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Physical Anthropology and Race: A Reckoning for the Newly Renamed "Biological" Anthropology in 2020 and Beyond

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Abstract Aleš Hrdlička, founder and editor of the *American Journal of Physical Anthropology* and instrumental in the founding of the American Association of Physical Anthropologists (AAPA) in 1930, cast a long shadow over the discipline during the 20th century due to his deeply rooted racism and use of the term "physical anthropology," a practice focused on measuring the physical form. More troubling was Hrdlička's study of the still-decomposing Native American remains from a late 19th-century massacre. He would later become the driving force behind the Smithsonian Institution's National Museum of Natural History's (NMNH) collection of skeletons of more than 30,000 Indigenous and enslaved people. Hrdlička's inspiration could be traced indirectly to Samuel George Morton, a known racist and notorious human skull collector in early 19th-century Philadelphia. This study explores the discipline's historically racist framework, in which human remains were studied to emphasize the biological and intellectual differences between the races. Primary and secondary sources in the form of 19th-century letters; books; museum record logs, including notes written directly on skulls; early 20th-century books; and journal publications were used. Several weeks of research in libraries and museums were employed to assess the materials and write this manuscript. Sociocultural factors impact science, and, as this study observes, the summer of 2020 brought a collision between the long-term fight for justice against U.S. federal agencies' curation of these remains and the racial unrest erupting after the murder of George Floyd, a Black man in police custody. At that time, physical anthropology was caught in the middle, forcing the discipline out of complacency to make substantive policy changes away from the prevalent scientific racism of the past and the influence of Hrdlička in particular.

Keywords: *ancestral remains, enslaved skeletons, Morton Cranial Collection, NAGPRA, physical anthropology, scientific racism*

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1. Introduction

Throughout the twenty-first century, several researchers, a few of whom would be considered racialists today, did their best to define race. Molnar [1] compiled the following samples of race definitions in biology and anthropology. These definitions (and a few more added by this author) are listed below in chronological order. It is interesting to read these definitions and, in particular, see how some researchers have changed their ideas over time:

HOOTON: "A race is a great division of mankind, the members of which, though individually varying, are characterized as a group by a certain combination of morphological and metrical features, principally non-adaptive, which have been derived from their common descent." ([2], 75).

HUXLEY AND HADDON: "Populations differed from one another, Huxley and Haddon stressed, only in the relative proportions of genes for given characters that they possessed. For existing populations the word *race* should be banished, and the descriptive and non-committed term *ethnic groups* should be substituted." ([3], 133; italics in the original)

BOAS: "argued against the stability of many biological features. He examined head form, expressed by a simple index that was commonly used to distinguish races. He showed that it changed significantly in the first American-born generation of immigrants who came to America. Relatively long-headed people became broader, and relatively broad-headed people became longer. Because the change was rapid and converged on the same head form from different starting points, Boas argued it was environmentally induced, an important trait to distinguish races could

easily change from one generation to the next" (quoted in Wolpoff and Caspari ([4], 149-150).

DOBZHANSKY: "Races are defined as populations differing in the incidence of certain genes, but actually exchanging or potentially able to exchange genes across whatever boundaries (usually geographic) separate them." ([5], 252)

HOOTON: "This insistence upon the use of 'non-adaptive' characters in human taxonomy now seems to me to be impractical and erroneous." ([6], 452; quotation marks in the original)

BOYD: "We may define a human race as a population which differs significantly from other human populations in regard to the frequency of one or more of the genes it possesses. It is an arbitrary matter which, and how many, gene loci we choose to consider as a significant 'constellation.'" ([7], 207; quotation marks in the original)

GARN: "At the present time there is general agreement that a race is a breeding population, largely if not entirely isolated reproductively from other breeding populations. The measure of race is thus reproductive isolation, arising commonly but not exclusively from geographical isolation." ([8] 7)

DOBZHANSKY: "Race differences are objectively ascertainable facts; the number of races we choose to recognize is a matter of convenience." ([9], 266)

COON: "Race is a zoological concept meaning a division of species." ([10], 5)

MONTAGU: "An ethnic group represents one of a number of populations, comprising the single species *Homo sapiens*, which individually maintain their differences, physical and cultural, by means of isolating mechanisms such as geographic and social barriers. These differences will vary as the power of the geographic and social barriers acting upon the original genetic differences varies." ([11], 317; italics in the original)

BAKER: "It is concluded that race may be defined as a rough measure of genetic distance in human populations and as such may function as an informational construct in the multidisciplinary area of research in human biology." ([12], 21)

HULSE: "Races are populations which can be readily distinguished from one another on genetic grounds alone." ([13], 262)

BRUES: "A race is: a division of a species which differs from other divisions by the frequency with which certain hereditary traits appear among its members. Among these traits are features of external appearance that make it possible to recognize members of different populations by inspection with greater or less accuracy. Members of such a division of a species share ancestry with one another to a greater degree than they share it with individuals of other races. Finally, races are usually associated with particular geographic areas." ([14] 1-2)

MAYR: "A subspecies is an aggregate of local populations of a species, inhabiting a geographic subdivision of the range of the species, and differing taxonomically from other populations of the species." ([15], 289)

