

Penultimate draft. Please cite this article as:

Hochman, A. (2016) Race: Deflate or pop? *Studies in History and Philosophy of Biological and Biomedical Sciences* 57: 60–68

If you do not have access to the final version feel free to ask me for a copy
adam.hochman83@gmail.com

Race: Deflate or Pop?

Adam Hochman

Abstract

Neven Sesardic has recently defended his arguments in favour of racial naturalism—the view that race is a valid biological category—in response to my criticism of his work. While Sesardic claims that a strong version of racial naturalism can survive critique, he has in fact weakened his position considerably. He concedes that conventional racial taxonomy is arbitrary and he no longer identifies ‘races’ as human subspecies. Sesardic now relies almost entirely on Theodosius Dobzhansky’s notion of race-as-population. This weak approach to ‘race’—according to which all genetic difference between populations is ‘racial’ and ‘the races’ are simply the populations we choose to call races—survived its early critiques. As it is being mobilised to support racial naturalism once more, we need to continue the debate about whether we should weaken the concept of race to mean ‘population’, or abandon it as a failed biological category. I argue that Sesardic’s case for racial naturalism is only supported by his continued mischaracterisation of anti-realism about biological race and his appeal to Dobzhansky’s authority. Rather than deflating the meaning of ‘race’, it should be eliminated from our biological ontology.

Keywords: Race; population genetics; forensic anthropology; hereditarianism; racial naturalism; Neven Sesardic

1. Introduction

Sesardic has offered one of the most forceful arguments for racial naturalism—the view that race is a valid biological category—in recent times (Sesardic, 2010). Its force derives not from its originality but rather from its synthesis of various lines of argument and evidence, including the statistical critiques of Richard Lewontin’s (1972) *The Apportionment of Human Diversity* (Edwards, 2003; Mitton, 1977), studies in forensic anthropology (Ousley, Jantz, & Freid, 2009; Sauer, 1992) and recent work in population genetics (Rosenberg et al., 2002). Nevertheless, Sesardic’s defence of racial naturalism has attracted strong criticism. At least three articles have been published responding exclusively to his 2010 *Race: A social destruction of a biological concept* (Hochman, 2013b; Pigliucci, 2013; Taylor, 2011). Sesardic (2013) has replied to one of these articles, my *Racial discrimination: How not to do it* (Hochman, 2013b). This paper continues the debate.

To contextualise Sesardic’s reply, note that philosophers of race have recently argued that there is very little disagreement left about the facts relevant to the reality of biological race, and that it is unlikely that the debate will be resolved by the revelations of future science (Hochman, 2014; Kaplan & Winther, 2012, 2014; Mallon, 2006; Winther & Kaplan, 2013). “We already know the facts”, claim Kenneth Weiss and Stephanie Fullerton in their *Racing Around, Getting Nowhere*. “In that sense, the endless cycling could stop, because we’re already there” (Weiss & Fullerton, 2005, p. 168). If this is right it has important implications for the future of this debate. If we are in agreement about the science we will need to turn our attention to our actual points of disagreement, such as semantic disputes about the meaning of ‘race’ and normative disagreements about the value of racial classification.

Sesardic’s reply is significant because he argues that the debate about the reality of race does turn on a substantive factual disagreement between race naturalists and anti-realists about race (let us set aside social constructionism about race for the purposes of this paper).¹ He believes that anti-realism entails the following claim, which he labels “(1)”: “Classifying people into commonsense races tells us absolutely nothing informative about biological characteristics of these people” (Sesardic, 2013, p.

¹ For an excellent, even-handed discussion of social constructionism about race, see Albert Atkin’s (2012) *The Philosophy of Race*.

287). If this is what anti-realism entails then this debate turns on an empirical disagreement, suggesting that our efforts to resolve the race debate should be focussed on determining whether or not (1) is true.

The main thrust of my critique of Sesardic's (2010) defence of racial naturalism was that he oscillated between two versions of racial naturalism: one strong but not supported by the science; one so weak that it does not contrast with anti-realism about race (Hochman, 2013b). On the strong version of racial naturalism 'race' is a privileged, objective, scientific representation of human biological diversity, and there are a handful of geographically defined races representing the major biological subdivisions within our species. On the weak version 'race' is correlated with various biological traits, but racial classification is both superficial and arbitrary, and there may be thousands of groups we could potentially call 'races'. If Sesardic is right and anti-realism about race entails (1) then there is a substantive empirical disagreement between anti-realists and weak race naturalists, and I was mistaken to suggest otherwise.

Sesardic responds by initially claiming that "the "strong" interpretation of race is not undermined by Hochman's arguments" (Sesardic, 2013, p. 287). However, everything that follows in his reply indicates that he has abandoned strong racial naturalism in favour of the weak variety. If this is right, and I will provide textual evidence that it is, we can ignore Sesardic's claim that strong racial naturalism is defensible and focus on his claim that weak racial naturalism does indeed contrast with anti-realism about biological race because anti-realism entails (1). Recall that (1) is the view that how people are racialised is uncorrelated with any of their biological features (gene frequencies, skin colour, hair form, eye shape, etc.). If anti-realism entails this radical claim then even a very weak form of racial naturalism will contrast with anti-realism about race.

We need to know what race naturalists and anti-realists are committed to if we are to arbitrate between them. It will also be useful to be clear about the status of the race concept in the sciences. Sesardic is right to observe that there has been an "effort to create the appearance of a scientific consensus through race-denigrating proclamations of experts, statements of learned societies and popular science publications" (Sesardic, 2013, p. 288). There has never been a strong consensus against racial naturalism, which is still a common position among biologists and physical anthropologists

(Lieberman, Hampton, Littlefield, & Hallead, 1992; Morning, 2011). This debate, as Sesardic recognises, is far from over.

Curiously, though, Sesardic adds to this illusory consensus by claiming that the 1950 UNESCO Statement on Race was anti-realist, which is false.² The 1950 and 1951 UNESCO statements both supported racial naturalism. Yet they are commonly understood as marking a turn to anti-realism about race, or even as promoting anti-realism (Baker & Patterson, 1994, p. 341; Barkan, 1992; Skinner, 2006). This may be because the statements were anti-racist (and racism was understood to be part and parcel of ‘race’) or because the populationist definition of race that they promoted was, for many, so deflated that it was no longer recognisably racial (Hochman, 2015). “The second UNESCO statement on race denied the validity of race as a *biological* category”, claim Baker and Patterson, in error, “and focused instead on the concept of a population” (Baker & Patterson, 1994, p. 3). Rather than claiming that the population concept superseded the idea of ‘race’, the statements actually claimed that ‘races’ *are* populations.

This is the position Sesardic now defends. He no longer argues that there are human subspecies (see Sesardic, 2010). It is by appealing to Dobzhansky’s (1944) definition of ‘races’ as genetically identifiable populations that he defends his view. What Sesardic does not seem to appreciate is that this definition was, and continues to be, controversial (Gannett, 2013; Livingstone, 1962; Millstein, 2015; Reardon, 2005). He does not engage seriously with one of my central arguments—that race-as-population trivialises the concept of race—and falsely assumes that racial naturalism has always been a trivial, and trivially true, position.

