Domestication and history of the cat

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Origins of the cat

Although the ancestors of the domestic cat (*Felis silvestris catus*) first appeared about 35 million years ago (MYA) during the late Eocene, the cat family or Felidae, to which all living cat species belong, emerged somewhat later during the Miocene about 10–11 MYA (Johnson & O'Brien, 1997; O'Brien *et al*., 2008). Morphological and molecular studies of phylogenetic relationships among living felids indicate that the 37 extant species can be divided up into 8 major phylogenetic groups or lineages: the *Panthera* lineage; the bay cat lineage; the leopard cat lineage; the caracal lineage; the ocelot, lynx and puma lineages; and, finally, the domestic cat or *Felis* lineage (Collier & O'Brien, 1985; Johnson & O'Brien, 1997; Leyhausen, 1979; O'Brien *et al*., 2008; Salles, 1992). The latter is believed to have diverged from the others around 6.2 MYA, and comprises four species of small cats that seem to have originated around the Mediterranean basin: the jungle cat (*Felis chaus*), the black-footed cat (*F. nigripes*), the sand cat (*F. margarita*) and the wildcat (*F. silvestris*) (O'Brien *et al*., 2008).

The last of these, *F. silvestris*, now inhabits a huge geographic range stretching from southern Africa through Europe to East Asia, and is currently divided into five, relatively distinct allopatric races or subspecies: *F. silvestris bieti* (the Chinese desert cat), *F.s. ornata* (the Central Asian wildcat), *F.s. silvestris* (the European wildcat), *F.s. cafra* (the southern African wildcat), and *F.s. libyca* (the North African/Near Eastern wildcat) (O'Brien *et al*., 2008). The difficulty of distinguishing morphologically between feral domestic cats and local wildcats, as well as occasional interbreeding, has generated a certain amount of disagreement among authorities regarding which of these subspecies gave rise to the domestic cat (*F.s. catus*). For example, based on morphometric and allozyme variability comparisons of ostensibly pure *silvestris*, *libyca* and *catus* populations from Sardinia, Sicily and the Italian mainland, Randi and Ragni (1991) concluded that *libyca* was the most likely ancestor of the domestic cat, and that hybridisation between feral domestic cats and either *libyca* or *silvestris* was 'improbable'. In contrast, a study of pelage and other morphological variation in a large sample of 'wild-living' cats from Scotland challenged the view that wildcats and domestic cats can be reliably distinguished from each other based on physical characteristics (Daniels *et al*., 1998). Anecdotally, Smithers (1968) also reported extensive natural hybridisation between urban feral cats and *F.s. cafra* in southern Africa. These observations suggest that gene flow between domestic, feral and wild populations may be sufficiently common in some areas to effectively blur the morphological and genetic distinctions between them.

Recent genetic studies have put most of these uncertainties to rest. Analyses of variation in mitochondrial and microsatellite DNA[1] have determined that all domestic cats, including purebred and free-roaming animals, are descended from the North African/Near Eastern subspecies, *libyca*, and that domestication probably occurred

[1] Mitochondrial or mtDNA is found in cell mitochondria and is inherited exclusively from the mother. Microsatellite DNA consists of short repetitive sequences of nuclear DNA and is derived from both parents.

somewhere in the Fertile Crescent (the Levant, southern Turkey, and Iraq) of western Asia (Driscoll *et al*., 2007; O'Brien *et al*., 2008). Indeed, surviving subpopulations of *libyca* wildcats from remote desert areas of Israel, United Arab Emirates and Saudi Arabia were found to be almost indistinguishable genetically from domestic cats, further suggesting that the original progenitors of *F.s. catus* came from this same geographic region (Driscoll *et al*., 2007, 2009a).

There are additional reasons favouring *libyca* as the most likely ancestor of the domestic cat. All of the available archaeological evidence points to a North African or western Asian origin for *F.s. catus* (Ahmad *et al*., 1980; Baldwin, 1975; Clutton-Brock, 1981; Todd, 1977; Zeuner, 1963). Behavioural evidence also tends to exclude *silvestris* as the probable ancestor. European wildcats have a reputation for extreme timidity and ferocity when cornered, even when hand-reared as kittens. Experimental attempts to rear them and tame them from an early age have been largely unsuccessful owing to their exceptional shyness and intractability. First-generation hybrids between European wildcats and domestic cats also tend to resemble the wild parent in behaviour (Cameron-Beaumont *et al*., 2002; Pitt, 1944). Although *silvestris* is unlikely to be entirely untamable, it would appear to be a relatively unsuitable candidate for domestication.

Some of the other wildcat subspecies, in contrast, are reported to possess more docile temperaments, and often live and forage in the vicinity of human villages and settlements. On a trip to the southern Sudan during the 1860s, the botanist-explorer, Georg Schweinfurth, observed that the local Bongo people frequently caught these animals when they were kittens and had no difficulty 'reconciling them to life about their huts and enclosures, where they grow up and wage their natural warfare against the rats'. Schweinfurth was himself plagued by rats that periodically devoured his precious botanical specimens. In response, he procured several of these cats which 'after they had been kept tied up for several days, seemed to lose a considerable measure of their ferocity and to adapt themselves to an indoor existence so as to approach in many ways to the habits of the common cat'. By night he attached them to his belongings and by this means he was able to 'go to bed without further fear of any depredations from the rats' (Schweinfurth, 1878, p. 153). Roughly a century later, Reay Smithers (1968, p. 20) found that the wildcats of Rhodesia (Zimbabwe) made interesting, if somewhat demanding, pets. As with *silvestris*, the kittens tended to be intractable at first, but they eventually calmed down and became disarmingly affectionate:

> These cats never do anything by halves; for instance, when returning home after their day out they are inclined to become super-affectionate. When this happens, one might as well give up what one is doing, for they will walk all over the paper you are writing on, rubbing themselves against your face or hands; or they will jump up on your shoulder and insinuate themselves between your face and the book you are reading, roll on it, purring and stretching themselves, sometimes falling off in their enthusiasm and, in general, demanding your undivided attention.