VOGEL AND MOTULSKY: "A race is a large population of individuals who have a significant fraction of their genes in common and can be distinguished from other races by their common gene pool." ([16], 534)

BRUES: "A race is a population that differs from others by the frequency of certain genes and the characters they produce. A more technical way of expressing it is to say that racially different populations have different gene pools. The existence of distinguishable gene pools within a species implies some mechanism of at least partial isolation, which in most cases is geographical in nature." ([17], 77)

TEMPLETON: "The word race is rarely used in the modern, nonhuman evolutionary literature because its meaning is so ambiguous. When it is used, it is traditionally a geographically circumscribed differentiated population." ([18], 632)

MOLNAR: "The term *race*, or *population*, will be used carefully to refer to that geographically and culturally determined collection of individuals who share a common gene pool. *Ethnic group* has some special meanings due to its various political and social *applications*; it may or may not affect genetic variability." ([1], 33; italics in the original)

HAVILAND, et al.: "***race*** in biology, the taxonomic category of subspecies that is not applicable to humans because the division of humans into discrete types does not represent the true nature of human biological variation. In some societies race is an important cultural category (***ethnic group***) . . . based on various cultural features such as shared ancestry and common origin, language, customs, and traditional beliefs." ([19], 323, 350; italics and bold in the original).

SMEDLEY AND GRAVLEE: "a culturally structured, systematic way of looking at, perceiving, and interpreting reality." ([20,21], 18;48).

New knowledge, interpreted one way or the other, cannot flourish without building upon the ideas of past scholars. Such a tradition is seen in the above definitions. One can see the intellectual links between certain researchers and their predecessors on the race concept. Specifically, some researchers applied the relatively new science of genetics (which was a virtual black box until James Watson, Francis Crick, Rosalind Franklin, and Maurice Wilkins unlocked the secrets of the genetic code in 1953) to their research and subsequent writings, indicated by the use of such words as "genes" and "gene pool" (particularly after Dobzhansky's [1944] writings). In contrast, one does not see morphological or phenotypical explanations, such as skin color, nose shape, and hair form or body form, in these definitions. In a few instances, one sees the term "ethnic group" substituted for "race." Moreover, the use of the terms "geographic subdivision," "geographic isolation," and any words indirectly referring to geography, such as ancestry, indicate that most of these researchers viewed geographical adaptation as an important factor in the formation of races. In more recent times, some researchers viewed race more as a mindset and less as a substantive reality. The two large anthropology organizations, the

American Anthropological Association (AAA) and the American Association of Biological Anthropologists (AABA), have followed suit.

> According to the AAA, "'Race' thus evolved as a worldview, a body of prejudgments that distorts our ideas about human differences and group behavior . . . In the United States both scholars and the general public have been conditioned to viewing human races as natural and separate divisions within the human species based on visible physical differences" ([22], para. 2, 9). The AABA writes that "the Western concept of race must be understood as a classification system that emerged from, and in support of, European colonialism, oppression, and discrimination . . . Because of that, over the past five centuries, race has become a social reality that structures societies and how we experience the world" ([23], 2).

Knowledge does not occur in a scientific vacuum; it is shaped by and shapes events in the greater society. As such, most biological anthropologists acknowledge that "the concept of race has developed hand-in-hand with racist ideologies over the last five centuries, and biological anthropology [previously called physical anthropology] has played an important role in the creation and perpetuation of both the race concept and racist ideologies" ([23], 2; brackets my addition). This role (i.e., emphasizing racial typology and biological determinism) collided in the summer of 2020 with the fight for social justice and the U.S. federal agencies and academic institutions' curation of the skeletal remains of enslaved and indigenous peoples. And physical anthropology, accused of perpetuating racism, was caught in the middle.

2. Research Methodology

The data used in this manuscript were explored and analyzed via extensive research. A qualitative research approach was performed using primary and secondary sources from integrated fields, including books, journals, historical documents, notes, reports, and letters. This study used letters from Rodriguez Cisneros, John James Audubon, and others to Samuel George Morton regarding the procurement of skulls of enslaved and Indigenous humans. Similarly, it included selected information from Samuel George Morton's letters dated 1819-1833 and 1834-1844 and his 1839 *Crania Americana* manuscript. Selected records from the American Philosophical Society Museum, the University of Pennsylvania Museum of Archaeology and Anthropology (the Penn Museum), the Smithsonian Institution's National Museum of Natural History (NMNH), and the Phoebe A. Hearst Museum of Anthropology were also reviewed. The following databases, together with rich reference literature, were used: Access Wiley Online Library, Academic Journals Database, Academic Search Ultimate (ASU), American Bibliographical Center Clio (ABC-CLIO), Directory of Open Access Journals (DOAJ), Elton B. Stephens CO (EBSCO database), Education Resource Information Center (ERIC), Journal Storage (JSTORE), and PubMed.

