Researcher argues that there's more to the genus Homo than we may think

August 28 2015, by Joe Miksch

Three mandibles accepted as representing Homo habilis. Note that each mandible presents a different configuration from the first molar (M1) to the last (M3). The dart (>) points to the part of the molar (anterior or posterior) that is narrower. The asterisk (*) denotes that the M3 of OH13 (Homo habilis) is ovoid. Fossils not to scale. Credit: © Jeffrey H. Schwartz

Among the many things that science is, it is a system of categorization. The human fossil record—file under genus, Homo; species, sapiens—is rather poorly categorized, contends the University of Pittsburgh's Jeffrey Schwartz, leading to a narrow view of what he believes to be a more complex and expansive evolutionary history than most anthropologists recognize.

In the Aug. 28 issue of the renowned journal *Science*, Schwartz, professor of anthropology and the history and philosophy of science, argues that, "the boundaries of both the species and the genus remain as fuzzy as ever, new fossils having been haphazardly assigned to species of Homo, with minimal attention to morphology."

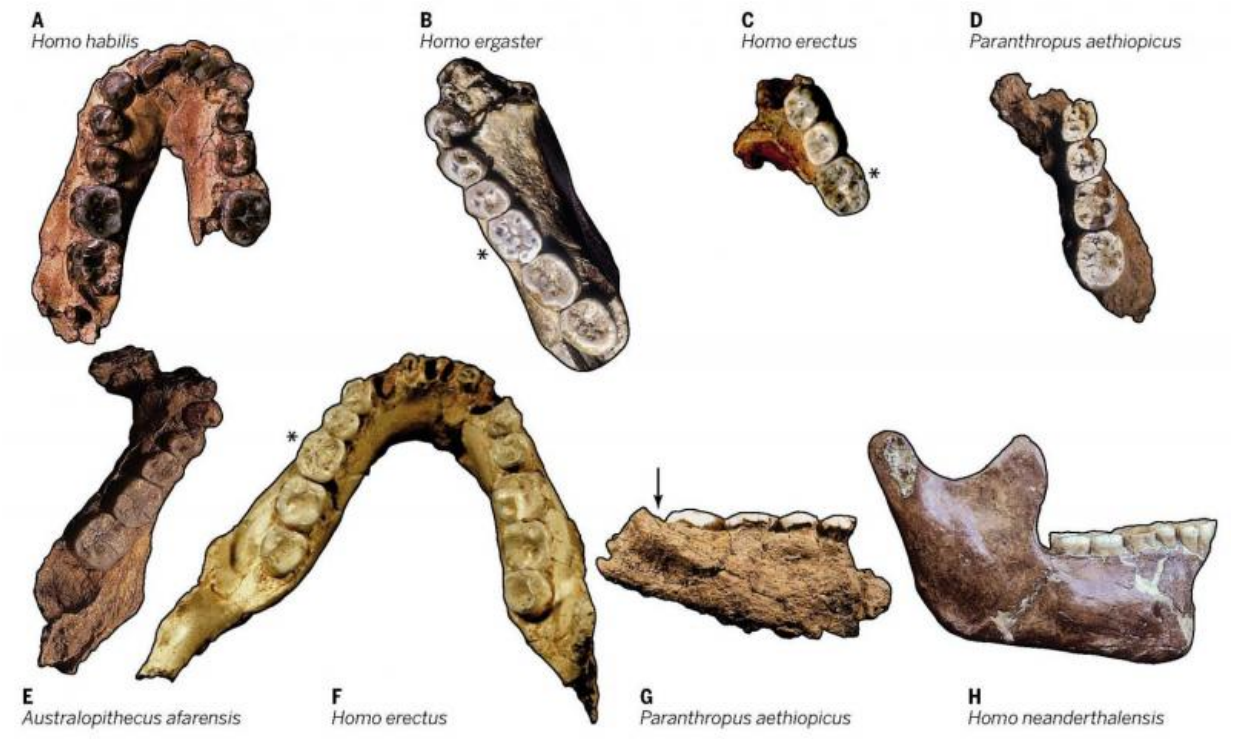
By this, Schwartz means that the form and structure of hominid (a group consisting of modern humans, extinct human species, and all our immediate ancestors) fossils are too often ignored in deference to tradition over objectivity.

As an example, Schwartz cites Jonathan and Mary Leakey's 1960 discovery of 1.8-million-year-old fossils in Tanzania's Olduvai Gorge. When the pair published their findings in 1964, they claimed the fossils represented a new species, Homo habilis.

"There was scant morphological justification for including any of this very ancient material in Homo," Schwartz writes. "Indeed, the main motivation appears to have been the Leakeys' desire to identify this hominid as the maker of the simple stone tools found in the lower layers of the gorge …"

According to Schwartz, including these fossils in Homo, when their age and appearance dictates otherwise, "so broadened the morphology of the genus that other hominids from other sites could be shoehorned into it almost without regard to their physical appearance. As a result, the

largely unexamined definition of Homo became even murkier."



What is “early Homo”? (A to C, F, G, H) Specimens attributed to Homo with dental and mandibular features that resemble those of australopiths [e.g., posteriorly narrow/tapered molars; notch between cheek-facing/buccal cusps (*); anteriorly tall mandible], and (D, E, G) australopiths with features claimed to be specific to Homo [e.g., anteriorly narrow molars; no buccal-cusp notch; last molar not entirely masked by the ascending portion of the mandible (arrow)]. A: OH7 (Homo habilis); B: KNM-ER 992 (H. ergaster); C: Sangiran 6 (H. erectus); D and G: Omo 75-1969-14A (australopith, Paranthropus aethiopicus), (D) occlusal, (G) lateral; E: A.L.128-23 (Australopithecus afarensis); F: Tighenif 1 (H. erectus); H: Tabun II (H. neanderthalensis). The OH7, KNM-ER 992, Sangiran 6, and Tighenif 1 molars narrow posteriorly (A, B, C, and F), but in Omo 75-1969-14A and A.L.128-23 they are narrower anteriorly (D and E). A buccal notch (*) is present in KNM-ER 992 (B), Sangiran 6 (C), and Tighenif (F), but not in Omo 75-1969-14A (D) and A.L.128-23 (E). The last molar of Omo 75-1969-14A (G) would have been partially exposed in front of the ramus

(arrow). The Tabun II mandible (H) is tall anteriorly. The fossils are not to scale. Credit: Jeffrey H. Schwartz

To ultimately understand what is Homo and what is not, Schwartz contends, anthropologists must approach their science in a more systematic fashion in order to truly understand the evolutionary past that led to the human of today.

"If we want to be objective, we shall almost certainly have to scrap the iconic list of (genus and species) names in which hominid fossil specimens have historically been trapped and start from the beginning," he says.

More information: "Defining the genus Homo." *Science* 28 August 2015: Vol. 349 no. 6251 pp. 931-932 DOI: 10.1126/science.aac6182

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