

# Desert Road Archaeology

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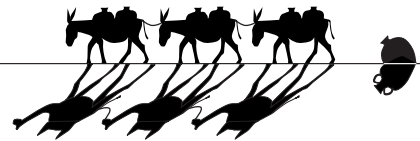
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# Desert Road Archaeology in Ancient Egypt and Beyond

Edited by Frank Förster & Heiko Riemer



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## Evidence of desert routes across northern Kharga (Egypt's Western Desert)

### Abstract

Since 2001, the North Kharga Oasis Survey (NKOS) has been systematically exploring the northern portion of the Kharga Oasis in Egypt's Western Desert. NKOS has worked on identifying and locating new archaeological sites, assessing the extent of the visible sites, as well as recording evidence for desert travel along the paths connecting the various sites. By combining all this information, it clearly appears that Kharga was an important desert crossroad where the north-south caravan route (known as the Darb el-Arbain) met an east-west route, that connected to the neighbouring Dakhla Oasis, and ultimately to the Gilf el-Kebir area, as well as to Lower Egypt via the other Western Desert oases. The importance of this east-west axis has been hitherto underestimated. This paper will focus on the evidence gathered along the north-south axis of the oasis; a description of the environment will be followed by an analysis of the various types of marks (cairns, pottery scatters, petroglyphs, etc.) that have been found. Although dating some of these traces is virtually impossible, by comparing and relating them with the evidence collected along the routes as well as in the main archaeological sites, it is possible to attempt a reconstruction of the use of some of the paths that cross the northern part of the oasis.

Keywords: cairns, donkeys, petroglyphs, pottery, trails, water sources, Pharaonic, Roman

## 1. Introduction

### 1.1. Kharga and the Western Desert

Kharga is the largest of Egypt's five major oases in its Western Desert. It lies in an elongated depression, more than 180 km long in a north-south direction (between N 24° and 26°) and 15 to 20 km wide (between 30° and 31° E). Its eastern and northern edges are well defined by a high scarp, which continues westwards and also marks the northern edge of the neighbouring Dakhla Oasis. The terrain to the south and to the west is relatively flat. Because of its geographical position in relation to the other oases and the Nile Valley, Kharga has been an important desert crossroad for a long time. Here two major routes met, one running north-south and the other running east-west [cf. Fig. 1]. Naturally several routes run between it and the Nile Valley. However, these Nilotic connections are not the topic of this paper; rather, it will focus on the web of communication that spanned the oasis proper.

The north-south route, now generally referred to as the Darb el-Arbain, has always provided an alternative to the Nile Valley for caravans travelling between Middle Egypt and the Sudan (Kuhlmann 2002). The east-west route across Kharga linked Upper Egypt to the Dakhla Oasis, and therefore with both the area of the Gilf el-Kebir and the chain of other oases of the Western Desert, permitting travellers to eventually reach Siwa and the Libyan coast or Lower Egypt. Therefore, the combination of these two routes, that basically allowed travellers to move along a north-south direction avoiding the Nile Valley, had huge strategic potential, in both military and commercial terms. These same routes could be used to attack, defend, explore and trade (or smuggle), contingent on the historical and political conditions of the moment. This has held true for all historical periods, with obvious differences depending on the shifting geographical boundaries of the various dominant powers.

The prehistoric situation was significantly different, particularly in the period between 10,000



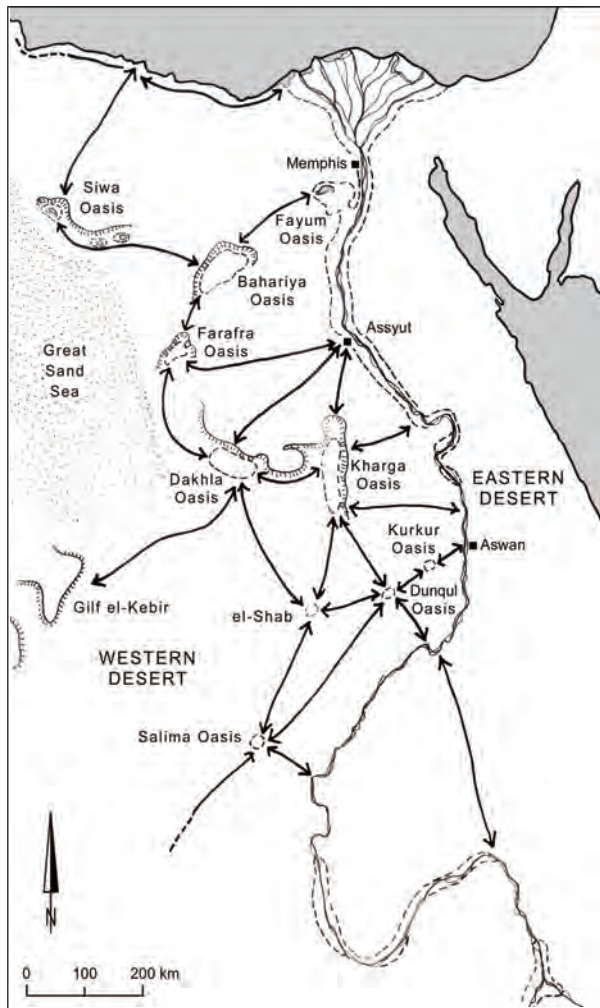


Fig. 1 Schematic map of Egypt's Western Desert with major routes (C. Rossi, © NKOS).

and 5000 BC, when a humid phase allowed the local inhabitants to occupy lands that later turned into barren and inhospitable desert (Kuper 2002: 5). This significant climatic change implied an equally significant change in number, position and distribution of the local settlements that must have gathered around the available water sources. As a consequence, travel patterns changed as well, and were concentrated along the most convenient routes linking inhabited centres and minor water sources (Eichhorn et al. 2005; for Kharga, see Gardner & Caton-Thompson 1932; Caton-Thompson 1952 for the position of Palaeolithic versus Neolithic sites). In a way, this climatic change marked the birth of

the desert tracks that are the object of this and of other similar studies (cf. Riemer, this volume).

In southern Kharga there is evidence of human occupation from at least 40 000 before present (Kleindienst 2001: 1–10), with a concentration of occupation and activity dating to c. 7500 BC, and continuing on steadily to the Pharaonic period (McDonald 2001: 30). Although there is no reason to believe that the oasis was ever abandoned completely (although in some periods its population might have dropped dramatically), it is true that not all historical phases are currently well documented.

The study of the Roman archaeological remains, for instance, suggests that about 2000 years ago the climatic situation may have been somewhat similar to today's conditions (for instance, Rossi & Ikram 2006: 302). However, it is probable that less sand engulfed some areas that were cultivated (cf. Ikram & Rossi 2007: 167–176), and seasonal (?) microclimates with more water existed. Since very little is known about the settlements dating to the earlier historical periods, it is currently impossible to draw any final conclusion regarding the local overall environmental situation; it may be assumed that the climate remained relatively unchanged at least from the end of the Old Kingdom onwards (c. 2000 BC on), with perhaps a tendency to become slightly drier as the millennia passed. It should be kept in mind, however, that the water levels in the underground aquifers so characteristic of Kharga (see below) might have fluctuated over time.

For all the reasons stated above, the archaeological material referring to desert tracks that has been retrieved so far and that will be analysed in the present article mainly dates to the historical period, rather than earlier. As is shown below, the evidence is uneven and fragmentary, but it does provide important information and new insights into desert travelling in this region.

