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A Troublesome Inheritance: Nicholas Wade's Botched Interpretation of Human Genetics, History, and Evolution

Agustín Fuentes¹

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.

Humans are still evolving, genetic sequences are important, and populations of humans differ from one another in many ways, including patterns of allelic variation. These facts are not debatable; they are true—but none of them are accurately discussed or represented in Nicholas Wade's book *A Troublesome Inheritance: Genes, Race and Human History*.

Wade argues that there are definable and genetically identifiable groups we can describe and label as biological races in humans today. He does not provide a consistent definition for what he means by "race" or a specific number of races that we have (he indicates three, five, and seven as options). Wade suggests that believing in biological races (especially African, Caucasian, and East Asian) is both common sense and solid science. He asserts that evolved differences in these races are the key explanation for social differences in histories, economies, and trajectories in societies; why "Chinese society differs profoundly from European society, and both are entirely unlike a tribal African society" (123). Wade argues that it is racial (genetic) differences and separate evolutionary histories that help us understand why humans are the way they are.

In making these assertions, Wade ignores the majority of data and conclusions from anthropology, population genetics, human biology, and

evolutionary biology (see Marks 1995, 2010). Rather than actually acknowledging the copious, and current, scientific research on human genetic variation that contradicts his assertions, Wade reviews, and rejects, only the protests of Jared Diamond and assertions by Richard Lewontin. Wade does make minimal reference to the official statements on race by the American Association of Physical Anthropologists and the American Anthropological Association; he simply disregards them by reasserting his belief that looking at genetics gives us clear racial assignment.

Despite being publicly challenged by numerous biological anthropologists, geneticists, and evolutionary biologists on the specifics of the data and his interpretations (see, e.g., Marks 2014; Fuentes 2014; Raff 2014), Wade has been adamant in his refusal to interact with any assertions, articles, data, or analyses that in any way problematize his simplistic, and erroneous, position. His approach is particularly dangerous as his justification for this position is that he is a defender of truth and that a cabal of left-leaning academics are obfuscating reality with oppressive, even fascistic, denials of the truth about race.

Since the publication of his book, the core of Wade's responses to his (many) critics have been that they (1) are trying to repress the true state of knowledge about racial variation, (2) have

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poor academic reputations and/or do less than acclaimed work and are worried that their careers would be derailed if biological races were true, and/or (3) “are heavy on unsupported condemnations of the book, and less generous with specific evidence” (Wade 2014).

None of these assertions are valid, and in fact, Wade is using them as a smoke screen to avoid actual scientific debate on the claims made in his book. And it works. Charles Murray, coauthor with Richard Herrnstein of the controversial book *The Bell Curve* (1994), wrote a glowing review in the *Wall Street Journal* (Murray 2014) championing Wade as the voice of reason against a sea of left-leaning lying academics, and Jared Taylor of the hyperconservative and openly racist magazine *American Renaissance*, congratulated Wade on his blow to the fascist left that is academia (Taylor 2014).

Wade's tactic is particularly dangerous in the public arena, as many readers do not have access to the wide range of current genomic and evolutionary data and theory and do not understand the complexities and rigor of the peer-reviewed publication process by which data are assessed and disseminated. Wade's line of obfuscation in this regard plays on the fact that most of the general public have little context with which to assess whether Nicholas Wade, with his 50-year-old degree in biology and no peer-reviewed publications or research experience, has the skill and knowledge set to engage with many of his critics who are current researchers and educators in the fields on which Wade writes. This is not to say that science writers can't offer excellent and groundbreaking contributions or that only experts in a given area can be participants in such discussions. It is to say that, if one does venture into a scientific topic and make very strong assertions about a complex data set, one should not avoid direct engagement with those whose research and teaching are in that very area.

But Wade does not engage; he avoids challenges and presents a sloppy, erroneous, and highly prejudiced view of human genetics and evolution. Wade makes two assertions that underlie all of his arguments: (a) humans are divided into genetically identified “continental races” (or three, or five, or seven, depending on where you are in the book); and (b) there are significant differences in genetically based social behaviors between these “races”

as a result of the last ~50,000 years of human evolution. These points are both wrong, and I will briefly outline why.

