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More evidence for cat taming at the Predynastic elite cemetery of Hierakonpolis (Upper Egypt)

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ABSTRACT

Continued excavations at the Predynastic elite cemetery HK6 at Hierakonpolis have yielded new evidence for the cultural control of cats during the Naqada IC-IIB period (c. 3800–3600 BC). In the same burial ground where evidence was previously found for the keeping of jungle cat (*Felis chaus*), a small pit was discovered containing six cats. The animals that were buried simultaneously, are a male and a female, and four kittens belonging to two different litters. The long bone measurements of the adult individuals clearly fall in the range of *Felis silvestris* and outside those of *F. chaus* and *F. margarita*. Comparison of the measurements – through the log-ratio technique – with data from the literature, as well as morphological characteristics of the mandible, suggest that the animals are domestic. It is argued that these results should be used with caution, since the criteria established to distinguish wild and domestic cat in European sites may reflect differences at the subspecies level (wild *Felis silvestris silvestris* versus the domestic form derived from *Felis silvestris lybica*). In northern Africa only *F. s. lybica* (wild or domestic) occurs, thus the established criteria may not be adequate when applied to Egyptian material. However, possible circumstantial evidence for the cultural control of the cats buried at Hierakonpolis is provided by their ages at death which indicate a deviation from the birth pattern reported in Egyptian wild cats.

1. Introduction

In the traditional view, the domestication of *Felis silvestris* occurred in Egypt around 4000 years ago, during the Middle Kingdom (c. 1950 BC), or on circumstantial evidence perhaps 300 years earlier in the late Old Kingdom (c. 2310 BC) (Malek, 1993). This has been challenged by a much earlier find from Cyprus that demonstrates a close relationship between cats and humans around 9500 years ago (Vigne et al., 2004). The Cypriote evidence, a cat buried in close association with a human, suggests that the domestication process may have started when humans in the Levant became sedentary and their cereal storage attracted rodents, and in turn cats. Further, in a recent article (Hu et al., 2013), based on stable isotope evidence, it has been suggested that small felids lived in the vicinity of humans about 5300 years ago in an early agricultural village of Quanhucun in Shaanxi, China. In Egypt itself, indications for the taming of cats, prior to the traditionally accepted date, was limited to the report of a possible cat skeleton near the feet of a man in a grave dating to the Badarian period (5th millennium BC) (Brunton, 1937: 34; Flores, 2003: 82), but the remains are unavailable for examination and the identity of the animal is unconfirmed. More reliable evidence is provided by the skeleton of a jungle cat (*Felis chaus*) dated to 3700 BC (Linseele et al., 2007, 2008). This young adult, found in a group burial in the elite cemetery of the Predynastic period (HK6) at Hierakonpolis, exhibits a femur and a humerus with a healed fracture, indicating that the animal had been tended to for several weeks prior to its sacrifice. Continued excavation of the same graveyard has now yielded secure evidence for the presence of the wild cat (*F. silvestris*). Below the find circumstances are described and the status of the cats (wild, tamed, domestic?) is discussed on the basis of morphological, osteometric and demographic information.

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2. The cat burial at Hierakonpolis

Hierakonpolis (25°06′N, 32°46′E) is located on the west bank of the Nile, 17 km north of the modern town of Edfu in Upper Egypt (Fig. 1). This large Predynastic site consisted of domestic quarters, industrial zones and ceremonial centres as well as cemeteries for the different strata of society. Excavations in the cemetery of the elite segment of the population called HK6 started in the late 1970s (Adams, 2000) and are still ongoing. The HK6 cemetery is unique in the Predynastic period for the number and variety of wild and domestic animal taxa it contains. Besides the traditional domestic species (cattle, sheep, goat, dog, donkey) a large number of wild species have been found: anubis baboon (*Papio anubis*), aurochs (*Bos primigenius*), hartebeest (*Alcelaphus buselaphus*), wild donkey (*Equus africanus*), hippopotamus (*Hippopotamus amphibius*), elephant (*Loxodonta africana*), jungle cat (*Felis chaus*), leopard (*Panthera pardus*), crocodile (*Crocodylus niloticus*) and ostrich (*Struthio camelus*). Recent excavations have shown that many of the animal graves are subsidiary to the large tombs of the human elite of the early Naqada II period (c. 3700–3600 BC), which were placed at the centre of mortuary complexes and surrounded by smaller graves not only of (presumably) family members and court officials, but also a variety of animals, both domestic and wild. These animals were deliberately and carefully buried whole in graves of their own, either singly or in groups usually of the same species. More rarely they accompany a human burial in the grave. Animals found in conjunction with humans include dogs, baboons, goats and hartebeest. Faunal remains representing butchered part of domestic animals offered as food are also present, but are not considered here as buried animals (Friedman et al., 2011; Linseele et al., 2007, 2008; Van Neer et al., 2004, 2014, in press). Animal graves also occur in association with architectural features in the cemetery, such as enclosure walls and funerary temples. Their sacrifice and burial seems to have marked the boundaries of certain precincts (Friedman, 2010).