## 1.2. NKOS and the survey of northern Kharga

Since 2001, the North Kharga Oasis Survey (NKOS) has been systematically exploring the northern portion of the Kharga Oasis in Egypt's Western Desert by car and on foot, and using aerial imaging (Ikram & Rossi 2002; 2004a; 2007; Rossi & Ikram 2006; Ikram 2007). In addition to locating, identifying, and mapping new archaeological sites that in-

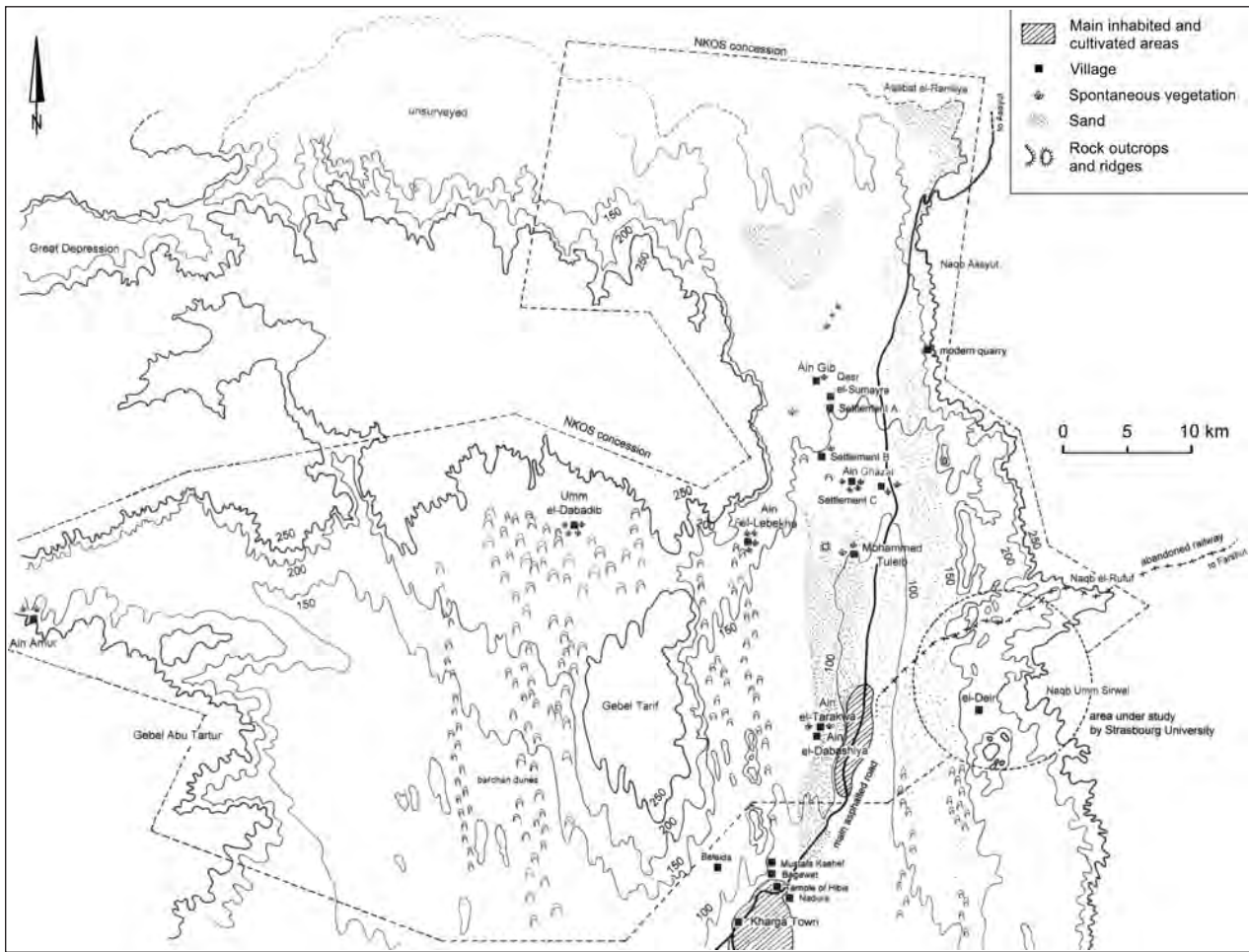


Fig. 2 Map of north Kharga with NKOS concession and main features. Note: for simplicity, contour lines above 250 m a.s.l. are not shown; due to space constraints not all archaeological sites mentioned in the text appear on the map (C. Rossi, © NKOS).

cluded Roman military installations, religious centres, settlements, cemeteries, agricultural installations and fields, NKOS has worked on recording evidence for desert travel along the paths connecting the various sites to one another.

The last phases of the main sites that NKOS has documented date to the Late Roman or early Christian era, probably late 5th century to early 6th century AD, some of which might rest on earlier foundations. The major remains, going from the north to the south are: the Northern Outpost, the forts of Qasr el-Gib and Qasr el-Sumayara, Settlements A, B, and C, a series of cemeteries on ridges as well as on rock outcrops, a rest-stop with access to water

(‘Pot Rock’), the settlement of Ain Ghazal, the cemetery of Umm el-Qusur, the walled enclosure and settlement of Mohammed Tuleib, Ain el-Lebekha, a series of scattered hamlets in the northern hinterlands of Ain el-Tarakwa and Ain el-Dabashiya, the sites themselves of Ain el-Tarakwa and Ain el-Dabashiya together with their temples and associated settlements and cemeteries, and the extensive settlement, cemetery, religious buildings, and fort of Umm el-Dabadib to the west of the oasis proper [Fig. 2].

NKOS’s concession is extensive, as it covers the entire northern portion of the oasis, from the scarp in the north to an ideal east-west line running

across Gebel el-Teir, with the exception of the site of el-Deir [Fig. 2]. This paper summarises the information that NKOS has thus far gathered about desert tracks in the main body of the oasis, running north to south: the Darb el-Arbain and its junction with the Darb Ain Amur, including any off-shoots.

## 2. The environment

### 2.1. Description of the area

Some knowledge of the environment is vital if one is to understand the routes that traversed the landscape and connected the different settlements to each other as well as with the outside world. After a journey across a gently undulating plateau, travellers approaching Kharga from the north suddenly find themselves at the edge of the depression: the terrain drops vertically for over 100 m with a short sequence of steep hills and rock outcrops engulfed by sand. The modern road skirts the northern edge of the depression, continues along its eastern edge for a few kilometres, plunges down into the plain with a tight series of bends and then heads south in the direction of Kharga Town [Fig. 2].

In the northernmost portion of the depression, from the edge of the scarp approximately to the level of Ain Ghazal, archaeological remains and traces of earlier desert travel have been found only to the west of the modern road; the terrain to the east, in fact, is covered by a thick layer of sand and by a chain of dunes that continue south all along the edge of the entire depression, thereby obscuring the traces of any ancient activities that might have occurred here. Sand has also accumulated along the western edge of the depression, whilst a few gigantic dunes slowly proceed southwards in splendid isolation along the central part of the plain (cf. Ikram & Rossi 2004a: 71; 73).

As we shall see below, there is ample evidence that, before the construction of the modern road, the ancient path descended into the oasis from the area of the 'Aqabat el-Ramliya (the 'sandy obstruction') in the north-east corner of the depression. In that area, the rougher terrain of the scarp gives way to patches of soft but stable terrain alternating with hard *playa*. Nothing changes in the landscape until about 7 km farther south, where the first spontaneous vegetation appears on the surface, immedi-

ately followed by the first cultivated patches of land (see below, section 2.2).

The entire area that extends to the west is currently more difficult terrain; it is possible to drive parallel to the northern and western escarpment keeping a certain distance from their sandy slopes, and in fact there is evidence of an ancient passage there (see below, section 4.3). The central, triangular area, however, is nearly impossible to cross. The terrain is extremely soft, with a grey surface that covers large patches of white powder. Deep incisions made by the rare rains do not facilitate the transit. No archaeological remains of any sort have been noted in this central area.

