Are "Autochthonous" Animal Breeds Living Monuments?

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"*...breeds are human creations just like ancient buildings and are living creatures just like the giant panda*."
(Imre Bodó, 2001)

Abstract
Most domestic species in Hungary include traditional breeds, referred to as "autochthonous". While yields by these undeveloped forms tend to be inferior to those of modern breeds, they are widely regarded as descendants of the stocks brought to the Carpathian Basin by conquering Hungarians during the 9–10th centuries. Along with a review of the evolutionary principles as applicable to the history of animal breeding, this paper sums up autochthonous breeds with references to their representation in archaeozoological assemblages. In addition to refuting the popular idea that domesticates could be maintained for centuries without change, it also explains the conspicuous lack of early medieval morphometric evidence for all present-day "autochthonous" animal breeds.

1. Introduction

There is a popular belief that autochthonous animal breeds in Hungary are direct descendants of the stocks brought into the Carpathian Basin by the conquering Hungarians during the 9–10th centuries. The term autochthonous (*őshonos*) is thus contradictory since it refers to creatures originating in the place where found. Wherever these animals came from, there must have been considerable dynamism in their emergence and modifications under the pressures of various natural and cultural environments. In addition to documentary and iconographic sources, the ancient history of domesticates is studied on the basis of the direct evidence of their bones.

Archaeozoology is the identification, analysis and scientific as well as socio-cultural interpretation of animal remains from archaeological sites. Such animals have been exposed to human activity (animal husbandry, processing, etc.). Consequently, archaeological animal bones are "artefacts" in that they embody cultural processes. *Lato sensu*, this holds true even for the remains of non-vertebrate taxa (mollusks, insects, etc.) that have not been directly manipulated by humans. The archaeological site is a human habitat, thus anthropogenic effects must be reckoned with in the case of all animals.

Scientific conclusions in archaeozoology are hampered by this constant anthropogenic "noise," which is, however, not simply a source of bias. Understanding ancient cultural influence on animals is an important task in archaeozoology. For example, if estimating the stature of an animal is impossible in the absence of complete extremity bones, one should understand why such bones were not found intact.

Parallel with academic research, legislation has also been devoted to autochthonous breeds in Hungary. Several have been listed in Appendix 1 of the Joint Statutory Rule 36/1994. (VI. 28.) FM-KTM issued by the Ministry of Agriculture and Ministry Environment and Conservation. In this paper, an attempt is made to link these registered breeds with the archaeozoological record. All the aforementioned sources of bias, however, should be born in mind, before contemplating the reconstruction of animals represented in archaeological deposits.

2. What is a domestic animal?

Animal remains in ancient cultural deposits are not only *per definitionem* artefacts: a more complex level of ancient human influence should also be considered. Domesticates themselves have evolved along with food producing economies. Thus, they are products of human culture.

Although several complex definitions have been put forward, the essence of domestication was best summarized by Keller (1902), as a symbiosis between humans and animals based on controlled breeding. Symbiosis means that not only humans profit from this relationship: "in exchange" for their products, the animals exploited have the benefit of human protection from the forces of natural selection. This is related to Keller's second point, controlled breeding: as a result of domestication, animals have been selected by culturally idiosyncratic criteria, often contradicting their needs of survival in nature. Such traits have been discussed by Charles Darwin (1868) in his seminal book, "The Variation of Plants and Animals under Domestication".

Domestic animals belong to the same species as their wild ancestors. Their cross-breeding produces fertile offspring, although zoological nomenclatures (both vernacular and scientific) often list the two forms as separate entities. In spite of its technical perfection, conventional Linnaean binomial nomenclature is rooted in 18th century creationism, i.e. the belief that living organisms never changed. Hence, there is a tradition of using separate Linnaean names for the wild and domestic forms of the same species. In fact, the scientific names of some domesticates predate those of the wild progenitor species (e.g. domestic cattle=*Bos taurus* Linnaeus 1758, aurochs=*Bos primigenius* Bojanus 1827).

Domesticates are exposed to accelerated change, i.e. cultural evolution, stimulated by selection driven by both random and conscious human behavior. This fact is reflected by the so-called infrasubspecific nomenclature, in which an adjective referring to the domestic form is appended the wild ancestor's Linnaean name (e.g. *Canis lupus*=wolf, *Canis lupus f. familiaris*=domestic dog; Bohlken 1958). Recently, an approach more consistent with the International Code of Zoological Nomenclature has been adopted: the International Commission on Zoological Nomenclature has fixed the earliest available specific names and recommended that the names based on domestic forms be adopted for the corresponding domestic derivatives (Gentry et al. 2004).

At the beginning, human influence on domesticates was probably far from conscious (Bartosiewicz 1999). It is possible that the most docile wild individuals were caught and bred in captivity: the irreversible evolution of domestic animals has thus begun. Variability increased, offering a basis for selection by arbitrary criteria (Bökönyi – Bartosiewicz 1987). Millennia later, with the advancement of animal husbandry, breeds were created according to economic need and cultural preferences. Artificial selection had only been carried out systematically on a large scale in Europe since the middle of the 18th century. In Britain, for example, Robert Bakewell pioneered the use of inbreeding and crossbreeding to improve stocks (Clutton-Brock 1998: 186).

Evolution is irreversible: the ancestors or even past forms of domesticates cannot be genetically reconstructed using present-day stock. In 1920, the Heck brothers, Heinz and Lutz, set out to "re-create" the extinct aurochs by crossing domestic cattle with aurochs-like morphological traits (Heck 1934). Heinz used primitive breeds at the Hellabrunn Zoo in München, while Lutz worked in Berlin, starting with another stock of unimproved domestic cattle. The experiment in Berlin failed, but the München form is still around. However, criticism has run for some time against the popular belief that the Heck cattle would be aurochs. Indeed, this is just another domestic breed, created following the mid-20th century mental template of ancient aurochs. Heck cattle have some distinctly aurochs-like characteristics (e.g. colour), those for which they have been most strictly selected. Horn conformation, however, is inconsistent and these animals are significantly smaller than aurochs known from the archaeological record. Skeletal measurements of such a Heck cattle, gathered by the author of this paper in the Osteological collections of the Hungarian Agricultural Museum (Budapest), are most similar to those of the dairy Ayrshire cattle (!) in the same collection.

