

# Questions asked and unasked: how by worrying less about the ‘*really real*’ philosophers of science might better contribute to debates about genetics and race

Lisa Gannett

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**Abstract** Increased attention paid to inter-group genetic variability following completion of the Human Genome Project has provoked debate about race as a category of classification in biomedicine and as a biological phenomenon at the level of the genome. Philosophers of science favor a metaphysical approach relying on natural kind theorizing, the underlying assumptions of which structure the questions asked. Limitations arise the more metaphysically invested and less attuned to scientific practice these questions are. Other questions—arguably, those that matter most socially and politically—remain unasked, not merely overlooked but systematically ignored and even foreclosed. Race fails as a postulated natural kind because it fails to meet expectations that as a category of classification it furnish an authoritative taxonomy that by depicting fundamental divisions in nature is conducive to fulfilling far-ranging explanatory aims. Racial, ethnic, and other group designations may nonetheless be projectible insofar as they support inductive inferences in biomedicine, but this does not render them any less social. Indeed, the statistical, contingent, accidental, localized, and interest-relative bases of such inferences serve to undercut the dichotomizing of race as either biological reality or social construct and favor the adoption of a pragmatic approach.

**Keywords** Race · Genetics · Natural kinds · Biological realism—social constructionism debate

## 1 Introduction

Following completion of the Human Genome Project in 2003, scientists turned their attention to genetic variability—among not just individuals but groups. This attention

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L. Gannett (✉)  
Department of Philosophy, Saint Mary's University, 923 Robie St., Halifax, NS B3H 3C3, Canada  
e-mail: lisa.gannett@smu.ca

to inter-group genetic variability has provoked questions, both inside and outside the academy, about the status of race as a category of classification in biomedicine and as a biological phenomenon at the level of the genome. The incorporation of population genetic approaches in socially relevant fields like DNA forensics and pharmaceuticals has raised the stakes implicated in these questions. And insofar as such fields have furnished successes, these are taken as evidence for race's validity as a category of classification in biomedicine and reality as a biological phenomenon at the level of the genome.

After the *New England Journal of Medicine* published results of the African American Heart Failure Trial (A-HeFT) (Taylor et al. 2004), which showed that the combination of the nitric acid donor isosorbide dinitrate and the antioxidant and vasodilator hydralazine—marketed as BiDil by NitroMed, Inc.—lowered mortality in African Americans with heart failure, *New York Times* science reporter Nicholas Wade (2004) asked: “Is there a biological basis for race? If there is not, as many social scientists and others argue, how can a drug like BiDil work so well in one race?” Unfortunately, this focus on the question of the biological reality vs. social construction of race leaves many other more interesting and socially and politically important questions unasked. Legal scholar Jonathan Kahn, who has followed the BiDil saga closely, argues that “[t]he primary forces driving the re-invention of BiDil as an ethnic drug ... were legal and commercial, rather than biomedical” (2004, p. 4). Indeed, U.S. Food and Drug Administration (FDA) approval of BiDil in 2005 did not make a new drug available: the combined dose of the generics hydralazine and isosorbide dinitrate was already available at a cost of about 44 cents (Maugh 2004). What FDA approval meant is that past decades of research and development could still prove lucrative: BiDil's original patent expired in 2007, but its patent for use in African Americans extends to 2020. Obvious questions about the ‘me-too’ pharmaceutical industry, and why so much money is invested on a drug whose components are already available in generic form while many diseases go untreated, were overlooked by the media; instead, BiDil was touted as the first “ethnic drug” in “the emerging field of race-based pharmacogenomics” (Henig 2004).<sup>1</sup>

Philosophers of science are prone to take a metaphysical approach relying on theories of natural kinds in debates about race's validity as a category of classification in biomedicine and reality as a biological phenomenon at the level of the genome. As in the news media, this tends to involve the dichotomous framing of alternatives: race is either socially constructed or biological reality, a fiction like phlogiston or a genuine natural kind, a merely linguistic or a projectible predicate. David Hull comments: “systematists find species as the things that evolve to be the most ‘real’ groups of organisms around, even if they are not real enough for some to count them as being *really* real” (1998, p. 362). You might say that while scientists are about the ‘real,’ we philosophers are about the ‘*really* real.’ We assume we best contribute to debates about

<sup>1</sup> This is a misrepresentation. BiDil is not an example of pharmacogenomics, or even pharmacogenetics, at all: the relevant trials assessed the drug's effects on mortality rates in patients with heart disease, but did not make efforts to identify pharmacologically or clinically relevant genes. It is even unclear just how “race-based” the results are: the 2020 patent was based on original data later reinterpreted to show H/I as less effective than enalapril in “whites” but equally effective in “blacks” (Carson et al. 1999), and no cross-racial comparisons were made in the A-HeFT, since only African Americans were included.

genetics and race by providing or withholding assent to the legitimacy of biological race concepts by metaphysical appeal to what is ‘*really* real’.

This paper explores three concerns I have with this approach. First, there are limitations to natural kind theorizing for assessing the validity of scientific categories. In Sect. 2, “Questions asked,” I argue that metaphysical pursuit of the ‘*really* real’ has serious shortcomings when it comes to addressing questions about race as a category of classification in biomedicine and as a biological phenomenon at the level of the genome. It is more productive to forego the ‘*really* real’ for the ‘real’ and reflect on what it is we want natural kinds to do for us when it comes to race. In Sect. 4, “Whither natural kinds? Whither race? Whither races?” I argue that even if philosophers are not prepared to do without natural kinds, the category of race must go because it cannot satisfy the most basic assumptions involved in theorizing about natural kinds. This is not to imply that racial and ethnic designations are *never* useful in biomedicine, but to emphasize how circumscribed their appropriate use is. Second, as I argue in Sect. 3, “Questions unasked,” focusing on metaphysics leaves out many other worthwhile questions. It is not simply that asking some questions inevitably leaves other questions unasked; rather, the traditional assumptions about natural kinds (the ‘*really* real’) philosophers of science are likely to call on for guidance in determining whether race is socially constructed or biological reality actually foreclose the asking of certain questions, specifically those questions that matter most socially and politically. Third, Sect. 5 concludes the paper with my final concern—that the natural kind approach compromises the critical insight philosophers of science might otherwise contribute to debate in the public sphere and thus risks sustaining an unproductive, even corrosive, standoff between biological race realists and social constructionists.

## 2 Questions asked: the metaphysics of natural kinds and being ‘*really* real’

There is not just one philosophical theory of natural kinds but many. Ian Hacking (2007) may be correct that the philosophy of natural kinds has entered a “scholastic twilight,” that “there are so many radically incompatible theories of natural kinds now in circulation that the concept itself has self-destructed” (p. 205). In this section, I survey a number of approaches to natural kinds and the specific contributions they make to addressing questions about the status of race as a category of classification in biomedicine and as a biological phenomenon at the level of the genome. Each approach incorporates assumptions that structure the ways in which questions about genetics and race are asked, and as we will see in Sect. 3, restrict the questions that are asked and the answers that are possible.