Moving south, the floor of the depression is evidently closer to the water table (see below), and patches of vegetation, mainly camel thorn, cover the central part of the plain. Initially these are small and scattered at some distance from one another, but as one proceeds south, the modern road crosses vast green areas, where thick, wild vegetation is mixed with extensive modern cultivations. On either sides of the central green area the terrain is barren. As mentioned previously, the eastern area is covered by a chain of sand dunes that in some areas becomes very dense; in the western area, however, there is a surprising variety of landscapes.

The exploration of the area between the most northern main standing site, the Gib/Sumayra Complex to the north, and the junction between the Darb el-Arbain with the Darb Ain Amur revealed a surprising succession of deep, long wadis separated by tall, rocky outcrops. In this area the terrain is sandy but stable; the landscape is here dominated by the presence of the so-called 'Square Rock', a large square outcrop that rises out of a scatter of jagged rocks.

The central strip of the oasis is punctuated by evidence for abandoned springs and wells. Yardangs (also called 'mud-lions'), the remains of lake deposits, also feature sporadically. Many were quarried as a source of building material in antiquity, and even today people use them to make mudbrick or even build small shelters directly onto them.

A recent agricultural phenomenon involves the cultivation of watermelons. Large tracts of land where the water table remains relatively high, particularly in the areas 60 km or so north of Kharga town, are covered with undulating furrows, many going down to 1.5 metres below the current



ground-level. People from the Delta governorate of Kafr el-Sheikh come about four times a year to plant, oversee, and harvest the crop, leaving only one or two farmers in charge of the watermelons for the rest of the time. The watermelons do not need irrigation as they derive the necessary water from the high water-table in the area. These fields are radically changing the nature of the landscape and often destroy ancient remains, be they structures, fields, or roadways. Hopefully it will be possible to find a compromise between the legitimate needs of the local population and the protection of the ancient sites, that consist not only of large buildings but also of a network of lines made of fragile evidence that may easily vanish.

South of the junction between the Darb el-Arbain and the Darb Ain Amur at the site of Ain Lebekha, travelling is relatively easy, whereas moving westward is made extremely difficult by the presence of large dunes and irregular terrain. The area stretching from the modern road to Gebel el-Tarif may be roughly divided into three parts: a green area in the central part of the depression, an extremely sandy and soft strip of land, and a firmer stretch of desert to the west. The sandy area, dotted by spontaneous vegetation, obscures the remains of the religious centre of Ain el-Tarakwa, whereas another temple, Ain el-Dabashiya, stands at a short distance to the west, surrounded by firmer ground (Ikram & Rossi 2007). A thick chain of dunes that comes from north skirts Gebel el-Teir and eventually crosses the modern road where the latter bends to reach Kharga Town, at a short distance from the site of the ancient Egyptian town of Hibis [Fig. 2].

## 2.2. Position and nature of water sources

Kharga enjoys an unusual water-source: a layer of fossil water is trapped in underground aquifers and this water was long the source of Kharga's continued agricultural wealth. In some areas the water lies very close to the surface, sometimes even less than a metre down (see above for modern watermelon cultivation). In addition, this water manifested itself in the form of lakes, some of which are still visible today, albeit at a much reduced scale. This access to fossil water was exploited for agricultural development as well as supplying Kharga's population with water for drinking, washing, and gener-

ally, living. It also provided water for the caravans that passed through the oasis, going to and coming from the Nile Valley.

Currently, the central part of the Kharga depression is covered by vegetation and extensive cultivations, among which villages of various sizes lie. The modern pumping systems, that retrieve water from significant depths, allow a constant improvement of the irrigation and a gradual growth of the extent of the cultivated fields. Therefore, green areas that were once separated by stretches of barren desert are now joined together, and vast portions of land are being reclaimed all around. It should be remembered that these wells with their attached pumps have lowered the level of ground water, and thus altered the nature of the oasis.

Therefore the part of the oasis that is presently inhabited is changing quickly, whereas the northernmost area is less affected by the impact of the more complex modern irrigation systems. It is also, therefore, less populated. In some cases, however, it is still possible to see how the Roman wells and *qanat* systems exploited the terrain; these continue to support the camel-thorn that grows throughout the oasis, and in rare instances, small farm holdings. *Qanats* are underground aqueducts that use the slope of the ground to exploit the fossil water trapped between layers of sandstone (Schacht 2003; Beadnell 1933). These ancient *qanats* or *manawir* can be found throughout the oasis and clearly were used extensively by the Romans to supply travellers who used the main oasis routes, to serve their local military installations and to improve and exploit the agricultural wealth of Kharga. Some of these *qanat* systems connect different settlements together, and extend well over eight kilometres (Ikram & Rossi 2004; Wuttmann et al. 1996). In some instances the shafts used for *qanats* were also enlarged and extended so that they served as wells; several examples of this are seen at the site of the Roman (3rd to 5th centuries AD) fort of Qasr el-Gib.

Until the introduction of the modern drilling systems, the method for digging wells remained fairly constant over the centuries; presumably this is one of the reasons why the local population tended to always re-use the same areas. The desert around Ain el-Tarakwa and Ain el-Dabashiya, for instance, is dotted by large wells; some are likely to have been dug in the mid-twentieth century, but others appear to be older as evidenced by the ceramic scat-

ter in the area (Ikram & Rossi 2007: 173). At Umm el-Dabadib, at the very beginning of the 20th century the ancient water systems were cleared and put into operation again (Beadnell 1909: 170–185); similarly, in the late 1980s a farmer was allowed to clear about two kilometres of one of the Roman *qanat* at Ain Lebekha and is currently cultivating a small patch of land. He has recently extended the length of the *qanat* in the direction of the scarp. The latter case is relatively recent and is likely to last for a while, but it is interesting to note that many other cases of re-use dating to the last century (including Umm el-Dabadib and the area of Ain el-Dabashiya) have been abandoned: the decisive factor for the survival of these installations might have been the introduction of electricity, that favoured settlements closer to the central area of the oasis.

In conclusion, unlike the central area, the northernmost portion of the oasis may still provide important information on how settlers and travellers interacted with the landscape prior to the introduction of the modern irrigation systems. In particular, as we demonstrate below, it is easier in that area to study the relationship between the position of the few water sources and the itinerary of the ancient caravan routes.

### 3. Evidence of desert travel

Different types of evidence are used to try to identify desert routes. These include aerial images, cairns, the nature and compactness of the sand, the remnants of animal tracks, built evidence for *mahattas* or way-stations, the presence of ceramic scatters, the remains of what were presumably pack animals, and petroglyphs scratched onto rocks along the way.

#### 3.1. Aerial images

Satellite images can be very helpful when trying to locate ancient tracks. Naturally, such indications need to be checked on the ground (Bubenzer & Bolten, this volume). Currently, Google Earth maps are being used to see if we can identify new routes or learn more about ones that NKOS has already discovered. The latter operation, carried out for the Darb Ain Amur east of Ain Lebekha, revealed an in-

teresting detail: only the sections of the track that are heavily marked by tyre marks appear on satellite images; other sections, even if well-marked at ground level by cairns, pottery scatters etc. are not visible from the sky – at least not at the current resolution.

Kite aerial photography has also proven useful, providing a closer view of ground. We have also used the more old-fashioned tradition of climbing a rock and viewing the terrain from there.

#### 3.2. Cairns

Cairns made of piles of large stones appear to have been the most favoured way and most widely employed to mark desert tracks [Figs. 3; 4]. They can be found in two different positions, either in the middle of flat plains (two examples), or built on top of high outcrops (about 20 cases recorded so far). In the first case, it seems that the cairns were used to mark major junctions of desert tracks: one has been found in the area between Umm el-Dabadib and Ain Amur (and therefore outside the area that is the object of the present article), and another half-way between Ain Lebekha and Mohammed Tuleib [Fig. 5]. Both these cairns were found whilst exploring routes clearly dotted by the presence of various markers (other cairns, pottery scatters, petroglyphs, etc.), in the middle of flat areas from where another direction could be easily identified, and then followed. They consist of rather tall (more than 2 m), compact piles of flat stones, darkened by the passing of time, with a rounded top.

