, bird, pecked chariot, rhinoceros, axe].
- S 26 - SE Tiggane, Tata (150.103, Tata Tagmoute) several 100 E
Situation: sandstone blocks on a series of low ridges stretching over several km overlooking O Tata. *Bibliography*: Lafanechère, 1952; 1953; Simoneau, 1972b [*mention only*]. *Contents* [*from Lafanechère, 1952*]: 1 group polished, mainly antelopes, some cattle, rhinoceros, 2 Barbary sheep (?), humans, ostriches; 2nd, smaller group pecked, animals as before + elephants, small canid.
- S 27 - Ouest Mahdaoui, Akka (150.125, Akka) numerous E
Situation: on blocks on series of low sandstone ridges SW of Tata [*continuation of Tiggane, S 26*]. *Bibliography*: Simoneau, 1969; 1975b [*mention only*]. *Contents*: polished; antelopes, cattle, elephants, 15 rhinoceros, humans, lion, axes, pecked circles.
- S 28 - Kheneg Brahim (150.105, Tata Tagmoute) no information

- S 29 - Akka Arhib, Imitek (150.106, Tlata Tagmoute) at least 1 E
 Situation: NE of Imitek
 Bibliography: A Simoneau, 1976 [*mention only*]. Contents: at least one rhinoceros
- S 30 - Akka Issil, Akka (150.107, Tlata Tagmoute) c 50-60 E
 Situation: on blocks on steep S point of sandstone ridge cut by a tributary of O Akka which has created a narrow gorge. Bibliography: Simoneau, 1969 [*mention only*]; 1972a [*mention only*]. Contents: pecked; [at least 27 bovids, 4 elephants, 2 rhinoceros, 10 antelopes, 1 lion, 4 ostriches, 2 equids, 3 humans, several animals n.i., 1 hache-pelte].
- S 31 - Oued Imitek, Imitek (150.108, Tlata Tagmoute) no information
- S 32 - Imaoun Assif Touna, Imitek (150.109, Tlata Tagmoute) Grid ref: 273x217 800-900 E
 Situation: 3 locations: (a) Imaoun S: on N and W face and sloping top of southern of 2 sandstone ridges standing out from the alluvial plain (800x200m), overlooking complex hydraulic network making up O Akka (b) Imaoun N: on scattered rocks on northern ridge (c) on blocks on top of hill 2 km W of foregoing
 Bibliography: Simoneau, 1975c [*mention only*]; 1977: 73-77; Searight, 1996a: 79-82; 1999: 15-26.
 Contents: (a) 739 engravings recorded; polished, pecked; curvilinear designs (414) (56%), domestic cattle (202) (27%), miscellaneous (16%) (inc. 17 humans, 56 animals n.i., 4 antelopes, 2 rhinoceros, a few ostriches); also: 1 pecked chariot (light patina), 10 hunting/fighting Libyco-Berber scenes (b) several hundred, pecked, wild animals (elephants, antelopes, ostriches), cattle, concentric circles, curvilinear designs, man with axe, Libyco-Berber dog and antelope (c) pecked, at least 8 cattle, concentric circles
 Archaeological material: (a) 10 simple tumuli (c) several dry-stone funerary monuments.
- S 33 - Adrar Temgart Issardine, Akka (150.131, Akka) numerous E
 Situation: c 20 km S of Imaoun (S 32) on ridge overlooking left bank of tributary of O Akka.
 Bibliography: Simoneau, 1977: 67-69. Contents: majority pecked: mainly cattle, 4 rhinoceros, lion, 3 humans; 1 polished frieze with 2 birds and 2 antelopes.
- S 34 - Adrar n'Metgourine, Akka (150.132, Akka) 365 E
 Situation: on blocks and bedrock on sides of sandstone outlier isolated in middle of plain within complex hydraulic network of O Akka, slightly S of Adrar Temgart Issardine (S 33). Bibliography: Simoneau, 1972b: 267-272; 1977: 54-65; Rodrigue, 1993: 49-61; Grébenart, 1995: 101-111. Contents [from Rodrigue, 1993]: pecked; 250 bovids, 19 humans, 15 elephants, 10 birds, 9 rhinoceros, 7 felids, 7 gazelles/antelopes, 4 caprids, 44 enigmatics [pecked chariot recorded by Wolff, 1982, not seen]
 Archaeological material: neolithic polished axes, arrow heads, pottery surrounding site.
- S 35 - Imgrad Tayaline, (N & S), Akka (150.133, Akka) at least 4 E
 Situation: sandstone outcrop 2 km S of Adrar n'Metgourine (S 34). Bibliography: Simoneau, 1973: 230-231 [*mention only*]; 1977: 68-71. Contents: pecked; 6 rhinoceroses, caprid, man behind bovid, elephant, man holding bovid by tail (polished), bovid associated with metal axe [*southern Morocco type*].
- S 36 - Guelta Targant, Akka (150.134, Akka) at least 2 E
 Situation: c 3 km NW of Adrar n'Metgourine (S 34). Bibliography: Simoneau, 1976 [*mention only*]. Contents: at least 2 rhinoceroses.
- S 37 - SO Tougounine (150.135, Akka) Eliminated
- S 38 - Ouine el-Khir, Akka (150.136, Akka) some E
 Situation: on blocks on sandstone ridge in plain N of Akka. Bibliography: Simoneau, 1976 [*mention only*]; 1977: 72,73. Contents: cattle, 1 human, 1 rhinoceros, dog, axe [?]. Archaeological material: tumulus.
- S 39 - Khaoui El Kleban, Mrimrima (150.119, O Branes) several E and P
 Situation: c 40 km S of Mrimrima, near site of Sidi Bou Lanouar (S40), just south of O Dra.
 Bibliography: Lafanechère, 1953. Contents: (engravings) 2 bovids and 1 animal n.i.; (paintings) animals, anthropomorphs, camel, [Libyco-Berber] horsemen, geometric signs.
- S 40: Sidi Bou Lanouar (uncatalogued) 22 E
 Situation: SE of Tata, S of O Draa. Bibliography: Senones et Puigaudeau, 1941b. Contents: polished:

14 antelopes, 3 ostriches, 2 elephants, 1 bovid, 1 hyena, 1 possible stork.

S 41 - Zaouia Sidi El-Mahdaoui (150.120, Ain Bou Mellous) some E
 Situation: left bank O Tata, c 10 km S of Tiggane (S 26). Bibliography: - Contents: [polished animals].

S 42 - Kheneg Ben Zerhmin (150.121, Ain Bou Mellous)
 Situation: c 30 km NE of Foug Alguim (S 43), just S of O Draa. Bibliography: -. Contents: [polished animals].

S43 - Foug Alguim, Akka (150.122, Ain Bou Mellous) Some E
 Situation: S of O Dra, c 60 km SE of Akka. Bibliography: Simoneau, 1972b [mention only]; 1977: 41-43.
Contents: polished; rhinoceros, antelopes, trap, anthropomorph.

S 44 - Tazout Sidi Adnane, Akka (150.128, Akka) 200 E
 Situation: on 15 km long ridge, on edge of left bank of O Dra, c 50 km SSE of Akka, c 30 km SW of Foug Alguim (S 42). Bibliography: Simoneau, 1972a. Contents: polished; 40% antelopes, 20% birds, 6 elephants, 3 rhinoceros, 2 lions, 2 humans, 1 giraffe, spirals, trapped animals.

S 45 - Gare El-Ghans, Akka (150.124, Akka) no information

S 46 - Maarda, Akka (150.123, Akka) numerous E
 Situation: semi-circular sandstone ridge, c 10 km E of Akka. Bibliography: Simoneau, 1969; 1977: 46,47. Contents: polished; antelopes, 3 masked archers followed by an antelope, elephant, 5 rhinoceros, ostriches.

S 47 - Nord Mou Tbane, Akka (150.126, Akka) no information

S 48 - Gara Sud Mlaleg, Akka (150.127, Akka) (261x229.5) 431 E
 Situation: on sandstone blocks on 3 km-long U-shaped ridge, 3½ km S of Oum Aleg village, overlooking tributary of O Akka and wide plains. Bibliography: Simoneau, 1969: 99; 1971a: 88; Searight, 1996b: 67-82. Contents: [majority polished wild animals: 120 antelopes, 35 gazelles, 2 giraffes, 63 domestic cattle (some pecked), 1 giant buffalo, 1 sheep, 1 possible goat, 2 camels, 11 rhinoceros, 7 elephants, 2 monkeys, 2 canids, 73 animals n.i., 6 anthropomorphs, 4 possible anthropomorphs, 34 ostriches, 3 other birds, 58 miscellaneous]. Archaeological material: numerous tumuli.

S 49 - S El-Gtara, Akka (150.130, Akka) several E
 Situation: on blocks on S side of sandstone outlier (548 m) c 500 m N of S 48. Bibliography: Simoneau, 1969; 1971a [mention only]. Contents: polished; wild animals.

S 50 - Tiounzfouine (150.129, Akka) (= S.O.Tougounine, 150.135) at least 1 E
 Situation: c 20 km SE of Akka. Bibliography: Simoneau, 1976 [mention only]. Contents: at least 1 polished rhinoceros.

S 51 - Assif Ikhf Ou Akhf (150.137, Akka) no information

S 52 - Tazaki n'Zida, Ait Ouabelli (150.138, Akka) no information

S 53 - Taheouacht Ait Ouabelli (Taheouast 150.139, Akka) c100 E
 Situation: on blocks and sides of series of sandstone ridges, 7 km SSE of Ait Ouabelli. Bibliography: Simoneau, 1972a; 1977: 52,53. Contents: majority pecked, a few polished; [c 30 bovids, 15 antelopes, 17 animals n.i., 1 lion, 6 elephants, 1 rhinoceros, 2 giraffes, 4 ostriches, 2 Barbary sheep, 1 sheep, 2 humans, 1 snake, 1 scorpion, 12 enigmatic, 1 hache-patte]. Archaeological material: numerous tumuli.

S 54 - Mouih El-Ghérib (150.140, Akka) no information

S 55 - Ait Ouabelli (150.157, Foug El-Hassane) at least 2 E
 Situation: ? Bibliography: Simoneau, 1976 [mention only]. Contents: at least 2 rhinoceroses

S 56 - Assif n'Tadakoust, Foug El-Hassane (150.158, Foug El-Hassane) no information

- S 57 - Moumersal, Foug El-Hassane (150.159, Foug El-Hassane) no information
- S 58 - Assif Youmkat, Akka (150.160, Foug El-Hassane) 4 E and 3 P
Situation: c 50 km NW of Akka. Bibliography: Simoneau, 1976 [*mention only*]; Heckendorf and Salih, 1999. Contents [*both sources*]: engravings: 1 rhinoceros, 1 bovid, 1 chariot, 1 Libyco-Berber horseman; paintings: bovid with rider, 1 anthropomorph.
- S 59 - Tissenrhaf, Ait Ouabelli (150.161, Foug El-Hasane) several E
Situation: between Icht and Ait Ouabelli. Bibliography: Simoneau, 1976; 1977: 50,51. Contents: pecked; humans, cattle, 2 rhinoceroses.
- S 60 - Anou n'Ait ben Yassine (150.162, Foug El-Hassane) no information
- S 61 - Douroudi, Foug El-Hassane (150.163, Foug El-Hassane) several E
Situation: between Tafraout and Foug El-Hassane. Bibliography: Mazel, 1971: 41. Contents: pecked; cattle, African elands [?], elephants.
- S 62 - Guelta Grinkane (Amda Guer Inkane 150.164, Foug El-Hassane) several E
Situation: on sandstone cliff E of O Tamanart. Bibliography: Mazel, 1971: 39,40; Simoneau, 1976 [*mention only*]. Contents [*from both sources*]: pecked; cattle, elephant, anthropomorphs.
- S 63 - Oukkas, Foug El-Hassane (Oukas, 150.165, Foug El-Hassane) several hundred E
Situation: on dolomitic limestone on high walls and scattered rocks near group of rock-shelters on left bank of assif Nnint (upper reaches of O Tamanart). Bibliography: Klug, 1939; Simoneau, 1969; 1976 [*mention only*]. Contents [*from Klug, 1939*]: pecked, "scratched"; numerous bovinds, caprinds, antelopes, gazelles, Barbary sheep, 1 lion, 2 elephants; [*from Simoneau, 1976*]: 1 rhinoceros.
- S 64 - Tissifriouine, Icht (150.166, Foug El-Hassane) several E
Situation: 2 sites on left and right of riverbed, c 8 km N of Icht. Bibliography: Simoneau, 1975c: 1976 [*mention only*]. Contents: right bank: cattle, 1 rhinoceros (polished), elephant, giraffe; left bank: giraffe (polished), antelopes (polished).
- S 65 - Tasselbe (150.167, Foug El-Hassane) Grid ref: 160,80x267,35 several E
Situation: c 2 km E of Kasba Ait Herbil (S73), near river. Bibliography: -Contents: [*several pecked cattle*].
- S 66 - Assif n'Tadroumt, Icht (150.168, Foug El-Hassane) at least 32 E
Situation: 2 groups: (a) right bank Assif n'Tadroumt (b) c 1 km E of (a). Bibliography: Simoneau, 1975c, 1976 [*mention only*]; Bravin, 1997, 17,18. Contents [*from Simoneau, 1975c*]: pecked; (a) cattle, antelopes, ostriches, 2 rhinoceros (polished), equid (b) chariot and bovid; [*from Bravin, 1997*]: pecked. 8 anthropomorphs with very large bovid
- S 67 - Leksbat, Icht (150.170, Foug El-Hassane) numerous E
Situation: c 3 km W of Assif n'Tadroumt (S 66), right bank O Tamanart, near well. Bibliography: Simoneau, 1975c. Contents: pecked; cattle, "numerous" schematic personnages, Barbary sheep.
- S 68 - Tircht, Foug El-Hassane (150.169, Foug El-Hassane) 120 E
Situation: c 10 km NW of Foug El-Hassane; (a) on blocks on right bank of O Tamanart and left bank of O Tasseft, at their junction, over c 3 km; (b) left bank O Tamanart. Bibliography: Senones and Puigaudeau, 1941a; Puigaudeau and Senones, 1953:1242-1261; 1965: 285-289. Contents: majority pecked, or "scratched", a few polished; mainly cattle and antelopes, 13 elephants, 5 rhinoceros, 1 giraffe, 3 animals n.i., 1 pig family, 1 ostrich, 1 human, 8 chariots (pecked), 4 weapons (including axes), meanders, concentric circles, traps.
- S 69 - Ighir Ighnain, Foug El-Hassane (150.171, Foug- El Hassane) 108 E
Situation: on sandstone cliff face, on left bank of affluent of O Tamanart. Bibliography: Simoneau, 1975c; 1977: 50,51; Rodrigue, 1992a. Contents [*both sources*] pecked; 105 domestic cattle (often in herds), 2 rhinoceros, 1 lion.
- S 70 - Ighir Ighnain II, Foug El-Hassane (uncatalogued, Foug El-Hassane) numerous E
Situation: on sandstone surfaces at top of one of N cliffs slightly upstream of Ighir Ighnain (S 69).

