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Mid Holocene game drives in Nubian landscapes?

Recent field survey in the Third Cataract region has now recorded some 550 new archaeological 'sites' spread along ca. 75 m of the Nile valley (Fig. 1). While much of the archaeological material encountered is relatively familiar, the survey has also identified a number of more enigmatic features, notably a series of linear stone features ('walls'). Many are quite ephemeral, often only a few courses of stone high, but others are more substantial structures with some examples 300-400 m long and possibly parts of more extensive complexes of walls extending over 1-1.5 km. Found in often very different landscape contexts within the region and varying considerably in scale, it seems unlikely all these 'walls' can be treated as a single class of monument and various 'walls' may have had very different functions and may well date to very different periods. A number of the larger wall structures are the subject of this discussion.

Long linear stone features were first encountered in 1991 (Edwards and Osman 1992: 54-59) along the Wadi Farjar, an ancient watercourse which traverses the prominent bend in the Nile on the Third Cataract. However, beyond noting their presence, no further work was undertaken at that time as work remained focussed on riverine areas. Further reconnaissance in that area suggested that such features in that area might be of late prehistoric date. The possibility was also considered that they might have been used for water-harvesting, supporting seasonal agriculture in the wadi (Edwards and Osman 2000: 61). Subsequently, further extensive complexes of walls were identified in parts of Sadeik-Habarab, along what may be an ancient Nile channel which runs ca. 1 km east of the present river, while more several more ephemeral walls were found in the very rocky area along the south side of Arduan island. However, with the aid of aerial photography and high-resolution satellite imagery it has become apparent that such various 'wall' structures are much more widely distributed in the region. Several further examples have been identified on the left (west) bank of the river from aerial photographs and several of these have

now been examined on the ground during 2005, in the areas of Tajab and Jawgul. All are found in the rockier parts of the cataract zone where there are now extensive areas of exposed granite and sandstone. To date, no such features have been found in the northern part of the survey area downstream of the Kajbar Cataract, where there is little loose surface stone. It is of interest that some potentially similar structures have recently been identified at a number of locations in the Fourth Cataract (Wolf 2005), another rugged and rocky landscape, with similar geology to this area.

