The Risk of Biological Races

Celso Neto*

Abstract. Biological race realism (hereafter BRR) is the view that humans form biologically distinct groups. Non-racist versions of BRR have emerged recently based on sophisticated work in science and philosophy (Hardimon 2003; 2017; Spencer 2012; 2014; 2019a). In this paper, I examine Quayshawn Spencer's version of BRR and argue that it fails to fully consider how social, political, and moral values influence the metaphysics of race. To do so, I rely on the "science and values" literature and the notions of inductive, epistemic, and ethical risk (Douglas 2000; Douglas 2009; Brown 2015; Biddle and Kukla 2017; Elliot and Richards 2017). Once one realizes the complex relationship between these types of risks and BRR, Spencer's metaphysical arguments become less appealing than they might first seem. This analysis raises questions about what it means to do metaphysics of race in a socially responsible way. Hence, this paper aims at making these questions visible, inviting metaphysicians of race to directly engage with them.

Keyword: race; biological race realism; epistemic risk; ethical risk; non-epistemic values;

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* This is a pre-print. Please do not cite without permission. Comments are welcome. To contact the author, write to C.Alves-Neto@exeter.ac.uk. Address: Centre for the Study of the Life Sciences (EGENIS) at Byrne House, St. Germain Rd. Exeter. EX4 4JP

1. Introduction

Biological race realism (hereafter BRR) is the view that humans form biologically distinct groups. This view has a long history related to racism, colonialism, and pseudoscience (Bernasconi and Lott 2000). For instance, a blatantly racist conception of races dominated Europe and North America in the 19th and early 20th grounded on the flawed practices of phrenologists and craniometrists (Gould 1980; James and Burgos 2020). According to this conception, human races are ancestry groups – populations originating from different continental regions, such as Africa and East Asia – that differ biologically in significant ways. These differences concern not only human physical appearance but, more importantly, intellectual and moral traits. For example, some humans would be naturally more intelligent than others because they belong to a particular race. Differences in this and other significant traits would supposedly justify the superiority of some races over others.

While science has debunked this racist conception of races, BRR has resurfaced in different forms in recent decades (Andreasen 1998; 2005; Pigliucci and Kaplan 2003; Hardimon 2003; 2017; Spencer 2014; 2019b; 2019a). Unanimously, these versions reject any association of races with moral and intellectual human differences, repudiating any type of racial hierarchy. Furthermore, some versions of BRR are explicitly deflationary (Hardimon 2017; Spencer 2019a). This means that races are ancestry groups that differ mostly in superficial phenotypic traits and are only modestly significant to science. Insofar as a few biological differences between races are still worth noticing, deflationists argue that racial classifications are nonetheless legitimate. For example, Eurasians (or "Whites," i.e., humans with main ancestry in the Caucasus) have a disproportionally high frequency of a genetic polymorphism that makes them more susceptible to Cystic Fibrosis than other racial groups (Hardimon 2017, 156). Racial classifications might help in diagnosing this and other health conditions.

The existence of a few medically relevant differences among ancestry groups suggests that racial divisions might be minimally useful in medicine (Hardimon 2017; Spencer 2018a). These divisions might also be modestly useful in other fields of biology. For instance, evolutionary biologists are interested in identifying and explaining evolutionary adaptations and some of these adaptations might be associated with racial divisions (Hardimon 2017, 81). Furthermore, geneticists use racial or quasi-racial terms like "Asian" when studying the genetic diversity of humans and the migration history of human populations (Rosenberg et al. 2002; 2005; Pemberton, Degiorgio, and Rosenberg 2013). In this sense, one might argue that the reference to racial groups is helpful to research programs in population genetics, and it seems to correspond to different genetic clusters (Spencer 2019a). These points indicate that racial classifications have a modest but non-negligible epistemic utility: they contribute to predictions, explanations, and other activities that generate knowledge and potentially boost scientific progress. This epistemic utility of racial classifications gives us reason to conclude that races are biologically real, or so the deflationists argue.

Deflationist versions of BRR seem attractive for at least three reasons. First, while rejecting racist assumptions of the old BRR, they retain the intuition that biological traits are distributed among humans in a non-random manner. There seems to be a correlation between some traits, ancestry, and geography, such that recognizing this correlation might have some epistemic utility. Second, deflationism uses reputable and up-to-date scientific work coming from medicine, population genetics, and other areas of biology. Rather than appealing to pseudo-science, deflationists try to make sense of how racial classifications are currently used in biology and what this utility entails. Third, deflationism is pluralist, and thus, it does not rule out other understandings of race (Hardimon 2017; Spencer 2019a). For instance, racial terms often refer to social constructs that result from socioeconomic circumstances rather than purely biological features (Mills 1998; Haslanger 2000). Deflationists accept this view, but they argue that the same racial terms sometimes refer to biological constructs.

As deflationist BRR has emerged in recent decades, so have arguments against it. One class of arguments focuses on the idea of biologically real groups or kinds (Maglo 2011; Hochman 2013; Gannett 2010). Gannett (2010) argues that typical biological kinds must serve various epistemic goals in biology, but races do not. She and other scholars challenge the epistemic utility and relevance of classifying humans into biological groups, particularly in medicine (Yudell et al. 2016; Root 2003). These arguments conclude that races are not useful *enough* to be deemed real (Maglo 2011; Hochman 2013).

Deflationists reject this conclusion. They offer sophisticated theories of biological kinds and argue that such kinds do not have to be very useful to be real (Hardimon 2017; Spencer 2014; 2019a). Quayshawn Spencer’s view is paradigmatic in this sense. His theory of kinds explicitly articulates the type of epistemic utility that an entity must have to be deemed real in science. He argues that biological kinds can be real (or, to use his terminology, “genuine”) even if they are not central to biology. Some examples are the hypothalamus, the TYRP1 gene, and monophyletic groups (2019a). Races would be just another example.

In this paper, I examine Spencer's version of BRR and how it relies on epistemic utility at the expense of non-epistemic considerations. I argue that Spencer fails to fully recognize that social, political, and moral values influence the metaphysics of race.[1] Kitcher (2007) raised a similar point in the past, arguing that the legitimacy of racial classifications depends on their epistemic *and* non-epistemic utility. Spencer (2012) rejected Kitcher's approach as relying on controversial assumptions about the fact-value distinction. The argument presented in this paper is not as easy to dismiss. While social, political, and moral considerations might not justify the reality of races (or lack thereof), they can indirectly influence the metaphysical reasoning around those justifications. This paper is the first effort in identifying and analyzing this influence.[2] My aim is not so much criticizing Spencer's view but rather using it as a case study to investigate the relationship between the metaphysics of race and non-epistemic considerations. I rely on the

[1] One might dismiss this argument by saying that it incorrectly assumes a distinction between epistemic and non-epistemic values (Longino 1996). While I acknowledge that distinguishing types of values is problematic in many ways, at least sometimes these distinctions are still philosophically useful because they help us to understand approximately how values influence science. Evidence of this philosophical usefulness is the fact that most debates about values in science have not completely abandoned those distinctions (e.g., Douglas 2009; Brown 2013; Intemann 2005; Steel 2010).

[2] In a different (non-metaphysical) context, the literature on pragmatic encroachment and ethics of belief has been advancing similar arguments to the ones presented in this paper. More recently, Rima Basu (2023) raises the question about how philosophical work in general should be mindful of moral and sociopolitical risks.