Smithers also noted that these cats were more territorial than domestic cats, and that first-generation hybrids between them were more like the domestic parent in behaviour. The reasons for these striking differences in temperament between the different

subspecies of *F. silvestris* are unknown, although the European wildcat's reputation for 'wildness' would certainly point to a history of relatively intense persecution by humans.

Finally, there are etymological reasons for believing that the cat is of North African or western Asian origin. The English word 'cat', the French 'chat', the German 'Katze', the Spanish 'gato', the fourth-century Latin 'cattus' and the modern Arabic 'quttah' all seem to be derived from the Nubian word 'kadiz', meaning a cat. Similarly, the English diminutives 'puss' and 'pussy' and the Romanian word for cat 'pisicca' are thought to come from Pasht, another name for Bastet, the Egyptian cat goddess (Beadle, 1977). Even the tabby cat appears to be named after a special kind of watered silk fabric, once manufactured in a quarter of Baghdad known as Attabiy (*Chambers 20th Century Dictionary*).

Domestication

Domestication is a gradual process rather than a sudden event, and it is therefore difficult to make precise claims concerning the exact time and place of cat domestication. Bökönyi (1969) has proposed dividing the domestication process into two distinct phases: (1) *animal keeping*, the practice of capturing, taming and keeping animals without any deliberate attempt to regulate their behaviour or breeding; and (2) *animal breeding*, eventually associated with the conscious, selective regulation and control of the animals' reproduction and behaviour. Phase 1, according to Bökönyi, is accompanied by only slight morphological divergence from the wild-type phenotype – usually no more than a slight decrease in body size – and these transitional forms of the species are often physically indistinguishable from the wild ancestor. Phase 2, in contrast, is usually associated with rapid and substantial divergence across a wide range of physical traits. Other important archaeological markers of full domestication include the occurrence of the species outside the geographical range of the ancestral species, artistic representations of the animal in an obviously domesticated state, and material objects associated with animal breeding and husbandry (Bökönyi, 1969).

Based on these kinds of criteria, it could be argued that the cat was only fully domesticated during the last 200 or so years, although it is probably more accurate to view *Felis s. catus* as a subspecies that has drifted unpredictably in and out of various states of domestication, semi-domestication and feralness depending on the particular ecological and cultural conditions prevailing at different times and locations. Where and when Bökönyi's transitional *animal keeping* phase of domestication began for the cat is largely a matter of speculation. However, archaeological evidence from the Mediterranean island of Cyprus has provided important clues. Since its formation, the island of Cyprus has remained separated from mainland Asia Minor by a distance of some 60–80 km. As a result, it has no native cat species. Nevertheless, excavations at the sites of Khirokitia and Shillourokambos, some of the earliest human settlements on Cyprus dating from about 9500 years before the current era (BCE), have unearthed the unmistakable remains of cats, one of which was buried in association with a person.

The relatively large size of these animals suggests that they belonged to the subspecies *libyca*, and their presence on the island, living and dying in association with people, strongly implies that they were tamed and brought there in boats by the first human colonists. Assuming that Cyprus was not an isolated instance of cat taming, these discoveries indicate that the early Neolithic inhabitants of the Levant were already in the habit of capturing and taming wildcats, and taking them on ocean voyages, at least as early as 10 000 years BCE (Davis, 1987; Groves, 1989; Vigne *et al*., 2004). Significantly, this date also closely corresponds to the date when the domestic cat lineage is believed to have separated from its *libyca* origins based on genetic evidence (Driscoll *et al*., 2007).

Fragments of bone and teeth, identified as probably belonging to *F.s. libyca*, have also been excavated from Protoneolithic and Pre-Pottery Neolithic levels at Jericho, dating from between 7000 and 8000 years BCE. Although there are no obvious osteological indications that these animals were domesticated, and it is possible that they represent the remains of wildcats killed for food or pelts, it appears likely, in light of the Cyprus discoveries, that these animals were also tamed or semi-domesticated (Clutton-Brock, 1969, 1981). The earliest known cat remains from Mostagedda in Egypt, dating from sometime before 6000 years ago, were also found, together with the bones of a gazelle, in the grave of a man (Malek, 1993).

Why cats were domesticated

The most widely accepted account of cat domestication posits that cats essentially domesticated themselves. According to the prevailing narrative, the advent of agriculture in the Middle East around 11 000 years ago, and the associated cultivation and storage of grains, such as barley and wheat, attracted the unwelcome attentions of small rodents, the natural prey of wildcats. Drawn by this local abundance of food, wildcats then invaded and colonised Neolithic towns and villages whose human inhabitants immediately saw the benefits of allowing these animals to live around their rodent-infested homes and granaries. This process, in turn, selected for the bolder, less-flighty individuals who eventually became the founders of permanent, urban domestic cat populations that relied increasingly on humans for food and shelter (Clutton-Brock, 1981; Driscoll *et al*., 2009a; Faure & Kitchener, 2009; Leyhausen, 1988; Malek, 1993; Zeuner, 1963). While this hypothetical scenario is superficially plausible, and certainly appealing to those who appreciate the cat's proverbially independent spirit, it tends to underestimate the active role that humans have played in the process of animal domestication through their habit of capturing and taming wild animals and keeping them as pets (Serpell, 1989).

