

Peer Review

Review of: "Does Palaeolithic Resource Management Leading to Domestication Explain Human “Modernity”?”

Eugenia Natoli¹

1. ASL Roma, Rome, Italy

General comments

This paper explores whether human self-domestication was linked to the management of large mammals during the Late Pleistocene as an initial step toward domestication. While the topic is interesting, it is presented in an unsatisfactory manner. Most notably, the extreme imbalance in section length seriously undermines the readability of the manuscript. The introduction alone spans nine pages, whereas the sections on reindeer and horses cover only a few pages, the section on bovids and hominins barely one page, and the section on dogs less than half a page. The latter is not only quantitatively insufficient but also qualitatively weak. Finally, the discussion is limited to a single page, which is disproportionate given the length of the introduction and the complexity of the topic.

I have several additional concerns.

In the introduction, the authors state: <<Bearing in mind that domestication processes are almost innumerable in nature, it is not surprising that they involve many complexities. Thousands exist in the natural world, laying to rest the view that humans are the only domesticators, shared even by Charles Darwin>>. This is a very strong claim and would require further description and explanation.

In the paragraph on dogs, the authors write: <<*Canis lupus* developed a commensal relationship with humans early on when the waste of human consumption of animals' bodies became abundant enough in camp areas to attract scavengers. Since wolves are animals living in social groups, they were likely to consider humans as members of their social relationships>>. This passage contains a major inaccuracy. While it may be true that <<Even today, domesticated dogs consider their human owners as pack leaders>>, i.e. modern domestic dogs often treat humans as social partners or leaders, this cannot be

projected onto the earliest phases of domestication. Early wolves scavenging near human camps would not have perceived humans as members of their social group.

Overall, the manuscript needs substantial streamlining to improve its readability and focus. Paradoxically, my main suggestion is to remove large portions of text that discuss issues only loosely connected to the title, and instead to expand those sections that are more directly relevant.

The following comments reflect differences of theoretical perspective rather than direct criticism. For instance, I am sceptical of the “domestication syndrome” as it is currently formulated, as it seems to capture only part of the phenomenon. It is plausible that selection for docility affects neural crest cells during embryonic development, and leads to changes in pigmentation, craniofacial structure, and the endocrine system. However, these traits could only persist phenotypically in protected environments with a reliable food supply and low predation risk. In natural environments, conspicuous coat colours would likely be counter-selected if present both in prey species and in predator species. Thus, domestication may not directly introduce these genes into the gene pool, but rather allows their phenotypic expression.

The same reasoning can be applied to other components of the ‘domestication syndrome’ such as more frequent and non-seasonal oestrus cycles (which can lead to their complete elimination), a luxury that domestic animals can afford due to the warmer environment in the barn or at home.

Finally, prolonged juvenile behaviour and various other neotenic effects are present in domesticated species living in a protected environment: in the natural environment, they would not have been able to afford this. A comparison among domestic populations (e.g., free-ranging vs. pet dogs and cats) illustrates this clearly, as street animals show far weaker neotenic traits than pets, despite belonging to the same domesticated species. A discussion of this point would significantly strengthen the manuscript.

Minor points

It would be very helpful if the manuscript included line numbers to facilitate precise referencing in the review process.

Declarations

Potential competing interests: No potential competing interests to declare.