² Sesardic reads the Statement as claiming that “For all practical purposes ‘race’ is not so much a biological phenomenon as a social myth” (Sesardic, 2013, p. 288). However, this is not only a quotation out of context, but a misquotation. The Statement actually claims that, “The biological fact of race and the myth of “race” should be distinguished. For all practical social purposes “race” is not so much a biological phenomenon as a social myth” (UNESCO, 1952, p. 101). There is a world of difference between the misquotation and the actual text. The claim that race is an illusion for *all practical purposes* would be anti-realist. The claim that race is biologically real but does not explain social reality is simply a form of non-hereditarian racial naturalism.

I show that Sesardic fails to identify a substantive factual dispute between anti-realists and race naturalists (except on issues surrounding hereditarianism). His case for racial naturalism is only supported by his appeal to Dobzhansky's authority and his continued mischaracterisation of anti-realists about race. By taking quotes out of context, Sesardic makes it appear that anti-realists defend (1), which is not true. He also accuses anti-realists of obscuring the truth for political reasons when they actually offer defensible, empirically grounded arguments for their anti-realism about race.

Sesardic has argued for racial naturalism on the basis of evidence from population genetics and forensic anthropology. In the following section I show that Sesardic continues to misunderstand the forensic anthropological arguments presented *against* race as supporting racial naturalism, and I attempt to explain these persistent misinterpretations. In Section 3 I demonstrate that none of the theorists Sesardic quotes and cites as endorsing (1)—the view that racial classification is uncorrelated with any biological feature—actually defend this position. His disagreement is with a straw-man of his own making. In Section 4 I argue that Sesardic fails to defend the populationist definition of race against my earlier criticisms. Section 5 deals with Sesardic's attempt to connect racial naturalism and hereditarianism. In Section 6 I draw the conclusion that 'race' should not be deflated to mean 'population', it should be rejected as a failed scientific theory.

2. Forensic anthropology and 'race'

While 21st century genetic clustering studies breathed new life into the biological race debate, Sesardic draws not only on genetic but also on morphological evidence to support racial naturalism. This section focuses on the morphological side of Sesardic's argument.

Both Massimo Pigliucci and I have pointed out that Sesardic cited forensic anthropology articles arguing *against* the racial classification of skulls as evidence *for* the racial classification of skulls (Hochman, 2013b; Pigliucci, 2013). Sesardic writes that

forensic anthropologists are quite successful in correctly inferring a person's race from the skeletal characteristics of human remains... This prompted one bewildered and exasperated scientist to write an

article with a provocative title: “If Races Do Not Exist, Why Are Forensic Anthropologists So Good at Identifying Them?” (Sauer 1992). (Sesardic, 2010, pp. 155–156)

However, Norman Sauer does not argue for racial naturalism in the cited article. Rather, he shows how anti-realism about biological race is consistent with the fact that forensic anthropologists are able to sort skulls into conventional ‘racial’ categories. “It is maintained in this paper”, explains Sauer, “that the successful assignment of race to a skeletal specimen is not a vindication of the race concept, but rather a prediction that an individual, while alive was assigned to a particular socially constructed ‘racial’ category” (Sauer, 1992, p. 107). Sauer is not the “bewildered and exasperated” race naturalist Sesardic paints him to be.

In response to my criticism of his misrepresentation of Sauer’s work, Sesardic maintains that “the main thrust of Sauer’s antipathy toward the concept of race does not come from his scientific expertise but from rather irrelevant considerations that can be legitimately ignored” as “what mainly bothers Sauer is ideological connotations of the word “race”” (Sesardic, 2013, p. 289). Sesardic takes this reading from the following passage in Sauer’s article:

That forensic anthropologists place our field’s stamp of approval on the traditional and unscientific concept of race each time we make such a judgement is a problem for which I see no easy solution. Perhaps we could avoid the term “race” in our communications about cases, substituting ‘ancestry’ or some other word that has less baggage than race. Perhaps we could be more explicit about the social or cultural concepts of race. Certainly we can teach the nonexistence of race in the classroom and do our best to clarify the use of races in forensic anthropology. At least, however, let us not fall into the trap of accepting races as valid biologically discrete categories because we use them so often. (Sauer, 1992, p. 110)

To which Sesardic responds,

This is a typical, purely verbal maneuver that we so often find in discussions about race. Notice that Sauer actually proposes that the non-existence of race be taught in the classroom and that at the same time the use

of race in forensic anthropology be clarified, not abandoned. The message seems to be: deny the existence of the category but continue using it! (Sesardic, 2013, p. 289)

This is indeed Sauer's message, but Sesardic has somehow missed his entire supporting argument. Yes, Sauer argues for the use of conventional racial categories in forensic anthropology, but that is only because those are the folk categories we use to describe our missing persons, *not* because 'race' is a valid biological category. As Sauer explains, "since the goal in forensic identification cases is to find agreement between the biological profile generated from a skeleton to a missing person report, it only makes sense to use the emic [folk] categories that are likely to have been used to describe the missing person" (Sauer, 1992, pp. 109–110). Sauer's point is that forensic anthropologists' use of emic or folk racial categories does not commit them to a belief in race as a valid *etic* or scientific concept.

Sauer argues that "to identify a person as having ancestors from, say, Northern Europe does not identify a biological race of Northern Europeans" (Sauer, 1992, p. 110). Conventional 'racial' taxonomy is, for Sauer, just one way of classifying populations, and it is not scientifically privileged over other potential taxonomies. Stephen Ousley, Richard Jantz, and Donna Freid (2009) have offered empirical support for Sauer's argument. They show that while it is indeed possible to sort skulls into conventional racial categories with high accuracy this does not vindicate racial naturalism because if all that is needed to demonstrate racial status is to accurately sort between groups of skulls then there are "so many possible distinctive biological races that the concept is virtually meaningless" (Ousley et al., 2009, p. 74). As both Pigliucci and I point out, Sesardic (2010) cited Ousley, Jantz, and Freid's study in support of racial naturalism, but like Sauer the authors actually argued for *anti-realism* about race (Hochman, 2013b; Pigliucci, 2013). Sesardic (2013) does not comment on his interpretation of this study.

For almost all of human history we have mated with those born relatively nearby—we had no other choice. Couple this kind of assortative mating with local adaptations, mutations and drift, and biological diversity will have a geographical structure. Almost any geographically based classification system will latch on to human biological diversity to some extent (Ousley et al., 2009). Ousley, Jantz and Freid were able to sort between Nagasaki and Tohoku males and also Arikara and Sioux females with even higher accuracy than between American black males, Japanese males, Native American males, and

American white males. This ability to make fine-grained differentiations suggests that forensic anthropologists could divide the world population into five, fifty, 500, perhaps even 5000 geographical groupings, and—with good enough data—accurately sort between their skulls. We should not therefore assume that when forensic anthropologists use any particular taxonomy that it represents some deep structure of human diversity, branches on our evolutionary ‘tree’, or a scientifically privileged way of subdividing our species.

