



Chimpocentrism and reconstructions of human evolution (a timely reminder)



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ABSTRACT

Chimpanzees, but very few other animals, figure prominently in (recent) attempts to reconstruct the evolution of uniquely human traits. In particular, the chimpanzee is used (i) to identify traits unique to humans, and thus in need of reconstruction; (ii) to initialize the reconstruction, by taking its state to reflect the state of the last common ancestor of humans and chimpanzees; (iii) as a baseline against which to test evolutionary hypotheses. Here I point out the flaws in this three-step procedure, and show how they can be overcome by taking advantage of much broader phylogenetic comparisons. More specifically, I explain how such comparisons yield more reliable estimations of ancestral states and how they help to resolve problems of underdetermination inherent to chimpocentric accounts. To illustrate my points, I use a recent chimpocentric argument by Kitcher.

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1. Introduction

Let me start by setting up a straw man. The straw man believes that to reconstruct human evolution, there is one animal (other than the human animal) which should be privileged over all others: our closest relative, the common chimpanzee (*Pan troglodytes*). More specifically, the straw man's favored chimpocentric reconstruction consists of three steps (see Fig. 1).¹ In the first, the chimpanzee is used to single out those features that make humans unique, and thus are in need of reconstruction. So, from a direct comparison between us and chimpanzees, the straw man infers a uniquely human trait or character state T^* ; humans have it, whereas chimpanzees rather exhibit T . In the second step, extant chimpanzees serve to initialize the reconstruction. That is, their state T is assumed to adequately reflect the state of the last ancestor which humans have in common with them (*aka* the LCA, living some 6–7 mya). Third, the straw man now sets himself the task of identifying a mechanism which could have given rise to the transition from T (in the LCA) to T^* (in humans), say, a selective pressure S , which humans

faced but chimpanzees didn't. With that, the straw man would have reconstructed the evolution of T^* in our lineage.

To my mind, no serious philosopher (nor any scientist, for that matter) has endorsed our straw man's line of reasoning exactly, at least not as of late. Yet, one still finds unmistakable traces of it in the writings of many (including my own, see Vaesen, 2012, even though my aims there were not really reconstructive). In light of that, the primary purpose of this paper is to make explicit the sense in which chimpocentric reasoning undermines the credibility of reconstructions that rely on it. Second, the paper shows what can be done about it, by introducing an alternative model, the Comparative Convergence Approach. Finally, I illustrate the reality and threats of chimpocentrism as well as the merits of the Comparative Convergence Approach, by considering a representative case, namely a reconstruction offered by Philip Kitcher in his recent book *The Ethical Project* (2011).

There are two reasons for bringing up and elaborating these points. The first is that, although the points themselves are not new to this paper and have received attention outside philosophy

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¹ Throughout the paper, chimpocentrism will refer to this three-step procedure, rather than to the idea that chimpanzees are much more clever than any other non-human animal (a common, alternative definition of the term).

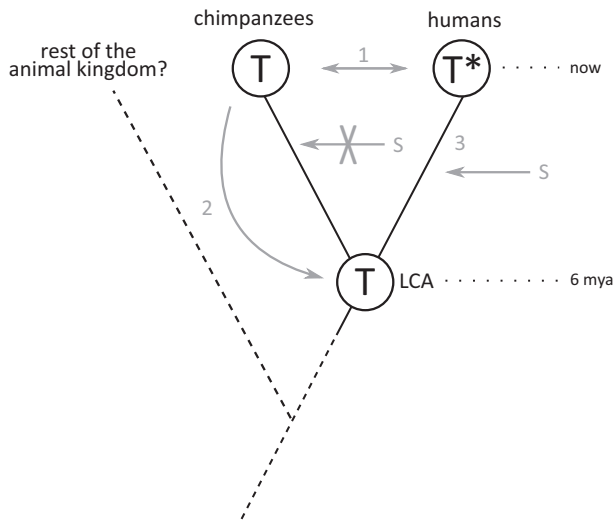


Fig. 1. Chimpo-centric reconstruction of human trait or character state T^* .

(see e.g., Sayers & Lovejoy, 2008, plus the response by Laland & Brown; Reader & Hrolic, 2012; Sayers, Raghantie, & Lovejoy, 2012), a systematic and analytic treatment is still missing. The second is that such a treatment, and a reminder of the points, is timely in light of recent endorsements of chimpanzeism (Kitcher being one prime example thereof).²

The paper proceeds as follows. Section 2 diagnoses the problems in our straw man's chimpanzeism. Section 3 explains how these problems may be addressed by what I will call the Comparative Convergence Approach. I also identify the conditions preventing application of that approach. Then, in Section 4, I show that Kitcher's reconstruction (2011) bears striking resemblances with chimpanzeism; and that Kitcher cannot reasonably invoke as an excuse the four condition just mentioned (see Section 5). I conclude in Section 6 with a cautionary note: while chimpanzeist reconstructions may sometimes be excusable on pragmatic grounds, they should always be presented with great caution, and with explicit acknowledgment of their limitations.