3. Historical Review

3.1. Origins of "Physical" Anthropology

3.1.1. Samuel George Morton

Very few biological anthropologists today would recognize the name Samuel George Morton (1799-1851) or afford him the title of "Father of American Biological Anthropology." Aleš Hrdlička (1869-1943), founder and editor of the *American Journal of Physical Anthropology* and instrumental in the founding of the American Association of Physical Anthropologists (AAPA) in 1930, was one of the few people familiar with Morton's work and afforded him his lofty title. In his *Physical Anthropology, Its Scope and Aims; Its History and Present Status in the United States* (1919), Hrdlička stated that "It is plain that Morton may justly and with pride be termed the father of American anthropology" ([24], 41). C. Loring Brace (2005), one of the few anthropologists who see no racial bias in Morton's craniometrics, goes even further:

> the original and enduring contribution that Morton made was in the invention and application of a battery of measurements that he used to compare large numbers of specimens from many parts of the world. Morton devised more than a dozen cranial measurements and basically initiated the use of metrics in comparing human biological forms. . . Morton, then, deserves recognition as one of the founders of the field of biological anthropology as a whole and not just its American manifestation. ([25], 82)
>
> Incidentally, the name "Hrdlička," particularly after World War II, was not mentioned in official academic circles as the world tried to move away from racism and racial typology in the wake of the NAZI atrocities. Hrdlička believed that Blacks were lower in cognitive capacity than Whites, stating, "The problem of the American Negro lies in his brain, and it would seem, therefore, that this organ above all others would have received scientific attention" ([26], 208). Additionally, his disrespectful treatment of Native American human remains exemplified by "his study of still-decomposing victims of a massacre of Yaqui Indians and removing the flesh from the skulls" ([27], para. 5). Furthermore, he did not challenge Madison Grant (1920) when Grant asserted that "The more primitive a type is, the more potent it is. That is why crossings with the negro are uniformly fatal" ([28], 301).

Hrdlička's worldview on race, according to C. Loring Brace [25], may have been shaped to some extent by his 4-month stay in Paris (1896) at the École and L'Anthropologie, directed by Paul Broca (1824-1880), one of the most distinguished biological anthropologists and MDs in France during the 3rd quarter of the 19th century. Broca probably read Morton's monograph *Crania Americana* because he noted that "Morton was his hero and model" ([29], 84). Ironically, when we hear the name Broca, it is not racial typology that we recall but his neuroanatomical work, where he demonstrated that the left parietal brain (called Broca's area) is important in controlling speech [25]. Nevertheless, it was the long shadow of Hrdlička, our founder, his racism, and the fact that most members of

AAPA do not study the physical aspects of humans eventually led to a name change of the organization in 2019 [23]. These details will be discussed later in the paper.

So why are Morton and his contributions to biological anthropology forgotten? Stephen J. Gould claimed that it was his "racial bias" that permeated his work [29,30]. Others have argued that it was his tentative support of phrenology that accounted for his obscurity [24,31]. Further, Brace (2005) argued that Morton's support for polygenism [1] and his association with outspoken proponents of slavery doomed his reputation and contributions to biological anthropology.

Morton obtained his MDs from the University of Pennsylvania Medical School in Philadelphia and the University of Edinburgh in Scotland between 1820 and 1823 [25]. Subsequently, he established a medical practice in Philadelphia, and its success allowed Morton to apply his considerable skills to research in academia. But the research that obliterated his legacy as a medical doctor was his use of science to support the continued forced servitude of African Americans.

Morton was so preoccupied with race in America and, to a larger extent, the five major races of men (recasting Johann Blumenbach's five varieties[2] as five races) that he spent his life attempting to collect representative samples of all five races. Thanks to Morton's frequent procurement of skulls from America and around the world, this collection still exists today (albeit with tremendous controversy) at the University Museum in Philadelphia, where it is maintained by the Department of Anthropology at the University of Pennsylvania as part of one of the most important anthropological research resources in the world.

Morton expanded on the craniological approach started by Blumenbach in his study of cranial form in the native populations of the Western Hemisphere. The result was his magnum opus, *Crania Americana; or, a Comparative View of the Skulls of Various Aboriginal Nations of North and South America; to which Is Prefixed an Essay on the Varieties of the Human Species* ([32]; capitalization per original]. By now, most scholars in the biological sciences have highlighted the serious intellectual flaws in Morton's manuscript [4,25,29,30], but it was an outstanding piece of scholarship for the 19th century, and Morton was praised for this scholarship by his American and European colleagues. An instance of this praise can be found in a letter written to him by Blumenbach's protégé, Alexander von Humboldt (1769-1859): "Your work is equally remarkable for the profundity of its anatomical views, the numerical detail of the relations of organic conformation, and the absence of those poetical reveries which are the myths of modern physiology" (quoted in [25], 82).

Morton opened his *Crania Americana* by discussing the major human classification schemes published in the early 19th-century literature. But Morton went further than his peers. He believed that the five races were indeed different species. Consequently, he placed race in a taxonomic context and subdivided each "race" into several "family" groups. For instance, his American race consisted of the American and the Toltecan families; his Malay race was made up of the Malay and Polynesian families; the Caucasian race had several families; the Ethiopian race had six families; and the Mongolian race had five ([25], 83). This proliferation of racial categories was adopted by a subsequent generation of anthropologists and presented in the anthropological literature [10,33,34,35].