Bibliography: Rodrigue, 1992a. Contents: roughly pecked: majority bovids, several felins, numerous birds, elephants, antelopes, spiral, dog (?), polished anthropomorph brandishing metal weapon and small triangular shield [?]. Archaeological material: numerous ruined fortified granaries.

S 71 - Aguerd, Foug El-Hassane (150.172, Foug El-Hassane) numerous E
Situation: [seems to be group] 6 localities (including Touzirt (in river-bed), Tirzhrine Amzaour (confluence), c 3km S of Ighir Ighnain (S 68), on O Tamanart. Bibliography: Simoneau, 1975c. Contents: pecked; Touzirt: 4 chariots, 1 axe, rhinoceros [7 for *Aguerd as a whole*, 1 polished], numerous ostriches, antelopes and bovids, 1 human, spirals; bovids, antelopes, elephant, rhinoceros; Tirzharine Amzaour: chariot, equid, numerous bovids, giraffe; (river bank): axe-shaped objects, ostriches, animal "silhouettes"; (river bank): ostriches, inscription; (on large sandstone block dominating river): tortoise.

S 72 - Irhir Tissetquit, Foug El-Hassane (150.173, Foug El-Hassane) several E
Situation: on summit of cliff overlooking O Tamanart, c 2½ km S of Imin Tart (S 74). Bibliography: Simoneau, 1975c. Contents: cattle, 3 chariots (pecked).

S 73 - Kasba Ait Herbil, Foug El-Hassane (150.174, Foug El-Hassane) several E
Situation: 2 localities on right and left of river below Ait Herbil, c 15 km N Foug El-Hassane. Bibliography: Simoneau, 1975c. Contents: (left bank): rhinoceros [?], cattle; (right bank): spirals. Archaeological material: tumulus (left bank).

S 74 - Imin Tart, Foug El-Hassane (150.175, Foug El-Hassane) several E
Situation: 4 localities grouped around confluences of O Tamanart. Bibliography: Simoneau, 1975c. Contents: (all localities together) pecked; cattle, antelopes, lions, ostriches, rhinoceros [?], elephants, 6 humans, axe-like object. Archaeological material: large tumulus adjoining two polishing stones.

S 75 - Tebseite, Foug El-Hassane (150.176, Foug El-Hassane) at least 7 E
Situation: c 15 km W of Aguerd (S 71). Bibliography: Simoneau, 1976 [mention only]; Wolff, 1982: 139, 142. Contents [both sources]: pecked; 1 rhinoceros, 1 elephant, 1 ostrich, 1 bovid, 3 chariots.

S 76 - Tidrarine, Foug El-Hassane (150.177, Foug El-Hassane) Grid ref: 157x235 no information

S 77 - Adrar Ounar, Foug El-Hassane (Adrar Ounrar, 150.178) Grid ref: 142,5x238 at least 2 E
Situation: near Akka Bibliography: Simoneau, 1976 [mention only]. Contents: at least 2 rhinoceroses.

S 78 - Foug Assif n'Wanou-Inif, Foug El-Hassane (150.179, Foug El-Hassane) Grid ref: 146x240
no information

S 79 - Tizgui n'Cheikh, Foug El-Hassane (150.180, Foug El-Hassane) Grid ref: 149x241
Situation: 2 sites on each side of road RP30. no information

S 80 - Irhir Ouilouln, Foug El-Hassane (150.181, Foug El-Hassane) 20 E
Situation: on cliff in palm grove, left bank O Tamanart, c 1 km S of Aguerd (S 71). Bibliography: Simoneau, 1975c. Contents: 20 bovids.

S 81 - Adrar Yousguerht, Foug El-Hassane (150.182, Foug El-Hassane) no information

S 82 - Tebseit, Taghijit (150.183, Taghijit) Eliminated
[Confusion with *Tebseite*, Foug El-Hassane, 150.176, S 74]

S 83 - Tizgui-Tagougalt, Taghijit (Tagigalt, 150.184, Taghijit) at least 2 E
Situation: ? Bibliography: Simoneau, 1976 [mention only]. Contents: at least 2 rhinoceroses.

S 84-88,90-92 - Oued Eç Cayyad, Taghijit (150.185-189, 150.191-193, Taghijit) 346E
Situation: 8 sites on sandstone ridges spread out along O Eç Cayyad and tributaries over c 20 km: Wazzouzount (S 84) (150.185), Wawkinkht (S 85) (150.186), Zergem (S 86) (150.187), Bou Ifecht (S 90) (150.191), Idmisane (S 91) (150.192), Tanzirt N (S 92) (150.193). Exceptions: Amtoundi (S 87) (150.188), at foot of fortified granary, and Assif Kelmt (S 88) (150.189) on left bank of river. Bibliography: Monteil, 1948 (site of Amtoundi); Simoneau, 1969 [mention only]; Wolff, 1976: 53-69; 1978/79: 183-202. Contents [from Wolff, 1976, 1978/79]: all sites together: majority pecked, only 11

(3%) polished (on softer sandstones at Bou Ifecht and Idmisane); cattle (152), rhinoceroses (21), elephants (22), felids (12), antelopes (15), ostriches (30), wild goats [?] (19), giraffes (4), wild boars (2), wild ass (1), wild goose [?] (1), fennec (1), horse [?] (1), dog (1), caprids [?] (2), humans (9), weapons, axes (3), chariots (17), spirals (6), "fern leaves" (9), varied (18); [from Monteil, 1948]: Amtoundi (S 87) Libyco-Berber horsemen.

- S 89 - Waday, Taghijjt (150.190, Taghijjt) at least 1 E
 Situation: 7 km N of Tanzirt (S 92). Bibliography: Simoneau, 1976 [mention only]. Contents: at least 1 rhinoceros.
- S 93 - Anou el Hajj, Foug El-Hassane (150.196, Talghaicht) c 30 E
 Situation: 15 km E of Tanzida (S 96), c 15 km SSE of Foug El-Hassane. Bibliography: Simoneau, 1972a [mention only]; 1976 [mention only]. Contents: pecked cattle, 1 rhinoceros.
- S 94 - Aghs Mimoun (150.197, Talghaicht) no information
- S 95 - Jbel Tarchkoun, Foug El-Hassane (150.198, Talghaicht) some E
 Situation: sandstone headland S of Foug El-Hassane, near river. Bibliography: Simoneau, 1972a. Contents: antelopes, 1 polished rhinoceros.
- S 96 - Tan Zega, Foug El-Hassane (Tanzida 150.199, Talghaicht) 17 E
 Situation: W of Foug El-Hassane. Bibliography: Lhote, 1964: 225-245. Contents: pecked; 3 elephants, 3 rhinoceroses, 1 lion (+ 1 possible), 2 gazelles, 1 ostrich, 7 bovids (1 polished).
- S 97 - Tachoukent, Foug El-Hassane (Tachokalt 150.200, Talghaicht) 36 E
 Situation: SO of Foug El-Hassane, on vertical faces where O Foug el Mlah narrows. Bibliography: Lhote, 1964: 225-245; Simoneau, 1972a [mention only]. Contents: [from Lhote, 1964]: pecked; 15 cattle, 2 elephants, 2 rhinoceros (AS+1), 11 ostriches, 1 gazelle, 1 antelope, 1 animal n.i., 1 chariot, 2 humans with axes; [from Simoneau, 1972]: 1 further rhinoceros and 1 man holding tail of elephant.
- S 98 - Tirhert, Foug El-Hassane (150.201, Talghaicht) Grid ref: 28°55' N, 8°55' O 50 E
 Situation: sandstone headland overlooking area between O Tamanart and its tributary O Bouguerni, 15 km WSW of Foug el Hassane. Bibliography: Simoneau, 1973. Contents: pecked; (1 polished antelope near village), c 12 cattle, humans, dog, foot, spiral, antelope (?), 6 elephants, 4 rhinoceroses; (near palm grove: chariot, camel, bovid, palm-tree).
- S 99 - Kheneg Tafagount, Foug El-Hassane (uncatalogued) 6E
 Situation: on sloping sandstone blocks on left bank of O Dra, between narrow passage and gorge forming junction with O Tafagount (block with 2 engravings deposited in museum in Rabat). Bibliography: Ruhlmann, 1938: 83-97. Contents: polished; 2 birds (runners or waders), wader, antelope, goat (?), elephant.
- S 100 - Merkala, Foug El-Hassane (uncatalogued) 1E
 Situation: S of O Draa and J Ouarkziz, by track from Akka to Tindouf, on horizontal block, c 3x1 m, on summit (c 50 m) of schistose hillock. Bibliography: Ruhlmann, 1934a: 3-14. Contents: pecked then polished: elephant and recent "graffiti".
- S 101 - Oued Kebch, Foug Zguid (uncatalogued) Grid ref: 29°46' 93"N, 06°55'30"W 486 E
 Situation: on heaps of large boulders on 2 km-long ridge, from bend in O Kebch to foot of hill; 7 main outcrops, 2 secondary. Bibliography: Rodrigue and Wolff, 1999: 106-118. Contents: pecked; 119 bovids, 21 antelopes, 14 ostriches, 9 giraffes, 8 felids, 7 elephants, 2 rhinoceroses, 2 anthropomorphs, 141 serpentiforms, 11 radnetze, 73 spirals, 8 miscellaneous, 71 non-interpretable.
- S 102 - Site AR, Foug Zguid (uncatalogued) several E
 Situation: c 40 km S of Foug Zguid, on 4 out of 5 large sandstone boulders delimiting a space 5x4 m. Bibliography: Rodrigue, 1999b. Contents: pecked: bovids, elephants, antelopes, serpentiforms, concentric circles.
- S 103 - Site FJ, Foug Zguid (uncatalogued) Grid ref: 29°N 43' 558", 6°W 47' 261" several E
 Situation: on vertical rock face and on bedrock outcrops. Bibliography: Searight (in press). Contents:

pecked; bovids, antelopes, ostrich, spirals, enigmatics.

S 104 - Tamzarar, Ait Ouabelli (uncatalogued) Grid ref: 29°18' 83"N, 08°29' 68"W several E
Situation: mostly vertical surfaces, above bank of Assif Tamzarar (access difficult). Bibliography:
 Salih and Heckendorf, 1998: 4-8. Contents: pecked; archers, leopards, elephants, bovids, goats,
 antelopes, ostriches, other birds.

S 105, 106 - Biouafen 1 and 2, Ait Ouabelli (uncatalogued) Grid ref: 29°16' 92"N, 08°30' 63"W several E
Situation: on 2 parallel ridges, about 200 m apart, N of confluent of Assif Ouardest with Assif Tamzarar.
 a) Biouafen 1: series of vertical surfaces on level part of sandstone cliff; b) Biouafen 2: mainly on summit
 of ridge. Bibliography: Salih and Heckendorf, 1998: 4-8. Contents: a) pecked; anthropomorph,
 probable dog, lions, elephants, antelopes, bovids, birds, ostrich; b) pecked, some light patina; 2 axes,
 meanders, spirals, circles.

S 107 - Taouraght, Ait Ouabelli (uncatalogued) Grid ref: 29°13' 45"N, 8°36' 49"W a few E
Situation: summit of ridge, 25 m above NW part of *fejja*, on right bank of O Tadakoust. Bibliography:
 Salih and Heckendorf, 1998: 4-8. Contents: pecked and polished; rhinoceros, elephant, antelope,
 hippotragus, ostriches, axes, meanders, traps (?), polished axe.

S 108 - Imaoun/O Imi Tek/N1 (Tlata Tagmoute)(uncatalogued) Grid ref: 29°38' 72"N, 8°17' 14"W some E
Situation: S of road from Hassi el Kerma to Imitek, very near road, at foot of ridge (much destruction).
Bibliography: Salih and Heckendorf, 2000: 5-9. Contents: bovids.

S 109 - Imaoun/O Imi Tek/N2 (Tlata Tagmoute)(uncatalogued) Grid ref: 29°38' 56"N, 8°16' 44"W some E
Situation: 400 m-long ridge, overlooking right bank of O Imi Tek. Bibliography: Salih and Heckendorf,
 2000: 5-9. Contents: leopards/lions, rhinoceroses, bovids and other themes.

S 110 - Imaoun/O Imi Tek/N3 (Tlata Tagmoute) (uncatalogued) some E
Situation: beside old track from Imitek to Akka, near S 108 and 109. Bibliography: Salih and Heckendorf,
 2000: 5-9. Contents: bovids.

S 111,112,113,114 - Imaoun/O Akka/S4 (Tlata Tagmoute) (uncatalogued) many E
 Grid ref: 29°33' 00"N, 08°19' 00"W
Situation: along O Akka, southern side of *fejja*. A large complex made up of 3 concentrations and a
 small isolated site, on boulders and ridge. Bibliography: Salih and Heckendorf, 2000: 5-9. Contents: S
 111,112,113 together: nearly 200 images; S 111, patina generally total, predominance of bovids over
 geometrics; S 112, the smallest, lighter patina, dominance of bovids; S 113, the biggest and most varied,
 incised, polished but mainly pecked; patina generally total; great variety of geometric forms but also
 bovids, elephants, antelopes, birds; S 114, pecked, patina total, bovids and rhinoceros but mainly
 geometric.

S 115 - Ifrane n'Taska, Zaouia Sidi en Nebi (uncatalogued) many P
Situation: 5 rock-shelters near Zaouia Sidi en Nebi. In small *fejja* within J Bani, crossed by O Lmansar,
 near Hassi Taska well. Bibliography: Heckendorf and Salih, 1999: 233-257. Contents: [all together] red
 paintings: lines, geometrical motifs, Libyco-Berber inscriptions, Libyco-Berber horsemen, giraffe,
 lions/leopards, equids, anthropomorphs, lines of dots, bovids.

S 116 - Hassi el Haoueira (uncatalogued) 14 E
Situation: on left bank of Oued Zemoul, near Hassi el Haoueira well, at northern end of chain of
 sandstone hills, c 12 k S of Sidi bou Lanouar (S 40), S of O Draa. Bibliography: Senones and
 Puigaudeau, 1941b: 157-168. Contents: polished; 6 antelopes, 1 ostrich, 1 female quadruped, 3
 "leaves" [bag traps]; scratched technique: sandal, circle, lozenge. Archaeological material: microliths, 2
 tumuli.

Zone 8 - South-west

SW 1 - Tazout, Assa (150.202, Assa) Grid ref: 141x184 at least 1 E
Situation: about 25 km SE of Assa, c 10 km N of O Draa. Bibliography: Simoneau, 1976 [mention only].
Contents: rhinoceros.

