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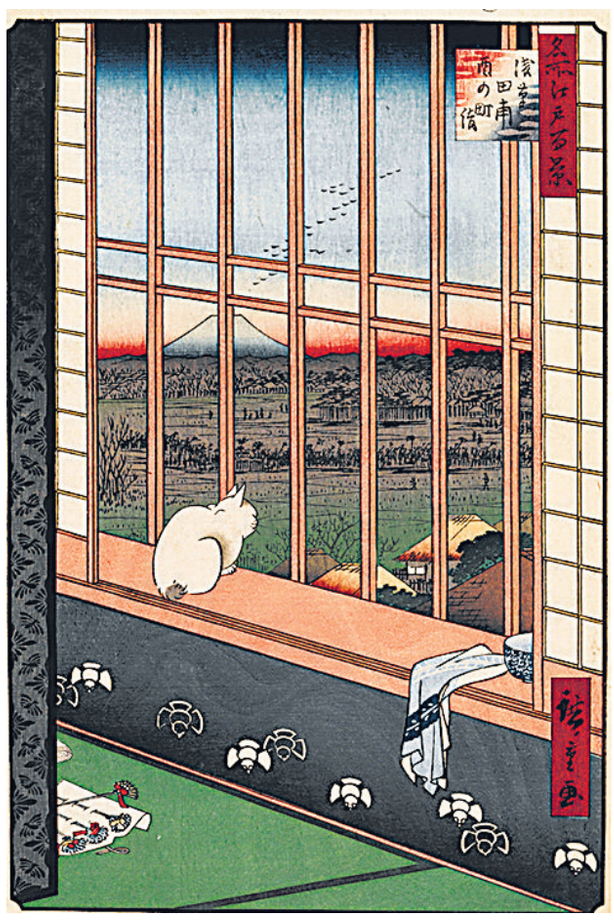

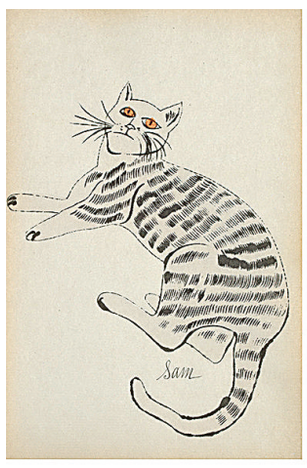

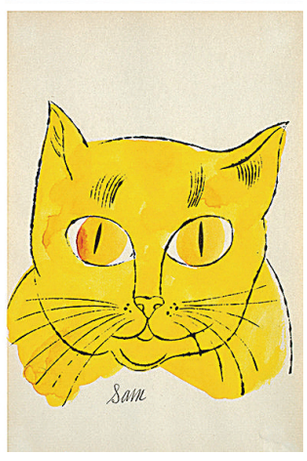

How to train your human

There have been cat people for thousands of years. (Read on for a few of their stories.) And yet, in all the world, only one species of wildcat has deigned to be domesticated. Somewhat. Our felines remain 'peculiar' in a number of ways, as one researcher puts it. They hold on to their hunting abilities and independence. They don't always wait to be adopted. See how they have changed, in our midst; how new research is updating the arc of our bond. And how we have celebrated, over millennia, the world's most supercilious pet

Gowri S
gowri.s@hindustantimes.com

People who adopt cats often do so in a rather unplanned way.

A cat stalks in, settles down, and suddenly one's life revolves around it.

How exactly did this happen? How did the domestic cat (Felis catus) become the one creature that appears to flip the relationship humans have with domestic animals?

Thousands of years after this relationship began, it still lives by its own rules.

Cats are almost impossible to train (the CIA famously tried to use cats as spies during the Cold War, and spent $20 million on the experiment, before finally admitting defeat). They are notoriously difficult to direct.

"It was like assembling a team of bank robbers," Peter Attencio, director of the film Keanu (2016), has said. (Scan the QR code below right to see why they're still cast, over and over, as filmstars).

Even in the home, one cannot expect to tell a cat what to do.

"What makes them peculiar among domestic animals is that they maintain several aspects of life in the wild. They retain a wild side, despite living in our households," says Claudio Ottoni, evolutionary biologist, cat researcher, and associate professor at the University of Rome Tor Vergata, Italy.

Their hunting instincts remain intact, as does their independence. They may playfully try to swat the cheese off your cracker, but they will not whine for a meal.

The terms of this relationship are, in many ways, ancient. Anthropologists say we first wooed the African wildcat, in our earliest years as settled farmers, to protect a precious asset that was new to us: standing crops.

Wildcats lived on the fringes of human settlements at the time, chasing their natural prey (pests and rodents), and were enticed to stay. Where exactly did they come from?

Fossil records indicate that, 33.9 million years ago, after the Eocene-Oligocene extinction event (an ice age that wiped out about 60% of Europe's endemic mammals), an agile, tree-climbing ancestor of the Felidae family emerged. The civet-like animal has been named Proailurus (Greek for "before cat").

