



Paleolithic dogs: Why sustained domestication then?



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ABSTRACT

Available evidence suggests that sustained canid domestication, resulting in the evolution of modern dogs, took place in Europe, but not before about 16,000–17,000 years ago, and perhaps slightly later. The basis for inferring this timing is clarified, in view of recent objections to its previous inference. In any case, wolves (*Canis lupus*), the ancestral species, and behaviorally modern humans have co-existed for much longer than that. Why dogs evolved when they did, and not sooner, lies in part in the precarious ecological dynamics confronted by many animals in Late Pleistocene times. A particular lineage of wolves successfully navigated those dynamics by becoming incorporated into human society. Relatively recent evolutionary models suggest that reduced fear and greater capability to cope with the stress associated with environments increasingly populated by people at this time likely characterized the founding stock. Recent genetic assessments have been interpreted as perhaps implying that the particular wolf subspecies giving rise to dogs has become extinct. While possible, an alternative explanation for the documented genetic patterns is that the subspecies lineage in question ceased to exist as a phenotype, but survived and thrived evolutionarily as dogs. In a very real sense, dogs are wolves.

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1. Introduction

A recent empirically based case specifies that sustained domestication of the dog (*Canis lupus familiaris*), resulting in the emergence of modern dogs, likely began sometime in the interval between 16,000 and 17,000 years ago (Morey, 2014). That interval represents a slight revision to Morey's (2010: 55) previous estimate of 15,000 years ago, and is based on additional information. Clearly recognizable dogs, distinguishable from their wild ancestor, the gray wolf (*C. lupus*), are securely documented not long after the 16–17,000 BP interval. Accordingly, the revised estimate reflects dates associated with earliest securely dated and identified dog remains, and some that were possibly in a state of transition from wolf to dog, as covered in Section 4. Additionally, the specified time frame allows for modest delay in the appearance of recognizable domestication changes that signify dogs osteologically. Left unaddressed in that study, though, is the issue of why canid domestication likely occurred during that interval. Morey (2014) left that issue uncovered, given the importance of addressing recent studies that had sought, on archaeological grounds, to advance cases for a much earlier onset of canid domestication, in some cases well exceeding thirty thousand years ago (e.g., Germonpré et al., 2009, 2012; Ovodov et al., 2011). Those cases were not found convincing (see also Crockford and Kuzmin, 2012; Boudadi-Maligne and Escarguel, 2014; Drake et al., 2015), and all things considered, the time range of 16–17,000 years ago now seems most plausible.

This presentation directly addresses the issue of how and why sustained canid domestication apparently ensued at about that time.¹ Before advancing that case, however, Germonpré et al. (2015a) have recently objected directly to Morey's (2014) previous inference, so it is necessary to address their objections.

2. Domestication

Early in their critique, Germonpré et al. (2015a) disputed Morey's (2014) inference about the relative rapidity of the canid domestication process, noting that “he fails to add how he views this domestication” (Germonpré et al. (2015a: 210). They are correct, as doing so was not an objective of that presentation. It is here, however. For the moment, though, we introduce the concept of animal domestication only cursorily, reserving the full development of our case regarding dogs until other matters have been addressed.

Without claiming to be exhaustive, it seems that historically most scenarios invoked to account for the emergence of the kinds of symbiotic ecological relationships that qualify as domestication tend to fall into one of two broad categories (see also Russell, 2012: 215–246). In one category, humans purposefully set out to accomplish domestication as an objective, in order to gain maximum benefit from the association (e.g., Zeder, 2006, 2012; earlier examples reviewed in Morey, 2010: 57–59). In the other category, domestication was a natural outgrowth of an ecological association between people and animals, in this case wolves, and transpired regardless of how those people may have viewed their association with those animals (e.g., Morey, 1994, 2010: Chapter 4; Coppinger and Coppinger, 2001; Crockford, 2006). Morey (1994) urged this perspective more than two decades ago regarding dogs, so not surprisingly it is the guiding perspective here. Rather than recapitulate that effort, however, in Section 5 below our treatment is restricted to more recent related scenarios in that category, as a backdrop for the particular case developed here. We develop that case after seeking to clarify issues concerning canid domestication timing

¹ An ongoing active collaboration involving numerous investigators, described by Grimm (2015), promises to shed much more light on when and why wolves became domestic dogs. We hope that our own effort can contribute in some way to this goal.

