USING BIOLOGICAL DATA TO CHALLENGE THE REALITY OF RACE

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ABSTRACT

Physical anthropology is unique within the behavioral and social sciences. Its primary focus is on the present and past biological history of and variation in humanity. It is included within anthropology because much of human biological history and variation is a result of sociocultural phenomena. This research applies the physical anthropology method of craniometry to the concept of human races. Craniometric data from India and Cuba are analyzed with a multiple discriminant function program that assigns individual skulls to racial categories. The results indicate that the program does not classify almost all of the skulls into the correct racial category, nor does it classify some skulls consistently. In some cases, it is poor in correctly classify skulls with regard to traditional racial categories. The primary reason for the inaccuracy and inconsistency is that human races are a social construct, not a biological reality.

INTRODUCTION

Although anthropology is a traditional behavioral and social science, one of its four major subfields, physical or biological anthropology, is actually a natural science. Physical anthropologists study human biological variation in modern peoples and back into the remote past, even earlier than our protohuman ancestors. Indeed some physical anthropologists do not even study humans or human ancestors; they focus on non-human primates, now and in the past, because Homo sapiens is a member of the biological order that includes our prosimian, monkey, and ape relatives. Still, physical anthropology has always been a traditional part of anthropology. That is because the goal of all of anthropology is to thoroughly understand everything possible about humanity, including our evolutionary roots and our non-human primate relatives. And it is typically not possible to understand the biological nature of modern humans and even ancient protohumans without taking sociocultural phenomena into account.

Human Osteology

One very important aspect of modern physical anthropology, and even early physical anthropology, is human osteology. Our bones vary, as do those of our ancestors, our non-human primate relatives, and their progenitors. Physical

anthropologists have always focused on bones, if for no other reasons than bones are hard and therefore preserve in the prehistoric record, and, unlike genes for example, bones are relative simple to study. They are easily measured and statistically analyzed.

One of the early popular aspects of human osteology was racial studies of the skull. Sometimes these studies had racist overtones, attempting to somehow demonstrate that the differences between European and other skulls were somehow associated with European cultural superiority. Such studies were a facile scientific justification for slavery and colonialism.

Forensic Anthropology

Forensic anthropology is a modern offshoot, an applied one, of human osteology. Forensic anthropologists study the remains of recently deceased people whose identity is unknown. Primarily working with coroners and medical examiners, sometimes with police agencies, they attempt to discern a demographic profile of who the unidentified bones might represent. The parameters of sex, age at death, living stature, health history, osteological idiosyncrasy, time-since-death, and race are traditional parts of a standard forensic anthropology report on an unknown skeleton.

However, as I reported a few years ago (Wienker, 2001), most anthropologists have now come to accept that human races are a social construct and that they do not have biological reality. The matter, though, is not without contention (Brace, 1995; Goodman and Armelagos, 1996; Kennedy, 1995; Sauer, 1992). Still, forensic anthropologists report to their constituents, the "race" of a skeleton, but nowadays they may use such other terms such as geographic or genetic ancestry, or population affiliation. That is because those in the medico-legal system want to understand the phenotypic characteristics that an unidentified set of bones would manifest if the skeletal remains had flesh. Such information is of great value in the hopeful identification of the unknown decedent, despite the apparent non-existence of human races.

The purpose of this report is to demonstrate the premise above: Human races do not exist except as social constructs, convenient mental typologies of common agreement. The method of demonstration is the result of the application of FORDISC analysis to different series of modern human skulls, for the most part from individuals of known genetic ancestry. The skulls come from India and Cuba.

FORDISC

FORDISC is a computerized program that analyzes human remains in a number of different ways, including for race. The modern data base of FORDISC, developed at the University of Tennessee, consists of skeletal measurements from modern (post 1950) individuals of known demographic categories (Ousley and Jantz, 1996). There are measurements from hundreds of individuals in the data base and the most recent version, 2.0, has sufficient

sample sizes to make for meaningful statistical results for the following categories: white, black, Japanese, and Amerindian males and females, and Hispanic, Chinese, and Vietnamese males.

FORDISC utilizes a set of measurements taken from an unidentified skull and creates an unique multiple discriminant function formula that classifies the skull with regard to percent likelihood that it falls into any of the specific previously-mentioned demographic categories that the user selects. It also gives a statistical indication of how typical the skull is of those in the selected demographic categories in the known database of the program.