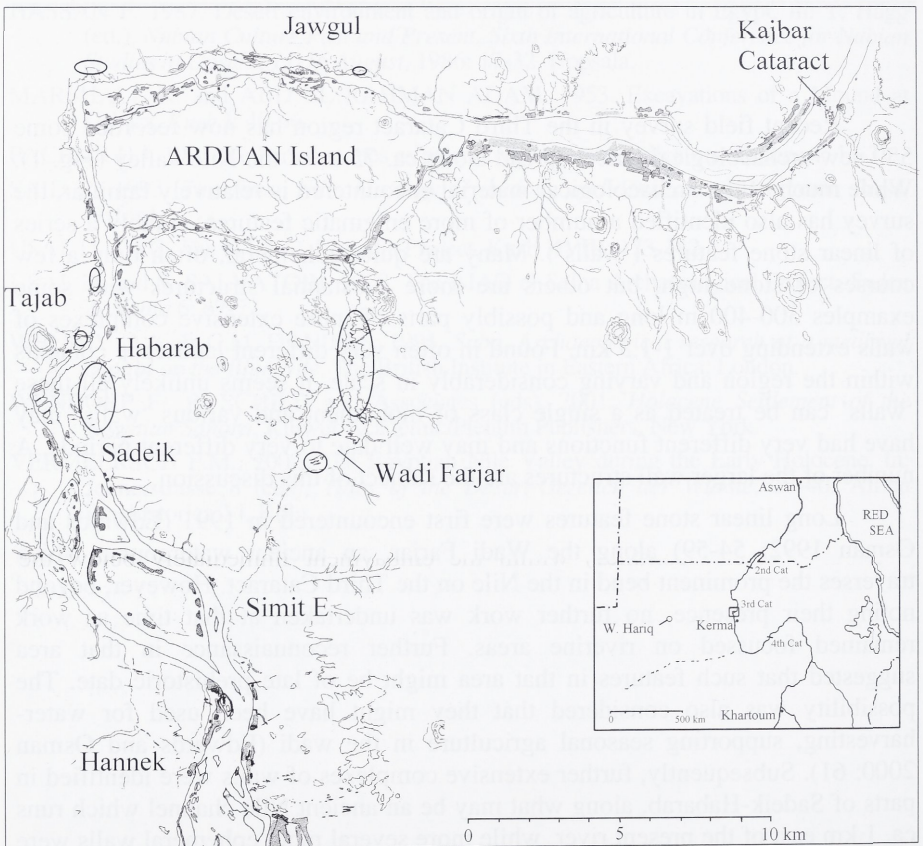


Fig. 1. The Third Cataract region (N.Sudan) with major groups of 'walls' ringed.

Wadi Farjar

One of the wall complexes so far discovered lies along the lower Wadi Farjar. This wadi once drained a substantial area within the bend of the Nile in the Third Cataract region, running from near Simit East at its south end, to rejoin the Nile near the southeastern corner of Arduan island (Fig. 2). The largest elements of the complex are two stretches of walls running along the two sides of the main wadi channel, ca. 5 km south of where it joins the Nile. The most substantial of these (FAR007) consists of a low wall standing 0.5-1 m high which extends over ca. 360 m of the rocky slopes curving around an embayment along the east side of the wadi (Fig. 3). At its south end it terminates at a rocky outcrop where the wadi narrows to a width of ca. 100m. There are two further small rocky outcrops within the wadi at this narrow bottle-neck. At its west end the wall stops at the wadi edge and does not seem to have run into or across it. A prominent feature along the line of the wall is a single gap ca. 26 m wide. While there is some limited collapse evident in places, the absence of spreads of rubble along the wall indicates that the original structure was never significantly larger than what we see today and the gap also appears to be an original feature of its construction.

There are no further structures directly linked to this wall, although on the relatively high rock outcrops just to the south of its western terminus are two small structures. The first (FAR030) is a low stone cairn, thought likely to be a burial monument. A few sherds found beside it may be of Napatan or possibly Kerma date (second – early first millennium BC?). A few metres to the south is a low stone kidney-shaped structure (FAR031) with an entrance in its south wall. No artefacts or other dating evidence was found with it. The only other artefacts discovered in this area were some thin spreads of sherd and lithic material (FAR029 – later Neolithic?) within the embayment immediately below the FAR007 walls. Several burnt mounds, which we interpret as the sites of burnt stands of trees (see below), are also found in this embayment as well as at several locations further north along the wadi.

On the west side of the wadi, another wall line (FAR021) runs north along its edge, beginning (ending) at the narrowest point of the wadi immediately opposite the end of FAR029. Running intermittently between boulders and rock outcrops, this feature extends over ca. 120 m, terminating at its north end at a small gully which runs into the main wadi from the west. There are no walls along the west side of the wadi north of this gully, although there are several other archaeological features in this area. These include a cluster of four Kerma graves (FAR033), a larger stone structure (FAR016) and some smaller stone features, some of which may be burial monuments of Kerma date, and another cluster of three or four stone foundations (FAR036), of unknown date. Some



Fig. 2. Wall-lines and other features in Wadi Farjar. (Original data © Quickbird 2003; distributed by Eurimage).



Fig. 3. Length of stone walling running along east side of Wadi Farjar (FAR007).

400m to the north, there is one further short length of wall ca. 50 m long (FAR037) running approximately W-E, located near the top of the slope above the wadi. It is unclear whether it relates to the other walls further up the wadi.