3. Domestication timing clarified

3.1. Dogs?

Germonpré et al. (2015a) objected to Morey's (2014) bases for rejecting a series of canid skulls dating between about 36,000 and 15,000 years BP as dogs. Included are specimens from Goyet Cave, Belgium (Germonpré et al., 2009), Předmostí, the Czech Republic, (Germonpré et al., 2012, 2015b), Eliseevichi 1, Russia (Sablin and Khlopachev, 2002; Germonpré et al., 2009, 2012), and Mezin and Mezhirich, Ukraine (Germonpré et al., 2009, 2012). Though not covered by Germonpré et al. (2015a), for the sake of completeness this presentation includes the ca. 33,000 year old canid from Razboinichya Cave, Siberia (Ovodov et al., 2011), also covered in Morey (2014). Bypassing some of the technical concerns about the comparative data bases used by Morey (2014), for present purposes we begin from the premise that all the above specimens can in fact legitimately be regarded as dogs. With that premise in mind, Germonpré et al. (2015a: 211) report, on the one hand, that their use of the term Paleolithic dogs is intended to distinguish them from modern dogs, with the accompanying implication that they might be, but aren't necessarily, directly ancestral to recent dogs. On the other hand, Germonpré et al. (2015a: 210) suggest that “the domestication of the wolf was a long process that started early in the Upper Paleolithic, and consisted of a gradual transformation from wild wolves via Paleolithic dogs to modern dogs, during which admixture could occur.” Even with periodic admixture likely, fully acknowledged (e.g., Morey, 2014: 306), this long process of gradual transformation surely entailed circumstances whereby initial Paleolithic dogs begat further Paleolithic dogs, causing one to expect some reasonable semblance of an emerging lineage to be in evidence.

With that expectation in mind, Fig. 1 presents a bivariate plot of CL (condylobasal length) by approximate date for the canid specimens in question. CL, an overall skull length dimension with stable anatomical reference points (see von den Driesch, 1976: 45), serves as a basic guide to overall size. What this plot shows is that the earliest cases (Razboinichya Cave, Goyet Cave) are also the two smallest of those dating about at or prior to 17,000 BP. The smallest, the Razboinichya canid, is just later in time than the earliest, from Goyet Cave, but available genetic data do not suggest continuity with later dogs beyond either the Razboinichya or Goyet Cave cases (Thalmann et al., 2013). Moving on through time beyond them, there is no size reduction, a longstanding expectation in early domesticates (e.g., Clutton-Brock, 1981: 22), including dogs in particular (e.g., Clutton-Brock, 1995: 16). Instead, they become larger, not markedly, but quite discernibly. The largest, coming in at about 17,000 years ago, are the two from Eliseevichi 1 in Russia (see also Crockford and Kuzmin, 2012: 2799).

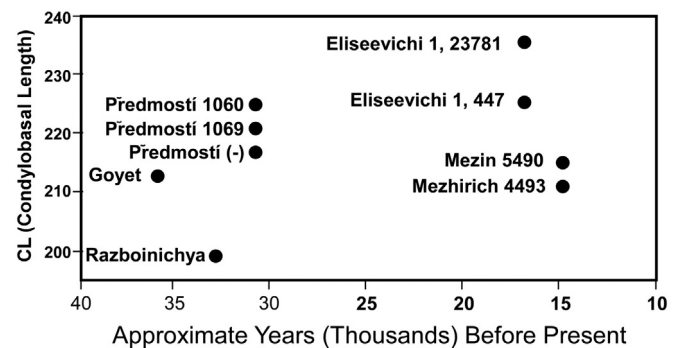


Fig. 1. Plot of CL (condyllobasal length) by approximate date for certain Paleolithic canid specimens assessed as dogs by Sablin and Khlopachev (2002), Germonpré et al. (2009, 2012, 2015a), or Ovodov et al. (2011). Measurement, in mm, follows von den Driesch (1976: 42, 45), and values for these specimens can be found in Germonpré et al. (2012: 187) and Ovodov et al. (2011: 4).

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