Pet-keeping of this kind is extraordinarily widespread among living and recent hunting and horticultural societies, and there is no obvious reason to think that the inhabitants of the Neolithic Near East were any different. In the Amazon region, where hunting and gathering and subsistence horticulture is still practiced by a handful of surviving Amerindian groups, hunters commonly capture young wild animals and

take them home where they are then adopted as pets, usually – although not invariably – by women. Such pets are fed and cared for with great enthusiasm. Typically, they are never killed or eaten, even though they may belong to edible species, and often they are mourned when they die of natural causes. A vast array of different birds and mammal species are kept in this way including members of the cat family, such as margay, ocelot, jaguarundi, and even jaguar (Serpell, 1989; 1996). More to the point, these animals do not need to serve any functional or economic purpose in order to be valued by their owners. Rather, they are viewed, cared for, and indulged much like adopted children (Serpell & Paul, 2011). Based on these sorts of observations, it could be argued that the domestication of *F.s. libyca* occurred where and when it did because tamed wildcats were already an integral feature of village life as a result of people actively adopting, hand-rearing and socialising young wildcats to keep as pets (Erikson, 2000; Galton, 1883; Reed, 1954; Sauer, 1952; Serpell, 1989; Zeuner, 1963). Indeed, the practice of burying cats with their owners in early Neolithic Cyprus strongly implies that these primordial human–cat relationships were based on emotional considerations rather than mere utility (Vigne *et al*., 2004).

The Neolithic advent of agriculture, with its settled farming communities, storage of harvested grain, and resulting proliferation of commensal rodents would certainly have enhanced the instrumental value of feline pets, as well as providing them with a more permanent ecological niche in which to flourish. However, it is unlikely that domestication would have proceeded at all in the absence of pre-existing social bonds between humans and cats.

The cat in Egypt

On the basis of current evidence, it is likely that the cat first attained fully domesticated status (*sensu* Bökönyi, 1969) in ancient Egypt, although, again, the probable date of this event is, at best, an approximation (Faure & Kitchener, 2009). Although small Egyptian amulets representing cats may date from as early as 2300 BCE, the oldest pictorial representation of a cat in a domestic or household context dates from around 1950 BCE, and depicts a cat confronting a rat in a painting from the tomb of Baket III at Beni Hasan. In a small pyramidal tomb of similar age, Flinders Petrie excavated a chapel containing the bones of 17 cats together with a row of little pots that may once have contained offerings of milk (Beadle, 1977; Malek, 1993; Mery, 1967). From about 1450 BCE onwards, images of cats in domestic settings become increasingly common in Theban tombs, and it is likely that these animals were fully domesticated. The cats are usually illustrated sitting, often tethered, under the chairs of the tomb-owners' wives, where they are shown eating fish, gnawing bones, or playing with other household pets. Although they comprise only a very small element of the paintings, the fact that they are there at all suggests that the presence of cats in Egyptian households was, by this time, taken for granted (Malek, 1993). Another popular motif in Theban tomb paintings – beautifully exemplified by the tomb of Nebamun, about 1450 BCE – depicts the cat 'helping' the tomb-owner and his family to hunt birds in the

marshes. Although some authorities have accepted this as evidence that aristocratic Thebans actually used house cats either to flush or retrieve game birds (Baldwin, 1975), the Egyptologist, Jaromir Malek (1993), cautions against taking these representations too literally. In his view, the marsh hunting scenes were largely imaginary and idyllic, and the artistic conventions of the period simply dictated that any representation of a family outing of this kind would have been considered incomplete without the additional participation of the family pet.

Because the ecological opportunities for cats in ancient Egypt were probably similar to those presented by other large agrarian civilisations in western Asia, it is necessary to offer some reason why cat domestication apparently proceeded further in Egypt than it did elsewhere in the ancient world. One plausible explanation may lie in the Egyptians' unusual affinity for animals in general. From the earliest dynasties onwards, animals appear to have played a particularly prominent role in Egyptian social and religious life. A diverse range of wild animals, including baboons, jackals, hares, mongooses, hippos, crocodiles, lions, frogs, herons, ibises and cats, came to be viewed as the earthly representatives of gods and goddesses, and many were the objects of organised religious cults (Smith, 1969). Cult practices often involved keeping and caring for substantial captive populations of these animals in and around temples dedicated to the worship of the appropriate deities. Species such as cats, which responded well to this sort of treatment, presumably bred in captivity, and so gave rise, over many generations of captive breeding, to a domestic strain more docile, sociable, and tolerant of living at high densities than its wild progenitor. The rodent-catching abilities of cats no doubt added to their value, but it seems likely that the Egyptians would have kept them as cult objects and as household pets regardless of any practical or economic advantages.

According to Malek (1993, p. 74), ancient Egyptian religion was 'a vast and unsystematic collection of diverse ideological beliefs which developed in different parts of the country in prehistoric times'. As a result, the belief systems of the Egyptians often appear little short of chaotic, with innumerable gods and goddesses – part human, part animal – merging, hybridising and diverging over time to produce a confusing array of bizarre and exotic deities. Most of these gods and their animal representatives originated in predynastic times as tribal emblems or *totems* which were then consolidated, under the Egyptian State, into a complex pantheon along the lines of those found in ancient Greece and Rome. As might be expected from their tribal and regional origins, the shifting status of these different deities often reflected the changing political fortunes of particular areas and groups within Egypt (see Mackenzie, 1913; Malek, 1993).

Until the end of the third millenium BCE, *Felis s. libyca* appears to have been of little or no religious significance to the ancient Egyptians. From roughly 2000 to 1500 BCE, however, cats began to be represented on so-called 'magic knives': incised ivory blades that were intended to avert misfortune, including accidents, ill health, difficulties in childbirth, nightmares, and the threat of poisonous snakes and scorpions. At roughly the same time, the male cat began to be represented as one of the forms or manifestations of the sun god, Ra, and it was in the guise of a tomcat that the sun god was believed to battle each night with the typhonic serpent of darkness, Apophis (Howey, 1930;

Malek, 1993). The Egyptians were doubtless familiar with the sight of cats killing snakes, and they evidently assumed that Ra would adopt the form of this animal when required to do likewise. The earliest representations of Ra in cat form depict animals that more closely resemble servals than cats, and it is probable that the switch to *F.s. libyca* coincided with this animal's increasing familiarity as a domestic pet. One of the cat forms of Ra known as 'Miuty' continued to be painted on the interior of coffins until the middle of the eighth century BCE, presumably as a protective or 'apotropaic' image.