In the second case, the size of the cairns located on top of high outcrops varies considerably [cf. Figs. 3; 4]. Visibility appears to have been the main concern of those who built them, and this result depended more on the position in relation to the landscape and the angle of approach than on the dimensions of the piles of rocks. In some cases, tiny cairns consisting of just a few stones but located in specific highly visible points, very effectively stand out against the background of the sky and can be spotted from extremely long distances. Concerning their precise function, the majority of these cairns simply mark 'the right direction' for the travellers to take. They are generally placed sequentially and seem to be visible one at a time.



**Fig. 3** Cairns north of Ain Gib: a 'tall' one on top of a rock outcrop along the north-western route (S. Ikram, © NKOS).



**Fig. 4** Cairns north of Ain Gib: a 'small' one along 'the Corridor', visible from a long distance (to the right; S. Ikram, © NKOS).

### 3.3. Trails

Modern tyre marks have often obliterated the fragile traces left on the terrain by ancient travellers. North Kharga, however, still offers interesting evidence in areas where cars have no reason to go. In addition to the well-known, winding camel tracks that are a signature of desert travel after the introduction of the camel [Fig. 6], in 2001 NKOS located a long north-south strip of terrain that appears to have been tamped down firmly by the passing of thousands of feet over a long period of time (Ikram & Rossi 2004: 74–76). The difference in the texture of the terrain is barely discernable from ground level, but becomes clear if observed from an elevated position (cf. Ikram & Rossi 2004: fig. 1).

### 3.4. Pottery and other objects

Remains of broken pots traditionally mark an ancient route. The sherds belong to vessels containing water that were emptied en route and abandoned along the way, or transport vessels that broke in transit. Concentrations of ceramic vessels, sometimes clustered near an outcrop, also mark way stations or *mahattas* along a route.

However, there is surprisingly little ceramic evidence except in the cases of what seem to be way stations, such as an isolated rock just south of the Gib/Sumayra Complex (labelled 'Pot Rock' for the substantial pottery scatter that surrounds it), and of course at major watering places, such as the wells located at the foot of Qasr el-Gib. Perhaps this is because the tracks within the oasis proper, such as the Darb el-Arbain, were easier and smoother, and

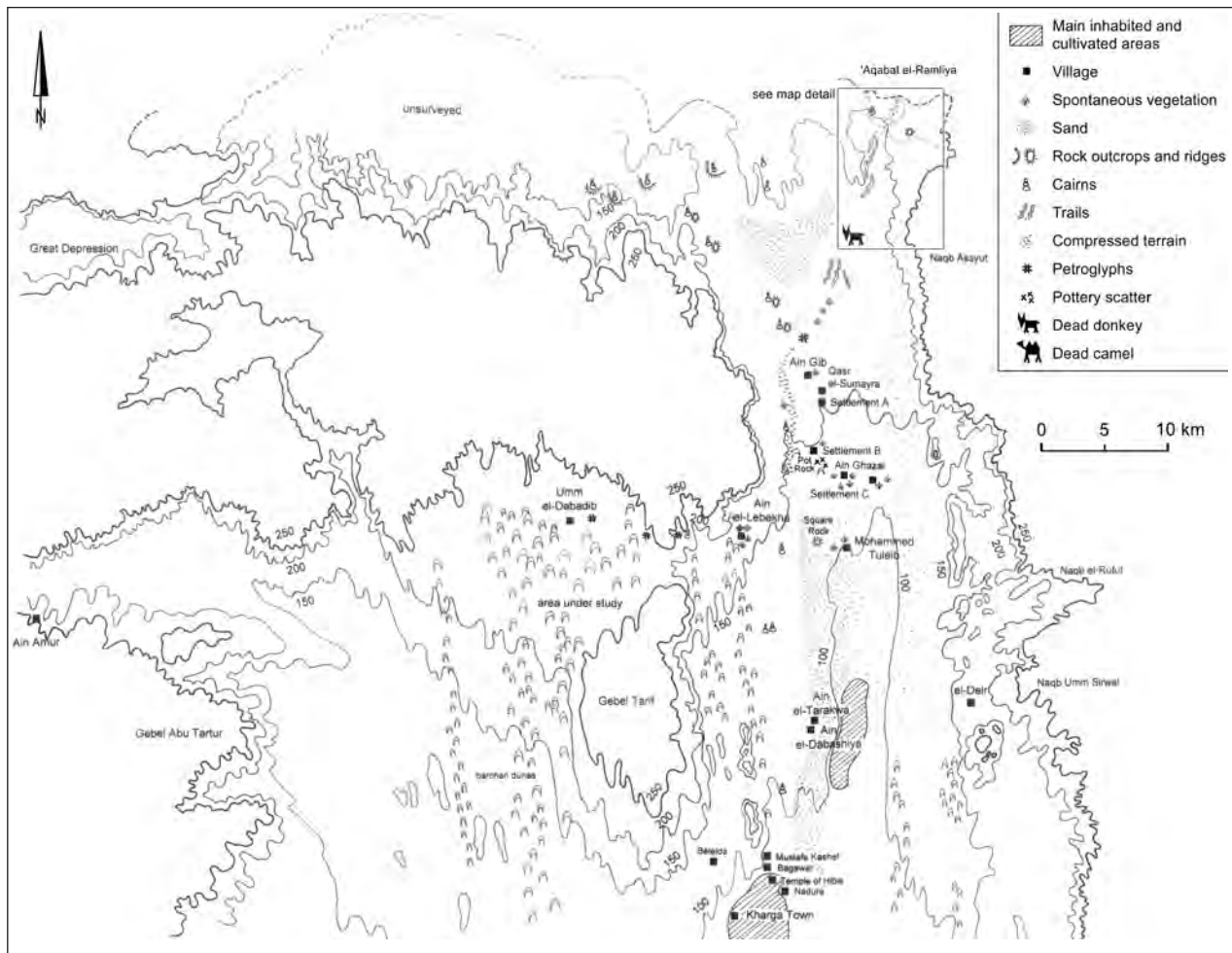


Fig. 5 Map summarizing the evidence of desert travel in north Kharga (C. Rossi, © NKOS). For map detail see opposite page.

water more readily available, or maybe the remains, at least in the central portion of Kharga, have been covered over or destroyed by subsequent occupation. It is also possible that the nature of the terrain, soft and sandy, might explain (at least in part) the absence of potsherds and small objects.

### 3.5. Remains of pack animals

Surprisingly few skeletons of pack animals (donkeys and camels) have been found along any routes. This is curious considering that the Darb el-Arbain was a very important route that was used over several millennia, and travellers of the 18th century onward have commented on their remains at certain

less populated points along the route (Winlock 1936). Thus far, the only route that has such a concentration is the most northern area of the oasis, close to the 'Aqabat el-Ramliya, with no other remains have been found on any of the routes that are more clearly within the oasis proper.