3. "Autochthonous" breeds in Hungary

New forms of domestic animals may be attributed to either migrations by various peoples or to the achievements in local selective breeding. Naturally, in most cases one must reckon with both, rendering the concept "autochthonous" largely meaningless. Populations of domestic animals living in a geopolitical corridor such as the Carpathian Basin would have been particularly prone to the perpetual combination of these two influences.

Shifts in the relative importance of animals (e.g. the oscillating emphasis on pig vs. sheep in various cultures) are relatively easy to demonstrate in the archaeozoological record (Bartosiewicz 2003). Dating the first appearance of

new forms within a species, however, is a subtle problem. This is especially the case when modern "autochthonous" breeds are to be traced back to their ancestry.

According to a widely publicised dilettante view, all autochthonous breeds in Hungary have been considered the unaltered descendants of their ancestors introduced into the Carpathian Basin by the conquering Hungarians during the 9–10th centuries. This view, however, is unacceptable on at least two grounds:

- Animal breeds would by no means remain unaltered for over 1100 years.
- The rate of change depends on the length and intensity of the reproduction cycle in each species, as well as on the historically shifting emphasis put on its selective breeding. Consequently, some animal species may end up being "more autochthonous" than others.

Disregarding these points would be non-scientific, edging on creationism in its denial of perpetual evolution. Such a static view also means that culturally idiosyncratic changes in economic need, and even "fashion", would be completely neglected. Nevertheless, this romantic view has been deeply rooted in the public mind, as it had been perpetuated by both public education and popular propaganda since the late 19th century (*Fig. 1*). In 1867, Hungary emerged as an equal partner in the Austro-Hungarian Monarchy, and a cultural identity, based on national ideology, was fostered and consolidated (Fodor 1998; Bartosiewicz 1993). Unfortunately, the belief in the millennium-old existence of autochthonous breeds overlooks the *complete* absence of certain diagnostic bones (especially typical horn cores) from coeval archaeozoological assemblages.

All this is not a complete denial of continuity between present day autochthonous breeds and the forms documented in the medieval archaeozoological record (Bökönyi 1961). However, such hypotheses could be verified only on the basis of detailed DNA studies, whose precision depends on preservation and availability is limited today. Until masses of such genetic data will be accumulated, one can only rely on the empirical/morphological description of the earliest animal bone finds, attributed to the forerunners of autochthonous breeds.

4. Overview by animal species

Hungarian autochthonous breeds were listed in Appendix 1 of the Joint Statutory Rule 36/1994. Endangered breeds, considered valuable from the viewpoint of gene preservation appear in Appendix 2. Some domesticates were not included in the list of either autochthonous or endangered breeds: water buffalo (Bodó 2000: 36–37) and donkey (Bodó 2000: 30–33) were left out. Among poultry, Hungarian pigeon breeds (Bodó 2000: 88–95) have not been listed officially.

The following section is a concise review of the officially listed autochthonous/endangered breeds, with reference to archaeozoology. Since Appendices 1 and 2 of the Statutory Rule are concerned with species of agro-economic significance, they do not include dogs. This species, however, will be briefly reviewed here given its archaeozoological relevance. The descriptions serve to illustrate relationships between archaeozoological evidence and present-day breeds.

4.1. Cattle (*Bos taurus* Linnaeus 1758)

The only autochthonous cattle listed is Hungarian Grey. This breed has often figured in romantic representations and is erroneously considered a great contribution to European culture by the conquering Hungarians of the 9th century (Bartosiewicz 1993).

Modern Hungarian Grey cows weigh on average 535 kg, with a withers height of 135 cm. The average bull weighs 700 kg and stands 150 cm at the withers. The average milk yield of dams ranges between 1000–2500 kg, with butterfat percentages of 4 to 4.5% (Bartosiewicz 1997a). Until the early 20th century, this was the most common breed in Hungary. Exploited for both beef and draught power, Hungarian Grey oxen were yoked in teams of four (*Fig.* 2) or more to be used in tillage and transport (Bartosiewicz et al. 1997). However, Hungarian Grey was gradually brought close to extinction by the modernization of agriculture (Bodó et al. 1996). In 1975, only two herds were registered, with a total of ca. 300 cows. By 1982, the Hungarian Grey stock had increased to 850 cows kept in 6 herds. Hungarian Grey cattle have attracted renewed attention for the last 15–20 years. As other historic long-horned breeds (Texas Longhorn, Scottish Highland cattle, etc.), they are often kept for the kudos attached to their image as a national/historic symbol.

Considering the decisive role Hungarian Grey breed played between the 18th to the early 20th centuries, its osteological evidence is less than scarce. Although medieval excavations occasionally yield postcranial elements

Fig. 1. The 1894 picture "The Hungarian Conquest" by Árpád Feszty shows late 19th century Hungarian Grey cattle in a romantic, "AD 9th century" context.

Fig. 2. Hungarian Grey ox team of four (Photo Sándor Bökönyi).

similar in size to those of modern Hungarian Grey cattle (Matolcsi 1977), sizeable horn core finds would provide the only evidence for early Hungarian Grey cattle. Matolcsi (1975) made a reference to early medieval cattle of comparable, so-called *primigenius* cranial type from the former Soviet Union; no long-horn cores are known from medieval Hungary. Excavations at the city of Vác, a crossing point on the Danube, where many westbound cattle drives crossed the river during the Ottoman Period (Bartosiewicz 1995b), revealed numerous horn cores. None of them, however, approach the base diameters measured on the large horns of modern Hungarian Grey cattle (*Fig. 3*). To date, the longest horn cores of relevance are known from the 17–19th century Kecskemét (Bökönyi 1974) and an 18th century pit below the Buda Castle (Szalag u. 22–30; Csippán, in press). Although some of the horn sheaths on these cores may have measured near 50 cm, their shapes still differ from those of modern Hungarian Grey (*Fig. 4*).