- SW 2 - Kheneg Lakahal, Assa (150.203, Assa) Grid ref: 176x120 some E
 Situation: on O.Draa, c 18 km SE of Assa. Bibliography: - Contents: [pecked; elephant, bovid, hand, feet].
- SW 3 - Ain Enbeibiga, Assa (150.204, Assa) c 35 E
 Situation: near spring, on sides of 5 adjacent rock surfaces, c 10 km S of Ain Smaiera (SW 7).
Bibliography: Baier, 1974/75: 137-138. Contents: polished, pecked, 25-70 cm, dark to light patina; (a) elephant, lion, bovids, c 6; (b) 10-15 bovids; (c) bovid, antelope, cross; (d) antelope, bovid; (e) bovids, 2+.
- SW 4 - Uad Zak, Assa (uncatalogued) 5 E
 Situation: main group on side of large sandstone block, c 25 km S of head of Oued Zag.
Bibliography: Mateu, 1945/46: 64; Almagro Basch, 1946: 213-4. Contents[from Almagro Basch, 1946]: pecked, "punched" technique; main group: unidentified animal, 40x28 cm; below: 2 large bovids, male and female, 135x80cm and 83x.80cm; below unidentified animal, 160x35cm; nearby: bovid
- SW 5 - Sidi bou Lasrar (150.205, Assa) Eliminated (confusion with Sidi Bou Lanouar, S40)
- SW 6 - Guelb-Ouday-Sfa, Assa (Oued Sfa, 150.206, Assa) 54 E
 Situation: on 2 flat and 2 vertical slabs, on edge of O Sfa, on much-used route. Bibliography: Monteil, 1940:p 8-23; 1948: 109-11. Contents: small (average 20 cm), "deeply engraved" [pecked? polished?]; majority animals, some anthropomorphs, geometrical and symbolical ornaments [?], "magical numerical inscriptions" [no photographs, but from tracings by local informant instructed by Monteil: fish, wild cat, fox, felins, squirrel, hedgehog, porcupine, lizards, scorpions, antelopes - a strange collection, except for antelopes, probably recent].
- SW 7 - Ain Smaiera, Assa (150.207, Assa) several E
 Situation: (a) on slab near the source, on both sides of river, on slight elevation (50 m); (b) on sides of 3 slabs nearby, c 15 km S of O Draa. Bibliography: Baier, 1974/75: 135-39. Contents: (a) pecked; several horsemen [probably Libyco-Berber] dogs or jackals; (b) lion (?) (dark patina), 3 rhinoceroses, 6 ovals (darker patina than rhinoceros), ostrich, bovid (both very dark patina).
- SW 8 - S Palmeraie Assa, Assa (150.208, Assa) Grid ref: 9°25' W, 28°36' N at least 12 E
 Situation: (a) on schistous sandstone cliff, facing mosque in the old town (b) on isolated block beside track bordering palm grove at foot of cliff. Bibliography: Monteil, 1940: 9-11; Puigauudeau and Senones, 1952: 9-15. Contents[from Puigauudeau and Senones]: 2 groups: (a) 2 pecked bovids (dark patina), (largest 68 cm), 2 superimposed ostriches and Libyco-Berber horseman (light patina); 2 pecked bovids (dark patina) (75, 78 cm), 5 superimposed pecked Libyco-Berber figures: 2 saddled [?] horses, ostrich, unidentified animal, horseman with lance and shield; nearby, "numerous" linear engravings: horses, camels, and recent copies (b) deeply and loosely pecked elephant (60 cm).
- SW 9 - Oued Tizgui-Remt (150.209, Assa) some E
 Situation: on cliff-face, c 20 km SE of Assa. Bibliography: - Contents: [Dark patina, fairly recent].
- SW 10 - Mou-Loucham, Assa (Mouloucham-Metbouli, 150.210, Assa) several hundred E
 Situation: on slab, c 20 m, near a well, 12 km SSE of Aouinet Ait Oussa, near O Draa, in mountainous region, at bottom of O Mou-loucham, frequented N-S route. Bibliography: Monteil, 1940. Contents: elephants, antelopes, cattle, horses, sheep, lions, humans (one larger than life-size), miscellaneous objects, jewellery, Arabic inscriptions, tribal marks. Much superimposition.
- SW 11 - Tiderdar, Assa (uncatalogued) [grid ref: 87x212.5] some E
 Situation: on side of rock in middle of O Mou-loucham at Tiderdar well, 10 km N of Targoumaït (40 km NW of Assa on road to Guelmim). Bibliography: Monteil, 1940: 25. Contents: 4 elephants [5 elephants, bovids, Barbary sheep, ostrich].
- SW 12 - Anou Tirardourène, Fask (150.212, Fask) (878x212.5) no information ?
 [This "pretty" site, 6 km W of Targoumaït, is said by Wolff (1976: 68), to have been noted by Monteil (1940). But it is not mentioned by Monteil. Confusion between Tiderdar and Anou Tirardourène.]
- SW 13 - Kheneg Tiflet, Fask (150.213, Fask) 6 E

Situation: on slopes of hill (376 m), and especially on sandstone ridge plunging into O Eç Cayyad.
Bibliography: Wolff, 1976: 66. Contents: pecked, dark patina; 4 bovids, 2 chariots [*in fact 9 bovids and very doubtful chariots*].

SW 14,15 - Mader Tiflet, Fask (150.214, 215, Fask) at least 8 E
Situation: (a) on dark, hard sandstone vein on S end of W face of Adrar Ouanfarrou; (b) on dark, schistose island in plain, to W of J Ouanfarrou; (c) on low, hard, dark sandstone ridge at junction O n'Mait, tributary of O Eç Cayyad, and Assif n'Tansselfout, 400 m S of route to Assa. Bibliography: Wolff, 1976: 68. Contents: (a) chariot (b) pecked antelope, 2 bovids (all dark patina) (c) pecked chariot (dark patina), bovid, spirals.

SW 16 - Tihremt (150.216, Goulimine) at least 1 E
Situation: on free-standing boulder. Bibliography: - Contents: 1 large bovid.]

SW 17 - Sidi Bourja (150.217, Tafnidelt) Grid ref: 2x179 some E
Situation: 22 km NO of Goulimine. Bibliography: - Contents: [*recent - kasbas, clocks, etc.*]

SW 18 - Aouinet n'Ait Oussa (150.218, Tanoute n'Ourhioul) no information
Situation: probably the locality 50 km E of Tan-Tan, on road between Assa and Tan-Tan)

SW 19 - Oued Ech Cheikh, (150.219, Taidalt) Grid ref: 557x383 some E
Situation: on soft sandstone. Bibliography: - Contents: [*recent - suns, fibulas, swastikas, etc.*]

SW 20 - Azrou Klan, (150.220, Taidalt) c 400 E
Situation: densely packed on sandstone sheets, c 160 x 20m, sloping down to dry O Azrou Klan, 15 km N of O Draa. Bibliography: Monteil, 1940; Martinet, 1996: 83-97; and comments from many other researchers. Contents: pecked, patina dark ochre to very light; 1 large (95 x 60 cm) sailing boat (medium patina), Libyco-Berber horsemen, foot-soldiers, camel and palanquin (very light patina), domestic animals, feet/sandals, Arabic inscriptions and letters (very light patina). Date proposed by researcher (Martinet, 1996) for the boat: between 2nd century BC and 1st century AD.

SW 21 - Teglite (150.221, Tan-Tan) at least 1 E
Situation: [*probably the locality, 80 km E of Tan-Tan, on road between Assa and Tan-Tan*].
Bibliography: Simoneau, 1969 [*mention only*]; 1976: 31 [*mention only*]. Contents: 1 rhinoceros.

SW 22 - Fahra (150.225, Saguiet El Hamra) no information
[*Almagro Basch (1946: 214) noted that there there were said to be rock engravings here, but that he could not visit nor get details*].

SW 23 - Oued Chbeika, Tan-Tan (150.222, Tan-Tan) several E
Situation: in valley of O Chbeika. Bibliography: Douls, 1888: 456; Almagro Basch, 1946: 215.
Contents [*from Douls, 1888*]: hippopotamus, giraffes, elephants. [*Never re-found*].

SW 24 - Oued Louar, Tan-Tan (150.223, Tan-Tan) no information

SW 25 - Oued Umma Fatma, Tan-Tan (150.224, Tan-Tan) no information

SW 26 - Timatkor (Tit Makor 150.211, Tarfaya) some E
Situation: near Matkor well, c 60 km S of O Draa. Bibliography: - Contents: [*"European" and "Libyan" inscriptions*]

SW 27 - Tilemsen, Tan-Tan uncatalogued 8 E
Situation: on scattered boulders, on flat stony ground beside now-dry river, c 50 km SE of Tan-Tan.
Bibliography: Searight (in press). Contents: broad, shallow, polished line; 5 elephants, 3 bovids.

Zone 9 - Western Sahara

WS 1 - Safia de El Aiun, Laayoune (150.242, Saguiet El Hamra) some E
Situation: 2 groups, 10-15 m apart, on fallen rocks c 100 m W of town, on what was [*in 1946*] a public

refuse area, now completely destroyed. Bibliography: Almagro Basch, 1944; 1946: 212-218; 1971a: 193,194. Contents: pecked; elephant (2.10x1.50 m), animals n.i., bovid (80 cm), "schematic" anthropomorphs (30-35 cm), 2 chariots.

WS 2 - Loma de Asli, Smara (150.226, Saguiet El Hamra) c 100 E
Situation: on eroded slate boulders near top of Loma [*hill*] de Asli, in middle of dry bed of O Asli, over area c 500 m, 15 km NW of Smara, on track from Smara to shrine of Sidi Ahmed Laarousi.
Bibliography: Almagro Basch, 1944; 1946: 235-40; Nowak *et al*, 1975: 37-38. Contents: very crudely pecked [*series of unconnected dots*]: gazelles, ostriches, 1 felin, elephants, oryx, equid, other ruminants, animals n.i., rhinoceros, [*possible Barbary sheep*], 9 chariots, crocodile (?), giant lizard (?), daggers, 2 Libyco-Berber horsemen, Libyco-Berber inscriptions.

WS 3 - Asli Richies, Smara (uncatalogued) ? E
Situation: on hillock opposite site of Loma de Asli (WS2). Bibliography: Almagro Basch, 1946: 240-242.
Contents: small (20-40 cm), "punched" technique, "similar to Loma de Asli"; ostriches, canids (?), felids (?), antelope (?), giraffe (?), anthropomorph, animals n.i.

WS 4 - Asli Gardega, Smara (uncatalogued) 320 E
Situation: on W side of 2 km-long slate hillock in dry bed of central part of O Asli (running N to join Saguia el Hamra), c 10 km W of Smara, S of Smara-El Aaiun road, parallel to Asli Bukerch hillock (much destruction). Bibliography: Balbin Behrmann, 1975 [no illustrations]. Contents: mostly pecked; 29 anthropomorphs, 40 antelopes, 13 bovids, 1 buffalo, 4 camels, 4 canids, 54 caprids 20 ostriches, 1 other bird, 2 elephants, 11 equids, 4 giraffes, 5 rhinoceros, 5 suidae, 1 felid, 1 seal [*? - crocodile?*], 43 quadrupedes, 2 insects (?), 4 serpents, 7 clubs, 3 chariots, 1 lance, 2 ocular idols [*?*] 34 circles, 29 miscellaneous forms.

WS 5 - Cerro de El Astein Bukerch, Smara (Udei Asli bou Querch 150.227, Saguiet El Hamra) numerous E
Situation: on dark, thin, easily detachable slate slabs on small hillock forming S end of Lomo de Asli chain, c 30 m above plateau, close to old airport, c 8 km SW of Smara, near site WS 2.
Bibliography: Almagro Basch, 1944; 1946: 219-234; H Nowak *et al*, 1975. Contents: [*all reports combined*] most polished, some pecked; rhinoceros, elephants, bovids, oryx, equids, antelopes, gazelles, ostriches, 2 dogs, geometrical signs (pecked), anthropomorph armed with bow following elephant, axe. "Site entirely destroyed from 1935 onwards by visitors" (Almagro Basch, 1944); "The best site" (Almagro Basch, 1946) [*in fact not entirely destroyed, because said to have been photographed in 1971. The Santander Prehistory Museum team visited sites in the Spanish Sahara in 1969; it 'thought' it saw Astein Bukerch, ('difficult to identify'), and published (Cabrillo and Jesus Garcia, 1975) c 10 engravings, not taken into account here. Under same site name, Balbin Behrmann, 1975, noted that few of the published illustrations (no mention of Santander Museum) corresponded to what he had seen in 1971 and considered his contribution as "original", with 967 engravings counted; his figures are not considered here as no illustrations given and subjects doubtful.*]

WS 6 - Smara (150.228, Saguiet El Hamra) 1 E
Situation: on fairly large rock 1 km N of military post of Smara. Bibliography: Almagro Basch, 1946: 242.
Contents: "punched" technique as at WS 3; oryx (reworked). [*Nowak et al, 1975, found numerous engraved slabs in different military messes in Smara. They illustrated them (pl 89-101) under the site heading "Smara". The exact provenance was unknown but is unlikely to have been site WS 6: in most cases the photographs show engravings similar to those of WS 5.*]

WS 7 - Güera del Uad Zeluan, Smara (Oued Uein Seluan, 150.229, Saguiet El Hamra) numerous E
Situation: on dark, slate slabs in 3 groups on hillocks: (a and b): on right bank of river, c 4 km N of Smara; (c) on left bank of river, c 3-5 km S of Smara. Bibliography: Mateu, 1945/46; Almagro Basch, 1946: 242-250. Contents: [*both sources*] small (15-30 cm): (a and b): polished, pecked [*some completely*]; antelopes, horse, gazelle, 2 felids (?), ostrich, elephant [*both polished*], canids, giraffe, camel (?), animals n.i., Libyco-Berber "signs" [*tiffinars?*], Arabic "signs" [*writing?*]; (c) mainly polished; bovids, felids, canids, 1 sheep, giraffes, gazelles, antelopes, elephant (?), human (?), 4 barbed-and-tanged arrowheads, one in side of antelope [*polished*]. Archaeological material: tumuli.

WS 8 - Oued Tasua, Smara (150.243, Saguiet El Hamra) 61 E

Situation: on scattered slabs on edges of affluent of O Tasua, opposite series of wells, c 17 km ESE of Smara, where river crosses Smara-Tifariti track (much destruction). Bibliography: Pellicer and Acosta, 1972; Nowak *et al*, 1975: 42; Balbin Behrmann, 1975: 15. Contents [from all sources]: most polished; 5 ostriches, 9 antelopes, elephants, 1 bovid, 4 buffalo, 1 canid, 3 caprids, 10 giraffes, 7 equids, 1 rhinoceros, 11 animals n.i., 2 flamingos [?], 1 spiral, 6 miscellaneous forms. Archaeological material: tumulus, one with engraved slab as lintel

WS 9 - Oued Miran, Smara (150.231, Saguiet El Hamra) at least 21 E
Situation: on sandstone slabs on ridges on right bank of O Miran, c 12 km upstream from junction with Smara-Tifariti road (c 25 km SE of Smara) (much destruction). Bibliography: Almagro Basch, 1971b; Nowak *et al*, 1975: 42,43; Lhote, 1982: 28 [mention only]; Balbin Behrmann, 1975: 15,16. Contents: [all sources]: polished; 5 axes [*haches-pêtes*], two held by anthropomorphs, 2 "hafted" axes, 1 antelope, 1 ostrich, 2 giraffes (1 with trap), 5 bovids (one with "linear design" [trap]), 1 armed horseman [not typical *Libyco-Berber*], 2 chariots; [the 18 engravings recorded by Balbin Behrmann, 1975, not as in earlier texts and not included here]. Archaeological material: 2-tier tumulus [Balbin Behrmann, 1975].

WS 10 - Uad Sfa, Smara (uncatalogued) 8 E
Situation: Oued Sfa, 28 km E of Smara [3 thin slabs now in Basel museum]. Bibliography: Basel Museum, 1977/78: 5-8. Contents: 3 slabs, polished; 1 rhino + 2 animals n.i.; elephant followed by 2 humans; bovid with horn anomaly+hindquarters of felid.

