

Camels, donkeys and caravan trade: an emerging context from Barāqish, ancient Yathill (Wādī al-Jawf, Yemen)

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ABSTRACT

Work at Barāqish/Yathill in 2005-06 has produced sequences encompassing the Sabaeen (13th-6th centuries BC) and Minaean/Arab (c. 550 BC-AD 1) occupations. Abundant animal remains were retrieved and contexts of use and discard were obtained. Camels and donkeys are studied together as pack animals, the camel being the domestic dromedary. Their zooarchaeological and contextual study at Yathill is justified from this city's location on the famous frankincense caravan route of the 1st millennium BC. An extramural stratigraphic sequence documenting the relationships between the city and the adjoining plain from c. 820 BC to the Islamic era was investigated to the northwest of the Minaean wall. Domestic camels were present by 800 BC, the earliest well-documented occurrence in Yemen; wild dromedary herds were still in the area during the 7th century and perhaps later. The study of the archaeological context links these Sabaeen-age camels to campsites possibly formed by non-residents. This pattern greatly developed during the Minaean period, with trade-jar handling posts outside the walled city and frequent stationing of camels and donkeys on the upper talus. Such data directly support the role of Yathill in the overland caravan trade and suggest that the extramural area was functionally important in this respect.

KEY WORDS

Dromedary (*Camelus dromedarius*),
Camelus sp. wild,
donkey (*Equus asinus*),
caravan trade,
archaeological indicators
of 'caravan' activity,
'frankincense route' in
Yemen,
Barāqish,
Yathill.

RÉSUMÉ

Chameaux, ânes et commerce caravanier : leur contexte archéologique à Barāqish, ancien Yathill (Wādī al-Jawf, Yémen).

Les travaux archéologiques à Barāqish/Yathill en 2005-2006 ont produit une séquence chronologique qui englobe des occupations de la période Sabéenne (13^e-6^e siècles BC) à la période Minéenne/Arabe (c. 550 BC-AD 1). De nombreux restes animaux ont été collectés et les contextes d'utilisations et de rejets ont pu être documentés. Les chameaux et les ânes sont étudiés ensemble comme bêtes de somme, le camélidé étant le dromadaire domestique. Leur étude archéozoologique et l'analyse contextuelle de ces restes à Yathill sont justifiées de par la localisation du site sur la route de l'encens au 1^{er} millénaire avant notre ère. Au nord-ouest du mur minéen, une séquence stratigraphique extramurale documente les relations entre la cité et la plaine environnante entre 820 BC jusqu'à l'époque islamique. Les chameaux domestiques étaient présents à 800 BC, l'occurrence la plus ancienne et la mieux documentée pour le Yémen. Des dromadaires sauvages étaient encore dans la zone durant le 7^e siècle et peut-être même après. L'étude du contexte archéologique relie ces chameaux de la période sabéenne aux campements apparemment formés par des non-résidents. Ce schéma se développe largement à la période minéenne, lorsqu'on observe des cabanes pour le maniement des jarres commerciaux en dehors du mur de la cité et le stationnement fréquent des chameaux et des ânes sur le talus. Ce genre d'information confirme directement le rôle de Yathill sur la route du commerce caravanier et suggère que cette zone extramurale de la cité avait une fonction importante dans ce contexte.

MOTS CLÉS

dromadaire (*Camelus dromedarius*),
Camelus sp. sauvage,
 âne (*Equus asinus*),
 commerce caravanier,
 indicateurs
 archéologiques d'activités
 "caravanières",
 "route de l'encens",
 au Yémen,
 Barāqish,
 Yathill.

INTRODUCTION AND EXCAVATIONS

The purpose of this paper is an archaeological investigation of camels and donkeys as beasts of burden in the context of a first-millennium BC caravan station on the Arabian frankincense route, Barāqish (Yemen). Unless specified otherwise, the camel species referred to in this paper is the domestic dromedary, *Camelus dromedarius*, while geographically the focus is Southwest Arabia. In this region and during the period under study camels and donkeys were the only pack animals commonly employed, although their usefulness extended to other tasks and economic sectors, at least occasionally (e.g. Fedele 2009). In addition, following historical analogy, one can surmise that the two species might have fulfilled broadly complementary roles in parcel transport, the camel as a long-range specialist while the donkey was particularly efficient on a local to regional scale. However, these latter aspects would need to be tested

archaeologically in order to define their temporal or regional oscillations.

A joint examination of camels and donkeys is thus justified in the perspective of a functional study of their combined role as beasts of burden. This role was at the same time economic and technological. If considered in isolation, each single species is insufficient for the purpose of a functional, 'behavioural' investigation of this particular role and the techno-economic system it determined. A further reason of interest lies with the unique importance of such a component in an Arabian context, and, more specifically, within an evolving community preeminently associated with first-millennium trade. For this period and subject Barāqish not only represents a most favourable locale, but is the only southwest Arabian site with a suitable – albeit incipient – archaeological and archaeofaunal record. An outline of archaeology and chronology and a summary of the site's animal evidence comprise the first part of this paper. However, a functional study