"science and values" literature and the notions of inductive, epistemic, and ethical risk (Douglas 2000; Douglas 2009; Brown 2015; Biddle and Kukla 2017; Elliot and Richards 2017). Once one realizes the complex relationship between these types of risks and BRR, Spencer's sophisticated metaphysical arguments become less appealing than one might have first thought. Furthermore, given that metaphysical reasoning about race involves those risks, responsible metaphysics about race should be sensitive to them.

In the next section, I present Spencer's BRR (Section 2). Then, I discuss how Spencer deals with a few objections to his view (Section 3). These objections focus on epistemic utility and how it relates to non-epistemic value judgments. Thereafter, I introduce the notions of inductive, epistemic, and ethical risk present in the "values and science" literature (Section 4). These notions enable me to propose that a socially responsible metaphysics of race should consider those risks. Metaphysicians like Spencer must provide an extremely clear and convincing case for the epistemic utility of categories because these categories are associated with high risks. So far, the supposed epistemic utility for BRR is not that clear or convincing. In conclusion, I invite philosophers to explore the intersection between metaphysics and risk, considering what it means to do metaphysics of race in a socially responsible way.

2. Spencer's Biological Race Realism

In its broadest sense, BRR is the view that races are biologically real. Spencer's version of this view has two important qualifications. First, it concerns the reality of "folk races," i.e., racial groups as ordinarily understood by people. Spencer claims that when people use racial terms – such as "Black" and "White" – in ordinary contexts, they are *frequently* referring to something biologically real (Spencer 2018a; 2018b). This ordinary use of racial terms differs from the way some scientists might technically define and use the same terms (Andreasen 2004; 2005).

Spencer's realism is *not* about the reality of what counts as race in any specialized academic context. Second, his realism concerns the reality of races as ordinarily understood in the United States. Spencer has nothing to say about races in Brazil, South Africa, or anywhere else. In summary, he focuses on what people in the US talk about when they use racial terms in everyday contexts.

The Census provides paradigmatic examples of racial terms in the United States. These terms are "White," "Black" or "African-American," "Asian," "American-Indian," or "Alaska Native," and "Native Hawaiian" or "Pacific Islander." The Office of Management and Budget (OMB) is responsible for organizing the Census and thus defining these terms (Spencer 2019b; 2019a). These terms and their definitions are widespread in various social contexts in the United States. For instance, they figure in healthcare surveys, medical records, college and job applications, and housing and aid program questionnaires (Spencer 2019a, 79). Hospitals, companies, universities, and many other social institutions adopt OMB's racial classification and contribute to its entrenchment in US culture. For this reason, Spencer argues that when people use a racial term like "Black" in the United States, they are frequently talking about the same group of people that would count as Black/African-American in the OMB Census (2019a, 82-83).

Spencer argues that the racial terms in the OMB Census frequently refer to what is known in population genetics as the five main "human continental populations" or "geographical populations" (Spencer 2019a, 99). These populations have distinctive geographical origins at the sub-continental level. They are: Black Africans with origins in Sub-Saharan Africa, Eurasians with origins in Eurasia (West Europe, Middle East, and South/Central Asia), Asians with origins in East Asia, Native Americans (or Amerindians) with origins in Alaska and North America, and Oceanians with origin in Oceania. This division maps into the racial terminology and classification proposed by the OMB, as described above. The terms “Black” and “African-American” refer to the Black African population; the term “Asian” refers to the East Asian population; the term “White” refers to the Eurasian population; the terms “American Indian” and “Alaska Native” refer to the Native American population; and the terms “Hawaiian Native” and “Pacific Islander” refer to the Oceanian population.

For the sake of argument, I will accept that racial terms in US ordinary contexts frequently refer to the five human continental populations. This claim has several criticisms, but it is not the focus of this paper.[3] Though I return to that claim later in the paper, my primary focus is the idea that races (hereafter understood as human continental populations) are biologically real. In the remainder of this section, I consider how Spencer defends this idea.

For decades, biologists have been studying the genetic ancestry and diversity of human populations (Reich 2018). Many studies use autosomal microsatellite markers, which provide good evidence of genetic diversity among humans (Rosenberg et al. 2005; Pemberton,

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[3] According to the famous mismatch objection, everyday uses of racial terms in the US do not refer to the human continental populations described by population geneticists and Spencer (Mallon 2006; Glasgow 2008, Jeffers 2019). While these populations might be “real” in some sense, they are not races as is commonly understood. Hence, Spencer’s BRR does not show that *folk* races are biologically real. Spencer deals with this objection, but critics do not seem persuaded (e.g., Spencer 2019a; Jeffers 2019). In this paper, I leave aside discussions of the mismatch objection and focus on the much less explored class of arguments related to epistemic utility and values.

Degiorgio, and Rosenberg 2013; Rosenberg et al. 2002).[4] In their 2002 study, Noah Rosenberg and colleagues used 377 markers from 1,056 individuals in 52 populations across the globe. In 2005, they expanded this data and used 783 microsatellites and included 210 insertion/deletion polymorphisms (another type of genetic marker). In 2013, scientists analyzed microsatellites of 5795 individuals from 267 worldwide populations. In all these studies, Rosenberg and colleagues relied on a specific algorithm (STRUCTURE) to cluster individuals into groups based on microsatellite similarity. In this algorithm, scientists decide how many groups the genetic similarity analysis should generate. The result was always the same: when scientists decide to divide humans into five groups of genetic similarity, these groups match the five human continental populations – Black Africans, Eurasians, East Asians, Native Americans, and Oceanians (Spencer 2019a, 96–99).

These genetic studies are revealing. For instance, they show that one can distinguish and identify the five human continental populations using genetic material alone (Hardimon 2017, 89). These genetic differences are unrelated to the phenotypic differences among populations because they

[4] These markers are short, repeated sequences of nucleotides (STRs) present in autosomal, non-sexual chromosomes (Feldman and Lewontin 2008). They provide good evidence of genetic ancestry and diversity for at least two reasons. First, they tend to vary a lot from one person to another. Second, they do not have clear influence on the human phenotype (e.g., on skin color and hair texture). Hence, shared microsatellites among humans are likely not a result of adaptive processes. Instead, they are most likely evidence of common ancestry (Hardimon 2017, 87; Rosenberg 2011). Sharing the same markers is also evidence that humans might share other genotypic and phenotypic traits.

do not influence racial traits or any other type of phenotypic trait in humans. So, one can recognize that a person comes from one of those five continental populations only by looking at her autosomal microsatellite markers. In this sense, one can also reasonably predict how a person will self-identify as belonging to a race in the United States Census. This is possible because human continental populations are distinct at the level of microsatellites.

Human continental populations are genetically distinct, but this does not entail that they are "real" in a philosophically interesting sense. Quayshawn Spencer is well aware of this point (Spencer 2019a, 99). He argues that human continental populations must be epistemically useful in biology, i.e., they must be somewhat relevant in explanations, investigations, or other epistemic activities of biologists. To make this point, Spencer relies on his theory of genuine kinds. According to him, human continental populations are biologically real only if they count as genuine kinds (2016, 166–69; 2019a, 69).[5] These kinds must satisfy three conditions. First, they must be part of a well-ordered scientific research program (hereafter SRP). Second, they must be useful for producing scientific generalizations in this research program. Third, these generalizations must be warranted in that research program such that the categories underwriting the generalizations are epistemically justified in that program. In what follows, I unpack these conditions and show how human continental populations satisfy them.

