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Dodging Darwin: Race, evolution, and the hereditarian hypothesis

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ABSTRACT

Many intellectuals enthusiastically denounce those who argue that genes play some role in cognitive differences between human populations. However, such proposals are perfectly reasonable and are, in fact, consistent with the Darwinian research tradition in which most modern social scientists profess to operate. We argue that population-based cognitive differences are congruent with our best understanding of the world because there are strong reasons to believe that different environments and niches selected for different physical and psychological traits, including general cognitive ability. Like most hereditarians (those who believe it likely that genes contribute to differences in psychological traits among human populations), we do not believe there is decisive evidence about the causes of differences in cognitive ability. But we will argue that a partial genetic hypothesis is most consistent with the Darwinian research tradition.

When Darwin's theory of natural selection was originally advanced, it challenged the prevailing religious orthodoxy in Victorian England. Most importantly and most "dangerously," it suggested that the Biblical view of special creation was merely mythical, and that humans, like other animals, were biological "accidents" resulting from millions of years of evolution. Today, Darwin's theory challenges another orthodoxy: The view that all populations of humans have an equal distribution of socially valued traits. The intense anger elicited by the argument that *some* of the well-known Black-White IQ gap is caused by genetics reveals the emotional fervour with which the beliefs of the modern orthodoxy are held. Responses to claims about cognitive differences among human populations have become even more furious recently, despite the fact that gaps in intelligence and achievement among various populations persist around the globe, including in places where environmental conditions are ostensibly equalizing (e.g., Marks, 2014). Because of this, modern Darwinism in practice is severely limited when applied to humans. In this article, we will argue that this modern orthodoxy is almost certainly wrong because (1) human populations vary; (2) they vary in predictable, patterned, and measurable ways; (3) they vary on a number of psychological traits; and (4) genetic differences plausibly explain at least some of the variance in these

traits.

We do not attempt to provide a completely comprehensive tour of the evidence on cognitive ability differences among human populations (see Jensen, 1998; Nisbett et al., 2012; Rushton & Jensen, 2005). Rather, we attempt to make the philosophical and theoretical case that hereditarianism—the view that a substantial proportion (20% or more) of differences in psychological traits within and among human populations is caused by genes—is more fruitful, parsimonious, and productive than is environmentalism—the view that almost all of the differences in psychological traits either within or among human populations is caused by environmental forces. We therefore urge scholars to overcome their understandable squeamishness and discomfort with hereditarianism¹ to discuss it honestly and judiciously, so that researchers can fulfill the promise of the Darwinian revolution in psychology.

Although accounts of human evolution and adaptation to local environments are promulgated in mainstream textbooks and widely accepted among academics (e.g., Molnar, 2006), they are worth briefly covering because they form the basis for broad theoretical considerations that support the contention that human populations vary in physical *and* mental traits at least partially because of differences in

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¹ We use hereditarianism both to refer to the research tradition and to specific hypotheses. In the sense of a research tradition, hereditarianism is a framework that contends that human variation—individual, sex, and population—is at least partially caused by genetics. It then seeks to solve puzzles about human differences from this perspective, forwarding specific hypotheses to explain specific differences. As a hypothesis, it refers to a proposed explanation to a specific difference. The hereditarian hypothesis about average group differences in height or intelligence, for example, is that some proportion of the differences are caused by differences in genes.

genes. Anatomically modern humans likely evolved in East Africa between 300,000 and 100,000 years ago (Stringer, 2012). At some point after roughly 150,000 years ago, these humans began to exit Africa into the Near East. By 45,000 years ago, humans had spread throughout much of Asia, Europe, and Oceania; and by 10,000, they had spread into America (Bae, Douka, & Petraglia, 2017; Klein, 2009; Stringer, 2000). After leaving Africa, humans encountered many novel climatological and ecological regions and therefore faced different selective regimes from the ones they faced inside Africa. Researchers have shown that the story of human evolution is more complicated than was once assumed, with waves of war and migration leading various human groups to blend with or displace other groups (Reich, 2018). However, the basic story remains: The humans that left Africa faced different environments and climates from those that prevailed in Africa, and populations were isolated enough from each other for natural and sexual selection to produce nontrivial differences among them.

Perhaps the most obvious difference among human populations is their respective skin colors. The average modern Norwegian has fair skin; the average modern Saudi Arabian has olive skin; and the average Sub-Saharan African has dark skin (Jablonski (2014)). These differences are correlated with the intensity of UV radiation in the population's ancestral environment such that dark skin is related to high intensities of radiation. The exact reasons for skin color variation among humans are not entirely known, but researchers are fairly confident that dark skin functions as a kind of sunscreen, protecting against cutaneous and systemic folate degradation (Jablonski & Chaplin, 2017). And although the causes of lighter skin are still debated, many researchers champion its relation to pre-vitamin D3 synthesis (Jones, Lucock, Veysey, & Beckett, 2018; but see, e.g., Frost, 2007).

Another interesting difference among human populations is that some have adaptations to extreme altitude (Bigham, 2016). At high altitudes (greater than or equal to 2500 m), low barometric pressure presents significant challenges to human health, survival, and reproduction. Humans who visit places of high altitude may experience temporary, acute "mountain sickness"; those who reside in such places may experience chronic mountain sickness. Despite this, there are human populations who do permanently dwell in high altitude (and have for thousands of years) areas such as the Qinghai-Tibetan Plateau and the Semien Plateau in Ethiopia. In different populations, the adaptations to altitude are slightly different and the Tibetan adaptations may have been facilitated by introgression of DNA (through interbreeding) from Denisovans or Denisovan-related individuals (Huerta-Sánchez et al., 2014).

Not only did humans encounter new environments during their evolution, but they also created them. This process, of an organism actively altering its environment, is called niche construction (Laland, Matthews, & Feldman, 2016). Capable of spinning fine silky webs which it uses for catching prey, laying eggs, and many other crucial behaviors, the spider is one of the most recognizable non-human animals that has created a remarkable niche for itself—although there are many other striking examples, such as beavers and wasps. Humans create a flexible niche of norms, traditions, and technologies, called culture, which has had profound influences not just on immediate human behavior, but on human evolution (Henrich, 2016). For example, after humans began to domesticate animals, some dairying populations evolved the ability to digest lactose after childhood (lactase persistence). This is why the distribution of lactase persistence across the globe varies from population to population (Gerbault et al., 2011). Domesticated animals also brought new diseases, transmitted from animals to humans, which selected for resistance to microbes to which hunter-gatherers were never exposed (Crawford, 2009; Greger, 2007). We will return to niche construction when we discuss human psychological variation and group differences in cognitive ability below.