Ousley, Jantz and Freid argue that a racial interpretation of forensic anthropology is due to confirmation bias. Sesardic (2010) certainly only considered the data that seemed to support a racial reading of skull classification. But confirmation bias may only be part of the reason for Sesardic’s racial interpretation of forensic anthropological research. He worries about the role political correctness plays in this debate. While he doesn’t use this phrase, Sesardic is concerned about what has been called the *political correctness fallacy*. One commits this fallacy when one gives more credence to a theory because it is politically correct. It seems, however, that Sesardic commits what we might call the *political incorrectness fallacy*. He gives *less* credence to theories that are deemed politically correct. Anti-realism about biological race may be the more politically correct position, but that has no bearing on whether or not it is true. Sesardic seems so convinced that the arguments against racial naturalism from forensic anthropology are ideological that he is unable to see the logic—and indeed the force—of those arguments.

3. What do anti-realists about race really believe?

We need to form a clear picture of what realists and anti-realists about race believe—and why—so that we can identify where the disagreement lies and what it would take to resolve it. Ron Mallon has argued that “Skeptics, constructionists, and naturalists share a broad base of agreement regarding the metaphysical facts surrounding racial or racialized phenomena” (Mallon, 2006, p. 527). If this is right the debate between race naturalists and anti-realists turns on semantic and normative factors, rather than on disagreements about the science.

Against this understanding of the state of the debate, Sesardic argues that the dispute turns on a factual disagreement about human biological diversity. He claims that anti-realists (or sceptics) believe (1): that ‘race’ is uncorrelated with any biological feature whatsoever. If Sesardic is right, and if all that stops anti-realists from becoming race naturalists is their mistaken belief in (1), the debate could be easily solved. All race naturalists would need to do is to show that (1) is false.

Do anti-realists about race really believe (1)? Sesardic argues that they do:

Consider typical statements made repeatedly by leading racial constructionists that race is biologically “meaningless” (AAA, 1994 [sic]; Fish, 2002, p. 138; Gould, 1996, p. 379; Marshall, 1998, p. 654; Rose, 2002; Schwartz, 2001), that “race as biology is fiction” (Smedley & Smedley, 2005), that “race is the phlogiston of our time” (Montagu, 1964, p. xii; similarly Hirschfeld, 1998, p. 36), that “race” is a concept like unicorn (Fish, 2002, p. 138), that “the reality of human races is [. . .] destined to follow the flat Earth into oblivion” (Diamond, 1994; a similar claim is also made by physical anthropologist A. Goodman in the 2003 PBS educational documentary “Race: The Power of an Illusion”), etc.

How is the ordinary reader expected to interpret these statements? As accepting (1)? Or as denying it? Or as being agnostic about it? I think it is quite obvious that most people would take these statements as implying (1). (Sesardic, 2013, p. 287)

Under pressure from me that anti-realists don’t actually believe (1), Sesardic concedes that

maybe when these people said that race is biologically meaningless they didn’t mean it literally! Maybe. Nevertheless, they must have been well aware that, given the way they chose to express themselves, the public was bound to take them to mean something like (1)... Be that as it may, we should be able to agree about this: if many a public statement by racial constructionists looks like (1) and quacks like (1), we may not know for certain that it “really” means (1), but it certainly deserves to be treated as expressing (1). And discussed accordingly. (Sesardic, 2013, p. 288)

Who the “ordinary reader” is supposed to be is unclear. Nor is the criteria for what makes a statement “public” obvious. The cited statements are public in the sense that they are accessible to the public, but

many of them were surely written with a specialist audience in mind, as they are published in academic journals including *American Psychologist*, *Science*, and *The New England Journal of Medicine*. We cannot know how the “ordinary reader” would understand these works unless we know how to identify her and actually ask her, so let us focus on what the cited texts actually claim about human biological diversity.

Before turning to the statements that supposedly imply (1), let us consider briefly what an implausible position it is. Consider, for instance, the distribution of skin colour. Skin colour differences are smoothly distributed across geographic space (Barsh, 2003). However, it is a plain and obvious fact that skin colour is at least *correlated* with conventional ‘racial’ categories. People racialised as ‘black’ are darker on average than people racialised as ‘white’, even though many individuals racialised as ‘black’ are lighter skinned than individual ‘whites’. Nobody disputes this. If (1) were true then people racialised as ‘black’ would not be darker on average than people racialised as ‘white’. Skin colour would be distributed randomly, or we would all have the same skin colour. That is one reason why (1) is utterly implausible and why nobody who understood what it actually entailed would believe that it were true.

3.1 ‘Race’ and the meaning of meaninglessness

Let us turn now to the statements that supposedly support (1). In this section I focus on the claim that race is ‘biologically meaningless’, which Sesardic believes implies (1). Sesardic attributes this claim to the AAA (1999), Jefferson Fish (2002, p. 138), Stephen Jay Gould (1996, p. 379), Eliot Marshall (1998, p. 654), Steven Rose (2002) and Robert Schwartz (2001). I will consider the cited texts in turn.

The phrase ‘biologically meaningless’ does not appear in the *AAA Statement on Race*, so it is unclear why it is included in Sesardic’s list of citations. Here is an extract from the statement:

Evidence from the analysis of genetics (eg, DNA) indicates that there is greater variation within racial groups than between them. This means that most physical variation, about 94%, lies within so-called racial groups. Conventional geographic “racial” groupings differ from one another only in about 6% of their

genes. In neighboring populations there is much overlapping of genes and their phenotypic (physical) expressions. Throughout history whenever different groups have come into contact, they have interbred. The continued sharing of genetic materials has maintained all of humankind as a single species.

Physical variations in any given trait tend to occur gradually rather than abruptly over geographic areas. And because physical traits are inherited independently of one another, knowing the range of one trait does not predict the presence of others. For example, skin color varies largely from light in the temperate areas in the north to dark in the tropical areas in the south; its intensity is not related to nose shape or hair texture. (AAA, 1999, p. 712)

The AAA Statement does not support (1) as it accepts that there is a correlation between genetic and phenotypic traits and conventional ‘racial’ taxonomy.³

Let’s move to the next citation, Fish’s *The Myth of Race* (Fish, 2002). Unlike the AAA Statement, Fish does indeed claim that race is “biologically meaningless” (2002, p. 138). Does he mean (1), as Sesardic suggests? There is one passage which supports this reading: “The fact that Americans believe that Asians, blacks, Hispanics, and whites constitute biological entities called races is a matter of cultural interest rather than scientific substance. It is misinformation that tells us something about American culture, but nothing about the human species” (Fish, 2002, p. 114). This particular passage does suggest (1), but this moment of exaggeration runs counter to the rest of the chapter. For instance Fish writes that, “Our species evolved in Africa from earlier forms and eventually spread out around the planet. Over time, human populations that were geographically separated from one another came to differ in physical appearance” (Fish, 2002, p. 115). Fish accepts that there is geographically structured biological variation in our species, which is inconsistent with (1).

³ As Naomi Zack (2001) has observed, the Statement even makes a factual error in favour of racial naturalism. It claims that conventional ‘races’ differ from one another in about 6% of their genes, when it should claim that ‘races’ differ in about 6% of the overall human genetic variation. We are all 99.5% genetically identical, according to recent estimates, so the authors of the AAA Statement claim that human diversity is twelve times greater than it actually is (Levy et al., 2007).