During the New Kingdom (1540–1196 BCE) cats also began to be associated with the goddess, Hathor, and particularly one of her manifestations known as Nebethetepet, whose most salient characteristic was sexual energy. The natural sexual promiscuity of female cats (see Chapter 7) was perhaps responsible for this link. The well-known association of domestic cats with the goddess Bastet did not become established until later, probably around the beginning of the first millennium BCE (Malek, 1993).

The cult of Bastet

From the earliest period of Egyptian history, Bastet was the chief deity of the city of Bubastis (now Tell Basta) in the southeastern part of the Nile Delta. She was a goddess without a real name, as Bastet means simply 'She of the City of Bast'. The earliest portraits of Bastet, dating from about 2800 BCE, clearly depict her as a woman with the head of a lioness. On her forehead she bears the uraeus (serpent) symbol, and she carries a long sceptre in one hand and the *ankh* sign in the other. Her attributes appear to have included sexual energy, fertility, child-bearing and motherhood.

Despite her origins in Bubastis, Bastet soon came to be associated with other localities in Egypt, notably Memphis, Heliopolis and Heracleopolis. En route, and presumably through a process of local assimilation, she also became closely linked with a number of other important female deities, particularly Mut, Pakhet and Sekhmet (three goddesses who were also often represented as lioness-headed), as well as Hathor, Neith and Isis. Bastet and Sekhmet began to be paired as complimentary opposites as early as 1850 BCE, and eventually came to be thought of as different aspects of the same goddess: Bastet representing the protective, nurturing aspects and Sekhmet the dangerous and threatening ones (Malek, 1993). Along with Hathor, Mut and Isis, Bastet was also sometimes referred to as the daughter or 'eye' of Ra.

It is not known precisely when domestic cats first came to be regarded as manifestations of Bastet, but it is likely that this occurred during the Twenty-second Dynasty (about 945–715 BCE), when the city of Bubastis rose to prominence during a long period of political instability in Lower Egypt. According to the Ptolemaic historian, Manetho, the Egyptian ruling family at this time was probably of Libyan extraction, and originated in Bubastis. As a result, the city became a major political centre and the scene of extensive building operations. Archaeological evidence suggests that the temple of Bastet was in a ruinous state at the beginning of this period, but it appears that several of the Bubastite pharoahs, particularly Osorkon I and Osorkon II, devoted considerable time and expense to its recontruction and expansion (Naville, 1892).

Contemporary information about the cult of Bastet, and her temple, is derived largely from the writings of the Greek historian, Herodotus, who visited Bubastis around 450 BCE during the heyday of the cult. Herodotus (1987, p. 191) equated Bastet with the Greek goddess, Artemis, and described her temple in the following glowing terms:

> There are greater temples, and temples on which more money has been spent, but none that is more of a pleasure to look upon . . . Save for the entrance, it is an island. For two channels from the Nile approach it, not mingling with one another, but each approaches it as far as the entrance, the one running round from one direction and the other from the opposite. Each is one hundred feet wide and shaded with trees. The propylaea [entrance] is sixty feet high and decorated with striking figures, nine feet high. The shrine stands in the middle of the city, and, inasmuch as the city has been raised high by the embankments and the shrine has not been stirred from the beginning, the shrine can be seen into from all sides. There runs round it a dry-wall, carved with figures, and within it a grove is planted round the great temple, with the hugest of trees, and in that temple there is an image. The temple is a square, a furlong each side. At the entrance there is a road made of laid stone, running for about three furlongs through the marketplace toward the east, and in breadth it is four hundred feet wide. On both sides of the road are trees towering to the sky.

Although Herodotus does not mention this specifically, it is likely that a sacred cattery or breeding colony of cats adjoined the temple. The job of 'cat keeper' was a hereditary position in Egypt, and strict rules evidently governed the care and feeding of these captive manifestations of the deity (Herodotus, 1987, p. 159).

The annual festival of Bastet, during April and May, was probably the largest in Egypt. As many as 700 000 people attended, having first performed a pilgrimage by water along the Nile. The ribald and licentious atmosphere described in Herodotus's (1987, p. 157) eye-witness description, may help to explain the great popularity of the Bastet cult:

> Some of the women have rattles and rattle them, others play the flute through the entire trip, and the remainder of the women and men sing and clap their hands. As they travel on toward Bubastis and come near some other city, they edge the boat near the bank, and some of the women do as I have described. But others of them scream obscenities in derision of the women who live in that city, and others of them set to dancing, and others still, standing up, throw their clothes open to show their nakedness. This they do at every city along the riverbank. When they come to Bubastis, they celebrate the festival with great sacrifices, and more wine is drunk at that single festival than in all the rest of the year besides.

There is little reason to doubt the authenticity of Herodotus's account. Although superstitiously reticent about the theological details of Egyptian religion, he seems to have been a remarkably keen observer. Among other things, he was apparently the first to record the now well-known phenomenon of male infanticide in cats. 'When female cats give birth', he wrote, 'they will no longer frequent the toms, and the latter, for all their desire to mate with them, cannot do so. So they contrive the following trick. They steal and carry off the kittens from their mothers and kill them; but although they kill them, they do not eat them. The females deprived of their young and eager to have more, go then, and then only, to the toms; for cats are a breed with a great love of children' (Herodotus, 1987, p. 160).

The status of cats during this period of Egyptian history seems to have been roughly equivalent to that of cows in present-day India. Many people owned pet cats, and the death of one sent the entire family into mourning, shaving their eyebrows as a mark of respect.