There are many other examples of human variation in physical traits that have been discussed, as noted above, in mainstream textbooks, so we will not expand on this physical variation further here. The

important point is this: Modern humans likely evolved in East Africa and then spread across the planet, inhabiting radically diverse environments, from the lush tropics with moderate weather to harsh woodlands with hot summers and bleak winters. Because of this, they evolved slightly different characteristics "suited" to those environments.

1. Classifying human populations

Most researchers will assent to the above, at least with regard to physical traits. But they will claim two things that prevent them from endorsing the full-blown study of human biodiversity. First, they will claim that human variation is virtually unclassifiable and that concepts such as race are scientifically misleading and morally pernicious. And second, they will claim that humans *do not vary* in psychological traits or tendencies. We will address the former in this section and the latter in the next.

Since the 1950s, many intellectuals have assailed the concept of race, arguing that it is a dangerous fiction and a deeply deceptive construct that creates an illusion of patterned variation that just does not match reality (Kaplan & Winther, 2013). Although these skeptical intellectuals have proposed many arguments against race, the three most popular are that (1) human variation is almost completely clinal; (2) human variation is not correlated in a predictable and patterned way; and (3) human variation *between groups* is small, probably insignificant, compared to variation *within groups*. These arguments are either factually wrong or true but misleading.

Before looking at these arguments in greater detail, it is worth noting that one of the most common tactics critics use to argue against race is to transform it from a reasonable classificatory construct into an implausible Platonic essence. For example, here is the philosopher Antony Appiah's (1990) view of what race (or "racialism") means:

There are heritable characteristics, possessed by members of our species, that allow us to divide human beings into a small set of races, in such a way that all the members of these races share certain traits and tendencies with each other that they do not share with members of any other race. These traits and tendencies characteristic of a race constitute, on the racialist view, a sort of racial essence (pp. 4–5).

This is a common claim, and is related to a rather less philosophical but equally implausible and essentialist notion recently advanced in a popular book that race realism is, "at its heart the belief that we are born different, deep inside our bodies, perhaps even in character and intellect, as well as in outward appearance" (Saini, 2019, p. xiii). It is unclear what "deep in our bodies" means here: the correct way to state the hereditarian position would be that human populations on average vary on psychological traits at least partially because of genes.

Unsurprisingly, those who forward these claims about racial Platonism rarely include quotations from the supposedly unsophisticated thinkers who are dedicated Platonists. That is because almost none exist among serious scholars today. Even Enlightenment thinkers such as Kant and Blumenbach, who are often derided today as archetypal racists crudely obsessed with racial essences, actually asserted *the opposite*. As Smith (2015) noted in his book on the concept of race in early modern philosophy, "...virtually all explicit claims to the effect that there is a real, permanent, essential difference between different groups rather than a temporary, reversible, contingent one, are made by radical free thinkers, such as Voltaire, in the aim of shocking modern sensibilities, rather than by conservative thinkers aiming to defend the status quo." Those who believe that race is a useful construct are not and have rarely been dedicated to the preposterous proposition that racial groups are completely different from each other, distinguished by some kind of unique essence (Sesardic, 2010).

Variation is clinal. This argument contends that human variation is not discontinuous, but rather gradual as human groups shade into each

other imperceptibly; therefore, “There are no races, only clines” (Livingstone & Dobzhansky, 1962, p. 279). Many scientists and philosophers have endorsed this view. There are two retorts. The first is that *even if human variation were completely clinal, researchers could still classify it without committing some kind of scientific sin* Relethford (2009). Think of age, for example. Variation in age is completely clinal. Nevertheless, we can and do make useful divisions, for example, “adolescent,” “middle-aged,” or “elderly.” Furthermore, these classifications, although somewhat arbitrary at the boundary, contain biological information. There really are differences between elderly people and children. The same holds for human populations. Imagine, for example, if variation from Central Africa to Norway were completely gradual. Norwegians are fair skinned, blond haired, etc., whereas Africans are dark skinned, black haired, etc. Researchers could still classify the resulting variation in meaningful ways. Somebody in southern Norway, for example, would be more similar, on average, to somebody in northern Norway than to somebody in Central Africa. Of course, any division will be somewhat arbitrary at the border. When does an adolescent become an adult? This is the nature of clinal classifications—but this arbitrariness does not mean that the classification is completely without justification. And scientists routinely deploy constructs that use such classifications (e.g., age and color).

The second reply is that variation is not entirely clinal. For example, genetic variation is structured in such a way that it mostly clusters by continent of origin of the human population (Rosenberg et al., 2002, 2005).² Researchers now know that the story of human evolution is much messier than once believed, with large amounts of branching and later interbreeding (Reich, 2018). But there is still an underlying pattern to the genetic variation that is not completely gradual—some individuals consistently group with other individuals in ways that largely conform to common sense racial classifications (Tang et al., 2005).

Classification is arbitrary because variation is not correlated and patterned. One eloquent and superficially persuasive version of this argument contends that “There are many different, equally valid procedures for defining races, and those different procedures yield very different classifications” (Diamond, 1994, p. 84). According to this, classifications based on, say, antimalarial genes will be different but equally legitimate as classifications based on skin color. Scientists can pick traits on which to categorize humans, sure, but each of the categorizations will vary and there is no “real” categorization system to which scientists can ultimately defer. Therefore, because racial classifications are arbitrary, scientists should eschew them.

But this argument is tendentious. Researchers do not haphazardly categorize humans, picking traits at random. In fact, since the Enlightenment, they have worked sedulously to create classifications that have explanatory power. Today, researchers care about (1) evolutionary history and shared ancestry, (2) genetic profiles, and (3) overall phenotypic profiles. A classification scheme that grouped the Zulu with Icelanders and Norwegians with Northeast Asians would be puzzling because it would confuse rather than illuminate evolutionary relationships and patterns of variation. Perhaps more charitably, a classification scheme that grouped Scandinavians with Nilo-Saharan speaking ethnic groups because both have high rates of lactase persistence might make sense if one is interested only in a single trait. But, again, it would clearly violate normal principles of classification because these groups diverged from each other long ago in evolutionary time, likely evolved the lactase persistence independently, and vary along many other traits (Check, 2006).