While Morton's particular racial categories were not used in the any census in the 19th century, he showed the obvious fact that individuals within one population group shared more features than they did with individuals from other groups. Nonracialists have argued that if Morton had used words like "regional groups" or "population groups" instead of "families," he might have helped in a small way to take the sting out of the word "race." But we will never know. Science is affected by the greater culture. Morton was a product of his generation. Despite the fact that he was "one of the most outstanding representatives of the first American generation of professional scientists" ([25], 80), his racial bias seemed to have seeped into his science.

Because most modern biology scholars have noted serious intellectual flaws in Morton's research, he has been accused of falsifying his results to support preconceived beliefs of a larger Caucasoid brain size, which, naturally, correlated with greater intelligence than other races in the view of the 19th-century European American. According to his critics [4,29,30], Morton used the materials common during this time period, lead shot and seed, to estimate cranial volume. Cranial volume (measured in milliliters or cubic centimeters) can provide an approximation of brain size. Seed is compressible, and lead shot is not; consequently, one can pack more of the former than of the latter into a given cranium, which would result in a "difference" in cranial volume depending on the material used. Morton's detractors have suggested that he packed Caucasoid skulls with seed to obtain larger cranial volumes, thus proving his preconceptions. Additionally, he chose all the larger crania (and omitting the smaller crania) in Caucasoids and chose all the smaller skulls (and omitting any larger ones) in the other races [4]. In other words, Morton had a presumption (or worked with an *a priori* assumption) of White supremacy and endeavored to fit his data to his specific hypothesis. Today we call this "inductive reasoning." In *The Mismeasure of Man* [29,30], the late Stephen J. Gould, a Harvard paleontologist, was quite candid concerning Morton's fraud:

> During the summer of 1977, I spent several weeks reanalyzing Morton's data. In short, and to put it bluntly, Morton's summaries are a patchwork of fudging and finagling in the clear interest of controlling *a priori* convictions ([29], 54). Yet—and this is the most intriguing part of the case—I find no evidence of conscious fraud; indeed, had Morton been a conscious fudger, he would not have published his data so openly. ([30], 86)

Alan Mann of Princeton University takes issue with this criticism. In "The Origins of American Physical Anthropology in Philadelphia" [36], published in the *Yearbook of Physical Anthropology*, Mann noted the following:

> Reading Gould's discussions of Morton's work, it is difficult not to come to the conclusion that his

[1] Polygenism posits the view that the human races are of different origins or have different "Adams" and Eves."

[2] Johann Friedrich Blumenbach (1752-1840) racial scheme published in his *De Generis Humani Varietate Nativa* [On the natural variety of mankind] second edition (1781) included: Caucasian, American, Malay, Mongolian, Ethiopian.

> criticisms are based on actual examinations of Morton's collection (now housed at the University of Pennsylvania Museum in Philadelphia). There is no record at the University of Pennsylvania Museum of a visit by Gould for the purpose of examining the Morton Collection . . . One would have to read carefully to realize he was not reporting his own work but was examining the two sets of data that Morton actually presented, which compared the use of seed and shot in the same skull. ([36], 161)

Furthermore, Morton was accused of controlling the average cranial capacities of the races by, for example, choosing all the larger crania (and omitting the smaller crania) in Caucasoids and choosing all the smaller skulls (and omitting any larger ones) in the other races [4]. Emily Renschler of the University of Pennsylvania has studied the Morton Collection extensively. Concerning the African crania, she stated:

> a letter to Morton that accompanied their shipping box described the crania as coming from Africans who had recently arrived in Havana, Cuba, as part of the slave trade . . . Skeletal analysis of the crania indicates that *the majority of the individuals in the sample were adolescents and young adults* in their 20s at the time of death. ([37], 33, italics added)

Clearly several abnormally small and subadult crania were selected by Morton to make the cranial capacity of Africans seem smaller. Because the statistical mean is very sensitive to large and small numbers, a sample consisting of a majority of crania with relatively large volumes will have a larger mean cranial capacity than a sample group with relatively small cranial volumes.

It would seem that Morton's preconceived notions or unconscious bias did seep into his work. Brace, however, disagrees with the accusations leveled at Morton. He noted:

> Morton, of course, did live in a society that was racially biased, and some of his private correspondence makes his own acceptance of that bias quite clear. At the same time, Morton was an exemplary scientist, and a careful analysis of his work shows that his 'racial' bias had no effect at all on the major pieces of anthropological investigation that he published. ([25], 90)

> Brace's position is supported by results from a reanalysis of Morton's *Catalogue of Skulls of Man and the Inferior Animals* data. According to Michael [38], the author of the reanalysis, Morton's "1849 data are *reasonably* accurate and there is no clear evidence that he doctored those tables for any reason" ([38], 354; italics added). The word "reasonably" is italicized because Michael did indeed find minor "miscalculations and omissions" ([38], 354).