NKOS discovered at least seven skeletons of donkeys, and three of camels in the oasis depression within 12 kilometres of the descent into Kharga [Fig. 7]. Judging from the number of these dead animals, the descent into the depression must have been a crucial moment of the journey. Although ascending the plateau is by no means an easy task, it is likely that the majority of those animals died on the way to Kharga, after crossing the barren desert that stretches between the Nile Valley and the oasis,

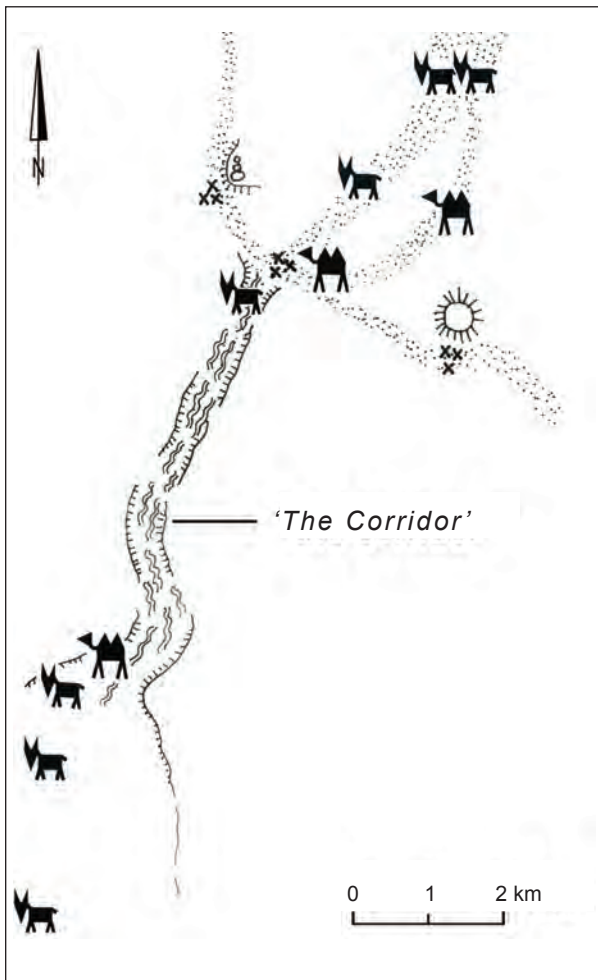


Fig. 5 (continued) Map detail showing 'the Corridor' heading towards the 'Aqabat el-Ramliya' (C. Rossi, © NKOS).

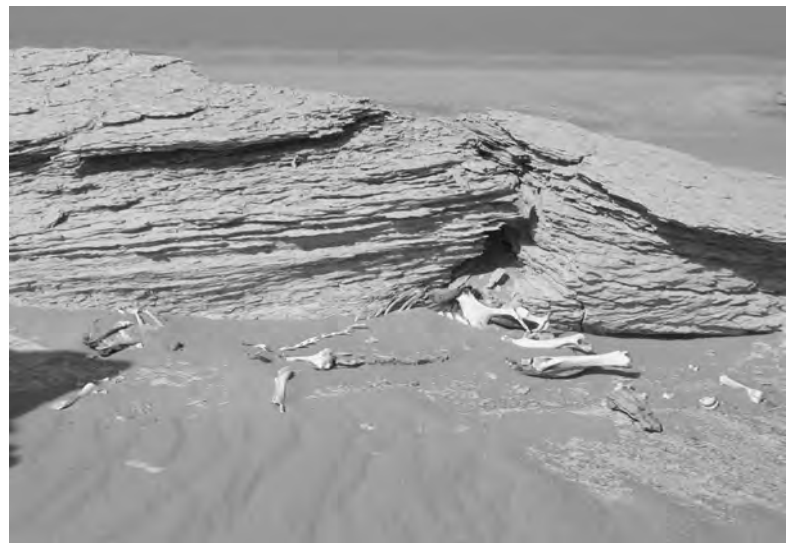


Fig. 6 'The Corridor' heading towards the 'Aqabat el-Ramliya' (C. Rossi, © NKOS).

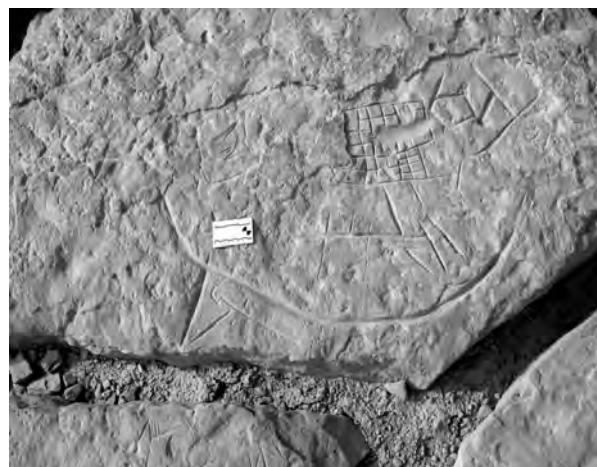
at only a few kilometres from the first source of water that would have saved their life.

It is difficult to date animal remains found on the desert surface as there is no stratigraphy and no other objects to provide a context. Weathering conditions vary significantly between locations, with different taphonomic implications, so that it is inadvisable to use differential weathering as an indication of the age of these deposits. As Carbon 14 dating was not possible, we can only speculate on when these animals died. It is only safe to say that the camels clearly date to after their introduction by c. 500 BC; unfortunately it is not possible to say if the donkey deposits are 50 years old, 500 years old, or 5000 years old.

Fig. 7 One of the donkey skeletons discovered while surveying the north-south route in Kharga. The skeleton was found in the more northern reaches of the oasis depression (S. Ikram, © NKOS).







**Fig. 8** Petroglyphs from different periods, including standing figures (to the left; C. Rossi, © NKOS) and a boat (to the right; S. Ikram, © NKOS), north of Ain Gib.

### 3.6. Petroglyphs

Unlike the area between Ain Lebekha and Ain Amur (cf. Rossi & Ikram 2002; Ikram & Rossi 2004b; Ikram 2009a; 2009b), few petroglyphs have been found in the north-eastern part of the depression. The most interesting group found within the oasis proper was located in 2001 (Ikram & Rossi 2004: 76), on a rock outcrop at about 3 km north of Qasr el-Gib, along an ancient route (see below, section 4.1). The drawings and inscriptions found on this rock, visible from some distance, and able to provide shelter and shade to travellers passing by, belong to various periods [Fig. 8].

## 4. Mapping the routes

The evidence gathered so far confirms the presence of two major routes, one running north-south, and the other east-west. A further track, that is heading north-west, which we have not yet finished exploring [Fig. 9], has also been identified. Smaller paths connected the different hamlets to one another; as yet, few of these can be identified clearly due to modern disturbances of the terrain, particularly those due to the activities of the watermelon cultivators. One should keep in mind, however, that, for the most part, these smaller paths were taken by pedestrians, sometimes with a few pack animals,

and perhaps accompanied by their pet dogs, and thus would not leave the kind of evidence that is found along major routes. Obviously the paths would be easy to navigate and would change over time, depending on modifications in the terrain, particularly that wrought by wind-blown sand or moving dunes. These are not included in the discussion below.

The archaeological material found along the major tracks clearly belongs to different historical periods; this, in itself, is hardly surprising, as over the centuries very little has changed in terms of travelling methods and itineraries until the introduction of motor vehicles and the construction of tarred roads. Unless there were specific reasons, travellers used the same tracks, headed towards the same landmarks, stopped at the same water sources or under the shade of the same rocks. The constant repetition of these acts is the main reason why these routes are still well marked and visible. At the same time, apart from petroglyphs, travellers left a significant amount of evidence that is often extremely difficult, if not impossible, to date: animal trails, for instance, cannot be dated, and ancient cairns are often restored or replaced by identical piles of rock.