Variation within human populations is much greater than between human populations. Although this argument is likely older, geneticist Richard Lewontin (1972) made it famous, announcing that, “Since such racial classification is now seen to be of virtually no genetic or

taxonomic significance either, no justification can be offered for its continuance.” One still often encounters this argument today. And although the claim about the relative amount of variance is correct, the contention that racial classification is “of virtually no genetic or taxonomic significance” does not follow. Before examining a more sophisticated argument, consider a simple thought experiment that illustrates the flaws with this line of thinking. Suppose that every human population were exactly the same genetically save for four alleles, which were unique to each population. Out of 20–25 thousand genes, that is, only one varied between groups. But, suppose that those alleles had enormous phenotypic consequences. Allele A made one group four feet tall, allele B made another group five feet tall, allele C made another six feet tall, etc. It certainly does not seem as though the resulting genetic variation would be of no taxonomic significance nor that researchers should ignore the large genetically caused phenotypic differences (and their pattern) simply because the underlying genetic variation was small. Group classification is based both on genotypic *and* phenotypic variation and there is no *a priori* way to know what amount of genetic variation is important enough to divide into groups.

The argument above suggests that Lewontin's claim is conceptually flawed. But it is also flawed for another reason: it ignores the effect of correlated genetic variation (Tal, 2012), which has been dubbed Lewontin's fallacy (Edwards, 2003). To make Lewontin's fallacy clear, consider an analogy. If one looked at the differences between men's and women's faces by examining one trait at a time (say, comparing eye size or cheek protrusion), then one would be unable to classify faces into male or female with a high degree of accuracy. However, if one considers the correlated differences at the same time, then one can classify human faces into male or female with over 95% accuracy (Bruce et al., 1993). Roughly speaking, Lewontin did the former instead of the latter with genetic loci, and concluded that race was of little genetic or taxonomic significance. However, as the analogy to human faces makes clear, the significance of human genetic variation, like the significance of a face or indeed of a language, is in the pattern. If one ignores the pattern, then one misses the meaning.

To conclude, race is a perfectly reasonable construct that picks out real patterns of human variation. However, in this article, we will generally use the term “human population.” The reason for this is quite frankly to avoid unnecessary contentiousness. “Race” is a charged term and debates about its appropriateness often distract from more important debates, such as the nature of human variation. Still, it is crucial to argue against fallacious or misleading claims about our inability to classify human variation profitably. Human populations vary in patterned and predictable ways, even if there is no single correct classification system. Similarly, cars and trucks, or tables and chairs, vary in predictable ways, and are categorized together because they share functional features and overlap on a number of characteristics, not because there is a single essential feature associated with different kinds of vehicles or furniture. For example, we do not reject the idea that a Tesla is a car simply because it has an electric motor rather than the more traditional internal combustion engine. And we do not find a three-legged table perplexing simply because most tables have either four legs or one.³

In classifying people, we can start with broad continental populations: Africans, Asians, Europeans, Americans, and Oceanianins,⁴ and then move to more granular analyses as scientific interests change, recognizing that large continental categories may lack the precision

³ See Wittgenstein's (1957) discussion of “family resemblances.”

⁴ There is a large amount of genetic diversity in Africa, so it is important to bear in mind that broad continental racial categories are quite crude, and perhaps they are not scientifically useful. That is an empirical question. However, it is clear that such classifications are not arbitrary. We wait further evidence and argumentation to make strong conclusions about the most useful classifications of human diversity.

² In fact, Rosenberg's results match fairly closely with Blumenbach's classifications.

required to make scientific progress on a number of puzzles of human variation. Although some may bemoan this, wondering why there are not “objectively” correct classifications, it is nothing unique to human variation. Theorists in biology have long been divided into “lumpers” and “splitters” and have argued sometimes vociferously about how to classify species and subspecies (Endersby, 2009).⁵

2. Psychological variation

As noted in the introductory section, most scholars accept that human populations vary physically, and mainstream textbooks discuss human variation openly without receiving derision or blowback (Molnar, 2006); however, few scholars openly accept that human populations vary *psychologically* (Winegard, Winegard & Boutwell, 2017). This position appears intellectually indefensible, because the brain is not somehow impervious to selective forces. Rather, it is an organ like any other and therefore is just as susceptible to evolutionary pressures as is the skin, lungs, or digestive system. For this reason, some have called the view that human populations do not vary psychologically “liberal creationism” or “selective dualism,” because it relies upon the implausible assumption that human psychological propensities were not selected for by different environments, niches, and climates in the past 50,000 years.

Although it may seem unfair to label a view “liberal creationism,” there is strong evidence that self-described liberals are more likely than conservatives to reject scientific evidence of group differences on ideological grounds (Clark & Winegard, in press). In fact, some opponents of the hereditarian hypothesis have argued that “it is a matter of ethical principle that individual and cultural accomplishment is not tied to the genes in the same way as the appearance of our hair” (Turkheimer, 2007). Others have suggested silence or double standards or even deception when dealing with ideas and evidence about population differences in socially valued traits. According to this view, when our ethical ideals conflict with the scientific evidence, we should prioritize our ethical ideals over scientific conclusions. The view that we should tell “noble lies” when we think the truth would poison social relations is at least as old as Plato’s *Republic*. While we reject the contention that widespread belief in the hereditarian hypothesis would have bad ethical consequences (Anomaly & Winegard, 2020), it is worth emphasizing that even if telling lies about socially consequential topics is sometimes justifiable on moral grounds, this does not change the fact that they are lies, which generally counts as a consideration against them (Anomaly, 2017).

What is perhaps more perplexing than the fact that many mainstream psychologists dismiss the notion that human populations vary psychologically is that some *evolutionary* psychologists do as well (Winegard & Winegard, 2014). Some of the most prominent members of the discipline, for example, have argued that any non-sexed linked psychological differences among human populations are caused either by stochastic processes or by pleiotropic genetic effects (Cosmides, Tooby, & Kurzban, 2003; Tooby & Cosmides, 1990). That is, according to this line of argumentation, there is a panhuman nature and any deviations from it are largely irrelevant noise. The arguments used to defend this position have, we believe, been refuted (or significantly weakened) by recent developments in genetics and human evolutionary analysis. And because many who dispute the fruitfulness of hereditarianism also rely upon them, it is worth examining them in detail.