3.2. "Physical" Anthropology and Race in Pre- and Post-World War II America

As the 19th century drew to a close, the legacy of the pre-Civil War belief of the inferiority of the non-White races played an integral role in American domestic and international policy. In 1882, the Chinese Exclusion Act was passed, and later America began its quest to become a colonial power in Latin America and South Asia under the banner of the "White man's burden."

Around the same time, William Z. Ripley (1867-1941), assistant professor of sociology at the Massachusetts Institute of Technology in Cambridge and lecturer in anthropology at Columbia University in New York, delivered the Lowell Institute Lectures on "physical geography and anthropology" in Boston ([25], 169). These lectures were compiled and published as a book entitled *The Races of Europe*: *A Sociological Study* (1899). While Ripley's book had a powerful effect on European Americans, the framework for his study was not original and could be traced back to Broca.

In *The Races of Europe*, Ripley divided the Europeans into three racial categories: "Nordic" (or Joseph-Arthur, Comte de Gobineau's [1816-1882] *Teutonic* category[3]), "Alpine," and "Mediterranean." The system included the thinly veiled idea that each race was endowed with different and unequal capabilities. Furthermore, his assessment of the identity of each race depended on head shape, pigmentation, and stature. Ripley [39] wrote about head shape, "The form of the head is for all racial purposes best measured by what is technically known as the cephalic index. This is simply the breadth of the head above the ears expressed as percentage of its length from forehead to back" ([39], 37). Hence, the obsession with the physical aspects of humans continued into the early 20th century.

In choosing this index, Ripley believed that it [index] was immune to environmental effects. But Franz Boas (1858–1942), who was also a faculty member at Columbia University at the time, argued against stasis or the stability of complex traits. He used the cephalic index to show that it changed significantly in the first American-born generation of immigrants [40]. Boas discovered that since long-headed people became broader, and those of broad-headed people became longer from one generation to the next, head shape was susceptible to environmental effects and therefore not a good trait to use in distinguishing populations. Sixty years later, William W. Howells (1908–2005), professor of anthropology at Harvard University, would provide extensive skeletal metric data in his monograph, *Cranial Variation in Man* [41]; later an updated version of that monograph entitled *Skull Shapes and the Map* [42], to show the variability of skull shapes within population groups.

With behavioral characteristics directly tacked onto Ripley's three-race model, for instance, "Nordics," were said to be "natural rulers and administrators," which accounted for England's "extraordinary ability to govern justly and firmly the lower races" ([43], 207), the "Alpines" were "always and everywhere a race of peasants" with a tendency toward "democracy," although "submissive to authority," and the "Mediterraneans" were superior to Alpines in "intellectual attainments" but far behind Nordics "in literature and in scientific research and discovery ([43], 227, 229). The European sociopolitical conditions were perfect to sustain the storm of World War I, which was on the horizon. In the meantime, derogatory names, such as "sauerkrauts" or "cabbage [head]" in English (though it actually refers to pickled cabbage,

[3] Joseph-Arthur Comte de Gobineau has been referred to as "the father of racism" and declared civilization was appropriate only for his "Teutons" or Germanic people (Biddiss 1970).

which is served shredded) for the broad-headed Germans and the like were hurled by members of one race at those of another. These ideas found their way into human evolution, where *Cro-Magnon*, the earliest modern European *Homo sapiens*, dated at approximately 40,000 years, was described as upright, tall, and with a high forehead. The Neanderthal, the late archaic *Homo sapiens*, was described as hairy, short, with a large brow ridge, large face, and bent knee and was widely accepted among European biological anthropologists (and a respective percentage of American biological anthropologists) as not ancestral to modern humans. Many Neanderthal fossils were initially found in the mid-19th century and early 20th century in Western and Eastern Europe [4]. But the first complete analysis of a Neanderthal skeleton was done in 1908 by Marcellin Boule (1861–1942), a prominent French anthropologist. Not understanding the pathology of old age, his description included terms like "bent-knee," "long arms," "apelike gait," and so on. In short, the terms meant "primitive." In a separate incident, a Neanderthal skull in the Feldhoffer Grotto near Dusseldorf in the Neander Valley of Germany in 1856 was labeled "the skull of a Russian Cossack from the Napoleonic War of 1814" because the anatomist who analyzed the skull, August Franz Joseph Karl Mayer (1787-1865), could not readily identify it [4,44]. The point is that the "Nordic" or northern Europeans were considered the "noble race," whereas the "Alpine" and "Mediterranean" varieties were deemed "primitive" and compared to Neanderthals.

If one wanted to study physical anthropology in the early 20th century, one would apply to a graduate program in anthropology at Harvard University run by Earnest A. Hooton (1887-1954). Hooton might be considered the father of American physical anthropology in the 20th century or, at least, an extremely influential figure in American physical anthropology in the first half of the 20th century [4,25,45]. He came to Harvard University in 1913 after completing his Rhodes scholarship obligations at Oxford University. From that point on, he was responsible for training virtually all the second-generation of American physical anthropologists [4] at a time when physical anthropology was not offered at many universities. Beginning in the early 1920s and continuing for the following two decades, Hooton supervised over two dozen PhD dissertations in biological anthropology [4]. And most of his students went on to produce their own students incorporating Hooton's scientific racism, more or less, into their thinking except for one, such as Sherwood Washburn (1911–2000), who called for a "new physical anthropology" where collaboration of social scientists, geneticists, archeologists, anthropologists, paleontologists, and linguists to understand human variation and the mechanisms of evolutionary change [46]. In essence, this new physical anthropology went against dividing breeding populations into "a series of racial types" ([46], 299). In "The Study of Race" [47], in the *American Anthropologist*, Washburn emphasized the unimportance of race: "Race, then, is a useful concept only if one is concerned with the kind of anatomical, genetical, and structural differences which were in time past important in the origin of races. Race in human thinking is a very minor concept" ([47], 527).