During excavations carried out in March 2008 along the course of a wood-post wall (Wall B7) that runs for over 72 m at the eastern edge of the cemetery, three subsurface pit features were discovered (Fig. 2). These contained the articulated skeletons of a juvenile anubis baboon (Feature B), nine adult and subadult dogs of medium

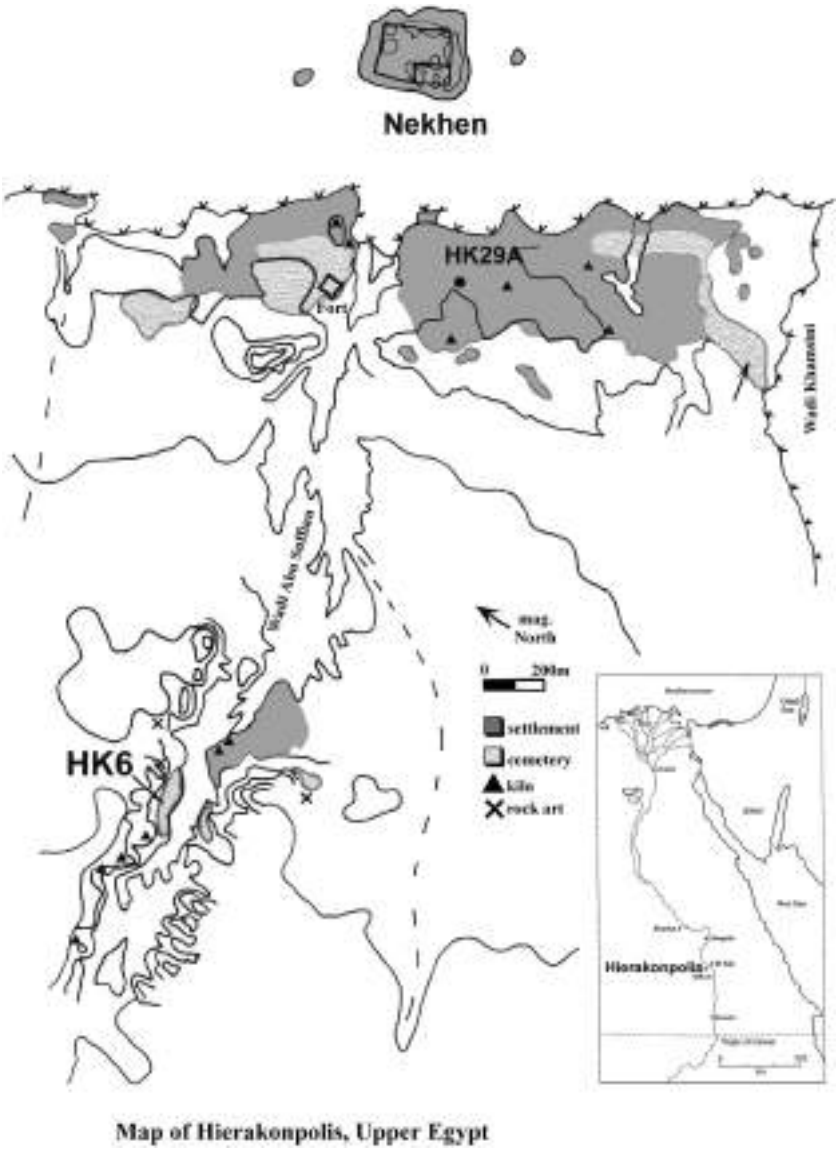

Fig. 1. Hierakonpolis and its localities mentioned in the text.