Those who could afford it had their pets embalmed and buried in special cat cemeteries, vast underground repositories containing the mummified or cremated remains of hundreds of thousands of these animals. Cat cemeteries have been unearthed not only at Bubastis, but also at Beni Hasan and Saqqara, a clear indication of the spread of the cult of Bastet. Large numbers of small bronze statuettes of cats were also deposited in these sacred burial grounds. The act of dedicating one of these votive statuettes to the temple apparently assured the giver a permanent place at the side of the goddess (Naville, 1892; Malek, 1990). In 1888, one of these cemeteries was accidentally uncovered by a farmer, and the remains inside proved to be so numerous that an enterprising businessman decided to ship them to England for conversion into fertiliser. One consignment of 19 tons of mummified bones that arrived in Manchester was estimated to have contained the remains of 80 000 cats. The new soil additive, however, was mysteriously unpopular with English farmers, and the business venture proved to be a failure (Beadle, 1977).

Cats were a protected species in Egypt, and causing the death of one, even by accident, was a capital offence. Consequently, anyone encountering a dead cat fled immediately from the scene, lest others should think that they had a hand in its demise. Diodorus Siculus, writing in about 50 BCE, recorded a diplomatic incident involving a cat during a rather sensitive period in Romano-Egyptian relations. A Roman soldier made the mistake of killing one and 'neither the officials sent by the king to beg the man off, nor the fear of Rome which all the people felt' were sufficient to save him from being lynched by an angry mob. It is apparent from archaeological evidence, however, that the proscription against killing cats did not extend to those in charge of the temple catteries, at least during the Late and Ptolemaic Periods (c. 664–30 BCE). Radiographic analysis of cat mummies from this period has revealed that most of the animals were deliberately killed or 'sacrificed' by strangulation before they reached 2 years of age, presumably in order to supply the demand for dead cats to mummify as votive offerings (Armitage & Clutton-Brock, 1981).

Out of Africa

The Egyptians generally restricted the spread of cats to other countries by making their export illegal. They even sent special agents out to neighbouring parts of the Mediterranean to buy and repatriate cats that had been illicitly smuggled abroad (Howey, 1930; Aberconway, 1949; Dale-Green, 1963; Mery, 1967; Beadle, 1977). Despite all these precautions, cats did eventually spread to other areas although, initially, progress was slow. The Indus valley Harappan civilisation (*c*. 2100–2500 BCE) has yielded surprisingly early evidence of the presence of urban cats. Bone remains have been excavated from the site of the city of Harappa and, more interestingly, the footprints of a cat being

chased by a dog are preserved in mud brick from the site of Chanu-daro (Ahmad *et al*., 1980). It is not known whether these cats were Egytian imports or the results of local domestication efforts. An ivory statuette of a cat, dating from about 1700 BCE, was found by archaeologists at the site of Lachish in Palestine. Egypt and Palestine enjoyed strong commercial links at this time, and it is likely that Egyptian entrepreneurs lived there and brought their cats with them. A fresco and a single terracotta head of a cat (about 1500–1100 BCE) are also known from late Minoan Crete, another area with which Egypt probably had strong maritime connections.

The cat does not appear to have reached mainland Greece until somewhat later. The earliest representation of the animal from Greece is on a marble block (about 480 BCE), now in the Athens Museum. It depicts two seated men, together with various onlookers, watching an encounter between a dog and a cat. The scene conveys an atmosphere of tense expectation, as if the observers were anticipating, and perhaps looking forward to, a fight (Zeuner, 1963). Cats were not apparently common at this time and were kept largely as curiosities, rather than for any practical purpose. When troubled with rodents, both the Greeks and the Romans used domestic polecats or ferrets in preference to cats. During the fifth century BCE, the Greeks introduced cats to southern Italy but, again, the animal does not seem to have been particularly popular, except as a rather unusual and exotic pet. An attractive Neapolitan mosaic, dating from the first century BCE, shows a cat catching a bird but, apart from this, there are few literary or artistic depictions of the species. The Romans failed to recognise the cat's vermin-destroying capabilities until around the fourth century AD, when Palladium recommended the use of cats, rather than the more traditional ferret, for curbing the activities of moles in artichoke beds (Zeuner, 1963; Beadle, 1977). Domestic cats were also slow to reach the Far East, probably arriving in China sometime after 200 BCE. Judging from contemporary illustrations, all of these early cats possessed the wild type, striped or spotted tabby coat colour, and many feral cats around the Mediterranean still retain this ancestral *libyca* appearance.

The Romans were probably responsible for introducing cats to northern Europe and other outposts of their Empire (Faure & Kitchener, 2009). Domestic cats were already present in Britain by the middle of the fourth century AD, and their remains have been found in various Roman villas and settlements in southern England. At Silchester, an important Roman site, archaeologists found a set of clay tiles bearing the impression of cat footprints. By the tenth century, the species appears to have been widespread, if not common, throughout most of Europe and Asia (Zeuner, 1963). Todd (1977) has pointed out that the cat owes much of its colonising abilities to the fact that it adjusts well to shipboard life. Judging from its present distribution, for example, the sex-linked orange colour mutant (i.e. ginger, ginger and white, calico and tortoiseshell) appears to have originated in Asia Minor, and to have then been transported, possibly in Viking long ships, to Brittany, northern Britain and parts of Scandinavia. Similarly, the tenth-century English blotched tabby mutant seems to have spread down a corridor through France along the valleys of the rivers Seine and Rhône. For centuries these rivers have formed part of an important inland barge-route between the Channel Ports and the Mediterranean.

The majority of modern cat breeds are of very recent origin and only a few, such as the Turkish Angora and Van cats, originated earlier than 1800. Twenty-two of the 38 recognised breeds were registered only within the last 100 years. The older 'foundation' breeds represent landraces – that is, naturally isolated geographic populations in which distinctive morphological traits became fixed due to founder effect and genetic drift – while the more recent breeds are mainly the products of deliberate hybridisation and selection from among these older forms (Lipinski *et al*., 2008; Menotti-Raymond *et al*., 2008).