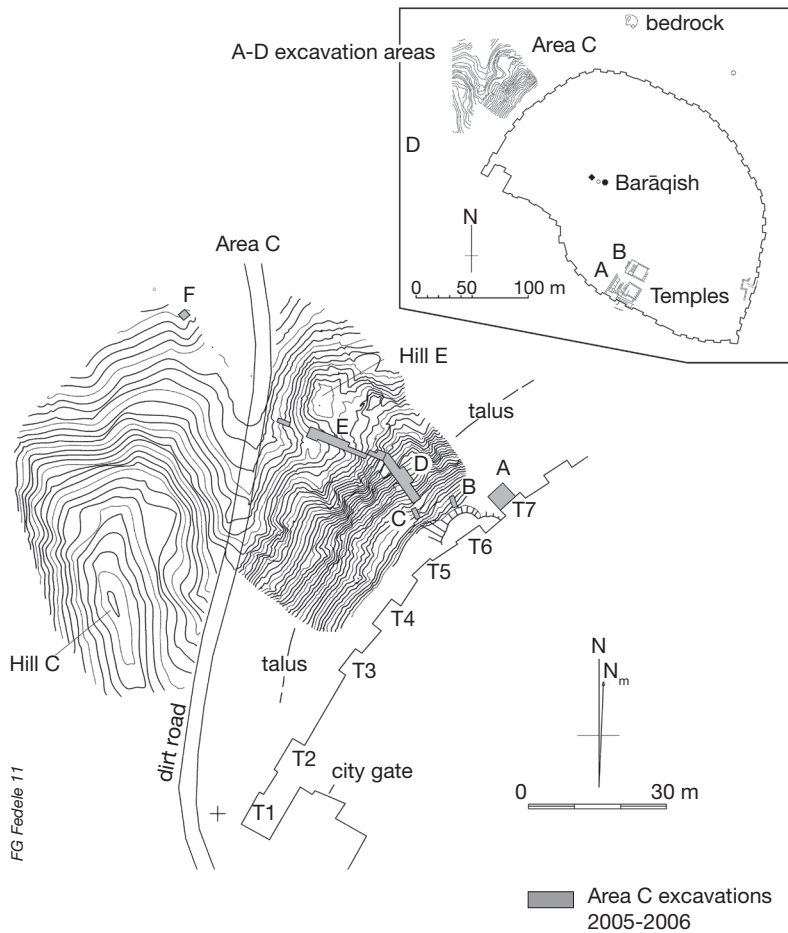


FIG. 1. — Barāqish: a plan of the extramural excavations 2005-06, Area C, with contour lines emphasizing the northwest talus and Hill C. Inset: city plan and project operations. T1 etc. = Minaean wall turrets.

of camels and donkeys will require an examination of archaeological context. This subject, and associated issues of archaeological theory concerning ‘caravan’ sites, will be approached in the second part of the paper.

Known in Arabic as Barāqish, ancient Yathill (or perhaps Yathull, based on Greek *Athroula*) (Fig. 1) is a walled city located on the margin of Wādī al-Jawf, the vast depression of northeastern Yemen. Its remarkably well-preserved walls were built by the Minaeans between the 6th and 3rd centuries BC, as revealed by the Italian excavations summarized below. They enclose an area of four hectares, this figure representing a medium-sized city for the region and period (Brunner

1997). It has long been known from classical sources, notably Pliny (*Naturalis historia*, xii, 63), that Yathill was a stop on the main overland route for frankincense and other Arabian resins, a commerce that had probably already begun by 1000 BC (e.g. de Maigret 1997, 2003b; 2009, 23-29; Groom 1981; Gyselen 1998; Harrington 1978; Potts 1998; Retsö 1991; on the origins and dating see Kitchen 1997). Other luxury goods including spices, textiles and alabaster were traded as well (cf. Liverani 1992).

Considering this role of Yathill, two main questions need be addressed: (i) what evidence is available for pack animals and, if any, how is it patterned in its

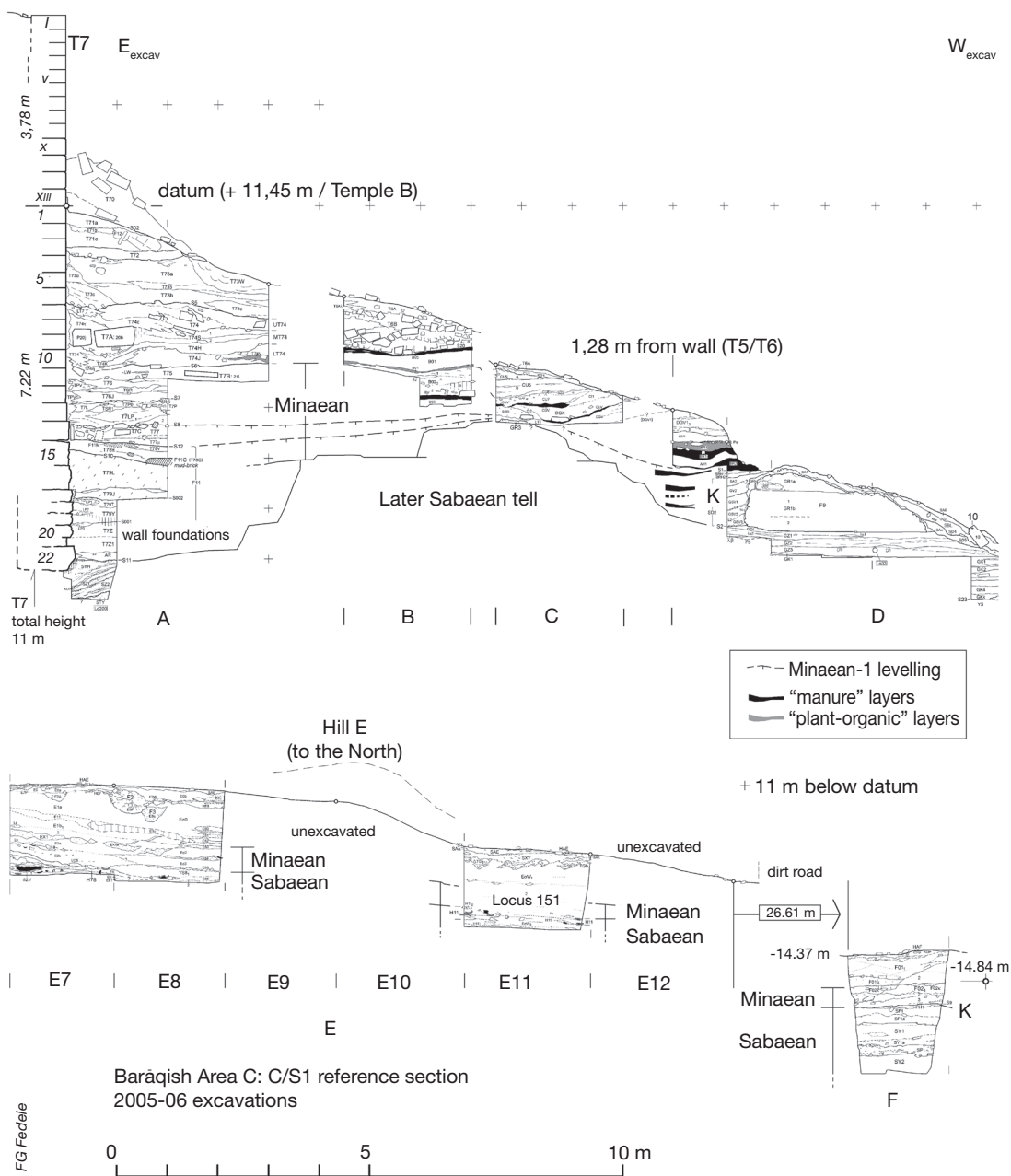


Fig. 2. — Barāqish, extramural excavations 2005-06: stratigraphic profile of sectors A-C and upper D (above) and sector E and Sounding F (below). The plant-detritus and 'manure' units in sectors A-D are emphasized; also shown are the Minaean city wall (T7) and the occurrences of Stratum K (K).

temporal and spatial distributions? and (ii) is there any 'hard' evidence for caravan trade? Concerning camels, in particular, one further question emerging

from the city's location at the desert margin has been discussed elsewhere (Fedele, in press): is this setting of any specific interest in connection with the open

TABLE 1. — Barāqish, extramural excavations 2005-06. Cultural-stratigraphic framework and chronology. See Fedele (2010) for details.
¹ Calendar age inferred from calibrated radiocarbon determinations and historical correlation. Abbreviations: **Indt.**, indeterminate; **6C**, Sixth century (and so on); /, or.