WS 11 - Odoloa Amgala, Smara (150.230, Saguiet El Hamra) 4 E
Situation: on sandstone outcrop, upstream of O Seluan, c 45 km SE of Smara. Bibliography: Morales Agacino, 1942: 373-79; Almagro Basch, 1946: 269-270. Contents: 1 Barbary sheep, 1 bovid, 2 anthropomorphs.

WS 12 - Hauza (Hausa, 150.232, Saguiet El Hamra) some E
Situation: on slabs and blocks, on small eminence, a few km N of Hausa fort. Bibliography: Mateu, 1945/46: 50; Almagro Basch, 1946: 250-53. Contents: polished, pecked; ostriches, flamingo [?], bovids, animals n.i., 1 anthropomorph.

WS 13 - Tuccat en Haila, Hausa (150.234, Saguiet El Hamra) some E
Situation: on sandstone slabs, isolated groups, c 400 m from left bank of Saguiet el Hamra, c 40 km E of Hausa. Bibliography: Mateu, 1945: 51; Almagro Basch, 1946: 253-54. Contents: mostly polished, dark patina: ostriches, antelope, bovid, "geometrical signs", Arabic letters, camel marks (light patina). Archaeological material: tumuli.

WS 14 - Suiel, Hausa (150.235, Saguiet El Hamra) 14 E
Situation: on slate hillock by O Suiel near junction with the Saguiet el Hamra, c 60 km E of Hausa. Bibliography: Pellicer and Acosta, 1972; Nowak *et al*, 1975: 38-50. Contents [all sources]: all polished; 3 bovids, 2 oryx, 1 gazelle, 1 elephant, 1 rhinoceros, 5 ostriches, 1 "mask" (light patina).

WS 15 - Fum Uad Ben Daka, Hausa (Foum Oued Ben Decca, 150.236, Saguiet El Hamra) numerous E
Situation: 10 km E of Suiel (WS 11), c 70 km E of Hausa, almost at junction of O Ben Decca with Saguiet el Hamra, on both banks but mostly on left, near well. Bibliography: Mateu, 1945/46: 54; Almagro Basch, 1946: 255,256. Contents [from Almagro Basch]: all polished; antelopes, gazelle, antelopes, recent Regeibat tribe herd marks, unidentifiable images. Archaeological material: tumuli.

WS 16 - Gart Temar, Hausa (150.233, Saguiet El Hamra) 1 E
Situation: c 60 km SE of Hausa, c 50 km NW of Tifariti, on O Erni. Bibliography: Milburn, 1972; Nowak *et al*, 1975: 61. Contents [from Nowak *et al*, 1975]: site said to contain "many cows" but only 1 polished bovid, dark patina (28 cm) found on single, flat, isolated stone and some geometric forms (light patina) near tumulus. Archaeological material: tumulus.

WS 17 - Gar Carfarsiat, Tifariti (uncatalogued) 23 E
Situation: on small slabs of slate, on large hillock adjoining junction of O Buragba and O Erni and on terrasses descending to river, 60 km N of Tifariti. Bibliography: Balbin Behrmann, 1975: 19. Contents: 2 antelopes, 5 bovids, 11 animals n.i., 3 giraffes, 1 canid, 1 ostrich. [Is this the nearby Gart Temar, WS 16? Balbin Behrmann, when visiting the area in 1971, said he was looking for a site which he could not find, but found this one instead].

WS 18 - Pozo de El Farsia, Mahbes (El Farsia 150.239, Saguiet El Hamra) some P and E
Situation: in 2 shallow rock-shelters in low cliff (25-30 m high), opposite very well-known well of El Farsia, (said to be origin of the Saguiet el Hamra), c 75 km SW of Mahbes. *Bibliography*: Morales Agacino, 1942: 373-79; Almagro Basch, 1946: 268,269. *Contents* [from Almagro Basch, 1946]: various possible *tifinars*, some engraved, some red painted [look more like camel marks].

WS 19 - Fet-Saccuna, Mahbes (uncatalogued) 25 E
Situation: near the Saguiet el Hamra, c 67 km W of Mahbes [if near Saguiet el Hamra, must be SW]
Bibliography: Cabrillo and Jesus Garcia, 1975: 89-96. *Contents*: all polished, patina light to dark; 1 rhinoceros, 3 bovids [1 oryx, 2 animals n.i.], 1 anthropomorph, 1 ostrich, 2 bovids, 1 bovid with anthropomorph 4 gazelles [3 probable oryx], 1 gazelle with elephant and anthropomorph, giraffe [no], 7 animals n.i. [site considered to be "totally unknown"]. [In 1971, Balbin Behrmann (1975) visited what was for him a new site which he named *Fadrat Saccum*. The engravings were situated on slate slabs on a low ridge in bed of small dry river - *Fadrat Saccum* - affluent of O Seita, itself affluent of the Saguiet el Hamra, a few km S of El Farsia well ("said to be origin of Saguiet el Hamra"), c 60 km SE of Echdeiria [and probably 60-80 km SW of Mahbes]. He noted 16 engravings (no illustrations): 1 anthropomorph, 3 antelopes, 1 bovid, 1 caprid, 2 animals n.i., 1 elephant, 2 ostriches, 1 inscription [tifinar? Arabic?], 4 miscellaneous forms. Same site?]

WS 20 - Chelja Mairat, Mahbes (150.238, Saguiet El Hamra) some E
Situation: on slabs on side of small promontory, c 115 km SW of Mahbes, c 40 km SW of Pozo de El Farsia (WS 18), c 6-7 km NE of Pozo Mecaiteb (WS 21). *Bibliography*: Mateu, 1945/46: 55; Almagro Basch, 1946: 268. *Contents* [from Almagro Basch, 1946]: polished; rhinoceros, animal n.i., antelope, bovid.

WS 21 - Pozo Mecaiteb, Mahbes (Pozo Lemcaiteb 150.237, Saguiet El Hamra) numerous E
Situation: on dark, slate slabs around well of Mecaiteb, on platforms bordering both sides of dry riverbed [Almagro Basch (1946), stated that this well is situated in the bed of O Ben Decca, c 10 km before this river joins the Saguiet el Hamra to the N, and 6-7 km SW of Chelja Mairat (WS 16); Nowak et al (1975) pointed out that AB had confused O Ben Decca and O Ben Sacca. The map shows that the well lies in bed of O Ben Sacca, c 160 km E of Smara, c 10 km SW of Chelja Mairat]. *Bibliography*: Morales Agacino, 1942: 373-79; Mateu, 1945/6: 56 et seq.; Almagro Basch, 1946: 256-68; Nowak et al, 1975: 52-60; Basel Museum, 1977/78. *Contents* [from all sources]: mostly polished, 20-50 cm; elephants, giraffes, gazelles, oryx, antelopes, 2 elephants pursued by human, rhinoceros with 2 humans, horse (?), pecked lion (?), hyena, bovids (one with pack-saddle), animals n.i., Barbary sheep, canids, horse (?) with collar, "mask", geometric signs (light patina), *tifinars* and Arabic inscriptions, possible animal markings. [Basel museum: axe with giraffe head, ostriches, giant buffalo].

WS 22 - Sidi Mulud, Mahbes (Sidi Mouloud 150.240, Saguiet El Hamra) Grid ref: 26°50' N, 9°12'W 44 E
Situation: small groups on 2 mounds, 750 m, apart between O Laauach Telli and O Sluguiat; most on E mound, on light-coloured horizontal slabs; 65 km S of Mahbes, c 90 E of Pozo Lemcaiteb (WS 20), c 10 km W of Islamic shrine of Sidi Mouloud. *Bibliography*: Milburn, 1972; Pellicer and Acosta, 1972; Cabrillo and Jesus Garcia, 1975: 97-108; Balbin Behrmann, 1975: 19; Nowak et al, 1975: 62. *Contents*: Milburn (1972) noted: polished; rhinoceros, ostriches, antelopes, gazelles, bovids, sandals, "signs" [bag traps], anthropomorphs. [In 1969, Cabrillo and Jesus Garcia visited this site - which they believed to be "totally undiscovered" and published part only (large site: 2 km²) (44 E) (1975): polished, c 30 cm. patina very uniform between dark and light: 16 bovids, 8 antelopes, 5 animals n.i., 2 rhinoceros, 1 elephant, 1 gazelle, 1 man with axe, 8 ostriches, 1 other bird, 1 (pecked) circle and 4 cup-marks. Balbin Behrmann visited the site in 1971 and noted (with no reference to any earlier work): 75 engravings, with themes as above except for the addition of 3 "buffalos", a spiral, a "mythical element" and without the sandals, "signs", axe and anthropomorphs.]

WS 23 - Ras Lentareg, Mahbes (150.241, Saguiet El Hamra) Grid ref: 26°27'N, 09°05'W 102 E
Situation: 16 groups, on flat slabs near river, c 105 km S of Mahbes, close to E frontier, by well-known track to Tindouf. *Bibliography*: Milburn, 1973: 197-206; Soleilhavoup, 1998: 54-65. *Contents*: [from Milburn, 1973 (39 engravings)] polished; 1 anthropomorph, 7 bovids, 3 rhinoceros, 4 giraffes, 7 gazelles, 2 antelopes, 1 oryx, 7 animals n.i. (2 bovids?), 4 ostriches, 1 trap, 1 "votive"axe, 1 "large metal" axe; [from Soleilhavoup, 1998 (102 engravings)]: cattle 24%; antelopes 23%; ostriches 10%; miscellaneous

signs 9%; giraffes 8%; animals n.i. 7%; bag traps 6%; rhinoceroses 6%; elephants 3%; anthropomorphs 2%; equids (?) 1%; canids (?) 1%. Archaeological material: numerous tumuli.

WS 24 - Cerro Noroeste de Amgala, Amgala (uncatalogued) 107 E

Situation: on slabs on hillock on left bank of stream, near old airfield, NW of Amgala village (good water supplies), 130 km S of Smara at Mauritanian frontier (much destruction). Bibliography: Balbin Behrmann, 1975: 16. Contents: 5 anthropomorphs, 21 antelopes, 11 bovids, 5 buffalos, 6 caprids, 2 equids, 4 elephants, 6 giraffes, 1 felid, 1 hare [?], 5 rhinoceroses, 15 animals n.i., 2 ostriches, 1 axe, 5 arrowheads, 2 inscriptions [*Arabic? tiffinars?*], 15 miscellaneous forms. Archaeological material: many tumuli.

WS 25 - Proa sur de Amgala, Amgala (uncatalogued) 29 E

Situation: on prominent rock on high hillock, near Amgala village and site WS 24 (much destruction). Bibliography: Balbin Behrmann, 1975: 16. Contents: 1 antelope, 3 bovids, 2 caprids, 5 animals n.i., 1 elephant, 1 equid, 5 giraffes, 1 ostrich, 1 flamingo, 9 miscellaneous forms.

WS 26 - Koudia Haratani (uncatalogued) some E

Situation: ? Bibliography: Martinez Santa-Olalla, 1944: 143. Contents: 1 chariot (pecked), possible rhinoceros, wild animals (polished, not Tazina).

WS 27 - Tifariti (uncatalogued) many P

Situation: several sandstone rock-shelters, c 200 km SW of Ras Lentareg (WS 23). Bibliography: Soleilhavoup, 1998: 54-65. Contents: red ochre paintings; very many hand stencils, giraffes, anthropomorphs (style close to Round Heads, of Tassili n'Ajjer, Algeria), cattle.

GLOSSARY OF THE ARABIC AND BERBER WORDS USED IN THE TEXT

A few Arabic and Berber words are used in the text. They are mostly geographical terms and are defined as follows:

<i>adrar</i>	mountain
<i>aougdal</i>	prairie, pasturage
<i>assif</i>	river, watercourse
<i>azib</i>	seasonal shelter for flocks and shepherds
<i>erg</i>	extensive range of sand dunes
<i>feija</i>	plain generally limited on two sides by mountains
<i>foum</i>	gorge, but sometimes no more than a passage in a rocky ridge
<i>gara</i>	outlier, generally the remains of a plateau
<i>hamada</i>	stony plateau in desert regions
<i>hassi</i>	well
<i>jbel</i>	mountain
<i>oued</i>	river
<i>reg</i>	flat stony expanse in desert regions
<i>sebkha</i>	depression in desert regions temporarily filled with salt water
<i>tizi</i>	mountain pass

The spelling of place names and towns is that used in current French-language road maps, except where current English versions exist. Many Berber place names are in the process of being Arabised and when occurring in modern geographical survey maps bear little visual relationship to the original spelling. Here, sites are generally spelt as first published, regardless of the new spelling.

The Arabic letter "ain" (ع) is represented here by an "a", rather than by the alternative "' ". An example is the River Draa, not the River Dra'a.

Two abbreviations have been used frequently in the text: "O" for Oued (river) and "J" for Jbel (mountain).

