

THE IDEA OF A SCIENTIFIC CONCEPT OF RACE

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ABSTRACT: This article challenges the orthodox view that there is and can be no scientifically valid concept of race applicable to human beings by presenting a candidate scientific concept of biological race. The populationist concept of race (PRC) specifies that a “race” is a subdivision of *Homo sapiens*—a group of populations that exhibits a distinctive pattern of genetically transmitted phenotypic characters and that belongs to an endogamous biological lineage initiated by a geographically separated and reproductively isolated founding population. The viability of the PRC is shown by demonstrating its capacity to withstand a wide range of objections. A common theme is that the objections turn on misconceptions of the idea of a scientific concept of race. The final section argues that the PRC will not foster racism.

I. INTRODUCTION

I wish to challenge the orthodox view that there is and can be no scientifically valid concept of race applicable to human beings. To this end, I shall present a candidate scientific concept of biological race.¹ One motivation for its introduction is to explain what can be called the *minimalist phenomenon of biological race*: the fact that human beings exhibit morphological differences—differences of skin color, body type, head shape, eye form, and the like—statistically associated with differences of geographical ancestry. To conceive of this phenomenon in the *minimalist* way, it is essential to refrain from supposing that groups exemplifying geographically based morphological differences differ in humanly important characteristics such as intelligence and behavior, forbear supposing that all the members of a race necessarily share a set of intrinsic properties peculiar to that race, and avoid any evaluative ascriptions. I call this the minimalist phenomenon of biological *race* because its components—differences of morphological features, differences of geographical ancestry, and the correlation of these differences—count intuitively as “racial” and because groups characterized by these features count intuitively as “races.”

Now the label ‘minimalist biological phenomenon of race’ might be thought tendentious. But there is widespread agreement that the phenomenon I am calling by this name exists—even among those who deny the existence of human biological races. Thus, for example, the geneticist Richard Lewontin, who denies that biological races exist, allows that “[p]eoples who have occupied major geographic areas for much of the recent past look different from one another. Sub-Saharan Africans have dark skin and people who live in East Asia tend to have a light tan skin and an eye color and eye shape and hair that is different from Europeans.”² The philosopher K. Anthony Appiah, another anti-realist about biological race, grants that a possible biological referent of the word ‘race’ consists of “groups defined by skin color, hair, and gross morphology, corresponding to the dominant pattern for these characteristics in the major subcontinental regions: Europe, Africa, East and South Asia, Australasia, the Americas, and perhaps the Pacific Islands.”³ The race anti-realist anthropologist C. Loring Brace concedes “[i]t is perfectly true that long term residents of various parts of the world have patterns of features that we can identify as characteristic of the areas from which they come.”⁴ No one doubts the existence of groups that *appear* to be races. The expression ‘minimalist phenomenon of biological race’ can be thought of as a name designating this appearance.

To say that the minimalist phenomenon of biological race exists is not to prejudice the question whether race is real from a biological point of view; for this assertion is compatible with denying that there is a scientific kind *race*. The question whether race is real from a biological point of view is the question whether there is a natural kind *race* that explains the minimalist phenomenon of biological race. On the face of things at least, it is possible that there is no such kind.

In characterizing the race concept to be introduced as a *candidate* scientific concept of race I refrain from asserting that it is a valid scientific concept or that there is a biological (or natural) kind *race*. I shall not provide the empirical evidence required to establish the validity of the concept or the existence of the corresponding kind, but shall restrict myself instead to the modest task of introducing the concept, defending it against certain objections and indicating its plausibility. I want to show the idea that there is a biological kind *race* picked out by the candidate scientific concept of race to be an hypothesis worth exploring.

In section II I introduce my preferred candidate scientific race concept. I defend it against a series of objections in section III. In fourth and final section I consider whether the concept will foster racism.

II. THE POPULATIONIST CONCEPT OF RACE

The concept of race piggybacks on the concept of species. The race concept is (at least roughly) the concept of a subspecies.⁵ Scientific concepts of race find their proper model in scientific concepts of species. Now the choice of any species concept will inevitably be contentious, since there are a variety of species concepts on offer and the definition of the species concept remains in dispute. I have chosen to opt for Ernst Mayr’s celebrated “biological species concept” (BSC)⁶ because of its

familiarity, centrality, and wide acceptance—and because of the light it sheds on the specifically *biological* character of biological race as I conceive of it.⁷

I shall call the candidate scientific race concept I wish to develop the “populationist race concept” (PRC).⁸ According to it

a “race” is a subdivision of *Homo sapiens*—a group of populations that exhibits a distinctive pattern of genetically transmitted phenotypic characters and that belongs to an endogamous biological lineage initiated by a geographically separated and reproductively isolated founding population.⁹

The concept I am calling the PRC is a refinement of Phillip Kitcher’s biological concept of race that is similar in some respects to Robin Andreasen’s cladistic race concept.¹⁰

The PRC is perhaps best explicated by comparison with Mayr’s biological species concept. According to the latter “[s]pecies are groups of actually or potentially interbreeding populations which are reproductively isolated from other such groups.”¹¹ The PRC and BSC are both framed in terms of the scientific concept of a *population*. Mayr defines a (local) population as “the community of potentially interbreeding individuals at a given locality.”¹² A PRC race is a subpopulation of the species *Homo sapiens*.

The PRC and BSC both instantiate the general biological attitude Mayr entitled “population thinking.”¹³ He (and Elliot Sober, whose discussion I follow)¹⁴ drew a contrast, familiar to philosophers of science, between this attitude and the older outlook the evolutionary biologist called “typological thinking.” As introduced by Mayr (and Theodosius Dobzhansky) population thinking was understood to apply to both species and races but their primary focus was on the concept of species. The extension of population thinking to race was never worked out in a sufficiently systematic and detailed way and consequently never had the impact that it ought to have had. It deserves closer examination.

The contrast between the BSC and the PRC can be developed by starting with the familiar idea that typological thinking takes biological species to have necessary and sufficient conditions, holding that for every species there is a set of intrinsic properties common and peculiar to each species member that makes the species the species it is and explains why members of the species are as they are.¹⁵ These properties constitute a typological species’ biological *essence*. The typological interpretation of race takes races and their biological essences in a parallel way.

The typological race concept can be aptly likened to the concept of astrology.¹⁶ Astrology says the visible arrangement of stars and planets at the time of your birth determines your personality and fate in life. Typology says your moral and intellectual characteristics are biologically determined by your race. Astrology purports to explain the (alleged) correlation between the arrangement of stars at birth and fate by reference to (confabulated) astrological laws. Typology purports to explain the (alleged) correlation between skin color and intelligence by reference to a (confabulated) racial essence. But the *populationist* race concept cannot be aptly likened to the concept of astrology. Not being typological, it is not an analogue of astrology.

Population thinking rejects the variety of essentialism that holds that every species member must share an intrinsic property—genotypic or phenotypic—common and peculiar to that species.¹⁷ It denies the corresponding thesis about race. A person properly classified as Caucasian (assuming Caucasian is a racial category of a valid scientific classification of race) might in principle have none of the phenotypic or genotypic traits thought to be specific to Caucasians.¹⁸ Populationists recognize that members of a given PRC race are *likely* to exhibit genetic traits distributed with a high frequency in that race, but hold there is no biological guarantee that such an individual will have any traits characteristic of the PRC race to which she belongs. An allele need not be “fixed in the population” to count as racial. Should it turn out that all and only the members of a PRC race share a particular trait, this would be nothing more than a biologically accidental fact.

Population thinking maintains that there is no single ideal way in which genotypes are expressed in phenotypes. All relations between environment and phenotype are equally “natural.”¹⁹ No phenotype is privileged. Consequently there is no phenotypic property that *could* play the role of species essence. The same point carries over to the concept of race.

Population thinking might be said to be anti-essentialist in that it removes the explanatory need for positing common intrinsic property essences for species.²⁰ Coupled with considerations of parsimony, this last point provides a reason for holding that races (and species) lack common intrinsic property biological essences.²¹

Population thinking involves a profound shift from conceiving of species as *kinds of individuals* to *kinds of populations*. The ontological status of races undergoes a parallel shift. Population thinking effects this transformation by providing a way of conceiving of species and races that does not depend upon the possibility of providing “constituent definitions,” definitions in terms of the characteristics of the individual organisms that constitute the race or species.²²

Population thinking’s focus on populations makes it holistic. The visibly distinctive patterns of phenotypic characteristics associated with PRC races are best understood as *group* properties—properties of the population considered as a whole. These properties are best identified by looking at populations as groups and focusing on the portions of populations that are found a maximal geographical distance from adjacent groups.

If uniformity is the hallmark of typological thinking, the hallmark of populationist thinking is variety. Typologists hold that each “normal” representative of the species is the same in virtue of sharing the essential characteristics of that species. Ditto for race. Variation represents a deviation from the norm that must be explained by reference to the intervention of interfering forces.²³ Populationists take variation to be the norm. They hold that every individual is different and hence unique. PRC races are essentially diverse.

This brings us to a point at once crucial and easily misunderstood. A BSC species is defined, not by the intrinsic properties its members necessarily share, but by a biological relation in which BSC species stand to one another.²⁴ *Mutatis mutandis*, a PRC race.²⁵ The defining biological relation for both categories is *reproductive isolation*, broadly understood.

‘Broadly’ should be underscored. The term ‘reproductive isolation’ as applied to race is construed in a non-standard way that contravenes Mayr’s influential restriction of the term’s reference to the sort of reproductive isolation exhibited by species.²⁶ Mayr expressly excludes geographical barriers (e.g., the walls of Alcatraz and San Francisco Bay)²⁷ from the extension of ‘isolating mechanism’ (the structures that account for reproductive isolation), limiting that term’s proper application to “biological properties of *individuals*.”²⁸ But Dobzhansky, who first introduced the term, explicitly counts geographical barriers as proper instances of isolating mechanisms.²⁹ Our broad use of ‘reproductive isolation’ thus accords with the original sense of the term. I recognize that readers accustomed to the accepted use of ‘reproductive isolation’ and ‘isolating mechanism’ may recoil at my use of these terms; I ask them for the patience required to come to appreciate the motivation for this non-standard use.

We can profitably regard the notion of reproductive isolation found in the PRC and the notion of reproductive isolation found in races as species of a *generic* notion of reproductive isolation. This makes it possible to say that the PRC and BSC are both defined in terms of this broader notion, which in turn makes it possible to identify possession of the property it picks out as the most important feature that species and races have in common. PRC races and BSC species are alike in being *reproductively isolated* populations. They differ in the specific kinds of reproductive isolation they exhibit. This is perhaps the most important contrast between them. One advantage of the PRC is that it provides a principled way of distinguishing race from species.