Cultural stratigraphy (Historical stratigraphy)			Strata	Suggested chronology ¹
Post-Minaean & Islamic Phase		Recent & Present Islamic 1-3	A B-C	19C-20C AD c. AD 1250-1800
		Post-Minaean & Earlier Islamic Indt.	D	1C-12C AD
	'Hiatus'	Post-Minaean Interval	E	1C-?2C AD
Minaean Phase	Later Minaean	Minaean 3-4	F-H	2C-1C BC
	Earlier Minaean	Minaean 1-2 & wall construction	I-J	6C-3C BC
	'Intermediate'	? (politically Minaean?)	K	c. ?600 / ?550 BC
Sabaeen Phase	Later Sabaeen	Sabaeen 3	L-N	c. 650 to ?600/?550 BC
	Earlier Sabaeen	Sabaeen 1-2 & wall construction	O-T	c. 820 to c. 650 BC

problems of dromedary domestication? (Qualified discussions on these problems can be seen, e.g., in Al-Saud 1996; Jasmin 2005; Peters 2001; Retsö 1991; Uerpmann and Uerpmann 2002.)

BARĀQISH: STRATIGRAPHY AND CHRONOLOGY

Archaeological excavations by the Italian Mission in Yemen, led by Alessandro de Maigret, were begun in 1986-92 in the temple area within the city, and resumed after a long interruption in 2004 (de Maigret 2004; de Maigret and Robin 1993). During two subsequent seasons, in 2005-06, a comprehensive exploration of stratigraphy was carried out outside the Minaean wall (Fig. 1). This over-wall operation or Area C will be called the 'extramural area' in this paper. The excavation was designed to shed light on the nature of human occupation in general terms, at the presumed interface between the city and the surrounding plain and well away from the cultic precinct. Environmental information and activity indicators were also sought, and one particular purpose of this work was to retrieve animal and plant remains, for the first time in the Jawf. These goals were met with considerable success (Fedele 2010).

A stepped trench was laid out on the north-western slope of the mound, where it rises about

15 m above the surrounding surfaces. The mound's margin was dug radially down and away from the wall and dissected from top to base. This trench cut into the talus and expanded beyond the foot of the slope into the adjacent plain (sectors *D* and *E*; the topographic sectors of the excavation will be marked in italics). Further away in the plain an isolated test pit, Sounding *F*, was sunk 78 m from the nearest point of the wall. Finally, at the upper end of the operation, Sounding *A* reached a depth of 8 m and brought to light the foundations of the Minaean wall (Fig. 1). By linking all these sectors, a comprehensive stratigraphic profile was obtained, in which sectors *A* to *E* in particular provide an essentially continuous cutting 52 m long and 14 m high through the outer tell and talus ('C/S1 Reference section'; Fedele 2010, 2011). Only the two end portions of this profile are of interest for this article (Fig. 2). 'Tell', 'talus' and 'plain' refer to the three depositional domains represented in the extramural area, with the talus profile shifting and evolving over time as a result of the accumulation-erosion balance and human activity. Neither sterile soil nor bedrock were found.

Overall, three historical periods were recognized at Barāqish/Yathill (Table 1): Sabaeen, Minaean (including an Arab subphase), and Islamic. The interface between the Sabaeen and Minaean phases corresponds to a problematic sediment suite, Stratum K (equated with a so-called 'Intermediate' phase; Fig. 2), possi-

TABLE 2. — Barāqish, extramural excavations 2005–06. Archaeofaunal species list for the Sabaeen and Minaean phases; the frequencies are indicative. The number of dots (•) is proportional to the relative frequency of finds. Abbreviations: **1 etc.**, actual number of finds; /, traces; **fr, frs**, fragment/s; **E**, eggshell fragment; **G**, gnawed bone.

	Earlier Sabaeen c. 820-700 BC kitchen/house refuse from “general” habitation, often roasted or burnt; occasional butchering discard	Later Sabaeen & Str. K 700-c. 550 BC	Minaean c. 550-1 BC meal refuse, some cooking; cutmarks, trampling — contexts suggest specialized activities
domestic species			
Domestic caprines	••••	•••• & coprolites	••••
<i>Ovis aries</i>			•• incl. hornless sheep
<i>Capra hircus</i>			•
<i>Bos taurus</i>	•	•••	•
<i>Camelus dromedarius</i>	/ & coprolites	•	• & coprolites
<i>Equus asinus</i>		/ & coprolites	• & coprolites
Equid hybrid(s)			1 (?4) donkey × onager?
<i>Canis familiaris</i> , small		1	/ & ?G
wild species			
<i>Camelus</i> sp., wild dromedary	1 from E11		?1 from Minaean 1
<i>Gazella</i> sp.		?1	/
<i>Capra ibex</i>	?1		1 (?4)
Small carnivore, ?wild	1		
Large rodent (<i>Hystrix</i> ?)			1G
Small rodents, spp.	1G		•• & frequent G
<i>Struthio camelus</i>			/ & 2E
Long-legged bird	1		
Micro-gastropods, spp.	/	/	
marine shells			
Cypraeids, cowries		2 frs from E8 & A	1 fr from F
Arcids, cf. <i>Arca</i>			1 fr from A

bly reflecting warfare and reduced occupation, after which a different material culture became common and the Minaean polity was demonstrably in control of the city (see Fedele 2011 for details). The Minaean phase lasted from the 6th century BC to about AD 1, with the Minaean rule proper on the wane by 200 BC; the last two centuries were characterized by the increasing presence and probable dominance of Arab tribes (Robin and de Maigret 2009). After about AD 1 Yathill was abandoned and a similar fate involved the other cities of the Jawf, possibly as a result of shifting caravan-trade arrangements and environmental deterioration (Fedele 2011, 115–116; Schiettecatte 2010).