[5] Throughout the years, Spencer varies his terminology. Sometimes he claims that he is proposing a theory of genuine kinds or genuine biological entities (Spencer 2016; 2012; 2019a). This terminological difference does not influence his argument and the discussion carried in this paper.

A well-ordered SRP is a paradigmatic example of productive and reliable scientific practice. This type of research program has significantly higher chances of long-term success than its potential competitors (Spencer 2012, 192). For instance, a well-ordered SRP has coherent and well-motivated research aims. There is nothing incoherent or contradictory between the aims of the research and its other components, such as methodologies, theories, and experiments. Moreover, a well-ordered SRP has "competitive predictive power" (Spencer 2016, 168). This power involves the capacity of the SRP to predict known and new phenomena with success that is at least on par with rival research programs. Finally, well-ordered SRPs must routinely cross-check their results. The studies within these SRPs must be replicated with slight changes in background assumptions, methodologies, instruments, etc. This practice ensures that the results from those SRPs are robust and reliable.

Spencer argues that continental human populations are part of a well-ordered scientific research program, namely population genetics (2019a, 95). More specifically, the set of studies conducted by Noah Rosenberg satisfies the description of a well-ordered SRP (Rosenberg et al. 2002; Pemberton, Degiorgio, and Rosenberg 2013; Rosenberg et al. 2005). These studies have well-motivated research aims, such as understanding the genetic composition of human populations and their patterns over time. There is no incoherence or contradiction between these aims and the methods, theories, and experiments used by those geneticists. In other words, there is no internal inconsistency in the work of Rosenberg and colleagues. This work also has competitive predictive power because it offers predictions and new hypotheses to be tested. Finally, the studies conducted by Rosenberg and colleagues receive constant cross-checking. Later studies changed aspects of previous ones, such as the number of individuals sampled, in an attempt to test its results and reliability (Rosenberg et al. 2002; Pemberton, Degiorgio, and Rosenberg 2013;

Rosenberg et al. 2005). Cross-checking was also conducted by other laboratory groups (Mallick et al. 2016).

The second condition of genuine kinds is the capacity to produce scientific generalizations in the respective well-ordered SRP. Spencer argues that genuine kinds must be epistemically useful in SRPs by underwriting generalizations. For instance, he considers that *alleles* and *genes* are genuine kinds of classic Mendelian genetics (2016). These kinds ground scientific generalizations, such as the so-called Mendel's law of segregation: "alleles of the same gene segregate into different gametes during gametogenesis" (Spencer 2016, 166). Without acknowledging alleles and genes, it would have been impossible to produce this generalization. Likewise, the category of human continental populations grounds generalizations in population genetics. This category (and, presumably, the sub-categories Black Africans, Eurasians, East Asians, Native Americans, and Oceanians) helps geneticists to "formulate a theory about human population structure" (2019a, 99). This theory states that the division of human continental populations matches the genetic subdivision of humans into five main genetic clusters. In other words, the category of human continental population is useful because – at the very least – it enables geneticists to formulate hypotheses about genetic divisions between humans.

Consider again the genetic studies conducted by Rosenberg and colleagues (Rosenberg et al. 2002; Pemberton, Degiorgio, and Rosenberg 2013; Rosenberg et al. 2005). In these studies, humans are sampled from different geographical locations and continents. Scientists use several categories when referring to groups of humans sampled from the same geographical location. Besides the five human continental populations, one uses more fine-grained categories such as European, Middle Eastern, Melanesian, Colombian, and Central/South Asia. All these categories are used when organizing and comparing the genetic samples of individuals. At least some categories – namely the five human continental populations – also appear in explicit generalizations investigated by the scientists. Hence, these categories play an important role in the context of a well-ordered SRP. They have epistemic utility in population genetics.

Not every category that underwrites generalizations in a well-ordered SRP is a genuine kind. To be a genuine kind, a category has to be *adequately epistemically justified* in an SRP (Spencer 2012, 189). This justification depends on the relation between the category, the underwritten generalizations, and the epistemic values of the well-ordered SRP. According to Spencer, a category is justified if its underwritten generalizations can predict or explain things according to the epistemic standards of the SRP. For example, Calvin Bridges used the concept of the chromosomal genes in Mendelian genetics to formulate a theory (generalization) about the segregation of sex chromosomes in *Drosophila amphelophila* (Spencer 2016, 167). His theory has proven to be adequate in the context of Mendelian genetics because it satisfies two central epistemic values of this field, namely empirical accuracy (adequacy) and quantitative precision (how similar are the quantitative measurements of the same phenomenon). Hence, Bridge's theory offers a legitimate explanation of sex-chromosome segregation in that species of *Drosophila*. The consequence is that the category of chromosomal genes is epistemically justified in Mendelian genetics.

Spencer argues that human continental populations are adequately justified in population genetics, and thus, are genuine kinds (2019a, 97). These populations figure in generalizations that satisfy the epistemic standards of that field. As I described before, Rosenberg and colleagues formulate the hypothetical generalization that the set of human continental populations corresponds to the genetic subdivision of humans into five main genetic clusters (Spencer 2019a, 99). Furthermore, this hypothesis has proven to be empirically accurate and quantitatively precise, as it has been tested repeatedly. The generalization involving human continental populations passes these and other empirical standards of population genetics.

Usually, geneticists tend to question methodological choices and, most of all, the significance of the results achieved by Rosenberg and colleagues (Desalle & Tattersall 2018). It is important to notice that these types of disagreements do not necessarily undermine Spencer's argument. They do not show that Rosenberg and colleagues engage in an incoherent, contradictory, or pseudoscientific research project. They also do not show that the hypothetical generalizations about human continental populations are empirically inaccurate, imprecise, or are not somewhat useful in population genetics. In other words, if one accepts Spencer's theory of genuine kinds, the studies promoted by Rosenberg and colleagues are good enough to suggest that races (understood as human continental populations) are biologically real.

In summary, the novelty in Spencer's BRR comes from bridging ordinary and scientific contexts. He argues that (i) what scientists call "human continental populations" are what people in the United States frequently call "races" in ordinary linguistic contexts; and (ii) scientists rely on human continental populations to develop successful scientific work, and thus, they should count as genuine kinds. In this sense, to conclude that races are biologically real simply means that racial terms frequently refer to ancestry groups that are legitimately part of empirically successful science.[6]

[6] Recently, Winsberg (2022) has suggested problems with Spencer's theory of genuine kinds and the point (ii) above. While I am sympathetic to Winsberg's arguments, they unfortunately do not engage with tensions between epistemic and non-epistemic values in the metaphysics of race. The present paper minds this gap.

3. Epistemic Utility and Non-Epistemic Values

Some scholars resist BRR by pointing out that racial divisions are not very useful in science (Maglo 2011; Hochman 2013; Gannett 2010). These authors might concede that races (i.e., human continental populations) are part of studies in population geneticists, but still argue that these populations are not significantly useful to biologists. For example, races are not central to any main biological theory and are inconsequential to most predictions in the field (Maglo 2011). Hence, one might conclude that races do not deserve to be called "biologically real."