The most common is that there has just been too little evolutionary time for human psychology to change from 50,000 years ago, because it takes many thousands of years to create new adaptations—new mental

mechanisms, in this case; therefore, modern human skulls still house “stone age” brains (Tooby & Cosmides, 2005, p 57). But this misframes the *actual* debate. The claim that hereditarians and others who believe in the importance of human psychological diversity advocate is not that some human groups have radically different mental adaptations from other groups, but rather that they have slightly different distributions of psychological traits that all humans share. Consider an analogy. There is a basic design for guitars. They have a body, a neck, a bridge, a fretboard, and six strings (for this example, at least). So, there is in some sense a “guitar nature.” However, small, correlated differences in guitar parts can lead to nontrivial differences in sound. Slightly different textured strings coupled with a slightly larger sound hole might lead to a more resonant, even plangent sound, even though the difference between that guitar and others is quite small. The same holds for human psychological traits. Small correlated differences in the brain might cause one group to be slightly more self-controlled, intelligent, ambitious, or aggressive than another (Winegard et al., 2017).

Another argument that is sometimes advanced is that humans evolved to be flexible and therefore did not need to respond to selection pressures psychologically because they could respond to them culturally. Undoubtedly, humans are uniquely cultural animals, with remarkably flexible behavioral repertoires (Baumeister, 2005). However, there is absolutely no evidence that they somehow evolved just the perfect amount of behavioral flexibility in Africa some 150,000 years ago such that all their descendants would never evolve slightly different psychological propensities. And, in fact, there is a lot of evidence to the contrary (Wade, 2014). Different environments and cultural systems likely selected for subtle differences in psychological proclivities *just as they did for physical traits*. Moreover, among primates it is clear that the comparative advantage of humans is the capacity to cooperate with large numbers of people (Bowles & Gintis, 2013; Turchin, 2015), to learn through cultural transmission (Henrich, 2016; Mesoudi, 2016), and to trade with strangers (Ridley, 2010). This requires humans to make plans, to develop a theory of mind, and to decipher who is trustworthy. Different environments, some of which are culturally constructed, will tend to select for different cognitive abilities and propensities. Therefore, the brain is an especially important target of natural selection in humans.

For one example, because of differences in climate and environmental harshness and later in staple agricultural crop, it is possible that Northeast Asians had to cooperate more than some other groups to survive and reproduce effectively—or, put slightly differently, those who cooperated more in their societies had higher fitness than those who did not (Kitayama, King, Hsu, Liberzon, & Yoon, 2016). And therefore, Northeast Asians have subtle, but noticeable and measurable shifts in personality traits that make them, on average, more cooperative and collectivistic. From this perspective, it is not a historical and cultural accident that Northeast Asians are more collectivistic than other populations (Markus & Kitayama, 2010). Rather, for evolutionary reasons, they are slightly more sensitive to social disapproval and solitude than other groups, and this leads them to create cultural systems that emphasize social harmony and belongingness (Chiao & Blizinsky, 2010; Way & Lieberman, 2010). These cultural systems are like the niches discussed in the introductory section, and they also exert selective pressures on the people who inhabit them. Therefore there is a feedback system such that slightly different personality traits among human populations lead to the creation of slightly different cultures, which then select, both culturally and genetically, for different traits.

It seems rather likely that we would have many more examples if researchers invested more time and resources into searching for them. As it stands, there are suggestions that some European groups exhibit more individualistic, trusting, and pro-social behavior—especially a willingness to follow impersonal rules, and punish rule violators—because of a persistent difference in marriage patterns (Frost, 2017) and a deliberate loosening of kin-based institutions by the Catholic Church (Schulz, Bahrami-Rad, Beauchamp, & Henrich, 2019); that Western

⁵ For example, some biologists think of a species as a population that can produce fertile offspring, while other biologists consider animals within the same genus that have similar traits a species, even if they cannot produce fertile offspring.

Europeans are more pacific (and less aggressive) than they used to be even 1000 years ago because of an extensive use of the death penalty for violent crimes by Western States (Frost & Harpending, 2015); and that societies farther from the equator tend to be more monogamous and cooperative because paternal provisioning became more important the farther from the equator a human population spread (Miller, 1994) among other suggestions. The point here is not that all of these hypotheses are correct, but simply that they are plausible, productive, and fruitful and should spur more research.

3. Group differences in cognitive ability

Perhaps the greatest refusal to grapple honestly with Darwin's legacy appears in the divisive debate about the etiology of group differences in intelligence (Rushton, 1999).⁶ Those who argue that genetics at least partially explain the Black-White IQ gap—and other disparities in cognitive ability among human populations more broadly—have been assailed for their supposed moral depravity and many if not most intellectuals publicly refuse even to consider the possibility that genes could play any role in group differences in cognitive ability (Cofnas, 2016; Winegard & Winegard, 2015). People seem to feel as though it is racist simply to hypothesize that groups might differ on a trait as socially valued as intelligence, although this is a fallacy that scholars should reject (Carl, 2018).

Before digging into specific hypotheses about group differences in cognitive ability, hypotheses that are incendiary and cause immediate and visceral resistance, it is probably better to ask a more abstract question: Could populations differ, on average, in cognitive ability because of evolutionary processes? Here, it seems difficult to deny that they could. Cognitive ability is “visible to selection” and is as amenable to evolutionary change as any other trait. Some have contended that because it is caused by many, many genes (i.e., is polygenic), cognitive ability is unlikely to have changed significantly in the last 50,000 years, but this is simply incorrect. Animal breeders select for polygenic traits without issue. And other polygenic traits, such as height, have likely been changed by natural selection in human populations in the past 45,000 years (Reich, 2018; Savolainen, Lascoux & Merilä, 2013). The only empirical question, then, is not *could* groups differ in cognitive ability at least partially because of genes, but *do* they.

Indeed, Charles Darwin (1876) wondered whether recent evolution might have produced cognitive differences that help explain the relative prosperity of different societies:

It is most difficult to say why one civilised nation rises, becomes more powerful, and spreads more widely, than another; or why the same nation progresses more at one time than at another. We can only say that it depends on an increase in the actual number of the population, on the number of men endowed with high intellectual and moral faculties, as well as on their standard of excellence (p. 140).