The major routes that NKOS has identified are discussed below, taking into consideration whether or not routes have been used continuously or not. First, we will ‘join the dots’ and describe the itineraries of the ancient routes (pre-tarred roads) that

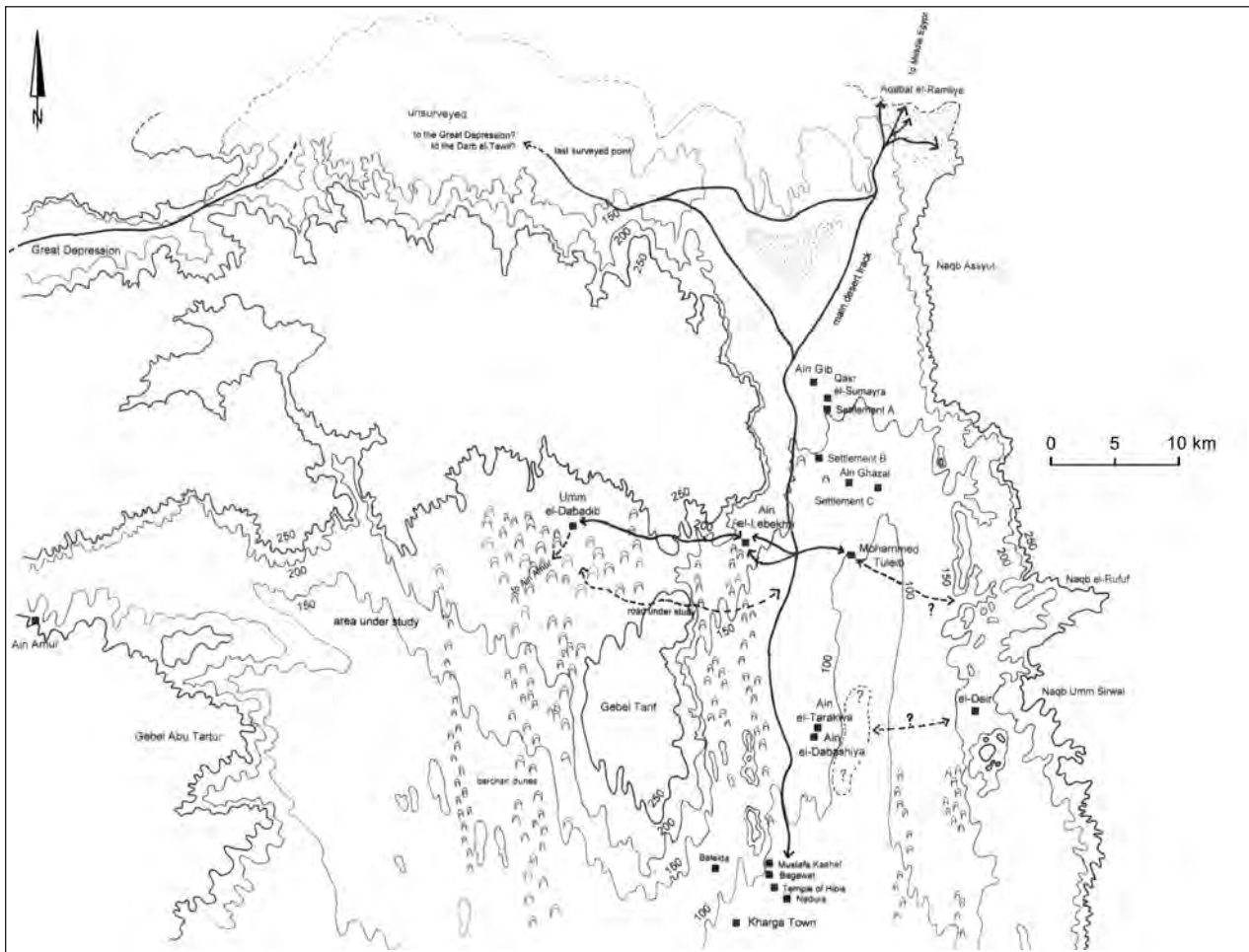


Fig. 9 Map of north Kharga with reconstruction of ancient routes (C. Rossi, © NKOS).

crossed the north of the oasis; then we will address the chronological use of these routes.

#### 4.1. The north-south axis

North Kharga provides plenty of evidence of the caravan route that crossed the oasis along a north-south direction. As mentioned above, travellers coming from the Nile Valley, particularly the areas of Asyut and points further north, descended into the depression from its north-east corner, along at least four different paths, possibly more. Many animals were lost in this crucial passage (cf. Giddy 1987: 8f.) as is attested by the skeletons of donkeys and camels that punctuate the landscape, and the

occasional remains of potsherds that date from the late 2nd and through the 3rd centuries AD. It is interesting that donkey skeletons all lie along the central, straight path. The remains of two camels, instead, lie along a parallel path, running slightly to the east [Fig. 5]. This may be a coincidence, or might indicate that camels favoured the eastern path, or indeed that the eastern part was used latterly.

Caravans then converged into 'the Corridor', headed south across a patch of hard *playa* and then on soft terrain that still retains evidence for meandering trails, many identifiable as camel tracks, left there over the centuries [Fig. 6].

An isolated outcrop at about 20 km south of the scarp provided a convenient rest-station, where travellers evidently spent enough time to carve



drawings and inscriptions on its rock surface. A dying palm-tree suggests that this area was once a small water-source. Beside the relatively common Bedouin tribal marks (*wasm*, pl. *wusum*) and Arabic inscriptions, there are two sets of interesting representations: one is a man mounted well forward on the hump of a camel, in a style typical of western and central Saharan camel riders; another is a group of three (dancing?) figures, adorned with clothes and jewels [Fig 8, left]. The head of one of them resembles that of an animal or a bird, thus suggesting the use of a mask. On the basis of this interpretation it has been suggested that these figures might have been drawn by animist slaves, captured in West Africa and imported into Egypt across the desert between the eighth and the eighteenth century (Rowe & Schacht 2004). Further research might shed additional light onto the origins of these drawings that definitely have a more sub-Saharan African, perhaps even West African, flavour. Additionally, the rock bears an eroded Greek inscription, and several images of feet and sandals. There is one picture of a boat that might actually be of much earlier Pharaonic date, although the precise period is yet to be determined [Fig. 8, right].

From here, the route bends slightly eastwards for several kilometres, and follows a flat wadi that still shows clear traces of having been compressed by feet over a long period of time. A small outpost on top of the so-called 'Square Rock', at the northernmost edge of the late-Roman complex of Gib and Sumayra, might have been used to check from the distance the arrival of travellers. Three cairns mark the route along the western edge of this archaeological area: one perched on an isolated, flat-topped outcrop; another on the western ridge that borders the ancient route; and one further south on a smaller rock. A portion of flattened sand near Qasr el-Gib attests to one branch of the track going this way. A rock just south-east of Qasr el-Gib is also adorned with *wusum*, Arabic inscriptions, and badly eroded geometric shapes and images that might date to earlier periods. Now only faint lines and scratches remain.

The track then descended from a ridge into a rather dramatic landscape made of chains of elongated outcrops alternating with long wadis covered by yellow sand, and continued towards a flat plain: here a large, isolated cairn appear to mark the intersection of the north-south route with the east-

west track that linked the areas of Mohammed Tuleib and Ain Lebekha (see below, section 4.2).

The route appears to continue south for about 6 km, following the elongated shape of the flat plain; a shift toward the west is marked by a pair of cairns. No substantial traces of a route have been found south of this point for nearly 13 km until the area of Gebel el-Teir, where the presence of another cairn has been recorded. The track appears to run at the foot of Gebel el-Teir, along the eastern edge of a chain of dunes, at a short distance from the abandoned sites of Ain el-Dabashiya and Ain el-Tarakwa (active from at least the Ptolemaic period if not before, with most of the extent remains dating to the 2nd to 4th centuries AD), but at a significant distance from the currently inhabited area. The modern villages and cultivations clearly exploit the presence of water, and although so far no evidence of ancient occupation has been recorded, it is possible that the patch of vegetation existed in antiquity as well. The desert area of Ain el-Dabashiya and Ain el-Tarakwa bears traces of a relatively recent agricultural re-use (Ikram & Rossi 2007), and Google Earth maps reveal the presence of other abandoned cultivations more to the south, the date of which is, however, unknown. At any rate, the main ancient route appears to have run far from the greenery, along the western edge of the inhabited/cultivated area.