Underlying the technique/program are some statistical and biological assumptions that are beyond the scope of this paper. However, my experience with FORDISC is that it is accurate enough to be used in the courtroom, unless of course, the unknown skull might be from such an exotic population as Australian Aborigine or Hottentot--far biologically from any category in the database. Tables 1-6 show the FORDISC analyses of various series of skulls of known identity; that is, the skulls are derived from individuals whose ethnicity or race is known.

In each analysis, the same methodology was used. Initially each skull was analyzed using all 11 demographic categories. Categories that yielded posterior probabilities (the probability that the unknown skull falls into the specific demographic category) of less than .05 were discarded and the analysis was run against the remaining categories until all demographic categories yielded posterior probabilities of at least .05.

The Samples and Analyses

Table 1 reports the FORDISC results from a series of 35 white Cuban male skulls of known identity, from individuals who died in the late 1960s and early 1970s. Table 2 summarizes those results.

Most important is that FORDISC only correctly classifies 56% of the sample, and those not correctly classified are not consistent with regard to the category of misclassification. Moreover, the average posterior probabilities are not very high, indicating that the skulls were often classified with moderate posterior probabilities into other demographic categories. Also, the typicality probabilities for most of the skulls are not particularly high.

Table 3 reports the FORDISC analysis of 16 skulls known to have originated in the subcontinent of India (Goldstein, 1997; Kosiba, 1999; Wienker et al. 1990). India is not in the FORDISC database, so the purpose of the analysis was to determine if the skulls were consistently classified. Obviously the answer is no. Indeed, the program did not classify any into the Vietnamese or Chinese categories, categories closest geographically to India. The posterior probabilities are not particularly low, and the typicality for many is not as low as one might imagine, given that India is not in the database and that the categories the skulls were most frequently classified as, are not geographically near India.

Table 4 reports the analytical results for 47 Chinese Cuban male skulls (Wienker and Roberts, 2003). These skulls are not from known individuals, but

from people who were buried in a Chinese cemetery in Havana. Moreover, most are probably not completely modern. Some may date to more than 100 years ago, if not somewhat longer. However, there is no reason to believe that they are not Chinese in ancestry. The skulls all manifest qualitative features of Asian ancestry, according to the criteria of Rhine (1990).

Table 5 summarizes the results in Table 4. While FORDISC does not classify most of the skulls as Chinese, it is pretty accurate in assigning East Asian ancestry to most of them. The posterior probabilities are for the most part high, but the typicality probabilities are interestingly rather low, probably because of the temporal disparity.

Table 6 presents the results of FORDISC analysis of 50 Cuban skulls from forensic cases processed through the Office of the Chief Medical Examiner of Havana Province in the late 1990s (Soto Izquierdo et al. 2000). All of the 50 skulls were derived from identified individuals. In Cuba, people classified as Mulattos (an official government census category) are of mixed Spanish and African origin, but not of overwhelmingly African origin. The latter are classified as blacks. In the summary data at the bottom of the table, Mulattos who are classified as blacks and whites who are classified as Hispanics are considered correctly classified. The results demonstrate a lack of consistency and overall accuracy; 78%, is not especially high.

Discussion

The results of these FORDISC analyses are a mixture of a little accuracy, lots of relative inaccuracy, and considerable inconsistency. What potentially explains the fact that for the most part, FORDISC does not accurately classify human skulls with regard to race, especially those from individuals whose race is known?

First, consider the inconsistency and inaccuracy in the classification of the white Cuban skulls, summarized in Table 2. The reason for this is that the Hispanics in FORDISC are Mexican and Puerto Rican, both of which have significant Amerindian ancestry. Cubans do not. In fact, Mexicans, Puerto Ricans and Cubans are derived from substantially different gene pools. For the most part, Mexicans are Amerindian and Spanish in ancestry. Puerto Ricans are Amerindian, Spanish, and African in ancestry; Cubans are African and Spanish in ancestry (Salzano and Bortolini, 2002). That is probably why only 20% of the Cuban white males in Table 2 and 25% of them in Table 6 are classified as Hispanic.

The traditional racial category Hispanic, or Latino, appears to be a mish-mash of individuals/populations of quite different biological backgrounds (Ross et al., 2005: Spradley and Jantz, 2005). This is hardly biological evidence of the existence or reality of human races.