Spencer is well aware of this criticism and replies to it using a "parity of reasoning" argument. According to him, races should be considered real for the same reason that any other entity in science is treated as real: they must be "epistemically useful and justified in a well-ordered research program" (2019a, 95). The reality of entities in science cannot depend on them being very useful to scientists because many entities in science are not fundamental or central to scientific theories and predictions. As an example, Spencer cites the case of the 93C allele from the TYRP1 gene and element 17 in chemistry. The 93C allele's only function is coding for blond hair in some Melanesian people, and thus, it does not help scientists to explain or investigate much (2019a, 95). Likewise, element 117 has nuclear instability, which explains why chemists do not do many things with it (2014, 1035). Nonetheless, Spencer argues, scientists do not deny that the 93C allele and the element 117 exist. These entities have very modest epistemic utility, but this would be enough to vindicate their reality.

Under the risk of logical inconsistency, the modest epistemic utility of races in biology should not be a reason to deny their existence. Races help to formulate accurate and precise generalizations about patterns of genetic distribution across continents. These generalizations can be tested and then used to predict and explain further phenomena in population genetics.

Furthermore, these explanations might also be useful in other areas such as medicine. Racial classifications might help medical researchers and practitioners more quickly find the genetic cause of and treatment for certain medical conditions (Spencer 2018a). Hence, modest epistemic utility seems enough for reality.

At this point, some critics recognize the epistemic utility of racial classifications in biology but argue that these classifications are also potentially harmful to society. Phillip Kitcher (2007) raises this possibility. He agrees that racial classifications are legitimate ("real") if they are useful, but he has a broad view of "utility" in mind (2007, 300–302). According to Kitcher, races are legitimate only if they are useful to society as a whole rather than specific fields of science. If the utility of biological racial classifications outweighs their problems for social well-being in general, then one is entitled to accept races as real. However, if those racial divisions cause more harm than good, one should reject them.

Kitcher's notion of utility is not merely epistemic. Utility is not limited to the question of how much races help us to acquire knowledge and develop science. Instead, racial classifications are also useful if they help us to improve our social, political, and moral circumstances. Hence, both epistemic and non-epistemic utility must be equally considered when determining the reality of races.

Once again, Spencer relies on a parity of reasoning argument to reject Kitcher's view. He compares the category of race and other paradigmatic examples of genuine kinds, such as *monophyletic groups*. This kind is part of cladistics, a well-ordered scientific research program in biological classification. The central epistemic aim of this program is to produce strictly genealogical classifications of organisms and species (Baum and Smith 2013; Wiley and Lieberman 2011). The kind monophyletic group is useful to define and classify groups of organisms according to this aim. Relatedly, this kind figures in generalizations, predictions, theories, explanations, and other activities in cladistics (2012, 190–91). For this reason, biologists are epistemically warranted in claiming that monophyletic groups are real, as they do (Baum and Smith 2013; Wiley and Lieberman 2011).

According to Spencer's parity reasoning, biological race realism is correct if races are analogous to monophyletic groups (2019, 78). If the reality of monophyletic groups in biology is justified solely based on epistemic utility, the same principle applies to races in biology. Using this line of argument, Spencer criticizes Kitcher's appeal to social, political, and moral considerations in the metaphysics of race. The problem is assuming that the reality of races and other entities requires any non-epistemic justification (2012, 200). This requirement is too demanding for a theory of genuine kinds *in science*. Paradigmatic examples of such genuine kinds, Spencer argues, do not require non-epistemic utility. Scientists do not justify the reality of scientific entities with statements about how socially, politically, or morally useful these entities are. Hence, there is no reason to ask them to justify the reality of races in the same way. In summary, non-epistemic values should not influence the acceptance or rejection of races.

In the next section, I challenge this conclusion. I argue that social, political, and moral judgments do play an indirect role in determining the reality of races in biology. This role has not been considered by Spencer, and thus, puts some pressure against his view. Furthermore, my analysis raises broader questions about the relationship between metaphysics and values.

4. Risk and Biological Race Realism

Spencer's discussion of epistemic and non-epistemic judgments might resemble some aspects of Heather Douglas' work (2000, 2009, 2014). Douglas investigates a central question in the philosophy of science: if science involves epistemic and non-epistemic value judgments, when and how should these values be legitimately allowed in science? According to her, non-epistemic judgments should not be direct evidence for scientific conclusions. They should not count as reasons for accepting or rejecting a scientific result. Analogously, Spencer argues that non-epistemic value judgments (e.g., the analysis of potential harms) do not provide direct evidence or reason for the reality of kinds.

Curiously, the work of Heather Douglas and other recent philosophers of science offers tools for identifying how non-epistemic values have a place in BRR that has not been appreciated so far (Biddle 2016; Biddle and Kukla 2017). Douglas formulates a contemporary version of the *inductive risk argument*, an argument originally sketched by Rudner (1953) and Hempel (1954; 1960). Inductive risk is the chance that scientists might be wrong in accepting or rejecting a hypothesis (Douglas 2000, 561). As scientists' conclusions result predominantly from inductive reasoning, there is an inevitable gap between scientific evidence and conclusions. Scientists cannot be entirely sure about their conclusions. For this reason, scientists will face the risk of error: they might reject a true hypothesis (false positive) or accept a false hypothesis (false negative).

This risk of error motivates scientists to assess the possible consequences of such errors. Some consequences might involve harm to the production of scientific knowledge, but in many cases the harm is to society as a whole. For example, imagine that scientists investigate whether chloroquine can cure patients of COVID-19. If chloroquine cures patients, but scientists conclude otherwise, these scientists will harm society. People would be discouraged from getting a fast, cheap, and easily accessible cure for the virus COVID-19. Now imagine if chloroquine is not effective against COVID-19, but scientists conclude that it is. This conclusion will also harm society. This time, people might buy chloroquine without realizing its serious side effects. For example, chloroquine can cause rhythmic heart problems and worsen diabetic conditions.

Scientists will assess these two types of consequences before concluding whether chloroquine is effective or not against COVID-19. They will consider how much harm wrong scientific conclusions might cause. Scientists want to minimize the risk of defending and spreading these wrong conclusions, especially when they can cause great harm. For example, if chloroquine represents a reasonable risk to human health, scientists will make sure to gather as much data as possible. They will conduct very rigorous experiments before concluding that chloroquine is effective against COVID-19.

By weighing the risk of error, scientists are implicitly letting social, political, and moral judgments influence their work. Scientists imply that certain actions are more harmful to society than others, for example. According to Douglas, these non-epistemic judgments have an *indirect* influence on how scientists arrive at their conclusions because these judgments might "act to weigh the importance of uncertainty about the claim, helping to decide what should count as sufficient evidence for the claim" (2009, 96). In other words, non-epistemic values influence how much evidence scientists need before concluding that chloroquine cures COVID-19. All else being equal, the more harmful a scientific conclusion is, the more evidence is needed before advocating this conclusion. Scientists must make sure that this conclusion is not wrong and thus avoid causing unnecessary harm to society.