Although we think the well-documented black-white IQ gap is no more interesting than other cognitive differences between groups, we focus on it to illustrate our view because more has been written about this cognitive difference than many others (Herrnstein & Murray, 1994; Rushton & Jensen, 2005).⁷ Our purpose is not to argue exhaustively in

favor of hereditarianism, but rather to situate its arguments and hypotheses into a broader evolutionary view of humans and point to the strong *theoretical plausibility* and *scientific fruitfulness* of hereditarianism.

There is a roughly one standard deviation (15-point) IQ gap between American Whites and Blacks, which is itself not a matter of dispute (Murray, 2007; Roth, Bevier, Bobko, Switzer III & Tyler, 2001). Here, for example, are quotes from two of the most popular textbooks on intelligence: “There is some variation in the results, but not a great deal. The African American means [on intelligence tests] are about one standard deviation unit...below the White means...” (Hunt, 2010, p. 411). And “It should be acknowledged, then, without further ado that there is a difference in average IQ between blacks and whites in the USA and Britain” (Mackintosh, 2011, p. 334). Some researchers do contend that this gap has narrowed across the 20th century (Dickens & Flynn, 2006), but others dispute this, and it seems reasonable, given the preponderance of evidence, to suppose that the gap remains roughly one standard deviation.

When grappling with a problem as complicated as the etiology of group differences in cognitive ability, no one piece of evidence will conclusively support one causal theory over another. Instead, researchers have to assess a body of empirical evidence and its relation to prior theory to estimate which causal account is more probable (Lipton, 2004; Urbach, 1974). Broadly speaking, there are two *research traditions* that organize data and exploration about the causes of group differences in cognitive ability: the hereditarian tradition and the environmentalist tradition. To simplify, research traditions are programs in which scientists largely share similar assumptions about specific causal forces and use those assumptions to try to solve various empirical puzzles.⁸ The hereditarian tradition hypothesizes, *inter alia*, that a significant proportion of difference between Black and Whites in cognitive ability is caused by genetics, whereas the environmentalist tradition hypothesizes that almost all of the difference is caused by environmental and cultural forces (Nisbett et al., 2012). In what follows, we will point to a few pieces of evidence that support hereditarian hypotheses, then we will situate the hereditarian hypotheses into the broader Darwinian theory of population variation that we laid out above.

High heritability of intelligence within groups. Heritability is a measure of how much of the variance in a trait in a particular environment is caused by differences in genes (Turkheimer, 2000). Cognitive ability is one of the most highly heritable psychological traits, often exceeding 70% in adult samples—meaning that 70% of the variance in intelligence (measured by IQ tests) is caused by differences in genes (Bouchard, 2013). Many scholars have argued, correctly as far as it goes, that one cannot uncritically infer that within-group heritability applies to between-group heritability; that is, just because much of the proportion of within-group variation in intelligence is caused by differences in genes, it *does not* mean that between-group variation is (Sesardic, 2000). However, the contention that within-group heritability is not at least suggestive of causes of between-group differences is wrong—especially if some other knowledge is added. High within-group heritability does not *ipso facto* mean that between-group variation is caused by genes; but it does make it more plausible

(footnote continued)
quite recently.

⁸ See Laudan (1978) for a discussion of research traditions; and compare to Kuhn's idea of paradigms, Kuhn (1970). Although a thorough discussion of these concepts is beyond the scope of this paper, notice that our use of “research tradition” is different from Laudan's, because in our usage it is an explanatory framework that makes hypotheses (e.g., it predicts that part of the variation in humans and among human populations is caused by genes). Laudan considered Darwinism a research tradition, but likely would not have considered hereditarianism one. We use the term to describe both, because we believe that hereditarianism shares enough similarities with the basic concept of “research tradition” to justify the expansion of the concept.

⁶ There is, of course, a huge literature that debates the validity of IQ tests, and we do not have time to discuss it in detail here. But the literature unequivocally demonstrates that IQ is predictive of a host of important life outcomes, ranging from wealth and educational attainment to health, relationship stability, and even criminality. For an influential view on how to define intelligence, see Gottfredson (1997). For an overview of life outcomes associated with intelligence (as measured by IQ), see Ritchie (2015) and Plomin and von Stumm (2018).

⁷ The reason for this focus is clearly that in the American context in the 20th century, Blacks and Whites were the two main demographic populations until

(Jensen, 1998).

One of the most famous arguments about the dangers of uncritically applying within-group heritability to between-group differences was made by Richard Lewontin (1970). Readers are to imagine a corn seed that is planted into pots containing two soils of different quality—call them soils A (fecund) and B (impoverished). And now imagine that the plant height varies a bit inside each pot, but varies drastically between pots (say, five inches in the impoverished and 15 inches in the fecund). Variation within each pot, if the pots are tightly controlled by experimenters, will be 100% genetic because there is no environmental variation. However, variation *between* the pots will be entirely environmental. Therefore, even though plant height is nearly 100% heritable within groups, it is nearly 0% heritable between groups. This example certainly shows that high within-group heritability does not imply that there is high between-group heritability. But there are several reasons that this observation is not a strong argument against the hereditarian hypothesis.

First, as noted by Lewontin himself, tweaking the example slightly allows it to show that a within-group heritability of 50% (or 0% even) is completely consistent with a between group heritability of 100%. So, suppose that both pots are filled with the same soil and that two kinds of seeds, red and green, are thrown in randomly. The red seeds lead to plants that are 13 inches tall on average, and the green seeds lead to plants that are 17 inches tall on average. Suppose now that the plants vary randomly in height around their means because of subtle deviations in sunlight and soil quality; and therefore, the heritability of height within each color is 50%. However, when researchers calculate the respective means for each group, the environmental variance cancels out, and all that is left is the between-group genetic variation.