### 2.1 Natural kinds as essentialist

For essentialists about natural kinds, membership in a kind is based on properties of individuals, usually assumed to be intrinsic, which serve as necessary and/or sufficient conditions for defining natural kind terms. Generally, this approach has been used by philosophers to argue that races are *not* natural kinds.

Naomi Zack (1993) bases her argument against race as a natural kind on the fact that there is no cluster of physical traits or cluster of genes causally responsible for such traits that is shared by each and every member of a race and could provide necessary and/or sufficient conditions for membership in that group:

*The scientific racial unit is the breeding population as a whole and not any individual within the population.... In logical, causal terms, there are no necessary, necessary and sufficient, or sufficient racial characteristics, or genes for such characteristics, which every member of a race has. (p. 14; italics in original)*

Michael Root (2003) takes a more reductionistic approach that defines racial essences as genetic:

For many years, race was taken to be biological race. People believed that there are biological races and that blacks and whites were divided by genes much as males and females are divided by a Y chromosome. The biological conception that prevailed until recently included the following three tenets: (A) a conjunction of physical characteristics divide the races, (B) these characteristics are heritable and express genetic differences between the races, and (C) the genetic differences are concordant and result from differences in descent.... Today, most biologists oppose all three tenets. (p. 1174)

Root views sex as a natural kind because the presence or absence of the Y chromosome marks a biological division between males and females and presumably explains the “conjunction of physical characteristics” that allows us to distinguish males and females visually by their appearances.<sup>2</sup> Root concludes that race is not biologically real but socially constructed because there is no analogous inherited cluster of genes that accounts for physical differences between Blacks and Whites.

Root’s account is consistent with the reductionistic approach taken by Hilary Putnam (1975) and Saul Kripke (1980), which defines natural kinds in terms of ‘hidden’ microstructural properties causally responsible for higher-level phenomena—an extension of Locke’s distinction between nominal and real essences, but with modern science able to discern the real essences unknowable in Locke’s time. As expressed by metaphysically necessary laws of nature (‘Water is H<sub>2</sub>O’ or ‘Gold has atomic number 79’), microstructural essences reveal the fundamental nature of reality. Tigers with a characteristic “inner structure” and lemons with a specific “genetic code” are Kripke’s and Putnam’s respective examples of biological kinds. Philosophers of biology have shied away from the metaphysically ‘really real’ in their rejection of an essentialist and reductionistic approach to biological kinds, at least when it comes to species, and their embrace of a post-Darwinian empirical reality. That evolution is a gradual process with species constantly undergoing change rules out definitions based on a conjunction or disjunction of properties necessary and/or sufficient for membership (Hull 1965). A genotype’s norm of reaction depends on the environment, so ‘hidden’ microstructure alone cannot explain phenotype (Sober 1980). Any biological

<sup>2</sup> Please note, however, that sex differentiation is significantly more complex than this (see Blackless et al. 2000).

generalization that holds for a species is not a law of nature because it is evolutionarily contingent not necessarily true (Beatty 1995).

Relying on an essentialist and reductionistic approach to natural kinds to decide the question whether biological races exist is a departure from how evolutionary biologists and population geneticists understand ‘race.’ The modern evolutionary synthesis rejected essentialism for species and races alike: relations among organisms (genealogy, breeding propensity, competition, etc.) and not intrinsic properties determined inclusion in these groups, and there was no longer any expectation that each and every member of the group would share a species- or race-specific characteristic, whether genetic or phenotypic. Root attends to scientific practice, but insufficiently: he appreciates the illegitimacy of any biological race concept that conforms to an essentialist or reductionistic approach to natural kinds, but fails to notice the use of alternative biological race concepts. Zack does not make this mistake. When Zack suggests that “the breeding population as a whole” is a race, even if individuals who belong to such populations do not have a race, she implies that race has a biological reality, but not one that conforms to an essentialist or reductionistic approach to natural kinds. Just as the biological category ‘species’ survived the downfall of species essentialism, so might ‘race’ as a biological category survive the downfall of racial essentialism.

## 2.2 Natural kinds as biologically real

Several philosophers of biology have recently defended the biological reality of race in ways consistent with the modern evolutionary synthesis, by treating biological races in *Homo sapiens* as a kind of human population rather than as a kind of individual human.<sup>3</sup> These accounts are better informed by scientific practice; they are also less metaphysically invested than essentialist and reductionistic ones inspired by Putnam and Kripke. To some extent, the ‘really real’ is discarded for the merely real—that is the ‘real’ of biologists not philosophers.

Robin Andreasen (1998, 2000) offers a cladistic definition of race: “Races are monophyletic groups; they are ancestor-descendant sequences of breeding populations, or groups of such sequences, that share a common origin” (1998, p. 214). On this account, race is a dynamic, not static, category with races coming into and passing out of existence—in fact, Andreasen believes that races have been disappearing as a result of the global dispersions of people that began with European colonization. Philip Kitcher (1999 [2003]) defines races as “inbred” lineages. Basically, on this view, species subdivide into founder populations which give rise to lineages of descendants within which, due to geographic isolation, distinctive phenotypic traits arise and are transmitted from one generation to the next. Should long-separated lineages come into contact, the persistence or disappearance of these races, along with their character-

<sup>3</sup> Joshua Glasgow’s (2003) critique of “the new biology of race” faults these philosophers for satisfying scientific demands on ‘race’ but failing to provide biological bases for our common-sense notions—in particular, the possession of similar phenotypic traits by each and every individual of a given race. However, any concept of race consistent with the modern evolutionary synthesis is unlikely to conform to these essentialist intuitions.

istic phenotypic markings, depends on the balance of “intraspecific” and “interspecific” mating (p. 238).<sup>4</sup> Massimo Pigliucci and Jonathan Kaplan (2003) define human races as ecotypes. Ecotypes are local populations adapted to particular environments which differ genetically in many or only a few genes. For Pigliucci and Kaplan, skin color still counts as a racial trait, but it is of ecological not phylogenetic importance—that is, shared skin color indicates similar selective pressures, not common ancestry. However, because adaptive variation is multiclinal (occurring across a number of geographical gradients), there is no unique race to which an individual belongs.

The ‘*really real*’ is not discarded for long, though—once a biological basis for race is identified, philosophers resume being philosophers, and the metaphysical stakes are raised yet again. This occurs in two ways: the monism–pluralism debate and dichotomization of the biological and the social.

### 2.2.1 Monism vs. pluralism

Given that Andreasen, Kitcher, and Pigliucci and Kaplan defend distinct biological race concepts, philosophical preoccupation with the ‘*really real*’ makes it inevitable that ensuing debate over who has gotten it right will be shaped by metaphysical assumptions about monism vs. pluralism. As in the species debate, there is the question whether competing definitions of race are appropriate for use in different areas of biology (e.g. applied to different kinds of organisms or different sorts of research problems) or if instead there is one basic or authoritative race concept to which others are reducible.