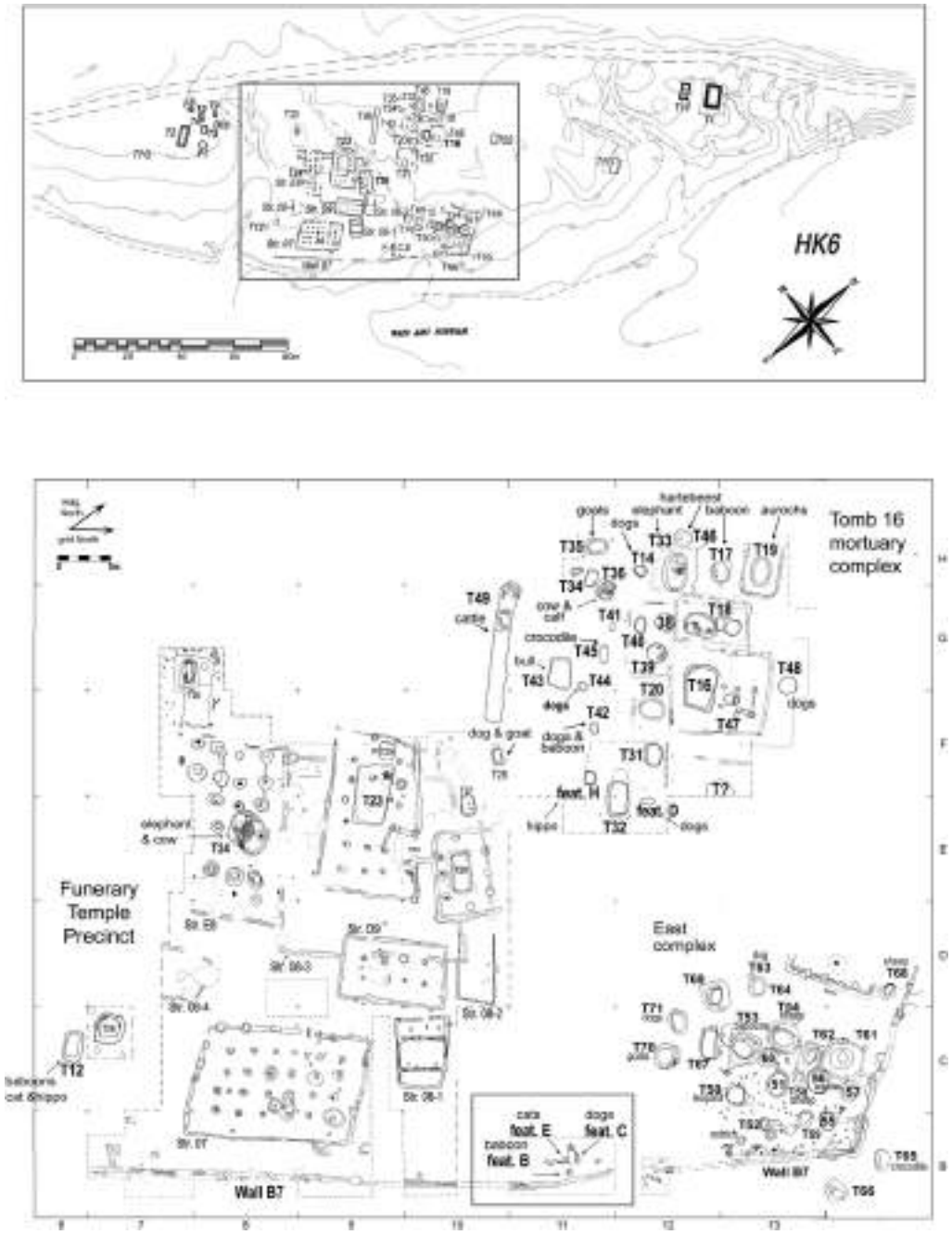

Fig. 2. Map of the cemetery at HK6 and detailed plan of the funerary temple precinct and tomb complex investigated in 2000–2013.

size (Feature C) and six cats (Feature E). The burials were all intact, and because they appear in close proximity to one another are believed to be contemporary. No artefacts were found inside the pits. Their position in relation to the boundary wall indicates an association. This wall can be dated to early Naqada II based on material deliberately incorporated in its foundations. Thus, the animal burial may be attributed a similar date. No material of later date was found in the vicinity (Friedman, 2010).

3. Description of the cat remains

The intact remains of six cats were found in a circular pit (Feature E) of about 50 cm in diameter, with a depth of 25 cm below the currently somewhat deflated ground surface (Fig. 3). The animals were fully articulated and draped along the bottom and around the sides of the pit. It is likely that their arrangement was to a large extent dictated by the small size of the pit.

The cats belong to different age classes: there are two adult individuals (called cat 3 and cat 6 during the excavation) and four kittens (cats 1, 2, 4, and 5). Age determination can be undertaken on the basis of the dentition combined – in the case of the two older individuals – with epiphyseal fusion data. The two older individuals have their complete dentition (Fig. 4), meaning that they were at least 7 months old (Habermehl, 1980). One of the individuals (cat 6) has all its epiphyses fused. According to Habermehl (1980: 111), the last epiphyses close at around 11½ months of age in the domestic cat. In another publication (Habermehl, 1985), he mentions that epiphyseal closure may be a

Fig. 3. View of the cat burial prior to the lifting of the individuals.

few months later in the wild cat. The individual (cat 6) from Hierakonpolis must have died when it was about one year of age, or shortly thereafter. There is no wear visible on the teeth and the postcranial skeleton shows no signs of any age-related pathology. This suggests that the animal was not very old and it is likely to represent a prime adult. The other adult individual (cat 3) is slightly younger as shown by the epiphyseal fusion data (Table 1). A precise age estimate is not possible, but it is clear that this individual must have been less than but close to one year.