In contrast to popular belief, this breed must have emerged as a spin-off of late medieval and 16–17th century Ottoman Period cattle trade. Market forces would have stimulated selective breeding for its trademark look, especially the long horns and silver colour of the coat. Cattle of all sorts were driven by tens of thousands annually to the urban markets of Southern Germany and Northern Italy (Bartosiewicz 1995a). Owing to dynamic changes in Hungary's history, Hungarian Grey cannot be compared to the archetype of all autochthonous cattle, the Chillingham cattle (*Alderson* 1989) thought to have formed for at least 700 years within the same, undisturbed estate.

The attention devoted to horn conformation in the Hungarian Grey is reflected in a complex vernacular terminology. No less than 172 horn shapes recorded by Herman (1914) included shacko, tulip and forked, to name only a few. Long and slender, symmetric horns separated by a broad intercornual ridge are traditionally considered a sign of good constitution (Tormay 1901). While shapes may vary (Bodó 1991), horns must be at least as long as the head in bulls. In cows, a minimum of 1.5x skull length is required.

Dual-purpose Fleckvieh began slowly outcompeting Hungarian Grey during the 19th century. The first dairy (*Schweizerei*) in Hungary was based on the import of Swiss Fleckvieh in 1680 (Gaál 1966; a century

Figure 3. Horn core base diameters from archaeological sites (K=Kecskemét, V=Vác)

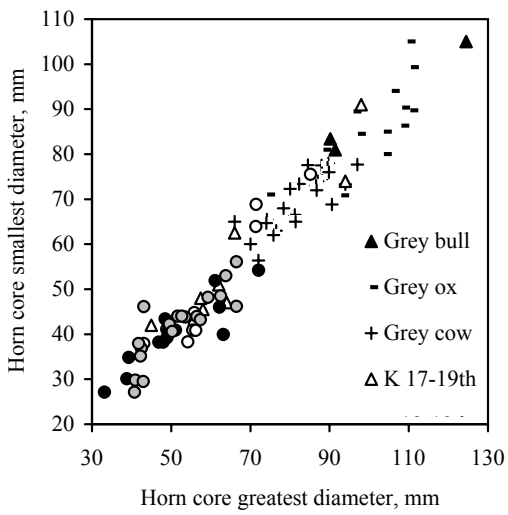

Fig. 3. Diagram showing the base diameters of medieval horn cores from Vác and those of modern Hungarian Grey cattle.

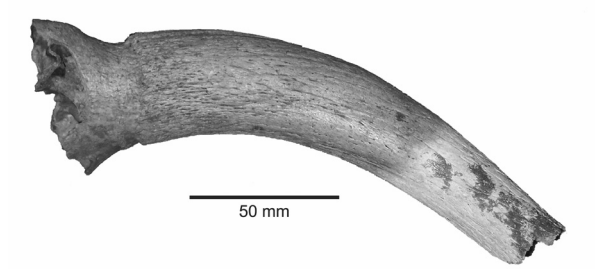

Fig. 4. Relatively long, 18th century horncore from Víziváros near the Buda Castle (Photo János Gergely).

later, the Swiss Parliament limited exports to prevent a shortage of cattle). During the 19th century, Simmenthal cattle took over most of Eastern Europe, the Balkans and Russia. In Hungary, the Bonyhád Fleckvieh, a dual-purpose regional variety, has been threatened by the expansion of New World dairy Holstein Friesians during the 1980s (Bartosiewicz 1983). Hungarian Fleckvieh is thus listed in Appendix 2 of Statutory Rule 36/1994.

4.2. Pig (*Sus domesticus* Erxleben 1777)

In 1939, Béla Hankó described 8 geographical varieties of Hungarian pigs. In Appendix 1, only three forms of the curly-haired Mangalica breed are listed. Distinguished by colour, they include blond (most common in Hungary), swallow-bellied (i.e. black with a white belly, common in Syrmia) and red (possibly related to the extinct Szalonta breed in Transylvania). A fourth colour variety, black, is extinct.

Mangalica is a robust breed, with a thick, curly coat. Its body is medium long, with an arched back. Boars may weigh 350 kg, while sows may attain 300 kg. Their respective withers heights average 75 and 65 cm. The head is small, with large, forward-sloping ears (*Fig. 5*). This "modern" breed is fundamentally different from earlier medieval forms, often characterized by longish, wild boar-like snouts, long bristles and upward pointing ears (*Fig. 6*). In Mangalica, the profile line of the stout skull is slightly concave (*Fig. 7*), similar to that of the extinct Szalonta breed (*Fig. 8*).

After 1833, Mangalica-like pigs started commonly occurring in the central part of the Carpathian Basin. This population was upgraded with stock from Šumadija, a densely forested pig-breeding region in modern-day Serbia. Šumadija was famous for its large-scale pig drives to markets in Hungary and Austria (Halpern 1999). An excellent lard producer, Mangalica has lost most of its significance along with this historic staple only by the 1960s (Takács 1990–1991). Mangalica sows were cross-bred with imported Cornwall and Berkshire boars as well as those of the Great White breed, in order to improve fertility and increase meat output.

The archaeozoological identification of such a large pig breed is impossible. Late medieval bones preserved in full length at various medieval sites in Vác (Bartosiewicz 1995a) yielded an average withers height (Teichert 1969: 264) of 69.8 cm. Pigs of this size, especially a 74.8 cm tall 15–16th century specimen, are considered large. But they

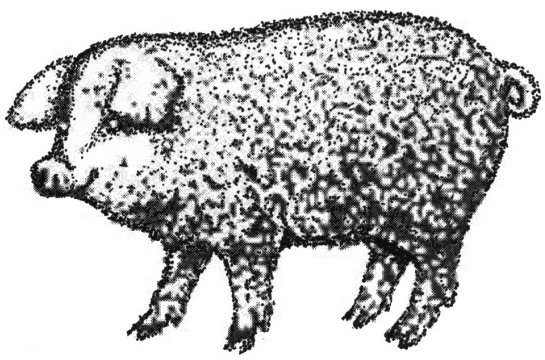

Fig. 5. Mangalica pig (Author's drawing).