In his defense of species as sets not individuals, Kitcher (1984) rejects monism and defends a position he calls “pluralistic realism.” Biologists interested in different research problems will classify species differently by singling out different kinds of relations—e.g. some biologists will be interested in structural similarities and other biologists will be interested in phylogenetic relationships. However, Kitcher (1999 [2003]) admits only a single race concept, one that is curiously gerrymandered. Kitcher’s definition of races as “inbred” lineages insists that several criteria coincide: common descent, geographic isolation, and distinctive phenotype. This definition appears to satisfy commonsense intuitions rather than theoretical demands: it ignores, for example, the genetic race concept which requires only genetic, not phenotypic, differences among groups (e.g. Dunn 1959).

Andreasen (1998, 2004) appears to be a monist about race. She finds the geographical subspecies concept inadequate because phenetic definitions on the basis of overall similarity are not necessarily of theoretical value and systematists have foregone the subspecies category. She argues that genealogical definitions are preferable because genealogical relations are theoretically interesting and genealogy is used by systematists to define species and higher taxa. Systematics is an authoritative science for Andreasen because when scientists debate the reality of race, this is where such debates occur. I am less convinced than Andreasen that scientists come together often to debate the reality of race and that when they do, they do so under the banner of systematics.

<sup>4</sup> As I discuss in Sect. 4, Kitcher now rejects this realist construal of biological races as “inbred” lineages.

For example, the special supplement that *Nature Genetics* published in November 2004 titled “Genetics for the Human Race” was situated in a biomedical context. The volume originated at the workshop “Human Genome Variation and ‘Race’” sponsored by the National Human Genome Center at Howard University. Researchers at this historically Black university focus on diseases with a high incidence in African Americans like diabetes, hypertension, and obesity. Scientific contributions came from those with backgrounds in human genetics, microbiology, medicine, biological anthropology, epidemiology, population genetics, and medical genetics. Nary a systematist to be found. Certainly, philosophers focused on the ‘*really* real’ will gravitate towards those biologists who share their interests in the ontological status of categories of classification and are familiar with philosophical terminology about nominalism and essentialism that other biologists would find arcane. But in order to address questions concerning race’s validity as a biomedical category and its biological reality at the level of the genome, philosophers of biology need to familiarize themselves with what race concepts are in actual use in various areas of the biological and biomedical sciences.

Pigliucci and Kaplan (2003) are pluralists: they attend closely to ways in which biologists use the term ‘race’ in practice and therefore do not forego the ‘real’ of biology for the ‘*really* real’ of metaphysics. Pigliucci and Kaplan find multiple biological race concepts applied to zoological and botanical species: races as incipient species, races as ecologically distinct populations, races as geographically isolated populations, races as genetically differentiated populations, races as phylogenetically distinct populations, and races as ecotypes. For Pigliucci and Kaplan, “[t]he question is not whether biological ‘races’ exist; rather, it is which biological race concepts can be most usefully applied to human populations” (p. 1164). They conclude that insufficient reproductive isolation during human evolutionary history made it impossible for Andreasen’s clades to arise, and therefore, the only human races are ecotypes. The ‘*really* real’ of metaphysics reenters, however, in the implicit naturalistic assumption by Pigliucci and Kaplan that nonhuman biology exhausts the range of scientific race concepts that could legitimately apply to humans, an assumption that contributes to the dichotomization of biological and social causation.

### 2.2.2 Biological vs. social causation

Andreasen, Kitcher, and Pigliucci and Kaplan are careful to distinguish their projects in philosophy of biology from the projects of social scientists, political philosophers, and critical race theorists who are interested in race as a social, not biological, category. The result is a dichotomization of the biological and the social as distinct causal realms. Indeed, philosophers of science have traditionally dichotomized biological and social causation, associating the biological realm with what is real, autonomous, and irreducible—at least relatively so—and the social realm with what is ideal, epiphenomenal, and reducible. Again, metaphysical stakes are raised from the ‘real’ to the ‘*really* real.’

Although the title of her 2000 paper is “Race: Biological Reality or Social Construct?” Andreasen actually subverts the dichotomization of race as *either* biological reality *or* social construct inasmuch as she argues that it is both. Biological



and social realms of causation are, however, dichotomized: there are race-concepts and race-objects specific to each. Taking race as a “biological reality,” writes Andreasen, “[t]he cladistic conception [of race] helps systematists understand the patterns and processes of human evolution” (1998, p. 219). More specifically:

A cladistic view of race would require constructing a phylogenetic tree out of human breeding populations; the nodes would represent breeding populations, and the branches would represent the births of new breeding populations. A ‘breeding population’ is a set of local populations that exchange genetic material through reproduction and are reasonably reproductively isolated from other such sets. (2000, p. S659)

When race is considered instead as a “social construct,” attention is paid to entirely different sets of causal processes:

In the United States, for example, race is a central component of many social policies, many people’s identities, and the identification and treatment of others. Constructivists want to understand the concepts of race that are at work in these cases. Of particular interest are invidious conceptions of race, since they often play a role in racist social practices and institutions. (2000, pp. S662–S663)

Andreasen envisions peaceful coexistence among biologists/realists and social scientists/social constructionists; she writes: “since the cladistic account supports the biological reality of human race without vindicating popular conceptions, it is not in competition with constructivist accounts” (1998, p. 218); also, “the cladistic concept falls outside the race constructivist’s appropriate domain of inquiry” (2000, p. S665).

Certainly, there are research questions for which it might be entirely appropriate to confine explanations to the realm of biological causation and research questions for which it might be entirely appropriate to confine explanations to the realm of social causation. However, there are also research questions that cannot be satisfactorily addressed unless allowance is made for the causal interactions that occur among biological and social factors. I discuss this in Sect. 3. For now, it is important to note that socio-cultural factors—differences in language, religion, nationality, etc.—determine reproductive relations and thereby structure the distribution of nucleotides in space and time. Andreasen recognizes that in humans, “socio-cultural differences” as well as geographic barriers promote the divergence of populations by limiting gene flow (2000, p. S659), but draws no ontological conclusions from this.

Kitcher (1999 [2003]), in contrast, recognizes that the causal role of cultural differences in human evolution has significant implications for the ontology of race. Because racial divisions correspond to real mating patterns, Kitcher rejects the eliminativist position “that races are purely social constructions” (p. 245). Appearing also to reject the dichotomization of the biological and social, he concludes: “we might say that races are *both* socially constructed and biologically real.... Races may *quite literally* be social constructs, in that our patterns of acculturation maintain the genetic distinctiveness of different racial groups” (pp. 246–247). However, Kitcher proceeds to reinscribe the biological–social dichotomy in drawing a distinction between race and ethnicity: for Kitcher, race is a biological concept associated with patterns of



biological transmission and ethnicity is a social concept associated with patterns of cultural transmission.