Fig. 4. Mandibles of the adult cats. p. cor.: *processus coronoideus*; p.art.: *processus articularis*; p.ang.: *processus angularis*.

The four younger individuals still have the deciduous premolars in their mandibles. In two of the individuals (cats 1 and 2), the first molar can be seen almost piercing through the crypt, whereas in the two other specimens, only a smaller opening is visible in the ramus (cats 4 and 5) (Fig. 5). In the domestic cat the lower molars erupt between 123 and 141 days (mean 132), or between about 4 and 5 months of age (Habermehl, 1980: 110). This must have been the approximate age at which the juvenile animals died. The small age difference between the two 'pairs' of cats as shown by the dentition is also seen in the overall size of the mandibles and postcranial elements (Tables 2 and 3). This means that all four of the young individuals did not belong to the same litter, but are rather from two different ones. Given the relatively small age difference between the two litters, it can be excluded that they came from the same female.

The measurements of the two adult specimens (Table 4) illustrate a clear size difference that can be attributed to sexual dimorphism. The metrical comparison of these cats with the subadult specimen of jungle cat (*F. chaus*), found previously in Tomb 12 (Linseele et al., 2007, 2008), also shows that the cats from Feature E are much smaller and can be identified as wild cat (*F. silvestris*). There is a third cat species in northern Africa, namely the sand cat (*Felis margarita*), which according to Osborn and Helmy (1980) would be of the same size as *F. silvestris* (average head and body length about 45 cm). Guggisberg (1975), however, mentions that the sand cat (45–57 cm) is clearly smaller than the wild cat (55–65 cm). We had no skeletons of modern Egyptian sand cat specimens at our disposal during the present study, but the limited data from a previous study of a male and female sand cat from Pakistan (Linseele et al., 2007) indicate that the species is indeed smaller than *F. silvestris*. The postcranial bones from the two adults from Hierakonpolis can therefore be safely identified as *F. silvestris*. The sand cat is extremely rare in Egypt (Goodman and Helmy, 1986), and for this reason it is sometimes not even mentioned among Egyptian mammal fauna (e.g., Malek, 1993). In the large series of cats found in the Late period catacombs at Saqqara (1st millennium BC), only wild cat and jungle cat are present (Callou, pers. comm.; Ginsburg, 1991). A visual impression of the size differences between the jungle cat

Table 1
Epiphyseal fusion data for cat 3, the youngest adult cat. The fusion times indicated are for domestic cat (Habermehl, 1975).

	Fusion state	Fusion date in months
Distal humerus	Fused	8½
Proximal radius	Fused	8½
Proximal and distal femur	Unfused	8½
Tuber calcis	Unfused	8½
Proximal ulna	Fused	10
Phalanges proximal	Fused	10
Proximal humerus	Unfused	11½
Distal radius	Unfused	11½
Distal ulna	Unfused	11½
Proximal tibia	Unfused	11½
Distal metacarpal and metatarsal	Fused	11½

and the male and female wild cat is illustrated on Fig. 6 for the calcaneus and astragalus and on Fig. 7 for the humerus.

4. Discussion

Unlike the jungle cat and the baboons interred with it in Tomb 12, which exhibited healed fractures suggesting that the animals were held in captivity for some time, the cats from Feature E do not display any pathology. When trying to establish whether the cats should be considered as wild, tamed or even domesticated different lines of possible evidence can be explored. Several publications deal with the morphological or osteometrical differences in the cranial and postcranial skeleton of the wild and domestic cat (Kratochvíl, 1973, 1976; O'Connor, 2007). The domestic form is suggested for the Feature E cats when applying the most reliable criterion described for the distinction of the mandibles (Kratochvíl, 1973: 20–23). The line that unites the caudal end of the *processus coronoideus* with the caudal end of the *processus angularis* cuts off the *processus articularis* (Fig. 4). The angle that this line makes with the ventral side of the *corpus mandibulae* is obtuse in the case of the female from HK6, and more or less straight in the male specimen. Kratochvíl (1973) established that in the wild cat this angle is mostly sharp, seldom straight.

Fig. 5. Right mandible of each pair of young cats. The specimen at the left (cat 5) is the youngest. Behind the deciduous premolars a small opening in the ramus can be seen. The other specimen (cat number 1) is slightly larger and has the first molar visible through the crypt.

Table 2
Measurements (mm) of the two youngest cats. NF = non fused. Measurements in brackets are approximate.