Further shorter lengths of walls have been identified in both directions along the wadi, some running parallel to it, with others running across its course. In its central area, the wadi forms a wide and relatively open plain, with a few rocky outcrops within it, bounded by low terraces. There further lengths of walls (FAR011) are located, running around a rocky outcrop on the north side of the wadi channel. The longest of these then turned south into the wadi, disappearing beneath the sandy silts of the wadi deposits. Amongst the rocks adjoining this area at least three potential prehistoric occupation 'sites' (FAR023-25) were identified amongst more extensive thin spreads of lithics and sherds. Similar material was found on the south side of the wadi.

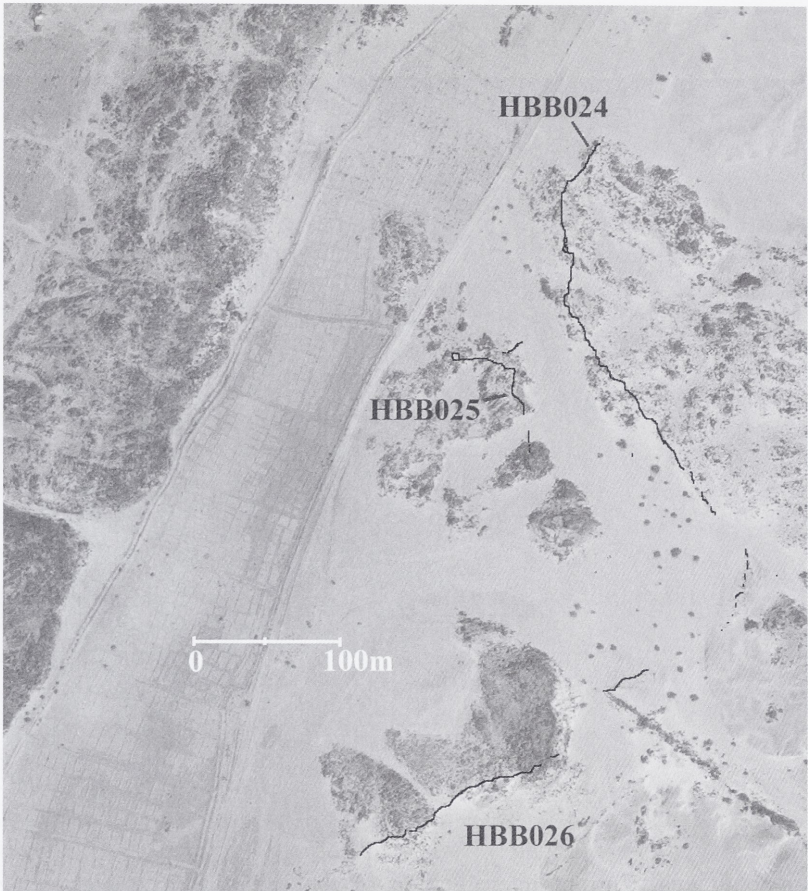


Fig. 4. Wall-lines along the east side of the palaeochannel in the Sadeik-Habarab area (Original data © Quickbird 2003; distributed by Eurimage).

Sadeik-Habarab

Another series of walls were identified in the Sadeik-Habarab area where three stretches of walls (HBB024-026), apparently all part of a single complex, lie on the east side of an ancient Nile channel which runs from Sadeik to Habarab, ca. 1 km east of the present river channel (Fig. 4). The longest of these HBB024 (ca. 320 m long), runs around a rocky headland and then along the eastern edge of a side wadi which runs into this larger palaeochannel. The course of the east end is still not fully determined but segments of walls continue around

the end of the wadi turning towards the southwest where further walls (HBB026) run for a further ca. 150 m. Facing HBB024 on the west side of the side wadi are a series of length of walls (HBB025, ca. 120 m long), including some which may be crossing a small side channel, and which are now partly buried. These walls seem to form part of a single complex, focused on the small side-wadi which winds around and between these rock outcrops. However, on the west side of the main wadi, there are several further stretches of wall running along its rocky edge, extending over a total distance of ca. 1.5 km. While much of this palaeochannel has recently been brought into irrigated cultivation there is very little evidence for significant occupation along this wadi after the second millennium BC, most sites dating to the Neolithic and Kerma-periods.