On Mayr’s view, the prototypical mechanisms of isolation separating species can be regarded as “internal.”³⁰ They consist, ideally, of biological traits *intrinsic to the organism*. It is owing to features of their individual biology (e.g., hybrid sterility, incompatibility of genitalia) that members of different *species* generally fail to interbreed. The prototypical isolating mechanisms associated with races, on the other hand, can be regarded as “external.” It is owing to *features of geography* (oceans, mountains, deserts) that prevent—or hinder—physical contact that members of the groups that became PRC races originally ceased to interbreed.³¹ The social factors that became the primary isolating mechanisms separating racial groups after the development of oceangoing transport can be regarded as “external” too.³²

It might be thought that, for a concept to be genuinely biological, all of its semantic components must be biological so that reference to external isolating mechanisms such as mountains, oceans, and deserts would undermine the PRC’s claim to be genuinely biological. But this idea shipwrecks against two fundamental points. The first is that the biological realm isn’t supposed to be “closed under explanation,” so we should not be surprised to find biological concepts containing extra-biological semantic components. Note that the extra-biological components may be features of the social environment. So the fact that PRC races can be maintained by isolating mechanisms that are social does not undercut the concept’s claim to be biological. The second point is the idea of organisms as ecological entities precludes the exclusion of non-biological environmental factors from the content of biological concepts.

It is a commonplace that races do not exhibit reproductive isolation of any kind. This, however, is an error—one that results from the failure to distinguish the sense of ‘reproductive isolation’ peculiar to race.³³ The error contains at least one significant truth, viz., that the race concept is not defined in terms of the kind of reproductive isolation *characteristic of species*. But it obscures the crucial fact that races exhibit the kind of reproductive isolation *characteristic of races*—external isolation resulting from geographic boundaries—rather than the kind of reproductive isolation characteristic of species.

It must be admitted that the distinction between the isolating mechanisms characteristic of race and the isolating mechanisms characteristic of species as it is actually found in nature is less than sharp. This suggests the possibility of cases in which the taxonomic status of a given population (species or race?) will be indeterminate. This indeterminacy, another indicator of the idealized character of Mayr’s race/species distinction, should not lead us to conclude that there is no objective difference between race and species. Twilight does not invalidate the objectivity of the distinction between day and night.³⁴ Races are not species.

Our choice of the BSC as the model for our candidate scientific concept of race has the advantage of making it possible to see that PRC races, like BSC species, are *biological*, where this means something like “genuinely biological” or “biological in the biologist’s sense of the term.” BSC species count as “biological” for Mayr because *inter alia* they are defined in terms of the biological relation of reproductive isolation—and ultimately: sexual reproduction.³⁵ Because PRC races are defined *inter alia* in terms of (their own distinctive form of) reproductive isolation, they are properly counted as biological too—even if, owing to the PRC’s inclusion of a morphological component, the boundaries distinguishing them are messier than the boundaries distinguishing BSC species.³⁶ It would be odd to say that the PRC’s inclusion of a morphological component rendered it unbiological. Now given the difference between the characterization of the PRC races and BSC species, it is only to be expected that races will be less well-defined than species. They are “by nature” less well-defined. Consequently the relative indeterminacy of PRC races should not be counted against their reality.³⁷

Kitcher’s biological race concept is framed in terms of a concept of reproductive isolation too. I owe the idea of construing race in terms of this relation to him. But Kitcher extends Mayr’s idea that isolating mechanisms are internal in the case of species to hold that they are internal in the case of races. In his view the “internality” of the isolating mechanism in race is what puts reproductive isolation in race on a par with reproductive isolation in species. He, however, stretches the idea of internality in counting the culturally based psychological propensity not to mate with persons of another race as internal.³⁸ Mayr’s idea was that isolating mechanisms had to be internal in the sense of being rooted in the genes of the individual organism.

Kitcher follows Dobzhansky in holding that human races are “*species in statu nascendi*.”³⁹ The idea that *human* races are nature’s way of making new species seems especially problematic. There is no good retrospective reason to think that the human populations ever underwent the sort of reproductive isolation that would

have put them on their way to speciation. The rapid breakdown of geographical separation after 1492 and the subsequent increase in gene flow provide positive reasons for doubting that races were headed toward of speciation. Biological riaciation in *Homo sapiens* is perhaps better thought of as nature's way of allowing one and the same species to survive and flourish in climatically different geographic areas while retaining its identity as a single species. Seeing that biological riaciation serves this biological function provides a biological motivation for regarding race as real.

General observation. A noteworthy feature of the BSC is that it does not itself specify a particular species classification. Correspondingly, the PRC does not specify a particular racial classification.⁴⁰ The PRC's job is to account for the *general* fact of the differentiation of the human species into populations whose morphological differences reflect differences of geographic ancestry. It constitutes a scientific framework within which various competing classifications of race can be articulated. The task of articulating a scientific concept of race is prior to and independent of, the task of producing a scientific classification of races. If the PRC applies to *Homo sapiens*, this fact entails that the species is divided into different racial groups. But this would not entail that all the divisions are sharp, still less that there is One True Racial Classification. The failure to recognize the division of labor between a scientific concept and a scientific classification of race is a persistent source of misunderstanding.⁴¹

As for scientific racial classifications, there is no a priori guarantee that a "good" classification will conform closely to the classifications of common sense.⁴² Since scientific classifications of species diverge from commonsense classifications of species in various respects, divergence between scientific and commonsense classifications of races is to be expected. Moreover the well-known inconsistencies found within and among commonsense racial classifications all but guarantee that any consistent scientific racial classification will conflict with some commonsense racial classification. On the other hand, if we hypothesize that phenomenon to which the PRC and the logical core of the ordinary concept of race apply are the same, there is antecedent reason to expect some fair measure of overlap between scientific and ordinary racial classifications.⁴³

Let us turn now to differences between the PRC and the BSC. One is that the PRC definition makes reference to morphology and the definition of the BSC does not. The inclusion of a morphological component in the PRC is not arbitrary. Morphology is a central feature of the minimalist biological phenomenon of race. Consequently, reference to these patterns is required by the very nature of the phenomenon that constrained populationism is introduced to explain. Patterns of phenotypic differences constitute an essential element of any adequate candidate scientific race concept. So to be counted as a race, a population must (as a matter of definition) exhibit a distinctive (characteristic) phenotypic pattern (e.g., skin color, head shape and hair form). Note that the characters that constitute these patterns need not be visible. The PRC can count differences in earwax or Rh as racial. PRC races retain their identity as races across generations only so long as their pattern of phenotypic characters remains distinctive.⁴⁴ Two phenotypically

identical subpopulations of the species that belonged to reproductively isolated lineages originating in different geographical locations would count as distinct races. In this respect reproductive isolation trumps morphology in race. But despite the fact that the PRC's definition contains a morphological component, it cannot be classified as a *purely* morphological race concept, since reproductive isolation is no less central to it than morphology.

The PRC is genetic *in the sense that* a member of an endogamous biological lineage has elevated probabilities of possessing the alleles that were present in the founders of the lineage.⁴⁵ The PRC's definition stipulates that the characteristics constituting a race's distinctive patterns are *genetically transmitted*. Each race has its own changeable, blurry, and contingent "genetic identity" constituted by the de facto statistical distribution of alleles across its members. The genetic transmission requirement entails that non-biological traits such as accents do not count as racial. The requirement is motivated by the wish to guarantee that genuinely racial traits will be biological.

PRC race, however, is not genetic in the sense in which sex is sometimes said to be. There is no "race gene," possession of which makes one an R—no gene that determines racial identity in a manner analogous to that in which the Y chromosome is said to determine male sexual identity.⁴⁶ Dupré provides reasons for thinking that the very idea of a race gene is incoherent.⁴⁷ The recurrent demand for a "genetic basis" (where this is understood as the demand for a race gene) or for a "genetic definition" of race as a condition of a race concept's scientific legitimacy is fundamentally misguided.

Population thinking rejects the notion that that the identities of populations (species or races) are fixed by the possession of certain genes. Just as it holds that no specific degree of genetic difference is required for two BSC species to be counted as distinct, so too it holds that no specific degree of genetic differentiation is required for two PRC races to be counted as distinct. In this specific respect neither concept is genetic.

One consequence of this point is that the observed lack of genetic differentiation among human populations in no way compromises their candidacy for racehood.⁴⁸ The common argument that the genetic flow between geographically separated human populations before 1492 was too great for the populations to have become separate races can be met by observing that the high rate of interbreeding between human populations does not constitute evidence against the idea that there have been endogamous biological lineages since the degree of endogamy required by PRC is limited to that which is necessary to maintain the distinctive patterns of phenotypic characters exhibited by the races—a degree that is compatible with a high level of gene flow.⁴⁹ The biological identity of PRC races is fixed, not by the possession of certain genes but by (a) reproductive isolation of their founding population, (b) differences in their geographic origin, and (c) differences in their distinctive patterns of visible physical features.

Another difference between the concepts. The PRC is historical. The BSC is not. A race is defined as a *lineage* (specifically a founder population and its descendants) extended through time. I follow Kevin de Quieroz in defining a *lineage* "as

a series of entities forming a single line of direct ancestry and descent.”⁵⁰ Because the BSC contains no temporal dimension, Mayr calls it “non-dimensional.” It is designed to apply specifically (and only) to populations living in the same locality and at the same time.⁵¹ BSC species—the taxa—do, of course, have histories, as do the taxa of the concept named by the PRC.

The PRC counts as a candidate *scientific* concept because it is (a) formulated in the vocabulary of science, (b) framed in terms of a going scientific theory (the neo-Darwinian synthesis), (c) consistent with principles and findings of contemporary biology, and (d) purports to pick out a natural kind. Points (a) and (b) were established in this section. Points (c) and (d) will be established in section III.

Prior to the development of population thinking, one might have been forgiven for assuming that the typological concept of species was the only possible kind of species concept. But the publication of Darwin’s *Origin of Species* and subsequent development of the Neo-Darwinian Synthesis brought forth the conceptual resources needed for the construction of a non-essentialist scientific species concept.⁵² General acceptance of population thinking made the idea that a scientific concept of species must be construed typologically untenable. Our elaboration of the extension of population thinking to race makes the idea that a scientific concept of race must be construed typologically (an assumption which continues to haunt much of the literature) equally untenable.

III. OBJECTIONS

This section makes a case for the viability of the PRC (and the general idea of a scientific concept of race) by demonstrating the PRC’s capacity to withstand a wide range of criticisms. We will consider: (i) an objection to the PRC’s claim to be a genuine race concept, (ii) objections to using the concept of population to specify a race concept, (iii) objections pertaining to the role pragmatic factors play in the articulation of racial classifications, (iv) objections based on the short duration of races and the brevity of the period of geographic separation between them, (v) objections having to do with the heterogeneity of races, the indeterminacy of their cardinality, and the plurality of possible racial classifications, (vi) the objection that race is an artifact, and (vii) objections to the PRC race’s claim to pick out a natural kind. One theme common to most of these objections is that they turn on misconceptions of the idea of a scientific concept of race.

1. The first objection is one of the subtlest and strongest weapons in the arsenal of critics of the idea of a scientific concept of race. It tries to stop the construction of any non-typological race concept before it starts. It says the PRC is not really a *race* concept because it jettisons the necessary correlation between skin color and humanly important traits.⁵³ This objection will require extensive discussion.

Before we begin, we need to feel the force of the objection. If someone proposed to save the concept of astrology by cutting the link between the visible arrangement of stars at time of birth and the determination of personality and fate, the natural, plausible, and correct response would be that this defense abandons the very concept it tries to save. Critics of the idea of the construction of a

scientific concept of race claim that the attempt to defend the possibility of a scientific concept of race by severing the link between race and essence likewise abandons the very concept it tries to save.