	Cat 4	Cat 5
Maxilla		
alv. L. Id1-Pd4	–	(21.5)
Scapula		
GLP	8.1	–
BG	5.6	–
Humerus	NF prox.; NF dist.	NF prox.; NF dist.
GL shaft	–	52.3
Bd	10.8	–
Radius	NF prox.; NF dist.	
GL shaft	42.3	–
Ulna	NF prox.; NF dist.	NF prox.; NF dist.
GL shaft	51.4	(53)
Femur	NF prox.; NF dist.	NF prox.; NF dist.
GL shaft	53.1	57.1
Tibia	NF prox.; NF dist.	NF prox.; NF dist.
GL shaft	54.5	57.7
Calcaneus		NF
GL without tuber	–	19.1
Astragalus		
GL	–	11.4

Table 3
Measurements (mm) of the two other young cats. NF = non fused. Measurements in brackets are approximate.

	Cat 1	Cat 2
Mandible		
Infradentale to condyle process	42.7	49
Infradentale to angular process	41.7	–
Height of vertical ramus	16.6	–
Humerus	NF prox.; NF dist.	
GL	75	
GL shaft	60.1	
SD	4.2	
Bd	14.4	
Radius	NF prox.; NF dist.	NF prox.; NF dist.
GL shaft	55.9	63
Femur	NF prox.; NF dist.	NF prox.; NF dist.
GL shaft	–	78.4
SD	–	6.8
Bd	–	16.2
Tibia	NF prox.; NF dist.	
GL shaft	70.5	
Bp	12.8	
SD	5.1	
Bd	9.0	
Calcaneus	NF	NF
GL without tuber	22.1	26.2
Astragalus		
GL	11.8	14.9
Metatarsal II	NF	NF
GL without distal epiphysis	31.6	–
Metatarsal III	NF	NF
GL without distal epiphysis	33.4	38.5
Metatarsal IV	NF	NF
GL without distal epiphysis	34.1	–
Metatarsal V	NF	NF
GL without distal epiphysis	–	38.5

Table 4
Measurements (mm) of the two adult cats, compared to those of *Felis chaus* from Tomb 12 and of a female and male *Felis margarita* from Pakistan (Natural History Museum Vienna, NMW 13472 & 13473). NF = non fused. Measurements in brackets are approximate.

	Cat 3	Cat 6	*Felis chaus*	*Felis margarita*
	Female	Male	Tomb 12	Female–male Pakistan
Skull				
alv. L. I1-M1	34.1	–	46.7	
alv. L. C-M1	26.9	29.7	37.3	
alv. L. P2-M1	–	22.0	27.1	
GL P4	10.2	10.1	15.8	
GB P4	–	5.1	7.0	
GL alveole C	4.7	–	8.2	
GB alveole C	–	–	6.2	
Height of jugal arch	–	10.5	–	
Mandible				
Infradentale to condyle process	52.3	59.8		
Infradentale to angular process	51.1	58.3		
Height of vertical ramus	22.4	24.8		
alv. L. I1-M1	29.4	32.3		
alv. L. C-M1	–	31.1		
alv. L. P3-M1	17.1	20.0		
Height of mandible in front of P3	–	9.2		
Height of mandible behind M1	–	10.3		
Axis				
BFcr		16.4		
LCDe		22.6		
Sacrum				
GL		26.4		
GB		29.2		
PL		25.2		
Scapula				
GLP	12.1	13.0		
BG	8.5	8.7		
Humerus	Fusing prox.		NF prox.	
GL	89.5	95.1	(120)	77–99
GL without proximal epiphysis	–	–	112.5	
Bp	14.4	16.8	21.5	
Dp	17.8	19.7	26.3	
SD	6.4	6.7	8.0	4.6–5.6
Bd	16.0	17.4	22.6	14.4–16.8
Radius	NF dist.			
GL	–	94.2		
GL without distal epiphysis	82.4	–		
Bp	7.4	7.7	9.6	
SD	4.7	4.5		
Midshaft width	–	5.7		
Bd	–	12.2		
Ulna	NF dist.			
GL	101	111	–	
GL without distal epiphysis	95.5	–	–	
BPC	8.5	9.7	11.4	7.1–8.2
SDO	–	10.7	–	
DPA	8.3	12.3	13.5	7.8–9.7
Metacarpal I				
GL	–	–	14.2	
Bd	–	–	6.1	
Metacarpal II			NF	
GL	26.2	–	–	
Bd	4.0	–	–	
Metacarpal III			NF	
GL	30.3	–	–	
Bd	4.1	–	–	
Metacarpal IV			NF	
GL	29.6	–	–	
Bd	3.9	–	–	
Metacarpal V			NF	
GL	24.2	–	–	
Bd	4.1	–	–	
Pelvis				
GL	71	81	(95)	54–66
LA	11.5	12.2	14.1	9.0–9.4
Femur	NF prox. & dist.			
GL	–	(111)	–	
GL shaft	92	–	–	
DC	–	9.8	–	
SD	–	–	–	
Bd	16.1	18.8[a]	(24.7)	14.5–17.5
Tibia	NF prox.		NF prox. & dist.	
GL	–	113	(146)	84–105
GL without prox. epiphysis	102	–	133.5	
Bp	18.0	21.4	26.5	15.0–18.1
SD	6.1	7.0	8.3	4.8–5.5
Bd	13.0	13.2	19.5	11.0–12.9
Calcaneus	NF			
GL	–	28.3	–	
GL without tuber	26.9	–	38.7	
Astragalus				
GL	14.9	16.5	19.5	11.9–14.3
Metatarsal II				
GL		47.5		
Bd		4.5		
Metatarsal III				
GL		51.7		
Bd		6.5		
Metatarsal IV				
GL		52.5		
Bd		5.5		
Metatarsal V				
GL		49.8		
Bd		4.6		