First, Wade's botched understanding of genetics: Wade states there are definable genetic races but offers no substantive definition. Wade uses the words *cluster*, *population*, *group*, *race*, *subrace*, and *ethnicity* without definitions and occasionally interchangeably throughout the book. He does assert that particular “clusters of variation” equal races but never gives a scientifically assessable definition for these “clusters”—he simply states that if you lump all humans by their genetic variation you get specific clusters, and that these clusters “always correspond to the five continental races” (97) (meaning African, East Asian, Caucasian, Australian, and Native American).

Wade thinks that a focus exclusively on the variation on coding regions of the human genome will get us answers. But he does not recognize that humans have only about 19,000 genes (many fewer than many less complex forms of life) and that even within these regions there is much variation in structure. For example, Ezkurdia et al. (2014) recently reported on a large collection of regions of the genome previously thought to be coding regions, concluding that “most genes in the potential non-coding set have multiple non-coding features, little or no evidence of transcript expression, no detected peptides, and a reading frame conservation that fits non-coding genes more closely than coding genes” (18). We know that “genes” don't do anything by themselves; epigenetics and complex metabolic and developmental systems are at play in how bodies work (Buchanan et al. 2009). So while “genes” matter, they are only a small part of the whole evolutionary picture, and focusing just on DNA segments won't get you what Wade implies it will.

In the book Wade refers to a sampling of recent genetic studies (including ~23 articles published since 2000) to support his “cluster of variation” idea of genetic races. But he repeatedly glosses over key points, misrepresents the findings in some of the studies cited, and wholly ignores an enormous body of literature that challenges his assertions (see, e.g., Templeton 2013; Edgar and Hunley 2009; Weiss and Long 2009; Xing et al. 2009; Marks 1995; among many others).

We know that humans all share 100% of the

same genes and 99.9% of variation, and that the vast majority of DNA that varies is not in coding regions themselves and is not directly shaped by natural selection the way Wade suggests it is. We know that most variation is due to gene flow and genetic drift, so the farther apart two populations are, the more likely they are to have more differences (isolation by distance); we also know that most of the variation in our entire species is found in populations just in Africa, with all the variation found in all populations outside of Africa making up a subset of that variation (Tishkoff et al. 2009).

Different populations do vary in much of the 0.1% of the genome, but this variation is not distributed along anything one could identify as racial lines. For example, one of Wade's core assertions of notable differences in the three "races" of African, East Asian, and Caucasian comes from a study by Voight et al. (2006) that used 89 Japanese and Han Chinese individuals from Tokyo and Beijing, 60 individuals with ancestry from northern and western Europe, and 60 members of the Yoruba group from Ibadan, Nigeria. It turns out that there are some discrete differences in patterns of evolutionary pressures on DNA sequence variation among these groups—and much more overlap (more than 99% of the patterns measured are shared). But these samples are extremely limited with respect to entire continents and are really far apart (visualize Tokyo, London, and Ibadan on a map). Of course populations vary, especially when they are far away from one another—but that does not make them races. We could easily get this same kind of pattern of minute but present differences between populations if we compared samples from Mongolia, Malaysia, and Sri Lanka, or Finland, Morocco, and Azerbaijan—but these do *not* reflect distinct races.

Wade relies heavily on some reports that are based on analyses with the program Structure to support the argument that humans naturally divide into the continental clusters (which he says are races). He relies on these few studies as the main support for his notion that there are three (or five or seven) natural clusters of humanity. The problems with the number of clusters provided by Structure for varying data sets has been extensively discussed elsewhere (see, e.g., Bolnick 2008) and are acknowledged even by the originators of the program, who warn that the inferred value of K

(how many clusters you get) can be rather arbitrary (see Rosenberg et al. 2002, plus responses and commentary). But Wade ignores this wrinkle of complexity, and in a clear example of his disinclination to engage with any research that complexifies his perspective, he ignores the argument in an article he cites that counters his view of three (or five or seven) clear racial clusters by arguing for 14 clusters, six of which are in Africa alone (Tishkoff et al. 2009).