Second, the example almost certainly does not pertain to the Black-White gap. It is difficult to argue that Blacks and Whites inhabit completely different, but uniform environments—that is, it is unlikely that there is some X-factor that affects all Blacks but no Whites (Jensen, 1998; Warne, 2020). One might immediately object. Surely Blacks face ubiquitous discrimination, which Whites do not face? The claim that Blacks face ubiquitous prejudice and discrimination in the contemporary United States is more often repeated than experimentally demonstrated. Blacks certainly might face *some* discrimination, but we are skeptical that it is as pervasive as is often claimed (see Boutwell et al., 2017; Zigerell, 2018). Still, to be charitable to the discrimination argument, it is not entirely unreasonable to suppose that if prejudice were widespread, this could conceivably affect cognitive performance, and certainly some evidence suggests that there is prejudice, perhaps sometimes subtle, against Blacks in the United States and elsewhere (Pearson, Dovidio & Gaertner, 2009)

Nevertheless, even if discrimination against Blacks in some countries is widespread, this would not explain IQ and achievement gaps *between* ethnically homogenous countries, such as Iceland and Haiti, or between different demographic groups *within* multi-ethnic countries in which racial discrimination is not widespread, such as the UK, France, or Sweden. Moreover, the claim that discrimination depresses intelligence must specify some causal mechanism that *also* affects other ethnic groups which suffer discrimination. As the prominent environmentalist James Flynn (1980) put it:

Racism is not some magic force that operates without a chain of causality. Racism harms people because of its effects and when we list those effects, lack of confidence, low self-image, emasculation of the male, the welfare mother home, poverty, it seems absurd to claim that any one of them does not vary significantly within both black and white America (pp. 59–60).

As within-group heritability increases, the size of the environmental variance effect needed to explain between-group differences increases substantially. For example, if the adult within-group heritability is 70%, which seems like a fair estimate, then the Black-White environmental effect difference would need to be 1.82 standard deviations to explain

the IQ gap (Sesardic, 2005). Our argument here, then, is not that discrimination arguments are completely erroneous, but that prejudice, systematic discrimination, and other commonly forwarded environmental variables likely cannot explain the entire IQ gap and therefore that the comparison to the plants with a zero percent genetic contribution to between-groups differences is almost certainly inapplicable to the Black-White IQ gap.

Now, to see that it is reasonable to extrapolate from within-group heritability to between group causes, consider the following. Imagine that we found that the heritability within a group of speaking a particular language is roughly 0% because the variance is entirely environmentally caused. Would that inform hypotheses about the causes of group differences in language spoken? It certainly seems as though researchers would and should presume that the between-group variation is substantially environmental, unless evidence strongly contradicted that hypothesis. And it seems as though the obverse should hold as well. The heritability of height, for example, is quite high within-groups; therefore, it is eminently reasonable to assume, as most researchers do, that at least some of the between-group variation in height is genetic. For example, even before researchers had strong genetic evidence, they assumed and hypothesized that African Pygmy groups were shorter than other populations because of differences in their genes (Jelenkovic et al., 2016). This hypothesis is likely correct (Pemberton et al., 2018) and might be driven by selection for a different life history (LH) strategy and the tradeoffs that entailed (Migliano, Vinicius & Lahr, 2007), although some research has suggested that LH differences might be a pleiotropic effect of selection specifically for height (Lopez et al., 2019). This does not mean that such assumptions are infallible. Rather, it just means that they are useful starting points—reasonable priors—that should be updated after further empirical exploration.

To repeat, high within-group heritability does not automatically mean that between-group variation is caused even partially by genetics. But we think the pattern of between-group variation in psychological traits that we see around the world is best explained by the hereditarian hypothesis. Hereditarianism is more parsimonious than environmentalism because it posits that, in most cases, the same causal processes that cause within-group variation also cause between group variation.

Global distribution of IQ. Although researchers have focused most intensively on differences between Blacks and Whites in cognitive ability, data on IQ scores are now global and suggest many interesting differences among populations (Becker & Rindermann, 2016; Lynn & Vanhanen, 2012). For example, many studies have found that Northeast Asians (IQ = 103–106) and Ashkenazi Jews (IQ = 110–115) score higher than Northern Europeans and higher than Caucasians more generally (Herrnstein & Murray, 1994; Hunt, 2010; Jensen, 1998; Wade, 2014). These studies are interesting because they suggest a broader pattern of human population differences in cognitive ability. They also cast doubt on at least some unsophisticated environmentalist explanations of the Black-White gap, which hold that purely social forces like persecution or privilege explain the relevant gaps. An obvious explanation for the Black-White IQ gap, as we noted, is that in some countries Blacks have faced persistent discrimination and that such discrimination has diminished their phenotypic IQ. However, Jews have also faced persistent discrimination, and yet have the highest IQ of any ethnic group in the world.⁹ Of course, the patterns of discrimination that Blacks and Jews faced are quite different, so there are prejudice-based explanations that are still salvageable. But this example

⁹ According to one view, Ashkenazi Jews have a high IQ in part because for about 1,000 years they were excluded from entering some occupations, and confined to working in cognitively demanding occupations like banking, from which Christians abstained for religious reasons (Hardy, Cochran, and Harpending 2006).

do point out that a straightforward “discrimination-depresses-IQ argument” is not tenable. It also adds an important data point that environmentalists struggle to explain, but which is perfectly explicable from the hereditarian perspective.

Global results have also shown that the IQ of Sub-Saharan Africans is roughly 75¹⁰ (Rinderman, 2013). This needs to be qualified, because substantial debate surrounds the estimate. First, some scholars insist that tests created largely by Europeans are necessarily biased against non-Western people (Nell, 2000). However, this is contradicted by the high scores of Northeast Asians and by the fact that IQ tests are predictively valid in Africa (Owen, 1992). The next source of contention is the score of the true genotypic estimate. Lynn and Meisenberg (2010a,b) argued that it was closer to 70; Wicherts, Dolan and van der Maas (2010) argued that it was closer to 80; and recently, Rindermann (2013) estimated that it was around 75. The Rindermann estimate, in absence of other evidence, strikes us as the most reasonable. We do, however, recognize that Flynn effects may occur, raising African IQ at least a few points in the coming decades; therefore, our suggestion is *not* that the current African phenotypic average IQ is concordant with their genotypic potential.

Blacks in the United States trace most of their ancestry to Western Africa, but are somewhere between 15–25% admixed with Europeans (Baharian et al., 2016; Bryc, Durand, Macpherson, Reich & Mountain, 2015). Thus, an 85 estimate of the mean IQ of Blacks in the United States is consistent with a roughly 75 IQ of Sub-Saharan Africans. Furthermore, these broad population patterns are consistent across the globe, with each group performing roughly similarly across multiple countries (Rushton & Jensen, 2010).