The function(s) of such structures

In the absence of obvious (ethnographic) analogies, proposing a function for such stone structures is not straightforward and will doubtless be further debated. However, this paper will discuss the possibility that they relate to prehistoric hunting activities, probably during the mid-Holocene, although we cannot as yet closely date them. More specifically it may be suggested that they are the remains of hunting drives and blinds used for forms of cooperative hunting.

While such structures have not, until very recently, been recognised elsewhere in the Middle Nile, they are not unique to this region. Potentially similar structures, insofar as they contain walls/stone alignments and other smaller cellular structures, are found, for example, in a number of parts of Northeast Africa and the Near East. A series of stone walls/alignments, some extending over ca. 2 km have been identified in the Egyptian Western Desert, in an area west of Dakhla (Riemer 2004). A number of further sites have been recorded in that general area. Current interpretation of the Egyptian examples generally favours a role in hunting. Interestingly, the geologist Haynes, who encountered similar stone alignments in the Egyptian desert records that one of his bedouin assistants did indeed suggest that such walls could be used for hunting gazelle “which generally will run along beside the stones rather than jump over them” (Haynes 1985: 301-302). His understanding of how such systems might have worked, and understanding of gazelle behaviour is of course of some interest as we lack modern analogues for such hunting systems in our region.

More generalised parallels, as well as similar problems of interpretation, may also be found in some quite well-documented occurrences of linear stone features, often known as ‘desert-kites’ in the Near East, distributed through parts of Syria, Jordan, Sinai, the Negev and Arabia (Echallier & Braemar 1995; Helms & Betts 1987; Meshel 2000; Van Berg et al. 2004). Most of these differ in some

important respects to the Sudanese examples. However, it is also reasonably clear that there may be several different types of structures which seem likely to have served a number of different functions. An important feature of many of the classic 'desert-kites' of the Near East are that they form enclosures. This feature, their landscape context, as well as their abundance in some areas, does seem to suggest that they relate to systems of pastoralism. However, current interpretations would suggest that while some may have been used for herding, others may have been used for hunting. The construction of low walls to guide game, often used with small stone blinds/hides, is recorded among modern Bedouin groups in parts of Arabia, also sometimes with pit traps (Jabbur 1995: 361-370). It should also be noted that some stone alignments, despite bearing some superficial similarity to 'desert-kites' may have had quite different uses. A so-called 'kite' in the central Sinai, for example, seems likely to be some form of cultic structure (Kobusiewicz 1999), reminiscent of the so-called 'antenna-tombs' encountered in the Libyan Sahara (Reygasse 1950: 56-62; Mattingly et al. 2003: 201-203).

In the absence of obvious modern analogues for such structures in the region, it may perhaps be instructive to look further afield, as potentially similar systems used for hunting are known in North America. Despite their distance in time and space, descriptions of such systems may be informative in relation to these African examples. The North American hunting drives consist of stone cairns, long stone alignments (drive walls), and/or arcuate to circular rock features/rock circles (Benedict 1996; Frison 1991). Low and often quite ephemeral walls simply serve to guide the animals towards a killing zone, while the stone circles seem to have served as hunting blinds/hides. In themselves it is important to recognize that the 'walls' do not contain the animals, but simply serve to guide their movement when being driven (the same point made by Haynes' Egyptian Bedouin informant). Frison explicitly notes how relatively slight stone features may be sufficient to guide the animals. Hunters' blinds served to conceal the hunters until the animals were within striking distance. These could be constructed if there were not natural features, like boulders, to hide behind. A range of other landscape features could also be used to help trap animals, including artificial corrals, seasonal watercourses (arroyos), and parabolic sand dunes (Frison 1991: 155).

There are of course many more practical questions concerning the functioning of these putative hunting features which require further investigation. How exactly may they have been used within the Nubian landscape? In some North American highland systems the blinds were commonly constructed on reverse slopes so that animals driven over a ridge would suddenly encounter the hunters in their blinds, in positions where the walls made escape difficult. The

location of wall lines running below the ridge lines might then suggest the direction from which animals were being driven towards the walls.

