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Source: Human Biology, 86(3) : 227-232

Published By: Wayne State University Press

URL: https://doi.org/10.13110/humanbiology.86.3.0227

Nicholas Wade and Race: Building a Scientific Façade

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A Troublesome Inheritance: Genes, Race and Human History, by Nicholas Wade. New York: Penguin Press, 2014. x + 278 pp. 978-1-5942-0446-3 (hardcover). US $27.95.

> For he will say to himself that he has no right to give names to objects which he cannot define.
>
> —Charles Darwin, *The Descent of Man*

Do "races" exist as meaningful biological categories?[1] Physical anthropologists and human biologists have been studying race (e.g., blacks vs. whites, or Europeans vs. Asians) for centuries. For most of that time they subscribed to the perspective that race was a taxonomic category, and they sought to identify the biological traits (e.g., cranial shape or skin color) that characterized and defined these different groups. This perspective assumed that each individual was a member of a single racial category, that the differences between racial categories were biological, and that these categories were predictive of other traits like ancestry, temperament, intelligence, or health (Linnaeus 1758; Morton 1839; Hooton 1939).

But it gradually became clear that this classificatory approach was not scientifically sound. Grouping people by skin color into "continental races" (Africans, Asians, Europeans) did not produce the same result as grouping people by skull shape or by such traits as susceptibility to sickle cell disease (Livingstone 1962; Relethford 2009). Furthermore, as scientists began to study human variation with the tools of genetics, it became obvious that human genetic variation does not divide humans into a few discrete groups. There are virtually no sharp boundaries, either with physical features or with patterns of genetic diversity, that show where one population "ends" and the next "begins" (Livingstone 1962; Lewontin 1972; Jorde et al. 2000; Relethford 2009; Long et al. 2009; Templeton 2013).

These observations have led the majority of physical anthropologists, human biologists, human geneticists, and sociologists in recent decades to conclude that the racial groups we recognize are social categories constructed in a specific cultural and historical setting, even if we consider physical features when categorizing people (Pigliucci 2013; Duster 2005). These social categories have biological consequences; for example, someone who experiences the stress of racism may be more likely to develop high blood pressure and hypertension than someone who does not (Gravlee 2009; Sullivan 2013).

However, according to former *New York Times* science writer Nicholas Wade, we should never have stopped thinking of race as a biological taxonomic category. In his book *A Troublesome Inheritance*, Wade takes it upon himself to educate scientists about the errors of our interpretations of human genetic diversity.

Wade claims that the latest genomic findings actually *support* dividing humans into discrete races and that the genetic makeup of different races contributes to behavioral and economic disparities. In a spectacular failure of logic, he asserts that those who disagree that races are meaningful

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Human Biology, Summer 2014, v. 86, no. 3, pp. 227–232.

Table 1. Various Numbers of Races Referred to by Wade in *A Troublesome Inheritance*

Number of Races	Definition	Page
3	Africans, East Asians, Europeans, "as well as many smaller groups"	2
3	Africans, East Asians, Caucasians (doesn't mention Native Americans)	4
5	Africans, East Asians, Caucasians, Native Americans, Australians/Papua New Guineans	64
3	Caucasians, East Asians, Africans	70
7	Five continental races, Indian subcontinent, people of the Middle East	96
5 or 7	Five continental groups but two additional groups recognized genetically: Central/Southern Asia and Middle East	100
4	European, East Asian, American Indian, African	115
3	"Major races"	121
5	"Major races"	242

biological categories in humans must *also* think that human populations do not differ genetically or have not been affected by evolution.

There is a lot to criticize in this book, particularly Wade's imaginative storytelling in chapters 6–10 ("a much more speculative arena," as he puts it [15]). He explains that English populations have a "willingness to save and delay gratification," which "seems considerably weaker in tribal societies" (184–185), and these differences *must be* genetically based, despite his admission that "the genetic underpinnings of human social behavior are for the most part still unknown" (15). In chapter 8, he asserts that Jews are adapted for capitalism in a manner analogous to the Eskimo's adaptation to survival in an Arctic environment (214)—an assertion unsupported by scientific evidence, to put it mildly. (Wade seems to be unaware of the consequences of laws prohibiting Jews from owning land and farming over much of Europe for centuries—and instead speculates that "the adaptation of Jews to capitalism is another such evolutionary process" [214].)

But the central foundation of Wade's argument is the scientific justification of the folk classification of race. He writes: "At least at the level of continental populations, races can be distinguished genetically, and this is sufficient to establish that they exist" (122). If Wade is right and races are distinct biological categories, then we would reasonably expect that they would be unambiguously different from each other genetically and physically (as well as behaviorally, according to Wade). One should be able to define each race with a set of objective criteria, which could be used by any person to independently reach the same classifications (and number of classifications) as Wade. Furthermore, these categories should have predictive power; that is, features that define race should be in concordance with new discoveries of genetic diversity.

What Is Race, According to Wade?