Transracial adoption. Although there is substantial debate about the meaning of the results of transracial adoption studies, the single best such study, the Minnesota Transracial Adoption Study (MTRAS), reported by Scarr and Weinberg (1976) and Weinberg, Scarr and Waldman (1992) comports well with hereditarian predictions. In this study, children of two White parents, one White and one Black parent, and two Black parents were adopted into middle class White homes. When the adoptees were seven years old, the children of two White parents scored 117.6, the mixed scored 109.5, and the children of two black parents scored 95.4. In a 10-year follow up, the respective IQs were 105.6, 98.5, and 89.4. The results of this study, of course, are perfectly explicable by the hereditarian research tradition. And although there are several reasonable criticisms of the hereditarian interpretation of the MTRAS, a wholly environmental explanation of its results appears much less parsimonious than one that includes genetic causation (Rushton & Jensen, 2005; but see, Thomas, 2017).

Furthermore, other studies with East Asian children, although likewise disputed (Thomas, 2017), also support the hereditarian position. For example, Clark and Hanisee (1982) reported results from a study in which 25 four-year olds from Vietnam, Korea, Cambodia, and Thailand were adopted into White families and scored 120 (112–114 with Flynn effect correction) on the Peabody Picture Vocabulary Test, despite that 16 were reported to be malnourished at some time in their infancy.¹¹ This study, it should be noted, provides ambiguous support for hereditarianism because 17 of the children were Southeast Asians, from nationalities with IQs lower than 100 according to recent estimates and therefore, at least some of these effects are likely related to well-known adoption gains (e.g., Kendler, Turkheimer, Ohlsson, Sundquist & Sundquist, 2015). In another study Frydman and

Lynn (1989) reported on 19 Koreans who were adopted into Belgian families. They found that the children had a mean IQ of 118 on the Wechsler Intelligence Scale for Children (WISC) and that correcting for IQ gains, the Korean children had a roughly 10-point advantage over native Belgian children (see also, Dalen et al., 2008). And in another study of 87 Chinese girls adopted by Dutch families, Finet, Vermeer, Juffer, Bijttebier and Bosmans (2019) found remarkable cognitive “catch-up” nine years after their adoptions such that they had a mean fluid IQ of 109.11 at age 10.

None of the evidence for hereditarianism listed here or in any other article is, of course, dispositive. But the hereditarian research tradition explains all of these data remarkably well. Because it posits that intellectual potential is influenced by genes that vary among populations, it predicts that, unless environments are wildly different, human groups will score reasonably similarly wherever they happen to reside. Furthermore, it predicts that they will also score reasonably similarly when adopted, even if into different socioeconomic or racial families from their own. The environmentalist research tradition, on the other hand, is confronted with many difficulties that require ad hoc hypotheses to explain. It begins with a bold theory: All human groups are roughly the same in intellectual potential, and, therefore, any population differences are caused by environmental or cultural forces. However, this bold claim is constantly assaulted by counterevidence that the environmentalists struggle to explain, especially compared to the ease of explanation offered by the hereditarian. The global pattern of IQ differences, for example, appears more difficult for an environmentalist to explain than an hereditarian. And so does the general persistence of demographic behavioral patterns across time and space. And so do other patterns in cognitive ability that are less often discussed in the literature, such as the high IQ scores of Ashkenazi Jews and Northeast Asians, even when they are adopted by White Christian families in North America and Europe (Finet et al., 2019; Herrnstein & Murray, 1994). It is not the case, of course, that explanations are impossible to forward from an environmentalist perspective; it is simply that they are more difficult to forward than from an hereditarian perspective and end up looking more like ad hoc hypotheses than fruitful predictions or parsimonious causal narratives.

Last, the hereditarian research tradition, as we will argue, is much more consistent with the single most powerful tradition in biology and psychology: Darwinism. As we have noted throughout, human population variation in both physical and psychological traits follows straightforwardly from Darwin's theories of natural and sexual selection. The hereditarian research tradition, as we see it, is a straightforward extension of the Darwinian tradition and makes the same basic scientific assumptions: humans are the products of natural and sexual selection; individuals vary in heritable traits; groups vary in heritable traits; intelligence is an adaptation; humans vary in intelligence; human groups vary in intelligence (Rushton, 1999). An environmentalist research tradition does not, of course, entirely contradict Darwinism, so far as we can tell, but it is not so obviously congruent with it as is hereditarianism. Moreover, researchers now know that genes and cultures co-evolve; therefore, offering an environmental explanation is often in part a way of revealing a potentially genetic one. Sometimes genes create bodies that sculpt environments in ways that increase their proliferation (Dawkins, 1982), just as environments—especially social norms—affect which genes find their way into future bodies (Henrich, 2016).

Researchers who are keen to unite the hereditarian tradition to Darwinism have forwarded several plausible hypotheses about the causes of group differences in cognitive ability. The broadest and most general of these is called cold winters theory (Lynn, 2015; Frost, 2019; Rushton, 1995). This theory proposes that harsher and more variable environments such as those further from the equator would likely have selected for more intelligence. The proposal is not that cold weather somehow makes people smart, but rather that the attendant problems of surviving and reproducing in environments with long, cold winters

¹⁰ It is worth noting that there might be variation in IQ across Sub-Saharan Africa because there is a large amount of genetic diversity in Africa. We do not mean to suggest here that Sub-Saharan African forms one group that is largely homogenous.

¹¹ It is important emphasize that the heritability of IQ scores increases substantially across age, moving from well below 50% in childhood to nearly 80% in adulthood.

which require long-term planning may tend to select for traits like higher intelligence and lower time preference relative to other environments. Food, for example, might be prevalent in the moderate months, but becomes scarce in winters, forcing inhabitants to hunt and fish game and/or to preserve food from the more fruitful seasons (Berbesque, Marlowe, Shaw & Thompson, 2014). Some scholars have argued that the important thing about distance from the equator is environmental novelty (Kanazawa, 2004; 2012).

Although cold winters theory is sometimes mocked for being silly or simplistic or for being unhelpfully speculative (McGreal, 2012), similar hypotheses are routinely forwarded in the literature about non-human animals. For example, researchers have explored the brain size-environmental change hypothesis in a number of species. The main idea is that animals that encounter harsher environments are confronted with greater obstacles to obtaining reliable food supplies, and thus that harsher environments sometimes select for enhanced cognitive capacities (Roth, Gallagher, LaDage & Pravosudov, 2012; Sol, Bacher, Reader & Lefebvre, 2008). Although the results are somewhat mixed, evidence more or less supports some variant of this hypothesis (Maklakov, Immler, Gonzalez-Voyer, Rönn & Kolm, 2011; Morand-Ferron, Hermer, Jones & Thompson, 2019); and inarguably it has spurred scholarship and creative hypothesizing (Kanazawa, 2008; Sayol et al., 2018), as well as constructive criticism (Wicherts, Borsboom & Dolan, 2010).