Changes in attitude

The gradual extinction of the pagan gods and goddesses, and the rise and spread of Christianity, produced a dramatic change in attitudes to cats throughout Europe. From being essentially benevolent symbols of female fertility, sexuality and motherhood, they became, instead, the virtual antithesis; malevolent demons, agents of the Devil, and the traitorous companions of witches and necromancers. It is not all clear what motivated this change in the perception of cats, although political forces doubtless played a part. In order to consolidate its power, the medieval Church sometimes found it necessary to employ extreme ruthlessness in suppressing unorthodox beliefs, and extirpating all trace of earlier pre-Christian religions. Perhaps because of its symbolic links with earlier fertility cults, the cat was simply caught up in this wave of religious persecution (Russell, 1972; Engels, 1999).

Between the twelth and the fourteenth centuries, nearly all the major heretical sects – the Templars, the Waldensians, the Cathars – were accused of worshipping the Devil in the form of a large black cat. Many contemporary accounts described how their rituals involved the sacrifice of innocent children, cannibalism, grotesque sexual orgies, and obscene acts of ceremonial obeisance toward huge cats which were supposedly kissed on the anus (*sub cauda*). Many heretics, needless to say, admitted to engaging in such practices when subjected to physical torture. Alan of Lille in the twelfth century even attempted to derive the term 'Cathar' from the Old Latin word for cat, *cattus*. In reality, the Cathars derived their name from the Greek word *Katharoi*, meaning 'the pure ones' (Cohn, 1975; Russell, 1972).

Under Christianity, cats also came to be closely associated with witchcraft, although the nature of this association varied from place to place. In continental Europe, ecclesiastical and secular authorities during the fifteenth, sixteenth and seventeenth centuries had tended to depict witchcraft as another form of heresy; in other words, as an organised cult of Devil-worshippers that existed in opposition to the true faith. Like their heretical predecessors, witches were said to fly to their gatherings or 'sabbats', sometimes on the backs of demons disguised as giant cats. The Devil also displayed a strong preference for appearing to his disciples in the form of a monstrous cat (Cohn, 1975; Kieckhefer, 1976; Russell, 1972).

At the level of popular or 'folk' culture, it was more common, at least in northern Europe, for people to view both cats and hares as the preferred forms adopted by witches when engaging in acts of malefice. As early as 1211 AD, Gervase of Tilbury

attested from personal experience to the existence of women, 'prowling about at night in the form of cats' who, when wounded, 'bear on their bodies in the numerical place the wounds inflicted upon the cat, and if a limb has been lopped off the animal, they have lost a corresponding member' (Summers, 1934, p. 194). In 1424 a shape-shifting witch named Finicella was burned in Rome for allegedly attempting to kill a neighbour's child whom she visited in the form of a cat. The child's father managed to drive the cat away, wounding it at the same time with a knife. Later Finicella was found to have a similar wound on precisely the same part of her body (Russell, 1972). Stories of this type are extremely widespread in medieval and post-medieval witchcraft folklore, and they provide an interesting connection with another well-known diabolical role of the cat: that of the archetypal witch's 'familiar' (Beadle, 1977; Campbell, 1902; Dale-Green, 1963; Howey, 1930; Mery, 1967; Serpell, 2002; Summers, 1934).

Briefly defined, the familiar or 'imp' was a demonic companion whom the witch dispatched to carry out her evil designs in return for protection and nourishment. Although it crops up from time to time all over Europe, the concept of the familiar achieved its most elaborate and vivid expression during the English witch trials of the late sixteenth and seventeenth centuries (Serpell, 2002). A fairly typical example is provided by the 1582 trial of Ursula Kemp, during which her illegitimate son testified that his mother possessed:

> four several spirits, the one called called Tyffin, the other Tyttey, the third Pygine, and the fourth Jacke: and being asked of what colours they were, saith that Tyttey is like a little grey cat, Tyffin is like a white lambe, Pygine is black like a toad, and Jacke is black like a cat. And hee saith, hee hath seen his mother at times to give them beere to drinke, and of a white Lofe or Cake to eat, and saith that in the night time the said spirites will come to his mother, and sucke blood of her upon her armes and other places of her body.

Various local women also came forward to testify that Kemp had used her familiars to make either them, or their children, ill (Ewen, 1933). Even in this relatively early trial, cats already predominate in the role of witch's familiar. They continued to do so throughout the entire period of witch persecution in England (see Figure 7.1), and have since become the ubiquitous ingredient of all modern Halloween iconography.

As demons incarnate, it might be assumed that these animal familiars possessed a degree of autonomy. Judging from various contemporary accounts, however, the line separating the 'cat familiar' from the 'cat-as-transformed-witch' was a thin one, at least in the popular imagination. In several cases, witches were reported to suffer parallel injuries when their familiars were wounded, and sometimes it is clear that prosecution witnesses believed that the familiar was simply the witch herself transmogrified. In the notorious case of the Walkerne witch, Jane Wenham, in 1712, several witnesses not only testified to being visited and 'tormented' by her cats, but also reported that one of these cats had the face of Jane Wenham. Jane Wenham was one of the last people to be formally condemned for witchcraft in England. Thanks to pressure from an increasingly skeptical London public, the verdict was eventually overturned and she was pardoned (Ewen, 1933; Serpell, 2002; Summers, 1934).

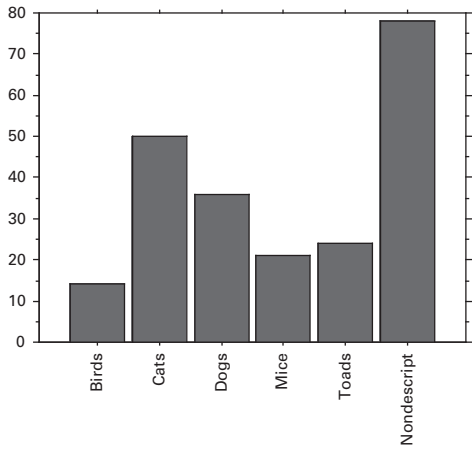

Figure 7.1 Frequencies with which different animal species feature as 'familiars' or 'imps' in a total of 207 English witch trials between 1563 and 1705 (because of their particularly aberrant nature, the trials brought by Matthew Hopkins and John Stearne in 1645–46 are not included in this analysis). NB: If the 'nondescript' category is ignored, cats are the most frequently reported familiars.