Fig. 6. Albrecht Dürer's 1497-1498 etching "The Prodigal Son" shows long-snouted late medieval pig.

Fig. 7. Mangalica boar's skull (Photo Ferenc Csecsetka).

Fig. 8. Szalonta boar's skull (Photo Ferenc Csecsetka).

still fall short of modern Mangalica. It is difficult to tell to what extent are the archaeozoological results influenced by sexual dimorphism and "feralization". Another extinct pig breed in Hungary, the Bakony pig (Matolcsi 1975–1977), was kept in a more-or-less feral state, continuously interbreeding with wild boars. A one-year-old female exhibited in the Museum of the Zirc Abbey measured only 42 cm at the withers (Hankó 1940: 128).

4.3. Sheep (*Ovis aries* Linnaeus 1758) and goat (*Capra hircus* Linnaeus 1758)

Appendix 1 lists three autochthonous Hungarian sheep breeds. The best known, Racka (Dunka 1984), was bred especially on the Great Hungarian Plain. The so-called Cigája (Gáspárdy et al. 2001), a mountain sheep, is mostly associated with breeding work in Transylvania. Adult rams there weigh, on average, 58 kg, while ewes are only 41 kg. Their withers heights are, on average, 67 and 63 cm respectively. Cigája ewes in Hungary are somewhat heavier (53 kg) and may grow up to 68 cm at the withers. The third autochthonous sheep breed listed in Appendix 1 is Cikta, another rare mountain breed of lesser significance.

Racka is a curious looking breed, with both ewes and rams possessing long, straight horns with a corkscrew twist that protrude in a straight V-shape, upward from the top of the head (*Fig. 9*). Owing to this trait, early forms may be easily identified even in archaeozoological assemblages. Bone remains of Cigája or Cikta type sheep would be impossible to recognize in excavated materials. Hence Racka, a special form of Karakul sheep (Ryder 1983: 354) is discussed here in detail.

The Statutory Rule lists three autochthonous forms of Racka: the White and Black varieties from Hortobágy and the Gyimes Racka developed in present-day Romanian Moldavia. All are used for meat, wool and milk production. For the Hortobágy form, the minimum body weight is 40 kg for ewes and 60 kg for rams. The average ram measures 72 cm at the withers. Fleece weight must be at least 3 kg for rams. Wool quality varies broadly between fibre diameters of 12–40 microns. The yield is 38–65 percent with approximately 30 cm staple length. The minimum length of horns is given as 50 cm for rams and 30 cm for ewes in the breed standard. Straight, twisted horns on both ewes (60–90 degrees angle) and rams (100–120 degrees angle; *Fig. 10*) are among the distinctive characteristics.

Gaál (1966: 79) adopted the view that the conquering Hungarians were sheep keepers and arrived with the Racka breed to the Carpathian Basin. As is the case with most ancient Hungarian breeds, early osteological evidence of this breed is absent. Two hypothetical Avar Period (7–8th centuries) fragments predate even the Hungarian Conquest (Bökönyi 1974: 182, Fig. 59). They look, however, too fragmented to be reliably identified as Racka-type horn cores. Although Racka-type Wallachian, Macedonian and Moldavian sheep may have reached medieval Hungary, the classical form is unlikely to predate the 18th century (Vörös 2002: 346). The first unambiguous iconographic evidence for this breed in Hungary was published by Marsigli (1726). Some late medieval and Ottoman Period sheep, with similar, open-coil horns (Bartosiewicz 1994; Vörös 2002), are reminiscent of Racka. When a modern skull without the horn sheats (*Fig. 11*) is compared to a late medieval find from Vác-Széchenyi utca (Bartosiewicz 1994; *Fig. 12*), it becomes apparent how little of the horn's coil is reflected in the shape of the horn core (c.f. Fig. 10).

Although a traditional form of Hungarian goat is reckoned with (Bodó 2000: 66–67), no breed of this species has been listed in the Statutory Rule. Goat seems to have gained importance during the Ottoman Turkish Period (mid-16–17th century in Hungary) when a hornless form also appeared (Bökönyi 1974; Bartosiewicz – Gál 2004).

4.4. Horse (*Equus caballus* Linnaeus 1758)

Statutory Rule 36/1994 lists horse breeds as endangered, rather than autochthonous in Appendix 2. This reflects reality, in as much as very little is known of ancient Hungarian horses, while of all domesticates the Early Modern History of horses is perhaps best documented. It is impossible to link, however, this information to the well preserved remains of 6–10th century Avar Period and early Hungarian horses (Bartosiewicz 1991).

The insistence in the traditionalist literature that ancient Hungarian horses did not originate from the Asiatic wild horse (named after Przewalski), but rather the "European" tarpan, was made largely irrelevant by the uncertain zoological status of the latter as a separate species (Matolcsi 1975).

A major influx of oriental, i.e. Arabic horses has been presumed during the 16–17th century Ottoman Turkish occupation of Hungary. Horses of this type indeed must have played some role at the time (*Fig. 13*). Of Arabic horses, however, only the Modern Age Shagya line, named after a stud imported in 1830, was included among the endangered horse breeds listed in Appendix 2.

Hungarian horses that one might consider traditional seem to have disappeared almost unnoticed by the 1880–1890s. Already during the reign of Maria Theresia of Habsburg (1740–1780), central efforts were made to improve

Fig. 9. Racka sheep (Author's drawing).

Fig. 10. Modern Racka sheep's skull with the horn sheat (Photo István Takács).

Fig. 11. The Racka sheep skull shown in Fig. 10 without the horn sheat (Photo István Takács).