Kitcher's distinction can be seen as unhelpful for current debates on genetics and race once we move away from a U.S.-centric focus. In many other parts of the world, 'ethnicity' is a more frequent category of classification for biological and biomedical research. A brief search of *Biological Abstracts* finds: a study in Canada looking at possible genetic predisposition to atherosclerosis compares Alberta Hutterites, Ontario Oji-Cree, and Keewatin Inuit (Hegele et al. 1999); a study in Bosnia-Herzegovina compares haplotype frequencies in Croats, Serbs, and Bosniacs (Marjanovic et al. 2005); a study in Spain compares the genetic relationships of the Basques as a "linguistic isolate" to other European, Caucasus, and North African populations (García-Obregón et al. 2007); a study in India investigates the genetic effects of the caste system (Zerjal et al. 2007).

### 2.2.3 Natural kind semantics and 'folk' race and races

In Sect. 2.1, I argued that adopting an essentialist approach to natural kinds to address questions concerning the suitability of race as a biomedical category and its biological reality at the level of the genome ignores scientific practice. A better argumentative strategy recognizes that 'race,' *as it is socially constructed*, is essentialist. With society, not science, as the starting point, the question becomes whether or not social construction conforms to biological reality. Along these lines, Kwame Anthony Appiah (2006) begins with a "folk" concept of race, notes its essentialist definition in terms of "shared inherited intrinsic properties," and contrasts this to the biological subspecies concept which is defined relationally in terms of mating propensity:

[T]he hypothesis that there are human folk races is the hypothesis that there are human groups of common ancestry that are (roughly) definable by shared inherited intrinsic properties.... [B]iological subspecies, at least as many evolutionary biologists have conceived of them, are not likely to be folk races. That's because membership in a subspecies is not an intrinsic property, but a relational one. A subspecies is a kind of biological population. (pp. 363–364)

Similarly, Pigliucci and Kaplan (2003) note the biological improbability of the "folk" concept's assumption of systematic racial differences in many traits: a single adaptive difference suffices for the ecotype concept they favor.

The scientific legitimacy accorded the subspecies concept by Appiah, ecotype concept by Pigliucci and Kaplan, and cladistic concept by Andreasen leaves us with a question concerning the nature of the relationship of what, if anything, biologists pick out as races to those social groups widely considered as races. In other words, while intensions may differ, extensions may be the same. Appiah (1996) finds no overlap between the reproductively isolated populations geneticists call 'races' and the social groups Americans call 'races':

I have no problem with people who want to use the word 'race' in population genetics.... The trouble is that ... while there are human populations that are and have been for some time relatively reproductively isolated, it is not plausible to

claim that any social subgroup in the United States is such a population. In *this* sense, then, there are human races, because there are human populations, in the geneticists' sense, but no large social group in America is a race. (p. 73; italics in original)<sup>5</sup>

Although [Andreasen \(2000, 2004\)](#) finds some similarities between cladistic races and the Office of Management and Budget (OMB) system of racial classification in the U.S., she points out that these also cross-classify: "Caucasians" and "Africans" are cladistic races, but "Asians" are not. And whereas the "folk" concept includes three major races, the cladistic concept yields a nested hierarchy of races. [Pigliucci and Kaplan \(2003\)](#) argue that races defined as ecotypes and "folk" races generally do not correspond: ecotypes are smaller, more numerous, and may have multiple independent origins, and there is no single ecotype to which a given individual belongs. While ecotypes and "folk" races are not completely orthogonal, when a trait like skin color is implicated for both, it matters for the scientific concept only because of its ecological importance as an adaptive response to natural selection.

Thus, a sizeable gap separating biological and 'folk' categories of race confronts all these theorists. [Appiah \(2002\)](#) appeals to Putnam's linguistic division of labor to argue that people mistakenly assume there are expert definitions of race which sanction their own use of racial designations:

Many of these experts [biologists, physical anthropologists, medical people] do not use the concept; those that do, employ it in ways that do not conform to much racial commonsense; and many of the experts that employ it are not life scientists but social scientists. (p. 288)

Appiah concludes the folk concept of race should be abandoned. In contrast, Andreasen and Pigliucci and Kaplan believe the folk concept of race should be retained for sociological research and historical redress.

The dichotomization of scientist-expert and nonscientist-commonfolk conceptual schemes, assisted by Putnam's causal theory of reference and linguistic division of labor, raises the metaphysical stakes in yet another way, as exhibited by a debate between Andreasen and Joshua Glasgow. [Andreasen \(2000\)](#) uses Putnam's causal theory of reference to defend the autonomy and authority of the biological race concept:

The objectivity of a kind, biological or otherwise, is not called into question by the fact that ordinary people have mistaken beliefs about the nature of that kind. Those familiar with the causal theory of reference for natural kind terms will be aware of this possibility. (p. 662)

Andreasen expects that ordinary usage when mistaken may be corrected to conform to scientific usage (like we now accept that whales are mammals, not fish), though she also allows that errant beliefs may persist, and that in the case of errant beliefs

<sup>5</sup> Interestingly, utilizing similar biological criteria, [Kitcher \(1999 \[2003\]\)](#) comes to the opposite conclusion, referring to "African Americans" and "Caucasians" in the U.S. as "likely to be one of the best (if not the best) examples of a racial division" (p. 240).

about race, because these exert social effects, they remain of interest to sociologists. However, the gap between folk and biological race concepts leads Glasgow (2003, p. 462) to criticize Andreassen: “How revisionist can one be about the meaning of ‘race’ and still call it ‘race’?” Glasgow also appeals to the causal theory of reference. He argues that the lack of expert consensus regarding intensional and extensional meanings of ‘race’ makes this a different case than Putnam’s ‘Water is  $H_2O$ .’ Semantic deference has a limit, Glasgow holds, a limit that is breached when meanings identified by specialists depart too far from “folk usage”:

[S]uppose chemists pointed to a substance *S*, with the chemical compound NaCl, and told nonspecialists that chemical analysis reveals that water is NaCl, despite the mass of nonspecialists calling substance *W* (with the chemical composition  $H_2O$ ) ‘water.’ Nonspecialists would rightly respond that NaCl is called ‘salt,’ not ‘water.’ (p. 467)

Glasgow’s example of water and salt is supposed to show that the scientific usage favored by Andreassen (i.e. races defined as clades) is not illuminating because it departs too far from not just folk usage but previous scientific usage. Despite their disagreement, Andreassen and Glasgow appear to share the view supported by the Kripke-Putnam account of natural kinds and Putnam’s causal theory of reference that at a specific historical moment, identifiable scientific experts tethered the term ‘race’ to nature in a ‘baptismal procedure’ that ‘rigidified’ the meaning of ‘race’ for this and all possible worlds. Glasgow argues that Andreassen’s revision of the folk concept of race in the direction of the cladistic concept of race can only be accomplished by “de-rigidifying” ‘race’ as baptized. Andreassen’s (2005) response to Glasgow is that “It is likely that we do not know enough about the history of ‘race’ to know what was in the minds of speakers during the baptismal procedure” (pp. 103–104).