The ephemeral nature of many of these walls is often commented on when attempts have been made to understand how they may have functioned. However, presuppositions that the 'wall's were required to serve as effective barriers must be viewed with caution. As the anecdotal evidence offered by Haynes suggests, any judgements on the effectiveness of such features is likely to benefit from a much greater knowledge of animal behaviour than most archaeologists possess. We probably also need to consider the extent to which, in view of the likely date of these structures, they were constructed within landscapes with more soil and vegetation than there exists today. As such, it is certainly possible that they could have had other structures, made for example of wood or thorns, associated with them. Wooden drive lines and trap structures are known in parts of North America (Frison 1991; Frison et al., 1990; Keyser 1974). We probably also need to consider the presence of trees and other landscape features which have long disappeared when considering discontinuous wall features. Were such walls constructed in a landscape with significant tree cover or a landscape in which trees were disappearing? Such possibilities of course create further problems for interpreting such structures as we may be looking at only parts of larger complexes, other elements of which have left no archaeological traces.

If these wall structures are indeed of mid-Holocene date, as the Egyptian examples suggest they may be, a better understanding of the environment in which they were constructed will be important for understanding their purpose. That this landscape had significant tree cover during the mid-Holocene is apparent both from general palaeoenvironmental reconstructions and from more direct evidence for ancient trees widely encountered in this region. Enigmatic burnt features, sometimes identified as hearths, have been noted in various parts of northern riverine Sudan, for many years. More than 50 years ago, Arkell recorded their presence in large numbers in the Kerma Basin/Wadi Khowi, interpreting them as Kerma period (ca. 3rd-2nd millennium BC) hearths (Arkell 1950: 35). Recent survey work in that region has confirmed the widespread occurrence of such 'burnt mounds' (Reinold 1987: 45; Welsby 2001: 604-605). The test excavation of a small number of these produced no clear evidence for their origin or purpose, generally revealing irregular and often sinuous 'pits' filled with burnt material. What was interpreted as a smoothed mud lining and finger marks in the burnt material was taken as an indication that some at least of these features were indeed man-made, although their function remained unknown.

Examination of many examples of similar features in the Third Cataract region has suggested to us however that the vast majority, if not all, of such features are 'natural', in so far as they mark the sites of burnt trees. Some examples of such features were also found which maintained recognisable elements of the trees and their root structure preserved in burnt, sometimes vitrified, soils. The structure of the trees was often quite evident in some detail, for example in smooth surfaces where the bark/surfaces of trees had once been. Their distribution, most commonly along the edges of wadis, is also consistent with the likely distribution of the last ancient trees in this region. Such features are commonly found along the edge of the Lower Wadi Farjar, as well as along the Sadeik-Habarab palaeochannel, and another paleochannel (known as Gaamuffa) on the west bank in the Hannek area (see Fig. 1). No evidence was found to suggest an anthropogenic origin for these features or that the distribution of burnt features could be related to the distribution of sites or artefact scatters in more than the most general way. The only association that was evident was that the areas where such features were most abundant, such as along palaeochannels, often/mostly in some distance from the modern Nile, often showed evidence for significant occupation during the mid-Holocene (broadly through the Neolithic and Kerma periods).

Such an identification finds confirmation in the many examples of what are demonstrably ancient trees encountered in the Wadi Hariq (Fig. 1), a complex wadi system located in what is now open desert some 400 km to the west of our survey area (Jesse et al. 2004). There, radiocarbon samples date burning episodes which destroyed those trees to the third millennium BCA. The destruction of trees was occurring in an area where playa-conditions with rain-fed pools in the Wadi Hariq seem to have disappeared at the end of the third millennium BCA. Human occupation there, remote from permanent water supplies seems to have ended by the mid-second millennium BC in the face of ongoing climatic deterioration.

