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Invited lecture/Reflection

# A Reflection on Effect of Human on Evolution of Cats

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**Abstract:**

In this text we focus on the problems in human interference with evolution of domestic cats. Based on documented records on pedigree cats, their exhibitions, and photographs, a brief comparison is made with the popular culture, status and situation of cats in the 21st century. Problems arising from physiological and psychological transformation of cats living with human are discussed. In particular, art is exposed as a possibility to influence the understanding of cats and their relation with human.

**Keywords:** Persian cat; Exotic cat; Scottish lapwing cat; Munchkin cat; Sphynx cat; Cat breeds

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**Citation:** Kovačič P. A Reflection on Effect of Human on Evolution of Cats. Proceedings of Socratic Lectures. 2022, 7: 137-142.  
<https://doi.org/10.55295/PSL.2022.D20>

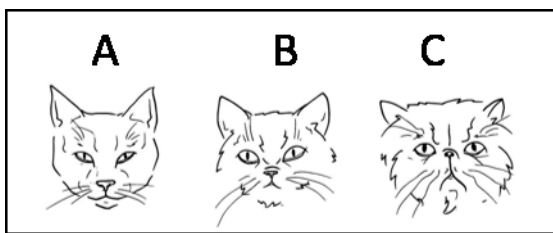
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## 1. Introduction

Domestic cats have the status of a family pet or a domestic breed. Several breeds of brachycephalic cats are known with phenotypic characteristics such as large eyes, short muzzle (brachycephalic skull shape; e.g. Persian cat), long (dolichocephalic skull shape; e.g. Siamese cat) and small ears. Other physiological traits include decreased level of stress hormones, increased reproductive period and accelerated or slowed down somatic development. Besides Scottish fold, Munchkin and Sphynx breeds are brachycephalic, presumably because of the "cuteness" attributed to them. Persians are divided into two groups according to the degree of brachycephaly: the traditional doll face and the show face (**Figure 1**). They are categorised into four categories of brachycephaly: mild, moderate, severe and extreme. In modern times, Persian cats are no longer leading in popular culture; this role has been taken over by hybrid cats – crossbreeds between wild and domestic cats.



**Figure 1:** Mesocephalic shape, doll shape and show brachycephalic shape of the cat face.

However, brachycephaly causes respiratory, ophthalmological, dermatological, reproductive, endocrinological, and neurological health disorders that affect quality of cat's life. Brachycephaly and its systemic effects have led cats to have difficulty breathing, smelling, eating, defecating, and rolling (O'Neill DG., Romans C., Brodbelt DC, 2019). In particular, the sense of smell is the cat's primary sense of perception and communication. However, with a cranial deformity, perception is impaired and with it the ability to understand and order the stimuli of the world in an action-oriented manner. Brachycephaly affects motor, sensory and cognitive abilities. Health, cognitive and behavioural problems either make it difficult for cats to perform basic biological functions or render them dependent on humans (Hartwell S. 2019).

Domestication means human control over feeding, care and breeding of the animal. We prefer to speak of self-domestication in the case of cats and domestication in the case of dogs. In cats, we can speak of self-domestication over the last millennia and only recently of domestication. In the early days of agricultural culture (which began in some places 12,000 years ago in the Palaeolithic age and elsewhere 10,000 years ago in the Neolithic age), cats approached humans as predators that hunted prey in fields and stored grain (Budiansky, 2003). Cats can be characterised as free-ranging predators that can find and hunt their own food. However, over time, cats evolved from fierce, territorial and independent animals to animals that were more tolerant to human society.

## 2. Cat Shows

In July 1871 (the Year of the cat), the first cat show was held at the Crystal Palace in Hyde Park, London. Since then, the cat shows were increasing in popularity. Persian cats (a specimen is shown in **Figure 2**) were the most popular breeds, as were also Angoras, Siamese cats, tailless Manx and hybrids. The cats were different in sizes, weights, shapes, coat lengths, coat colours, patterns, eye colours, and also different degrees of disability, e.g., a white deaf cat with blue eyes which nevertheless won first prize. The show was a status symbol for aristocrats with the trend towards cat shows, pedigree cats and hybrids continuing to now. It was suggested that certain colours and coat patterns play a communicative role as well as a protective one (Jaroš, 2012). However, physical constitution and condition dictate a cat's level of fitness and thus its compassion, and that mesocephalic facial features influence normal perception and basic functions, especially eating.



**Figure 2:** Blue Persian "Gentian" owned by Lady Marcus Beresford, the prize-winner at Westminster in 1899. Courtesy of Landor, Public domain, via Wikimedia Commons.