The geographic inaccuracy and overall inconsistency of the FORDISC classification of the skulls from India in Table 3 can be attributed to the fact that the peoples of India are an extraordinary genetic hodge podge (Balakrishnan, 1978). For thousands of years, humans traveling through Asia have contributed

to the genetic basis of modern Indians, who have substantial hereditary influences from East Asia, Southwest Asia, and Europe. Indeed, rather than being a race, the people of the subcontinent of India are in reality many different and genetically diverse populations. Some are tribal in nature while others, depending on historical and geographical nuance, may have relatively greater European, Middle Eastern or Asian ancestry (Lukacs, 1984).

As Table 5 indicates, FORDISC does do a pretty good job of classifying Chinese skulls as Asian, but it could not accurately identify even half as actually being Chinese. And, as Table 6 demonstrates, FORDISC was very accurate in not classifying white Cuban skulls as other than white or Hispanic. It is interesting to note that only four of 21 white Cuban skulls were classified as Hispanic. No doubt, readers of this paper probably would classify all of the 21 white Cubans as being Hispanic.

A further result of these analyses is the frequent low typicality statistics, below 50%. This is an indication that the skulls are statistically unlike those of known racial identity in the data base of FORDISC.

While the craniometric analyses presented in this paper do not disprove the existence of biological races of modern humanity, they profoundly underscore the weakness of the concept from the standpoint of biology. They strongly infer, as I pointed out recently (Wienker, 2002), what most anthropologists today accept--that human races are a social construct, without biological validity or meaning. They further support the visionary posture of Frank Livingstone (1962), who argued for the non-existence of human races more than 40 years ago and the pioneering insight of Ashley Montagu (1942) even 20 years earlier.

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Table 1. FD Racial Analysis of 35 White Male Cuban Skulls

	RACE	PP[1]	T[2]
1	White	0.62	0.63
2	Japanese	0.64	0.90
3	Black	0.29	0.71
4	White	0.32	0.135
5	White	0.81	0.02
6	Hispanic	0.54	0.84
7	White	0.59	0.08
8	Black	0.70	0.30
9	White	0.67	0.00
10	White	0.57	0.10
11	White	0.91	0.93
12	Black	0.49	0.63
13	White	0.50	0.07
14	Hispanic	0.51	0.47
15	White	0.90	0.13
16	White	0.44	0.06
17	White	0.49	0.58
18	White	0.65	0.09
19	Amerindian	0.31	0.99
20	White	0.28	0.86
21	Black	0.52	0.10
22	Chinese	0.38	0.78
23	Chinese	0.36	0.87
24	Black	0.53	0.79
25	Japanese	0.42	0.10
26	Hispanic	0.37	0.63
27	White	0.22	0.19
28	Vietnamese	0.28	0.34
29	Black	0.29	0.29
30	White	0.72	0.01
31	Black	0.59	0.68
32	Hispanic	0.42	0.58
33	Black	0.33	0.56
34	Black	0.31	0.36
35	White	0.54	0.80

[1] Posterior Probability
[2] Typicality

Table 2. Summary of FD Racial Classification of 35 White Cuban Male Skulls

RACE	N	%	PP[1]	SD	T[2]	SD
White	**16**	**46**	**.58**	**.19**	**.29**	**.35**
Hispanic	**4**	**11**	**.46**	**.24**	**.63**	**.30**
Black	**9**	**26**	**.45**	**.15**	**.49**	**.24**
Amerindian	**1**	**03**	**.31**	**–**	**.99**	**–**
Japanese	**2**	**06**	**.53**	**.11**	**.50**	**.40**
Vietnamese	**1**	**03**	**.28**	**–**	**.34**	**–**
Chinese	**2**	**06**	**.37**	**.01**	**.825**	**.425**

[1] Posterior Probability
[2] Typicality

Whites and Hispanics: 20/35 = 56%

Table 3. FD Racial Classification of 16 Skulls from India (India Ancestry does not exist in the FD database)

	Race	Posterior Probability	Typicality
1	White Female	.84	.46
2	Amerindian Female	.36	.29
3	Black Male	.76	.85
4	Black Female	.52	.66
5	Black Male	.275	.06
6	Japanese Female	.65	.002
7	White Female	.55	.915
8	White Female	.56	.04
9	Black Female	.85	.57
10	Black Male	.52	.27
11	White Female	.87	.92
12	Japanese Female	.44	.33
13	Japanese Female	.77	.97
14	Japanese Male	.66	.74
15	Japanese Female	.70	.07
16	Japanese Female	.69	.40