The proper reply is that this objection assumes that the ordinary concept of race is essentially essentialist (in the common intrinsic property sense) and that this assumption is false. To see that this is so, it is necessary to obtain a proper understanding of the *ordinary* concept of race. This in turn requires the invocation of the familiar philosophical distinction between *concept* and *conception*.⁵⁴

The ordinary *concept* of race is an abstract general notion.⁵⁵ The concept of X provides the most basic possible characterization of X. A *conception* provides a particular way of articulating a concept. What is referred to here as ‘the ordinary *conception* of race’ is a particular articulation of the ordinary concept of race—one that corresponds to the standard understanding of the “man-on-the-street’s”⁵⁶ understanding of race or “race as commonly understood.”⁵⁷ Like any other concept, the ordinary concept of race can be articulated in different ways by different conceptions.

Now the ordinary *conception* of race, understood as the man-in-the-street’s conception, *is* essentially essentialist in the common intrinsic property sense. It holds that there is a necessary correlation between skin color and such traits as intelligence and moral character, that there are (common intrinsic property) racial essences and that races are correctly viewed as hierarchically ranked. The widely held, but mistaken belief, that the ordinary *concept* of race is *essentially essentialist*, in the common intrinsic property sense, results from the conjunction of a correct apprehension of the content of the ordinary *conception* of race and a confusion of this content with that of the ordinary concept of race.

The claim that the ordinary concept of race is not essentially essentialist rests in part on the observation that speakers can recognize upon reflection that the ordinary term ‘race’ can be correctly used without the (racialist) meaning assigned to it by the ordinary conception of race. The reader is invited to confirm (or disconfirm) this claim by reflecting on examples in which the idea of “race” is invoked without any suggestion that race is essentialist. The idea that there can be *races* that lack common intrinsic property essences may contradict the ordinary conception of race, but it is one ordinary users of the word ‘race’ can find intelligible upon reflection.

The upshot of the last three paragraphs is that there is no contradiction between the notion that the man-in-the-street *believes* races are racialist and the idea that the ordinary race concept the man-on-the-street uses to formulate this belief is not essentialist in the common intrinsic property sense. The idea that there is a *philosophical* distinction between the ordinary concept and conception of race is fully compatible with the observation that the distinction is not one ordinary speakers ordinarily make. We can deny that the ordinary concept of race is essentially essentialist in the common intrinsic property sense and allow that speakers may often intend the ordinary term ‘race’ to have the (essentialist) meaning the ordinary conception of race assigns to it or that they may, as speakers, often mean the term in that way. The account of the ordinary concept of race presented here is

not meant to capture the man-on-the-street's own second-order understanding of the ordinary concept of race (i.e., the one she might spontaneously produce). It is a philosophical account of an ordinary first-order concept.

The ordinary concept of race *can* be used to express the racist outlook the ordinary conception of race assigns to it. It is possible that it is most often used that way. But if we start with the ordinary conception of race and engage in a Burge-inspired process of philosophical reflection, we can arrive at the ordinary concept of race's "logical core."⁵⁸ The logical core consists of those elements of the concept that are "rational" or empirically sound.

The process is one in which we attempt to make the best sense possible of the ordinary concept of race. It consists of a dialectic that seeks to find a fit between characterizations of the entities to which the concept purports to apply (which figure in the content of the concept) and "good" instances of the entities. The latter consist of human groups that count intuitively as races if any do: for example, Caucasians, Sub-Saharan Africans, East Asians, Native Americans. The process is guided by the goal of arriving at *factually correct characterization* of these groups (the examples). (It should be clear from this that examples—actual human groups—play an absolutely critical role in the reflective process.)⁵⁹ We are particularly concerned to avoid falsehoods associated with stereotypes and obsolete conceptions of race. Characterizations of race that are false or fail to fit empirically correct descriptions of the human populations that represent the best candidates for ordinary racehood must be revised or dropped. We draw on all available empirical knowledge about human populations, including the most recent results of population genetics. Consequently this procedure eliminates the essentialist and racist elements that may be associated with the ordinary concept of race.

The logical core that we arrive at consists of the idea that a race is a group of human beings

- (i) which, as a group, is distinguished from groups of other human beings by patterns of visible physical features of the relevant kind,
- (ii) whose members are linked by a *common ancestry* peculiar to members of the group, and
- (iii) originate from a *distinctive geographic location*.

Conditions (i)–(iii) plainly do not contain the notion of an essence constituted by common intrinsic properties. So the logical core of the ordinary concept of race is NOT essentialist in the relevant sense. 'Racism,' as I use the term, is the view that race is essentialist and normatively hierarchical. Since conditions (i)–(iii) do not contain the idea of or provide the materials for the construction of a normative hierarchy, the logical core is NOT racist. Therefore the fact that the PRC is not racist does not entail that it is radically discontinuous with the ordinary concept of race. So the *not really a race concept* objection fails.

Here at last is the fundamental disanalogy between race and astrology: The ideas of laws of superstition cannot be jettisoned without abandoning the concept of astrology. The ideas of racism, however, can be dispensed with without abandoning the logical core of the ordinary concept of race.

I have already indicated that explaining the minimalist phenomenon of biological race constitutes a motivation for introducing my preferred candidate scientific race concept. Another reason is to make it possible to address what might be called the General Question Concerning the Existence or Reality of Biological Race. This is the question whether race exists or is real in human beings from a scientific point of view. It is called the *general* question because it is posed by scientists, philosophers of science, and lay people alike. That professional scientists are actually concerned to answer this question can be seen from the fact that they address their (competing!) answers to the general public.

Note that, in posing the General Question, we are *not* asking whether there is *some scientific concept or other* that applies to human beings to which the label ‘race’ can be stipulatively affixed. The subject-matter we are asking about is nothing other than the “race” picked out by the ordinary concept of race’s logical core. As Glasgow notes, the question is “whether race, *as defined within the constraints of ordinary use is real.*”⁶⁰

Attention to what we are asking in asking the General Question makes clear that what we —scientists and laymen alike—want to get an answer to is whether there is a scientific race concept that is intuitively recognizable *as a race concept* that applies to human beings. Now, for a scientific race concept to be intuitively recognizable as a race concept, it must be continuous with the ordinary concept of race. This brings us to the punch line: Given the purpose for which we are introducing a candidate scientific concept of race, that concept must satisfy a *continuity condition*. It must be sufficiently continuous with the ordinary concept of race to be intuitively recognizable *as a race concept* that applies to human beings.

We can see that the PRC satisfies this (intuitive) condition by noting that it “preserves” all three elements of the ordinary concept of race’s logical core:

- (1) The idea of distinguishing visible physical characteristics found in the ordinary concept is preserved in the PRC’s idea of a distinctive pattern of phenotypic characters.

(The specific requirement of visibility is not retained in the PRC but nature guarantees that many of the elements of the distinctive pattern of phenotypic characters [skin color, nose shape, hair form, and so on] *will* be visible. The PRC also allows the possibility of invisible elements of the distinctive patterns of phenotypic characters that are partly constitutive of race, Rh blood type for example.)

- (2) The PRC’s idea that races are biological lineages captures the idea that a common ancestry links members of a given race.
- (3) The idea that the members of a given race originate from a distinctive geographic origin is articulated in the PRC’s idea that race founder populations are geographically separated.

Note also that the elements picked out by the ordinary concept of race’s logical core are the central features of the phenomenon the PRC was originally introduced to represent. If the PRC failed to capture the fact that people from different geographic regions differ physically, it would not perform the function it

was introduced to perform. I hypothesize that the fundamental explanation of the overlap of content is that there is a common subject-matter the two concepts represent. The PRC purports to capture the kind that is instantiated by the minimalist phenomenon of biological race.

It might be thought that the PRC's continuity with the ordinary concept of race would destroy its scientific standing, but this is not the case.⁶¹ Bone fide scientific terms can be continuous with their ordinary counterparts. For example, the International Astronomy Union's recent definition of the term 'planet' (a term which had hitherto gone undefined) illustrates such continuity.⁶² It appears that continuity with the ordinary concept of planet was a *desideratum* for many of the astronomers who voted for the new scientific definition. We have seen that continuity with the ordinary concept of race is a *desideratum* for a race concept. The moral of this story is that continuity is a legitimate *desideratum* of scientific concept construction.

From a philosophical point of view, the PRC and the IAU's scientific planet concept can be seen as *refinements* of their ordinary counterparts. They regiment and systematize the elements of the ordinary concepts to which they correspond in a scientifically motivated way. Refinement of ordinary notions is a legitimate function of scientific concepts.

Interestingly, the PRC's main competitors fail to satisfy the continuity condition. This point has dialectical force because the advocates of the PRC's main competitors all took themselves to be addressing the General Question. Dobzhansky's well-known genetic race concept famously defines races as "populations which differ in the incidence of some genes or chromosome structure in the gene pool."⁶³ This definition has the advantage of freeing the "race" concept of the epistemic difficulties associated with the determination of morphological difference. But showing that there are human races in the genetic sense of the term does not answer the General Question. Were someone to respond to this question by arguing that human races exist because the gene pools constituted respectively by the inhabitants of New York and Los Angeles differ in the incidence of some genes and hence constitute distinct races, we would rightly say that the subject had been changed. The fact that his race concept counts as distinct races human groups that are physically indistinguishable (provided they are genetically distinct) shows that his concept of race is discontinuous with the ordinary concept.

Andreasen's "cladistic" race concept (CRC) captures the historical dimension of race, a dimension that Dobzhansky's concept does not include.⁶⁴ She defines races as "lineages that are ancestor-descendant sequences of breeding populations, or groups of such sequences that share a common origin."⁶⁵ But since the CRC resembles the genetic race concept in lacking a morphological component, it cannot take up the General Question. Her cladistic race concept is discontinuous with the ordinary concept of race because it counts, as distinct races, human groups that are physically indistinguishable—provided the groups belong to different monophyletic lineages. The fact that a group counts as a cladistic race does not entail that it counts as a race in the ordinary sense of the term.

Pigliucci and Kaplan's concept of "race as ecotype"⁶⁶ cannot engage this question either because, although it contains the morphological component that

Dobzhansky and Andreasen's concepts lack—they define races as populations ecologically adapted to a particular environment that exhibit characteristic phenotypic differences—it makes no provision for ancestry. It is discontinuous with the ordinary concept of race because it would count two populations of the same ecotype that lacked a common history as one and the same race. With respect to the General Question, the theories of Dobzhansky, Andreasen, and Pigliucci and Kaplan offer irrelevant, homonymous theories of race that change the subject matter without changing the name.

I am not claiming that these alternative “race” concepts are useless. There may well be scientific tasks other than addressing the General Question for which any or all of them are better suited than the PRC. The point here is that they are ill-suited to answering the General Question. We can speculate that one reason philosophers and biologists are attracted to race concepts that are discontinuous with the ordinary concept of race is that they mistakenly assume that continuity with the ordinary concept would entail continuity with the racialist concept of race—something they understandably don't want. Nonetheless Dobzhansky's, Andreasen's, and Pigliucci and Kaplan's decision to deploy race concepts that are discontinuous with the ordinary concept of race has the unfortunate ironic result of insuring that the answers they provide won't answer the question they are meant to address.