Wade never provides a clear definition of "race" in this book. He tries to rely instead on loose associations rather than definitive characteristics, which forces him (like Hooton 1918, 1931) to conclude both that physical traits define race but that the traits can vary from person to person: "Races are identified by clusters of traits, and to belong to a certain race, it's not necessary to possess all of the identifying traits" (121).

With such a shifty, casual footing, it's no surprise that Wade's conclusions are unsound. He can't keep the number of races straight (see Table 1). Wade can't settle on a definite number of races because he can't come up with a consistent, rigorous definition of what "race" means. He freely uses such terms as "major race," "race," "subrace," "group," and "population" but doesn't provide any serious, objective ways to distinguish among these terms for arbitrary groupings of people.[2]

Wade seems to realize the contradictory claims of his premise but tries to have it both ways: "Such an arrangement, of portioning human variation into five continental races, is to some extent arbitrary. But it makes practical sense. The three major races are easy to recognize. The five-way division matches the known events of human population history. And, most significant of all, the division by continent is supported by genetics" (94).

To support this claim, Wade relies heavily on

a study published by Rosenberg et al. (2002) that used a program called *Structure* to group people based on similarities in short tandem repeat markers distributed across the genome. He notes that the program identified five major clusters in this 2002 study, which corresponded to the major geographic regions of the world (Africa, Eurasia, East Asia, Oceania, and America). Therefore, Wade argues, these results clearly show that humans are divided up into racial categories that match continents.

Charles Murray, coauthor with Richard Herrnstein of the book *The Bell Curve* (1994)—which claimed that genetically based differences in intelligence between blacks and whites (as measured by IQ) could explain social and economic disparities, and was widely criticized (see Alland et al. 1996)—recently reviewed Wade's book in the *Wall Street Journal*. He stated that "a computer given a random sampling of bits of DNA that are known to vary among humans—from among the millions of them—will cluster them into groups that correspond to the self-identified race or ethnicity of the subjects. This is not because the software assigns the computer that objective but because those are the clusters that provide the best statistical fit" (Murray 2014) But Wade and Murray are both wrong. While the program *Structure* can be a useful tool for inferring individual ancestry, it requires (1) an understanding of the assumptions inherent in the clustering algorithms and (2) cautious interpretation of the results. Because of these caveats, careful and rigorous scientists generally view the "best" clustering scheme as a starting point for generating testable hypotheses about ancestry and population history, *not* as the basis for slicing the species into a discrete number of groups or races.

Structure is a program that assigns individual genotypes to hypothetical populations or ancestry groupings (Bolnick 2008). It assumes that populations are in Hardy-Weinberg equilibrium and that loci are not in linkage disequilibrium (Pritchard et al. 2000). Results produced from this analytical tool are extremely sensitive to a number of factors, including models (i.e., correlated vs. uncorrelated allele frequencies), the type and number of genetic variants studied, and the number of populations included in the analysis (Rosenberg et al. 2005). The authors of *Structure* also caution that it will produce rather arbitrary clusters when sampled populations exhibit clinal patterns of genetic variation due to isolation by distance (Pritchard et al. 2000). This description applies to most human populations, so it makes the results of *Structure* problematic and difficult to interpret in many cases. In fact, Rosenberg et al. (2005) explicitly stated: "Our evidence for clustering should not be taken as evidence of our support of any particular concept of 'biological race.'"

Contrary to Wade's assertion, *Structure* didn't simply identify *five* clusters in the Rosenberg et al. (2002) data set. It also identified two, three, four, six, and seven clusters.[3] Why? Researchers using *Structure* have to define the number (K) of clusters *in advance*, because that's what the program requires. So where does Wade get the idea that $K = 5$ is the most statistically supported number of clusters? Not from Rosenberg et al. (2002).

There are a few statistical methods for identifying which choice of K is "best." *Structure* itself provides an estimate of the log probability of the data for each value of K [$\ln P(D)$]. However, using this estimate to choose among values of K is not without some controversy—the authors of *Structure* caution that it "merely provides an *ad hoc* approximation" and the "biological interpretation of K may not be straightforward" (Pritchard et al. 2010: 15). In their simulation study, Evanno et al. (2005) observed that $\ln P(D)$ wasn't necessarily maximized at the correct value for K. They recommend instead the measure of ΔK, or the second-order rate of change of the likelihood function with respect to K (essentially, how much better each value of K is compared with the preceding value of K). Many researchers follow this practice, although it has been argued against (Waples and Gaggiotti 2006).