What Fish really argues is not (1), but rather that conventional racial categories are poor representations of our biodiversity. For instance he discusses how the idea of a ‘black African race’ obscures our understanding of physical variations of the human form. “Because the human species spent most of its existence in Africa, different populations in Africa have been separated from each other longer than east Asians or northern Europeans have been separated from each other or from Africans. As a result, there is remarkable physical variation among the indigenous peoples of Africa that goes unrecognized by Americans, who view them all as belonging to the same race” (Fish, 2002, p. 117). When we engage with the content of Fish’s chapter, rather than with an ambiguous statement removed from its context, it is clear that he does not endorse (1).

The next citation is Gould’s *The Mismeasure of Man*. Gould does indeed write about such “biologically meaningless categories as white and black” (Gould, 1996, p. 379). Does he endorse (1)? Clearly not:

...our own species, *Homo sapiens*, might have included a set of subspecies (races) with meaningfully different genetic capacities. If our species were millions of years old (many are), and if its races had been geographically separated for most of this time without significant genetic interchange, then large genetic differences might have slowly accumulated between groups. But *Homo sapiens* is, at most, a few hundred thousand years old, and all modern human races probably split from a common ancestral stock only about a hundred thousand years ago. A few outstanding traits of external appearance lead to our subjective judgment of important differences. But biologists have recently affirmed—as long suspected—that the overall genetic differences among human races are astonishingly small. (Gould, 1996, p. 353)

If (1) were true, then rather than there being “astonishingly small” genetic differences between racialised groups, there would be no differences at all.

Sesardic cites Marshall (1998) as another author who has stated that race is biologically meaningless:

“Ridiculous” is the word cultural anthropologist John Moore of the University of Florida, Gainesville, uses to describe such racial typing. This view is based on a growing body of data that indicates, as Moore says, that “there aren’t any boundaries between races.” Geneticist Kenneth Kidd of Yale University says the

DNA samples he's examined show that there is "a virtual continuum of genetic variation" around the world. "There's no place where you can draw a line and say there's a major difference on one side of the line from what's on the other side." If one is talking about a distinct, discrete, identifiable population, Kidd adds, "there's no such thing as race in [modern] *Homo sapiens*." (Marshall, 1998, p. 654)

Once again, Sesardic wrongly attributes (1) to an author. Marshall accepts that there is a virtual continuum of genetic variation around the world. Because groups are racialised according to geographic origin they will have some differences in gene frequencies, so (1) will be false even if racial typing is superficial, largely arbitrary, and indeed "ridiculous".

The next in line is an article in the *Independent* written by Rose. "Biologists define "race"", claims Rose,

as a group or population differing in gene frequency from that of others in the same species. Such differences usually occur as a result of some type of geographic barrier limiting interbreeding, so that the two otherwise similar genetic populations begin to drift apart.

Thus there are distinct "races" of fruit flies – separated perhaps by mountainous or desert conditions. However, with very limited exceptions there are no such separated groups within the human population, and those that do occur do not map on to what are in conventional speech regarded as separate "races".

The consensus view among population geneticists and biological anthropologists is that the concept of "race" to indicate analytically distinct subgroups of the human race is biologically meaningless. (Rose, 2002)

Rose believes 'race' is biologically meaningless if it is used to mean "analytically distinct subgroups". He does not endorse (1). He argues that there has been too much mating between conventional 'racial' groups to justify calling them races, not that mating has been random. Rose actually claims that there are human races, but that they do not map on to conventional racial categories.

The last citation of a 'public statement' claiming that race is biologically meaningless is Schwartz's (2001) article in the *New England Journal of Medicine*. In response to Sesardic's (2010) treatment of Schwartz as endorsing (1) I showed that Sesardic was misinterpreting him. I won't go over the details

(see Hochman, 2013b, p. 284). What is interesting is that Sesardic uses this citation again after being shown that he is misrepresenting the views of its author. It must be the invocation of the ‘ordinary reader’ that is supposed to justify the repeated citation of Schwartz as endorsing (1).

Before moving on let us look at one more citation. Sesardic quotes Audrey and Brian Smedley claiming, from the title of their article, that “Race as Biology is Fiction” (Smedley & Smedley, 2005). Do they endorse (1), as Sesardic suggests? Again, the answer is clearly negative. They argue that “racialized science is based on an imprecise and distorted understanding of human differences”, not that there are no human biological differences that correlate with ‘race’ (Smedley & Smedley, 2005, p. 22). We can add another couple of straw-people to the growing list.

For Sesardic the authors discussed above are contradicting themselves when they write that race is ‘biologically meaningless’ and proceed to discuss statistical genetic and phenotypic differences between racialised groups. However, I have suggested that the phrase ‘biologically meaningless’ could be understood in two ways: as endorsing (1), or as the less radical claim that ‘race’ is not a valid biological category (Hochman, 2013a, 2013b). Sesardic responds to this suggestion as follows:

Saying that race is biologically meaningless means much more than merely that race “fails to capture the most basic features of human biological diversity”. It entails that race is not relevant at all, i.e. it entails not merely that race doesn’t capture the most basic features of human biological diversity, but that it captures no biological features whatsoever. For if it did, it couldn’t be biologically meaningless. (Sesardic, 2013, p. 288)

The problem is that this interpretation of the phrase is at odds with what anti-realists actually mean when they write that race is biologically meaningless. I agree with Sesardic that this ambiguous phrase should be dropped, but I disagree that it necessarily amounts to (1). When we read the phrase in context it is clear that the authors do not endorse (1). Rather than demonstrating that “Hochman’s “straw man” comes to life” in the form of anti-realists who indeed defend (1), Sesardic continues to misrepresent anti-realists about race (Sesardic, 2013, p. 288). This is a problem for Sesardic as he wants (1) as a view with which to contrast his weak populationist version of racial naturalism. And it is more broadly a

problem for the view that races are genetic populations, because that view does not contrast properly with the anti-realist position.

3.2 What do 'Race', 'Unicorn', 'Flat Earth' and 'Phlogiston' Have in Common?

None of the authors cited as claiming that race is 'biologically meaningless' defend (1). However, Sesardic also cites a number of authors comparing 'race' to phlogiston, to unicorns, and to flat earth. "How is the ordinary reader expected to interpret these statements?" asks Sesardic:

As accepting (1)? Or as denying it? Or as being agnostic about it? I think it is quite obvious that most people would take these statements as implying (1). The ideas of phlogiston, unicorn and flat earth were rejected because they had no correspondence with reality whatsoever. In equating race with phlogiston, unicorn and flat earth, it is hard to see how Diamond, Goodman, Fish and Montagu could have intended to communicate to their readers anything less than (1). And yet (1) is the view that, according to Hochman, no one defends. (Sesardic, 2013, p. 287)

How does 'race' compare to these discarded ideas? Do such comparisons really imply (1)?