Despite our likely ignorance of so many of the skills involved in prehistoric game hunting, there are clearly many other aspects of these wall systems which may merit further attention. How might game be driven? Where were the killing zones in the different types of systems located? With wall systems which seem to relate to wadis, were animals being driven along them, contained within the wadis, with a killing ground at a selected bottle neck (as might be proposed at FAR007)? Alternatively, were they being driven towards the wadis from the higher ground around them? It is worth noting that some hunting traditions (sometimes referred to as 'miring') are known to direct game towards swamps/wetlands, from which animals may find it difficult to escape. This may be of interest in some of our cases where wall systems appear to be

focused on embayments close to the river which may, in periods of higher river levels, have been flooded for at least part the year. In such areas, we find complexes of walls sited on lower slopes surrounding these potentially swampy areas. In such cases, two different scenarios could be suggested, one in which animals could have been driven towards these swampy areas, with a killing zone on its margins, or a second in which they could have been driven out, towards the walls/blinds around the embayment.

Problems of chronology

As has commonly been found with such structures in other regions, establishing their date remains very problematica. By their nature, it is extremely difficult to establish direct associations between such stone structures and dateable artefacts, while finding other chronometric means of dating them remains difficult. In particular, the often heavy erosion/deflation of desert land surfaces makes the likelihood of recovering samples suitable for radiocarbon dating, for example, unlikely. Where material does survive, establishing a firm association between samples and structures remains difficult. Haynes, for example, was able to date charcoal from a hearth close to one of his stone alignments (6020 ± 140 BP), but obviously could not demonstrate a certain link between the hearth and the walls (Haynes 1985: 302).

Some idea of the relative and possibly absolute chronology of such features may also be acquired through detailed analyses of their relationship to other, more readily dateable features. In the Near East, the evidence of rock drawings, for example, has been used to suggest some of the 'desert-kite' features may date back to the Early Holocene Natufian period. A number of rock drawings which seem to date to that period have been identified in both Syria and Jordan which may depict such structures, in association with people and animals (van Berg et al. 2004: 94-97). However, no drawings which might relate to these structures have been identified from the Middle Nile amongst the large collections of published rock drawings (e.g. Hellström 1970; Otto & Buschendorf-Otto 1993), nor have any been encountered amongst the many rock drawing sites within our own survey area.

Further indications of data may be provided by the wider archaeological landscapes within which these features are located. This contextual information is probably most useful in relation to sites in the region's hinterlands, especially the Wadi Farjar, where the abundance of late prehistoric features and sites, and the marked absence of later material, is very marked. Our current understanding of this and similar wadi-systems is that they were most intensively used/occupied during the fifth – second millennia BCA. It may also be possible to suggest dating relative to other features such as burial cairns. In the lower Wadi Farjar

there were several burial structures which can be broadly dated to the Kerma period (later third – early second millennia BC). These seem likely to postdate walls in their immediate vicinity but we have, as yet, failed to find unequivocal stratigraphic relationships to confirm this.

Further up the wadi, in the relatively open plains around FAR011, at least three potential prehistoric occupation ‘sites’ (FAR023-025) were identified within the rocky outcrops immediately east of these walls. Further thin scatters of artefacts amongst the rocks around these occupation foci suggests that perhaps this whole area of rock outcrops was extensively occupied, on many occasions. Sherd material includes Neolithic, pre-Kerma and possibly early Kerma material indicating the intermittent occupation of this location over millennia. A potentially promising feature of these sites is the presence of animal bone, some burnt, which was noted on some of these sites. No collections have yet been made but observations of surface material on the surface suggest the presence of large mammals.

That kill sites could also survive must also be considered, especially if hunts involved numbers of larger game animals whose bones may have been more robust. Numerous examples of kill sites involving possibly hundreds of animal (typically bison, but also antelope and wild sheep), for example, are known from North America (Frison 1991).