Fig. 12. Horn core of a late medieval Racka sheep from Vác–Széchenyi Street (Bartosiewicz 1995).

Fig. 13. Sixteenth century picture of a Turkish saddle horse showing "Arabic" features (Wathay 1604).

Fig. 14. Modern day peasant horses in the Carpathians (Photo: Benjamin Langer).

Hungarian horse populations, aimed at increasing stature for military use. Regional varieties depended on the local stock and the stallions used in upgrading (Gaál 1966: 450). The term "fallow horse", often encountered in the literature, seems to refer to 18–19th century crossings, rather than any concrete breed. In his 1784 decree, Joseph II of Habsburg ordered the establishment of local breeding centres in Hungary. The Mezőhegyes stud was founded in 1785 to satisfy demand by the military. The Bábolna stud was established in 1789 as a centre for eastern type horses (Gál, in press).

Alongside these developments, numerous small forms survived in the Carpathians (*Fig. 14*) and under the influence of Balkan horses. The best known examples include Hucul, Goral, Slavonian, Wallachian, Moldavian and "Turkish" horses (Ecsedi 1914: 237; Herman 1914: 335): traditional forms of domestic animals have a better chance to be preserved in the remote mountain areas. The last concerted effort to tap into this resource of rural

horses was made by the Hungarian military during World War II, when acquiring small and sturdy pack horses was still a strategic priority (Hankó 1943: 18, 25). The most typical representative of this group, Hucul horse from Ruthenia (*Fig. 15*), was included in Appendix 2 of the Joint Statutory Rule.

One of the most widely known breeds in Appendix 2 is the Lipizzaner (*Fig. 16*). It dates back to 1580 when Charles II, Archduke of Austria, established the stud in Lipizza, Italy. Native stock was crossbred with the then fashionable Iberian horse and the Lipizzaner breed was created. For the next 200 years it was crossed with the finest imported stock, supplying the Habsburg Court in Vienna. The stud was moved to Hungary during the Napoleonic Wars, first to Mezőhegyes then to Fogaras in Transylvania. Recently, it has been settled in Szilvásvárad, in Northern Hungary (Bodó 2001).

During the early 19th century, Count István Széchenyi encouraged the use of English Thoroughbreds in the upgrading of Hungarian stock for all possible purposes. The military stud at Kisbér was established in 1853 by a decree issued by Franz Joseph I of Habsburg. Following the establishment of the Austro-Hungarian monarchy in 1867, court studs in Hungary were nationalized, to ensure a steady supply of local horses for the army (Gál, in press).

The Hungarian Warmblood horse was developed largely during the late 19th century. Through selective crossing of native Hungarian horse breeds listed in Apendix 2: Kisbér Half Bred, Gidrán, Furioso-North Star, and Nonius (*Fig. 17*) with established "warmblood sports horse" breeds such as Holsteiner. The resulting sports horse stands 160–170 cm at the withers, and comes in all solid colours. Although this unlisted breed may be considered autochthonous, its remarkably short history and multi-faceted background show the relativity of this term.

4.5. Dog (*Canis familiaris* Linnaeus 1758)

Although dog breeds have not been included in the Joint Statutory Rule 36/1994, nine Hungarian breeds, registered by the *Fédération Cynologique Internationale*, are considered autochthonous. These include three sheepdogs (Puli, Pumi and Mudi), two large herding dogs (Komondor and Kuvasz) and four hunting dogs (Vizsla, Wire-haired Vizsla, Hungarian Greyhound, Transylvanian Bloodhound).

Linking form directly with dog function, let alone breed, however, is a relatively modern concept. Panmictic dog populations rapidly melt back into animals of mediocre size and shape. In Switzerland, so-called prehistoric "turbary" dogs were hardly larger than foxes (Schibler 1987b: 194; Becker – Johansson 1981: 50–51), and looked quite homogeneous in terms of phaenotype. Owing to this non-distinct appearance, they may have been reminiscent of modern pariah dogs (*Fig. 18*), reproducing in urban habitats in a semi-feral state (gracile skeleton, grey tawny or yellow-red colour, white markings, characterless ears and tail; Dennis-Bryan and Clutton-Brock 1988). A sheepdog similar to pariah dogs (c.f. Fig. 18) may be seen in a 1506 nativity scene by Master M. S. (*Fig. 19*). Owing to the high reproduction rate of multipara dogs, however, new breeds could be created in a relatively short time.

All three Hungarian sheepdogs are medium-sized. The best known, energetic Puli has a long corded or felted coat, comparable to that of a Komondor (c.f. Fig. 19 below). This breed is mostly black, the next most common colour being *fakó* ("pale"), a shade of beige. There are also white individuals. The average range of withers height is 40–44 cm for males and 37–41 cm for bitches. Males weigh 13–15 kg, bitches 10–13 kg (Sárkány – Ócsag 1977: 70–71). The distinctive bushy coat, however, covers a rather unimproved skeletal system. In addition to similarities in stature, inner frontal widths measured between the orbits of four prehistoric "turbary" dog skulls correspond closely to the values cited for modern "Collie-like" pariah dogs from the Middle East (Menzel 1960: 27), as well as those of the Puli (Bartosiewicz 2002: Table 6). This reflects direct relationships between three very distant forms. It rather shows that breeding effort was put into developing traits other than the skeletal system.

The Pumi, another sheepdog, displays terrier-like characteristics. Its body is square with an elongated head and developed muzzle. The ears are semi-erect, the tail is upright. The medium-long coat is never corded or felty, in several but solid colours. The withers height ranges between 35–44 cm. Pumis weigh 8–13 kg (Sárkány – Ócsag 1977: 70–71). In addition to herding even large livestock such as cattle, Pumi has also been used to destroy vermin such as rodents. This breed supposedly evolved during the 17–18th centuries by crossing the Puli with Spitz-like sheepdogs from France and Germany. The breed, however, was separated from Puli only during the mid-20th century.