[a] In the femur, the distal measurement is on the left bone, whereas the two other measurements are on the right femur.

O'Connor (2007) used the measurements provided by Kratochvíl (1976) for the wild and domestic cat as standards in a study that aimed at finding osteometrical criteria to distinguish both forms in north European archaeofaunal assemblages. Using the log-ratio technique (Meadow, 1999), archaeological specimens were compared to these standards and this often allowed wild and house cats to be differentiated. In addition to European archaeological samples, the Roman cat from Quseir (von den Driesch and Boessneck, 1983) was also considered and identified as an exceptionally large house cat, having provided several strongly positive values when compared to the house cat standard (O'Connor, 2007: 593–4). Using the standards calculated by O'Connor (2007) for the house cat, the values for the two adult cats from HK6 were calculated and those from the Quseir cat reconsidered (Fig. 8). It appears that the Quseir cat is indeed very large compared to the house cat standard, and that the two HK6 specimens are smaller than the Roman cat from Quseir. The female individual from Feature E has negative values against the house cat standard, except for one slightly positive value for a pelvis measurement (LA). However, von den Driesch (1976) has defined this measurement as difficult to take. The male cat from Feature E has both slightly negative and slightly positive values against the house cat standard. The values noted for long bone lengths show a weak negative value for the humerus (−0.006) and weak positive values for the tibia (0.006), the ulna (0.008), and the radius (0.009); a somewhat higher value is seen for the femur (0.046). The Hierakonpolis male, in any case, is much

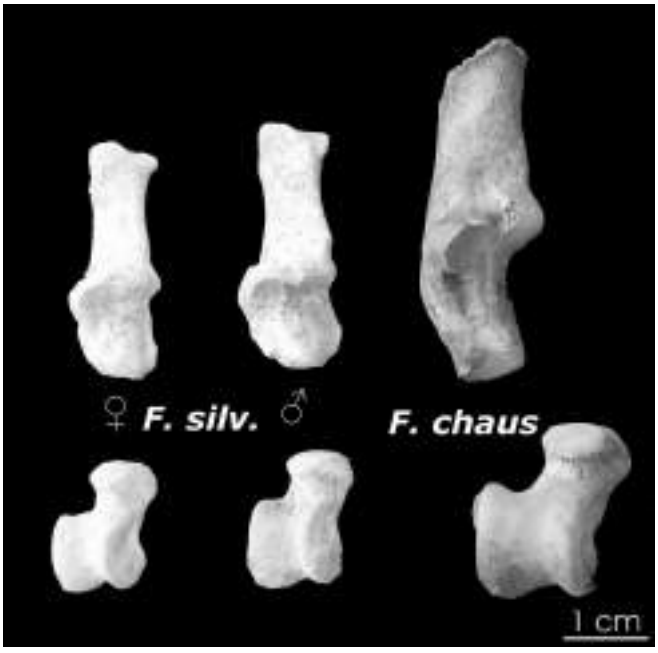

Fig. 6. Calcaneus and astragalus of the male and female *Felis silvestris* from Feature H, compared to those of *Felis chaus* from Tomb 12.

smaller than the male from Quseir which was said to be domestic because of the morphology of the skull and the mandible.

Both the morphological traits of the mandible and the osteometric data suggest that the Feature E cats are domestic. However, it remains to be verified what the exact meaning and value is of the

Fig. 7. Humerus of the male and female *Felis silvestris* from Feature H, compared to that of *Felis chaus* from Tomb 12.