### 3. Art

Art has always been a commentary or interpretation of reality. The depiction of cats in art history is an expression of observed characteristics that people symbolically idolise, which crosses over into mythology and religion. In that, the cat properties (including the facial features) are interpreted as to serve expressiveness and attractiveness to humans. This is, in turn, detrimental to understanding of a cat and living with it.

Have artistic representations contributed to the re-humanisation of the domestic cat? Could this motif be the cause of unethical breeding in impoverished, under-sized and cramped living conditions for those who were once acrobatic hunters and adventurers? Today's co-habitation and upbringing impose the need of human to make them "nice and cuddly". Is the desire for absolute control over a living creature hidden behind this in the name of love, care and safety? Can (popular) art put a stop to this or establish a critical distance from what it has so far presented as curiosity, cuteness and popularity? The artist is complicit in the corruption of his/her audience (Warner, 2018); the way he/she is portraying cats makes him/her partly responsible for their well-being.

#### 3.1. *Naturalism and realism*

In the 19th century, in the age of industrialisation, especially with the advent of photography and new artistic movements, Naturalism and Realism (1830-1899) developed which no longer idealised and stylised motifs as in Neoclassicism (1750-1830) and Romanticism (1790-1880), but rather depicted them realistically or as they are. The motifs were everyday scenes, village genres, everyday objects and, of course, cats. The supposed cuteness and playfulness of the cats were in the foreground, but also their serenity and mysticism. While cats were depicted as companion animals, especially on the lap, there are many motifs of cats doing their business outdoors or indoors.

#### 3.2. *Painting*

Henrietta Ronner-Knip, who came from a Dutch family of painters (1821-1909), mainly painted cats. She took in a stray cat which multiplied so much that the cats took over her whole studio and her motifs. She created more than 100 works featuring cats in drawing, watercolour on paper and oil on canvas. The subjects ranged from hunting and rustic to more playful genres. She depicted individual and group portraits of cats hunting, fighting, playing, resting, etc. She was interested in the poses, facial expressions, movements and behaviour of cats in different environments and situations. Not all her works are dated, but it is noticeable that the cats she painted in her home are more endearing than her earlier naturalistic works.

### 3.3. Photography

With the development of photography and its general availability in 1891, the photographic industry and the art of photography flourished (**Figure 3**). The photographer Harry Pointer is considered the most famous cat photographer. He started with ordinary subjects or cat subjects, but later moved to more anthropomorphised expressiveness for more appeal and humour. He photographed cats in various costumes, dresses, uniforms, ties, bow ties, in scenes on a tricycle, in shoes, at a tea party, etc. The photos were available as postcards with captions, e.g. "A happy new year!", at a tea party in "Five o' clock tea", at a dinner party in "Bring up the dinner Betsy". It could be said that this started the trend of humorous cards that are now known as memes.

The term meme is an abbreviation of mimeme from ancient Greece and means imitated thing. A meme is something that is spread, transmitted and exists among people as a cultural, social phenomenon. Today they are online messages, ideas, mainly in the form of a digital image with a caption. Memes spread, multiply, mutate, adapt...



**Figure 3.** "The Shah", a photo of a white Persian cat from "The Brighton Cats" series. Photo: Harry Pointer (Pointer, c1870).

The most popular memes are those of Grumpy Cat, a female Tardar Sauce (2012-2019) who was perceived as a grumpy and unhappy cat due to her peculiar appearance (dwarfism; large bulging blue eyes, sunken muzzle, drooping lips). She was anthropomorphised into a cynical and negativistic cat to achieve a deliberate misinterpretation that was amusing. Her defect turned her into a celebrity and earned the cat or (literally) its owner fame and fortune on the internet.

If we compare today's domestic Persian cat of 1871 with the exhibition Persian cat of 2022, we notice morphological changes in today's Persian cat, e.g., more concise facial features, larger, bulging round eyes, a smaller and suppressed muzzle, narrower nostrils and a shorter nasal bridge, a smaller and shorter muzzle and smaller ears, a lower and broader head, skin folds on the face, and a stockier body with lower and broader legs.

## 4. Neoteny

Neoteny means "stretching youth" (Kollmann, 1885) and is a "paedomorphosis" resulting from a slowing of somatic development (Gould, 1977). Heterochrony is observation of personal development or ontogenetic differences resulting from growth over time (Bavdek, 2015). It is divided into paedogenesis, in which the development of the body is arrested at sexual maturity, and paedomorphism, in which (some of the) juvenile characteristics are retained in the sexually mature individual. Part of the latter is neoteny. Neoteny is the retention of traits from youth in various forms, either phenotypic or developmental, at a later age. Biological neoteny leads to behavioural neoteny

and thus specific cognitive and emotional abilities and capacities. Neoteny is thought to, among other things, affect the brain and affect its plasticity. This can occur spontaneously, intentionally or through the development or neglect of certain neotenic traits.

