

**Discuss Washburn's "New Physical Anthropology" with reference to the practice of American physical anthropology in the 19<sup>th</sup> and early 20<sup>th</sup> Centuries.**

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ANTH 155

10/24/06

Sherwood L. Washburn identifies the functional adaptive complex to be a major focus of research for the “New Physical Anthropology” of the mid-twentieth century. His emphasis on functional anatomy suggests that notions of “function” had begun to develop in the history of anthropology’s methods and theories in America during the late 19<sup>th</sup> and early 20<sup>th</sup> Centuries. This paper will discuss the influence of functional problems in American anthropology on the emergence of Washburn’s new physical anthropology. The purpose of tracing the development of notions of “function” in American anthropology is to demonstrate that Washburn was not only concerned with addressing functional problems within the details of human physiology, adaptation and evolution, but also with issues regarding the form and function of anthropology as a discipline. Washburn (1951, p. 299; 1951, p. 303) emphasizes that physical anthropology “must change its ways of doing things to conform with the implications of modern evolutionary theory”, and he adds “the field is changing from the form it assumed in the latter part of the nineteenth century into a part of modern science”.

A brief history of the practice of American anthropology during the late 19<sup>th</sup> and early 20<sup>th</sup> Centuries will help introduce three concepts that emerge in relation to functional studies: race, cultures and species. The historical context and significance of these three themes in American anthropology offer the appropriate background for tracing the development of the “functional” approach, which will lead into discussion of Washburn’s (1943, p. 171) concerns about the discipline’s failure to resolve “the classic anthropological problems”. Concerns with function in anthropology and biology linked these disciplines with regard to the methods of laboratory experimentation and fieldwork, and led to new understandings about behavior. Washburn’s new physical anthropology considers behavior to be the principle problem for anthropologists, and behavior is the link between physical anthropology and the rest of the field

(Haraway, 1988). In discussing the most representative methods and theories of the new physical anthropology, reference will be made to the organizational activity occurring within biology's new synthesis in order to highlight Washburn's strategic inclusion of anthropology, as a scientific discipline, in the emerging and complex community of evolutionary studies (Cain, 1993).

Late 19th Century American anthropology was engaged in the "easy transference of biological concepts into the area of social thought" (Stocking 1968, p. 47). According to Stocking (1968), widespread notions of Lamarckian evolution created the difficulty of distinguishing between racial and cultural features. These manifestations of polygenist thought formed the basis of typological, racial theory, and they were put into practice in 19<sup>th</sup> and early 20<sup>th</sup> Century American anthropology through descriptive and comparative methods supported by the measurement and quantification of morphological peculiarities. In the attempt to characterize "ideal types" and "pure races", anthropology provided "scientific" inquiry into understanding the biologically (racially) determined variation and hierarchy of human culture, psychology and human mental abilities (Stocking, 1968; Caspari, 2003).

The continuing role of Lamarckianism in American social thought contributed to the conceptualization of culture as a singular entity, where culture is present in different races to varying degrees according to their progression along an evolutionary spectrum (Stocking, 1968). Stocking's (1968, p. 203) literature review of American social science writings from 1890 to 1915 concluded that the plural form of the word *culture* does not appear prior to 1895, other than in the research of Franz Boas, and that references to "cultural stages" or "forms of culture" were not regularly replaced by "cultures" until 1910 in the work of Boas' students. Franz Boas' developmental study of immigrant headforms contributed to more dynamic explanations of the

sources of human variation, primarily cultural and environmental influences. Boas introduced the need to investigate the causes producing the end-effects of evolution, which helped to separate concepts of biological and cultural heredity (Stocking 1968, p. 264). Boas' rejection of unilineal cultural evolution gave rise to the multiplicity of *cultures*, and thus formed the anthropological culture concept.