2. Returning now to objections, an influential line of criticism is directed against the use of the concept of a population. Its advocates recognize that defenders of the project of formulating a scientific concept of race have tried to reconstruct the concept along populationist lines, but argue that this approach necessarily fails on basic conceptual grounds.

One version of this objection contends that the use of the concept of population to articulate a scientific concept of race is illicit because the concept of race cannot be identified with that of a population.⁶⁷ But the two concepts were never supposed to be *identical*. The PRC definition does not assert: race =_{df} population. Nor does it say: *every* population is a race. Only *some* populations are races (if any are). The extension of the concept of population is broader than that of the concept of race. Therefore, nothing in the idea of *race as population* forces acceptance of the *reductio ad absurdum* that embracing it would force one to view the Amish as a race.⁶⁸ The Amish are a population. They are not a race.

Another version of this objection argues that the concepts of population and race are incommensurable. Allan H. Goodman, for example, argues, “[p]opulations are dynamic and respond to evolutionary pressures at local levels. Races, on the other hand, are poorly defined and unchanging groupings.”⁶⁹ But PRC races are no more non-evolving types than BSC species are. The same Darwinian considerations that show species evolve show races evolve, too. PRC race is dynamic, not static.⁷⁰ The idea that races must be understood as non-evolving types rests on the erroneous and retrograde assumption that the typological race concept is the only race concept there is.

3. Sometimes the population concept itself is said to be defective. Zack observes that there are no generally accepted answers to such questions as:

How many generations of isolation are necessary to form a population? How large must a population be? What proportion of population members must reproduce in a given generation for it to qualify as a breeding unit? How much gene flow into or out of the group can take place before the population is a different population?⁷¹

Zack's inference that the concept of a population is "not epistemologically tidy" is sound. But the population concept is deeply entrenched in evolutionary biology and population genetics; its use has proven extremely fruitful.⁷² Its epistemological untidiness is something with which working biologists are evidently able to cope. Consequently, it provides a poor starting place for mounting an attack on the idea of a scientific concept of race.

4. A different objection argues to the irreality of races from the uncontroversial fact that racial classifications inevitably reflect the practical aims and theoretical preferences of the investigating biologist.⁷³ The notion that pragmatic components of a classification inevitably compromise its reality is now widely rejected. On the other hand, it is reasonable to say that *pernicious* (for example racist) pragmatic factors ought to play no role in the scientific classification of races. This sensible point must, however, be sharply distinguished from the dubious notion that pragmatic factors ought never to play a role in theory choice. Classifications embodying objectionable normative commitments are subject to criticism and ought to be rejected on those very grounds. Commitments to white supremacy, hierarchical relations among racial groups, or the association of differences in skin color with differences in moral standing exemplify normatively objectionable stances. The PRC definition is free of these commitments. It contains no intrinsic ideological components—no notions of essence or hierarchy—that could taint the racial classifications in which it is deployed.

The idea that pragmatic considerations enter into the classification of populations is sometimes associated with the notion that biologists "construct" the populations they study.⁷⁴ If "construct" means literally bringing races—poof!—into being, the notion is absurd. Racial populations come into existence through an objective (observer-independent) process when subpopulations of species migrate into geographically separated, environmentally distinct areas, and develop distinct phenotypes that are preserved through the lineages they initiate.

5. Races are sometimes said to be too labile and impermanent to count as real.⁷⁵ But just how permanent do races have to be? Compared to species, races *are* short-lived. Darwin's fundamental teaching, however, is that species are transient too. The difference is one of degree. To accept the reality of Darwinian species is to reject the general identification of reality with permanence. Once rejected, this identification cannot be deployed against the reality of race.

6. Again, it is sometimes argued that there are no races because, owing to the recentness of the migration of modern human beings out of Africa, human populations were not geographically separated for an *evolutionarily significant period of time*.⁷⁶ But what counts as an "evolutionarily significant period of time"? If it is defined as a period that persists long enough *for populations to lose the ability to interbreed*, then races do lack evolutionary significance. But then the latter claim

boils down to the assertion that races aren't species. And the proper response is: Well, of course not. Races are not species. Nor are they species-in-the-making. It is unreasonable to make the reality of races contingent upon race's being like species in every respect. The notion of an evolutionarily significant period of separation must be tailored to fit the structural features of the taxa to which it applies. Thus one might reasonably count a period of time as evolutionarily significant vis à vis race if it continues long enough for distinctive patterns of phenotypic characters to emerge. This, however, is a condition some human populations satisfy.

7. A different line of argument starts from the extreme heterogeneity of individual human populations. It holds that the best candidates for scientific racehood are too heterogeneous to count as distinct biological units. One recent study, which we will consider in greater detail below, estimates that the within-population component of genetic variation in *Homo sapiens* falls between 93 and 95 percent.⁷⁷ Earlier studies place the within-population variation at around 85 percent.⁷⁸ This objection is thought fatal to the typological race concept because the amount of genetic variation typological races can tolerate is assumed to be severely limited.⁷⁹ But nothing in the PRC precludes the observed degree of within-population variation found in *Homo sapiens*! Being populationist, PRC races are *supposed* to be heterogeneous. This is not, however, to say that PRC races have nothing in common beyond their membership in the human species.⁸⁰ What they all have in common is that they each exhibit a distinctive pattern of phenotypic characters that corresponds to their geographical origin and that they belong to endogamous biological lineages initiated by geographically separated and reproductively isolated founding populations.

8. The observed continuity of human skin color provides yet another starting point for an argument to the conclusion that there are no races.⁸¹ It has long been recognized that variations in human skin color form "clines."⁸² But the step to the conclusion that there are no races requires the additional premise that the boundaries between races must be sharp. Populationist thinking, as we have seen, makes no such demand.⁸³ Rather than saying, with Livingstone "there are no races, there are only clines,"⁸⁴ we can say: some racial variation is clinal. Population thinking provides the resources to think of PRC races as real despite the fluidity and blurriness of the differences between them.

Note that it would be incorrect to say that continuity between races is an anomaly that population thinking can tolerate. Population thinking provides a standpoint from which such continuity is to be expected. Sober notes that the fact that species evolve *entails* that the boundaries between species will be vague.⁸⁵ Mayr teaches us that the existence of borderline cases is what is to be expected if one believes in evolution."⁸⁶

One possible motivation for the insistence on sharp boundaries between races is a commitment to the general proposition that *all* entities must be sharply bounded. But this commitment is unbiological. Continuity is a fundamental characteristic of organic phenomena.

9. Another line of attack looks at numbers: "If clearly discernable races existed, their number should have been long since determined without argument,"⁸⁷ but their

number remains in dispute, so there are no races. It is true that there is no agreement about the number of races—a point repeated ad nauseum in the literature. But is the number of races really in *dispute*? Most biologists have long since abandoned the conceit that there is some value that is *the* number of races (or subspecies). If there is a consensus view, it is that the whole enterprise of fixing the cardinality of races is misguided.⁸⁸ The objection from numbers is a red-herring.

But . . . doesn't unaccountability entail non-existence? To be is to be countable. Or is it? Consider the parallel argument: There is no number that is *the* number of mountains; therefore, there are no mountains. But there are mountains! If mountains can be of indeterminate number and real, races can too. Or think of the colors of the spectrum. Red shades into orange; orange into yellow; yellow, green; green, blue. There is no number that is *the* number of colors. No one, however, would conclude that there are no colors. No one should accept the parallel inference about race. Those who adhere to the proposition that "fundamental entities" must be countable should be not troubled by this idea. It is not part of the idea of PRC races that they are fundamental entities in the sense that sub-atomic particles are supposed to be.⁸⁹

The last three objections suggest that racial classifications are indelibly marked by arbitrariness.⁹⁰ Some infer that the category of race is nothing more than an artifact. First reply: Even if particular racial divisions are artificial, the evolutionary process that underlies them is real. It is a real historical process—as real as any process in the history of humankind. It seems plausible to claim that racial divisions "inherit" their reality from the real biological process that produces them. They are real qua products of a real process. Human races come to be seen as the real-if-not-always-sharply-delineated products of the real process of evolutionary diversification that has taken place within the biological species *Homo sapiens*.

The inevitable arbitrariness of any particular scheme of racial classifications does not entail that there is anything arbitrary about the *general* idea that the species can be divided into not-sharply-distinguished subpopulations that exhibit patterns of morphological differences reflecting differences in geographic ancestry. Moreover there is reason to think that at least some racial divisions may not be arbitrary from a genetic point of view.

Second reply: The much-cited recent study of human population structure we just adverted to can be interpreted as providing evidence for the plausibility of the idea that it is possible to draw non-arbitrary genetic lines between races.⁹¹ Despite the extensive attention this study has garnered, its significance for the question concerning the reality of race has not been well understood. Consequently, it merits an extended examination.

In the study, researchers assigned 1056 individuals from 52 populations probabilistically to genetic clusters on the basis of 377 autosomal microsatellite loci using a model-based clustering method implemented by the computer program STRUCTURE—*without* using prior information about the geographical ancestry or population affiliation. Individuals were grouped together on the basis of the likelihood of shared descent, with some individuals of mixed genetic ancestry, being assigned to multiple clusters.

Six clearly discernable statistical clusters, of which five corresponded to five “major geographic areas”—Africa, Eurasia (Europe, the Middle East, Central/South Asia) and East Asia, Oceania, and America—were found.⁹² The clusters are represented by colored segments in a diagram (figure 1 from the original article) in which the breaks between the clusters are clearly discernable to the (untrained) naked eye. The reader is invited to confirm this point for him or herself by examining the relevant diagram.⁹³

The fact it is possible to draw sharp boundaries between the genetic clusters entails that the division between the populations corresponding to the clusters is not arbitrary. It entails that the division has a genetic basis. If the five populations are races, then contrary to what is often maintained, it *is* possible to draw sharp genetic boundaries between some races.

Now the conjoint fact that allele frequencies are supposed to vary continuously across geographic space *and* form clusters poses a paradox. How can both propositions be true? Whence the clusters, given the fact of continuity? In a follow up study in 2005 (“Clines, Clusters, and the Effect of Study Design on the Inference of Human Population Structure”), Rosenberg et al. solve this paradox by noting that (i) the discontinuities between the clusters arise as geographic barriers (oceans, Himalayas, Sahara) are crossed⁹⁴ and (ii) that although small, the *genetic distance* between most population pairs on opposite sides of geographic barriers is larger than that between pairs on the same side of the barriers that are separated by the same *geographic distance* as the population pairs on opposite sides of the barriers. The discontinuity is generated by the difference in the size of the genetic distance between these two sets of pairs.

Let’s consider the implications of Rosenberg et al. 2002 for the reality of biological race. *If* the populations corresponding to the five clusters are races, the original study entitles us to infer that

- (a) it is possible to assign individuals to some races without recourse to prior information about the individuals’ racial identity, phenotypic features, or geographic origin.

It is “possible to” here means there is a mechanical procedure (implementation of the program STRUCTURE) that can make these assignments. The procedure appears to constitute an interest-independent way of assigning individuals to the races in question—a circumstance sometimes cited as a condition of the biological reality of groups.

On the assumption that the five populations are races, the study allows us to infer that

- (b) some races, although extremely similar genetically, can be nonetheless distinguished from one another on the basis of “the accumulation of small allele-frequency differences across many loci.”⁹⁵

This would license a further inference: If distinguishability at the “level of the gene” (in some sense of that vague phrase) is the epistemic mark of biological reality, then the division between the five races is biologically real.