Significantly, the extramural excavations confirmed the existence of a substantial Sabaeen settlement underneath the Minaean layers, reaching back to the end of the 9th century BC, but continuing further down. They also revealed that the settlement extended well beyond the surface of the Minaean

city. The thickness of the Sabaeen occupation was similarly documented in a temple area sounding made by de Maigret in 2006, where levels of the 13th century were reached. Detailed reports on the extramural excavations and the city sounding have been published (de Maigret 2010; Fedele 2010, 2011; see also Robin & de Maigret 2009: 63–72). For the purpose of this paper, however, only the extramural excavations are relevant, because only the bone assemblages from this area could be examined. Furthermore, as the Barāqish mission came to an unfortunate halt in 2007, only the material from Sounding A could be studied in reasonable detail.

THE ARCHAEOFAUNAL EVIDENCE

As mentioned, abundant and generally well preserved animal remains were recovered, the extramural collec-

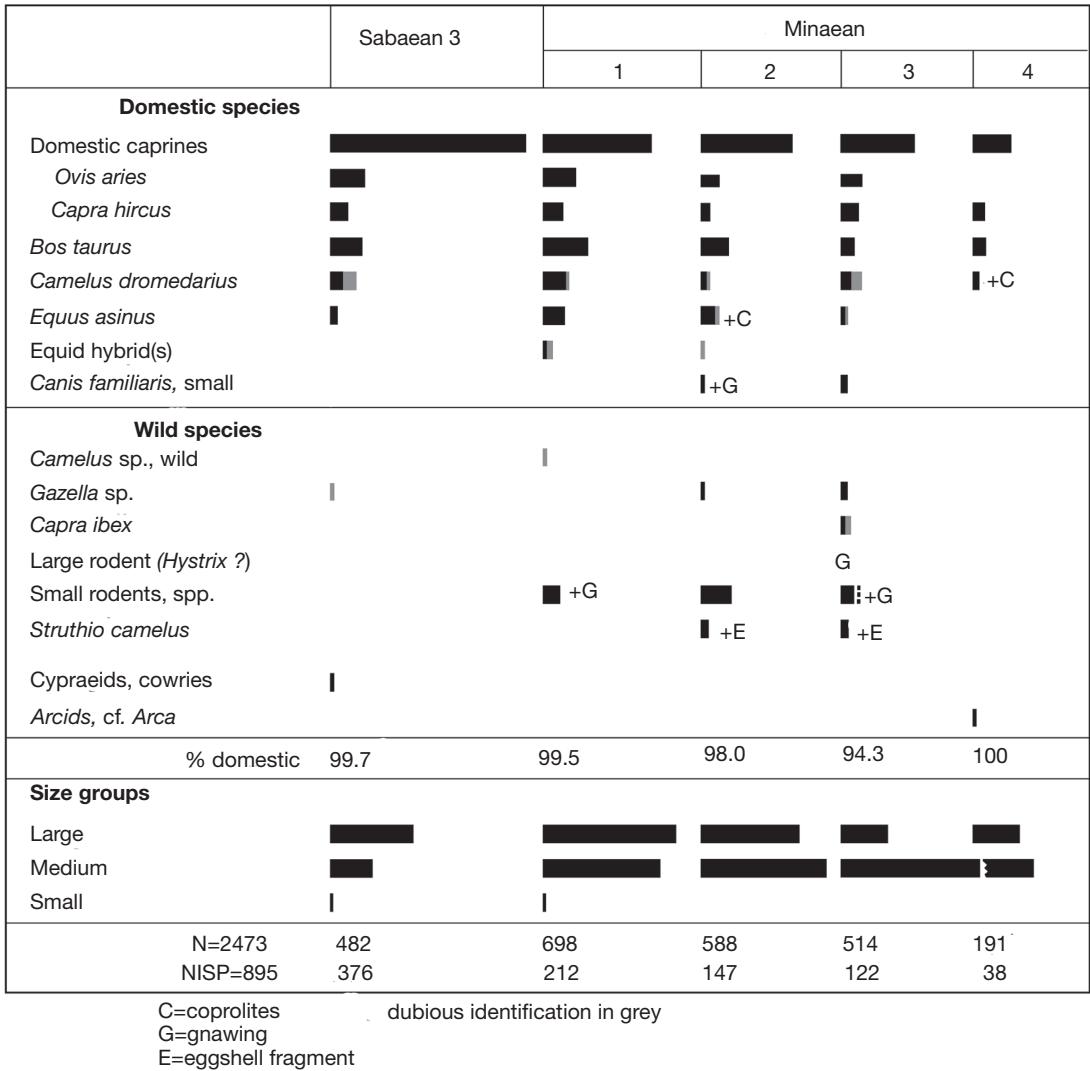


FIG. 3. — Barāqish, extramural excavations 2005-06. Quantitative archaeofaunal analysis for the Later Sabaeen and Minaean levels, Sounding A.

tion numbering several thousand pieces. An overview of the faunal data for the Sabaeen and the Minaean phases (Table 2) shows that in terms of species composition domestic animals are overwhelming. Both the Sabaeans and the Minaeans relied heavily on sheep and goat, with cattle very subordinate. Wild species are virtually nonexistent among the remains. Against this background, however, a few individual finds do stand out: several ostrich bones in the Minaean

levels (Fedele 2011, 111-112: fig. 10f), and isolated finds of wild dromedary (*Camelus* sp.) in the Later Sabaeen and possibly the Minaean phases (Fedele in press). Figure 3 presents a preliminary attempt at quantification on the basis of the collection from Sounding A; the zooarchaeological details will be presented elsewhere. A ceramic figurine of a camel was found on the Minaean 2/3 surface in Sounding A (Fedele 2011: fig. 10 h1).