Returning to Hooton, one will always be struck by his ambivalence about race. On the one hand, he wrote the draft statement protesting Germany's racial hygiene program at the request of Boas, and on the other hand, racism and eugenics are apparent in his publications. For instance, he published a draft, "Plain Statement About Race" [48], in *Science*, the official voice of the American Association for the Advancement of Science [4,25,49], speaking out against the evils of discrimination, yet he was sympathetic to eugenic ideas. Specifically, Hooton believed that individuals with physical deformities, mental retardation, and so on should be prevented from having children or genetically transmitting their affliction. Further, in the last edition of his major text, *Up From Ape* [6], Hooton wrote, "we are fairly safe in assuming that the Australian [aborigine] is far less intelligent than the Englishman" ([6], 158; brackets added).

Like proponents of the Great Chain of Being, Hooton believed that each race had its place in this great hierarchy. What is implied by Hooton [50] in this hierarchy is that his northwest-European stocks were "a little lower than angels" ([50], 19-29). One of his Harvard graduate students, Carleton Coon, would take this view of race even further by applying a human evolutionary spin to it.

Carleton S. Coon (1904-1981) argued that the five races evolved separately from five different *Homo erectus* (a prehistoric human ancestor dated at between 200,000 and 1.8 million years) species inhabiting the four large geographical regions and each one evolved into *Homo sapiens* at different times. And the race that crossed first was more evolved in biology and culture [10]. "Caucasoids" and "Mongoloids" were first to cross the line into modernity (or the "*Homo sapiens* line") and presumably, therefore, they were the most "advanced" ([10], 482). The African and "Australoid" races crossed the *Homo sapiens* line late and were deemed the most "primitive." Coon believed that this *Homo sapiens* line was identified by large brain size, which was set at approximately 1,250cc to 1,300cc, despite the fact that brain size is variable within as well as between populations.

However, Coon's polygenism theory is not totally original. The "evolving separately" component comes from him ([51], 572-573). The evolutionary component, however, comes from Franz Weidenreich's polycentric (not polygenic) model, but it was misinterpreted by Coon. Weidenreich's populations were never "separate" or "isolated" when each crossed Coon's "Rubicon" or "*Homo sapiens* threshold." Weidenreich's polycentric model showed "gene flow" between populations in Africa, Europe, Asia, and Australia, preventing speciation and enabling any adaptively advantageous gene appearing in one population to spread throughout the species range ([25], 237; [4], 249). In short, if there were a *Homo sapiens* threshold, then the five races crossed it together.

Coon adopted his "scientific" polygenism from Hooton at Harvard. He earned his PhD under Hooton in 1928 and then became a colleague in Hooton's department in 1934. In the late 1930s, Coon was contracted by the Macmillan Company to rewrite Ripley's Races of Europe; his version would be published in 1939 [25]. By agreeing to rewrite this book, Coon supported Ripley's views about the

inherent superiority of the Nordic race. Even when World War II had already begun in Europe, Coon was oblivious to the ramifications of his book. Similarly, Coon's [52] naïveté kept him from understanding how civil rights could change the evolutionary fate of blacks. It appears, for instance, that Coon worked behind the scenes to undermine the desegregation that followed the *Brown v. Board of Education* decision of 1954 [25]. This information is based on Coon's correspondence housed at the Smithsonian with Carleton Putnam (1901–1998), author of *Race and Reason: A Yankee View* published in 1961 [53].

Coon was out of touch; not only was he ignorant of the social revolution in the mid- to late 20th century, but also of the modern evolutionary synthesis that unified Darwinian's natural selection, biology, and Mendelian genetics into an edifice for understanding evolutionary change. Theodosius Dobzhansky (1900–1975), one of the architects of the Modern Synthesis, noted this ignorance in his review of *The Origin of Races*:

> The specific unity of mankind was maintained throughout its history by gene flow due to migration . . . Excepting through such gene flow, repeated origins of the same species are so improbable that this conjecture is not worthy of serious consideration; and given gene flow, it becomes fallacious to say that a species has originated repeatedly, and even more fallacious to contend that it has originated five times, or any other number above one. ([54], 172)

Coon's philosophy was incompatible with the new physical anthropology. His beliefs, like those of many racialists before him, were so powerful that they permeated his science. Marks [55] stated, "Coon's mistakes were inferring race from fossils, using cultural criteria for ranking races, and ranking races on very poor evidence by inferring different times for becoming human" ([55], 105). Unfortunately, inferring race from fossils continues to this day, as evidenced by the Kennewick Man[4] controversy of the late 1990s.