Now this line of argument turns on the assumption that the five populations are races. Are they? On this question, the original 2002 Rosenberg et al. article is silent. The word ‘race’ does not appear in its text. Reference is made instead to “self-reported ancestry” and a general correspondence between “genetic ancestry” and “regional affiliation.” In the 2005 follow-up study, the authors note “that [their] evidence for clustering should not be taken as evidence of [their] support *for any particular* concept of ‘biological race’ (my italics).”⁹⁶

The question whether the five populations constitute races can be formulated using the logical core of the ordinary concept of race or the PRC. I propose to note the plausibility of the idea that the populations are races in the sense specified by the logical core and indicate what would have to be shown to establish that they are races in the sense fixed by the PRC.

The five populations in question consist of inhabitants of Africa, Eurasia (Europe, the Middle East, Central/South Asia) and East Asia, Oceania, and America. These populations are generally thought to exhibit different patterns of visible physical differences, to have different ancestries, and to originate from different geographical locations. So it is plausible to think (a) that the populations are races in the sense fixed by the logical core of the ordinary concept of race and, consequently, (b) that Rosenberg et al. 2002 and 2005 show that some logical core races can be distinguished using genetic markers alone.

The question whether the five populations constitute PRC races is the question whether they satisfy the conditions of this concept. It seems plausible to suppose that the populations exhibit distinctive patterns of phenotypic characteristics. As we have noted, the idea is widely accepted—even by those critical of the idea of a scientific concept of race. The real (controversial, substantive) question is whether the populations satisfy the further conditions of being endogamous biological lineages initiated by geographically separated and reproductively isolated founding populations. I regard this as a hypothesis worth exploring.

Here I will restrict myself to rebutting one general argument for the claim that the five populations do not satisfy the PRC. The objection turns on the idea that PRC races are supposed to be phylogenetic lineages. It is sometime argued that there has been too much interbreeding to count any group of human populations as a phylogenetic lineage. Now it is correct that PRC races do not form the kind of phylogenetic lineage that constitute incipient species or “threaten the common evolutionary fate of the species of which they are a part.”⁹⁷ PRC races (or the human populations that might be thought to be PRC races) are indeed subject to recurrent gene flow. It is therefore important to recall that the PRC does not conceive of races as species *in statu nascendi*. More to the point, it does not take race to be such as to threaten the common evolutionary fate of the human species. The concept represents them instead as *transitory historical subdivisions within a single species that share a common evolutionary fate as parts of that one species*. The common evolutionary fate of humankind does not constitute a counterargument to the existence of PRC races. That they share a common evolutionary fate is part of the idea of the PRC.

PRC races are distinguished from one another by differences in patterns of phenotypic characters and the genes associated with these patterns. The biological significance of the features that figure in these patterns—and the genes that underlie them—consists in some of them being adaptations to the various environments constituted by the different geographical regions into which human populations moved in the course of ancient migrations.⁹⁸ All that is required for the maintenance of PRC lineages is that the gene flow between PRC races be sufficiently restrictive to preserve the genetic differences that underlie the patterns of phenotypic characters that mark the races. This circumstance, however, is compatible with an amount of gene flow that is required for the populations to evolve together as a single species.

A word of caution. Nothing in Rosenberg et al. (2002) should be interpreted as evidence for the unique correctness of a five race division. The general form of the argument for the racial status of the five populations given above can be extended to other graphs in Figure 1 in which the total population was divided into fewer clusters and to graphs in Figure 2 which are divided into more clusters. This suggests the possibility of drawing PRC racial divisions of different cardinality. To make sense of *this* idea we have to suppose that some races may turn out to be subdivisions of other races.

Fortunately, the PRC definition permits a race to consist of two or more groups, each of which itself is a race, so this supposition poses no theoretical problem for the concept.⁹⁹ The different racial divisions that result from dividing the total population into different numbers of clusters are drawn at different levels of granularity and consequently do not compete for classificatory correctness. We should not, however, be troubled by a plurality of race classifications, as we have already seen that the claim PRC races exist does not depend on the assumption that there is One True Racial Classification.¹⁰⁰

Fixation on the ordinary conception of race might lead one to think that the notion that different racial divisions can be drawn at different levels of granularity is at odds with the ordinary concept of race, but reflection on the ordinary concept's logical core shows this is not the case. The fact that the PRC allows there to be nested races does entail that racial taxonomies will not have the same degree of utility as those drawn with categories that do not allow of nested taxa. Biologists cannot be confident that *any* two PRC races picked out will be disjoint.¹⁰¹ But I think the real interest of the PRC lies less in the particular racial taxonomies that might be drawn using it than in the fact that it shows us *what from a scientific point of view a biological race is*.

One noteworthy line of criticism questions whether Rosenberg et al. (2002) has any bearing on the question concerning the biological reality of race. Critics have argued that, since the alleles considered in the study do not govern race-related phenotypic properties such as skin color and hair form, its results have no bearing on the reality of race whatsoever.¹⁰² Paradoxically, however, it is precisely this fact—the disconnect between genetic marker and phenotypic properties traditionally taken to be racial—that explains the study's relevance to the dispute.

To explain. All parties accept the notion that differences in skin color and hair form have a genetic basis.¹⁰³ So it would come as no surprise to show that these

differences have a genetic basis. But a key point in dispute is whether it is possible to distinguish between races on the basis of alleles *other than those associated with the visible markers of race*.

Rosenberg et al. (2002) shows that, if the five populations are logical core races, it is possible to distinguish between some races on the basis of alleles that are not associated with the visible markers of race. This result is not undermined by the triviality of the markers used in the study. Their triviality does have the consequence that Rosenberg et al. (2002) does not show that there are *important* genetic differences between races (an interesting observation in its own right) but it is crucial to distinguish the question concerning the *reality* of race from the question concerning its *importance*. This point will be a theme of the next section.

10. The final objection to be considered is that PRC race is not biologically real because the populations that constitute the best candidates for PRC racehood do not constitute a “natural” (or “scientific” or “biological”) kind.¹⁰⁴ Thus, for example, it can be argued that race is not the kind of kind Mill calls “real.”¹⁰⁵ His notion of real kind would require that there be an almost endless number of interesting things to be found out about PRC races that do not follow analytically from their being PRC races, and this is not the case. Lewontin is correct in his contention that racial categories do not have “great predictive power for as yet unstudied characters.”¹⁰⁶ PRC race is not a class about which a wide range of “non-accidental, scientifically relevant inductive generalizations can be formulated” (Machery).¹⁰⁷

But we should be wary of placing too much weight on the notion of a natural kind. There are any number of competing conceptions of what a natural kind is—with little prospect that philosophers of science will come to agree about how to specify it.¹⁰⁸ More fundamentally, just how much theoretical work the (any) concept of natural kind can be expected to do is also a matter of controversy. Dupré questions whether natural kind is itself a natural kind.¹⁰⁹ Hacking says provocatively that “*there is no such thing as a natural kind*” (his italics).¹¹⁰ What he means by this is that talk of natural kinds is always relative to a set of concerns and assumptions. Their existence depends on certain scientific frameworks and goals—a point I wholeheartedly accept. If we are to deploy the notion of natural kind in the context of the debate about the (biological) reality of race, we must do so circumspectly. What this means, practically speaking, is that we need to tailor our conception of the concept of natural kind to be used in this context to fit what we know about the best candidates for PRC races.

We should not, for example, make the reality of race turn on whether race is a real kind or whether race is a class about which a wide range of “non-accidental, scientifically relevant inductive generalizations” can be formulated. Nor again should we make it pivot on whether race constitutes a “fundamental reality constituting the human species.”¹¹¹ If race is biologically real, its being real is not a matter of its being one of *these* kinds.

Our conception of natural kind should be expansive enough to allow for kinds of differential inferential power—and we should countenance the possibility that race may be found at the lower end of the scale. We should also make room for natural kinds that represent not-so-fundamental realities. On the other hand, our

conception must not be too broad. We don't want to recognize kinds such as *gem-mule*, *barmin*, or *destructiveness organ*—wrongheaded kinds—as real or natural.¹¹² Nor should we recognize, as natural, gerrymandered kinds (such as *being green or divisible by 13*) or adventitious kinds (such as *being the nearest tree to Uncle Harry when we sang 'Die Fiorelle'*).¹¹³ If *PRC race* should turn out to be a wrongheaded, gerrymandered, or adventitious kind, we ought to deny that it is real.

But the PRC is formulated within the framework of populating thinking. The kind it purports to pick out is not obviously wrongheaded. Nor is it intuitively gerrymandered, or adventitious. PRC racial divisions correspond to the ancient migrations of human populations across the face of the earth. Surely that counts intuitively as “natural.” Furthermore, there are principled biological reasons for dividing the human species into PRC races. Doing so makes it possible to understand how one and the same species was able to survive and flourish in the climatically different geographic areas into which it migrated over the course of its history while retaining its identity as a single species. Drawing this division also makes it possible to see *PRC race* as the biological reality of which the minimalist phenomenon of race is an appearance. We appear to have found a principled biological basis for the division of the species into PRC races. Recognizing this point puts us in a position to think of *PRC race* as a candidate natural kind. If PRC races exist, *PRC race* is an (actual) natural kind and race is biologically real.

It might be objected that the admittedly vague conception of natural kindhood advanced here lacks bite because it makes the result that there is a natural kind *race* unsurprising. But, in light of what we know about the history of the human species—and the minimalist phenomenon of biological race—the existence of a natural kind *race* should not be surprising. One might say: it would be surprising if there were no natural kind lurking in the background. Nor is the idea that race is a real-but-not-that-important kind uncontroversial. Anti-realists about race are hostile to *any* conferring of reality on race.¹¹⁴ Were they to accept that race is a real-if-not-that-important kind, they would have given up their anti-realism. So the claim that race is a real-but-not-that-important kind is highly non-trivial. Our understanding of the dispute about biological racial realism would be greatly improved in my opinion if we came to see that the real (significant) debate does not turn on the question whether race is a Very Important Kind (for there is widespread agreement that it does not) but rather on the question whether race is a not-that-important biological kind (an open question, the answer to which might well be *yes*.)¹¹⁵

To this it might be objected that ‘real’ *just means* “important.” I myself just used the word in roughly that sense. It is certainly true that the sentence *racial differences are unreal* is often used to convey the proposition that racial differences are unimportant. When ‘real’ is used to mean “important,” the denial of the “reality” of racial differences goes through. But ‘real’ doesn't always mean “important.” The present discussion is a context in which it does not. The idea that races are *biologically real* only if we can show that race is biologically important is either trivial (because ‘real’ just means ‘important’) or question-begging (since my contention is precisely that race can be biologically real and unimportant).¹¹⁶

Critics might try to pooh-pooh my position by suggesting that that if race is not a Very Important Kind, it is not very interesting.¹¹⁷ A good response would be to ask what this has to do with the *reality* of race. Why assume that everything real is interesting? And even if race is not *very* interesting—as interesting as it might be were it a Real kind—it might still be, well . . . interesting. In any case, the idea that race is uninteresting—a popular refrain in the literature—merits critical examination. For one thing, *if* race is a real-but-not-that-important kind, *that* surely is an interesting fact (especially given the long history of regarding race as a Very Important Kind)! To think of race as a real-but-not-that-important kind is to think of it in a new salutary (and deflationary) way.¹¹⁸ Besides, the idea that biological race as represented by the PRC is uninteresting is just wrong.