This mode of argument verges on the fantastical, little removed as it is from Putnam’s science fiction about my doppelganger on Twin Earth drinking XYZ and mistakenly thinking it is what I call ‘water.’ There is no substitution for the detailed historical research required to understand the range of ways in which scientific ideas about race and wider cultural ideas about race have intersected in the past. Putnam’s causal theory of reference is not even historically accurate for the much simpler example of water as  $H_2O$  (Needham 2002). A theory of natural kinds metaphysically invested in a ‘really real’ ontology of possible worlds, invented to serve semantic theoretical ends, discounts the much messier reality of human history on this planet, on all of its parts and in all of its periods.

In addition, the dichotomization of scientist-expert and nonscientist-commonfolk conceptual schemes ignores the ways in which scientific ideas about race and wider cultural ideas about race intersect. I discuss this in the next section.

### 3 Questions unasked

One might criticize a focus on metaphysical questions for diverting philosophical attention away from questions of practical importance (ethical, political, etc.) in a general sense, that is, as a criticism of the discipline. That is not my intention. My

interest is specifically in how philosophers of science approach debates about genetics and race. Whether race is an appropriate category of classification in biomedicine is already a question of practical importance, and what matters is how *this* question is addressed. Philosophers of science, among others, tend to view it as a question about the reality of race as a biological phenomenon at the level of the genome. The answer lies in what the authority of nature tells us, which, for philosophers of science, is the metaphysics of natural kinds. Consequently, the practical context in which the question initially arose—that of biomedicine—falls away.

Certainly, asking some questions inevitably leaves other questions unasked. But the problem involves more—it involves privileging a certain set of questions (theoretical, metaphysical, etc.) such that others (practical, evaluative, etc.) are not merely overlooked but systematically ignored.

The metaphysical debate over monism vs. pluralism arises as a result of competing biological definitions of race—for example, Andreasen’s defense of races as clades, Kitcher’s defense of races as “inbred” lineages, and Pigliucci and Kaplan’s defense of races as ecotypes. In Sect. 2.2.1, I argued that Andreasen’s monism that privileges systematics as the arbiter of the ‘*really* real’ is empirically inadequate because it ignores those race concepts in use in other areas of biological and biomedical science that might sanction race as a category of classification in forensics, pharmaceuticals, etc. Hull (1998) makes an even greater appeal to the authority of systematics, though with different conclusions. Hull argues that biological races do not exist because systematists consider subspecific groupings to be “too ephemeral and variable” to be useful for formal classification. And so, Hull concludes,

the current state of biological systematics with respect to subspecies does not provide much support to racists. If races do not exist in any significant sense, then it is hard to see how one race can be superior to other races. (p. 366)

The problem is that biologists working in areas other than systematics do not cede similar authority to systematists. What counts as “any significant sense” depends on which biologists one is talking to, and those biomedical fields in which race and ethnicity are currently used as categories of classification are quite remote from systematics. Hull’s monism leads him to ignore that even if support for racism is not found in systematics, it may be found elsewhere in biology.

Although the monism of Andreasen and Hull promotes meager attention to classification practices in areas of biology and biomedicine outside systematics, deciding the metaphysical debate in favor of pluralism does not solve the problem. Privileging theoretical questions leads to questions of practical (including social and political) importance concerning race and genetics to be not just overlooked but systematically ignored. When it comes to these practical questions, what matters more than resolving the monism–pluralism question posed metaphysically is attending empirically to what race concepts are in actual use across the biological and biomedical sciences. This methodology does not demand a pluralistic metaphysics but rather calls for an epistemological framework that is open to either monism or pluralism turning out to be true—an approach advocated by Helen Longino in *The Fate of Knowledge*. As Longino notes, “[t]he plurality of representations in the sciences may be a function of how the world is or of human intellectual equipment for and interests in understanding the

world (or of both)” (2002, p. 95). She argues that any epistemology we choose should be open to the long-term vindication of either “theoretical plurality” or “theoretical unity.”

While the metaphysical debate over monism vs. pluralism results in one set of questions being privileged and another set of questions being overlooked and systematically ignored, the dichotomizing assumptions embedded in traditional accounts of natural kinds go further: they actually foreclose the asking of certain questions. And arguably, these are the questions that matter most socially and politically.

The dichotomization of the biological and the social as distinct causal realms discussed in Sect. 2.2.2 precludes investigating the very context-specific ways in which biological and social factors interact. As mentioned already, from the ‘biological’ perspective, socio-cultural differences (language, religion, nationality, etc.) structure the distribution of genetic variants in space and time. From the ‘social’ perspective, it should not be ignored that race is socially constructed by enlisting biological differences and investing these with socio-cultural meanings. For example, sociologist Paul Gilroy (2000) conceives ‘race’ as “an active, dynamic idea or principle that assists in the constitution of social reality”: social groups are constituted by racializing some contingent combination of biological, cultural, and national differences as essential, hierarchical, primordial, authentic, historical, natural, discrete, absolute, fixed, static, immutable, and unbridgeable (p. 57). And as Hacking’s theory of “looping” or “interactive” kinds suggests (1995, 1999), classificatory practices may direct behaviors in ways that ultimately reinforce or challenge the classification scheme. Classifications embedded in the institutional matrix influence behavior even without self-conscious awareness, but classifications also affect self-conceptions—ideas about who we are and what behaviors are appropriate for us given the sorts of people we are. It bears mention that the underlying biology can be affected if reproductive choices are consistently structured by racial and ethnic identities.

The dichotomization of scientist-expert and nonscientist-commonfolk conceptual schemes discussed in Sect. 2.2.3 similarly rules out consideration of ways in which scientific ideas about race and wider cultural ideas about race intersect. Andreasen (2005), in addressing Glasgow’s criticisms, modifies her position slightly to defend the “*relative* autonomy of the scientific and folk meanings of ‘race’” (p. 102; italics added): scientific and folk meanings are autonomous insofar as cross-classification and differences in extension are permitted without necessitating a demand for revision of the folk meaning; however, scientific and folk meanings are not wholly autonomous because science influences the folk meaning and the folk meaning often provides a starting point for scientists in their research. This starting point for scientists in their research may actually be quite significant, however, significant enough to threaten the objectivity Andreasen believes holds for a cladistic concept of race insofar as taxonomic racial divisions represent a process of evolutionary branching that has taken place “independently of human classifying activities” (2000, p. S656). In a 2004 paper, “The ABO blood groups: Mapping the history and geography of genes in *Homo sapiens*,” James Griesemer and I use Bruno Latour’s theory of circulating reference to point out the extent to which a priori categories of classification assumed by blood group researchers at the outset of data collection are not discharged in the course of the study but prove integral to whatever a posteriori classification results. Some

of these undischarged a priori assumptions (where to draw geographical boundaries, which phenotypic characteristics matter, who counts as indigenous to a territory, etc.) are no doubt indebted to nonscientist-commonfolk conceptual schemes per Putnam's division of linguistic labor.