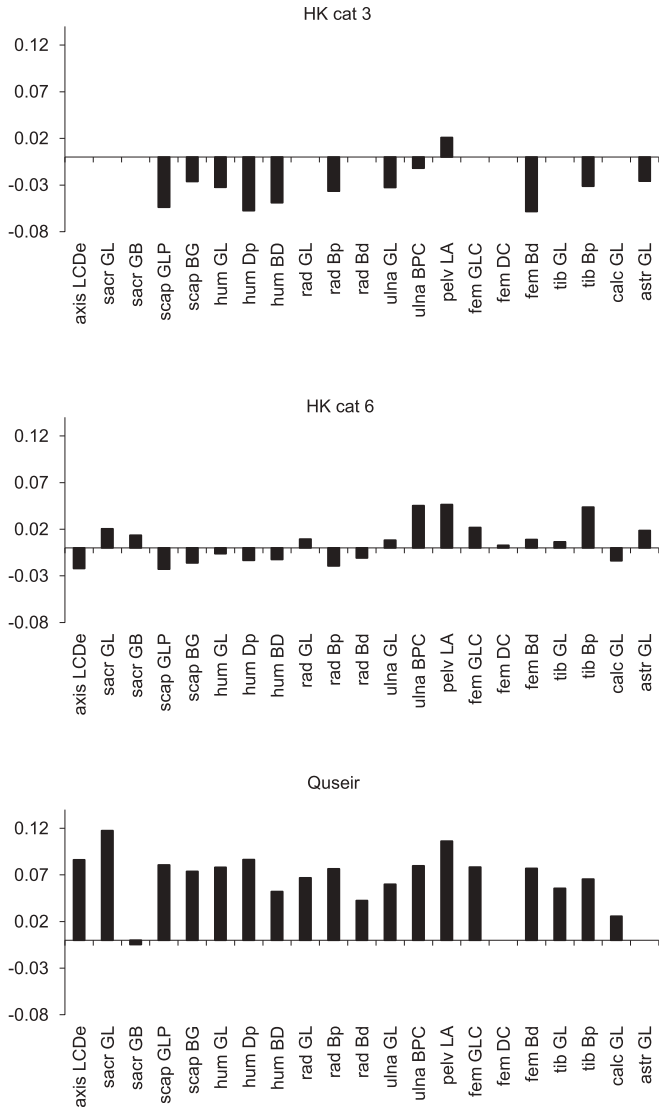

Fig. 8. Length and breadth measurements of the Hierakonpolis female (HK cat 3), the Hierakonpolis male (HK cat 6) and the Quseir male against the house cat standard.

criteria used to arrive at such a conclusion. It should be remembered that in the aforementioned studies a comparison was made of modern wild cat material from the European subspecies *Felis silvestris silvestris* with house cats that are the domestic form derived from the wild cat subspecies *Felis silvestris lybica* that occurs in Egypt. It is therefore possible that the differences in morphology between the domestic form and the wild cat described by Kratochvíl (1973) reflect the shape differences between the two subspecies rather than changes that occurred during the process of domestication. For that reason it would be useful to analyse a large series of wild *F. s. lybica* and to compare the morphological data to those obtained on the domestic form. Only then it will be clear whether Kratochvíl's (1973) criteria are adequate when dealing with the material from Hierakonpolis or other Egyptian sites. A large series of measurements on wild cats from Egypt would also facilitate osteometrical studies of the kind carried out by O'Connor (2007). Taking into account the current state of knowledge and the fact that, compared with many other species, cats underwent little morphological changes as a result of the domestication process, it may be more efficient to approach the status of the Hierakonpolis animals from another angle.

At first sight it may be tempting to consider the six cats found in Feature E as four kittens from a single litter with their father and mother. However, it is clear from the age determinations that this is incorrect. The young animals are in fact two pairs of kittens of slightly different age, and, as already mentioned above, because of the small age differences they must necessarily be from two different mothers. It appears, moreover, that the female cat found with them in the pit cannot be the mother of the kittens because she was less than one year of age when she was sacrificed. Wild cats are sexually mature at 9–10 months (Habermehl, 1985) and gestation takes 56–60 days (Estes, 1991). Because the kittens from Feature E were 4–5 months of age, their mother had to be at least 16 months old. Thus, the female cat is too young and cannot be their mother. The relationship of the male individual to the kittens cannot be established. The fact that no relationship can be proven between the six individuals means that the investment needed to procure these animals must have been considerable, as it probably involved four different captures (the male, the female, and each pair of kittens). Chances are reduced that opportunities for successful capture occurred frequently in a short time span. It is therefore likely that at least some of the cats were held in captivity until a quantity was obtained that was considered sufficient for the intended purpose.