The Mudi is another medium-sized sheepdog with prick ears. The body is distinctly sloping towards the rear. The head and the limbs are covered by a short, smooth coat. The trunk has somewhat longer, wavy or slightly curly hair. The Mudi also comes in different but always solid colours. The average range of withers height is 41–47 cm for males and 38–44 cm for bitches. Males weigh 11–13 kg, bitches 8–11 kg. Among Hungarian sheep dogs, Mudi has the least distinctive look. Because of its agility, Mudi is popular with shepherds but can also be

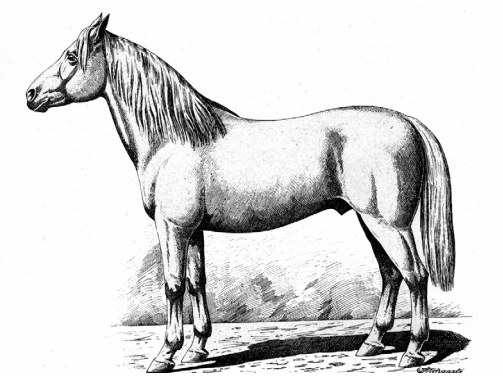

Fig. 15. Hucul horse (Zürn 1902).

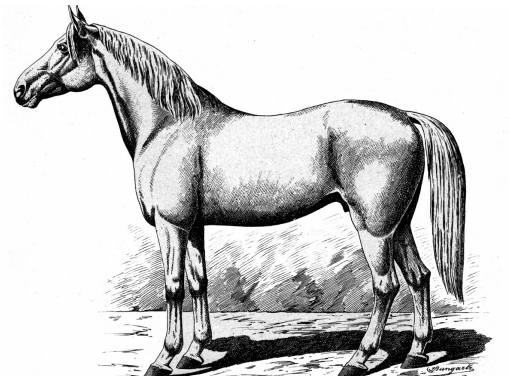

Fig. 16. Lipizzaner horse (Zürn 1902).

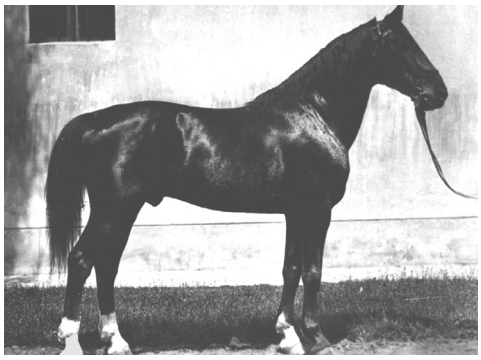

Fig. 17. Nonius XLIII, an Anglo-Normand stallion from The Royal State Studherd of Mezőhegyes int he 1930s (Photo Berta Waltner).

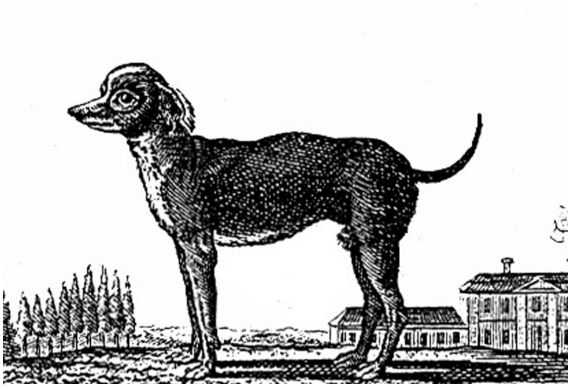

Fig. 18. "Turkish [pariah] dog" from the 18th century in Buffon's Histoire Naturelle.

Fig. 19. Medieval sheepdog in a nativity scene painted by Master M. S. in 1506.

trained to herd large livestock. Some are used even in hunting wild boar. Mudi was bred during the 19th century presumably crossing Hungarian herding dogs with prick-eared German sheepdogs.

Both large Hungarian herding dogs are robust, bred as guards against wolves, bears and criminals. They are white. Komondor has a long, corded coat often felted. This may, however, be a relatively recent trait: early 19th century pictorial evidence shows a major difference between the unimproved and recent forms (*Figs. 20* and *21*). The average ranges of withers height are 65–80 cm for males and 55–70 cm for bitches. Males weigh 50–60 kg, bitches 40–50 kg (Sárkány – Ócsag 1977: 70–71). Some believe that the Komondor was imported by the Conquering Hungarians, according to others it was introduced into the Carpathian Basin by the Cumanians, a pastoral people of Turkish origins during the 13th century. Even the name Komondor has been interpreted as "Cumanian dog".

The Kuvasz is another impressive herding dog. Its musculature is dry, with a strong but not coarse skeletal structure. It has an almost square, rectangular frame and a white coat with thick, wavy hair. The withers height of males is 71–75 cm, bitches 66–70 cm. Males weigh 40–52 kg, bitches 30–42 kg (Sárkány – Ócsag 1977: 70–71). Although it is not a proof of the breed's

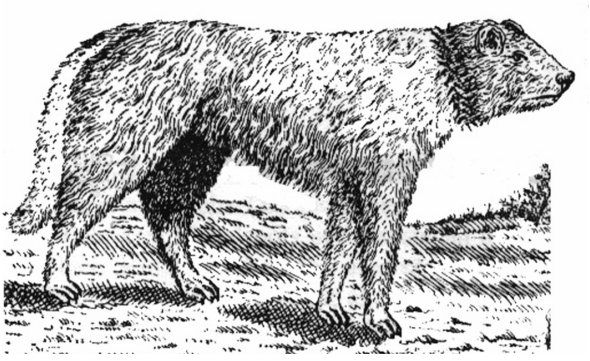

Fig. 20. Drawing of a Komondor from 1815 (Sárkány and Ócsag 1977).

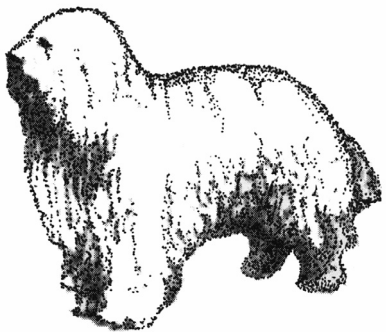

Fig. 21. Modern Komondor (Author's drawing).