Another, related, problem with the dichotomization of scientist-expert and nonscientist-commonfolk conceptual schemes is that the fixed distance it maintains between scientific and folk concepts of race provides support for the assumption that only "ordinary people" can be racist. Hull (1998) appears to assume as much:

Ordinary people in first-world countries tend to group people into four or five races that we define in terms of such outward signs as skin color. None too surprisingly, these are the races that racists and antiracists have in mind in their disputes. But these common-sense groupings are not the races recognized by professional anthropologists. They subdivide people into such groups as Negroids, Caucasoids, Mongoloids, Amerindians, Australoids, and Negritoes.... Periodically, some of the groupings produced by professional anthropologists correspond roughly to common sense races, but such correspondences are very rough and extremely short lived. Ordinary people remain contentedly oblivious to all these professional disagreements, and racism is first and foremost a fact about ordinary people reasoning the way that ordinary people reason. (p. 364)

Hull compares racists to creationists, and he is quite correct to claim that racists, like creationists, use whatever they can from science and ignore the rest. But just as religious traditions permeate society and affect ecumenicals, agnostics, and atheists despite their professed beliefs, so are scientists and liberals not immune to racism. Asking questions about scientific racism is, however, ruled out by the dichotomization of scientist-expert and nonscientist-commonfolk conceptual schemes.

#### 4 Whither natural kinds? Whither race? Whither races?

Were we to adopt, with Longino, an epistemological framework that accepts the "plurality of representations" offered by different sciences, becoming agnostics on the metaphysical question of monism and pluralism, would we abandon theorizing about natural kinds? What might be lost by doing so? Nothing, it seems, if we accept Hacking's (2007) diagnosis: "Some classifications are more natural than others, but *there is no such thing as a natural kind*" (p. 203; italics in original). It is helpful to take a step back, in order to reflect on the basic motivations involved in theorizing about natural kinds, generally, and race as a natural kind, specifically. Attempting to capture basic motivations, we might say that theorizing about race as a natural kind is associated with the expectation—an expectation nonscientists share with scientists—that race as a category of classification furnishes an authoritative taxonomy, a taxonomy that by depicting fundamental divisions in nature is conducive to fulfilling far-ranging explanatory aims.

Race is a taxonomic concept, even outside of systematics. It is assumed that all individuals belonging to the relevant domain (in this case, *Homo sapiens*) can be sorted into racial groups, for the most part uniquely, or at least hierarchically; of course, an

allowance is made for a relatively small number of mixed-race individuals in whose cases the exception serves to prove the rule. Although essentialist approaches to race assume it is individuals who are sorted into racial groups, a post-evolutionary synthesis racial taxonomy may instead classify populations with the racial identity of individuals determined secondarily by their membership in a given population. Current projects investigating human genetic diversity do not appear capable of sorting all or most individuals belonging to *Homo sapiens* into groups: indigenous peoples are usually favored in sampling protocols, for example. In addition, the taxonomic ideal is confounded by the cross-classification of theoretical kinds: Andreasen's clades, Kitcher's "inbred" lineages, Pigliucci and Kaplan's ecotypes, genetically distinct breeding populations, and so on—these biological race concepts yield different taxonomies conducive to fulfilling different theoretical purposes. Given that no single one of these taxonomies is authoritative even within biology, there is no reason to expect the diverse theoretical and practical aims associated with fields like DNA forensics, pharmacogenomics, environmental genomics, etc. to be fulfilled by a single, authoritative taxonomy of racial kinds.

The expectation that there could be an authoritative taxonomy of race, that by depicting fundamental divisions in nature, the category of race is capable of fulfilling wide-ranging explanatory aims, is associated, of course, with Plato's influential metaphor in the *Phaedrus*, which suggests that the number of ways of cutting nature at its joints is static, determinate, relatively few, and nonoverlapping. According to this realist tradition in philosophy, the category of race might be considered fundamental because if it represents one of relatively few, determinate cuts in the swath of nature's fabric, it would be expected to have explanatory breadth, providing a useful system of classification in quite disparate research areas and serving as the explanandum for a wide range of explanations. For nineteenth-century scientists, race explained differences in criminality, sexual degeneracy, child neglect, morbidity and mortality, suicide, alcoholism, frugality, intelligence, aesthetic sensitivity, mathematical ability, musical talent, legal status, cultural achievement, national character, capacity for democracy, etc. (Smedley 2007).

In a recent article, Kitcher (2007) rejects his previous construal of biological races as "inbred" lineages as part of a wider movement from "pluralistic realism" to "a pragmatist account of natural kinds" (p. 300). Kitcher considers his 1999 [2003] account to be compromised by realist assumptions about natural kinds because his "pluralistic realism" assumed a nature, albeit a "multiple-jointed" nature, amenable to being cut at its joints. Kitcher no longer finds Plato's metaphor persuasive: his conversion to pragmatism means "there is a nondenumerable infinity of possible accurate maps we could draw for our planet" (p. 299), and which boundaries get drawn depend on our purposes. The utility of dividing humans into "inbred" lineages needs therefore to be demonstrated, as other classifications are possible. The sole vestige of realism, for Kitcher, is the preclusion of just any boundary being drawn.

There is a second sense in which natural kinds are considered fundamental: staying with Plato's metaphor, like John Stuart Mill's "real Kinds," they are associated with deep rather than superficial cuts. For the empiricist Mill, general names refer to classes of objects, be these real objects like horses or imaginary objects like unicorns. Mill distinguishes two sorts of classes of real objects: (i) classes whose objects share a



“finite and determinate” number of distinct properties that either correspond to those connoted by the name of the class or follow from these by some law of nature; and (ii) classes whose objects share an “indeterminate multitude of [distinct] properties” where these not only exceed those connoted by the name of the class but would prove “inexhaustible” to discover. Mill considers only the latter sort of classes to be “real Kinds” and views his distinction as analogous to Aristotle’s between accidental and essential differences: all white things are not a “real Kind” whereas all human beings are (1889, pp. 79–81).

In this case, the category of race would be supposed fundamental because it tells us a lot about individuals: members of the same race might be assumed to share an indeterminate and inexhaustible number of properties not found in members of other races. It is this assumption that is implicated in racial stereotypes but undercut by the empirical fact, emphasized by [Richard Lewontin \(1972\)](#) and others since, that the greatest proportion of human genetic variability lies within populations, not between them. [Hacking \(2005\)](#) points out that Mill himself judged races not to be “real Kinds” because he considered racial differences to be due to climate, habits, or one or a few differences in structure. Hacking draws on Mill in order “to clarify the naturalist position on race” in view of BiDiI’s ostensible success as a ‘race-based’ drug (p. 104). Since Mill assumed the existence of only uniform differences among kinds, Hacking updates the account to be able to consider the existence of statistical differences among populations defined geographically or historically: characteristics are defined as statistically significant if their distributions in comparable populations differ significantly, as statistically meaningful if a causal understanding of the different distributions exists, and as statistically useful if they serve as indicators for something of practical concern. However, Hacking concludes: “Classes that are statistically significant, meaningful, or useful are *not* thereby real Kinds” (p. 105). That is, the discovery of statistical differences among populations defined geographically or historically is no indication that population boundaries represent deep cuts in nature that indicate anything more about individuals belonging to those populations than the statistical distribution of the specific characteristics studied does.