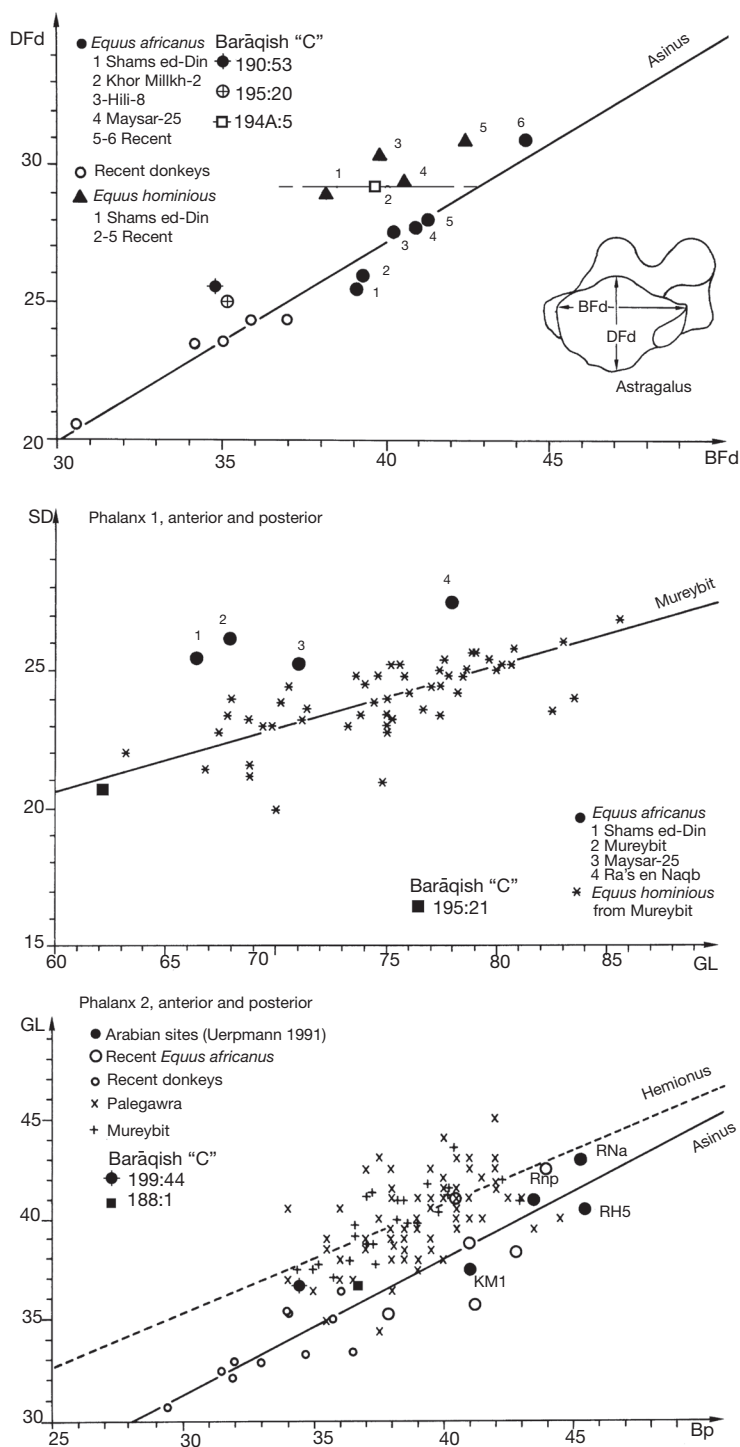


FIG. 4. — Barāqish, extramural excavations 2005-06, Sounding A: bivariate plots for equid bones, including the astragalus and the first and second phalanges. Reference plots from Uerpmann (1991).

The temporal distribution of the camel and the donkey – or the equids in general – is significant. One can observe an increase of both with the Later Sabaeen phase, and perhaps a relatively sharper increase with the advent of the Minaean presence. In fact, no donkey remains were retrieved from the Earlier Sabaeen levels, although there might be traces of equid coprolites in a layer of that age. When the donkey becomes apparent, starting with the Later Sabaeen, all its bones derive from mature or old animals. The fact that donkeys were killed at the end of their working life provides indirect confirmation of their chief use for transport. Given this origin of the bone residue it is usual that non-meat animals such as the donkey, the dog, and to some extent the camel, are underrepresented considerably in terms of bones. As indicated in the upper part of Table 2, all bone residue in the extramural area is from cooking or meals, although the particular contexts of deposition varied over time.

The recognition of wild dromedaries and presumed equid hybrids in the collection was based on a combination of morphological and metrical observations as well as – for the former – on considerations of context. The camel remains having been presented in detail elsewhere, in the context of a discussion of camel domestication (Fedele, in press), only the essentials are repeated here. Skeletal morphology and size indices show that domestic camels were already present by about 800 BC, one of the earliest occurrences in Yemen. The available logarithmic size indices for the Barāqish finds were interpreted in light of the diagram generated by Uerpmann and Uerpmann (2002: fig. 3; Beech *et al.* 2009: fig. 9), adopted as a reference. Most of the camel bones appear to be osteologically domestic throughout the Barāqish sequence.

On the other hand, the case for a wild dromedary can be argued on the basis of a distal humerus from the outskirts of the Later Sabaeen settlement, bordering the plain (find 151.1 from Locus 151 in sector E, see below; cf. Fig. 2, below; Fig. 5), and less confidently for a phalanx from a Minaean 1 level. There is little doubt that the large humerus belongs to a wild animal of dromedary morphology (LSI = 0.045). The bone was chopped by heavy percussion and partially roasted; in surface appearance and size it is very different from all

other camel material from the extramural area. Locus 151, which as part of Stratum M can be dated within the 7th century BC, contained two more fragments of *Camelus* long bones, also slightly burnt.

Although obviously limited, these finds are interesting because they indicate that wild dromedary herds still existed in Yemen during the 7th and perhaps as late as the mid-first millennium BC (cf. Uerpmann & Uerpmann 2002, 257; U.A.E. data), when the domestication of the species had been under way for a long time and was being perfected (Fedele, in press, with references). The wild population inferred from humerus 151.1 may be located in the wider area of Yathill, but this is unsure. Although the bone may be a result of episodic hunting by residents of Yathill, it might, alternatively, derive from a chance encounter with a wild herd in the course of travel or caravan traffic, and thus have been brought in from greater distance for meat.

Both the Sabaeen and Minaean donkeys were small. However, there is a possibility of equid hybrids in the Minaean. A metrical analysis of the measured bones would suggest that at least an astragalus is from a mule, while a first 'asinine' phalanx appears to fall within the hemione distribution, as does a second phalanx (Fig. 4). Since no caballine trait is detectable, all these presumed hybrids would derive – surprisingly – from crosses with hemiones (onagers). Incidentally, an upper premolar or molar shows a mix of ass and 'hemione' traits as well. Onagers might have been present on the borders of the Ramlat as-Sab'atayn desert of Yemen, albeit at an earlier date (revised data from site HAR2, cf. Fedele in Di Mario *et al.*, 1989, 141-145; mentioned in Edens and Wilkinson 1998, 69), but of course this contention is problematic and needs further research.