Importantly, Rosenberg et al. (2002, 2005) do not report the $\ln P(D)$ (or ΔK) for any of the values for K, so those articles do not tell us which number of clusters are most likely present in the data set. Bolnick (2008) reports information about the unpublished $\ln P(D)$ values:

> No single value of K clearly maximized the probability of the observed data. Probabilities increased sharply from $K = 1$ to $K = 4$ but were fairly similar for values of K ranging from 4 to 20. The probability of the observed data was higher for $K = 6$ than for smaller values of K, but not as high for some replicates of larger values of K. The highest Pr $(X|K)$ was

> associated with a particular replicate of $K = 16$, but that value of K was also associated with very low probabilities when the individuals were grouped into 16 clusters in other ways. Consequently it is uncertain which number of genetic clusters best fits this data set, but there is no clear evidence that $K = 6$ is the best estimate. (Bolnick 2008, 77; based on information provided by personal communication from N. Rosenberg)

Wade does not seem to have read any of the papers critical of interpretations of Rosenberg et al.'s (2002) data as evidence for human racial divisions, such as Bolnick (2008) or Templeton (2013). Nor does he seem to have noticed Rosenberg et al.'s (2002) omission of any statistical evaluation of the different K values. They do highlight "six main genetic clusters, five of which correspond to major geographic regions" within the *abstract*, making one wonder whether Wade carefully read the rest of the paper. I would like to believe that a veteran science reporter would not be so cavalier as to selectively read only sources that support his position. Wade evidently seems to like $K = 5$ simply because it matches the number of inhabited continents: "It might be reasonable to elevate the Indian and Middle Eastern groups to the level of major races, making seven in all. But then many more subpopulations could be declared races, so to keep things simple, the five-race, continent-based scheme seems the most practical for most purposes" (100). Practical. Simple. Wade wants us to cut up human diversity into five races not because that's what the statistical analyses support but because thinking about it as a gradient is hard.

Nobody (least of all contributors to this journal!) is denying that humans vary physically and genetically. But observed patterns of human genetic diversity simply don't fit with any scientifically viable definition of race as a taxonomic unit (Templeton 2013). In order to find biological support for folk classifications of race, Wade has decided that certain patterns of variation are more important than others. The five-part division of races seems "logical" to Wade because there are five continents. Anticipating confusion on this point, he claims: "Those who assert that human races don't exist like to point to the many, mutually inconsistent classification schemes that have recognized anywhere from 3 to 60 races. But the lack of agreement doesn't mean that races don't exist, only *that it is a matter of judgment as to how to define them*" (92, emphasis mine).

So, rather than being defined by empirical criteria, as Wade had asserted so confidently earlier in the book, it really is just a subjective judgment call. The differences between groups are so subtle and gradual that no objective lines can be drawn, so Wade draws his own on the basis of his own preconceptions. In other words, he can't define distinct races. He just knows them when he sees them.

There is a great deal more in this book that deserves critique, such as Wade's assertion that the genetic differences between human groups determine behavioral differences, resurrecting the specter of "national character" and "racial temperaments." But as I have shown here, it's all pseudoscientific rubbish because he can't justify his first and primary point: that the human racial groups we recognize today are scientifically meaningful, distinct biological divisions of humans.

Finally, it is worth noting that, throughout the book, Wade repeatedly calls attention to the fact that his view on race is contrary to that of anthropologists and sociologists. In responses to criticisms of his book (including an earlier online version of this review) he insists that "by denying the existence of race, social scientists are intimidating biologists from pursuing this path" (Wade 2014)—a claim belied by the robust criticism of his book by geneticists, evolutionary biologists, and physical anthropologists). This ploy is a variation on the Galileo fallacy: the fact that one bravely holds a minority view in science is considered to be sufficient evidence of the worth of one's position. I have seen it used over and over again in responses to criticisms of pseudoscience, and it is no more persuasive for Wade than it is for creationists or homeopaths.

NOTES

1. This review incorporates material that has previously appeared in the *Huffington Post* (www.huffingtonpost.com/jennifer-raff/nicholas-wade-and-race-building-a-scientific-facade_b_5375137.html) and *Violent Metaphors* (http://violentmetaphors.com/2014/05/21/nicholas-wade-and-race-building-a-scientific-facade/).
2. See Agustín Fuentes's online debate with Wade sponsored by the American Anthropological Association, available

at https://aaanetevents.webex.com/ec0701lsp11/eventcenter/recording/recordAction.do?theAction=poprecord&AT=pb&internalRecordTicket=48325-34b000000021dea9fff10e4adbe92477105faf7337d575f8022218d05ffd3d0cede6594483c&renewticket=0&isurlact=true&recordID=8614987&apiname=lsr.php&format=short&needFilter=false&&SP=EC&rID=8614987&RCID=e801bfd96855006077205e3d2e023699&siteurl=aaanetevents&actappname=ec0701lsp11&actname=%2Feventcenter%2Fframe%2Fg.do&rnd=5083844903&entappname=url0201lsp11&entactname=%2FnbrRecordingURL.do.

3. It actually identified up to 20 divisions, but clusters 1–7 are the primary ones discussed in Rosenberg et al. (2002). The same study also divided their worldwide sample up into regions, and then ran *Structure* within those regions, to look at finer-scale population structure (see Bolnick 2008).

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