That the culture concept coincided in the early 20<sup>th</sup> century with the rediscovery in biology of Mendel's principles of genetic inheritance was significant for the sociopolitical treatment of racial issues and for the emergence of Washburn's new physical anthropology. Boas demonstrated diversity within "types" while highlighting the equipotentiality and unity of human mental abilities (Stocking, 1968). Meanwhile, geneticists had begun evaluating forces of intraspecific evolutionary processes with a focus on variation and fluidity between populations of the same species (Caspari 2003, p. 73). Behavioral studies, genetics and paleontology, in the years leading to Washburn's new physical anthropology, combined to offer experimental methods for evaluating Darwinian natural selection such that "populations" replaced the concept of "races", and both anatomical and behavioral traits could be discussed together as adaptations under the influence of environmental forces.

According to Washburn (1951, p. 300), the relevance of relating the form of a physiological feature to its function is "to determine the precise nature of a particular adaptation". In her review of articles that were printed in the *American Journal of Physical Anthropology* between 1918 and 1948, and which dealt with relations of form and function, Florence Simon (1950, p. 294) states that "[t]he desire to give the research of physical anthropology wide significance in functional problems has remained continually present". Notions of "function" changed through the history of anthropology with the development of new

methods, from its applications in the 19<sup>th</sup> and early 20<sup>th</sup> Centuries to racial issues, to its role in cultural anthropology during the early 20<sup>th</sup> Century and finally in its significance to biologists who were influential in Washburn's new physical anthropology of the mid-20<sup>th</sup> Century.

Simon (1950) and Stocking (1968) discuss examples in which measurements of the cephalic index were correlated with intelligence for purposes of distinguishing racial types in a hierarchical fashion during the 19<sup>th</sup> and early 20<sup>th</sup> Centuries. Simon (1950) refers to studies correlating the amount of fatty tissue with mental and emotional characteristics; Simon (1950) also includes the study by Bean and Baker, from 1919, that correlates the racial characteristics of the weight of the heart and kidneys with decreased fitness of the "negro" race in America. Though Boas felt that attempts to identify causes for the origin of human variation would be speculative given the current biological knowledge, Stocking (1968, p.184) quotes him as stating, in 1894, "that there were few racial differences in bodily proportions which could not 'be explained by functional causes'". Anthropologists' efforts to relate form with function in the context of racial-type thinking are significant in demonstrating a time when anthropology was atheoretical, descriptive and comparative, and engaged strictly in measurement for taxonomic purposes, all of which Washburn's new physical anthropology sought to change.

However, physical anthropologists were not alone in the discipline's pursuit of relating form and function. The relativism implicit in Boas' work emphasized the importance of fieldwork for understanding diverse cultures, and in Boas' own studies of folklore he initiated an idea that cultural traditions serve a functional purpose for individuals (Stocking, 1966). This concept of "function" in cultural studies, which was carried on in the work of Bronislaw Malinowsky, "poses a dynamic, rather than static descriptive question" (Bennett 1954, p. 175). Malinowski's functional analysis was biologically and psychologically oriented, focusing on

individuals' needs in order to understand how derived cultural and social features satisfy them (Bohannon and Glazer, 1988). Approaches within cultural anthropology that were explicit in making "culture the major human adaptation" would be critical for the emergence of Washburn's new physical anthropology (Haraway 1988, p. 221).

Similarly, biologists who engaged in the modern synthesis identified increasingly dynamic approaches to understanding evolution and speciation through causal-mechanical explanations and experimental manipulation (Cain, 1993). In Cain's review (1993, p. 17) he refers to the geneticist, Dunn, who "proposed studying the 'old questions with new tools'". Evolutionary biologists of the 1920's and 1930's underwent similar taxonomic frustrations as physical anthropologists in recognizing the arbitrary nature of classification based simply on biometrics (Cain, 1993). With reference to the works of other biologists engaged in the new synthesis, M.F. Ashley Montagu (1942, p. 370) states "that in Nature there actually exist many groups of individuals in different phyla which are distinct species in every sense but the morphological one". Thus, diagnosis of species variation required the use of behavioral cues and experimental modification to understand the mechanisms of evolutionary change and population genetics (Cain, 1993). A focus on general processes and on experimental modeling introduced new methodological possibilities to physical anthropologists by promoting the use of non-human specimens as behavioral and laboratory models to resolve functional problems pertaining to human evolution, adaptation and variation.