Further demonstrating his ignorance about human genetics, Wade states in chapter 5 of his book that "it might be reasonable to elevate the Indian and Middle Eastern groups to the level of major races, making seven in all," and he notices a problem: "But then, many more subpopulations could be declared races." His solution? "So to keep things simple, the 5-race continent based scheme seems the most practical for most purposes" (101). This solution is practical if one's purpose is to maintain the myth that black, white, and Asian are really separable biological groups. But if one's goal is to accurately reflect what we know about human genetic variation, then it is not practical at all—it is flat out wrong.

Wade departs even further from reality when he tries to talk about human evolution. His argument is that our species emerged in Africa about 200,000 years ago (which is true) and that between 120,000 and 50,000 years a few small groups left Africa, some heading to Europe and some to East Asia (accurate but woefully incomplete). In his story these groups stayed reasonably separate for the next 50,000 years (patently false; see, e.g., Templeton 2013 and a plethora of archeological research). Wade argues that "people as they spread out across the globe at the same time fragmented into small tribal groups. The mixing of genes between these little populations was probably very limited. Even if geography had not been a formidable barrier, the hunter-gatherer groups were territorial and mostly hostile to strangers. Travel was perilous. Warfare was probably incessant" (78) (also wrong; see, e.g., Fry 2013). He argues that these groups then followed independent evolutionary paths to the different human races that inhabit each continent.

Wade goes on to assert that "different kinds of society seen in the various races and the world's great civilizations differ not just because of their received culture . . . but also because of variations in

the social behavior of their members, carried down in their genes" (41). Wade then suggests that it is the genetic differences (due to isolation and natural selection) that are the prime explanatory factors for why Chinese dynasties had such longevity, why it was so difficult for the United States to instill democratic social institutions in Iraq after the war, and why Jews have such high IQs. The only way his story makes sense is if you ignore the vast majority of our paleoanthropological, archeological, and genetic data, and if you bypass what we know about ecological systems and human biological and social evolution (not to mention history). Wade agrees that culture and history are important but argues that the real interesting stuff is in genetic influences on social behavior. Culture is a mighty force, he says, but it is the genetic bases for our behavior that guide peoples toward certain propensities.

Regarding the races (whether it is three, five, or seven) and societies, Wade asserts that the differences are due to the minor variations in human social behavior that have evolved within each race during its geographical and historical existence: "The evolution of human social behavior was thus different and largely or entirely independent on each continent" (135). He suggests that these differences are based on different races' social institutions, which are cultural edifices resting on underlying variation in genetic sequences.

Setting aside the fact that these continental races don't actually exist, such a simplistic version of evolution is simply not accurate. We know that mutation introduces genetic variation, which in interaction with genetic drift, epigenetic, and developmental (biological growth and change over the life span) processes produces biological variation in organisms. We also know that gene flow moves the genetic variation around and that natural selection shapes variation in response to specific constraints and pressures in the environment. We also now know that organism-environment interactions can result in niche construction, which can alter the way natural selection operates and create new ecologies, and in humans, multiple systems of inheritance (genetic, epigenetic, behavioral, and symbolic) can all provide information that can influence biological change over time. Social structures, cultural patterns, and behavioral actions can impact evolutionary processes, which in turn can affect our bodies and behaviors (e.g., Flynn et

al. 2013; Fuentes 2013; Kendal 2012; Jablonka and Lamb 2005).

The bottom line is that evolution is not simply a process of natural selection shaping specific genes (as Wade emphasizes)—and presenting it as such is highly misleading. Contrary to Wade's assertions, the actual data on human genetic variation and human evolution demonstrate that we do not have multiple continental races in humans, that we do not evolve simply by genetic shifts in response to the environment, and that we did not spend the last 15,000–50,000 years as isolated, paranoid little bands of hunter-gatherers. Abundant, and peer-reviewed, scientific research clearly demonstrates that Wade's assertions are unequivocally wrong.

Race as we use the term in the United States (black, white, Asian, Latino, etc.) is a real thing, but it is a socially, historically, and politically created and maintained reality, not a specific and identifiable cluster of genetic variation. Race is not defined by biology, but racism can have biological effects, and understanding and confronting the realities of race are important for our society (e.g., Gravlee 2009).

We do need more public discussions on race, but not those promulgated by Wade. We need to engage, fearlessly and accessibly, with what the social and biological sciences actually tell us about genetic variation, about race, about evolution and why it all matters.

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