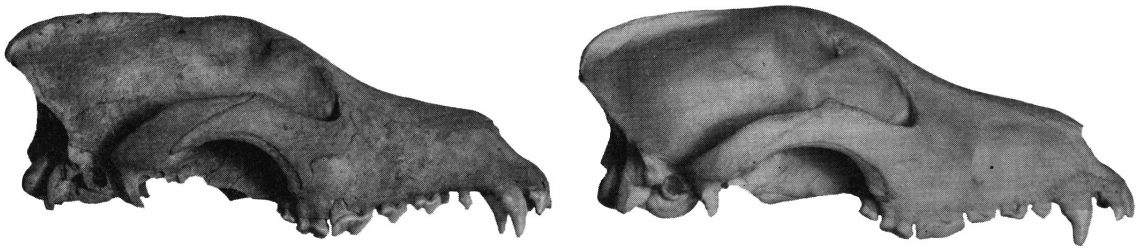

Fig. 22. Skull of a 16th century large dog from the site of Szentkirály and of a modern Kuvasz (Matolcsi 1982).

late medieval existence, a Kuvasz-like skull came to light during the excavations of the 16th century settlement of Szentkirály (Matolcsi 1982). In the absence of data on stature and coat, this dog shall not be equated with Kuvasz, although its craniological resemblance to Kuvasz is striking (*Fig. 22*).

The Vizsla is a medium-sized, short-coated, multi purpose hunting dog. It is rather lightly built, resembling a pointer. It is also good at retrieving, even in wetland environments. The coat comes in shades of an attractive golden rust. Males measure 57–64 cm at the withers, females attain 53–60 cm. Their weights range between 22–30 kg. This breed is thought to have been bred in the 18th century from the ancient Hungarian foxhound and the yellow coloured Turkish hunting dog. It appeared in its present form in the 19th century when it was improved by breeding with more foreign gundogs. The wire-haired Hungarian Vizsla has been registered as a separate autochthonous breed.

The Hungarian Greyhound has a long, muscular body with a deep chest and long tail (*Fig. 23*). Hungarian Greyhounds have a short and coarse coat in all colours, displaying patterns of solid, spotted and brindle. Its withers heights range between 63 to 70 cm, weights between 22 to 31 kg. To increase its speed, the Hungarian Greyhound was crossed with different sighthound breeds in the 19th century. The origins of Hungarian Greyhound are unclear, but both bone remains (Bartosiewicz 1997b) and written references to hare-hunting *leporarius* dogs are available from the Middle Ages. According to popular opinion, this breed also dates back to the Hungarian Conquest. In fact, the bones of extremely slender Roman Period dogs in Pannonia predate the arrival of ancient Hungarians (Bökönyi 1984; Bartosiewicz 2000) by centuries. This special form may be bred and maintained, but its presence should by no means be taken as a proof of continuity between greyhounds from various periods.

The Transylvanian Hound comes in two varieties: short-legged, used on fox and hare; and long-legged, specializing in wild boar, deer, wolf and lynx. The body is nearly square with a muscular neck of medium length. The pronounced withers are accompanied with a long, broad chest. The ears are hanging and have rounded tips, the tail is set low. The short-legged variety has short and straight coat, the long-legged Transylvanian hound is characterized by longer, denser, coarser hair. The coat is reddish-brown toward the abdomen and legs in the short-legged variety. The long-legged variety is black with red marking on the eyebrows, muzzle and legs. The withers height of the short-legged variety ranges between 45 to 50 cm. The long-legged variety attains a withers heights between 55 to 65 cm. These dogs weigh between 30 to 35 kg. Although this type of hunting dog has also been associated with conquering Hungarians in the popular literature, its origins are uncertain. Owing to its function and region of origins, however, this is certainly a relatively old breed, even if its past is unclear. Hounds (*molossus, vertagus, canis venaticus*, etc.) may have been linguistically distinguished by the 12th century, as opposed to the generic term "kutya", which first occurs in a 1511 document (Szamota – Zolnai 1902–1906: 166).

4.6. Poultry and hare

Three domestic bird species, hen, goose and turkey are listed in Appendix 1 as having autochthonous breeds in Hungary. Domestic hen *(Gallus domesticus* Linnaeus 1758) is represented by six breeds, distinguished by plumage (Szalay 2000). They include Hungarian Yellow, Hungarian Speckled, Hungarian White, Bare Necked Speckled, Bare Necked White and Transylvanian Bare Necked. Domestic hen has been present in the archaeozoological record of Hungary since the Iron Age (Bökönyi 1974). Little research has been done, however, concerning intraspecific variability in this animal. Owing to its very short reproduction cycle, genetically the hen is the most "malleable" of all animals discussed in this paper.

The only autochthonous goose (*Anser domesticus* Linnaeus 1758) breed is the Hungarian Frizzle Feathered goose (Mihók 2000a). However, even distinguishing between the bones of domestic goose and its wild ancestor can be difficult in archaeozoological assemblages (Gál 2002). Nevertheless, early medieval Árpád Period tax rolls mention white (domestic) geese (Matolcsi 1975). Naturally, direct continuity between those birds and the modern autochthonous breed would be difficult to accept.

Bronze Turkey (*Meleagris gallopavo* Gould 1800; Mihók 2000b) is an autochthonous breed not easily linked with Conquering Hungarians. Hypothetical precolumbian pictorial evidence from Europe, as well as two 13–14th century (?) bone finds from Switzerland and Hungary, have temporarily cast doubt on the role played by the Spanish in distributing this New World bird (Bökönyi – Jánossy 1958). Notably, however, none of the 21 earliest occurrences of turkey bone in Northern and Central Europe listed by Benecke (1994: 394, Tabelle 30) predate the 16th century. The first written reference to turkey in Spain is known from 1511, while in England it dates to 1541, half a century after Columbus' discovery of America (Crawford 1984).