Let us begin with phlogiston. Phlogiston theory is traditionally regarded as non-referring. After all, phlogiston was supposed to be the material released by combustion, and there is no such material. Yet not everyone believes that phlogiston, or at least phlogiston theory, had "no correspondence with reality whatsoever". While there is no phlogiston, phlogiston theory was quite successful. It captured many empirical regularities, regularities retained in current chemistry. Phlogiston theorists knew that combustion, calcification and respiration are the same sort of reaction (what we know today to be oxidation). They also knew that animals and plants have opposite effects on air (animals 'phlogisticating' the air and plants 'dephlogisticating' it). Moreover, phlogiston theorists made novel predictions. For example, the identification of inflammable air (hydrogen) with phlogiston led Priestly to predict the possibility of inverting the process of calcination. He heated metal calxes in inflammable air, and reconverted the calxes into metals as the inflammable air was absorbed. In other words, he

performed what chemists now recognise as *reduction*. Phlogiston theorists understood that ‘dephlogistication’ (oxidation) and ‘phlogistication’ (reduction) are inverse chemical reactions.

Nothing directly corresponds to phlogiston in modern chemistry, but there is an indirect correspondence relation between phlogiston theory and modern chemistry:

Dephlogistication of X corresponds to (and hence indirectly refers to) the donation of electrons of X-atoms to their bonding partner in the formation of a polarized or ionic chemical bond.

Phlogistication of X corresponds to (and hence indirectly refers to) the acceptance of electrons by positively charged X-ions from their bonding partner in the breaking of a polarized or ionic chemical bond. (Schurz, 2009, p. 109)

I will not go into the chemistry behind this (see Schurz, 2009). What I want to point out is that while oxygen theory heralded a change in ontology from phlogiston theory, much of the underlying theoretical structure remained. Comparing race theory to phlogiston theory is a compliment to race theory! They are similar in the sense that neither phlogiston nor race is real, but they are dissimilar in the sense that racial theory cannot match the success of phlogiston theory. People have known that the human form varies along geographical space since antiquity. What were the empirical successes of race theory? What were its novel predictions?

Let us move on now to the mythic beast, the unicorn. Fish writes that ‘race’ is “a cultural concept, like ghost or unicorn” (2002). Sesardic claims that by equating ‘race’ with ‘unicorn’ Fish (2002) wanted to convey that conventional racial classification tells us absolutely nothing informative about the biological characteristics of the people being classified. But, as we saw in the previous section, Fish does not endorse (1). After discussing a number of racial classification schemes from around the world, and then claiming that ‘race’ is a concept like ‘unicorn’, Fish clarifies this remark by explaining that, “More specifically, the American concept of race does not correspond to the ways in which human physical appearance varies... None of these folk taxonomies corresponds to the biological facts of human physical variation. This is why race is a myth and why races as conceived by Americans (and

others) do not exist” (Fish, 2002, p. 138). Fish is making an analogy between the myth of biological race and the myth of unicorns. Like all analogies, it is imperfect. If it were not imperfect it would not be an analogy. Fish’s argument is that the various taxonomies of race do not correspond to the “biological facts of human physical variation”, not that there are no such facts, or that racial taxonomies offer zero inferential power. When we read Fish’s comparison in context it is clear he does not endorse (1).

What about the third example, flat earth? Jarred Diamond and Alan Goodman compare ‘race’ to the idea of flat earth, which Sesardic believes implies (1). As Diamond writes,

Science often violates simple common sense. Our eyes tell us that the Earth is flat, that the sun revolves around the Earth, and that we humans are not animals. But we now ignore that evidence of our senses. We have learned that our planet is in fact round and revolves around the sun, and that humans are slightly modified chimpanzees. The reality of human races is another commonsense “truth” destined to follow the flat Earth into oblivion.

The commonsense view of races goes somewhat as follows. All native Swedes differ from all native Nigerians in appearance: there is no Swede whom you would mistake for a Nigerian, and vice versa. Swedes have lighter skin than Nigerians do. They also generally have blond or light brown hair, while Nigerians have very dark hair. Nigerians usually have more tightly coiled hair than Swedes do, dark eyes as opposed to eyes that are blue or gray, and fuller lips and broader noses. (Diamond, 1994, pp. 83–84)

Diamond of course goes on to question conventional racial taxonomy, but he cannot endorse (1) because he accepts that how people are racialised correlates with traits such as hair colour and shape, skin colour, eye colour, lip fullness, and nose width.

Goodman also uses the flat earth analogy to show that anti-realism in race requires a shift in perspective, rather than to endorse (1). “Human biological variation is so complex”, he says on PBS’s *RACE - The Power of an Illusion*. “There are so many aspects of human variation. So there are many, many ways to begin to explain them”. Yet he maintains that “There is no way to measure race. We sometimes do it by skin color, other people may do it by hair texture—other people may have the dividing lines different in terms of skin color. What is black in the United States is not what’s black in

Brazil or what's black in South Africa". 'Race' has a correspondence to perceived reality for many of us, just like the idea of flat earth corresponds to our perception of the earth from down on the ground. Comparing 'race' to 'flat earth' is a way to demonstrate how science can challenge ordinary perception. The comparison is not meant to suggest (1), it is meant to be an aid to learning.

For Sesardic comparing 'race' to phlogiston theory, belief in unicorns, and the idea of a flat earth implies that it has "no correspondence with reality whatsoever" (Sesardic 2013, 287). This is misleading. Scientists do not only reject theories that tell us "absolutely nothing informative" about reality, they also reject theories that are minimally informative and misleading, like race theory. Like those who argue that race is 'biologically meaningless', those who draw analogies between 'race', phlogiston, unicorns, and flat earth do not endorse (1). Sesardic again fails to show that there is a factual disagreement about human biological diversity between race naturalists and anti-realists.

4. The deflation of the meaning of 'race'

I have argued that weak racial naturalism is too weak to revive race as a valid biological category because it does not contrast with what anti-realists believe about human biological diversity (Hochman, 2013b). Sesardic disagrees because he believes that anti-realists endorse (1). If this were true there would be a genuine empirical disagreement between naturalists and anti-realists about race. But it is not true, and Sesardic does not seem to disagree with my reading of the science. We are left without a substantive disagreement about the facts of human biological diversity. A change in focus is needed. We need to move from illusory empirical disagreements to the semantic and normative disagreements that are really driving this debate (see Ludwig, 2015).

Perhaps because Sesardic relies on (1) as a position with which to contrast his version of racial naturalism, he does not build a case for his preferred definition of race. He appeals to Dobzhansky's definition of race-as-population as hegemonic. For Dobzhansky (1962) every population—every genetically identifiable group—is racially distinct, and the races are the populations we choose to racialise. While this weak form of racial naturalism became popular in the mid-20th century, it has always been controversial. As Frank Livingstone wrote in his debate with Dobzhansky,

In applying the theory of population genetics to humanity, the species is divided into breeding populations although for any area or group of people this concept may be difficult to apply. It is likely that each breeding population will prove to be genetically unique, so that all will be racially distinct in Dobzhansky's terms. But this is not the general use of the concept of race in biology, and the concept has not in the past been associated with this theory of human diversity. (Livingstone, 1962, p. 281)

Sesardic accepts Dobzhansky's approach, but he fails to defend it against my criticisms—following Livingstone and others—that it trivialises the concept of race, that it is too weak a view to revive racial naturalism, and that it in fact changes the topic from 'race' to 'population'.