ARCHAEOLOGICAL CONTEXT AND THEORY

In this section the archaeological contexts in which camels and donkeys occur at Barāqish will be reviewed. As mentioned, an examination of archaeological context is essential for approaching a functional study of animals' roles through time and in connection with people. From this perspec-

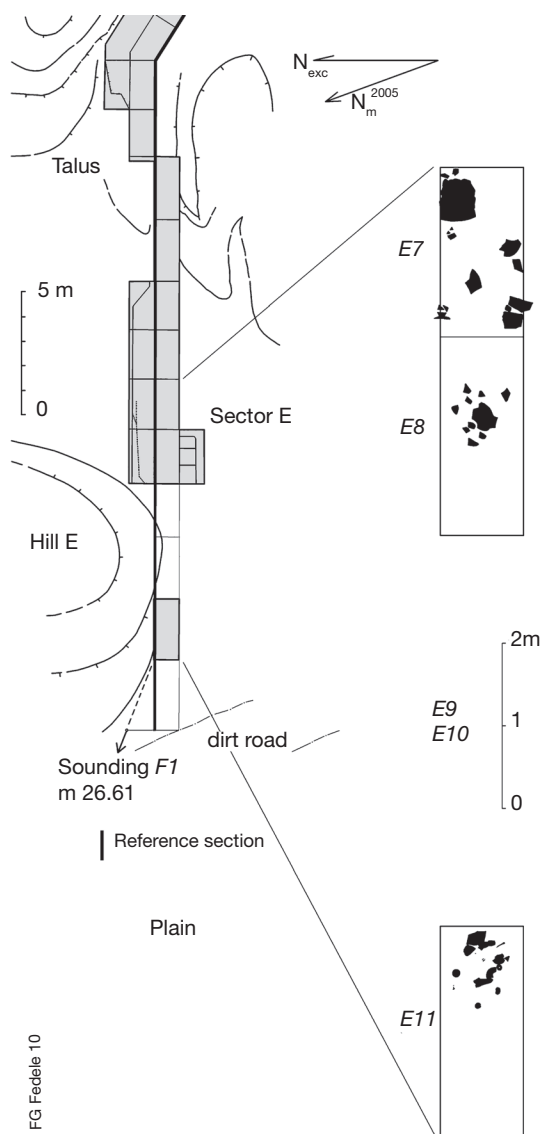


FIG. 5. — Barāqish, extramural excavations 2005-06: spatial clustering in the main Later Sabaeen cultural level, lower sector E. The cluster in quadrangle E11 is 'Locus 151'.

tive, and starting with the Sabaeen evidence, it is of interest that the sampled contexts at the base of the Sabaeen talus and in the adjacent plain appear to suggest the occurrence of campsites or tentsites, possibly partly formed by non-residents. In particular, the context associated with camel

humerus 151.1 (cited above) suggests a clustered tentsite-like feature outside the settlement, one in a series of such traces stratified on the former plain along the footslope of the talus (Fig. 5).

The composition and condition of materials in Locus 151 do not suggest 'normal' kitchen refuse. Rather than intensive occupation they indicate repeated episodes of activity in the open, possibly associated with light-shelter constructions. The archaeological association – cooking pots, tripods, pans, 'torpedo' jars and evidence of burning – combined with what looks like a patchy distribution of activity clusters, suggests a scenario of bivouacs or tents on the plain. Some unusual or exotic items (cf. Table 4) may further suggest that foreign parties – occasional 'migrants'? merchant caravans? – were possibly involved. Although 'torpedo' jars have recently been demoted from their presumed role of specialized trade containers (this latter reiterated by de Maigret, e.g. 2003a), a general association with sealed beverage transport (Porter *et al.* 2009) appears to fit a 'migrant' campsite scenario.

This kind of inference sounds rather daring at the present stage of the excavations, given the very limited evidence that it was possible to obtain from one restricted sampling round the city perimeter. Unfortunately at the moment one can only glimpse a pattern, to which the direct, walking experience of the Barāqish setting, and surface observations at some distance west of the tell, seem to add credibility. With this caveat in mind, how can we enhance our possibility of detecting patterns and contexts capable of shedding light on any remnant of transient campsites? It is widely known that the available literature on the material correlates of nomadism, or 'transience' more generally, is fairly scanty. Caravan activity should be understood archaeologically as a kind of nomadism.

With Mashkour and Abdi (2002: 211; my emphasis) one can state that 'archaeologists are *just beginning* to develop techniques for identifying sites representing early forms of pastoral activities, especially those with higher mobility. [...] Ephemeral occupations, shallow deposits, and poor surface evidence cannot be dismissed as reasons why mobile

TABLE 3. — Towards a theory of archaeological (material) evidence for ‘caravan’ activity, particularly adapted to the case of Barāqish/Yathill: a very preliminary list. Five behavioural entities or ‘activity modes’, with their attendant attributes, should be distinguished (see upper part of table in grey), and their archaeological indicators sought, as detailed in the right-hand part of the table.

• F/T ‘foreigners/travellers’ • C, ‘campers’, specifically tent-camping • T, ‘traders’, trade		implying • TRA means of transport/travel, and/or • CAR ‘caravans’, i.e. the caravan mode
A tentative list of indicators with an emphasis on the case of Barāqish/Yathill (Yemen)		
proxies for F/T (e.g.):		• exotic, alienogenous items • <i>potential indicators</i> : presence of animals of burden and/or horses, including hybrids, and their life-history attributes (e.g. age); composition in species
clues to/hints of c (e.g.):		• clustering of cultural debris (in unimpeded space) • clustering of traces or residue from cooking or burning • insubstantial structures (if any) • peg holes, pole holes • light, portable ‘domestic’ equipment (including lamps) • <i>potential indicator</i> : diffuse trampling in unimpeded space
direct evidence for T:		• specialized trading vessels or other containers • specialized plaster sealings, ideally associated with jar stoppers • workshops (sheds, shelters) associated with some at least of the specialized items above
indirect evidence for T:		• any recurrent combination of CAR, TRA, c (?) • textual and/or pictorial evidence (if any)

pastoralist sites have been neglected in regional surveys.’ But whereas mobile pastoralist sites have now been examined with a relatively focused approach, sites generated by other kinds of ‘migrants’ – including pack-transport sites and even ‘caravan’ sites – have generally eluded specific consideration. This touches particularly upon the material, non-textual evidence for caravan trade, which is a research subject still neglected in mainstream South Arabian archaeology. Artefactual correlates and off-site traces await investigation in Yemen and over most of Arabia (cf. Glanzman 2004).