These basic assumptions about natural kinds and race as a natural kind—that racial classification is taxonomic, that taxonomic divisions represent cuts in the swath of nature’s fabric, few in number, deep as well as broad, rendering great explanatory power—are likely to be shared by scientists and nonscientists alike who subscribe to the category of race. Unfortunately for race enthusiasts, however, there are good reasons to be skeptical that race fulfills these basic assumptions about natural kinds—that it tells us something about a lot of things or a lot about some things (and all such things in its domain). This suggests that race cannot do for us what it seems many have wanted it to do.<sup>6</sup> Even if one is loathe to jettison natural kinds, the category of race as a postulated natural kind must go. This may seem premature: we have not yet considered another basic assumption of natural kind theorizing. Nineteenth-century theorizing about natural kinds grew out of eighteenth-century debates in natural history about whether taxonomies were artificial or natural, corresponding to conventions

<sup>6</sup> My wording here is indebted to [Sally Haslanger \(2000\)](#).

adopted by taxonomists or God's own plan of creation (Hacking 2007; McQuat 2009). The projectibility approach to natural kinds, which originates in Nelson Goodman's *Fact, Fiction, and Forecast*, helps to address the question whether racial classification is conventional and therefore not natural, natural and therefore not conventional, or both conventional and natural. In doing so, we leave the category of race behind. The question is no longer whether race is a natural kind, but whether specific racial designations (e.g. 'Caucasian,' 'Asian,' etc.) are projectible. Goodman talks about green and blue emeralds, not colors and precious gems.

The definition of natural kinds in terms of projectibility is "roughly the idea that natural kinds are extensions of projectible predicates" (Häggqvist 2005, p. 77). Ludovica Lorusso and Giovanni Boniolo (2008) investigate the question of the validity of race as a biomedical category in a way that is consistent with a projectibility approach to natural kinds. They provide an account of how drawing boundaries in human genetics research to yield clusters for study is done on the basis of three sets of properties: the main property (e.g. 'being an Ashkenazi woman'), investigating property (e.g. 'having a germ-line BRCA1 mutation'), and catalyzing property (e.g. 'being susceptible to breast cancer'). Lorusso and Boniolo point out that what boundaries are drawn and clusters produced depends on what properties are used and this in turn depends on the researcher's interests: "Since the clustering process is property dependent, and the properties are chosen by the geneticist-observer, this process is geneticist-observer dependent" (p. 169). Such epistemic relativity obviously does not mean the projected predicates do not support inductive inferences. Does this mean that the ethnic or racial groups for which such inferences obtain can legitimately be regarded as natural kinds?

Richard Boyd's (1989) account of natural kinds as homeostatic cluster kinds suggests a positive response, provided a causal mechanism that explains the statistical correlation among such properties as being an Ashkenazi woman, having a germ-line BRCA1 mutation, and being susceptible to breast cancer can be identified. According to Boyd, properties reliably but contingently co-occur in nature as a result of underlying mechanisms or processes (which embedded in the causal structure of the world exist independently of human classifying practices). These homeostatic clusters support the ability to make inductive inferences and offer scientific explanations expected of natural kinds. The homeostatic property cluster definitive of a kind is not individuated extensionally but as a historical object or process that preserves its identity despite changes over time; in fact, for Boyd, "The paradigm cases of natural kinds—biological species—are homeostatic cluster kinds" (p. 17). Although Boyd's account tends to be conflated with Kripke's and Putnam's, it is much more inclusive, exhibiting the pluralism expected of the projectibility approach to natural kinds whereby different and cross-cutting classifications of the world are permissible (Häggqvist 2005, p. 79). Thus, there is room for the epistemic relativity mentioned by Lorusso and Boniolo: which property clusters are isolated depends on the researchers' interests, but the underlying causal processes are real. Appealing to 'homeostasis,' however, exaggerates the stability of the correlation between being Ashkenazi, having a BRCA1 mutation, and susceptibility to breast cancer. Such stability depends on cultural understandings of what it is to be 'Ashkenazi,' degrees of endogamy, etc., which seem quite remote from ideas about the auto-regulation of cells and organisms.

Sören Häggqvist (2005) argues that Boyd's homeostatic cluster kinds place too many constraints on a projectibility approach to natural kinds, and that Boyd's mechanisms, like Putnam's microessences, are sufficient but not necessary for being a natural kind: "I would suggest that what matters is the *reality* of the kind, or, to put it another way, its genuine, as opposed to apparent, projectibility" (p. 80; italics in original). Häggqvist defends a position he calls 'bare projectibilism,' which accepts the reality of kinds where the relevant predicate is projectible in the brute sense that it supports inductive inferences even though there is no underlying causal mechanism that explains why. Häggqvist suggests that electrons and jade count as natural kinds on this account, whereas they would not on Boyd's. Paul Griffiths (1999) presents a similar account: "A kind is (minimally) natural if it is possible to make better than chance predictions about the properties of its instances" (p. 216). And so, even if there is no causal mechanism available to explain the statistical correlation whereby the risk of having a germ-line BRCA1 mutation and being susceptible to breast cancer is elevated among Ashkenazi women, on Häggqvist's bare projectibilism or Griffiths' 'minimally natural' account, the property 'being Ashkenazi' might still be considered a natural kind.

Although the projectibility approach to natural kinds originates in Goodman, he does not himself refer to kinds as 'natural.' In *Fact, Fiction, and Forecast*, Goodman distinguishes between "genuine" and "artificial" kinds, and places scare quotes around these terms to suggest that the kinds themselves lie along a continuum of 'genuineness.' Projectibility, Goodman writes, "may give us a way of distinguishing 'genuine' from merely 'artificial' kinds, or more genuine from less genuine kinds" (1983, p. 122). In *Ways of Worldmaking*, Goodman states that one reason he prefers the term "relevant" to "natural" is that "'natural' is an inapt term to cover not only biological species but such artificial kinds as musical works, psychological experiments, and types of machinery" (1978, p. 10). On Goodman's account, it seems, a predicate like 'Ashkenazi' counts as a 'genuine' kind because it supports the inductive generalization that Ashkenazi women have an elevated risk of cancer due to a germ-line BRCA1 mutation, and a 'relevant' kind because it satisfies research and clinical purposes in biomedicine. It matters not whether 'Ashkenazi' is regarded as a biological, social, or biosocial identity.