These considerations about inductive risk suggest a way to challenge Spencer's BRR. While one might agree with him that social, political, and moral judgments do not count as reasons for claims such as "X is a biological race," one might still argue that those judgments *indirectly* influence such claims. Thus, the problem is that Spencer fails to recognize that non-epistemic judgments can have this influence and, in so doing, he fails to identify limitations of his parity of reasoning argument and theory of genuine kinds that ground the supposed reality of races.

To expose the problems with Spencer's view, let us return to the comparison between races and monophyletic groups (Section 3). Monophyletic groups are paradigmatic examples of genuine kinds. They figure in the domain of cladistics, a coherent and well-motivated area of biology that has predictive power and rigorous cross-checking methodologies. Within this research program, the category of monophyletic groups figures in theories and explanations that are empirically adequate and satisfy other epistemic aims of cladistics. For these reasons, Spencer argues, one is warranted to conclude that monophyletic groups are real.

Claims relying on the category of monophyletic groups involve inductive risk. Scientists must rely on inductive evidence before concluding that "X is a monophyletic group." If scientists are wrong about this claim, non-negligible consequences may result in those areas of study. For instance, one might have to revise large chunks of biological classification, which is something that recently happened to dinosaur classification (Baron et al., 2017). Still, being wrong about "X is a monophyletic group" would most likely have just a minor impact on society broadly construed. The risk that this claim will have a negative influence on human institutions and behavior is not high.

The case of race is much more complex. Consider the claim that "X is a biological race." First, one might consider the risks within the context of population biology and other areas of biology. For instance, what if Asians are not one of the K=5 genetic clusters, as population geneticists currently suggest? In this case, being wrong could lead to revisions in data banks, methodological procedures, and perhaps claims about human migrations. These risks are intrinsic to the work of Rosenberg and colleagues.

Second, recall one of the central premises in Spencer's argument: racial terms in US ordinary contexts frequently refer to ancestry groups (human continental populations) in population genetics (Section 2). If Spencer is correct, the conclusions that scientists reach about human continental populations are conclusions for what people in the US ordinarily understand as races (Section 2). This correspondence between ordinary and scientific discourse will influence the inductive risk analyses of scientists if they and the public become aware of it.[7] After all, scientists would know that their hypotheses would attract further interest and could have a higher social impact. Population geneticists are indeed worried about the social uptake of their work. People already recognize a connection between their racial language and the categories and hypotheses developed by geneticists. Nevertheless, this recognition would *significantly* increase if (assuming Spencer's view of is correct) people and scientists realized that they were indeed talking about the same thing. Population geneticists should worry even more about the social uptake of their work and its possible unintended consequences. Hence, if Spencer is correct, the risk involved in the work of Rosenberg and colleagues is even higher than one might first think.

If one accepts the inductive risk argument, scientists should include those worries in the inductive risk analysis. As geneticists discover patterns of reproduction among humans and extinct humanoids, they should worry about how these discoveries will become part of the racial discourse in the US, how they will be represented, and how they might feed into racism. For instance, minority groups such as Melanesians might be harmed by racial stereotypes that

[7] I take that one of the consequences of Spencer's view is that OMB bureaucrats, residents of the US, and population geneticists should or at least could be made aware that they are talking about the same referents.

associate the biological patterns of reproduction (i.e., the presence of "ancient" DNA in those groups) and ideas of cultural primitivism, etc. (Havstad 2021). Again, while these harms already occur, they will be exacerbated if scientists and residents of the US recognize that they are indeed sharing a discourse.

For this reason, it should be clear that scientists working on monophyletic groups and those working on human continental populations face very different standards of inductive risk. Genetic studies involving racial terms are indirectly influenced by social, political, and moral judgments. These judgments are implicit in how geneticists evaluate the possible harms associated with inductive risk. If Spencer is correct about how people in the US use racial terms, this risk might be higher than anticipated, and non-epistemic judgments should have a significant influence on those studies. The higher the risk, the more inductive evidence is required before accepting the results of such studies. But this is not all.

Inductive risk only exists given the possibility of error and uncertainty during knowledge production activities. Nevertheless, this possibility determines a broader category of risk, namely *epistemic risk* (Biddle 2016; Biddle and Kukla 2017). This risk comes from any possible mistake in epistemic activities that might result in unintended and harmful consequences. Inductive risk is only a sub-type of epistemic risk because it tends to focus on particular stages of scientific practice (hypothesis evaluation) and it privileges cases of inductive scientific reasoning, such as cases in epidemiology and my COVID example. Both inductive and epistemic risk apply to scientists but also other professionals (Douglas 2003; 2009). In principle, philosophers can also be subject to those risks, a point that I will return to later in the paper.

There is another type of risk that features prominently in science (Biddle and Kukla 2017, 219). *Ethical risk* is the risk of harming others unrelated to the possibility of error. For instance, clinical studies involve a perennial risk of harming or compromising the autonomy of their participants. These risks come from the very nature or design of those studies, and they cannot be dismissed even if such studies were epistemically flawless. Research programs on racial and gender differences frequently involve significant ethical risks because the methods and experiments in these programs contain racist and sexist assumptions (Brown 2015). These studies might solidify racist and sexist practices in society.

The studies conducted by Rosenberg and colleagues are not free from ethical risk. Insofar as these studies rely on sampling, they also involve the risk of causing harm to the donors. Furthermore, these studies use linguistic terms ("Black," "Asian," etc.) that are identical to the ones present in the OMB racial classification and the everyday racial discourse in the US (and elsewhere). For this reason, such studies may contribute to reinforcing beliefs about the essentiality and immutability of racial groups and human identity. This type of ethical risk is most likely absent in research involving the monophyletic groups. Rosenberg and colleagues (2002) seem aware of the significant ethical risks involved in their research and explicitly try to distance themselves from racial discourse. One way to mitigate these ethical risks is to reassure the public that their research is *not* about race, as Rosenberg and colleagues do.

Nevertheless, if Spencer is correct, the research of Rosenberg and colleagues is indeed about race.[8] This raises a problem. The ethical risks associated with their research are hard to dismiss

[8] Notice that, to run his argument, Spencer has to re-interpret the activity of two professional groups, rejecting how these groups describe their own practices. First, he must say that the OMB racial categories refer to biological races (Jackson 2022; Winsberg 2022). This idea is expressly

because their research necessarily concerns the same groups ordinarily recognized as races in the US. It is not enough to say that Rosenberg and colleagues do not study race in any relevant sense. While one might say that races (human continental populations) in this context have no social or political meaning, this claim is not enough to avoid or dismiss ethical risks. After all, ethical risks also depend on the uptake of ideas. Again, the risks involved in those population genetic studies are higher than first anticipated and much more complex than the monophyletic group example.

In summary, both epistemic (including inductive) and ethical risks are present in research regarding monophyletic groups and race. Nonetheless, the studies of Rosenberg and colleagues might have a more direct and impactful consequence to society. These studies carry significant risk, requiring geneticists to be extra careful in their strategies to mitigate possible errors and recognize the ethical implications of their work. Spencer's "parity of reasoning" argument (Section 3) simply does not consider how risk influences scientific claims around the categories of monophyletic groups and races in different ways. Interestingly, the risk does not only influence scientific claims about race but also philosophical ones. In the remainder of this section, I show how Spencer's theorizing is/should be sensitive to risk. This point reveals some weaknesses in his argument and raises broader questions about metaphysics and values.

rejected by the OMB. Second, he must say that Rosenberg et al. (2002) are studying races, something they strongly deny.