In his response to me, Sesardic no longer discusses the clusters found in the Rosenberg et al. (2002) study as in any way privileged, as he did in his 2010 article, and he no longer identifies 'races' as human subspecies. For Sesardic, races are those genetically (or phenotypically) identifiable populations we choose to call races:

Race naturalists do not have to believe (and usually do not believe) that races are clearly delineated groups, easily distinguishable from one another, readily countable, effortlessly applicable to almost anyone, marked by a recognizable genetic signature, etc. One can be a race naturalist without subscribing to any of these views. Moreover, one can be a race naturalist even if one concedes that race is a crude, course-grained and imperfect category. (Sesardic, 2013, p. 290)

In effect, he is claiming that racial naturalism is trivially true, and that everyone can be a race naturalist. Everyone except those who believe (1), that is. But who are these scholars? Do they really exist? As I have argued in the last two sections, Sesardic fails to show that anyone actually believes (1).

Sesardic now adheres to a weak version of racial naturalism—the view that race is real in the sense that racial labels correlate with various biological traits, but that race is superficial and arbitrary. Sesardic even claims that “In principle we might introduce names for hundreds or even thousands of human groups that we could call races on the grounds of their genetic differentiation”

(Sesardic, 2013, p. 290). For Sesardic, “if the impossibility of unequivocal race counting undermines the concept of race, a similar argument could then be made against the concept of species as well” (Sesardic, 2013, p. 290). Yet for many an anti-realist about race the inability of race naturalists to justify a roughly continent-based racial taxonomy over one that consists of “hundreds or even thousands” of races is indeed a problem. We should expect that if ‘race’ were a scientific category the numbering of the races would not be quite so arbitrary. This is not an issue of unequivocal ‘race’ counting. We can of course expect borderline cases in taxonomy. When it comes to ‘race’, however, this issue is of such great magnitude that the category itself must be thrown into question. If there is no principled reason to prefer a racial taxonomy of five to a racial taxonomy of 5000—as Sesardic accepts—racial naturalism is in trouble.

‘Race’ was meant to describe the major subdivisions and lineages within our species. However, there are no such subdivisions because human biological diversity and population structure is primarily smooth or *clinal* in its distribution, and reconstructions of human evolutionary history do not fit a tree-like branching structure, indicative of major human lineages (Handley, Manica, Goudet, & Balloux, 2007; Serre & Pääbo, 2004; Templeton, 2013). Because of this clinal distribution of traits, and because there are many traits—which are discordant with each other—that can be used in attempts to subdivide our species, racial classification cannot ‘carve nature at its joints’. As Ashley Montagu put it, particularly well, “The process of averaging the characters of a given group, knocking the individuals together, giving them a good stirring, and then serving the resulting omelette as a “race” is essentially the anthropological process of race-making. It may be good cooking but it is not science, since it serves to confuse rather than to clarify” (Montagu, 1941, p. 245). We should not make an omelette of human biological diversity, but describe “the character of the variability of the elements comprising it” (Montagu, 1941, p. 245). There are no races, there are only largely discordant clines of the various characteristics that comprise human biological diversity.

Sesardic is willing to eat this “indigestible dish conjured into being by an anthropological chef” (Montagu, 1941, p. 245). He maintains that “racial naturalism does not entail that there must be a clear and precise answer to the question about the exact number of human races. After all, as far as I know, no racial naturalist has ever defended this kind of answer in the literature” (Sesardic, 2013, p.

290). However, the practice of offering a race list was standard at least until Darwin. According to Darwin, “Man has been studied more carefully than any other animal, and yet there is the greatest possible diversity amongst capable judges whether he should be classed as a single species or race, or as two (Virey), as three (Jacquinot), as four (Kant), five (Blumenbach), six (Buffon), seven (Hunter), eight (Agassiz), eleven (Pickering), fifteen (Bory de St-Vincent), sixteen (Desmoulins), twenty-two (Morton), sixty (Crawford), or as sixty-three, according to Burke” (Darwin, 1871, pp. 232–233). By the mid-20th century authors such as Stanley Garn and Carleton Coon were arguing that “no major discrepancy exists between one taxonomic system listing only six human races and a second system enumerating thirty” (Garn & Coon, 1955, p. 1000). However, they go on to clarify that “geographical races are to a large extent collections of convenience, useful more for pedagogic purposes than as units for empirical investigation” (Garn & Coon, 1955, p. 1000). They do not explain, however, what the pedagogic value might be of teaching students about these “collections of convenience” that are not appropriate “units for empirical investigation”.

Population naturalism about race faces both normative and semantic challenges. Population naturalists need to give some account of the value of racial classification given that ““major” races cannot be rigorously distinguished from other groups, as they don’t have a qualitatively different status from other possible groupings” (Sesardic, 2013, p. 290). If this is indeed the case, and conventional racial classification is a mere ‘convenience’, then we must ask whom it is convenient for and why.

Turning to semantics, population naturalism about race requires a radical meaning change. For population naturalists ‘race’ is a superficial and arbitrary category and unlike the subspecies category it does not describe major biological divisions or evolutionary lineages. Population naturalism trivialises ‘race’ and conflates it with ‘population’. If a population is any genetically identifiable group, and a race is any population we choose to call a race, then it is trivial to say that there are human races. It also changes the topic from ‘race’ to ‘population’. As Jonathan Kaplan and Rasmus Winther observe, “no one has ever seriously suggested that there is no population structure at all in humans, or that all (genetic) traits vary strictly independently from each other across our species” (Kaplan & Winther, 2012, p. 411). Population naturalism about race cannot be contrasted with (1)

because (1) is a view without adherents. Population naturalists such as Sesardic need to make a case for deflating the meaning of race as Dobzhansky recommended, rather than eliminating it from our biological ontology. They cannot simply appeal to Dobzhansky's authority.

5. Scientific racism: don't even think about it?!

Sesardic's (2010) argument for racial naturalism had three prongs: genetic, genetically determined morphological, and genetically determined psychological. There was an important misunderstanding between Sesardic (2013) and I regarding the third prong, red herrings, and smelly fish. Sesardic (2010) made a case for the validity of racial classification based on the first two prongs, but not the third. Appearing to take the existence of races to be established on the first two prongs he argued for the plausibility of genetically determined (statistical) moral and intellectual differences between the so-called races, although he did not support this argument by describing any evidence in its favour. Because I wanted to reply to Sesardic's discussion of hereditarianism, but thought that it was a distraction from the debate about the validity of human racial classification, I called it a red herring: a pungent one (Hochman, 2013b). The red herring is used in detective novels to throw off pursuing scent hounds. A pungent red herring is a distraction you particularly want to pursue.

Sesardic did not follow my metaphor. He thought I was treating the topic like I might a smelly fish, avoiding it altogether: "why is there so much repugnance toward the topic that it is called "a particularly pungent red herring"?" (Sesardic, 2013, p. 292). This is a misunderstanding. I wanted to respond to Sesardic's section on alleged psychological and moral differences but did not because unlike the sections on genetic and morphological differences it did not contain arguments for the validity of racial classification, which was the topic of discussion. However, in Sesardic's response he calls psychological differences "one of the potential sources of racial differentiation" (Sesardic, 2013, p. 287). This suggests that Sesardic believes not only that there might be biologically heritable psychological differences between the so-called races but that they might be distributed in such a way that they could be used to *differentiate between and classify people into races*. For Sesardic your IQ

or—to use another of his examples—how criminally inclined you are, could be used to determine your ‘race’. This was not clear in his 2010.