The fact that a population is a PRC race entails that it exhibits a distinctive pattern of phenotypic characters that correspond to its geographic origin and that it belongs to an endogamous biological lineage initiated by a geographically separated and reproductively isolated founding population—that’s an interesting constellation of features. The PRC’s theoretical significance quotient is relatively high. Even if we bracket the biological significance of *PRC race* (its role in the history of humankind) and ignore that the PRC is “founded on something of central importance to biology, the reproduction of organisms,”¹¹⁹ the surface features of *PRC race*—differences in patterns of phenotypic traits that correspond to differences in geographical ancestry—are themselves interesting. One need not be racist to find these differences interesting—just curious. To be sure, this interest can take a malignant form. This has happened in the past and could happen again. Some people are just looking for a hook on which to hang their racist views. But this does not annul the interest of these differences. Nor does it entail that there is anything inherently untoward about the interest itself. In its naïve form, interest in these differences is perfectly innocuous. One might say “natural.” Nor is this interest unscientific. If Darwin’s dictum is correct—that accounting for life’s diversity belongs to biology’s fundamental tasks—interest in phenotypic differences that correspond to differences in geographical ancestry is genuinely *biological* (‘biological’ in the scientific sense).¹²⁰

The PRC promises to be scientifically useful. One thing it does is provide a *scientific description* of the patterns of visible physical characters picked out by the logical core of the ordinary concept of race. It represents these features as features of a natural kind in which differences between these characters are differences between genetically transmitted phenotypic traits, tracing back to the ancestors of present day populations. The PRC provides a scientific description of the biological groups that are the bearers of the visible physical traits, representing them as populations belonging to biological lineages, initiated by geographically separated and reproductively isolated founding populations. The PRC thus converts the scientifically *unprepared description* of the logical core of the ordinary concept of race into a scientifically *prepared description* of race, thereby fixing race as characterized by the logical core of the ordinary concept of race as a *bona fide* scientific *explanandum*.¹²¹ If some kinds are important to science “because they enable scientists to answer questions about the world in the distinctively

compelling way that that science enables us to answer questions,” others are important because they enable scientists to *ask* questions that can then be answered in the distinctively compelling way that science enables us to answer.¹²²

As Nancy Cartwright makes clear, conversion of scientifically unprepared description into scientifically prepared descriptions can be a significant scientific accomplishment in its own right. This is not to say that the baraminologists’ conversion of fundamentalist Christian dogma about creationism into the basic tenets of baraminology is an achievement. Baraminology is wrongheaded. The PRC by contrast has a place in the well-ordered scientific research program of population genetics. It is at least arguable that population geneticists sometimes use the notion of population as a euphemism for ‘race’.¹²³ Sometimes they are interested in populations *as races*. The PRC provides them with a scientific race concept free of the baggage carried by the racist concept of race that allows them to refer scientifically to race as *race*.

I suspect that the primary scientific use for the PRC, should it prove to be valid, will be to talk about race (rather than other things). For most other purposes, other concepts (e.g., population) will do. The PRC is not—and does not pretend to be—a master concept. Its utility is likely to be limited—far more limited than the concept of populations. But then the PRC is supposed to be a more specialized concept than population. And limited utility is different from no utility. Making it possible to talk about race scientifically as race (a topic which may be of interest from the standpoint of the history of the human species) constitutes one not insignificant way in which the PRC could contribute to long term scientific research.

IV. DOES THE PRC FOSTER RACISM?

I want to close by briefly discussing the moral/political worry that acceptance of a scientific concept of race can be used to foster racism and racial oppression.

I begin by noting that the PRC is not *inherently* racist. Unlike the typological concept of race, the PRC posits no racial essences. It does not assert a necessary correlation between skin color, nose form, and the like—and intelligence, character, or behavior. It makes no reference to humanly important characteristics and provides no basis for establishing a normative hierarchy of races. Our candidate scientific concept of race provides no warrant for genocide, slavery, or colonialism, no grounds for the affirmation of racist institutions and practices, no basis for treating people differently on the basis of race. Furthermore (and this is an especially important point) the concept itself contains no elements that would *incline* people to *want* to reach the conclusion that people who differ in shape and color are likely to differ in humanly important characteristics.

Should we encounter someone claiming to be operating with the PRC who is nonetheless disposed to find correlations between geographically-based morphological differences and differences in humanly important traits, we have good reason to suspect that typological thinking unconnected to the PRC is playing a significant if unrecognized role in the background. Without some racist notion in play, the will to associate humanly important differences with differences in PRC

race simply would not exist. As Dobzhansky and Mayr noted long ago the scientific framework of which the PRC is a part is antithetical to racialism and typology.

It would, however, be naïve to think that deployment of the PRC will of itself lead to the elimination of racism, even if it will help to undercut racism's intellectual foundations. But it would be equally naïve to fault the concept for its inability to achieve this result. There is only so much a scientific concept can be reasonably asked to do.

It is true that nothing in the PRC precludes statistical discrimination.¹²⁴ One might, in principle, on the basis of true statistics, without relying of typological universal generalizations, take PRC racial identity as a probable sign of a characteristic that it is reasonable to take into account in a context at hand (e.g., a propensity to rob cabdrivers) and consequently discriminate against persons belonging (or appearing to belong) to the PRC race in question—without racial animus.¹²⁵

The first thing to note is that such discrimination, when carried out against socially subordinate or vulnerable groups (e.g., racial minorities), is morally objectionable. It has this moral status because it contributes to the stigmatization and subordination of such groups—something that is itself a racial wrong.¹²⁶ But there is nothing about the PRC concept in particular that facilitates statistical discrimination. Any race concept can be used to this effect. Moreover it is possible to engage in statistical discrimination by appealing to statistical regularities associated with differences in visible physical characteristics and geographical ancestry without the use of any race concept. Eliminating the PRC would not annul this possibility. Nor would eliminating the ordinary concept of race. Differences in visible physical characteristic and geographical ancestry would still be there, ripe for conscription by the racist. This possibility will persist as long as there are differences in visible physical characteristics that correspond to differences in geographical ancestry. The PRC doesn't make these differences any more salient than they already are. Statistical discrimination is a very bad thing and should be opposed on moral and political grounds, but its possibility does not provide reason for the non-deployment of the PRC.

Now there is a non-trivial sense in which the PRC cannot be abused. *It* (the very concept it is) cannot be “essentialized.” Were one to “insert” a common intrinsic property essentialist element into the concept's definition, the resulting definition would no longer be a definition of the PRC nor would the defined concept be the PRC. A concept's identity is inseparable from its intentional properties.¹²⁷ People who take themselves to imagine the nefarious consequences of the essentialization of the PRC are really imagining the nefarious effects of the deployment of another concept. Judgments about the PRC ought to be based on assessments of it and not some other concept.

There is, however, a clear sense in which the PRC can be abused. It is possible to draw inferences to morally objectionable conclusions using premises that deploy the concept. It is possible to enlist the PRC in the service of racist ends. But the possibility of abuse does not differentiate the PRC from any other concept. If we eliminated every concept that has the potential of being abused, we would have no concepts.¹²⁸

What is the appropriate response to the possibility that the PRC may be abused? It is to be on guard against this eventuality and criticize abuses of the concept whenever and wherever they occur. We should in particular be on the lookout for attempts to deploy the concept in claims that reproduce or purport to ground traditional stereotypes. We should also be wary of attempts to use the PRC in social explanation—a task the concept is ill suited to perform. Attention must also be paid to the possibility of the surreptitious substitution of typological notions for the PRC. These are, it is true, stock responses, but they are no less correct for that. Nor is their soundness undercut by recognition of the likelihood that our efforts to combat the abuse of a scientific concept of race will sometimes fail.

On the plus side, the PRC performs the salutary function of providing a non-racialist account of differences in visible physical characteristics that correspond to differences in geographical ancestry—the very differences racists want to exploit. In the absence of a scientific account of what the minimalist biological phenomenon of race is, the suspicion will remain that it is actually to be explained by the racialist concept of race. The PRC should help undercut the idea that these differences are associated with differences that are humanly important. It may, furthermore, help us to see that in themselves these differences are not that important.

One striking disadvantage of the denial of the existence of biological races in human beings is that it makes it impossible to say that biological race is unimportant (existence being a precondition of unimportance). Given the salience of differences in patterns of visible physical characters associated with differences in geographical ancestry and the enduring widespread propensity to “racialize” them—to treat them as correlated with humanly important traits—this is a notable shortcoming. The PRC, on the other hand, provides us with the discursive means of asserting the unimportance of biological race. That is no small thing.¹²⁹

ENDNOTES

1. Biological race is not a pleonasm. *Biological race* can and should be distinguished from *social race*, the specifically social phenomenon of race—the “race” that is a social construction. My concern in this essay is exclusively with biological race.
2. Richard Lewontin, “Interview with Richard Lewontin. ‘Race: The Power of an Illusion. Background Reading.’” PBS Home Programs. http://www.pbs.org/race/000_About/002_04-background-01-04.htm.
3. K. Anthony Appiah, “Race, Culture, Identity: Misunderstood Connections,” in *Color Consciousness*, ed. K. Anthony Appiah and Amy Gutmann (Princeton: Princeton, 1996), 73.
4. Nova, “Does Race Exist?” <http://www.pbs.org/wgbh/nova/evolution/does-race-exist.html> (02/15/2010).
5. Subspecies are traditionally thought to be apt objects of trinomials (scientific formal, Latin names referring to genus, species, and subspecies). I do not wish to claim that the divisions between the groups I will refer to as PRC races are sufficiently fixed and well defined as to warrant such denomination. I agree with Stephan Jay Gould (“Why We Should

Not Name Races,” in *Ever Since Darwin: Reflections in Natural History*. [New York: W.W. Norton & Company, 1977], 231–236) that we should not try to assign trinomials to races, although I do not think it necessarily unacceptable to use vernacular names (e.g., East Asian) to refer to races, provided those names are understood not to have anything like the standing of trinomials in systematics. Because the notion of subspecies is itself a topic of philosophical and biological discussion, with its own complexities and its own extensive literature, I will adopt a position of agnosticism for the purposes of this paper on the question whether races are properly called subspecies.

6. Ernst Mayr, *Systematics and the Origin of Species* (New York: Columbia University, 1942), 119.

7. I believe that, at the present stage of the discussion, there is room for the articulation of alternative candidate scientific race concepts based on species concepts other than the BSC. Whether there is ultimately one scientific race concept or whether instead scientific race concepts are ineluctably many is a question on which I will take no stand.

8. The designation I have chosen for my preferred candidate scientific race concept has the distinct lexical drawback of highlighting a feature that fails to distinguish the concept from its serious competitors. It is therefore imperative to acknowledge straightaway that the alternative race concepts to be considered—Dobzhansky’s genetic race concept, Kitcher’s biological race concept, Andreasen’s cladistic race concept, and Pigliucci and Kaplan’s concept of race as ecotype—are populationist concepts too. (Massimo Pigliucci and Jonathan Kaplan, “On the Concept of Biological Race and Its Applicability to Humans,” *Philosophy of Science* 70 [2003]: 1161–1172.) I hope the offense is mitigated by the fact that I need *some* name for the concept I am introducing, imperfect though it may be. The populationist label has the advantage of calling attention to the most important feature of the specific concept it is being used to name. Another attractive feature of label is its insinuation that the idea of a scientific concept of race is properly construed along populationist lines.