Spencer is aware of two ethical risks related to BRR (2019a; 2018b).[9] First, white nationalists and other racist actors might attempt to use his theory for their political purposes. This appropriation is already underway, and it comes as no surprise (Thompson 2019; Jackson 2022). After all, while geneticists are reluctant to even use the term "race" in their research, Spencer defends the legitimacy of a biological understanding of races. Second, a possible consequence of biological race realism is reinforcing psychological essentialism and, therefore, racist beliefs. As empirical studies indicate, claims such as "X is a biological race" lead people to think that racial divisions are fundamental and necessary aspects of reality (Ludwig 2016; Donovan 2014, 2016, 2017; Heine 2017). When students are confronted with those claims in the context of a biology classroom, they tend to develop essentialist views of races and racist beliefs. Old-fashioned ideas that some humans are essentially more intelligent or altruistic than others gain traction.

Spencer does not give much attention to the risk of appropriation, but he addresses the worry of BRR promoting racist beliefs (2019a). He takes a "scientifically informed approach" to this issue and argues there is still no strong evidence for the link between BRR and racism in the classroom (2019a, 240). As Spencer notices, the work of Donovan (2014, 2016, 2017) suggests that racist beliefs depend on the degree of a student's comprehension of Mendelian genetics. Hence, he concludes, "perhaps one morally respectable way to do philosophy of race is not to supress research on biological race realism, but rather, to improve the public's understanding of genetics" (2019a, 240).

[9] The two issues are mentioned both in print and interviews, as the interview below: https://biopoliticalphilosophy.com/2020/05/20/dialogues-on-disability-shelley-tremain-interviews-quayshawn-spencer-redux/

Spencer's conclusion is telling. It shows that he is worried about the ethical implications of his metaphysical view. If the right evidence for risks comes along, he might consider stopping his research on BRR. In this sense, his way of dealing with those ethical implications resembles strategies that scientists take when dealing with ethical risks that "may function as sufficient reasons to block a research project altogether, or they may shape its methodology or implementation in myriad ways" (Biddle and Kukla 2017, p.219). At the same time, ethical risks might give scholars reasons to pursue a research project with some epistemic utility. After all, suppressing legitimate research is also an ethical risk that must be avoided. Spencer concludes that this risk trumps the worry about racist beliefs because the latter still lacks sufficient evidence.

While ethical risks could lead Spencer to stop researching BRR, they do not influence Spencer's research conclusions. Whether races count as genuine kinds or not, this philosophical analysis is independent of ethical risks. Nevertheless, this analysis could at least in principle still be influenced by epistemic risks. I consider this possibility next.

Epistemic risks would arise in case there is the possibility that Spencer is mistaken about something. For example, if population geneticists could be mistaken about their results, Spencer could also be mistaken about that. Moreover, some epistemic risks might result from possible mistakes in Spencer's reasoning and analysis. For instance, one might argue that the set of studies done by Rosenberg and colleagues is not representative of the work and goals of most population geneticists. In this case, Spencer might be mistakenly treating Rosenberg's work as paradigmatic of population genetics, resulting in a misinterpretation of population genetics and its epistemic aims. Finally, Spencer's theory of genuine kinds might be mistaken in the sense that it fails to meet what Spencer himself considers to be the goal of any adequate theory of kinds.

The goal would be to capture most if not all cases, of what scientists take to be legitimate scientific categories (Spencer 2012, 2019a). Indeed, Winsberg (2022) suggests that Spencer's theory fails to be an adequate theory.

While Spencer could be mistaken in various ways, it is hard to assess how this possibility of error should influence Spencer's philosophical arguments for BRR. These possible mistakes are different from the ones that occur in the empirical sciences and motivate the re-evaluation of scientific work. For example, in cases of inductive risk, the risk of error frequently leads scientists to revise their standards of inductive evidence, often gathering more data and conducting more experiments in favor or against an inductive hypothesis. In this sense, the possibility of error influences how scientists justify their claims. It is far from obvious that the possibility of error has and should have an analogous influence in philosophical (metaphysical) argumentation for BRR. Spencer might recognize possible errors in his analysis and try to avoid them, but it is not clear that he must gather extra arguments in favor of BRR or change his theory of genuine kinds as a way of mitigating the epistemic risk. Thus, the role of epistemic risk in metaphysical theorizing is an open question.

This conclusion leads to a paradoxical situation. On the one hand, at least some metaphysical views have epistemic risks that can result in non-negligible social and political consequences. If Spencer is wrong about BRR, he would be needlessly providing ammunition to white supremacists and perhaps facilitating the development of racist beliefs in classrooms. Spencer wants to avoid these consequences especially if they would follow from a possible mistake. On the other hand, the proper way of accounting for epistemic risks in metaphysics is an open question and does not seem analogous to how the empirical sciences account for them. So, how should epistemic risks legitimately influence metaphysical theorizing?

I contend that responsible metaphysics of race must at least leave open the possibility that epistemic risk influences metaphysical reasoning. The problem with Spencer's BRR is that this possibility is not available. For instance, imagine that empirical studies show a clear and indisputable link between BRR and the promotion of racist beliefs in only a few circumscribed contexts. At the same time, imagine that there are some good reasons to keep researching BRR and that pilot educational practices are starting to be developed such that there is a chance to mitigate those racist beliefs and their consequences. One might decide to keep pursuing BRR under these conditions, but this situation involves higher epistemic risk than if no link between BRR and racist beliefs exists. The existence of such a risk would morally demand adjustments in how the metaphysics of race is conducted. While epistemic risk might not motivate Spencer to change aspects of his theory of genuine kinds, it should motivate him to carefully re-examine the allegedly epistemic utility of biological race classifications that function as justification for BRR. In the face of high epistemic risk, one should appeal to extremely clear and convincing cases of utility.

This conclusion indicates that non-epistemic values can indirectly influence BRR. In the hypothetical case of a clear link between BRR and racist beliefs, the epistemic risk associated with BRR has harmful social and political consequences, namely the promotion of those beliefs. Hence, before concluding that "X is a biological race," Spencer must explicitly assess how bad it would be to promote racist beliefs based on a mistake. This assessment will indicate to him how careful his analysis of epistemic utility must be.

As discussed in previous sections, Spencer characterizes the epistemic utility of racial categories as their capacity to ground generalizations in population genetics. Nevertheless, his actual example is extremely modest in at least two ways. First, racial terms (terms for human continental populations) are useful to generate hypotheses about the very reference of those terms (2019a). Most if not all terms in science are useful in this way. Hence, it is unclear how distinctively useful those racial categories are. He does *not* provide further examples.[10] Second, Spencer treats population genetics as a research program, which might overemphasize the epistemic utility of racial categories. It is an open debate whether these categories are useful in grounding generalizations outside the specific research agenda of Rosenberg and colleagues. Hence, the analysis of epistemic utility provided by Spencer is less straightforward than it might first appear. Given the epistemic risk involved in his defense of BRR, its epistemic utility must be sufficiently clear and convincing.