BIBLIOGRAPHY

Abbreviations used

- Bol. Centro Camuno di Stu. preist.* Bollettino del Centro Camuno di Studi preistorici, Capo di Ponte, Italy
- Bull. d'Arch. Maroc.* Bulletin de l'Archéologie marocaine, Rabat
- Bull. du Club Alpin Français* Bulletin du Club Alpin Français, Casablanca, Morocco
- Bull. C.T.H.S.* Bulletin du Comité des travaux historiques et scientifiques, Paris, France
- Bull. Groupe d'Arch. et d'Anthrop. Casablanca* Bulletin du Groupe d'Archéologie et d'Anthropologie de Casablanca, Morocco
- Bull. Instit. Fr. Afr. Noire* Bulletin de l'Institut Français d'Afrique Noire, Dakar, Senegal
- Bull. et Mém. de la Soc. d'Anthrop. de Paris* Bulletin et Mémoire de la Société d'Anthropologie de Paris, Paris, France
- Bull. Mus. Anthropol. préhist. Monaco* Bulletin du Musée d'Anthropologie préhistorique de Monaco, Monaco
- Bull. Soc. Etudes et Rech. Les Eyzies* Bulletin de la Société d'Etudes et de Recherche, Les Eyzies, France
- Bull. Soc. Géog.* Bulletin de la Société de Géographie, Paris, France
- Bull. Soc. Géog. et d'Arch. d'Oran* Bulletin de la Société de Géographie et d'Archéologie d'Oran, Algeria
- Bull. Soc. Hist. Nat. Toulouse* Bulletin de la Société d'Histoire Naturelle de Toulouse, France
- Bull. Soc. Préh. fr.* Bulletin de la Société préhistorique française, Paris, France
- Bull. Soc. Préh. Maroc.* Bulletin de la Société de Préhistoire du Maroc, Casablanca, Morocco
- C.R. Acad. Inscip. & Belles Lettres* Comptes rendus de l'Académie des Inscriptions & des Belles Lettres, Paris, France
- C.R. Acad. Sci. Paris* Comptes rendus de l'Académie des Sciences, Paris, France
- C.R. Séances mens. Soc. sci. nat. et phys. Maroc* Compte rendus des Séances mensuelles de la Société des sciences naturelle et physique du Maroc, Rabat, Morocco
- C.R. des séances mens. Soc. Sc. nat. maroc.* Compte rendus des séances mensuelles de la Société des Sciences naturelles du Maroc, Rabat, Morocco
- Int. Newsletter on Rock Art* International Newsletter on Rock Art, Foix, France
- J. Soc. Afric.* Journal de la Société des Africanistes, Paris, France
- Proc. Preh. Soc.* Proceedings of the Prehistoric Society, London, England
- Pub. Service Antiq. Maroc.* Publications du Service des Antiquités du Maroc, Rabat, Morocco
- Rev. africaine* Revue africaine, Paris, France
- Rev. d'Egyptologie* Revue d'Egyptologie, Paris, France
- Rev. Anthrop.* Revue Anthropologique, Paris, France
-

- Aghali-Zakara, M. 1997. Alphabets Libyco-Berbères et Informatique. *Epigraphie Libyco-Berbère*. 3, 2-3
- Almagro Basch, M. 1944. El arte prehistórico del Sáhara español. *Ampurias*. 6, 273-284.
- Almagro Basch, M. 1946. *Preistoria del Norte de Africa y del Sáhara Español*. Barcelona.
- Almagro Basch, M. 1971a. Las representaciones de carros en el arte rupestre del Sáhara español. *Trabajos de prehistoria*. 28, 183-210.
- Almagro Basch, M. 1971b. A propósito de unos objetos hachiformes representados en el arte rupestre del Sáhara Occidental. *Munibe*. 1, 25-35.
- Anati, E. 1984. The State of Research in Rock Art. *Bol. Centro Camuno di Stu. Preist.* 21, 13-56.
- Anati, E. 1993. World Rock Art. The Primordial Language. *Bol. Centro Camuno di Stu. Preist.* 27, 7-160.
- Anthony D.W. and Brown, D.R. 2000. Eneolithic horse exploitation in the Eurasian steppes: diet, ritual and riding. *Antiquity*. 74(283), 75-86.
- Antoine, M. 1927 Répertoire préhistorique de la Chaouia. *Bull. Soc. Préh. Maroc*. 1, 6-49
- Antoine, M. 1935. Notes de préhistoire. Les pétroglyphes de l'abri sous roche du Champ de Tir, près Casablanca. *Bull. Soc. Préh. Maroc*. IX, 3-4 trim. 67-79.
- Antoine, M. 1936. Une station intéressante du Paléolithique supérieur dans le Grand Atlas: Telouet. *Bull. Soc. Préh. Maroc*. X, 17-31
- Antoine, M. 1950. Rapport sur l'activité de la Société pendant l'année 1950. *Bull. Soc. Préh. Maroc*. 2(3/4), 4.
- Antoine, M. 1951. Notes de préhistoire marocaine XXV. Sur une curieuse station néolithique à O Massa. *Bull. Soc. Préh. Maroc*. 3-4, 71-76.
- Antoine, M. 1952. *Les grandes lignes de la préhistoire marocaine*. Casablanca.
- Antoine, M. 1954. Notes de Préhistoire marocaine. L'industrie accompagnante les gravures rupestres de l'Oukaimeden (Grand Atlas central). *Pub. Service Antiq. Maroc*. X, 11-24
- Antoniewicz, W. 1968. Le motif de l'orant dans l'art rupestre de l'Afrique du Nord et du Sahara central. *In: Préhistoire, problèmes et tendances*. 1-17.
- Aulagnier, S. and Thevenot, M. 1986. *Catalogue des mammifères sauvages du Maroc*. Rabat, Institut Scientifique.
- Aumassip, G. 1986. *Trésors de l'Atlas*. Algiers, Entreprise Nationale du Livre.
- Aumassip, G. 1993. *Chronologies de l'art rupestre saharien et nord africain*. Calvisson (France), Ed. Jacques Gandini
- Aumassip, G. 1997. Considérations sur l'ancienneté de l'art rupestre gravé dans le nord de l'Afrique. *L'Anthropologie (Paris)*. 101(1), 197-219.
- Aumassip, G., Tauveron, M. and Vernet, R. 1988. L'Élevage au Sahara. *In: (no editor) Milieux, Hommes et Techniques du Sahara Préhistorique*. 137-159. Paris, L'Harmattan.
- Bahn, P.G. 1998. *The Cambridge Illustrated History of Prehistoric Art*. Cambridge, Cambridge University Press.

- Bahn, P.G. and Vertut, J. 1988. *Images of the Ice Age*. London, Windward.
- Bahn, P.G. 1996. New developments in Pleistocene Art, 1990-1994. In: Bahn, P. and Fossati, A. (editors) *Rock Art Studies: News of the World I*. Oxford.
- Baier, B. 1974/75. Felsbilder des Oued Saac, Sudmarokko. *Almogaren*. V/VI, 135-141.
- Bailloud, G. and Mieg de Boofzheim, P. 1964. La Nécropole Néolithique d'El-Kiffen, près de Tamaris (Province de Casablanca, Maroc). *Libyca*. 12, 95-171.
- Balbin Behrmann, R. de. 1975. *Contribución al estudio del arte rupestre del Sáhara español*. Unpublished doctoral thesis. Madrid.
- Ballouche, A. 1986. *Paléoenvironnements de l'homme fossile holocène au Maroc. Apports de la Palynologie*. Unpublished doctoral thesis, University of Bordeaux I.
- Ballouche, A. (in press). Paysages végétaux holocènes du Maghreb. In: *Etat des connaissances. Premières Journées Nationales d'Archéologie et du Patrimoine, 1st-4th July, 1998, Rabat* (summary).
- Ballouche, A., Raynal, J.P., Daugas, J.P., Lefèvre, D., Ousmoi M. and Texier, J.P. 1990. Cadre Chronoécologique et humain de l'Holocène du Maroc. In: *Colloque INQUA, Human Impact and Climatic Changes, Sfax (Tunisia), 2-4 March 1990*. 1
- Banque Marocaine du Commerce Extérieur 1997. *Le Maroc en Chiffres 1997*. Rabat.
- Barich, B.E. 1997. Review of: *Les Images Rupestres du Sahara*, by A. Muzzolini. *African Archaeological Review*. 14(2), 125-133.
- Barth, H. 1857-1858. *Reise und Entdeckungen in nord-und Central-Afrika in den Jahren 1849 bis 1855*. Gotha.
- Basel Museum. 1977/78. Exhibition catalogue: *Als die Sahara grün war - Felsbilder aus der Sagua el-Hamra*. Basel.
- Bayle des Hermens, R. de and Vialou, D. 1979. Gisements préhistorique littoraux du Sahara Occidental. Etude typologique de l'industrie lithique et tests décorés. *Bull.Soc.Préh.fr.* 76, 10-12.
- Bayle des Hermens, R. de, Léon-Leurquin, J., Patou, M. and Souville, G. 1984. La grotte de Toulkine (Haut Atlas Marocain) et le Toulkinien. *L'Anthropologie (Paris)*. 88 (3), 413-439.
- Bednarik, R.G. 1991. About: "The uses of style in archaeology". *Sahara*. 4,157.
- Bednarik, R.G. 1993. Pleistocene Animal Depiction in Asia. *Int.Newsløtter on Rock Art*. 6, 2-5.
- Bensimon, Y., Martineau, M. 1987a. Les houes néolithiques de la région de Marrakech (Maroc). *L'Anthropologie (Paris)*. 91 (2), 689-692.
- Bensimon, Y., Martineau, M. 1987b. Note sur des céramiques néolithiques nouvelles du littoral saharien marocain. *Bull.Soc.Hist.Nat., Toulouse*. 123, 57-63.
- Berthélémy, A. 1987. Ma Izza, site néolithique marocain. *Bull.Soc.Préh.fr.* 84/3, 75-82.
- Boube, J. 1983/84. Une idole énéolithique à Chella. *Bull.d'Arch.Maroc*. XV, 125-129.
- Boube-Picot, C. 1980. Les Bronzes Antiques du Maroc. III. Les Chars et l'Attelage. *Etudes et Travaux d'Archéologie marocaine*. VIII, 1-146.

- Bradley, R. 1989. Deaths and entrances: a contextual analysis of megalithic art. *Current Anthropology*. 30 (1), 68-75
- Bradley, R. 1997. *Rock art and the prehistory of Atlantic Europe*. London, Routledge.
- Bradley, R., Criado Boado, F. and Fabregas Valcarce, R. 1994. Rock art research as landscape archaeology: a pilot study in Galicia, north-west Spain. *World Archaeology*. 25(3), 374-390.
- Bradley, R., Criado Boado, F. and Fabregas Valcarce, R. 1995. Rock art and the prehistoric landscape of Galicia: the results of field survey 1992-1994. *Proc.Preh.Soc.* 61, 347-370.
- Brandt, S.A. and Carder, N. 1987. Pastoral rock art in the Horn of Africa: making sense of udder chaos. *World Archaeology*. 19 (2), 194-213.
- Bravin, A. 1997. Nuove incisioni rupestri di Wadi Tamanart. *B.C. Notizie (Notario del Centro Camuno di Studi Preistorici)*. March. Capo di Ponte, Italy.
- Bulliet, R.W. 1975. *The Camel and the Wheel*. Cambridge, Mass., Harvard University Press.
- Cabrillo, N. and Jesus García, P. 1975. Expedición al Sáhara dirigida por el Museo de Prehistoria de Santander. *Publicaciones del Patronato de la Cuevas. Sautuola*. 1, 81-108.
- Camps, G. 1960. Les traces d'un âge de bronze en Afrique du Nord. *Rev.africaine*. CIV, 31-55.
- Camps, G. 1974. *Les civilisations préhistoriques de l'Afrique du Nord et du Sahara*. Paris, Doin.
- Camps, G. 1984a. Quelques réflexions sur la représentation des Equidés dans l'art rupestre nord-africain et saharien. *Bull.Soc.Préh.fr.* 81/10-12, 371-381
- Camps, G. 1984b. Origines des Berbères. In: Camps, G.(editor) *Encyclopédie Berbère*. I, 14-26.
- Camps, G. 1989. Les chars sahariens. Images d'une société aristocratique. *Antiquités africaines*. 25, 11-40.
- Camps, G. 1992. Documentation et filtres culturels. A propos de la faune néolithique et protohistorique de l'Afrique du Nord. In: Shay, T. and Clottes, J. (editors) *The Limitations of Archaeological Knowledge*. University of Liège. 211-224.
- Camps, G. 1993a. Chars (art rupestre). In: Camps, G. (editor) *Encyclopédie Berbère*. XII, 1877-1892.
- Camps, G. 1993b. Cheval (origines). In: Camps, G. (editor) *Encyclopédie Berbère*. XII, 1907-10.
- Camps, G. and Cadenat, P. 1980. Nouvelles données sur le début de l'Age des Métaux en Afrique du Nord. *Bull.Soc.Etudes et Rech.Les Eyzies*. 30, 40-51
- Camps-Fabrer, H. 1966. Matière et art mobilier dans la préhistoire nord-africaine et saharienne. *Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques*. 5. Algiers.
- Capitant, J.F. and Mieg de Boofzheim, P. 1954. La Grotte de l'Oued Merzeg. *Bull.Soc.Préh. Maroc*. 7-8, 1 sem., 55-66
- Champion, T., Gamble, C., Shennan, S., and Whittle, A. 1984. *Prehistoric Europe*. London.
- Charon, M., Ortlieb, L.. and Petit-Maire, N. 1973. Occupation humaine Holocène de la région du Cap Juby (Sud-Ouest Marocain). *Bull.et Mém.de la Soc.d'Anthrop.de Paris*. 10, series XIII, 379-412.

- Chenorkian, R. 1988. *Les armes métalliques dans l'art protohistorique de l'occident méditerranéen*. CNRS
- Chenorkian, R. 1989. Art rupestre des âges des métaux. In: Mohen, J.P. (editor) *Le Temps de la Préhistoire*. 188-192.
- Choppy, J. 1952. Peintures rupestres dans la région d'Ifrane. *Bull.Soc.Préh.Maroc*. 1-2 sem., 101-105.
- Clariond, L. 1933. Les gravures rupestres d'Ait Saadane (Maroc Saharien). *Bull.Soc.Préh. Maroc*. 2. 3-4 trim., 90-95.
- Clottes, J. 1997. *Rock Art. A universal cultural message*. UNESCO.
- Clutton-Brock, J. 1989. Cattle in ancient North Africa. In: Clutton-Brock, J. (editor) *The Walking Larder. Patterns of Domestication, Pastoralism and Predation*. London. 200-206.
- Clutton-Brock, J. 1993. The spread of domestic animals in Africa. In: Shaw, T., Andah, B. and Okpoko, A. (editors) *The Archaeology of Africa. Food, Metals and Towns*. 59-70.
- Coffyn, A. 1985. *Le Bronze Final Atlantique dans la Péninsule Ibérique*. Paris, Editions de Boccard.
- Coles, J.M. 1990. *Images of the past. A guide to the rock carvings and other ancient monuments of Northern Bohuslän*. Uddevalla, Risbergs Tryckeri.
- Coles, J.M. and Harding, A.F. 1979. *The Bronze Age in Europe*. London, Methuen & Co.Ltd.
- Conkey, M. W. and Hastorf, C.A. 1990. *The Uses of Style in Archaeology*. Cambridge.
- Cornand, G. 1933. Gravures rupestres signalées près de Tamgdout (au Sud d'Agadir, dans l'Anti-Atlas). *Le Patriote Illustré*. 29.1.1933, 142-143
- Cribb, R. 1991. *Nomads in archaeology*. Cambridge, Cambridge University Press.
- Daugas, J.P. 1992. Néolithique. In: Raynal, J.P. (director), *Activités 1992, Mission Préhistorique et Paléontologique Française au Maroc*. 17-16.
- Daugas, J.P., Raynal, J.P., Ballouche, A., Occhietti, S., Pichet, P., Evin, J., Texier, J.P. and Debenath, A. 1989. Le Néolithique nord-atlantique du Maroc: premier essai de chronologie par le radiocarbone. *C.R.Acad.Sci.Paris*. 308, Series II, 681-687
- Daugas, J.P., Daugas, C., El Idrissi, A., Ouchaou, B., Raynal, J.P. and Texier, J.P. (in press). La séquence néolithique du Maroc nord atlantique: cadres chronologiques et culturels. *1ères Journées Nationales d'Archéologie et du Patrimoine, Rabat, 1-4 July, 1988*.
- Davis, W. 1984. Representation and knowledge in the prehistoric rock art of Africa. *The African Archeological Review*. 2, 7-35.
- Davis, W. 1989. Finding symbols in history. In: Morphy, H. (editor), *One World Archaeology. Animals into Art*. 179-189. London, Unwin Hyman.
- Debenath, A. 1979/80. Mission préhistorique et paléontologique française au Maroc: Rapport d'activité pour l'année 1978. *Bull.d'Arch.Maroc*. XII, 45-77
- Debenath, A., Daugas, J.P., Lefevre, D., Raynal, J.P., Roche, J. and Texier, J.P. 1981/82. Mission préhistorique et paléontologique française au Maroc: Rapport d'activité pour l'année 1979. *Bull.d'Arch.Maroc*. XIV, 3-48.