9. This formulation of the PRC is cast in terms specific to human beings. It could be easily generalized by substituting ‘species S’ for *Homo sapiens*.

10. Philip Kitcher, “Race, Ethnicity, Biology, Culture,” in *Racism*, ed. Leonard Harris (Amherst: Humanity Books, 1999), 87–117. Kitcher has essentially retracted his proposed biological race concept for a variety of pragmatic reasons. See *Science, Truth, and Democracy* (New York: Oxford University Press, 2001) and “Does ‘Race’ Have a Future?” *Philosophy and Public Affairs* 35(2007): 293–313. I respond to some of his concerns in section III.

11. Mayr, *Systematics and the Origin of Species*, 120.

12. Ernst Mayr, *Populations, Species, and Evolution* (Cambridge: Harvard University Press, 1970), 82.

13. Ernst Mayr, “Typological versus Population Thinking,” in *Conceptual Issues in Evolutionary Biology: An Anthology*, ed. Elliot Sober (Cambridge, MA: MIT Press, 1994), 157–160. From Ernst Mayr, *Evolution and the Diversity of Life* (Cambridge, MA: Harvard University Press, 1976), 26–29.

14. Elliot Sober, “Evolution, Population Thinking, Essentialism,” in *From a Biological Point of View* (New York, Cambridge, 1984). Originally in *Philosophy of Science* 47 (1980): 350–383.

15. *Ibid.*, 205.

16. The astrology objection was independently raised by Allen Wood and an anonymous reader.

17. ‘Intrinsic’ contrasts with ‘relational’. Population thinking does not preclude the possibility of characterizing species or races by necessary and sufficient relational properties.
18. In this respect the PRC may be at odds with what I will call the ordinary *conception* of race. If the distinction made between the ordinary *concept* and ordinary *conception* of race in section II is sound, it does not follow from the fact that the PRC conflicts with the ordinary *conception* of race that the PRC conflicts with the ordinary *concept* of race. The contrast between *concept* and *classification* of race is discussed below.
19. Sober “Evolution, Population Thinking, Essentialism,” 222–223.
20. Sober discusses *how* population thinking removes this need at *ibid.*, 218–221, 226–227.
21. *Ibid.*, 210.
22. *Ibid.*, 205.
23. *Ibid.*, 210.
24. Ernst Mayr, *Animal Species and Evolution* (Cambridge, MA: Harvard University Press, 1963), 19.
25. The fact that PRC races are characterized in terms of a broad notion of reproductive isolation distinguishes the PRC from Mayr’s own race concept, which makes no use of this notion. His race concept is a morphological variant of Dobzhansky’s genetic race concept (see below). He holds that “[i]f the average differences between two groups of individuals is sufficiently great to be recognizable on sight, we refer to such groups of individuals as different races” (“Typological versus Population Thinking,” 159). The fact that Mayr’s races are not defined in terms of reproductive isolation reflects Mayr’s belief that races are distinguished from species by the fact that they are not characterized by the relation of reproductive isolation characteristic of species.
26. Ernst Mayr, *The Growth of Biological Thought: Diversity, Evolution, and Inheritance* (Cambridge, MA: Belknap Press of Harvard University Press, 1982), 274.
27. Mayr, *Animal Species and Evolution*, 91.
28. *Ibid.*, 56. Italics in original.
29. Theodosius Dobzhansky, *Genetics and the Origins of Species* (New York: Columbia University Press, 1936), 181.
30. The terms “internal” and “external” are not part of the standard technical vocabulary of systematic biologists nor are they used by Mayr himself. They do, however, reflect the way in which Mayr himself seems to conceive of the distinction between the isolating mechanisms that divide races and the isolating mechanisms that divide species.
31. One could construct a broader, PRC-like race concept, the definition of which made no mention of geographic isolation or reproductive isolation. Such a concept would better satisfy the race concept *desideratum* of *generality*. See David Hull, “The Ideal Species Concept—and Why We Can’t Get It,” in *Species: The Units of Biodiversity*, ed. M. F. Claridge, H. A. Dawah, and M. R. Wilson (London: Chapman and Hall, Ltd., 1997), 347–380. But it would fail to represent the fundamental fact about isolating mechanisms that accounts for the origination of *human* races. The primary conceptual *desideratum* to which the PRC aspires is the ideal Hull calls *theoretical significance*.
32. One could stipulate that human populations that are races remain races only so long as they continue to be reproductively isolated by geographic factors, and hold that, as soon as social factors come to function as the isolating mechanisms that prevent members of dif-

ferent human populations from reproducing, the human populations that were races cease to be races. But it is not clear what the biological motivation for this stipulation would be. Some writers regard the question whether, if human races (once) existed, they (now) continue to exist to be of great moment. I regard it as one of conceptual bookkeeping. If there were human races before 1492 that ceased to be races after 1492, those populations became “former races.” *Former race* is no less a biological category than *race*. Referring to human populations that were races before 1492 and remained reproductively isolated after 1492 (albeit as the result of social isolating mechanisms) as races has the advantage of simplicity. Perhaps the label ‘race’ has already lost its application to human beings (if indeed it ever applied), perhaps not. There may, in any case, come a time, when, owing to increased rates of intermarriage, even the label “former PRC race” will lose its application (i.e., if human populations become indistinguishable). Whether this event will ever come to pass is a matter of speculation.

33. Cf. David Hull, “Species, Subspecies, and Races” *Social Research* 65 (1998); Massimo Pigliucci and Jonathan Kaplan, “On the Concept of Biological Race and its Application to Humans,” *Philosophy of Science* 70 (2003): 1164; Michael Root, “The Use of Race in Medicine as a Proxy for Genetic Differences,” *Philosophy of Science* 70 (2003): 1175.

34. Mayr, *Animal Species and Evolution*, 22.

35. Kitcher, “Race, Ethnicity, Biology, Culture,” 101. Mayr actually provides a variety of reasons for characterizing biological species as biological.

36. Mayr himself strenuously resists this conclusion. He opts for a narrow species-specific notion of reproduction isolation and insinuates that the isolating mechanisms responsible for race formation are not biological (presumably because they are not intrinsic biological traits) as a way of securing the biological standing of species (*Systematics and the Origin of Species*, 247, and *The Growth of Biological Thought*, 275). But oceans, mountains, and deserts are important *ecological* factors and consequently should not be thought of as extra-biological. Distinguishing species from races on the basis of the kind of reproductive isolation in terms of which they are characterized makes it possible to preserve Mayr’s conviction that species are special while recognizing an important respect in which they are similar to races.

37. Cf. E. O. Wilson and W. L. Brown, “The Subspecies Concept and its Taxonomic Application,” *Systematic Zoology* 2.3 (1953): 97–111. One might say that the fact that races are less determinate than species implies that they are “less real” than species, but “less real” still implies “real” and the introduction of a degreed notion of reality adds unnecessary complication.

38. Kitcher, “Race, Ethnicity, Biology, Culture,” 96.

39. *Ibid.*, 91. Dobzhansky and Spassky write, “Race divergence may lead, under certain conditions to the splitting of a biological species into several derived ones. Racial differentiation of mankind has not progressed very far along this road.” Theodosius Dobzhansky and Boris Spassky, “*Drosophilapaulistorum*, a Cluster of Species *in statu nascendi*,” *Proceedings of the National Academy of Sciences* 45 (1959): 419–428.

40. Mayr, *The Growth of Biological Thought*, 273. The context makes clear that this remark is intended to have the force “and this is *not a defect*.”

41. Naomi Zack, *Philosophy of Science and Race* (New York: Routledge, 2002), 1 and 37.

42. This point is urged by Andreasen.

43. The idea of the “logical core” of the ordinary concept of race is discussed in section III.
44. Kitcher, “Race, Ethnicity, Biology, Culture,” 97.
45. This point was urged by an anonymous reviewer.
46. Cf. Root, “The Use of Race in Medicine.”
47. John Dupré, “Why There are No Race Genes,” in *Revisiting Race in a Genomic Age*, ed. Barbara A. Koenig, Sandra Soo-Jin Lee, and Sarah S. Richardson (New Brunswick: Rutgers University Press, 2008), 39–55.
48. See below.
49. Zack, *Philosophy of Science and Race*, 32.
50. Kevin de Queiroz “The General Lineage Concept of Species,” in *Species: New Interdisciplinary Essays*, ed. Robert A. Wilson (Cambridge, MA: MIT Press, 1999), 48–89.
51. Mayr, *Animal Species and Evolution*, 17–19.
52. Charles Darwin, *On the Origin of Species* (Cambridge, MA: Harvard University Press, [1859] 1964).
53. Joshua M. Glasgow, “On the New Biology of Race,” *Journal of Philosophy* 100 (2003): 456–474.
54. John Rawls, *A Theory of Justice* (Cambridge, MA: Harvard University Press, 1971), 5.
55. Michael O. Hardimon, “On the Ordinary Concept of Race,” *Journal of Philosophy* 100 (2003): 439–440.
56. Ashley Montagu, “The Concept of Race,” in *The Concept of Race*, ed. A. Montagu (New York: Free Press, 1964), 12.
57. Zack, *Philosophy of Science and Race*, 3.
58. Hardimon, “On the Ordinary Concept of Race,” 441–448.
59. Sally Haslanger’s characterization of my approach to the concept of race as “descriptivist” is incorrect. It fails to appreciate the central role that examples play in arriving at the characterization of the ordinary concept of race’s logical core. Haslanger “Language, Politics and ‘The Folk’: Looking for ‘The Meaning’ of ‘Race,’” *The Monist* (2010).
60. Joshua Glasgow, *A Theory of Race* (New York: Routledge, 2009).
61. Our cultural preoccupation with cases in which science overthrows “common sense” (Copernicus, Galileo) can lead to the misconception that science’s relation to “common sense” must always be adversarial.
62. “A ‘planet’ is a celestial body that (a) is in orbit around the Sun, (b) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, and (c) has cleared the neighbourhood around its orbit.” Resolution 5A Definition of ‘planet,’ IAU (2006).
63. Theodosius Dobzhansky *Evolution, Genetics, and Man* (New York and London: John Wiley & Sons, 1955).
64. Robin Andreasen, “A New Perspective on the Race Debate,” *British Journal for the Philosophy of Science* 49 (1998): 199–225; “Race Biological Reality or Social Construct?” *Philosophy of Science* 67, Supplementary Volume (2000): 87–120; “The Meaning of ‘Race’: Folk Conceptions and the New Biology of Race,” *Journal of Philosophy* 102 (2005): 95–106.