Sesardic gives us no reason whatsoever to accept the view that there are biologically heritable psychological differences that clump according to ‘race’. He focussed only on what he considered to be bad anti-hereditarian arguments. Sesardic complains that ‘racial’ differences are “a priori ruled out at the psychological level” for political and moral reasons (Sesardic, 2013, p. 292). But unless hereditarians can give positive evidence for their view, what is there for anti-hereditarians to respond to? Sesardic needs to argue that the reason “criminal activity is [allegedly] significantly higher in some racial groups than others” is biological, and not a product the ongoing history of individual and institutionalised racism (Sesardic, 2010, p. 159).

Kaplan has recently argued that hereditarianism is unsupported by current evidence. “It is impossible”, he writes, “to systematically control for the different environments experienced by different populations in the US” (Kaplan, 2015, p. 15). However, Kaplan does not believe that hereditarianism is in principle untestable:

Active manipulation of environmental variables suspected of being causally related to differences in the development of the cognitive abilities associated with performance on IQ tests is, of course, eminently possible. Indeed, making those kinds of changes is precisely what those who regard the gaps in average performance between populations as a social justice issue hope to do. But insofar as current racism, and the effects of past racism, are responsible for the gap between the average scores of Blacks and Whites (in the US, and more broadly), one must recognize that it is unlikely that the gap will be eliminable in the near-future. Racism is simply too ubiquitous, and the effects are too varied, systematic, and long-lasting, for there to be any real hope of eliminating its effects in the near-term. But working to eliminate those effects, even knowing that failure, in the near term, is inevitable, remains the only decent course of action available to us. (Kaplan, 2015, p. 15)

If Kaplan is right, it is only when racism and its effects are a thing of the past that hereditarians can test their view. If they really want to know whether their position is true, then rather than suggesting that certain unnamed ‘racial’ groups might be criminally inclined by nature, which contributes to the kind

of environmental differences that Kaplan suggests currently make it impossible to test hereditarianism, hereditarians would do better to fight for social justice.

Sesardic is aware that hereditarianism itself is linked with racism, but he argues that we should not take this connection seriously. Hereditarianism, he writes,

has been supported not only by the big names in the history of biology like Charles Darwin, H. J. Muller, R. A. Fisher, J. B. S. Haldane, A. H. Sturtevant, Julian Huxley, W. D. Hamilton, James Watson and Francis Crick, but also by many reputable and very sophisticated contemporary scholars like Arthur Jensen, Linda Gottfredson, John Loehlin, Richard Herrnstein, Charles Murray, David Rowe, Vincent Sarich, David Bartholomew, James Crow, etc. Now it is possible, of course, that all these scientists were just motivated by visceral racism and that they had “no decent reasons” for their views, but I will assume that this possibility should not be taken seriously. (Sesardic, 2010, p. 160)

No reason is given to support Sesardic’s dangerous assumption that we should not even entertain the possibility that some hereditarians might just be, or have been, racist. Against this assumption, Kaplan has argued elsewhere that current hereditarians are “actively promoting ignorance about racism in the United States” and that they are “properly regarded as racist not because they support a politically unpopular scientific hypothesis, nor even (just) because they are guilty of culpable ignorance, but rather because their work reveals a deliberate and systematic attempt to minimize and ignore both the continued existence of racism, and the contemporary and historical effects of racism” (Kaplan, 2014, p. 160). If the history of race science has taught us anything, it is that we cannot assume that scientists and other “reputable and very sophisticated scholars” are immune to racism. Sesardic’s assumption seems fishy to me.

6. Conclusion

Philosophers of race have recently argued that we are reaching a consensus about the facts of human biological diversity,⁴ so disagreements about the reality of race do not turn on the science. If true, we need to focus our attention on the actual points of disagreement between race naturalists and anti-realists, which seem to be primarily semantic (what does ‘race’ mean?) and normative (what is the value of ‘racial’ classification?), rather than scientific. Sesardic has argued that this picture is wrong because anti-realists endorse (1), which is a mistaken empirical claim. I have shown that *none* of the authors Sesardic cites as endorsing (1) actually support this position. The ‘ordinary reader’—the reader who is not a race naturalist suffering from a crippling case of confirmation bias—would have the wherewithal to recognise this.

Sesardic no longer identifies ‘races’ as human subspecies and now endorses population naturalism about race. Presumably because population naturalism contrasts with (1) Sesardic does not seriously engage with my argument that population naturalism is too weak a view to revive race as a legitimate biological category. After all, if anti-realism entails (1)—a radical and obviously mistaken claim—then a weak view like population naturalism about race may be all that the race naturalist needs. Given that anti-realists do not believe (1), population naturalists about race will need to do more than appeal to Dobzhansky’s notion of race-as-population as hegemonic. This approach to race has always been contested on semantic and pragmatic grounds. It trivialises the notion of race and conflates it with ‘population’. A strong version of racial naturalism—such as the view that there are human subspecies—makes a non-trivial claim about human biological diversity. It just happens to be untrue (Hochman, 2013a; Keita et al., 2004; Kittles & Weiss, 2003; Templeton, 2013). The concept of race should not be deflated, it should be popped.

References

AAA. (1999). AAA Statement on Race. *American Anthropologist*, 100(3), 712–713.

⁴ Issues surrounding hereditarianism may be the exception here.

- Atkin, A. (2012). *The Philosophy of Race*. Durham: Acumen.
- Baker, L. D., & Patterson, T. C. (1994). Race, racism, and the history of US anthropology. *Transforming Anthropology*, 5(1-2), 1–7.
- Barkan, E. (1992). *The retreat of scientific racism: Changing concepts of race in Britain and the United States between the world wars*. Cambridge: Cambridge University Press.
- Barsh, G. S. (2003). What Controls Variation in Human Skin Color? *PLoS Biology*, 1(1), 19–22.
- Darwin, C. (1871). *The Descent of Man, and Selection in Relation to Sex*. New York: Hill Press.
- Diamond, J. (1994). Race without color. *Discover*, 15(11), 83–89.
- Dobzhansky, T. (1944). On species and races of living and fossil man. *American Journal of Physical Anthropology*, 2(3), 251–265.
- Dobzhansky, T. (1962). Comment. *Current Anthropology*, 3(3), 279–280.
- Edwards, A. W. F. (2003). Human genetic diversity: Lewontin’s fallacy. *Bioessays*, 25(8), 798–801.
- Fish, J. M. (2002). The myth of race. In J. M. Fish (Ed.), *Race and intelligence: Separating science from myth* (pp. 113–141). Mahwah, NJ: Erlbaum.
- Gannett, L. (2013). Theodosius Dobzhansky and the genetic race concept. *Studies in History and Philosophy of Biological and Biomedical Sciences*, 44, 250–261.
- Garn, S. M., & Coon, C. S. (1955). On the number of races of mankind. *American Anthropologist*, 57(5), 996–1001.
- Gould, S. J. (1996). *The mismeasure of man*. New York: WW Norton & Company.
- Handley, L. J. L., Manica, A., Goudet, J., & Balloux, F. (2007). Going the distance: human population genetics in a clinal world. *TRENDS in Genetics*, 23(9), 432–439.
- Hirschfeld, L. A. (1998). *Race in the making: Cognition, culture, and the child’s construction of human kinds*. Cambridge, MA: The MIT Press.
- Hochman, A. (2013a). Against the new racial naturalism. *The Journal of Philosophy*, 110(6), 331–351.
- Hochman, A. (2013b). Racial discrimination: How not to do it. *Studies in History and Philosophy of Biological and Biomedical Sciences*, 44(3), 278–286.