Despite such uncertainties, the identification of potentially comparable sites in the western deserts of Egypt (Haynes 2001; Riemer 2004) is useful in indicating that a date as early as the mid-Holocene is certainly possible for such sites. With regard to these Egyptian sites, the environmental context is the most persuasive indicator of date, in that after ca. 6000BP (ca. 4900BC) the increasing aridity will have made occupation in that region increasingly tenuous. That there are also radiocarbon dates from that period from sites in the immediate vicinity of walls may be seen as strengthening the case for such a date.

In the Third Cataract region, where we have as yet found little evidence for Early Holocene populations, a rather later date is certainly possible for these features (ca. 5000-3000BC?), but in a ‘Neolithic’ period in which herding and cultivation will have coexisted with some hunting. However, in view of the growing evidence for ‘Mesolithic’ settlement on the northern margins of the Kerma Basin, ca. 30 km to the south (Honnegger 2004) some earlier exploitation of this area by hunters cannot be ruled out. The scarcity of finds of ‘Mesolithic’ material in the area, especially its easily identified pottery, need not of course be necessarily very significant, in that such material is likely to be scarce, or absent in what were primarily hunting sites.

An even later date cannot of course be ruled out, as the presence of several Kerma-period sites in these same wadis indicate. However, we know very little about hunting during the Kerma period and whether it may have remained a significant activity. The little faunal evidence we have for this period, which is almost entirely derived from the townsite of Kerma, only suggest that wild animals/game formed a relatively minor part of the diet there, with only a few Dorcas gazelle, Dam Gazelle and Nubian ibex represented (Chaix 1990). On the other hand, gazelle (as opposed to domestic animals such as sheep and cattle) burials are not uncommon in Kerma cemeteries in more northerly parts of Nubia (e.g. Vila 1987). There are also many depictions of game as well as domestic animals amongst the numerous rock drawing sites in the Third Cataract region. Our current understanding of the rock drawings of this region is that the majority of the 'prehistoric' drawings seem likely to date to the period of the fourth-second millennia BCA. It is certainly difficult to identify many drawings that we can confidently date much earlier or that the drawings of wild animals represent an earlier phase of rock drawings, predating those of domesticated animals.

Lost traditions of hunting?

It has been suggested that a feature of these putative hunting drives is their use for cooperative hunting. It is perhaps worth stressing that the scale of such structures and the way they are located in the landscape seem to imply forms of cooperative hunting rather different from those which involve tracking/stalking prey, which may be carried-out by individuals or small groups of people. As has been noted, we have not been able to locate any potentially analogous forms of hunting using hunting drives in this region in more modern times. Most of the records of cooperative hunting during recent centuries are dominated by accounts of hunting large game, notably elephant, giraffe and oryx (e.g. Davies 1919; Audas 1919). Another significant feature of such recent accounts is also, of course, the use of the horse, to run down game.

Those areas of the Middle Nile where stone features such as these have been identified are of course currently rather limited, namely the Third and Fourth Cataract regions. Such structures do not seem to have been recorded in riverine areas of Nubia further north, either in the Second Cataract region or the Batn al-Hajar, a rocky landscape very similar to that of these cataract zones further south. No records of such hunting systems have been found further south, although it must be recognised that there is very little loose surface stone to be found over very large parts of central Sudan. However, it is important to bear in mind that if these are indeed of mid-Holocene date, the environmental conditions and forms of social organisation which supported such systems have long disappeared. Such hunting systems simply may not have survived the changes in environmental and social conditions which were taking place during the later

Holocene. Indeed, the social and natural environments in which such hunting and such structures could occur may not have existed for several millennia. If such an interpretation of such structures is correct, they may be seen as a product of a particular set of circumstances in open sahelian/savanna landscapes, in which hunting populations found both game resources and the exposed surface stone with which such structures could be built. As such, it may not be so surprising that such features are proving so difficult to understand. Whether this interpretation is correct remains to be seen, but it seems likely that such structures can only be understood when located within their landscape context.

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