4. Discussion and Evaluation

4.1. "Physical" Anthropology and Race in the 21st Century: Policy Implications and the New "Biological" Anthropology

One might say that the name change from the AAPA to the American Association of Biological Anthropologists (AABA) implemented in 2019 after a membership vote was prescient because of the racial unrest that would erupt in 2020 and beyond with physical anthropology accused of perpetuating racism.

In the latter part of the 20th century, indigenous and marginalized peoples spoke out against the continued ownership of their biological and cultural materials by U.S. state and federal agencies and academic institutions (Figure 1). This push culminated with enacting the Native American Graves Protection and Repatriation legislation to address long-standing claims by federally recognized tribes that human remains and cultural artifacts, unlawfully removed from pre-contact, post-contact, former, or current Native American homelands should be returned to lineal descendants for reburial [56]. The NAGPRA law may have, to some respects, paved the way for the respectful reburial of more than 400 individuals in 2003 when New York City construction uncovered the largest-known African American burial ground in the United States in 1991. Academics and activists advocated at the time for an African American Graves Protection and Repatriation Act. In essence, the repatriation of Native and African American cultural and biological remains is influencing indigenous and marginalized peoples in other parts of the world to fight for the protection of their ancestral remains. And, this fight reached a flashpoint during the height of the COVID-19 pandemic with lasting consequences.

Figure 1. Human skulls stacked on shelves in undisclosed museum. (Image © Used under license from Alamy, Inc.)

In 2017, Francisco Diaz, an anthropology doctoral student at the University of Pennsylvania, felt uneasy as he sat in a classroom in the University of Pennsylvania Museum of Archaeology and Anthropology (commonly called the "Penn Museum") surrounded by human skulls, but he was particularly focused on one with the label, "Maya from Yucatan," pasted to its forehead ([57], 151). Diaz was Yucatec Maya, and from his perspective, the skulls from Black and Indigenous people were treated like decorations in the classroom.

These skulls are part of what is known as the Morton Collection. During the 1830s and 1840s, Morton acquired approximately 900 skulls, occasionally referred to by his contemporaries as "The American Golgotha" ([25], 81; [58], 28).[5] After his death in 1851, more skulls were added, growing to more than 1,300. The collection contained a representative sample of Morton's five races: Caucasian, Mongolian, American, Malay, and Ethiopian. Specifically, the skulls belonged to enslaved individuals, stolen from indigenous communities (i.e., some removed by military doctors from the corpses of individuals killed in battles against the U.S. Army), and taken from "the potter's fields of almshouses and public hospitals, where U.S. and European doctors had long sourced bodies for dissection" ([57], 150). Essentially, "if you were a marginalized or disenfranchised human being, then there's a chance you would end up in Morton's collection" (quoted in [57], 150).

[4] Skeletal remains of a Paleoamerican man (dated: 8,900 to 9,000 years) discovered near the Columbia River in Kennewick, Washington.

[5] "Golgotha" is the Aramaic word for Calvary, or "the place of a skull," (Matthew 37:33; Mark 15:22) where the crucifixion of Jesus took place.

In 2019, Penn professors and students working on the Penn & Slavery Project learned definitively that the Morton Collection contained 51 skulls of enslaved Africans from Havana, Cuba. The public announcement of this fact would be the spark that generated the flashpoint in 2020. Based on the research by the members of the Penn & Slavery Project, Cuban Dr. José Rodriguez Cisneros dug up the bodies of the 51 "pure rare African" individuals, removed their skulls, and shipped their skulls to Philadelphia in 1840 at the request of Morton ([57], 150). After a public presentation on the 51 skulls, some in the audience were brought to tears.

After the May 2020 murder of Floyd, a Black man in police custody, the flashpoint was fully ignited. The history of racial injustice perpetrated by 19th- and early 20th-century scientists reemerged with a vengeance. These scientists focused on scientifically "proving" the superiority of the White race over other races by measuring skull size, and in the wake of Floyd's death, academics and activists turned their attention to the Morton Collection. The protest sparked by the murder forced the Penn Museum to put the collection, including the 51, in permanent storage while a committee of university and community leaders discuss future repatriation plans. The rippling effect of this situation will impact many notable university-affiliate and public natural history museums such as the Smithsonian Institution's National Museum of Natural History (NMNH), which "holds the remains of more than 30,000 people, many Indigenous and some likely enslaved" ([57], 150). Hrdlička, who used Native American remains to study race (and promote eugenics), was the driving force behind NMNH's skeletal collection. Another notable museum in the accountability crosshairs is the American Museum of Natural History in New York City where curators are scrambling to find out the number of Indigenous and/or enslaved African Americans in their collection.