The ages of the kittens compared to that of the female may be significant for establishing the status of the animals. Reproductive data on *F. s. libyca* are extremely rare. In Egypt, wild cats are reported to have a single litter of young per year, in April–May (Le Berre, 1990: 170). European wild cats (*F. s. silvestris*) are also described to have only one litter per year but with two oestrus periods in the year, in spring and early autumn (Harrison Matthews, 1941). Autumn litters have also been observed in *F. s. libyca* on the east coast of the Caspian Sea (Heptner and Sludskii, 1992: 490) and in southwestern Africa (Shortridge, 1934: 94). Further, African wild cats (*F. s. cafra*) in the Kalahari show no clear seasonality and might produce in case of food abundance up to four litters a year (Herbst, 2009: 92). It can be assumed from the aforementioned information that the reproductive behaviour from wild cats depends largely on environmental/climatological conditions and food availability. It is unlikely that there was so much interannual and seasonal variation in food availability in the Nile Valley as described for the Kalahari. In fact, the Nile Valley itself can be considered a rather harsh, but stable environment with more or less predictable seasons. As the kittens from Feature E were 4–5 months of age when they died, the adult animals buried with them should have been around 16–17 months of age (or 28–29 etc.) had they been born in accordance with the same natural reproduction cycle as reported for Egyptian wild cats. The female individual, which was slightly younger than one year of age, clearly does not follow this natural pattern. This discrepancy is too large to be attributed to a lack of reliability in the ageing criteria, which are derived from the domestic cat. The most plausible explanation for the observed ages is that more than one litter per year was being produced, meaning that the HK6 cats no longer followed the natural birth pattern. This phenomenon has been observed elsewhere in Africa where free-ranging female wild cats that are hand-reared can have two to three litters per year (Estes, 1991: 358–359). Hence, it would appear that there was some kind of relationship between man and cats at or near Hierakonpolis.

Wild cats are found today in Africa wherever rats and mice are abundant, including near villages and towns. It is likely that in Predynastic times wild cats were also attracted by the rodents that must have lived in and near large settlements such as Hierakonpolis. To what extent the animals from Feature E were free-ranging or cats that were tamed and held in captivity is difficult to establish. That small felids (amongst other animals) were kept in captivity at Hierakonpolis is known from the previous find of the jungle cat in Tomb 12. Several accounts exist to demonstrate that kittens of the African wild cat *F. s. lybica*, unlike those of European wild cat *F. s. silvestris*, can easily be reared in captivity. Guggisberg (1975) cites an example from southern Sudan in the late 19th century AD, where native people captured young African wild cats which would shortly thereafter stay of their own volition and live around their huts serving as a form of pest-control. Such a scenario might also apply to Hierakonpolis, although the rather small size of the Feature E cats is puzzling, especially when compared to the Roman cat from Quseir. Perhaps the Quseir cat was a wild specimen that was tamed and the HK6 specimens should be considered domestic? On the other hand, analyses of cat mummies have shown that Egyptian domestic cats are often larger than their present-day wild relatives (Armitage and Clutton-Brock, 1981; Morrison-Scott, 1952). Since this is in contrast to the expected size reduction usually seen as a result of domestication, it has been argued that the large size of those domestic cats may be due to their special status and the care that was taken to keep and feed them (Gautier, 1999). Until more osteological data on modern African wild cat and ancient cats from Egypt become available it will be difficult to establish the precise status of the HK6 cats on that metrical basis.

5. Conclusion

The morphology of the dentaries of the adult cats suggests that they belong to the domestic form if compared to the diagnostic criteria described by Kratochvíl (1973). The measurements of European domestic and wild cats published by Kratochvíl (1976) and used by O'Connor (2007) to establish standards, also point to the domestic form. For the time being, and until wild *F. s. lybica* from north Africa have been analysed from a morphological and osteometrical point of view, these results from Hierakonpolis need to be treated with caution. Most probably, the criteria that allow wild *F. s. silvestris* to be distinguished from the domestic form of *F. s. lybica* at European sites are in fact differences at the subspecies level. Whether the wild and domestic form of *F. s. lybica* can be distinguished using the same criteria needs to be verified. Nevertheless, it is clear that there was a close interaction between these small felids and humans at Hierakonpolis during Predynastic times. The four young animals of 4–5 months of age were from two different litters, and the female of almost a year of age was too young to be their mother. The adult male was over a year of age, but it cannot be verified if it could be related to the kittens. If all these animals are supposed to be taken from the wild, four different captures must be accepted. It seems unlikely that sufficient opportunities for successful capture would have occurred in a short period of time prior to the sacrifice. For that reason it seems that at least some of the cats may have been kept in captivity prior to their burial as was clearly proven for the previously reported jungle cat with its healed fractures (Linseele et al., 2007, 2008). The ages at death moreover show that the natural reproduction cycle, with one birth season in spring, was not followed, a phenomenon that has been observed in Africa among free-ranging wild cats that were hand-reared by humans. Although it is difficult to establish whether the Hierakonpolis cats were tamed cats that were held in (voluntary or involuntary) captivity or rather free-ranging cats living near the settlements, it is clear that there was a close relationship with humans that predate the oldest accepted evidence for domestic cat in Egypt by almost two millennia.

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