2. Three threats of chimpanzeism

Apart from ignoring the simple fact that the common chimpanzee (*Pan troglodytes*) is as closely related to us as is the bonobo (*Pan paniscus*), the chimpanzeist model in Fig. 1 is problematic in each of its three steps.³ Let me start with the most straightforward problem, associated with step two, and then consider step three and one.

2.1. Step 2: Chimpanzees as a model for the LCA

In step two, the state of the LCA is directly inferred from the state of extant chimpanzees. What this step thus takes for granted is that evolutionary change has taken place in our lineage (from T

to T^*), and no change happened in that of our closest relative (T was conserved). Yet, at least from a strictly chimpanzee-centric perspective, it is just as likely that T^* (rather than T) was the ancestral state, implying that chimpanzees lost T^* instead of humans developing T^* . In that case, one would need to reconstruct chimpanzee evolution—and attempts to reconstruct state T^* in humans would be pointless.

One may think that no sensible person would take step two of our chimpanzee-centric model. Unfortunately, sensible people actually have done so. A textbook example concerns the explanations provided in the 1970s and 1980s to account for the supposed evolution of concealed ovulation in humans, i.e. the absence of obvious signs indicating a female's period of fertility. That one thought to need such an explanation was the result of using the chimpanzee as a direct model for the LCA (Laland & Brown, 2003; Pawlowski, 1999): one assumed the ancestral state to correspond to the exaggerated sexual swellings observed in extant female chimpanzees and, accordingly, that one needed to figure out the selection pressures responsible for their disappearance in humans.⁴ The loss of exaggerated swellings was hypothesized to be adaptive because, for instance, it would result in higher levels of paternal investment (Alexander & Noonan, 1979); it would reduce male mate competition while favoring male cooperation (Daniels, 1983); it would prevent women from actively avoiding the pain and risks of labor (Burley, 1979; for an overview of all the hypotheses proposed then, see again, Pawlowski, 1999).

Only when the ovulatory signs of other primate species were taken into account (Burt, 1992; Pawlowski, 1999; Sillén-Tullberg & Møller, 1993), it transpired that the real question was not so much “why did humans lose exaggerated swellings?” as “why did exaggerated sexual swellings evolve in chimpanzees?” (Laland & Brown, 2003). Using phylogenetic analysis, Sillén-Tullberg and Møller for example found that the most parsimonious phylogenetic map producing the distribution of visual signs of ovulation across the Anthroidea (the suborder including all monkeys, apes and humans) was one in which the LCA had only slight anogenital signs of ovulation, rather than chimp-like exaggerated swellings. This should not come as a surprise given that none of the Hominoidea (humans plus our five closest relatives, the apes) have exaggerated swellings, except for the two *Pan* species (chimpanzees and bonobos); these two, not humans, appear to be the exception in the clade (see Fig. 2).

To be sure, phylogenetic analyses have suggested also quite a few similarities between chimpanzees and the LCA. These would for instance have in common their size, encephalization, habitat, diet and locomotion (Moore, 1996), and some aspects of their social life (Foley, 1989; Ghiglieri, 1987; Wrangham, 1987, but see Section 5). The results of these comparative studies, ironically, may even have prevented chimpanzeism from disappearing. From established similarities has been inferred similarity as regards traits which have not been subject to phylogenetic analysis. But, evidently, being alike in some respects does not imply being alike in all respects. For any given trait the state of the LCA must be established—and that implies discarding chimpanzeism.

² Chimpo-centrism is often disguised as what one could call primatocentrism. Here data on primates other than chimpanzees are discussed, but do not enter any phylogenetic analysis. So basically other primates just serve to single out what is special about chimpanzees, which in turn serve purposes of initialization. Further, in such primatocentric accounts the evidential significance of convergent evolution (for instance, in non-primate species) is typically ignored. See e.g., Joyce (2006), Prinz (2007) and Dubreuil (2010).

³ Notwithstanding our close relatedness to bonobos, I have never encountered reconstructions that would reasonably qualify as bonobocentric. Chimpo-centric accounts that do mention bonobos, usually do it in passing; bonobos are briefly argued to resemble the common chimpanzee to such an extent that they can be further neglected (for an example, see Section 5). Yet, ignoring the differences between chimpanzees and bonobos is an easy source of error, especially when it concerns determining the state of the LCA (again, see Section 5).

⁴ In the 1970s, owing to the work of Washburn & DeVore (1961) and DeVore & Washburn (1963), baboons were almost as popular as chimpanzees for reconstructing our lineage's past, and this was predicated on the idea that savanna-dwelling baboons are more likely to face ecological challenges similar to those faced by our savanna-dwelling ancestors. Hence, it would be more accurate to say that in the 1970s the motivation behind explanations of concealed ovulation derived from the application of a chimpanzee/baboon model (baboons having exaggerated sexual swellings too). The perceived need for such an explanation persisted, however, even when the baboon model had already fallen into disfavor.

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