- Debenath, A., Daugas, J.P., Raynal, J.P., Roche, J. and Texier, J.P. 1983/84. Activités de la mission préhistorique et paléontologique française au Maroc. Années 1981-1982. *Bull.d'Arch.Maroc.* XV, 11-80
- Debenath, A., Raynal, J.P., Roche, J., Texier, J.P. and Ferembach, D. 1986. Stratigraphie, Habitat, Typologie et devenir de l'Atérien marocain: Données récentes. *L'Anthropologie (Paris)*. 90 (2), 233-246.
- Delibrias, G. and Roche, J. 1976. Datations absolues de l'épipaléolithique marocain. *Bull.d'Arch.Maroc.* X, 11-25.
- Digard, J.P. 1994. *Le cheval, force de l'homme*. Paris, Editions Découvertes Gallimard.
- Douls, C. 1888. Voyage d'Exploration à Travers le Sahara occidental et le Sud marocain. *Bull Soc.Géog.* 9, 473-479.
- Dupuy, Ch. 1996. Mobilité des peuplements et arts rupestres dans les bassins des fleuves Niger et Nil. *Préhistoire Anthropologie Méditerranéennes*. 5, 173-196.
- Duveyrier, H. 1875. De Mogador au Djebel Tabayoudt, par le Rabbin Mardochee Abi Serour; résumé du journal de voyage. *Bull.Soc.Géog.* 6 série, 10, 561-573.
- Duveyrier, H. 1876. Sculptures antiques de la province marocaine de Sous découvertes par le rabin Mardochee. *Bull.Soc.Géog.* 6 série, 12, 129-137
- Duveyrier, H. 1893. Rochers gravés du Sous. *Bull.Soc.Géog.* 2, 144-145.
- El Khatib-Boujibar, N. 1983a. Ecritures préromaines. In: Essakali, L. (editor) *Le Mémorial du Maroc*. Vol.1. 135-139. Rabat, Ed.Nord Organisation.
- El Khatib-Boujibar, N. 1983b. Les royaumes berbères. In: Essakali, L. (editor) *Le Mémorial du Maroc*. Vol.1. 151-160. Rabat, Ed.Nord Organisation.
- Ennouchi, E. 1954. La faune néolithique de Toulkine (Haut Atlas). *C.R.mens.Séances soc.sci.nat.et phys.Maroc.* 20, 140-141.
- Ferron, J. 1988. Le mythe solaire et la résurrection des âmes d'après la peinture funéraire de Kel-el-Blida. *Archéologia*. 20, 52-55
- Firth, R. 1973. *Symbols - Public and Private*. London.
- Flamand, G.B.M. 1921. *Les Pierres Ecrites (Hadjret Mektuba)*. Paris.
- Flood, J., 1989. *Archaeology of the Dreamtime. The Story of Prehistoric Australia and its People*. Revised edition. New Haven and London, Yale University Press.
- Galand, L., Février, J. and Vajda, G. 1966. *Inscriptions antiques du Maroc*. Paris, C.N.R.S.
- Garcea, E. 1995. New Investigations in the Tadrart Acacus, Libyan Sahara. *Nyame Akuma. Bulletin of African Archaeology*. 44, 35-37
- García Hernández, E. 1941. Un abrigo con pinturas rupestres en Beni-Issef. *Mauntania*. 14 (167), 300-302.
- Gautier, E.H. 1916. Nouvelles stations de gravures rupestres nord-africaines. *L'Anthropologie*. XXVII, 38-45.
- Gautier, E.H. 1927. *Les Siècles obscurs du Maghréb*. Paris, Payot.

- Gautier, A., and Muzzolini, A. 1991. The life and times of the giant buffalo alias *Bubalus/Homoiceras/Pelorovis antiquus* in North Africa. *Archéozoologie*. IV/1, 39-92
- Gilman, A. 1975. The Later Prehistory of Tangier, Morocco. *Bulletin 29*. Peabody Museum, Harvard University, Cambridge, Mass.
- Glory, A. 1953. Gravures rupestres du Haut Atlas. Un épisode guerrier de l'histoire berbère. *La Nature*. 3218, June, 174-180.
- Glory, A. 1955. Une nouvelle industrie préhistorique. Les trièdres toulkiniens. *Actes II Congrès panafricain de Préhistoire, Alger, 1952*. Paris. 429-434.
- Glory, A., Allain, C. and Reine, M. 1955. Les gravures libyco-berbères du Haut-Draa (Maroc). *Actes II Congrès panafricain de Préhistoire, Alger, 1952*. Paris. 715-722.
- Grand Encyclopédie du Maroc. Géographie physique*. 1987. Rabat, Selca S.A..
- Grébénart, D. 1972. Matériaux pour l'Etude de l'Epipaléolithique et du Néolithique du Littoral Atlantique Saharien du Maroc. *Colloque International: L'Epipaléolithique méditerranéen, Aix en Provence, June 1972*. 151-188.
- Grébénart, D. 1974. Datation d'une antilope gravée sur coquille d'oeuf d'autruche provenant de Tarfaya (Sahara atlantique marocain). *L'Anthropologie (Paris)*. 78 (4), 461-462.
- Grébénart, D. 1988. *Les Premiers Métallurgistes en Afrique occidentale*. Paris, Ed. Errance.
- Grébénart, D. 1995. Le Néolithique de l'Adrar n'Metgourine (région d'Akka, Maroc). In: Chenorkain, R. (editor), *L'Homme Méditerranéen*. 101-111. Aix-en-Provence. Publications Université d'Aix-en-Provence.
- Grébénart, D. 1996. Le Néolithique de Bab Merzouka et de l'Ouest de Taza (Maroc). Etude préliminaire. *L'Anthropologie (Paris)*. 100 (2/3), 366-382.
- Grébénart, D. and Pierret, B. 1966. Traits polis et cupules de l'Oued Zireg (Province de Taza, Maroc). *Libyca*. XIV. 329-335.
- Greisson, D. 1973/75. Sites préhistoriques et gravures rupestres des Ait Bou lchaouen (Maroc oriental). *Bull.d'Arch.Maroc*. IX, 103-144.
- Hachid, M. 1982/83. La chronologie relative des gravures rupestres de l'Atlas saharien (Algérie) et la région de Djelfa. *Libyca*. 30/31, 143-164.
- Hachid, M. 1992. *Les Pierres Ecrites de l'Atlas saharien. El-Hadjra et-Mektouba*. Algiers, Enag/Editions.
- Haltenorth, T. and Diller, H. 1980. *Collins Field Guide. Mammals of Africa including Madagascar*. London, William Collins Sons and Co. Ltd.
- Hamy, F.T. 1902. Note sur une nouvelle station de pierres écrites, Djebel Zenaga. *C.R.Acad.Inscrip. et Belles Lettres, séance 5 sept.1902*. 477.
- Heckendorf, R. and Salih, A. 1999. Les peintures rupestres au Maroc: Etat des connaissances. *Beitrag zur Allgemeinen und Vergleichenden Archäologie*. 19, 233-257.
- Herber, J. and David, M. 1933. A propos des dalles gravées au Cap Cantin. *Bull.Soc.Préh. Maroc*. VII. (1-2), 27-31.
- Hodder, I. 1990. Style as a historical quality. In: Conkey, M.W. and Hastorf, C.A. (editors). *The Uses of Style in Archaeology*, Cambridge.

- Hourbette, D. 1992. Un nouveau site de gravures au Yagour. *Bull. Groupe d'Arch. et d'Anthrop. Casa.* 10, 15-20.
- Howe, B. 1967. The Palaeolithic of Tangier, Morocco. *Bulletin of the American School of Prehistoric Research.* 22, Harvard University, Cambridge, Mass.
- Huard, P., Leclant, J., Allard-Huard, L. 1980. La Culture des Chasseurs du Nil et du Sahara. *Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques.* 29, 2 vols. Algiers.
- Jacques-Meunié, D. 1958. La nécropole de Foum Le-Rjam, tumuli du Maroc présaharien. *Hesperis.* XLV, 95-142.
- Jaubert, chevalier. 1840. *Idrisi, La première géographie de l'Occident* (translation). Paris, Flammarion
- Jodin, A. 1956. La grotte néolithique du "Kheneg Kenadsa" à Tendrara (Maroc Oriental). *Bull. d'Arch. Maroc.* I, 119-155
- Jodin, A. 1957. Note préliminaire sur l'établissement pré-Romain de Mogador (Campagnes 1956-1957). *Bull. d'Arch. Maroc.* II, 9-40.
- Jodin, A. 1958/59. Les grottes d'El Khiril à Achakar. Province de Tanger. *Bull. d'Arch. Maroc.* III, 249-313.
- Jodin, A. 1964. Les gravures rupestres du Yagour. Analyse stylistique et thématique. *Bull. d'Arch. Maroc.* V, 47-116.
- Jodin, A. 1966a. Les gisements de cuivre du Maroc et l'archéologie des métaux (Gravures rupestres et Tumulus). *Bull. d'Arch. Maroc.* VI, 11-27.
- Jodin, A. 1966b. Les gravures rupestres de l'Oukaimeden (Haut Atlas): documents inédits. *Bull. d'Arch. Maroc.* VI, 29-54.
- Joleaud, J. 1935. Gravures rupestres néolithiques d'Akka (Oued Draa, Maroc méridional). *J. Soc. Afric.* V, fasc.1, 272-273.
- Klug, Lt. 1939. Note sur les gravures rupestres reconnues dans la circonscription de Tafraout. *Bull. Soc. Préh. Maroc.* 1/2 sem., 17-24.
- Koehler, H. 1931. La grotte d'Achakar au Cap Spatel. *Collection Marrochitana.* 1
- Lacombe, J-P., Daugas, J-P. and Sbihi-Alaoui, F-Z. 1990. La nécropole néolithique de Rouazi-Skhirat (Maroc). Présentation de l'étude des sépultures. *Bull. et Mém. de la Soc. d'Anthrop. de Paris.* n.s. 2, N°3-4, 55-60
- Lafanechère, R. 1951. Recherches de préhistoire dans la région du Bani (Sud-Marocain). *Bull. Soc. Préh. Maroc.* New series 3-4, 40-45
- Lafanechère, R. 1952. Recherches de préhistoire dans la région Bani-Dra. *Bull. Soc. Préh. Maroc.* 5-6, 43-89
- Lafanechère, R. 1953. Recherches de préhistoire dans la région Bani-Dra. 2° Note. *Bull. Soc. Préh. Maroc.* 7-8, 111-136.
- Lambert, N. and Souville, G. 1970. Influences orientales dans la nécropole mégalithique de Tayadint (Maroc). *Antiquités Africaines.* 4, 63-74.
- Larcher, M. 1980. *Herodotus, Histories, Book IV* (translation).

- Lefebvre, G. 1963. "Hache polie" et gravures rupestres. *Libyca*. XI, 138-150.
- Lefebvre, G. and Lefebvre, L. 1967. Corpus des gravures et des peintures rupestres de la région de Constantine. *Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques*. 7, 227-274. Algiers.
- Lenz, O. 1884. *Timbuktu, Reise durch Marokko, die Sahara und den Sudan*. Leipzig.
- Le Quellec, J.-L. 1993. *Symbolisme et Art Rupestre au Sahara*. Paris, L'Harmattan.
- Le Quellec, J.L. 1998. *Art rupestre et préhistoire du Sahara*. Paris, Bibliothèque scientifique Payot.
- Letan, R. 1966. Note sur les gravures rupestres de la région d'Igherm de l'Anti-Atlas. *Bull.d'Arch.Maroc*. VI, 455-460.
- Letan, R. 1967a. Un campement néolithique à Tarfaya (Cap Juby). *Bull.d'Arch.Maroc*. VII, 137-150
- Letan, R. 1967b. Gravures rupestres de Mrimina. *Bull.d'Arch.Maroc*. VII, 549-68.
- Lewis-Williams, J.D. and Dowson, T.A. 1988. The Signs of all Times: Entoptic Phenomena in Upper Palaeolithic Art. *Current Anthropology*. 29 (2), 201-245.
- Lhote, H. 1964. Gravures rupestres de Tachoukent et de Tanzega, Sud Marocain. *Libyca*. 12, 225-245.
- Lhote, H. 1970a. Gravures rupestres du djebel Mélias. Annexe de Beni-Ounif, Sud Oranais (Algérie). *Objets et Mondes*. X (4), 299-306.
- Lhote, H. 1970b. Les gravures rupestres du Sud-Oranais. *Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques*. 16. Algiers.
- Lhote, H. 1975. Les gravures rupestres de l'Oued Djerat (Tassili-n-Ajjer). Tome I. *Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques*. 25. Algiers.
- Lhote, H. 1976. Les gravures rupestres de l'Oued Djerat (Tassili-n-Ajjer). Tome II. *Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques*. 25. Algiers.
- Lhote, H. 1982. *Les Chars Rupestres Sahariens*. Toulouse, Editions les Hespérides
- Lorblanchet, M. 1988. Le Congrès international d'art rupestre de Darwin (Australie) (Premier congrès de l'AURA). *Bull.Soc.Préh.Fr.* 85 (8), 227-232.
- Lubell, D., Sheppard, P. and Gilman, A. 1989. The Maghreb, 200,000-4,000 B.P. In: Ehrich, R.W. (editor), *Chronologies in Old World Archaeology*. Chicago. 305-308.
- Luquet, A. 1967. Gravures rupestres de la région de Demnate. *Bull.d'Arch.Maroc*. VII, 579-91.
- Lutz, R. and G. 1995. *The Secret of the Desert*. Innsbruck, Golf Verlag.
- Malhomme, J. 1950. Les pierres excavées et les gravures rupestres du Grand Atlas de Marrakech. *Bull.Soc.Préh.Maroc*. 3/4 trim., 7-21
- Malhomme, J. 1953. Une représentation de haches du Bronze (Grand Atlas). *Bull.Soc.Préh. Maroc*. 8, 105-109
- Malhomme, J. 1954. La station préhistorique La Caze (Oukaimeden, Grand Atlas). *C.R. des séances mens.Soc.Sc.nat.maroc*. 20, 81

- Malhomme, J. 1958/59. Le Bronze II dans le Grand Atlas: les Sacrifices Humains. *Bull.d'Arch. Maroc.* III, 379-387.
- Malhomme, J. 1959. Corpus des gravures rupestres du Grand Atlas, vol.1. *Pub.Service Antiq. Maroc.* 13, 1-156.
- Malhomme, J. 1961. Corpus des gravures rupestres du Grand Atlas, vol.2. *Pub.Service Antiq. Maroc.* 14, 1-164.
- Mareuil, G. de. 1939. *Quatre groupes de gravures rupestres au sud de Goulimine.* Unpublished typed manuscript.
- Margat, J. and Camus, A. 1958/59. La nécropole de Bouia au Tafilalet. *Bull.d'Arch.Maroc.* III, 345-370.
- Martin, J., Jover, H., Le Coz, J., Maurer, G. and Noin, D. 1970. *Géographie du Maroc.* Paris, Hatier.
- Martinet, G. 1996. Le Voilier du site d'Azrou Klane ("La Pierre tatouée") (Sud-Marocain). *Bull.Soc.Etudes et Rech.Les Eyzies.* 45, 83-97.
- Martinet, G. 1997. Les Ait Atta. *Bull.Groupe d'Arch.et d'Anthrop.Casablanca.* 19, 23-28.
- Martinez Santa-Olalla, J. 1941a. Las primeras rupestres del Marruecos español. *Atlantis, actas y memorias Sociedad español de Antropología,Etnología y Prehistoria.* 16, 438-442
- Martinez Santa-Olalla, J. 1941b. Obras de arte prehistóricas en el Sáhara Español. *Mauritania.* 165, 233-235
- Martinez Santa-Olalla, J. 1944. *El Sáhara español anteislámico.* Madrid, Min.Educ.Nacional.
- Masy, Ph. 1998. Remarques et questions sur quelques aspects des gravures rupestres du sud marocain. Les "nasses". *Les Cahiers de l'Association des Amis de l'Art Rupestre du Sahara.* 4, 17-28.
- Mateu, J. 1945/46. Nuevas aportaciones al conocimiento del Arte Rupestre del Sáhara Español. *Ampurias.* VII-VIII, 49-65.
- Mattingly, D.J., al-Mashai, M., Balcome, P., Drake, N., Knight, S., McLaren, S., Pelling, R., Reynolds, T., Thomas, D., Wilson, A.I. and White, K. 1999. The Fezzan Project 1999: preliminary report on the third season of work. *Libyan Studies.* 30, 129-145.
- Mauny, R. 1947. Une route préhistorique à travers le Sahara Occidental. *Bull.Instít.Fr.Afr. Noire.* IX, 341-357.
- Mauny, R. 1956. Préhistoire et Zoologie: la grande "faune éthiopienne" du Nord-Ouest africain du paléolithique à nos jours. *Bull.Inst.Fr.Afr. Noire.* XVIII, 246-279.
- Mavor, J.W. 1976. The riddle of Mzorah. *Almogaren VII.* 89-117.
- Mazel, J. 1971. *Enigmes du Maroc.* Paris, Robert Laffont.
- Mercer, J. 1980. *The Canary Islanders, their prehistory, conquest and survival.* London, Rex Collings.
- Meunié, J. and Allain, Ch. 1956. Quelques gravures et monuments funéraires de l'extrême sud-est marocain. *Hesperis.* XLIII, 1 and 2 trim, 51-85.
- Michaux-Bellaire, E. and Biarnay, S. 1912. La caverne des idoles au sud du Cap Spartel. *Archives marocaines.* 18, 391-396.