Some of the hostility toward cats that emerged during this period may have had a medical basis. Witchcraft folklore abounds with stories of witches adopting the form of cats specifically in order to sneak into people's houses to smother them in their sleep (Briggs, 1996). In what is probably one of the earliest references to allergic asthma, Edward Topsell, writing in 1607, maintained that 'the breath and favour of Cats consume the radical humour and destroy the lungs, and therefore they which keep their Cats with them in their beds have the air corrupted, and fall into several Hecticks and consumptions'. Even as recently as the 1920s, local superstitions held that it was unsafe for a cat to sleep in a child's cot or bed because of the danger of suffocation (Opie & Tatum, 1989), and a recent survey in the USA found that respiratory allergies are one of the most common reasons given by people for relinquishing pet cats (but not dogs) to animal shelters and SPCAs (Scarlett *et al*., 1999).

Another source of ambivalence was the widespread belief that a cat's eye changes in shape and luminescence according to both the height of the sun in the sky, and the waxing and waning of the moon. The Egyptian author, Horapollon, writing in the fourth or fifth century AD, noted that the pupils of the cat's eye changed according to the course of the sun and the time of day. The Roman writer, Plutarch, also mentioned the phenomenon, as did the English naturalist, Edward Topsell, in his *Historie of Foure-Footed Beastes* (1607):

> The Egyptians have observed in the eyes of a Cat, the encrease of the Moonlight, for with the Moone, they shine more fully with the ful, and more dimly in the change and wain, and the male Cat doth also vary his eyes with the sunne; for when the sunne ariseth, the apple [pupil] of his eye is long; towards noone it is round, and at the evening it cannot be seene at all, but the whole eye sheweth alike.

The conspicuous eye shine produced by cats' eyes at night intrigued many early writers. The majority seems to have believed that cats were able to generate this light themselves

by storing light collected during the day (Aberconway, 1949). Many found the phenomenon disconcerting. Topsell, for example, states that the glittering eyes of cats, when encountered suddenly at night, 'can hardly be endured, for their flaming aspect'.

With such a wealth of negative associations, it is not altogether surprising that cats became the objects of widespread persecution throughout Europe during the Middle Ages and the early modern period. On feast days, as a symbolic means of driving out the Devil, cats, especially black ones, were captured and tortured, tossed onto bonfires, set alight and chased through the streets, impaled on spits and roasted alive, burned at the stake, plunged into boiling water, whipped to death, and hurled from the tops of tall buildings; and all, it seems, in an atmosphere of extreme festive merriment. Anyone encountering a stray cat, particularly at night, also felt obliged to try and kill or maim it in the belief that it was probably a witch in disguise (Dale-Green, 1963; Darnton, 1984; Engels, 1999; Howey, 1930). By associating cats with the Devil and misfortune, the medieval Church seems to have provided the superstitious masses of Europe with a sort of universal scapegoat; something to blame and punish for all of life's numerous perils and hardships.

A powerful element of misogyny also seems to have underpinned this animosity toward cats. Medieval and early modern Christianity was dominated by an overwhelmingly male priest-hood with distinctly ambivalent attitudes toward women. This love–hate relationship with femininity was exemplified by the image of the asexual and immaculate Blessed Virgin on the one hand and Eve, the begetter of original sin, on the other. Deriving their authority from Aristotle, ecclesiastical scholars of the period not only promulgated the view that women were the weaker and more imperfect sex, but also portrayed them as lascivious temptresses with insatiable carnal appetites who used their sexual charms to beguile, bewitch and subvert men. These same characteristics also predisposed women to witchcraft, because, as one commentator put it, the Devil tends to resort, 'where he findeth easiest entrance, and best entertainment' (Clark, 1997, p. 113). Medieval clerics also accepted Aristotle's evaluation of the female cat as a peculiarly lecherous creature that solicits sexual attentions indiscriminately from any available male (Rowland, 1973). Thus, a strong metaphorical connection was established between cats and the more threatening aspects of female sexuality (Darnton, 1984).

No doubt the natural behaviour of cats helped to reinforce this association. Female cats, especially when in oestrus, solicit physical contact, and enjoy being stroked and caressed. But they are also notoriously coy and unpredictable; demanding affection at one moment, scratching or running away the next. Sexually, the female cat is highly promiscuous, unashamedly inviting the attentions of several males. She is also a back-biter, however, often turning and attacking her partner immediately after copulation. For the ancient Egyptians, these ordinary feline attributes, together with maternal devotion, were evidently admired and celebrated. For the sexually repressed clerics of medieval and early modern Europe, however, they seem to have inspired a mixture of horror and disgust.

Europe was not the only region to draw negative links between cats and women. Malevolent, spectral cats were a common element of oriental folklore, and in Japan, popular legends existed of monstrous vampire cats which assumed the forms of women in order to suck the blood and vitality from unsuspecting men. The Japanese also

applied the word 'cat' to Geishas on the grounds that both possessed the ability to bewitch men with their charms. According to superstition, the tail was the source of the cat's supernatural powers, and it was common practice in Japan to cut off kittens' tails to prevent them turning into demons later in life (Dale-Green, 1963). This belief may also help to explain the origin of the genetically unique, bob-tailed cats of Japan.

Finally, the cat's somewhat ambivalent relationship with human society provides another possible clue to its victimisation. Together with the dog, the cat is one of the few domestic species that does not need to be caged, fenced in, or tethered in order to maintain its association with people. Cats, however, tend to display a degree of independence that is uncharacteristic of dogs, and which inclines them to wander at will, and indulge in noisy sexual forays, particularly during the hours of darkness. In other words, cats lead a sort of double life – half domestic, half wild; part culture, part nature – and it was perhaps this failure to conform to human (and especially male) standards of proper conduct that led to their subsequent harassment.