In Table 3, the elements of a theory of archaeological evidence for caravan activity are tentatively outlined, as an attempt towards a more general theory of the material correlates of ‘transience’. The table lists five separate ‘activity modes’ and a number of archaeological and zooarchaeological ‘indicators’, admittedly inspired from the case of archaeological

Barāqish and ancient Yathill. The information in the table was compiled from a critical reading of literature, while informal observations personally made in Iraq (1980–81) and Yemen (1984–2007) were also useful. For such data and the relevant interpretive framework particular reference should be made to Akkermans (1993, 181, 256–265), Chang & Koster (1986), Cribb (1991, 2004), David & Kramer (2001, 239–242, 255–270), Gilbert (1975), Hole (1978, 1979, 1980, 2009), Mashkour & Abdi (2002), McDonald (1998, 126), Mortensen (1972), Pachur (1991), Rosen (1993, 2003), Saidel (2009), Sweet (1965), Yekutieli (2009), Zarins (1989, 135–144), and to contributions in seminal edited volumes such as Gamble & Boismier (1991), Bar-Yosef & Khazanov (1992) and Barnard & Wendrich (2008). Limits of space prevent from a detailed discussion, and this complex subject is being developed for publication elsewhere.



FIG. 6. — Barāqish, extramural excavations 2005-06: indication of the area on the upper talus subjected to frequent stationing of camels and donkeys during the Minaean occupation; Minaean wall with turrets T6-T7 in the background. Some of the earliest 'manure' layers can be seen in section (upper sector *D*, on the right).

INDICATORS OF CARAVAN TRADE IN THE SABAEOAN AND MINAEAN CONTEXTS

With the above framework in mind, two separate lists of activity indicators potentially bearing on caravan trade are here presented for the Sabaeoan and the Minaean levels. Table 4 is a summary of the indicators for 'tent-camping' and/or 'foreigners/migrants' from the Sabaeoan sequence, mostly dating from the Later Sabaeoan (7th and possibly early 6th century BC). Following the entries in the figure, one can recognize (i) indications of regular stays of camels and perhaps donkeys; (ii) the occurrence of cultural residue both clustered and suggestive of 'light' cooking and meals in the open (already mentioned above); and (iii) a possibility that 'foreigners' were often involved, to judge from some rather exotic items, such as the wild dromedary humerus and its cluster. Were these non-residents not just 'foreigners' or 'travellers', but traders? The peculiar clustering of cultural debris and burnt patches can be

particularly observed in the Later Sabaeoan occupation levels (Fig. 5), by which time camels and donkeys had clearly become more significant (Table 2; Fig. 3).

The extramural excavations may thus provide first-hand evidence for trade as early as the Sabaeoan period: camels as probable pack animals, jar handling, exotic items, and camping in tents (Fedele, in press). With further data trade may emerge – unsurprisingly – as a pivotal factor in Yathill's existence from the beginning. Of course, the Sabaeoan occupation of Yathill should be much more widely investigated before sound judgments can be made on the subject.

However, during the Minaean occupation this kind of archaeological pattern developed further, with our data pointing to a broad specialization in the material repertoire. There are already hints of this development in the Intermediate phase, during the deposition of Stratum K. In Table 5 a list of the activity indicators for 'tent-camping' and/

TABLE 4. — Barāqish, extramural excavations 2005-06: indicators or potential indicators for 'tent-camping' and/or 'foreigners/travellers' (C, F/T) in the Sabaeen strata, and particularly the Later Sabaeen.

Sabaeen	
• All evidence from the base of talus and plain; • mostly dating from the Later Sabaeen.	
• a 'manure' layer	at the foot of the Sabaeen-2 tell, and coprolites both in qu. E8 and near the Sabaeen wall in qu. E2, indicating → regular stay of <i>Camelus</i> and perhaps <i>Equus asinus</i> (no bones);
• a clustering of cultural debris (1) as well as traces on the ground (2) –	
(1) what cultural debris?	• cooking pots and related items employed in cooking (poorly-fired clay 'tripods' etc.), several indicating cooking on the spot (i.e. <i>in situ</i> debris) • burnt & broken limestone cobbles, 'roasted' sandstone plaquettes, etc. • unusually large charcoal fragments, ash concentrations • a frying pan with mending holes • a broken quern • animal bones all from cooking & meals, and from caprines & cattle exclusively (i.e. no donkey! no domestic dromedary!); including a highly unusual bone piece (151.1, below)
(2) burnt patches in particular (Sounding F)	• and associated ash pockets and burnt stones, see above;
all likely indicators of → 'tent-camping' or campsites (hence 'foreigners/travellers'?);	
• recurrent trampling (in the plain), pointing to → habitual circulation by animals and/or people;	
• indication of encounters with wild dromedary herds (bone 151.1, Locus 151); and	
• introduction of an obsidian core (from Sounding F); • a perforated pendant (from Sounding F); • a fragment of a cowrie;	
all potential indicators of → 'foreigners/travellers'.	

or 'foreigners' and/or trade is presented for the Minaean; trade can now be written without quotation marks because there is positive evidence for it. The finds from the Minaean sequence in the extramural area can indeed be reduced to a narrow range of categories, a vast proportion being represented by the indicators on this list. Several indications from the bone evidence (Table 5, bottom) have already been mentioned. It must be reported in this context that the presence of foreigners at Minaean Yathill has now been directly shown by the excavation of a presumed cenotaph cemetery on Hill D to the west of the city (cf. Fig. 1, inset); from the 'rather lowly social status' inferred through the burials it was thought that the cemetery is 'possibly to be associated with the caravaneers themselves' (Antonini and Agostini 2010, 45).

Furthermore, the available evidence is spatially concentrated. Three locations are involved: the great wall, the upper talus, and the plain. Taking into due account the geomorphic and culturally-induced evolution of the talus (Fedele 2010), this

spatial patterning itself adds to the evidence for extramural specialization during the Minaean period (Fedele 2011). These three locations and the information they provide will be briefly reviewed.

A significant piece of evidence is represented by the recognition of trade-jar handling posts outside the walled city, along and near the wall itself, on a recurrent basis during the Later Minaean. The existence of an imposing wall created new opportunities in this respect. Direct evidence for trade has come to light, particularly including jar sealing, as demonstrated by stamped plaster (*cretulae*) and lithic evidence for jar stopper manufacture (flaked discs made from cryptocrystalline limestone; Fedele 2011: fig. 10 b; on jar sealings in general see Costa 1991). Such material is associated in the levels of Minaean 4 with a decayed stone and mudbrick structure, interpreted as a jar-sealing workshop, in which people both worked and lived (structure F8; Fedele 2011, 114-115: fig. 8 b). It was perhaps only one of several such sheds located against the wall.