It must be emphasized, however, that this and other biomedical generalizations making use of racial and ethnic designations are statistical, contingent, accidental, localized, and relative to our interests—in contrast to natural kind essentialism's support for generalizations that are universal, necessary, lawful, unrestricted, and mind-independent. They are more like Goodman's example of an accidental generalization ("All the coins put in my pocket on VE day were silver on VE day") than his example of a lawlike generalization ("All copper conducts electricity"). In contrast to the basic assumptions underlying natural kind approaches to race, the designation 'Ashkenazi' does not render one of relatively few broad and deep cuts in nature's fabric, nor does a more racialized designation like 'Caucasian.' Social designations of race and ethnicity that support inductive generalizations of biomedical interest are no less social in virtue of doing so. Hence, while 'Ashkenazi' could be a kind, in Goodman's sense of a genuine and relevant kind, it is not a natural kind in the sense of being an asocial kind. Indeed, the degree to which any particular racial or ethnic designation is 'genuine'

or ‘relevant’ needs to be interrogated. It may be true that Ashkenazi women have an elevated risk of cancer due to a germ-line BRCA1 mutation, but it is a small minority of those women who actually have the mutation, and fewer yet actually get cancer. Relative risk is a local measure: it depends on what comparison group is chosen, who counts in that place as being ‘Ashkenazi,’ how many marry within and without, etc. These statistical issues bear on how relevant the kind is with respect to the purposes for which it is mobilized, but so do other considerations, for example, whether this risks biologizing or naturalizing the category in a way that might potentially do harm.

Despite his Goodmanian sympathies and his rejection of races as Millian ‘real Kinds,’ [Hacking \(2005\)](#) writes that the existence of statistical differences among populations defined geographically or historically—be these statistically significant, meaningful, or useful—“make[s] plain that naturalism about race, far from being an atavistic throwback to an era well left behind, is a topic for today, one about which we have to become clearer” (p. 109). Hacking regards ‘Ashkenazi’ as “a valuable geographical, historical, and social classification” (p. 107) and refers to races as “geographically identified populations” (p. 108). Though I agree that more clarity about race as a research variable is called for, I urge caution about falling back on a naturalistic approach when it comes to the use of racial and ethnic designations in biomedicine. There is a tendency to view the spatial patterning of genetic variability in naturalistic terms, perhaps because nonhuman animals show similar patterns of variability, perhaps because it suggests physical obstacles to the movement of genes (mountains, oceans, deserts). Political borders are no less barriers to movement, however. And while continental-level differences may appear ‘natural,’ eighteenth- and nineteenth-century racial classifications (‘Caucasoid,’ ‘Mongoloid,’ ‘Negroid,’ etc.) were presented as no less ‘natural,’ despite the influence of colonial encounters and the transatlantic slave trade. U.S. racial history impacts studies of global genome diversity in ways that exaggerate continental-level differences while at the same time reinvesting these with social meanings—consider the International HapMap project’s sampling protocol, which included only Utah Mormons, Japanese and Han Chinese, and the Yoruba of Nigeria.

## 5 Conclusion

What emerging genomics research tells us about the biological reality of race is a hot topic these days, for scientists and nonscientists, philosophers and nonphilosophers alike. *Race: The Reality of Human Differences*, the 2004 book written by Vincent Sarich (a scientist whose late-1960s doctoral research contributed to the development of the molecular clock and the then-radical but now widely accepted date of separation of ape and hominid lineages) and Frank Miele (a philosopher who is senior editor at *Skeptic* magazine), advances a number of controversial claims about biology and race. I have neither the space nor inclination to go into these in any detail; suffice it to say that they are rather horrid, including, for example, the postulation of significant cognitive differences arising during the past 10,000 years among geographically separated human groups as cultures came to differ more in their “achievements” and a “statistical reality” that makes it inevitable that racial groups will be disproportion-

ately represented at the extremes of values for traits like being a criminal or having a high-paying job. Like Wade, Sarich and Miele question whether race is “a mere social construct” or “an underlying biological reality” and are greatly impressed with recent scientific developments: they believe that DNA data gleaned from the “latest genetic technologies” provide decisive evidence for the biological reality of race and that “recognition of the reality of race” is making a difference in the “life-and-death” matters of pharmacogenetics and DNA forensics: “If ‘race’ were a mere social construction based upon a few highly visible features, it would have no statistical correlation with the DNA markers that indicate genetic relatedness” (p. 23). Sharing the persecution complex of so many Galileo-inspired defenders of unpopular and uncomfortable truths, Sarich and Miele consider those of us who are resistant to their claims to be dupes of propaganda spread by “colleges, universities, or PBS” about the social construction of race or just too PC to admit to what stares us in the face.

Finally, I am brought to a third concern about the tendency of philosophers of science to take a metaphysical approach relying on theories of natural kinds when it comes to debates about race’s validity as a category of classification in biomedicine and reality as a biological phenomenon at the level of the genome. Recall that my first concern questions the ability of metaphysically invested approaches to natural kinds to contribute to these debates, and my second concern is that approaching these debates by asking questions about the metaphysical reality of race as a natural kind leaves other questions—often socially and politically important questions—unasked. My third concern is that no matter how much philosophers of science would like to challenge the racist agenda of a book like Sarich and Miele’s *Race*, their critical stance is limited by the role played by the assumptions about the ‘*really* real’ inherent in theorizing about race as a natural kind. There is a dichotomous framing of possible alternatives: race is either socially constructed or biological reality, a fiction like phlogiston or a genuine natural kind, a merely linguistic or a projectible predicate. This framing mirrors Sarich and Miele’s dichotomy of race as “a mere social construct” or “an underlying biological reality.” And thus, despite their best anti-racist intentions, philosophers of science might contribute to sustaining a stagnant and unproductive, at times even corrosive, debate in the public sphere between biological race realists and social constructionists.

‘Making philosophy of science more socially relevant’ was the topic that inspired the original conference leading to this symposium of papers. Regarding debates about genetics and race, for instance, about the status of race as a category of classification in biomedicine and as a biological phenomenon at the level of the genome, philosophy of science will become more socially relevant when it leaves the metaphysical comfort zone of natural kinds and embraces the discomfiting mess of the world we live in. By divesting ourselves of the ‘*really* real,’ we do not forego the ‘real,’ but we come to understand it differently. To the extent that social constructions of race and ethnicity mobilize biologically salient characteristics like phenotypic traits, genealogical ties, and geographical origins, and invest cultural meanings in these, it would be very surprising if the statistically correlated DNA markers which so impress Sarich and Miele were not to be found. But we can expect such correlations to be statistical not universal, local not global, contingent not necessary, and accidental not lawful, and expect their corresponding cuts in nature to be interest-relative not mind-independent, dynamic

not static, indeterminate not determinate, many not few, overlapping not nonoverlapping, and superficial not deep. The dichotomous choice of race as either ‘underlying’ biological reality or ‘mere’ social construction thereby becomes meaningless. Philosophers of science are granted permission to worry less about the ‘*really* real’ and instead assess the appropriateness of group categories of classification relative to the purposes of specific research programs, an assessment which on this pragmatic approach invites consideration of the social and political ramifications of drawing boundaries in one way rather than another (Gannett 2005).

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