According to Jung (1959), animals are often used to express, 'unconscious components of self'. Whether they are perceived in positive or negative terms as a result of this self-identification, however, depends presumably on the individual moral perspective of the person or culture involved. During the Middle Ages, church authorities went to considerable efforts to establish and maintain an absolute distinction between humans and other animals (Salisbury, 1994; Serpell, 1996; Thomas, 1983). By exploiting the comforts of domestic existence while, at the same time, enjoying the pleasures of a wild night on the tiles, the cat perhaps invited official condemnation and persecution by challenging this conveniently dichotomous worldview. Attitudes to dogs during this period differed according to class. Like the cat, ordinary street dogs, mongrels and curs became symbols of mankind's baser qualities – gluttony, crudity, lust, etc. The pets and hunting companions of the nobility, on the other hand, represented loyalty, fidelity, obedience and other desirable human attributes (Thomas, 1983). The latter image of the dog is nowadays prevalent in western countries, but the image of the cat remains tarnished, to some extent, by its older unruly reputation.

Although behavioural characteristics of animals often provide the basis for intolerant or disparaging attitudes, it should be emphasised that such effects are culturally constructed. In the majority of Islamic countries, for instance, attitudes to dogs and cats are more or less reversed. The dog is regarded as unclean, and touching one results in defilement (Serpell, 1995). Cats, on the contrary, are tolerated and, to some extent, admired.

Modern attitudes

From its sacred origins in ancient Egypt, the domestic cat has now spread to virtually every corner of the inhabited world. Indeed, across most of Europe and North America the species has now overtaken the dog as the most popular companion animal (Messent & Horsfield, 1985; Serpell, 1996). This trend, however, is comparatively recent. In his best-selling *Histoire Naturelle*, published in the latter half of the eighteenth century, Georges Louis Leclerc, le comte de Buffon, described the cat as a perfidious

animal possessing 'an innate malice, a falseness of character, a perverse nature, which age augments and education can only mask'. Buffon also loudly reasserted medieval ideas concerning the female cat's insatiable craving for sex: 'she invites it, calls for it, announces her desires with piercing cries, or rather, the excess of her needs … and when the male runs away from her, she pursues him, bites him, and forces him, as it were, to satisfy her' (cited in Kete, 1994, pp. 118–119). In nineteenth-century zoological literature, according to Ritvo (1985), cats were the most frequently and energetically vilified of all domestic animals. Whereas the dog was admired for its loyalty and obedience, the cat was despised and distrusted for its lack of deference and its failure to acknowledge human dominion. Cats were also negatively portrayed as 'the chosen allies of womankind'. In nineteenth-century Paris, and, one assumes, elsewhere in Europe, cats came to be associated with artisans and intellectuals, by virtue of their independence, and apparent lack of obedience to social mores and conventions (Kete, 1994). This represented a significant turning point in attitudes to cats, and presaged their widespread adoption into bourgeois society as fashionable middle-class pets.

Attitudes to cats remain, nonetheless, ambivalent to this day. In a large survey of contemporary American attitudes to animals, Kellert and Berry (1980) found that 17.4% of those questioned expressed some dislike of cats, as against only 2.6% who disliked dogs. Contemporary statistics on animal cruelty derived from humane societies and animal protection groups in the USA indicate that cats are still the most frequent victims of the more extreme forms of abuse, including burning, beating, torturing, mutilation, suffocation, drowning and being thrown from heights (Lockwood, 2005). The sporadic popularity of anti-cat literature seems also to reflect latent animosity toward felines. The small book of cartoons entitled *A Hundred and One Uses of a Dead Cat* (Bond, 1981) became a world bestseller, and sold over 600 000 copies in the first few months after publication. Various similar titles, such as the *I Hate Cats Book*, *The Second Official I Hate Cats Book* and *The Cat Hater's Handbook*, were also highly successful (Van de Castle, 1983). It is difficult to imagine *A Hundred and One Uses of a Dead Dog* or a *Dog Hater's Handbook* achieving the same levels of popularity, and the fact that such books have not appeared in print suggests that publishers do not regard them as viable commercial propositions.

Many people continue to regard the sudden appearance of a cat as a sign of bad luck, and others fear or dislike these animals, perceiving them as furtive and untrustworthy. The cat's longstanding association with women and female sexuality is still implied by the slang use of terms, such as 'cat house' or 'pussy', and although research in this area is sparse, it is also tentatively confirmed by the results of some attitudinal surveys. A study of 3862 children aged between 8 and 16, for example, found that 18% of girls questioned described the cat as the animals they would most like to be, while only 7% of boys gave the same response. Dogs, in contrast, were chosen with almost equal frequency – 34% and 32%– by both sexes (Freed, 1965). In all likelihood, this legacy of negative attitudes to cats will continue to dissipate, as increasing numbers of people learn to appreciate the benefits of living with this clean, affectionate, and essentially companionable species.

Concluding remarks

Molecular, archaeological and behavioural evidence suggests that the domestic cat was originally derived from the North African/Near Eastern wildcat, *Felis silvestris libyca* sometime around 10 000 years BCE, and probably attained full domestication in Ancient Egypt about 4000 years ago. Cats have been valued since antiquity for their rodent-catching abilities, and they have also acquired religious, symbolic and emotional value in many societies. Attitudes towards them as symbols, however, have ranged from reverence to abhorrence. In ancient Egypt, cats were worshipped and jealously protected as representatives of Bastet, a goddess of fertility and motherhood. In medieval and early modern Europe, on the contrary, cats became a metaphor for female sexual depravity and social unruliness, and were persecuted and despised for their alleged links with witchcraft and the Devil. In symbolic terms, cats still appear to excite a certain ambivalence of feeling in many Western countries, although within the last few decades they have successfully overtaken the dog as the world's most popular companion animal.