Turkey was introduced to Hungary during the Ottoman Turkish Period, although not necessarily through Turkish mediation. This bird had first been brought to England by Levantine traders, whom the English called "Turkey merchants". Hence the name, "Turkey bird", or "Turkey cock". Others, including the Turks themselves, thought they originated in India, i.e. the place they then believed was India, as is reflected in the name of turkey in various languages (*Fig. 24*). A 16th century, Turkish Period turkey sternum came to light at the Székesfehérvár city wall (Bartosiewicz 1997c; *Fig. 25*). The bones from a mature as well as a young adult turkey were found at Vác-Music School, another urban site (Bartosiewicz 1995a). Recently, a tarsometatarsus fragment was identified in the 17th century castle of Szendrő-Felsővár (Tassi, in press). In Hungary, written sources mention 17th century turkey keeping in the Danube-Tisza Interfluve (Matolcsi 1975: 218).

The Hungarian Giant Rabbit (*Oryctolagus cuniculus* Linnaeus 1758; Holdas 2000: 70–71) is another autochthonous breed whose bones would be difficult to identify. Although remains of the wild brown hare (*Lepus europaeus* Pall. 1778) occur quite frequently in

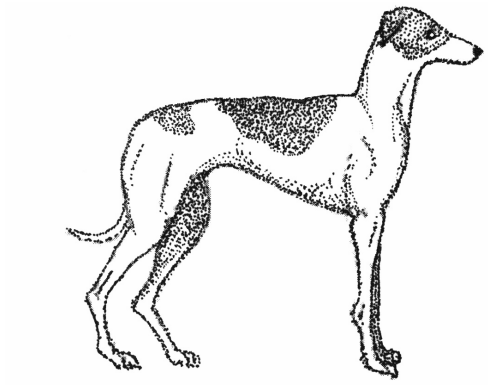

Fig. 23. Hungarian Greyhound (Author's drawing).

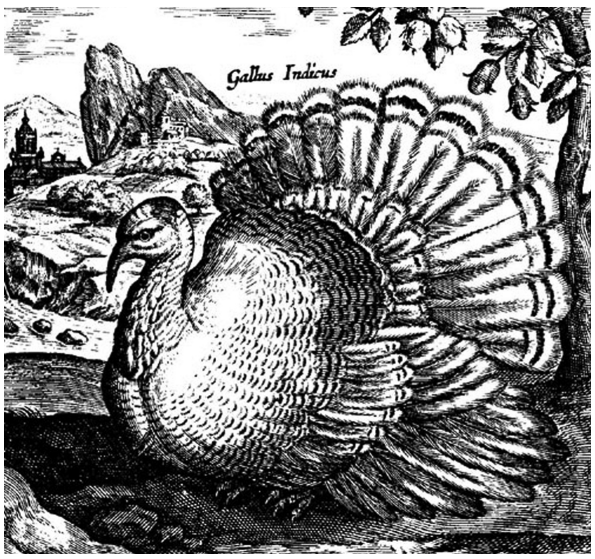

Fig. 24. Etching showing an early 17th century turkey as "gallus indicus" (Collaert 1617).

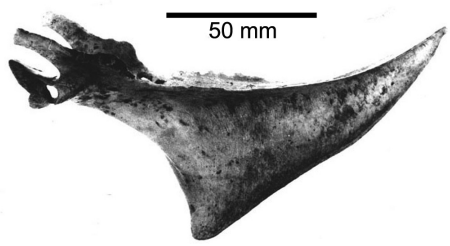

Fig. 25. Turkey sternum from an Ottoman Period deposit in Székesfehérvár (Photo Krisztina Pálfay).

archaeozoological assemblages in Hungary, remains of rabbit could be identified only at the medieval royal centre in Visegrád (Bökönyi 1974). The smaller size of rabbit is a basic criterion in identification, so bones of the "giant" form would probably blend in readily with those of wild brown hare. Fortunately, one may also presume that this modern bred has also been developed relatively recently. Nevertheless, in depth research into this problem would be most welcome.

Among the endangered breeds, Appendix 2 also lists a single poikilothermic species, Hungarian carp (*Cyprinus carpio forma hungaricus*). It is, however, not only this traditional breed, but wild carp itself that has been threatened by extinction through crossing with modern carp breeds. Many regional varieties of this fish species exist, most easily distinguished on the basis of mature size (Bartosiewicz et al. 1994).

5. Conclusions

The question posed in the title has already been answered by the motto of this paper. Autochthonous breeds are human creations and, at the same time, living creatures (Bodó 2001). Hence the term "monument" may be misleading. This point was supported by a number of arguments in this study:

- While natural evolution is random, the effects of domestication have been shaped by both conscious and sub-conscious human action. This dynamic process is perpetual and irreversible.
- Breeds must change along with culture. Therefore, no breeding work can re-create neither the wild ancestor nor past, "ancient" breeds.
- Most conspicuously, none of the autochthonous breeds could be traced back in their present form for more than 200–300 years in the archaeozoological record. This shows the extreme dynamism in the culture-driven, artificial evolution in domesticates.
- Even large, unipara animals of a long reproduction cycle are prone to massive change during centuries. At the other extreme, breeds of small prolific species (e.g. dog and poultry) emerge and disappear rapidly. The chances of detecting their ancestors, therefore, are poor.
- The ancient nature of autochthonous breeds should not be mistaken for a biological fact. These animals represent part of an evolutionary continuum that retained some ancient features, often as a result of professional breeding work.
- Present-day concern with autochthonous breeds satisfies a need to protect genetic resources in a variable form that contribute to the diversity of domestic stocks, and may be mobilized continuously as new requirements are set for domestic animals and their products.
- The romantic image of autochthonous breeds is a "product" in and of itself. It is in high demand in many modern societies that seek constancy amidst perpetual change.

Although, rather than monuments, autochthonous breeds are modern animals whose ancient features have been preserved, one should be comforted by the fact that they are as diagnostic of our current culture as any other artifact.

Acknowledgements

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