The problems and "immediate tasks" that Washburn (1951, p. 298) identifies for the new physical anthropology incorporate or respond to the theories, methods and principles discussed so far with regard to the history of the "functional" approach in anthropology. In calling his approach to physical anthropology "new", Washburn modeled the strategic organizational

activity of evolutionary biologists, particularly the British synthesizer Julian Huxley, who helped produce the 1940 anthology, *The New Systematics* (Cain, 1993). Washburn emphasized the same two features that Huxley highlighted in using the word “new”: experimental approaches and cross-disciplinary collaboration (Cain, 1993). These two features will now be summarized in relation to the new physical anthropology while paying particular attention to Washburn’s approach to behavioral studies with notions of function as a guide.

Simon (1950, p. 294) stated that “the problems of form and function have become more and more a matter of careful technical experimentation and analysis,” with particular reference to the 1943 publication, *An Experiment Bearing on the Problems of Physical Anthropology*, conducted by Washburn and Detwiler. In an interview, Washburn said, “the notion of the experimental method was simply to start with a problem, ideally more carefully defined than traditional problems had been, and then do something actively to intervene in what one was looking at” (De Vore 1992, p. 417). New physical anthropology’s approach to functional problems was borrowed from those in biology, particularly the methods for observing causal-mechanical relationships to explain species formation, evolution and variation. In his 1943 publication Washburn lists various anthropological problems concerning the relationships between structure and function and states “[m]an is a mammal, and it would be strange indeed if the laws which govern the human body were different from those which control other mammals” (Washburn 1943, p. 175). Washburn (1943, p.171) was concerned with physical anthropology’s methodological assumption of the 19<sup>th</sup> and early 20<sup>th</sup> Centuries that accurate description and flawless comparative analysis were sufficient for solving problems. He notes that these methods were particularly controversial when one explanation about ‘physical man’ was the exact opposite of another, suggesting that anthropology lacked a unified theory upon which hypotheses

could be tested. New physical anthropology allied itself with the logic of evolutionary theory, with clearly understood and experimentally verified mechanisms of change, based on the notion that natural selection is for function and adaptation (Washburn 1951, p.299). Therefore, the biological validity of anthropological relationships between form and function could be tested against a neo-Darwinian theory of adaptation.

New physical anthropology's engagement with experimentation was a matter of applying general processes and patterns to the understanding of human evolution. Since the processes leading to current human conditions are of adaptive significance, and since they are maintained by selection pressure, Washburn's (1951, p. 302) suggestion that anthropologists identify functional complexes gave credence to a cross-disciplinary approach in applications of evolutionary theory to human behavior. New physical anthropology's focus on behavior helped to re-balance and re-organize the contributions available from each anthropological sub-discipline in a similar fashion as occurred amongst biologists in the new synthesis.

Washburn's aim of identifying functional patterns in seeing how things work as a system was compared with the changes Malinowsky brought to ethnology (De Vore 1992, p. 418). This reference to the influence of cultural anthropology's functional thinking on Washburn's emerging ideas in physical anthropology is supported by Haraway's (1988) references to Washburn's notions of function and social systems as they apply to primates. For purposes of joining the new physical anthropology with the evolutionary synthesis in biology, Washburn translated the concept of "'population' into the structural-functional 'social group'", and he drew upon psychology and primate field studies to identify behavioral complexes that were selected for in the process of human evolution, particularly hunting (Haraway, 1988, p. 228). This

example is representative of the new physical anthropology's approach to synthesizing paleontology, population genetics, ethnology, linguistics and the study of the physical man.

Tracing the history of functional problems in anthropology contextualizes the relationships between the methods proposed in Washburn's new physical anthropology and previous techniques founded in concepts of race, cultures and species. The new physical anthropology's focus on experimentation, collaboration and fieldwork were influenced by a dynamic notion of "function". Emphasis on behavior and adaptation grounded anthropology in scientific approaches to classic anthropological problems. The new synthesis encouraged introspection on the part of physical anthropology to re-identify how its methods would support the complex nature of evolutionary studies.

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