- Mieg de Boofzheim, P. 1956. *Rapport de sondage*.
- Milburn, M. 1972. Felsbilder und Steinbauten in der östlichen Saguia el Hamra, Spanische Sahara. *Almogaren*. III.
- Milburn, M. 1973. Sur quelques gravures du Sahara espagnol. La station rupestre de Ras Lentareg. *Anuario de estudios atlánticos*. 19, 197-206.
- Milburn, M. 1975. Gravures tardives du Sahara Espagnol: la station rupestre de Ras Lentareg. *Bol. Centro Camuno di Stu. preist.* 12. 169-173.
- Monod, T. 1932. L'Adrar Ahnet. *Travaux et Mémoires de l'Institut d'Ethnologie*. 19. Paris.
- Monteil, V. 1940. Les "pierres tatouées" du Sud-Ouest marocain. *Revue des Etudes Islamiques* Cahier II, 1-26.
- Monteil, V. 1948. *Supplement aux pierres tatouées du Sud-Ouest marocain*. *Revue des Etudes Islamiques*. I, 109-111.
- Moorey, P.R.S. 1986. The emergence of the light, horse-drawn chariot in the Near East c2000-1500 BC. *World Archaeology*. 18(2), 196-215.
- Morales Agacino, E. 1942. Grabados rupestres del Sáhara español. *Mauritania*. XII, 373-79.
- Morales Agacino, E. 1944. Grabados e inscripciones rupestres de la Alta Saguia el Hamra en el Sáhara Español. *Sociedad español de Antropología, Etnología y Prehistoria*. 19 (1-4), 1937-1951.
- Mori, F. 1974. The earliest Saharan rock-engravings. *Antiquity*. XLVIII (190), 87-92.
- Moyen, A. 1959. De nouvelles gravures rupestres découvertes au Sahara. *Le Patriote Illustré*. 43, 25.10.1959. Brussels.
- Musée Archéologique, Rabat. 1998. Exhibition: *Pré- et protohistoire du Rif oriental*.
- Musée de l'Homme. 1996. Exhibition: *La Préhistoire de l'Afrique de l'Ouest*. Paris.
- Muzzolini, A. 1982. La "Période des Chars" au Sahara. L'hypothèse de l'origine égyptienne du cheval et du char. In: Camps, G. and Gast, M. (editors). *Actes du Colloque de Sénanque: Les Chars Préhistoriques du Sahara, 21-22 mars 1981*. 45-56. Aix-en-Provence, Publications de l'Université de Provence.
- Muzzolini, A. 1988a. Les Chars des Stèles du Sud-Ouest de la Péninsule ibérique, les Chars des Gravures rupestres du Maroc et la datation des Chars sahariens. *Actas, Congreso Internacional "El Estrecho de Gibraltar, Ceuta, Nov. 1987"*. 361-387.
- Muzzolini, A. 1988b. Le "Style de Tazina": définition, extension, signification de ses figurations les plus méridionales (Fezzan, Tassili, Djado, Air). *Préhistoire Ariégoise*. XLIII, 179-201.
- Muzzolini, A. 1990. Au sujet de: la datation des chars au "galop volant". *Sahara*. 3, 115-118.
- Muzzolini, A. 1993. L'Origine des Chèvres et Moutons domestiques en Afrique. Reconsidération de la Thèse diffusionniste traditionnelle. *Empurias*. 48-50, 2, 160-171. Barcelona.
- Muzzolini, A. 1994. Les chars au Sahara et en Egypte. Les chars des "Peuples de la Mer" et la "Vague orientalisante" en Afrique. *Rev. d'Egyptologie*. 45, 207-234.

- Muzzolini, A. 1995a. Faunes holocènes du Maroc et variations des aires de distribution de certaines espèces sauvages dans le Nord de l'Afrique. L'expansion récente de l'Oryx dammah. *Actes 2^e Congrès Internat. de Ceuta "El Estrecho de Gibraltar" (Novembre 1990)*. 215-244
- Muzzolini, A. 1995b. *Les images rupestres du Sahara*. Toulouse, ed.author.
- Muzzolini, A. 1996. Northern Africa: some advances in rock art studies. In: Bahn, P. and Fossati, A. (eds.), *Rock Art Studies, News of the World I*. Oxford. 59-69.
- Nouveau Larousse illustré*. 1901. Selle. Vol 7, 633. Paris.
- Nowak, H. 1976. Neue Felsbildstationen in der Spanischen Sahara. *Almogaren*, V-VI.
- Nowak, H. 1977. Die Felsbilder von Amgala, Westsahara. *Almogaren*, VII.
- Nowak, H., Ortner, S. and Ortner D. 1975. *Felsbilder der Spanischen Sahara*. Graz, Akademische Druck- und Verlagsanstalt.
- Odinot, P. 1928. Les grottes du Seddina. *Bull.Soc.Préh.Maroc*.
- O'Riordain, S.P. 1936. The Halberd in Bronze Age Europe. *Archaeologia*. 86, 195-321.
- Ouassini, H. 1992. *Histoire de la Végétation climatique et anthropique dans l'Afrique du Nord et du Sahara: Essai de Cartographie à l'échelle de l'Holocène*. Unpublished Mémoire, INSAP, Rabat.
- Ouchaou, B. and Amani, F. 1997. Etude préliminaire des grands mammifères du gisement de Kaf-Taht-el Ghar (Tetouan, Maroc). *Préhistoire Anthropologie Méditerranéennes*. 6, 53-60.
- Ousmoi, M. 1989. *Application de la datation par thermoluminescence au Néolithique marocain*. Unpublished doctoral thesis, University of Clermont Ferrand.
- Paskoff, R. 1960. Note sur quelques vestiges archéologiques des environs de Berguent (Maroc oriental). *Libyca*. 8, 295-297.
- Pellicer, M. and Acosta, P. 1972. Aportaciones al estudio de los grabados rupestres del Sáhara española. *Tabona*. 1, 3-26. Canary Islands.
- Perret, R. 1937. Une carte des gravures rupestres et des peintures à l'ocre de l'Afrique du Nord. *J.Soc.Afric*. VII, 107-123.
- Petit-Maire, N. 1984. Le Sahara, de la steppe au désert. *La Recherche*. 160, 1372-1382.
- Petit-Maire, N., Charon, M. and Ortlieb, L. 1980. La dune d'Izriten. In: Petit-Maire, N. (editor), *Le Sahara atlantique à l'Holocène: Peuplement et Ecologie. Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques*. XXVIII, 17-34.
- Phillipson, D. 1993. *African Archaeology*. 2nd edition.
- Pons, A. and Vaufrey, R. 1938. L'abri sous roche orné du Jebel Youssef. *Bull.Soc.géog.et d'Arch.d'Oran*. LIX, fasc. 210, 117-122.
- Ponsich, M. 1970. *Recherches archéologiques à Tanger et dans sa région*. Editions C.N.R.S., Paris
- Poyto, R. and Musso, J.C. 1969. Corpus des peintures et gravures rupestres de Grande Kabylie. *Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques*. 12.
- Puigaudeau, O. du, and Senones, M. 1952. Vestiges préislamiques dans la région d'Assa. *J.Soc.Afric*. XXII, 7-15.

- Puigauveau, O. du, and Senones, M. 1953. Gravures rupestres de l'Oued Tamanart (Sud marocain). *Bull.Inst.fr.Afr.noire*. XV, 1242-1261.
- Puigauveau, O. du, and Senones, M. 1965. Nouvelles gravures rupestres de l'Oued Tamanart (Sud marocain). *Bull.Inst.fr.Afr.noire*. XXVII, 285-289.
- Raynal, J.P. 1997. Casablanca et son importance pour la Préhistoire marocaine. *Bull.Groupe d'Arch.et d'Anthrop.Casablanca*. 20, 3-6.
- Raynal, J.P., Magoga, L., Sbihi-Alaoui, F-Z. and Geraads, D. 1995. The earliest occupation of Atlantic Morocco: the Casablanca evidence. In: Roebroeks, W. and van Koifschoten, T. (editors), *The Earliest Occupation of Europe*. 255-262.
- Regagnon, M. 1978. Deux gravures rupestres dans le Haut Atlas. *Journal des Africanistes*. 48, 97-99.
- Reille, M. 1976. Analyse pollinique de sédiments postglaciaires dans le Moyen Atlas et le Haut Atlas marocains: Premiers résultats. *Ecologia Mediterranea*. 2, 153-170.
- Reille, M. 1977. Contribution pollenanalytique à l'histoire holocène de la végétation des montagnes du Rif (Maroc septentrional). *Supplement to Bulletin de l'Association française Etudes du Quaternaire*. 50, 53-76.
- Reine, M. 1969. Les gravures pariétales libyco-berbères de la Haute Vallée du Draa. *Antiquités africaines*. 3, 35-54.
- Robert, S., Devisse, D. and Devisse, J. 1970. *Tegdaoust I. Recherches sur Aoudaghost*. t.1. Paris, Arts et Métiers Graphiques.
- Roche, J. and Jodin, A. 1966. Une gravure rupestre à Temara (région de Rabat). *Bull.Soc. Préh. Maroc*. VI, 447-453.
- Roche, J. de la. 1952. Le Sous préhistorique. La butte d'Inezgane. *La Vigie marocaine*. 9.3.52, 2.
- Rodrigue, A. 1985. Les gravures rupestres de la région de Marrakech. *Bull.Soc.Etudes et Rech.Les Eyzies*. 34, 19-22.
- Rodrigue, A. 1986. Gravures inédites d'éléphants dans l'Atlas marocain. *Cahiers Ligures de Préhistoire et de Protohistoire*. New series 3, 179-191. Nice.
- Rodrigue, A. 1987. Une frise d'éléphants inédite dans l'Atlas marocain. *Bull.Soc.Etudes et Rech.Les Eyzies*. 36, 43-44.
- Rodrigue, A. 1987/88. Corpus des gravures rupestres libyco-berbères de Marrakech. *Bull.d'Arch.Maroc*. XVII, 89-180.
- Rodrigue, A. 1988. Gravures anthropomorphes: Toujours à découvrir ... même à l'Ouka. *Bulletin du Club Alpin Français*. June, 44-48.
- Rodrigue, A. 1989. Nouvelles gravures rupestres dans la région de Zagora (Maroc présaharien). *Bull.Soc.Etudes et Rech.Les Eyzies*. 38, 43-49.
- Rodrigue, A. 1989/90. Gravures rupestres inédites dans le Dadès. *Bulletin du Club Alpin Française*. 24-26
- Rodrigue, A. 1990. Nouveau foyer rupestre dans le Haut-Atlas marocain. *Bull.Groupe d'Arch et d'Anthrop. Casablanca*. 5, 3-10.

- Rodrigue, A. 1992a. Les stations rupestres d'Ighir-Ighnain (Oued Tamanart, Maroc). *Préhistoire ariégoise*. XLVII, 177-183.
- Rodrigue, A. 1992b. Première synthèse des Recherches préhistoriques dans le Haouz de Marrakech. *L'Anthropologie (Paris)*. 96(4), 689-710.
- Rodrigue, A. 1992c. La station rupestre du Jbel Tistouit (Aougdal n'Oumzouar, Telouet). *Bull. Groupe d'Arch. et d'Anthrop. Casablanca*. 11, 3-10.
- Rodrigue, A. 1993. Documents de l'Adrar Metgourine (Maroc Saharien). *Bull. Soc. Etudes et Rech. Les Eyzies*. 42, 49-61.
- Rodrigue, A. 1994a. Ifar, station rupestre inédite du Yagour (Haut Atlas Marocain). *Préhistoire ariégoise*. XLIX, 215-223.
- Rodrigue, A. 1994b. Les représentations de haches dans l'art rupestre du Maroc méridional. *Bull. Soc. Etudes et Rech. Les Eyzies*, 43, 27-36.
- Rodrigue, A. 1994c. Un rhinoceros dans le Haut Atlas marocain. *Sahara*. 6, 82-83.
- Rodrigue, A. 1995/1996. Outils aratoires dans l'art rupestre du Haut Atlas Marocain. *Bull. Mus. Anthropol. préhist. Monaco*. 38, 49-50.
- Rodrigue, A. 1996. Les stations à micro-industrie du Haut Atlas marocain. *Sahara*. 8, 97-98.
- Rodrigue, A. 1997. *Les gravures rupestres du Haut Atlas marocain. Typologie, analyse, essai de chronologie*. Unpublished doctoral thesis, Université of Aix en Provence.
- Rodrigue, A. 1998. Gravures rupestres du Haut-Atlas marocain: faune rare ou chimères? *Bull. Soc. Etudes et Rech. Les Eyzies*. 47, 78-86.
- Rodrigue, A. 1999a. *L'art rupestre du Haut Atlas Marocain*. Paris, L'Harmattan.
- Rodrigue, A. 1999b. Megalithic engraved structure in the South of Morocco. *Almogaren*. XXX, 345-348.
- Rodrigue, A. and Wolff, R. 1999. Nouvelles gravures rupestres à l'Oued El Kebch (Sud Marocain). *Bull. Soc. Etudes et Rech. Les Eyzies*. 48, 106-118.
- Roget, R. 1924. *Le Maroc chez les auteurs antiques*. Paris, Soc. d'Editions "Les Belles Lettres".
- Rosenberger, B. 1970. Les vieilles exploitations minières et les anciens centres métallurgiques du Maroc. Essai de carte historique (1ère partie). *Revue de Géographie du Maroc*. 17, 71-108.
- Rosenfeld, A., and Smith, C. 1997. Recent developments in radiocarbon and stylistic methods of dating rock-art. *Antiquity*. 71, 405-411.
- Rowley-Conwy, P. 1988. Early radiocarbon accelerator dates for camels from Qsar Ibrim, Egyptian Nubia. *Sahara*. 1, 93.
- Ruhlmann, A. 1934a. La gravure rupestre de Merkala (Maroc Saharien). *Bull. Soc. Préh. Maroc*. N° 3-4, 47-58.
- Ruhlmann, A. 1934b. Les graffiti d'Igherm (Anti-Atlas). *Bull. Soc. Préh. Maroc*. N° 3-4, 59-64.
- Ruhlmann, A. 1935. Pierre gravée et tumulus du Djebel Siroua. *Pub. Service. Antiq. Maroc*. 1, 55-65.
- Ruhlmann, A. 1936. Enceintes préhistoriques marocaines. *Bull. Soc. Préh. Maroc*. 10, 44-51.