TABLE 5. — Barāqish, extramural excavations 2005-06: indicators or potential indicators for ‘tent-camping’ and/or ‘foreigners/travellers’ and/or trade (c, F/T, τ) in the Minaean strata.

Minaean			
The evidence comes from : a belt along the Minaean wall ↓	the upper talus ↓	the base of talus ↓	the plain (Sounding F) ↓
Structure F8, quite probably a workshop for handling/sealing trade jars (Minaean 4); containing : • both flaked & unused limestone cobbles for making jar stoppers; • stamped plaster sealings, or <i>cretulae</i> (Minaean 3) the above providing the only direct evidence of trade at Yathill for the moment (Later Minaean); • remnants of large trade jars; • a marine shell (Minaean 4)			
	• repeated, thick ‘manure’ layers from dromedaries & donkeys, containing coprolites, urine chemicals, lenses of fodder etc.; → suggesting that animals were frequently stationed on the upper talus (in enclosures or stalls?); • an intercalated level of limestone spalls from the making of jar stoppers • traces of plaster sealings (from E8 etc.); • a limestone burner, i.e. a lamp (from E8); • fragments of trade jars; • an isolated quern of a ‘Minaean’ type → suggesting tent-camping and indicating involvement in trade		
			• concentrations of trade jars, jar stoppers, fragments of plaster sealings; and in addition • a limestone burner, i.e. a lamp; • a cowrie (prob. from a necklace); • a fossil shell → suggesting tent-camping, ‘foreigners/travellers’, and indicating involvement in trade.
Concerning the animals of burden, during the Minaean one can observe : • an unprecedented frequency of <i>Equus asinus</i>, almost exclusively represented by adult or aged individuals; • and (almost certainly) the appearance of mules; all indicators of systematic use of donkeys in work and/or pack transport; and plausible indicators of at least local transport (hence probably short-distance trade?).			

A concurrent and complementary piece of evidence is relevant to our subject: the dark brown ‘manure’ layers in the upper part of the extramural deposits, precisely corresponding to a part of Stratum K and the whole series of the Minaean strata. Their location is the former upper talus (Fig. 2, above; Fig. 6). In these layers both ‘manure’ – i.e. dung – and ‘plant-organic’ units can be distinguished, on the basis of the composition and ratio of actual excreta to plant fraction, as well as sedimentary texture cum structure. The reader is referred for details to previous work (Fedele 2010, 2011); chemical analyses and a

search for spherulites, unfortunately, could not be arranged, but the nature and origin of such lenses and layers cannot be doubted. Where preservation is good, camel and donkey coprolites constitute the large majority of the recognizable components. The pattern exhibited by such a rich sequence of dung and dung-enriched layers is unprecedented in the sedimentary history of the extramural area. The interpretation is inescapable: throughout the Minaean period there must have been frequent stationing of camels and donkeys on the upper talus. From excavation sectors *B* and *C* we have reconstructed that the

stationing would particularly occur on level strips below the wall, in a belt 7–20 m from the curtain (cf. Fig. 2), and the area concerned can vaguely be perceived behind the present morphology (Fig. 6). At times, constructed stalls or enclosures for camels and/or donkeys may have existed, as dung concentrations often are indicators of enclosed animals, and a pointed vertical stake was indeed found in sector *B*.

The other area in which the Minaeans dealt with trade jars, or trading in general, in addition to the strip between the upper talus and wall, was the plain. Although extremely restricted, the sampling provided by Sounding *F* was revealing. There is evidence of Minaean levels replete with both trading-jar remains and flakes from lithic jar stoppers. Whole stoppers are also frequent. Fragments of cuboid burners made of limestone, probably to be explained as broken lamps left by camping parties, are only common in this area (*F*) and at the base of the talus (lower sector *E*; on the function of these ‘incense’ burners cf. Fedele 2011, 115, with references). Additional clues to the role of the extramural areas to the west of the city come from the already mentioned excavation carried out by S. Antonini on Hill D (cf. Fig. 1, inset). The presence of plaster jar sealings, clay stoppers for trade jars, and even a bronze seal fragment, although coming from reworked aggregates (Antonini and Agostini 2010), might provide further evidence for caravan trade activity on Hill D or nearby, at a distance of a mere 100–120 m from the Minaean activity locations discussed above.

CONCLUDING REMARKS

Within the obvious excavation limits, two areas present indisputable evidence pertaining to trade during the Minaean period. One is the area flanking the north-western wall, a short distance from the city’s gate, which appears to have been particularly and repeatedly used for the handling of trade jars, while pack animals were often kept on the talus a little below. One could surmise that several operations connected with trade goods took place in installations outside the walls, plausibly including the packing and dispatching of caravans. Concurrently, the adjoining flats to the northwest of the tell appear to have

been used within the same functional framework. Also a low outlying mound, Hill C (Fig. 1), might have played a role in connection with both caravan tent camps and the daily unloading and loading of animals. An archaeological package suggesting caravan commerce thus emerges as a functional signature for the plain and talus, to the exclusion of any other systematic activity.

The areas to the west and northwest of the city might indeed emerge as the preferred location for this vital activity of Yathill, and especially for the stands or sojourns of people and animals. The relative proximity to the city’s gate might have been important. At traffic peaks caravan space had to be found extramurally, Yathill being too small to provide rest for hundreds or thousands of dromedaries – the average caravan. In such a case separation of caravan space from city space was probably standard. Analogies from pre-modern historical sources may help flesh out the composition of ancient trans-Arabian caravans and their behaviour in relation to staging-post cities (e.g. Jāzim and Leclercq-Neveu 2001). Admittedly, apart from our scrutiny along radius *A–F*, little is known of the remainder of the areas encircling Yathill.

Although Yathill’s association with overland caravan trade has long been deduced from geographic position and textual sources, mainly classical, the data reviewed in this article begin to support this pivotal role of the city with direct and explicit archaeological evidence. The emphasis is on material culture, the extramural excavations providing modest but tangible evidence for this defining aspect of Minaean society. Equally important is a preliminary indication that at least part of the functional patterns detected for the Minaean period were already effective during the preceding occupation by the Sabaeans. It seems reasonable to infer that throughout the first-millennium history of Yathill the plain and eventually the talus were not inert appendages of the tell, but in fact specialized, fully functional parts of the settlement.

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