Other researchers have proposed slightly different ideas. Rushton (1985) famously argued that different environments selected for different life-history (LH) strategies, with Africans possessing the fastest LH because they evolved in an unpredictable environment and Asians, the slowest because they evolved in a harsh, but predictable environment. From this view, intelligence is just one among many LH traits that vary in a correlated manner among human populations. These include aggression, age of maturation, and impulsivity (Meisenberg & Woodley, 2013). Others suggest a different explanation for these correlated phenotypic traits: the amount of paternal provisioning required varies such that more is needed the further from the equator a population lives (Miller, 1994). As a group's diet consists more of hunted (or fished) food, the proportion of calories women provide decreases; therefore, women become more dependent on men for calories for their children and can no longer "gene shop" reproductively by having more sexual relationships with relatively uncommitted men. Instead, they must form more exclusive bonds with men who will provide calories for the children (Marlowe, 2003). And this, according to Miller, likely selected for a suite of traits that look similar to Rushton's LH traits (less impulsivity, lower libido, etc.).

These theories likely are not enough to explain differences in cognitive ability among modern humans and therefore need to be supplemented with other theories, most importantly with some kind of niche construction theory (Laland, Odling-Smee & Feldman, 2000). We discussed niche construction in the introduction. Here, the crucial point is that some niches can and likely did select for intelligence in humans. For example, many theories of human intelligence posit that social competition was a chief driver (Bailey & Geary, 2009). These theories appear limited and unable to grapple with some data, but, if expanded into a broader cultural theory of intelligence, one that posits that intelligence evolved to allow humans to flourish in complicated and often competitive cultures, they likely work well (Muthukrishna, Doebeli, Chudek & Henrich, 2018; Van Schaik, Isler & Burkart, 2012). Culture, a human niche, creates selective pressures on human intelligence because it rewards those who are cognitively sophisticated enough to learn rapidly and to innovate (Clark, 2009). From this perspective, cold winters may have selected for human intelligence, but then culture, especially after the invention of agriculture, did as well, significantly augmenting it in some cases (Cochran, Hardy & Harpending, 2009; Haidt, 2009).

None of these theories is as powerful and persuasive as, say, Newton's theory of gravitation, but that is the nature of evolutionary biology (Hull, 1974). Physics and chemistry are often more certain and

more precise than biology or psychology will ever be. And many theories in evolutionary biology and psychology will remain speculative and tentative until more genetic and archeological evidence is available. Despite this, such theories and hypotheses nevertheless should shift the priors of an honest and open scholar. Our belief is that the hereditarian research tradition is fully consonant with a broader Darwinian tradition that has been remarkably successful and best explains current data; therefore, it should be widely accepted until and unless researchers in the environmentalist tradition produce data that strongly contradict it or point to specific puzzles their research tradition can solve that hereditarianism cannot. Nevertheless, it is important to be humble and to accept the limitations of the current evidence. Specific hypotheses proposed by the hereditarian research tradition seem to us much more plausible than those proposed by the environmentalist tradition. Hereditarianism also seems more fruitful and capable of solving important problems about human variation. However, our current understanding of longstanding puzzles about human evolution is limited, and even ostensibly simple puzzles such as the causes of skin color variance among human populations have not been entirely solved. It is unlikely that we will solve the puzzle of the causes of variation in human intelligence anytime soon. Our contention is not that hereditarians have the final answers. Rather, it is that the hereditarian research tradition seems best equipped to provide such answers, has forwarded fruitful hypotheses, and is perfectly congruent with Darwinism.

Before concluding, it is worth asking why so many social scientists adamantly refuse to consider the hereditarian hypothesis, as well as the broader hereditarian research tradition, despite that it is often more fruitful than the environmentalist alternative. It is hard to escape the conclusion that most of the resistance is driven by ideological and not scientific concerns. Many scholars and journalists are "equalitarians" who are strongly predisposed to believe that all demographic groups are equal on all socially valued traits (Garrett, 1961; Gottfredson, 1994; Winegard & Winegard, 2015; Winegard, Clark, Hasty & Baumeister, 2019).

Many scholars, it seems, believe that race and IQ is a toxic topic and possibly even dangerous to study. For a long, long time, they have at least tacitly endorsed a regime of silence, a kind of quiet noble lie, and have punished those who violated this regime ferociously. But, if the goal of science is to discover the truth, then the only option scientists have is to pursue it even if it might lead to conclusions that challenge sacred narratives. Unlike momentary sensibilities, the truth is immutable, and in almost all cases, the costs of a lie outweigh the costs of truth. One cost of a lie is misinformation. Today, many believe that the overwhelming consensus of reputable scientists is that some variant of an environmental explanation for persistent IQ differences among groups is almost certainly correct. But this is wrong. And getting the answer wrong can invite costly social policies that are likely to fail, as well as create inter-group hostility when people notice that groups systematically behave differently even in similar circumstances (Cofnas, 2020; Murray, 2020). Among experts, hereditarianism is widely respected and endorsed (Rindermann, Becker, & Coyle, 2016). And even those experts who believe that it is ultimately wrong, generally agree that it is a reasonable research tradition that should be treated with scientific respect and confronted with debate and evidence, not moral accusations (Flynn, 1980).

4. Conclusion

In this article, we have argued that the modern orthodoxy about group differences in cognitive ability is almost certainly incorrect and has stultified research. Specifically, we argued that (1) humans populations vary; (2) such variation can be classified; (3) they almost certainly vary psychologically; and (4) they also almost certainly vary in cognitive ability. These assertions follow straightforwardly from Darwinian considerations. For too long, scholars have attempted to

dodge some of these almost inevitable consequences of Darwinism, either ignoring psychological variation among human populations or actively arguing that it does not exist. This appears misguided and untenable. The hereditarian hypothesis that at least part of IQ differences among human populations, like differences in other psychological traits, are caused by genetics, seems to us the most plausible hypothesis for the cause of persistent cognitive differences. And the hereditarian research tradition seems the most powerful and fruitful in the game of human variation right now. It is consistent with everything we know about biology and best explains the available data. Although there might be another, better research tradition waiting to form, we will not know until we begin to discuss these topics openly, honestly, and judiciously.

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