Over millions of years, its body grew more elongated and slender, as it evolved better leaping and hunting skills. Its legs grew longer, with muscles that acted as springs, and were built for short bursts of speed. Its collarbone dwindled and became detached, and its spine grew more flexible, allowing it to twist over and over in mid-air.

This lithe little ancestor to the modern Felidae likely evolved about 10 million years ago.

The timeline of feline domestication is a lot harder to pin down.

Unlike dogs, who soon became fixtures as hunting companions and guard animals and were even buried with or by their humans as far back as 23,000 years ago, cats step in only about 11,000 years ago, and were always commensal domesticates, meaning that they weren't raised by humans but were frequent visitors to human habitats.

From the evidence unearthed so far, it would appear that this relationship began in the Fertile Crescent (modern-day Iraq, Israel, Jordan, Lebanon, Palestine, Syria, Kuwait and parts of Turkey and Iran). In their vital role as crop protectors, it is thought that they were taken as far as Cyprus by the Neolithic farmers of the Levant, says Ottoni.

It would appear that there have always been cat people.

In what is considered the earliest sign of domestication, the carefully interred remains of a human and an eight-month-old kitten were found in a joint burial crypt in the Neolithic village of Shillourokambos, Cyprus, dated to about 9,500 years ago.

It wasn't long before cats were both feared and revered.

By 2,500 BCE, they show up in burial art in pharaoh's tombs in Egypt. (An early intact depiction of the feline form lies on the tomb of Nebamun, c. 1350 BCE.)

The Egyptians would mummify cats for centuries, all the way until the 4th century CE, to offer the deceased protection and companionship in the afterlife. Kittens were also sacrificed in Ancient Egypt, to appease the cat-headed Bastet, goddess of protection, fertility and domesticity. (Turn to the story alongside for more on cats in ancient cultures.)

We know that cats travelled the world with their humans, performing on ships the same role they performed in fields.

They weren't just pest-hunters, vital as that was (particularly in keeping illnesses away on long ocean voyages). They were also thought to bring good luck; some legends cast the cat as an all-knowing messenger of the gods, so skilled at survival that one is generally safer with at least a few of them about.

And so, ships had cats, and so did traders' caravans, and some of these felines stepped out nimbly at ports and settled on different continents. Domestic cats around the world today, in fact, can be traced via genetic markers to the African wildcat that evolved in the Fertile Crescent.

While previous studies had indicated that this spread occurred about 6,500 years ago, a new study published in the journal Science in November indicates that the migrations into Europe could have been far, far more recent.

Ottoni was a lead author on that paper. He and his fellow researchers analysed 225 samples of genetic material gathered from 97 archaeological sites in Europe and Turkey representing 11,000 years of history, and concluded that the domestic cats most widespread today may only have reached Europe around 200 BCE.

All genetic material uncovered by the team from before this period can be traced to local wildcats, and none of those species was successfully domesticated, says Bea De Cupere, an archaeo-zoologist with the Royal Belgian Institute of Natural Sciences, who also worked on the study.

> WE'VE BEEN GOOD FOR CATS. PARTS OF THE FELINE BRAIN LINKED TO AGGRESSION AND FEAR, FOR INSTANCE, HAVE SHRUNK, AS A RESULT OF LOWERED THREAT LEVELS

The scholars are now looking to expand their research. "We are analysing ancient and modern African samples to try and pin down the original sites of settled domestication, and more closely trace the modes of dispersal around the world," Ottoni says.

The researchers will also attempt to determine why only the African wildcat was successfully domesticated, while closely related species in Europe and China were not.

"The answers to all these questions likely lie in ancient DNA," says Ottoni, "if we can find it."

(Clockwise from left) Detail of Black Cat and Narcissus, a 19th-century scroll by Chinese artist Zhu Ling. A sketch of Oskar, a ship's cat that reportedly survived the sinking of three vessels during World War 2. A mural on the tomb of Egyptian scribe Nebamun, c. 1350 BCE. An 18th-century miniature depicts chaos after a cat lets a parrot out of its cage. Edward Hopper's Study of a Sleeping Cat. MUSEUM OF ART & PHOTOGRAPHY

SCAN the QR code for more cat art and lore

READ: Once more, with felines! How are so many cats getting starring roles on screen?

Meanwhile, it would appear that we've been good for cats.

Parts of the feline brain associated with aggression, fear and overall reactivity have shrunk, indicating lives of vastly lowered threat levels. They have evolved longer intestines, to digest a mixed diet provided by, or scavenged from, humans.

They have evolved meows that demand attention and are very different from the loud, aggressive cries of their wild ancestors. They have retained their abilities to leap and climb, and their lightning-quick reflexes. But adapted to a range of climates and terrains.

"Their spread worldwide is remarkable from an evolutionary point of view," Ottoni says. "Their adaptability and ecological flexibility have allowed them to conquer the so-called anthropogenic niche." In other words, they can now live more or less anywhere that humans can.

And they do. The domestic cat has spread across every continent except Antarctica. They, along with all other terrestrial mammals, are banned there by the Antarctic treaty formulated to protect the isolated ecosystem.

It's one rule the cat has followed, at least so far.