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Anthropology 570
First Essay
16 April 2007

Within the framework of biological evolution, isolated groups of organisms adapt to environmental conditions over time and change by genetic drift through generations. The cumulative results of these changes and adaptations in the overall population through time may create a situation where a group no longer sufficiently resembles its ancestors to be classified by taxonomists as members of the same biological species. Such a speciation event is known as anagenesis. This form of speciation is difficult to illustrate in that it is problematic to define when the later species can no longer be referred to as being the same as the earlier. Such an event may be occurring in a discipline that studies human beings within this evolutionary framework.

The discipline of physical anthropology in the US has evolved over time, and this evolution has created a situation in which many of the discipline's practitioners have elected to reclassify the field as biological anthropology. This reclassification appears analogous to an anagenic biological speciation event in that many of the classifiers have decided that the discipline has changed sufficiently enough to rename it. Although there is little doubt that the field of physical/biological anthropology has changed over the last six decades, the question arises; do these cumulative changes warrant a renaming of the discipline? An investigation of introductory texts from the discipline in both the present and the past may clarify this matter.

The discipline of biological anthropology, as described by Stanford, Allen and Antón in their 2006 text *Biological Anthropology,* is defined as "the study of humans as biological organisms, considered in an evolutionary framework" (3). Stanford et.al. state that biological anthropology encompasses a number of major subfields including human biology, primatology,

paleoanthropology, osteology, paleopathology and forensic anthropology (3-7). The text however, concentrates its efforts heavily on the first three subfields while alluding to the latter three only briefly by either incorporating them into discussions of the former, or relegating them to appendices. The research foci of the text thus includes human biology – "the study of human growth and development, adaptation to environmental extremes, and human genetics" (7), primatology – "the study of the nonhuman primates and their anatomy, genetics, behavior, and ecology" (6), and paleoanthropology – "the study of the fossil record of ancestral humans and their primate kin" (3). The text also focuses heavily on evolution and its mechanisms, and how the human physical form, brain and behavior evolved and how this differs from other primates.

The discipline of physical anthropology, as described by Montagu in his 1945 work *An Introduction to Physical Anthropology,* was defined as the study of "man's physical characters, their origin, evolution, and present state of development" (3). Montagu lists the major subfields of physical anthropology as human biology, paleoanthropology, primatology, primate paleontology, and the study of race (5-7). Montagu defines human biology as "the study of man as a purely zoological species" (5), primatology as "the study of the monkeys and the apes" (5), primate paleontology as "the study of extinct or fossil primates which are ancestral or related to those living today" (6), paleoanthropology as the study of prehistoric man to "trace the origin of man back to that non-human primate stock from which he may have emerged, and then from this stage onward to trace his evolution, in his different varieties, up to the present time" (6), and the study of race as "the study of existing varieties of man" (7). Montagu's text treats each of these subfields more or less equally, though he focuses exceedingly on race at the end of the text.

In comparing these two texts separated by six decades of research and accumulation of knowledge on the subject, it would at first appear as though the foci of the discipline and its

subfields have not changed significantly. Stanford et.al.'s definition of paleoanthropology encompasses Montagu's distinct subfield of primate paleontology, although Montagu's definition of paleoanthropology neglects to mention the fossil record. The subfields of primatology and human biology are similar, although Montagu's definitions are far less specific and fail to mention genetics. Stanford et.al.'s exclusion of the study of race is notable. There was a decline of the race concept in physical anthropology throughout the 1960's and 70's (Carmill & Brown 2003; Lieberman, Kirk & Littlefield 2003), and a shift from thinking of races to considering populations beginning in the 1960's (Caspari 2003:73). But the study of race might be classified under Stanford et.al.'s definition of human biology in the phrase "adaptation to environmental extremes", and could also be categorized under human variation, which they define as a subfield of human biology dealing with "the many ways in which people differ in their anatomy throughout the world" (2006:7). The differences between concepts of race and population/human variation may also be merely semantic as Caspari suggests stating, "the race *concept* may be rejected by anthropology, but its underlying racial *thinking* persists" (2003:74).

The differences between the two definitions of physical/biological anthropology are subtle, but may be significant. The difference in the second part of the definition comes only from the fact that Stanford et.al. consider Montagu's "origin, evolution and present state of development" (Montagu 1945: 3), as merely "within an evolutionary framework" (Stanford et.al. 2006: 3). As "origin" and "present state of development" are both part of an "evolutionary framework", this difference is mainly semantic. A second semantic difference in the first part of each definition is in the use of the word "man" by Montagu in 1945 as opposed to "human" by Stanford et.al. in 2006. This difference is mainly socio-cultural in that Western society has changed and attempted to use less gendered language when referring to *Homo sapiens*.

Accordingly, the main difference in Montagu's definition of physical anthropology in 1945, as compared with Stanford et.al.'s definition of biological anthropology in 2006, is that Montagu describes "physical characters" as opposed to Stanford et.al.'s "biological organisms". It is this slight difference that would appear to be the impetus for reclassifying the discipline.

In referring to "physical characteristics", Montagu was likely referring to the physical anthropological preoccupation with skeletal biology. It was mainly anatomists who established the discipline of physical anthropology in the United States (Spencer 1981:353) and the evidence of the human past from this period was mainly paleoanthropological. This served to reinforce the skeleton-centric leanings of the discipline. In this sense Montagu can be seen as a man of his era. However Montagu foreshadowed how the discipline would change based on new types of evidence stating, "the application of…genetic methods to the solution of the problems of human variability has already made…a beginning, and holds out great promise for the future" (1945:4). The concept of genetics appears to be the catalyst of the shift from physical anthropology to biological anthropology. Genetics became a major focus of physical anthropology following World War II (Spencer 1986:348), and references to human genetic variation in American Anthropologist began to appear at this same time (O'Rourke 2003:101). Research on genetics in physical anthropology became more rigorous in the late 60's and 70's, and by the 90's molecular genetic research provided more data in a single publication than in all others combined before 1985 (O'Rourke 2003:102-3). Given this history, it becomes apparent that in referring to humans as "biological organisms", Stanford et.al. are attempting to include genetics in their definition.

And so the question remains, is this paradigm shift enough to warrant a change in the taxonomy of the discipline? Given the increasing focus on molecular genetic variation in human populations, O'Rourke believes that "the way in which we will approach questions of human

evolution and variation in the future is likely to change" (2003:107). O'Rourke speaks of an "intersection of biological anthropology and human genetics three decades ago", while referring to "physical anthropology 40 years ago" (2003:107), and so it would seem that for O'Rourke taxonomically, the future was between 30 and 40 years ago, and physical anthropology became biological anthropology in the late 60's. As human genetic research became *en vogue* during this period and has proliferated since it seems an apt point for a disciplinary speciation event, yet perhaps it should have been reclassified in the 80's with the advent of DNA sequencing or even with Montagu in the 40's when he first wrote of the promise of genetics. And so it would appear that questions surrounding taxonomy and speciation through anagenesis are equally as problematic when referring to the discipline of biological/physical anthropology, as they are when referring to its object of study.

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