- Ruhlmann, A. 1938. Gravures rupestres de l'Oued Draa (Maroc saharien). *Pub.Service.Antiq. Maroc.* 3, 83-97.
- Ruhlmann, A. 1939. Les Recherches de Préhistoire dans l'Extrême Sud Marocain. *Pub.Service Antiq.Maroc.* 5.
- Ruhlmann, A. 1945. Le Paléolithique marocain. Nouvelle Esquisse d'une Etude d'ensemble. *Pub.Service.Antiq.Maroc.* 7, 3-103
- Ruhlmann, A. 1951. La grotte préhistorique de Dar es-Soltan. *Hesperis.* 11. Rabat.
- Russo, P. 1926. Les pierres écrites du col de Zenaga (Sahara marocain). *Rev.Anthrop.* 258-86.
- Russo, P. 1934a. Sur les gravures rupestres de l'Oued Draa. *Bull.Soc.Préh.Maroc.* 1-2, 3-6.
- Russo, P. 1934b. Inscriptions rupestres modernes dans le Sous. *J.Soc.Afric.* IV, 269-272.
- Russo, P. and Pons, A. 1936. L'abri sous roche de Beni Ounif. *XVI Congrès international d'anthropologie. Bruxelles 1935.*
- Salih, A. 1995. The painted shelters of Jbel Bani (Morocco). *Int.Newspetter on Rock Art.* 12, 3.
- Salih, A., Oujaa, A., Heckendorf, R., Nami, M., El Gharraoui, M., Lemjidi, A., Zohal, H. 1998. L'aire rupestre de l'Oukaimeden, Haut Atlas, Maroc. Occupation humaine et économie pastorale. *Beiträge zur Allgemeinen und Vergleichenden Archäologie.* 18, 253-295.
- Salih, A. and Heckendorf, R. 1998. Tamzarar, Biouafen and Taouraght: new rock art sites to the north of Jebel Bani (Morocco). *Int.Newspetter on Rock Art* 21, 4-7.
- Salih, A. and Heckendorf, R. 2000. New rock art sites at Imaoun (pre-Sahara, Morocco). *Int. Newspaper on Rock Art.* 26, 5-9.
- Searight, S. 1987. Les gravures rupestres de l'Assif Tiwandal, région d'Ighram, Anti-Atlas. *Revue de Géographie du Maroc.* New series 11 (1), 3-34.
- Searight, S. 1991. Gravures rupestres des Skhour des Rehamna (Maroc). *Préhistoire Ariégoise.* XLVI, 235-248.
- Searight, S. 1994a. Le site du Tizi-n-Iblouzen. *Montagnes marocaines.* 2, 29-30.
- Searight, S. 1994b. Nouvelle gravure d'éléphant à Tata (Sud Marocain). *Préhistoire ariégoise.* XLIX, 211-213.
- Searight, S. 1995. Le commerce de l'ivoire au Maroc préhistorique et les gravures d'éléphants: peut-on les associer? *Bull.Soc.Etudes et Rech.les Eyzies.* 44, 33-59.
- Searight, S. 1996a. Imaoun: a unique rock art site in South Morocco. *Sahara.* 8, 79-81.
- Searight, S. 1996b. Un site rupestre du Sud-marocain: Oum el Aleg. *Bull.Soc.Etudes et Rech.les Eyzies.* 45, 67-82.
- Searight, S. 1997. Art rupestre et hallucinogènes. *Bull.Soc.Etudes et Rech.les Eyzies.* 46, 46-62.
- Searight, S. 1998. Un campement préhistorique à Tarfaya: le Site Letan. *Bull.d'Arch.Maroc.* XVIII, 109-124
- Searight, S. 1999. Imaoun: un site de gravures rupestres du Sud-marocain. *Cahiers de l'Association des Amis de l'Art Rupestre du Sahara.* 5, 15-26.

- Searight, S. and Hourbette, D. 1992. *Gravures rupestres du Haut Atlas*. Casablanca, Ed. Belvisi.
- Senones, M., and du Puigaudeau, O. 1941a. Gravures rupestres de la montagne d'Icht (Sud-Marocain). *J.Soc.Afric.* XI, 147-155.
- Senones, M., and du Puigaudeau, O. 1941b. Gravures rupestres de la vallée moyenne du Draa (Sud-Marocain). *J.Soc.Afric.* XI, 157-168.
- Shaw, B.D. 1976. Climate, environment and prehistory in the Sahara. *World Archaeology*. 8 (2), 133-149.
- Simoneau, A., 1965. Le poisson symbole du Finistère atlasique. *Hesperis-Tamuda*. 6, 53-77.
- Simoneau, A. 1967a. Les gravures d'éléphants du Haut Atlas. *Bull.d'Arch.Maroc*. VII, 569-578.
- Simoneau, A. 1967b. Les gravures du Haut Atlas de Marrakech. *Revue de Géographie du Maroc*. 11, 67-76.
- Simoneau, A. 1967c. L'androgynisme et les gravures du Haut Atlas. *Bull.d'Arch.Maroc*. VII, 91-135.
- Simoneau, A., 1968. Recherches sur les gravures rupestres du Haut-Atlas marocain. *Bull.Soc.Préh.fr.* 65, fasc.2, 642-653.
- Simoneau, A. 1968/72. Nouvelles recherches sur les gravures rupestres du Haut Atlas et du Dra. *Bull.d'Arch.Maroc*. VIII, 15-31.
- Simoneau, A. 1969. Les Chasseurs-pasteurs du Dra moyen et les problèmes de la néolithisation dans le Sud-marocain. *Revue de Géographie du Maroc*. 16, 99-116.
- Simoneau, A. 1970. Gravures rupestres inédites de l'Haut Atlas. *Valcamonica symposium 68. Actes du symposium international d'Art Préhistorique, 23-28 Sept. 1968.* 369-379.
- Simoneau, A. 1971a. Images inédites du Draa Moyen (Maroc du Sud). *Bol.Centro Camuno di Stu.Preist.* 7, 87-95.
- Simoneau, A. 1971b. La région rupestre de Tazzarine. Documents nouveaux sur les chasseurs-pasteurs. *Revue de Géographie du Maroc*. 20, 107-118.
- Simoneau, A., 1972a. Les prospections rupestres dans la région du Dra extrême-Sud Marocain. Avril 1971-Avril 1972. *Almogaren*. III, 15-33.
- Simoneau, A. 1972b. La station bovidienne de l'Adrar Metgourine. *Almogaren*. III, 267-272.
- Simoneau, A. 1973. Nuova scoperta d'arte rupestre nel Marocco meridionale. *Bol.Centro Camuno di Stu.Preist.* 10, 230-231
- Simoneau, A. 1974/75a. Recherches rupestres autour de Msissi. *Almogaren*. V-VI, 309-12.
- Simoneau, A. 1974/75b. Nouvelles stations rupestres entre Tata et Tissint (Avril 1974). *Almogaren*. V-VI, 313-320.
- Simoneau, A. 1975a. Protohistoire religieuse du Jebel Rhat (Haut Atlas). *Valcamonica symposium '72 Actes du symposium international sur les Religions de la Préhistoire*, 335-342.
- Simoneau, A. 1975b. Une région rupestre de chasseurs tardifs, le Présahara marocain. *Options méditerranéennes*. 26, 61-71.

- Simoneau, A. 1975c. Documents rupestres du Sud marocain. *Bol. Centro Camuno di Stu. Preist.* 12, 163-168
- Simoneau, A. 1975d. L'abri de la Gara Mélias. *Bol. Centro Camuno di Stu. Preist.* 12, 168.
- Simoneau, A. 1976. Les rhinocéros dans les gravures rupestres du Draa-Bani. *Antiquités africaines.* 10, 7-37
- Simoneau, A. 1977. *Catalogue des sites rupestres du Sud-Marocain.* Ministère d'Etat chargé des Affaires Culturelles, Rabat.
- Simoneau, A. 1995. Chasseurs au Sud du Sarho. *Préhistoire, Anthropologie Méditerranéennes.* 5, 143-157.
- Smith, A.. 1980. Domesticated cattle in the Sahara and their introduction into West Africa. In: Williams, M.A.J. and Faure, H. (editors) *The Sahara and the Nile. Quaternary environments and prehistoric occupation in northern Africa.* Ed A.A. Balkema, Rotterdam. 489-501.
- Soleilhavoup, F. 1998. L'Art Rupestre au Sahara Occidental. *Archéologia.* 342, 54-65.
- Souville, G. 1964. Une curieuse hache en bronze de la région du Beni Snassen. *Bull. d'Arch. Maroc.* V, 319-323.
- Souville, G. 1965. Recherches sur l'existence d'un âge de Bronze au Maroc. *Actes VI Cong. U.I.S.P.P.* 1962. 419-424. Rome
- Souville, G. 1972. Note sur l'industrie préhistorique de Bab Merzouka (Maroc). *Congrès panafricain de Préhistoire, Actes de la VI^e Session, Dakar, 1967.* 83-85.
- Souville, G. 1973. *Atlas Préhistorique du Maroc. I. Le Maroc Atlantique.* C.N.R.S., Paris
- Souville, G. 1986. Témoignages sur l'Age du Bronze au Maghreb occidental. *C.R. Acad. Inscr. & Belles-Lettres.* Jan.-Mars. 97-114.
- Souville, G. 1989. Présence du Chalcolithique au Maroc central. *Bull. C.T.H.S.* New series, 20-21, 7-15.
- Souville, G. 1991. Essai d'interprétation des Gravures Rupestres du Haut Atlas Marocain. *C.R. Acad. Inscr. & Belles-Lettres.* Nov.-Déc., 767-782.
- Souville, G. 1995. L'industrie préhistorique de Bab Merzouka (Maroc). In: Chenorkian, R. (editor) *L'Homme Méditerranéen.* 93-100. Publications Université de Provence, Aix-en-Provence
- Souville, G. 1997. Sur trois pointes de javelot en fer d'un tumulus du Maroc Oriental. *Espacio, Tiempo y Forma. Series II, Historia Antigua.* 10, 15-21.
- Spruytte, J. 1978/79. Le véhicule à un essieu à brancards, ou à deux timons, dans l'Antiquité. *Almogaren.* IX/X, 53-78.
- Spruytte, J. 1996. *Attelages antiques libyens.* Ed. de la Maison des sciences de l'Homme. Paris.
- Striedter, K.H. 1982. Application du traitement automatique des données aux recherches sur l'art rupestre. In: Camps, G. and Gast, M. (editors). *Les chars préhistoriques du Sahara. Actes du Colloque de Sénanque, 21-22 mars 1981.* Aix-en-Provence. 185-198.
- Swartz, B.K. 1992. Standards for the recording of petroglyphs and pictographs. *Int. Newsletter on Rock Art.* 1, 18-20

- Taçon, P.S.C. and Chippindale, C. 1998. An Archaeology of rock-art through informed methods and formal methods. In: Chippindale, C. and Taçon, P.S.C. (editors). *The Archaeology of Rock Art*. 1-10. Cambridge University Press, Cambridge
- Tarradell Mateu, M. 1954. Noticia sobre la excavación de Gar Cahal. *Tamuda*. 2, 344-358.
- Tauveron, M. 1992. *Chalcolithique et Age de Bronze au Maghreb. Corpus du Mobilier métallique*. Paris.
- Thomas, H. 1979. La faune quaternaire d'Algérie. *Archéologia*. 134, 61-71.
- Treinen, F. 1973/75. La grotte Velozzo, près de Dar bou Azza (province de Casablanca). *Bull.d'Arch.Maroc*. IX, 1-37.
- Ucko, P.J. 1977. Opening remarks. In: Ucko, P.J. (editor) *Form in Indigenous Art*. London. 7-10
- Ucko, P.J. and Rosenfeld, A. 1967. *Palaeolithic cave art*. London.
- Vaufrey, R. 1955. *Préhistoire de l'Afrique*. Paris, Librairie Masson
- Vernet, R. 1993. *Préhistoire de la Mauritanie*. Nouakchott, Mauritania, CCF-Sepia.
- Vernet, R. 1995. *Climats anciens du Nord de l'Afrique*. Paris, L'Harmattan.
- Viñas Vallverdu, R. 1981. Nouvelles stations de gravures rupestres au Sud du Djebel Bani (Anti-Atlas, Maroc). *Préhistoire Ariégoise*. XXXVI, 115-139.
- Wailly, A. de. 1973/75. Le site du Kef-el-Baroud (région de Ben Slimane). *Bull.d'Arch.Maroc*. IX, 39-101.
- Wailly, A. de. 1976. Le Kef El Baroud et l'ancienneté de l'introduction du cuivre au Maroc. *Bull.d'Arch.Maroc*. X, 47-51.
- Wengler B. and Wengler, L.. 1979/80. Abri Rhirane: premiers résultats. *Bull.d'Arch.Maroc*. XII, 23-44.
- Wengler, L., Delibrias, G., Michel, P. and Vernet, J.L. 1989. Sites Néolithiques du Maroc Oriental: Cadre chronologique, archéologie et milieu naturel. *L'Anthropologie (Paris)*. 93 (4), 507-534
- Wolff, R. 1976. Chars schématiques de l'oued Ec Cayyad. *Bull.d'Arch.Maroc*. X, 53-69
- Wolff, R. 1978/1979. Rock engravings of the Upper Wadi Eç Cayyad (Southern Morocco). *Almogaren*. IX-X, 183-202.
- Wolff, R. 1982. Contribution à l'étude des chars rupestres du Sud-marocain. In: Camps, G. and Gast, M. (editors) *Les Chars Préhistoriques du Sahara. Actes du Colloque de Sénanque, 21-22 mars 1981*. 139-151. Aix-en-Provence.
- Wolff, R. 1997. Pièges gravés du Sud Marocain. *Préhistoire, Anthropologie Méditerranéennes* 6, 61-120.