At this point, one might argue that racial categories are useful in other domains, such as race-based medicine (Hardimon 2017; Spencer 2018a). To offer a detailed discussion of these uses of racial categories would drastically influence the scope of the paper. Instead, I limit my discussion to raising the problem of co-reference. Racial terms might be useful in population genetics, medicine, and other areas of science. For instance, these categories might help Rosenberg and colleagues to study genetic clusters, while also helping clinicians offer fast diagnoses to their patients. One might be tempted to list these facts as part of the epistemic utility of the same category, but this temptation might result in a mistake. Only if the category (e.g., "Asian") has the same reference across research contexts can one lump together the benefits of this category.

[10] Furthermore, as described by Winsberg (2022), Spencer's examples show that the dividing humans into continental populations is an useful activity, but it does not show that any particular category (e.g., Asian) is itself useful. Hence, the reality of populations described by particular categories is unclear.

Co-reference is necessary if the uses of that same term are supposed to capture a “real” and “genuine” kind. The problem is that this co-reference is yet to be proven. Again, the conclusion is that, given the epistemic risk involved in his defense of BRR, one should carefully examine the epistemic utility of racial categories. This utility seems even more modest and less clear than Spencer himself admits.

This conclusion resembles one of the main criticisms against BRR (Section 3). According to this criticism, racial divisions are not sufficiently useful to be deemed “real.” Spencer replied to this idea by arguing that genuine kinds do not have to be significant or central to science. I agree that many legitimate kinds might not be central to science. Perhaps, some kinds might be considered “genuine” by merely supporting the types of self-referential generalizations that Spencer discusses. Nevertheless, when a high epistemic risk is involved, the legitimacy of kinds must be grounded on an even clearer and comprehensive assessment of their epistemic utility. Spencer does not sufficiently engage with this utility (Winsberg 2022).

Notice how my argument differs from the view of Phillip Kitcher (Section 3). Kitcher claims that races are legitimate if there are more beneficial than harmful societal consequences when claiming so. For him, epistemic and non-epistemic values are equally important as they offer justificatory reasons for the reality of biological races. BRR is true only after weighing all the epistemic and non-epistemic consequences. On the one hand, I agree that possible consequences of claims as “X is a biological race” influence the metaphysics of race. Assessing these consequences enables one to understand the seriousness of the epistemic risks involved in that metaphysics. On the other hand, the influence of epistemic (and ethical) risk in the reality of races is indirect. Risks are not justificatory reasons for or against BRR, but they motivate us to re-examine and revise those reasons, which pushes us to demand high standards of clarity and evidence for them.[11]

Spencer fails to recognize this indirect influence of non-epistemic values in the metaphysics of race. He fails to recognize that the risks of BRR might legitimately influence metaphysical claims. At the very least, I contend that our metaphysical theories should be open to that influence. Alternatively, metaphysicians of race must explain why their work is *not* subject to such an influence. This explanation would set them apart from scientists and many other professional groups that deal with risks all the time (Douglas 2009). Once one recognizes the influence of non-epistemic values in metaphysics, one is led to scrutinize the epistemic utility of racial categories in science. Ethical and epistemic risks require a high level of cautious reasoning, interpretation, and analysis of that epistemic utility. This level is significantly higher than the one required for scientific categories such as monophyletic groups. At this point, Spencer's parity argument breaks down. Doubts about the epistemic utility of racial categories call BRR seriously into question. This metaphysical view of races is ultimately more modest than Spencer admits.

5. Conclusion

[11] It is worth noticing that some philosophers dispute the distinction between the direct and indirect influence of epistemic risk (Elliott 2011). If these philosophers are correct, my line of argument might not be so different from Kitcher after all. Nevertheless, this would only reinforce that Spencer is too dismissive about the intricate relationship between metaphysics and values when he replies to Kitcher (2012).

In this paper, I examined Quayshawn Spencer's BRR and argue that it fails to consider how social, political, and moral values influence the metaphysics of race. Spencer is not alone in this point. The relationship between metaphysical reasoning and non-epistemic values is underexplored by philosophers and deserves careful analysis. If one agrees that the metaphysics of race involves epistemic and ethical risks, one should consider how these risks legitimately influence the reasoning and conclusions of metaphysicians.

An exhaustive analysis of this influence is beyond the scope of this paper. Instead, my goal here was threefold. First, to show that risks can legitimately influence the metaphysics of race, at least in the sense of demanding high levels of scrutiny, clarity, and evidence for the alleged epistemic utility of racial categories. These categories involve high epistemic and ethical risk, and thus, the metaphysical reasoning underlying these categories should avoid possible mistakes as much as possible. Second, I have briefly shown that the epistemic utility of racial categories provided by Spencer hardly withstands such scrutiny. Finally, my analysis of BRR should be an invitation for metaphysicians to consider the broad question of socially responsible metaphysics. After all, should metaphysics be responsive to social and political risks? If so, how?

References

Andreasen, Robin O. 2004. "The Cladistic Race Concept: A Defense." *Biology and Philosophy*. Vol. 19.

———. 2005. "The meaning of 'Race': Folk Conceptions and the new Biology of Race" *The Journal of Philosophy* 102 (2): 94–106. https://about.jstor.org/terms.

Appiah, K. A. 1996. "Race, Culture, Identity: Misunderstood Connections."." In *Color Conscious: The Political Morality of Race.*, edited by K. A Appiah and A Gutmann, 30–

105. Princeton University Press.

Basu, R. (2023). Risky Inquiry: Developing an Ethics for Philosophical Practice. *Hypatia*, *38*(2), 275-293.

Baum, David, and Stacey Smith. 2013. *Tree Thinking: An Introduction to Phylogenetic Biology*. Robert and Company.

Bernasconi, R, and T. L. Lott. 2000. *The Idea of Race. Hackett Publishing.* Hackett Publishing.

Brown, Matthew J. 2013. “Values in Science beyond Underdetermination and Inductive Risk.” *Philosophy of Science* 80 (5): 829–39. https://doi.org/10.1086/673720.

Douglas, Heather. 2000. “Inductive Risk and Values in Science.” http://www.journals.uchicago.edu/t-and-c.

———. 2009. *Science, Policy, and the Value-Free Ideal*. Pittsburgh University Press.

———. 2013. “The Value of Cognitive Values.” http://www.journals.uchicago.edu/t-and-c.

Elliott, Kevin C., and Daniel J. McKaughan. 2014. “Nonepistemic Values and the Multiple Goals of Science.” *Philosophy of Science* 81 (1): 1–21. https://doi.org/10.1086/674345.

Elliott, K. C. 2011. "Direct and indirect roles for values in science." *Philosophy of Science*, *78*(2), 303-324.

Feldman, Marcus W., and Richard Lewontin. 2008. “Race, Ancestry and Medicine.” In *Revisiting Race in a Genomic Age*, edited by Barbara A. Koenig, Sandra Soo-Jin Lee, and Sarah S. Richardson, 89–101. Rutgers University Press.

Gannett, Lisa. 2010. “Questions Asked and Unasked: How by Worrying Less about the ‘really

Real' Philosophers of Science Might Better Contribute to Debates about Genetics and Race." *Synthese* 177 (3): 363–85. https://doi.org/10.1007/s11229-010-9788-1.

Glasgow, Joshua. 2003. "On the New Biology of Race." *The Journal of Philosophy* 100 (9): 456–74.