The rippling effect goes even further because, despite decades of Indigenous activism, University of California at Berkeley had failed to return the remains of thousands of Native American tribes until the Penn Museum–Morton Collection controversy and the Floyd murder sparked protests. In 2020, Tim White, a celebrated paleoanthropologist at UC Berkeley finally reported and relinquished, after years of legal wrangling, Native American remains for repatriation. He had borrowed the remains from the Phoebe A. Hearst Museum of Anthropology (which, to date, still holds 9,000 Indigenous people on the campus) in the 1990s for teaching purposes [59]. For years, White used his interpretation of the NAGPRA law, which states that human remains had to have a cultural or biological link to present-day tribe to be considered Native American. According to White, the collections he worked with needed no reporting under NAGPRA because there was no way to determine the origin of the bones, which meant the law did not apply [59]. White used this argument when he and two other professors blocked the repatriation of two 9,000-year-old skeletons to the Kumeyaay (12 tribes whose homelands straddle the U.S.-Mexico border with San Diego) [59]. This was the implied argument for the Kennewick Man controversy.

White uses phrases like, "we should preserve them [skeletal collections] for study," or, " . . . students should not be deprived of the opportunity to learn from them" [59]. There are many human osteologists who feel the same way. For example, Janet Monge, a biological anthropologist who was the curator for the Morton Collection, saw the collection as valuable for studying human variation. In fact, from 2004–2011, Monge et al. used computerized tomography (CT) to scan the skulls generating scientific papers on changes in tooth alignment over time and skull development and growth [57]. Because thousands of researchers have used documented skeletal collections in museums in the United States and around the world, there is a feeling of both shame because they know that documented human skeletal collections have been built with the bodies of impoverished and marginalized peoples, and fear that the fervor toward repatriation neglects the importance of these skeletons in skeletal anthropological research, education, and training in the United States [60].

5. Conclusion

Washburn's call for a new physical in 1951, where there would be collaboration across multiple disciplines linking the four fields of anthropology to understand human evolution and dispel racial typology is well on its way. And the name change to "biological anthropology" a year before the 2020 turmoil was long overdue and came at the right time, distancing the field from its racist founder Hrdlička and the sole focus on physical or racial typology. But in the past 69 years, we in biological anthropology have taken multidisciplinary and interdisciplinary research for granted and have become too satisfied with our accomplishments in the field. Nevertheless, this hubris was shattered after the collision of the Morton Collection controversy and the Floyd murder.

As of the summer 2021, the Penn Museum announced an expanded repatriation plan for the Morton Collection**,** a national search for an anthropologist of color to direct repatriation, and repatriation requests from descendant communities [57]. Similarly, Berkeley is currently preparing for its biggest repatriation of more than 1,400 ancestors to the Santa Ynez Band of Chumash Indians (whose ancestors' remains were excavated from burial grounds along California's coast and Channel Islands in 1901, as funded by Phoebe Hearst [59]. This trend toward repatriation will continue around the country, and there is a suggestion that institutional review boards (similar to ones used to evaluate the ethics of research using living people) be created for studying human and cultural remains in museums.

The multidisciplinary and interdisciplinary nature of biological anthropology is evident if one reviews some of the major journals, such as the *American Journal of Biological Anthropology, Journal of Human Evolution, Yearbook of Biological Anthropology, Evolutionary Anthropology, and Human Biology*, to name a few. For example, in notable fossil discoveries in the late 20th century and early 21st century, such as *Ardipithecus ramidus*, *Homo floresiensis*, *Australopithecus sediba*,

Denisovans, and *Homo naledi*, the specialists involved were biological anthropologists, anthropological archaeologists, geologists, geneticists, paleoclimatologists, pedologists, and geochronologists. The ongoing investigations of some of these fossils and reviews of older discoveries are moving us to a closer understanding of fossil hominin variation, dynamics of their social organization, and our genetic relationship to these hominins (i.e., in the case of DNA sequencing of fossil bones found in the Denisovan cave in Siberia).

Continuing, John Relethford examined the global distribution of skin color and craniometrics traits in order to show the fallacy of the race concept [61]. He showed that the boundaries in global variation are not discrete and do not fit "a strict view of the race concept" ([61], 16). And Clarence Gravlee examined racial inequalities in health and found that cardiovascular disease, diabetes, stroke, low birth weight, and the like do not indicate genetic differences between races [21]. Gravlee argued for more focus on complex long-term environmental influences on human biology. Finally, Peter Turnbaugh and his colleagues studied the human microbiome to understand "the microbial components of the human genetic and metabolic landscape and how they contribute to normal physiology and predisposition to disease" ([62], 8). Overall, these few examples of the new biological anthropology show the collaboration within and across disciplines to understand human evolution in the framework of social cultural, environmental, genetic, biological, and physiological mechanisms.

In conclusion, the AABA still has work to do on making the organization more diverse. We study human biological variation and evolution; therefore, we should practice what we preach and make every effort "to attract scientists from a variety of backgrounds who have different views and experiences" ([63], 158). A good start is partnering with anthropology, biology, and anatomy programs at Historically Black Colleges & Universities (HBCU) and other minority-serving institutions to increase the visibility of biological anthropology [63]. In time, there will be more scientists like Diaz, the Penn doctoral student staring in shock at the skull of his ancestor on the shelf in the classroom, and they will have control in determining the ownership and disposition of their ancestral curated skeletal and cultural remains.

Statement of Competing Interests

The author has no competing interests.

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