Evidence of modern occupation takes over very quickly as the track approaches the inhabited area, but it may be concluded that the route bent westwards and headed between the two hills that marked the access to the core of the oasis, basically converging with the modern road [Fig. 9].

#### 4.2. The east-west axis via Ain Amur to Dakhla and beyond

The western section of the Kharga Oasis yields clear and abundant evidence of the existence of two major east-west routes that linked Kharga and Dakhla: the Darb el-Ghubbari and the Darb Ain Amur. The former is more southern, and consists of an easy to navigate flat desert route of some 140 km that basically follows the Gebel Abu Tartur and takes approximately 3 to 4 days, depending on the caravan's speed. Its only disadvantage is that it is waterless. The latter is a bit shorter and more direct,

taking only 2 to 3 days, again depending on the caravan load and speed. This also has the added benefit of a still active spring at the site of Ain Amur, the tiny oasis half-way up the scarp that gives the route its name.

The Darb Ain Amur route leaves Kharga proper at the site of Ain el-Lebekha, and goes on to the small oasis of Umm el-Dabadib to the west, continuing, by a variety of tracks, some interrupted by lines of sand dunes, to Ain Amur, and thence over the plateau to Dakhla [Fig. 2]. By the Roman period, if not before, Ain Amur itself provided succour to the traveller not only in the form of a spring, but also with the comforts provided by a settlement and a temple (Winlock 1936; Rossi 2000; Ikram 2007).

As mentioned above, this east-west axis via Kharga and Dakhla gave access to two major routes: one heading north-west via the other Western Desert oases, and one heading south-west to the area of the Gilf el-Kebir, and thence to Libya and, possibly, Chad. Whereas the former is still in use (and in fact has been turned into a tarred road), the importance of the latter appears to have been progressively diminished as the desert dried out. In antiquity the situation was different: the presence of a chain of artificial water stations dating to the late Old Kingdom/First Intermediate Period along the track linking Dakhla with the Gilf el-Kebir ("Abu Ballas Trail") suggests a strong interest in maintaining a direct link with that area (Kuper 2003; Förster & Kuper 2003; Förster 2007a; 2007b; this volume). Although there is evidence of desert travelling along that and other parallel tracks during the subsequent historical periods, no large-scale attempts to build a stable link between the two areas have ever been attempted since.

The portion of the Darb Ain Amur running between Ain Lebekha and Ain Amur via Umm el-Dabadib is still being studied by NKOS. Although some material has been already published (Rossi 2000; Rossi & Ikram 2002; Ikram & Rossi 2004b), the vast majority of the finds will be presented all together in a future publication. On this occasion, therefore, we shall deal in detail only with an extremely short section of this track, the portion running east of Ain Lebekha.

Only a few kilometres of this route can be followed with certainty. The late-Roman site of Ain Lebekha covers an elongated area, more than 4 km long and about 1.5 km wide. Several modern tracks

depart eastwards from the site, and after a while converge into a single, well-beaten route connecting to the centre of the oasis that is about to be turned into a tarred road, easily accessible to tourists. It is possible, however, that in Roman times more than one track departed eastwards toward the Darb el-Arbain, and then probably joined the tracks heading east straight to the Nile Valley via the Naqb el-Rufuf (that was also exploited to build the now-abandoned railway at the beginning of the twentieth century) and the Naqb Umm Sirwal. Indeed, a number of routes that connected the Nile Valley to Kharga at different points fed into the Darb el-Arbain.

In 2007, NKOS located the remains of an overhanging rock-shelter further protected and transformed into a safe, dry place by a rough dry-stone wall littered with human bones and pottery about 1 kilometre east of Ain Lebekha's southern cultivation (Bahgat et al. 2008: 17, fig. 14). The presence of bones might suggest that these are the remains of ancient tombs (similarly collapsed tombs can be seen in the Gib/Sumayra Complex, see Ikram & Rossi 2004: 81–83), but the strangely isolated position and the disposition and types of ceramics make this interpretation rather doubtful. It is more probable that this was originally a shelter/way station that was later used as a tomb, or was a place where tomb robbers dismembered ancient bodies in an effort to ravage their funerary equipment. Interestingly, this point is not only aligned with the southern end of the Lebekha cultivation but also with the isolated cairn that rises in the middle of the flat plain (see above, section 3.2). This appears to be a further confirmation that the isolated cairn in the middle of the flat plain marked a major junction between the north–south and the east–west routes.

Thus far, no clear evidence of the desert routes used by the ancients has been found to the east of the isolated cairn. Instead, the terrain is deeply marked by a network of tyre marks (some a result of the 2003 Paris-Dakar race), and quickly becomes unreadable. It is likely that the route continued east towards the modern village of Ezbet Mohammed Tuleib, a thickly vegetated area, next to which lie the remains of a late-Roman site, once more proving that the presence of water is not a temporary event. The route might have continued across the depression, joining up with the main north-south route, and probably heading towards the Nile Valley in

the Qena/Farshut area, possibly via the Naqb el-Rufuf [Fig. 9].

### 4.3. The north-western route

In 2002, NKOS recorded the existence of a sequence of four cairns, starting north of Ain Gib and heading north-west, into the furthest reaches of the oasis depression. Further exploration carried out in 2007 ascertained the existence of (at least) six more cairns that appear to mark a hitherto unrecorded track.

The sequence of four cairns noted in 2002 start from the area named North Gib. The exploitation of this area is somewhat enigmatic. It consists of at least three widely separated groups of mounds and spoil heaps accompanied by potsherds, perhaps either an early attempt to find water or to mine alum, in the Late Roman period, presumably after the establishment of the Gib/Sumayra Complex (see above). North Gib lies just between the last visible traces of the compressed stretch of terrain that was identified as a portion of an ancient route (see above, section 3.3) and the isolated rock covered by petroglyphs (see above, section 4.1). From there, the first cairn is visible to the north-west; following that direction, three more cairns progressively appear, each visible from the previous one. They are all easily accessible, perched on tall, flat-topped outcrops. Two of them appear to be newer, constructed of unweathered sandstone, and built next to the ruined remains of older cairns made of rock that is weather-darkened.

The route appeared to head north-west, in the direction of a wide opening of the depression, the actual size of which is difficult to appreciate from the distance. The exploration carried out in 2002 stopped at this juncture, but was resumed in 2007. The route appears to bend west and head towards a narrow passage in the north-west corner of the depression, marked by a cairn on its northern edge. It continued along a north-west direction through another narrow passage marked by a cairn, also located on the northern edge. Because of the presence of a thick layer of sand, the exploration stopped about 5 km further to the north-west of this cairn, in the vicinity of another narrow passage [Fig. 9].

Obviously further exploration will be necessary to clarify where this route goes; however, it is likely that it joins a portion of route identified by the

ACACIA project in 2002, that comes from Dakhla and runs in the so-called Great Depression [Fig. 9]. This route is also connected with the network of tracks (including the Darb el-Tawil, 'the Long Road'; cf. Bubenzer & Bolten, this volume) that crossed the northern area and headed towards the Nile Valley in a north-east direction (for the ACACIA work cf. Eichhorn et al. 2005: fig. 1; Heiko Riemer, pers. comm.).

Apart from the cairns, no further evidence (pottery, petroglyphs, etc.) has been retrieved thus far. Animal trails are unlikely to have survived, as the terrain is extremely sandy. Tyre marks are clearly visible, but the suggestion that this is an entirely modern track is in contrast with the appearance of the cairns that look much older than the introduction of motor vehicles.