65. Andreasen, "A New Perspective on the Race Debate," 201.
66. Pigliucci and Kaplan, "On the Concept of Biological Race."
67. Alan H. Goodman, "Six Wrongs of Racial Science," in *Race in 21st Century America*, ed. Curtis Stokes, Theresa Meléndez, and Genice Rhodes-Reed (East Lansing: Michigan State University Press, 2001), 29; Montagu, "The Concept of Race," 19; Zack, *Philosophy of Science and Race*, 66–70.
68. Appiah, "Race, Culture, Identity," 73.
69. Goodman, "Six Wrongs of Racial Science," 29.
70. Montagu "The Concept of Race in the Human Species in the Light of Genetics," in *The Concept of Race*, ed. A. Montagu, 7.
71. Zack, *Philosophy of Science and Race*, 69.
72. This is not to say that the concept of a population is altogether free of difficulties. On this point see Kitcher "Some Puzzles about Species," in *What is the Philosophy of Biology*, ed. Michael Ruse (Dordrecht: Kluwer Academic, 1989), 183–208.
73. Lisa Gannett, "Making Populations," *Philosophy of Science* 70 (2003): 989–1001. Gannett makes the point mentioned above in connection with the notion of population rather than race.
74. Ibid.
75. Luigi Luca Cavalli-Sforza, Paolo Menozzi, and Alberto Piazza, *The History and Geography of Human Genes* (Princeton: Princeton University Press, 1994), 19.
76. Larry Adelman, "Race and Gene Studies: What Difference Makes a Difference?" in *Race—The Power of an Illusion*, <http://www.newsreel.org/guides/race/whatdiff.htm>; David Blackburn, "Why Race is Not a Biological Concept," in *Racism in Theory and Practice*, ed. Berel Lang (Lanham: Roman & Littlefield, 2001); Goodman, "Six Wrongs of Racial Science," 35; Root, "The Use of Race in Medicine," 1175; and Alan R. Templeton "Human Races: A Genetic and Evolutionary Perspective," *American Anthropologist* 100 (1999): 622.
77. Noah A. Rosenberg, J. K. Pritchard, J. L. Weber, H. M. Cann, K. K. Kidd, L. A. Zhivotovsky, and M. W. Feldman, "Genetic Structure of Human Populations," *Science* 298 (2002): 2381–2385.
78. Richard Lewontin, "The Apportionment of Human Diversity" *Evolutionary Biology* 6 (1972): 381–398.
79. Zack, *Philosophy of Science and Race*, 63.
80. John Dupré, *Darwin's Legacy: What Evolution Means Today* (New York: Oxford University Press, 2003), 103.
81. Goodman, "Six Wrongs of Racial Science," 30–33.
82. Frank B. Livingstone, "On the Non-existence of Human Races," in Montagu, *The Concept of Race*, 46–60.
83. Sober, "Evolution, Population Thinking, Essentialism," 204–205.
84. Livingstone, "On the Non-existence of Human Races," 47.
85. Sober, "Evolution, Population Thinking, Essentialism," 206–207; Mayr, *The Growth of Biological Thought*, 282–283.
86. Mayr, *The Growth of Biological Thought*, 282.

87. John H. Relethford, *The Human Species*, 2nd ed. (Mountain View: Mayfield, 1990, 1994), 167; Blackburn, "Why Race is Not a Biological Concept," 4–5; Cavalli-Sforza et al., *The History and Geography of Human Genes*, 27; Darwin, *The Decent of Man, and Selection in Relation to Sex* (Princeton: Princeton University Press, [1871] 1981); Jared Diamond, "Race and Color," *Discover* (November 1994): 89; Dobzhansky, *Evolution, Genetics, and Man*, 140.
88. Dobzhansky, *Evolution, Genetics, and Man*, 140.
89. I owe this point to Craig Callender.
90. Diamond, "Race and Color," 84.
91. Rosenberg et al. "Genetic Structure of Human Populations." For a more extensive discussion of evidence of genetic differentiation among races see Neil Risch, Esteban Burchard, Elad Ziv, and Hua Tang, "Categorization of Humans in Biomedical Research: Genes, Race, and Disease," *Genome Biology* 7 (2002): 1–12.
92. The sixth cluster corresponds to the Kalash, a relatively isolated Pakistani group. I will take no stand on whether the Kalash are a PRC race.
93. <http://www.sciencemag.org/content/298/5602/2381.short>.
94. Noah Rosenberg, Saurabh Mahajan, Sohini Ramachandran, Chengfeng Zhao, and Jonathan K. Pritchard, "Clines, Clusters, and the Effect of Study Design on the Inference of Human Population Structure," *PLoS Genetics* 1.6 (2005): e70, 0660–0671. DOI: 10.1371/journal.pgen.0010070.
95. Rosenberg et al. "Genetic Structure of Human Populations," 2384.
96. Rosenberg et al. "Clines, Clusters, and the Effect of Study Design," 0668. Note that the claim is *not*: our evidence of clustering should not be taken as evidence of our support of the reality of biological race.
97. Cf. Templeton, "Human Races."
98. The idea of the adaptive character of racial traits is emphasized by Pigliucci and Kaplan. If some of the visible phenotypic traits that figure in the patterns of characters referred to in the definition of PRC races are adaptive (e.g., skin color, hair form, eye shape) there is an *evolutionary* reason for the traditional "dominance" of easily observable morphological traits that is not owing to "the sensory constraints of our own species." Cf. Templeton, "Human Races," 632.
99. I owe this suggestion to Noah Rosenberg (personal communication).
100. The framework provided by the PRC provides a reason for rejecting the claim made by Cavalli-Sforza et al., *The History and Geography of Human Genes* that the fact that the possibility of distinguishing successive levels of clustering through multivariate analysis leaves one with no biological reason for preferring a particular level as a race provides a sufficient ground for thinking that the populations thus distinguished are not races. The PRC allows for the possibility of distinguishing races at different levels of granularity without identifying any one of those levels as privileged.
101. I owe this point to the anonymous reviewer for this journal.
102. Adelman, "Race and Gene Studies."
103. Diamond, "Race and Color," 85; Goodman, "Six Wrongs of Racial Science," 33; Montagu, "The Concept of Race," 7.

104. As I use the expressions, ‘natural kind,’ ‘biological kind,’ and ‘scientific kind,’ natural kinds are scientific kinds and biological kinds are a species of natural kind.

105. John Stuart Mill, *A System of Logic: Ratiocinative and Inductive* (1843).

106. R. C. Lewontin, “Confusions about Human Races,” in *Is “Race Real”: A Web Forum Organized by the Social Science Research Council*, <http://raceandgenomics.ssrc.org/Lewontin/>.

107. E. Machery, “Concepts are Not a Natural Kind,” *Philosophy of Science* 72 (2005), 444–467.

108. For a thoughtful attempt to arrive at a conception of natural kind upon which all parties in the debate about biological racial realism can agree, see Quayshawn Spencer, “What Biological Realism Should Mean,” *Philosophical Studies* (2011): 1–24. I doubt that it is possible to arrive at a single conception of a natural kind upon which all parties to the debate can agree, as the matter of what notion of natural kind is most suited to the debate is itself one of the fundamental points at issue in the debate.

109. John Dupré “Is Natural Kind a Natural Kind?” *The Monist* 85 (2002): 29–49.

110. Ian Hacking, “Natural Kinds: Rosy Dawn, Scholastic Twilight,” *Royal Institute of Philosophy Supplement* 82 (2007): 203–239.

111. Lewontin, “Confusions.” The idea that a biological race concept must represent race as a fundamental division of nature is an atavism going back to the racialist concept of race. It is essential to free ourselves from the grip of this obsolete concept’s pretensions.

112. The examples of *gemmae*, *barmin*, and *destructiveness organ* are borrowed from Q. Spencer. The notion of wrongheaded kind, a kind whose explanatory schemata rests on substantially mistaken presuppositions, I take from P. K. Stanford, “For Pluralism and Against Realism about Species,” *Philosophy of Science* 69 (1995): 70–91.

113. My characterization of gerrymandered and adventitious kinds is drawn from T. Burge, *Origins of Objectivity* (New York: Oxford University Press, 2010), 57.

114. Lawrence Blum, *I’m Not a Racist, But . . . : The Moral Quandary of Race* (Ithaca: Cornell University Press, 2002), 160.

115. In allowing that race is not a Very Important Kind, I am not conceding the fundamental point at issue (since this point is not in contention); I am instead re-directing attention to the point that I say really is in contention (whether race is a real-but-not-that-important kind).

116. Cf. Gannett, “The Biological Reification of Race,” *The British Journal for Philosophy of Science* 55 (2004): 323–345, and Spencer (2011).

117. See, for example, Appiah, “Race, Culture, Identity,” 74; (2002), 144; and L. A. Hirschfeld, *Race in the Making* (Cambridge, MA: MIT Press, 1998), 4.

118. Not an entirely new way. There are textual reasons to think that Lewontin (1972) was originally intended as an argument for the claim that biological race is a not-that-important kind. But this deflationary reading has largely been superseded by an eliminativist reading (biological race does not exist), a reading that has been encouraged by (the later) Lewontin himself.

119. Kitcher, “Race, Ethnicity, Biology, Culture,” 101.

120. Cf. Appiah, “Race, Culture, Identity,” 74.

121. Nancy Cartwright, *How The Laws of Physics Lie* (New York: Oxford University Press, 1983), 15 and 133.

122. Spencer, “What Biological Realism Should Mean.”

123. This is not true of Rosenberg’s use of ‘population’ in Rosenberg et al. “Genetic Structure of Human Populations” and “Clines, Clusters, and the Effect of Study Design” (Personal communication).

124. Lisa Gannett suggests a stronger charge, namely, that populationist race concepts can actually *foster* racism. The PRC (like any race concept) is co-optable by racists but being *co-optable by racists* seems different from *fostering* (encouraging or promoting) *racism*. “Racism and Human Genetic Research: the Ethical Limits of ‘Population Thinking,’” *Philosophy of Science* 60 (Suppl) (2001): S479–S492.

125. I allow for the *theoretical* possibility of true statistical discrimination but note (a) that what is billed as statistical discrimination (which by definition involves no racial animus) may actually be discrimination based on racial animus and (b) that the statistics appealed to in putative cases of statistical discrimination (e.g., arrest rates) merit critical scrutiny as they may themselves be affected by stereotypes and other racial biases.

126. My discussion of the moral status of statistical discrimination in this paragraph and the preceding footnote follows Blum, *I’m Not a Racist, But . . .*, 85–90.

127. Tyler Burge, “Concepts, Definitions, Meanings,” *Metaphilosophy* 24 (1993): 310.

128. I owe this point to Allen Wood.

129. I am grateful to William Bechtel, Craig Callender, Nancy Cartwright, Sophia Efstathiou, Joyce Havstad, Philip Kitcher, James Messina, Dana Nelson, Samuel Rickless, and Kory Schaff for helpful comments on earlier drafts. I benefited from questions and criticisms of an earlier version made by the audience at the Department of Logic and the Philosophy of Science at UC, Irvine. Michael Root provided detailed comments on earlier versions of the essay. Noah Rosenberg wrote comments on sections of earlier versions of the paper that address his research. Monte Johnson read the discussion of race as a natural kind. Thanks to Tyler Burge for helpful discussion of underlying issues in the philosophy of language. I have profited enormously from extended email correspondence on topics discussed in this essay with Allen Wood. This essay is much improved as the result of the trenchant criticisms of the penultimate draft made by the anonymous reviewer for this journal. I am especially grateful to Mary Devereaux, who commented on more drafts of this article than anyone should reasonably be expected to read.