———. 2008. *A Theory of Race*. *A Theory of Race*. https://doi.org/10.4324/9780203880951.

———. 2019. "Is Race an Illusion or a (Very) Basic Reality?" In *What Is Race? Four Philosophical Views*, edited by Joshua Glasgow, Sally Haslanger, Chike Jeffers, and Quayshawn Spencer, 111–49. Oxford University Press.

Gould, Stephen Jay. 1980. *The Mismeasure of Man*. New York: Norton & Company.

Hardimon, M. 2003. "The Ordinary Concept of Race." *The Journal of Philosophy* 100 (9): 437–55. https://about.jstor.org/terms.

———. 2017. *Rethinking Race The Case for Deflationary Realism*. Cambridge: Harvard University Press.

Haslanger, Sally. 2000. "Gender and Race: (What) Are They? (What) Do We Want Them To Be?" *Noûs* 34 (1): 31–55. https://doi.org/10.1111/0029-4624.00201.

———. 2012. *Resisting Reality: Social Construction and Social Critique*. *Resisting Reality: Social Construction and Social Critique*. https://doi.org/10.1093/acprof:oso/9780199892631.001.0001.

Hochman, Adam. 2013. "Against the New Racial Naturalism." *The Journal of Philosophy* 110 (6): 331–51.

———. 2016. "In Defense of the Metaphysics of Race." *Philosophical Studies* 174.

https://doi.org/10.1007/s11098-016-0806-0.

———. 2019. “Race and Reference.” *Biology & Philosophy* 34: 32. https://doi.org/10.1007/s10539-019-9685-z.

Intemann, Kristen. 2005. “Distinguishing between Legitimate and Illegitimate Values in Climate Modeling.” *Biddle and Winsberg* 337 (2): 111–37. https://doi.org/10.1007/s13194-014-0105-6.

Jackson Jr, J. P. 2022. "The Perils of Polysemy: Racial Realism in the Real World." *Philosophy, Theory, and Practice in Biology, 14*.

James, M, and A Burgos. 2020. “Race.” Stanford Encyclopedia of Philosophy. 2020.

Jeffers, Chike. 2019. “Cultural Constructionism.” In *What Is Race? Four Philosophical Views*, 38–72. Oxford University Press.

Kitcher, Philip. 2007. “Does ‘Race’ Have a Future?” *Philosophy & Public Affairs* 35 (4): 293–317.

Longino, Helen E. 1996. “Cognitive and Non-Cognitive Values in Science: Rethinking the Dichotomy.” In *Feminism, Science, and the Philosophy of Science*, 39–58. https://doi.org/10.1007/978-94-009-1742-2_3.

Ludwig, David. 2016. “Ontological Choices and the Value-Free Ideal.” *Erkenntnis* 81 (6): 1253–72. https://doi.org/10.1007/s10670-015-9793-3.

Maglo, Koffi N. 2011. “The Case against Biological Realism about Race: From Darwin to the Post-Genomic Era.” *Perspectives on Science* 19 (4): 361–90. https://doi.org/10.1162/POSC_a_00048.

Mallick, Swapan, Heng Li, Mark Lipson, Iain Mathieson, Melissa Gymrek, Fernando Racimo, Mengyao Zhao, et al. 2016. “The Simons Genome Diversity Project: 300 Genomes from 142 Diverse Populations.” https://doi.org/10.1038/nature18964.

Mallon, Ron. 2006. “‘Race’’: Normative, Not Metaphysical or Semantic.’” *Ethics* 116 (3): 525–51.

Pemberton, Trevor J, Michael Degiorgio, and Noah A Rosenberg. 2013. “Population Structure in a Comprehensive Genomic Data Set on Human Microsatellite Variation.” *G3 Genes Genomes Genetics* 3. https://doi.org/10.1534/g3.113.005728.

Reich, D. 2018. *Who We Are and How We Got Here Ancient DNA and the New Science of the Human Past*. Pantheon.

Root, Michael. 2003. “The Use of Race in Medicine as a Proxy for Genetic Differences.” http://www.journals.uchicago.edu/t-a.

Rosenberg, Noah A., Jonathan K. Pritchard, James L. Weber, Howard M. Cann, Kenneth K. Kidd, Lev A. Zhivotovsky, and Marcus W. Feldman. 2002. “Genetic Structure of Human Populations.” *Science* 298 (5602): 2381–85. https://doi.org/10.1126/science.1078311.

Rosenberg, Noah A. 2011. “A Population-Genetic Perspective on the Similarities and Differences among Worldwide Human Populations.” *NIH*. https://doi.org/10.3378/027.083.0601.

Rosenberg, Noah A, Saurabh Mahajan, Sohini Ramachandran, Chengfeng Zhao, Jonathan K Pritchard, and Marcus W Feldman. 2005. “Clines, Clusters, and the Effect of Study Design on the Inference of Human Population Structure.” *PLoS Genetics* 1 (6): E70.

https://doi.org/10.1371/journal.pgen.0010070.

Spencer, Quayshawn. 2012. “What ‘biological Racial Realism’ Should Mean.” *Philosophical Studies* 159: 181–204. https://doi.org/10.1007/s11098-011-9697-2.

———. 2014. “A Radical Solution to the Race Problem.” http://www.journals.uchicago.edu/t-and-c.

———. 2016. “Genuine Kinds and Scientific Reality.” In *Natural Kinds and Classification in Scientific Practice*, edited by C Kendig, 177–92. Routledge.

———. 2018a. “A Racial Classification for Medical Genetics.” *Philosophical Studies* 175: 1013–37. https://doi.org/10.1007/s11098-018-1072-0.

———. 2018b. “‘Racial Realism II: Are Folk Races Real?’” *Philosophy Compass* 13 (1): 1–16. https://doi.org/10.1111/phc3.12467.

———. 2019a. “How to Be a Biological Race Realist.” In *What Is Race? Four Philosophical Views*, edited by Joshua Glasgow, Sally Haslanger, Chike Jeffers, and Quayshawn Spencer, 73–110. Oxford University Press.

———. 2019b. “I—A More Radical Solution to the Race Problem.” *Aristotelian Society Supplementary Volume* 93 (1): 25–48. https://doi.org/10.1093/arisup/akz011.

Steel, Daniel. 2010. “Epistemic Values and the Argument from Inductive Risk*.” *Philosophy of Science*. Vol. 77. http://www.journals.uchicago.edu/t-and-c.

Sundstrom, Ronald R. 2002. “Race as a Human Kind.” *PHILOSOPHY & SOCIAL CRITICISM • Vol*. Vol. 28.

Wiley, E. O., and Bruce S. Lieberman. 2011. *Phylogenetics: Theory and Practice of*

Phylogenetic Systematics: Second Edition. *Phylogenetics: Theory and Practice of Phylogenetic Systematics: Second Edition*. https://doi.org/10.1002/9781118017883.

Winsberg, E. (2022). Putting races on the ontological map: a close look at Spencer's 'new biologism' of race. *Biology & Philosophy*, *37*(6), 46.

Yudell, Michael, Dorothy Roberts, Rob Desalle, and Sarah Tishkoff. 2016. "Taking Race out of Genetics." *Insights Perspectives* 564: 6273. https://doi.org/10.1126/science.aac4951.

Zack, N. 2002. *Philosophy of Science and Race*. Routledge.