Partial neoteny due to self-domestication could be evolutionarily possible, but it would likely occur spontaneously and slowly. An experiment by Russian scientist Dmitri K. Belyaev with Siberian foxes from a fur farm showed that the animals change morphologically, emotionally and behaviourally by selecting friendlier animals that show less fear and/or aggression towards humans. This is a domestication syndrome in which the animals spontaneously change their appearance to become more like human (Belyaev et al., 1983).

## 5. Owning and breeding

In nature, cats are capable of independent and self-reliant living and do not need humans to survive. In urban environment, domestic cats have developed survival strategies to coexist beside humans. If a cat is not neutered, uncontrolled breeding can be a major problem for the fitness and health of the cat itself and the cat colony, for the safety of other individuals, especially prey, and for hygiene. Too many cats in too small a space with too few resources is a recipe for feline disease and people's dislike of cats.

Owning and controlling is not the same as understanding and caring, and moral and ethical questions are raised about modern cat life. What causes humans to care for or "parent" cats?

It has been hypothesised that it is a neuroendocrinological link that regulates the emotional and motivational system of caring for others, especially children. When a person is young or dependent on parental help, this is reflected in development of the endocrine system and affects psychophysical state resulting in helping behaviour. In adolescence, this mechanism becomes inhibited by reduction of dependence on parents and care. This applies not only to biological parents, but also to owners, caregivers and guardians of cats (Herbeck et al., 2022). Problems arise when the issue moves from cooperative parenting to the level of ownership and control.

In preparing the mother cat to have kittens, sufficient quality food and a quiet place are sufficient. The gold standard of proper socialisation and habituation of the kittens is between 2 and 9 weeks of age. At that age they are gradually and appropriately exposed to external socio-physical stimuli according to their physiological and behavioural development, especially those with which they will be surrounded due to humans in the course of modern life. Excessive interference in the development and upbringing or unnecessary replacement of the mother cat may make cats more accustomed to human, but it also deprives them of their feline essence.

The moral and ethical dilemma is not only the breeding of abnormalities in the name of beauty (Ewer RF., 2018), but also of creating hybrids which were exhibited and popular at the above-mentioned cat show as early as 1871. Both trends are on the rise; breeders, owners and groomers consider grooming as a matter of daily routine rather than an indicator of disease and unsuitable conditions (Plitman et al., 2019). There are exemplary breeders who are committed to the health and beauty of cats.

Cats have natural instinctive needs and behaviours, natural-learned needs and behaviours and (un)learned needs and behaviours. Natural behaviours are primary and enable survival: seeking shelter, food, fluid (or eating and drinking), excretion, reproduction, avoidance of unpleasantness and retreat into pleasantness, or the need for safety. These are genetically determined and do not require associative learning. All this happens more or less instinctively or through non-associative learning, such as habituation- dishabituation, sensitiation-desensitisation. The Five Freedoms (Mellor and Reid, 1994, Mellor, 2017) concerns satisfying these needs. Since domesticated cats no longer need to strive for existence, its striving shifts to a new model of well-being: to satisfaction of motor, sensory, cognitive and social needs.

Due to modern lifestyles and selective breeding, Persian and domestic cats generally live an exclusively indoor life in an impoverished environment, are less athletic and acrobatic, and have untapped potential. In Persian cats, this potential has been genetically suppressed, making them slower to react, less interested and less active.

## 6. Consumer neoteny and anthropomorphism

Consumer neoteny, or infantilis ethos is an infantile form of consumer behaviour in adulthood in which people conflict with reality. It was suggested that anthropomorphised products or services allow them to escape from reality into phantasms (Olive, 2016). With products, in our case live cats or anthropomorphised representations of cats, instead of a responsible and sober relationship, a dependent and insatiable relationship is established for the sake of human satisfaction and well-being. It has been found that people with a higher level of education, especially those in animal science professions, have a better understanding of the welfare of cats with brachycephalic (and dolichocephalic) face shaped cats. Mesocephalic cats with medium length hair, orange colour, a striped pattern and green or blue eyes received the highest likability scores. Most owners have a preference for cats they own or have owned in the past (Plitman et al., 2019).

## 7. Conclusion

Why is demystifying the motifs for cat breeding important? Because it exposes attitudes towards cats and other animals, allows for better representations of cats and other animals and strives for their higher-quality of life.

**Conflicts of Interest:** The authors declare no conflict of interest.

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