Five more cairns, extremely similar in appearance and dimensions, have been located along the northern edge of the Kharga depression [Fig. 5]. Unlike the other cairns of the area, they are located in very high positions, on top of the hills and outcrops that form the first step of the northern plateau; thus, they lie far above the paths of the travellers. These cairns appear to mark an east-west link between the north-western route discussed above, and the 'Aqabat el-Ramliya, that constitutes an integral part of the Darb el-Arbain. This east-west link might have been especially favoured by travellers coming from Dakhla via the Great Depression. Travellers coming from the Nile Valley and heading to Dakhla, in fact, would have found water just a few kilometres to the south of this east-west branch, and heading straight east along the northern scarp seems illogical – unless they were in a hurry.

In general, it may be interesting to note that hitting every single source of water was not the main scope of these routes (cf. the situation in the north with the course of the main path in the south, far from the central patch of vegetation). Rather, the main concern seems to have been heading straight to the final destination along a smooth path.

## 5. Time periods

It is very difficult to ascertain when tracks were first established and the length of time that they were used. Obviously ceramic remains provide consid-

erable evidence concerning usage, as well as textual references, be they in the form of petroglyphs or travellers' accounts. The latter, though, are few and far between prior to the late 18th century. Cairns and animal skeletons, as discussed above, cannot provide firm dates for track usage. Nevertheless, we shall attempt to draw a few, cautious conclusions on the chronology of the use of these paths.

### 5.1. Pre-Roman era

Thus, evidence for pre-Roman usage of the routes is more textual and circumstantial. Historically, there is textual evidence for Kharga being part of the oasis road network, such as the one that Harkhuf (6th dynasty) refers to using in order to reach the land of Yam (Goedicke 1981; Limme 1973; Dixon 1958; Yoyotte 1953; cf. Förster, this volume). These routes saw particular activity in the Second Intermediate Period when they were employed by the Hyksos and the Kushites to circumvent Thebes (Habachi 1972; Smith & Smith 1976).

Given the evidence of tombs, ceramics, and constructions found in the oasis that date to subsequent periods, it is clear that these (and other) desert roads would have been used during these eras. This is particularly so during the Late Period, especially during the Persian occupation of Egypt when many of the temples in Kharga were expanded or founded (Cruz-Urbe 1986; 1987; Osing 1990). Also, this area was noted for its wine export from the New Kingdom onward (cf. Giddy 1987: 89).

However, there is scant hard evidence along the routes discussed above for pre-Roman usage of these tracks. The exploration of the Qena Bend area and the tracks departing from there in the direction of the southern oases has yielded Pharaonic material (J.C. Darnell 2002; this volume). So far, apart from the dubious boat found amidst other petroglyphs, mentioned above [Fig. 8, right], no clear traces dating to the same period have been found along the routes lying in the northernmost part of the Kharga Oasis.

Interestingly, the portion of the Darb Ain Amur that goes from Umm el-Dabadib to Ain Amur does show some ceramic and inscriptional evidence for Pharaonic usage (e.g. Rossi & Ikram 2002; Ikram & Rossi 2004b; 2007). Seemingly, the desert track heading straight along an east–west axis from the Nile

Valley to the central part of the Kharga Oasis via Qarn el-Ginah revealed Pharaonic material at both ends (D. Darnell 2002; cf. Darnell, this volume). Perhaps this 'horizontal' connection was especially important in that period. Of course, the nature of a track within a watered and patrolled oasis is different to one that lies solely in the desert. The former is less hazardous, and there is less chance of finding abandoned vessels and even animals there than along tracks in rougher terrain with limited water supplies, stopping places, and aid.

### 5.2. Late Roman period

The most obvious evidence for the use of these tracks dates to the Roman period. The vast majority of the standing remains throughout the oasis are of Roman date, and most of the tracks connect them. Clearly the forts, as has been discussed elsewhere (Rossi & Ikram 2006; Ikram & Rossi 2002; Ikram 2007), were used to control traffic along routes as well as to provide water for caravans/travellers. The few ceramics that have been found all date between the early 3rd to the early 5th centuries AD.

Very likely, the local tracks were used before, during and after the Roman period; there is no evidence that the Romans 'opened' any new way. However, the Romans might have felt the necessity, more than anybody else in any other historical period, to mark the tracks with a number of 'road signals'. In particular, it may be suggested that a large number of cairns date to the Late Roman period.

The isolated cairn that stands at the crossroad between the north-south axis and the track connecting Ain Lebekha and Mohammed Tuleib, for instance, is likely to be contemporary with these two sites, both inhabited in the Late Roman period. As a consequence, the identical cairn that marks a major crossroad between Umm el-Dabadib and Ain Amur (in the area not included in this essay), may well date to the same period.

Another example may be the two lines of cairns that dot the northernmost part of the oasis. The line heading north-west in the direction of the Great Depression 'departs' from the Late Roman site of Ain Gib, that was the last permanent outpost and the last water-station; the site probably functioned as some sort of checkpoint, from where travellers may head north-east or north-west. A contemporary



date for the site and the line of cairns is likely, even if it cannot be proven. Perhaps the Romans reused and enhanced earlier cairns. It is interesting that, differently from the north-western track, the track heading from North Gib in the direction of 'Aqabat el-Ramliya (that is, the direction of the Asyut area) is not marked by any cairn. Perhaps this important track was somehow 'obvious' and did not need any 'road signal'.

The east-west line of cairns marking the northern edge of the depression appears to be extremely similar in terms of size and position (also in terms of weathering, although this is not always a secure method to obtain a date), and a contemporary date might be suggested. They could have had a double function: guiding west travellers coming from Asyut that descended into the depression and then headed towards Dakhla, and/or act as 'boundary cairns', by re-directing either westwards or eastwards travellers that did not know the road and that, heading straight north, had ended up at the foot of the scarp far from the passes.

Apart from the physical proximity of the first line of cairns with Ain Gib, there is no hard evidence that may unequivocally date the two lines of cairns. However, it is true that a good network of roads and tracks was a key instrument to both install and maintain a chain of large-scale settlements and to keep the region under military control, and therefore a Late Roman date for the manifestation of these cairns is extremely likely.

### 5.3. Post-Roman era

Many of these routes continued to be used thereafter, with some variations occurring, depending on the ever-changing topography. Textual evidence refers to the use of the Darb el-Arbain as a route to transport grain, gold, spices, slaves, ebony, ivory, and animal skins. Some ceramic vessels, fragments of iron, and clay pipe-bowls dating to the Ottoman era have been found. This route, or a version of it, continued to be used well into the 1970s, and is even, perhaps sometimes, used today, but with cars and trucks rather than pedestrians and pack animals. Most of the more modern usage seems to be associated either with military operations, or with smuggling.

## 6. Conclusions

Desert tracks are of great interest and significance to archaeologists as these little studied remains provide a great insight into the trade, transportation, and communication networks of antiquity. Without these tracks and pathways the great empires of Egypt, Persia, and Rome would not have been able to function. Kharga's role for all these empires (as well as those that came later) was significant not just for its agricultural yields that fed these empires, but also for its key position in terms of trade. This oasis was a pivotal point of communication between Egypt and sub-Saharan Africa, particularly to places like the entrepot of Darfur, and the riches of West Africa. Egypt's agricultural products and luxury goods went south in return for the wealth of sub-Saharan Africa.

The work of NKOS has thus far discovered different branches of the Darb el-Arbain once it enters the oasis proper, demonstrating the variations in desert routes over time due to changes in topography and preferred destinations. It has also established a portion of the path that links Kharga to Dakhla, along the Darb Ain Amur. A path that seemingly goes northward toward Farafra has been discovered, although its ultimate destination is yet to be determined. Beadnell (1909: 38) refers to the existence of a track leading to Farafra from the Darb Ain Amur area, although this is based on hearsay rather than his own investigations. Future work will further elucidate these different desert routes, and will reveal more information about the road network that connected Egypt through the ages.

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