Table 4. FD Racial Classification of 47 Chinese Cuban Male Skulls

	RACE	PP[1]	T[2]
1	Chinese	0.47	0.51
2	Chinese	0.44	0.09
3	Chinese	0.88	0.09
4	Chinese	0.88	0.05
5	Japanese	0.35	0.32
6	Vietnamese	0.70	0.30
7	Hispanic	0.43	0.29
8	Vietnamese	0.99	0.00
9	Japanese	0.27	0.91
10	Chinese	0.50	0.41
11	Hispanic	0.34	0.56
12	Vietnamese	0.84	0.00
13	Chinese	0.39	0.54
14	Chinese	0.52	0.80
15	Amerindian	0.99	0.00
16	Chinese	0.67	0.28
17	Chinese	0.83	0.94
18	Chinese	0.40	0.99
19	Black	0.50	0.29
20	Chinese	0.97	0.52
21	Chinese	0.74	0.00
22	Chinese	0.51	0.03
23	Amerindian	1.00	0.08
24	Chinese	0.86	0.00
25	Chinese	0.85	0.27

	RACE	PP[1]	T[2]
26	**Japanese**	**0.38**	**0.98**
27	**Japanese**	**0.62**	**0.02**
28	**Chinese**	**0.29**	**0.23**
29	**Vietnamese**	**0.32**	**0.71**
30	**Japanese**	**0.57**	**0.97**
31	**Vietnamese**	**0.97**	**0.00**
32	**Chinese**	**0.50**	**0.27**
33	**Chinese**	**0.48**	**0.37**
34	**Vietnamese**	**1.00**	**0.29**
35	**Vietnamese**	**0.86**	**0.60**
36	**Chinese**	**0.76**	**0.74**
37	**Chinese**	**0.82**	**0.84**
38	**Japanese**	**0.87**	**0.05**
39	**Chinese**	**0.33**	**0.87**
40	**Vietnamese**	**0.52**	**0.94**
41	**Amerindian**	**0.72**	**0.26**
42	**Japanese**	**0.74**	**0.07**
43	**Japanese**	**0.37**	**0.65**
44	**Chinese**	**0.83**	**0.15**
45	**Chinese**	**0.20**	**0.55**
46	**Amerindian**	**0.84**	**0.62**
47	**Amerindian**	**0.35**	**0.03**

[1] Posterior Probability
[2] Typicality

Table 5. Summary of the FD Racial Classification of 47 Chinese Cuban Male Skulls.

RACE	N	%	0 PP[1]	SD	T[2]	SD
Chinese	**23**	**49**	**.63**	**.22**	**.41**	**.33**
Hispanic	**2**	**4**	**.39**	**.05**	**.43**	**.14**
Black	**1**	**2**	**.50**	**–**	**.29**	**–**
Amerindian	**5**	**11**	**.78**	**.67**	**.20**	**.24**
Japanese	**8**	**17**	**.52**	**.21**	**.50**	**.44**
Vietnamese	**8**	**17**	**.78**	**.26**	**.36**	**.36**

[1] Posterior Probability
[2] Typicality

Asian: 39/47 = 83%

Table 6. 50 Cuban Crania Analyzed Using FORDISC

FORDISC CATEGORIES OF RACE/SEX

50 Documented Cuban Crania	White Male		Black Male		Chinese Male		Hispanic Male		White Female		Black Female	
	N	%	N	%	N	%	N	%	N	%	N	%
16 White Male	10	62.5	0	0	0	0	4	25	2	12.5	0	0
12 Black Male	3	25	5	41.7	0	0	2	16.7	2	16.7	0	0
1 Chinese Male	0	0	0	0	1	100	0	0	0	0	0	0
8 Mulatto Male	1	12.5	5	62.5	0	0	1	12.5	1	12.5	0	0
5 White Female	0	0	0	0	0	0	0	0	4	80	1	20
6 Black Female	0	0	3	50	0	0	0	0	0	0	3	50
2 Mulatto Female	0	0	0	0	0	0	0	0	0	0	2	100

All crania are derived from individuals whose identity is known.

Accuracy: Whites 20/21 = 95%, considering that classification as Hispanic is correct)

Blacks (including Mulattos): 18/28 = 64%

Overall: 38/49 = 78%