- Hochman, A. (2014). Unnaturalised racial naturalism. *Studies in History and Philosophy of Biological and Biomedical Sciences*, 46, 79–87.
- Hochman, A. (2015). Of Vikings and Nazis: Norwegian contributions to the rise and the fall of the idea of a superior Aryan race. *Studies in History and Philosophy of Biological and Biomedical Sciences*, 54, 84–88.
- Kaplan, J. M. (2014). Ignorance, Lies, and Ways of Being Racist. *Critical Philosophy of Race*, 2(2), 160–182.
- Kaplan, J. M. (2015). Race, IQ, and the search for statistical signals associated with so-called “X”-factors: environments, racism, and the “hereditarian hypothesis.” *Biology & Philosophy*, 30(1), 1–17.
- Kaplan, J. M., & Winther, R. G. (2012). Prisoners of Abstraction? The Theory and Measure of Genetic Variation, and the Very Concept of “Race.” *Biological Theory*, 7, 401–412.
- Kaplan, J. M., & Winther, R. G. (2014). Realism, antirealism, and conventionalism about Race. *Philosophy of Science*, 81(5), 1039–1052.
- Keita, S. O. Y., Kittles, R. A., Royal, C. D. M., Bonney, G. E., Furbert-Harris, P., Dunston, G. M., & Rotimi, C. N. (2004). Conceptualizing human variation. *Nature Genetics*, 36, S17–S20.
- Kittles, R., A., & Weiss, K., K. (2003). Race, ancestry, and genes: implications for defining disease risk. *Annual Review of Genomics and Human Genetics*, 4(1), 33–67.
- Levy, S., Sutton, G., Ng, P. C., Feuk, L., Halpern, A. L., Walenz, B. P., ... Venter, J. C. (2007). The Diploid Genome Sequence of an Individual Human. *PLoS Biol*, 5(10), 2113–2144.
- Lewontin, R. C. (1972). The Apportionment of Human Diversity. In T. Dobzhansky, M. K. Hecht, & W. C. Steere (Eds.), *Evolutionary Biology* (Vol. 6, pp. 381–398). New York: Meredith Publishing Company.
- Lieberman, L., Hampton, R. E., Littlefield, A., & Hallead, G. (1992). Race in biology and anthropology: A study of college texts and professors. *Journal of Research in Science Teaching*, 29(3), 301–321.

- Livingstone, F. B. (1962). On the non-existence of human races, *3*(3), 279–281.
- Ludwig, D. (2015). Against the New Metaphysics of Race. *Philosophy of Science*, *82*(2), 244–265.
- Mallon, R. (2006). “Race”: Normative, not metaphysical or semantic. *Ethics*, *116*(3), 525–551.
- Marshall, E. (1998). DNA studies challenge the meaning of race. *Science*, *282*(5389), 654–655.
- Millstein, R. L. (2015). Thinking about populations and races in time. *Studies in History and Philosophy of Biological and Biomedical Sciences*, *52*, 5–11.
- Mitton, J., B. (1977). Genetic differentiation of races of man as judged by single-locus and multilocus analyses. *The American Naturalist*, *111*(978), 203–212.
- Montagu, A. (1941). The concept of race in the human species in the light of genetics. *Journal of Heredity*, *32*(8), 243–248.
- Montagu, A. (Ed.). (1964). *The concept of race*. New York: Free Press.
- Morning, A. (2011). *The nature of race: How scientists think and teach about human difference*. Berkeley, CA: University of California Press.
- Ousley, S., Jantz, R., & Freid, D. (2009). Understanding race and human variation: Why forensic anthropologists are good at identifying race. *American Journal of Physical Anthropology*, *139*(1), 68–76.
- Pigliucci, M. (2013). What are we to make of the concept of race?: Thoughts of a philosopher–scientist. *Studies in History and Philosophy of Biological and Biomedical Sciences*, *44*(3), 272–277.
- Reardon, J. (2005). *Race to the Finish: Identity and Governance in an Age of Genomics*. Princeton, NJ: Princeton University Press.
- Rosenberg, N. A., Pritchard, J. K., Weber, J. L., Cann, H. M., Kidd, K. K., Zhivotovsky, L. A., & Feldman, M. W. (2002). Genetic structure of human populations. *Science*, *298*(5602), 2381–2385.
- Rose, S. (2002). The concept of race is biologically meaningless. *Independent*. 28 January.

- Sauer, N. J. (1992). Forensic anthropology and the concept of race: If races don't exist, why are forensic anthropologists so good at identifying them? *Social Science & Medicine*, 34(2), 107–111.
- Schurz, G. (2009). When empirical success implies theoretical reference: A structural correspondence theorem. *The British Journal for the Philosophy of Science*, 60(1), 101–133.
- Schwartz, R. S. (2001). Racial profiling in medical research. *New England Journal of Medicine*, 344(18), 1392–1393.
- Serre, D., & Pääbo, S. (2004). Evidence for gradients of human genetic diversity within and among continents. *Genome Research*, 14, 1679–1685.
- Sesardic, N. (2010). Race: a social destruction of a biological concept. *Biology and Philosophy*, 25(2), 143–162.
- Sesardic, N. (2013). Confusions about race: A new installment. *Studies in History and Philosophy of Biological and Biomedical Sciences*, 44, 287–293.
- Skinner, D. (2006). Racialized futures: biologism and the changing politics of identity. *Social Studies of Science*, 36(3), 459–488.
- Smedley, A., & Smedley, B. (2005). Race as biology is fiction, racism as a social problem is real. *American Psychologist*, 60(1), 16–26.
- Taylor, P. (2011). Rehabilitating a biological notion of race? A response to Sesardic. *Biology and Philosophy*, 26(3), 469–473.
- Templeton, A. (2013). Biological races in humans. *Studies in History and Philosophy of Biological and Biomedical Sciences*, 44(3), 262–271.
- UNESCO. (1952). *The race concept: Results of an inquiry*. Paris: United Nations Educational, Scientific and Cultural Organization.
- Weiss, K. M., & Fullerton, S. M. (2005). Racing around, getting nowhere. *Evolutionary Anthropology: Issues, News, and Reviews*, 14(5), 165–169.

Winther, R. G., & Kaplan, J. M. (2013). Ontologies and Politics of Biogenomic "Race." *Theoria*, 60(3), 54–80.

Zack, N. (2001). Philosophical aspects of the "AAA Statement on 'Race.'" *Anthropological Theory*, 1(4), 445–465.