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SHORT COMMUNICATION

"*Australopithecus afarensis*": A Composite Species

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ABSTRACT. In response to a critique by FERGUSON (1989), LEONARD (1991) reiterates most of his original arguments for supporting "*Australopithecus afarensis*" JOHANSON, WHITE, and COPPENS, 1978 as a single species. He disregards the principle of morphological equivalence by comparing the dental metrics and morphology of a hominid with those of species of the Pongidae, which do not correspond with the degree of variation in hominids, instead of with those of species of the Hominidae. He fails to refute clear evidence that the range of variation of dental metrics and morphology in "*A. afarensis*" exceeds that seen in species of the Hominidae. On the basis of extreme variation, "*A. afarensis*" is, therefore, interpreted as representing a composite species.

Key Words: "*Australopithecus afarensis*"; Hominid; Pongid; Dental metrics and morphology; Range of variation.

INTRODUCTION

Ever since the naming of "*Australopithecus afarensis,*" its validity and availability have been disputed. The authors of "*A. afarensis*" got into difficulty by naming a new species *before* making a comprehensive comparative study of the range of variation in the fossil sample from Laetoli and Hadar.

LEONARD and HEGMON (1987) claim that "*A. afarensis*" represents a single species according to a statistical and morphological analysis of selected teeth compared to those of modern great apes. In a critique, FERGUSON (1989) refutes this analysis as fundamentally flawed by comparing a member of the Hominidae with an entirely different family, the Pongidae, instead of with other hominids. The range of variation in pongids is much greater than in hominids so it is not surprising that the hominid "*A. afarensis*" falls within the range of variation of pongids. When compared with hominids, however, "*A. afarensis*" falls outside their range of variation.

In response to this critique, LEONARD (1991), (the date is hereafter omitted), attempts to disprove the evidence for great variation in the Laetoli/Hadar sample, again by using the pongid analog and naturally coming to the same conclusions as before that the single species hypothesis cannot be rejected.

The purpose of this paper is to reply to LEONARD's response and briefly review the metrical and morphological dental evidence of great variation that indicates "*A. afarensis*" is a composite species.

RESULTS AND DISCUSSION

LEONARD criticizes FERGUSON (1989) for selectively presenting data that supports his case, while ignoring the "more comprehensive" studies on the issue of dental variation. Regarding selective data, as any taxonomist knows, "neither specimens nor taxa are compared in all their attributes" (BLACKWELDER, 1967). As for ignoring the comprehensive studies on the issue of dental variation, KIMBEL and JOHANSON (1985) do not include the I^1 index, the C/V for the canines, the P_3 crown shape indices, and the C/Vs do not agree with those of LEONARD and HEGMON (1987).

CONSISTENCY

LEONARD says that the Laetoli/Hadar sample is not consistently more variable than other fossil hominid species. The fact that certain teeth in some hominid species are more variable than in "*A. afarensis*" is irrelevant. The range of variation in valid species of hominids is not being questioned, and a dental character does not show the same degree of variation in different kinds of teeth.

LEONARD says that "specimens assigned to a distinct species should consistently display a suite of characteristics associated with the species." But this is not true for "*A. afarensis*" in which "single specimens can be matched in other samples representing different taxa" (JOHANSON et al., 1978).

THE PONGID ANALOG

LEONARD claims that the use of modern pongids rather than fossil hominids is a "logical choice" since modern apes are biological species, unlike fossil hominids which are morphospecies, and thus the specific status of the apes is sure. By the same logic, LEONARD cannot be sure that the morphospecies "*A. afarensis*" is a single species. It is worth recalling that most species in the world are morphospecies and considered valid for comparative analysis. Morphospecies are by inference biospecies (CAIN, 1963).

LEONARD states that since the Laetoli/Hadar specimens represent the earliest known hominids and, therefore, the most recently derived from the last pongid ancestor, he assumes that "there is good reason to believe that these hominids are recent descendents of an ancestor with high sexual dimorphism and many pongid affinities." But Miocene or Pliocene apes were more generalized than modern apes (LE GROS CLARK, 1964). And since high sexual dimorphism is a specialization, the common pongid ancestor was probably not highly sexually dimorphic. The dental traits in the living apes are the result of specialization, and *Australopithecus* had none of their special traits (HOWELLS, 1967). Unlike modern pongids, sexual dimorphism is poorly developed in the dentition of *Australopithecus* (ROBINSON, 1956).

LEONARD justifies comparing the dentition of *Australopithecus* from Laetoli and Hadar with that of modern pongids by assuming that the Laetoli/Hadar *Australopithecus* is "not far removed from the common ape ancestor." On the contrary, *Australopithecus* is far removed from the common ape ancestor. "*Australopithecus* had reached an advanced stage of development in the direction of evolution which has characterized the Hominidae, and divergent from the direction followed by the pongid sequence of evolution" (LE GROS CLARK, 1964). "All the important morphological features of the dentition are fundamentally of the hominid type (and very different indeed from the dentition of all known pongid genera, recent and extinct)" (LE GROS CLARK, 1963).