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Race and Scientific Reduction¹

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1 The Problem of Race in Contemporary Science

The Human Genome Project has created some anxiety about the reemergence of ‘race’ in biology and medicine. The concept of race, it seemed, had been eliminated from physical anthropology and human biology during the twentieth century. Recent analyses of genetic variation, however, show a geographic pattern to genetic variation that roughly corresponds to traditional notions of race. Moreover, there are persistent correlations between race and health. American Blacks suffer higher rates of HIV infection, diabetes, hyper-tension, cardiovascular disease, and so on, than American Whites. In May, 2003, the Human Genome Center at Howard University convened a workshop to address the question “What does the current body of scientific information say about the connections among race, ethnicity, genetics, and health?” (Patrinos 2004: S1). The papers were published in a November 2004 supplement to *Nature Genetics*. Participants agreed that while genetic diversity clusters geographically, the variation is not structured into races or sub-species. Some went on to argue that race remained useful as a proxy to identify

genetic variation relevant to health. The conceptual frailty of this position was illustrated by the *New York Times* report on the conference results. Under the headline “Articles Highlight Different Views on Genetic Basis of Race,” the article began: “A difference of opinion about the genetic basis of race has emerged between scientists....” (Wade 2004). The reporter thus translated disagreement about the latter issue (whether race is a useful proxy) into disagreement about the former (whether race has a genetic basis). The confusion in *The New York Times* is not mere sloppy reporting. There is a tension between the thesis that there are, genetically speaking, no human races and the thesis that race might be a useful proxy for identifying medically relevant genetic differences. How could race be useful as a proxy if race had no genetic basis? In spite of protests to the contrary, has the Human Genome Project really shown that race is real after all?

A brief review of the history of the race concept and of recent work in genetics will help clarify these questions. As a scientific concept, race arose in the eighteenth century and was substantially developed during the nineteenth. In his *Systema Naturae* (1758/1964), Linnaeus divided the species *Homo sapiens* into four sub-species, or races. They were distinguished by geographic and somatic features. Their names identify the races by continent: *Americanus*, *Europaeus*, *Asiaticus*, and *Afer*. It is noteworthy that the somatic features used to differentiate the races include both skin color and the dominance of one of the four humors. Native Americans are thus choleric, Europeans sanguine, Asians melancholy, and Africans phlegmatic. Eighteenth century medical thought was dominated by the Galenic system where humoral balance was used to explain health and illness. A relationship between race and health was thus established at the inception of racial theorizing.

In the nineteenth century, accounting for the difference among human groups was an important anthropological problem. Two centuries of exploration and trade had made human diversity vivid to European theorists. Moreover, the differences apparently clustered in a coherent way. Skin color and other aspects of somatic form seemed to vary with differences in language, technological development, social organization, and cultural forms. Health differences among the races maintained their significance, even as Galenic medicine gave way to germ theory. Black Americans were thought to be especially susceptible to tuberculosis, syphilis, and other diseases, while being resistant to malaria and yellow fever. Some physicians attributed the difference primarily to physiological differences between blacks and whites (Cartwright 1871; Wilson 1915). Even those who recognized poor sanitation or diet as important risk factors typically attributed differences in sanitation or diet to purported racial characteristics such as “indolence” (Harris 1903) or “fatalism” (Folkes 1910). The human species thus seemed to divide into sub-species with systematically distinct properties. Race was taken to be a property of humans—Blumenbach called it the *nisus formatives*—that accounted for our somatic, medical, psychological, social, cultural, and linguistic differences. In the nineteenth century, ‘race’ was a powerful explanatory posit.

While racial theorizing dominated nineteenth century thinking about humans, there was opposition from within anthropology. Franz Boas was one of the first to make empirical arguments against race, and by the early twentieth century, his voice had been joined by a chorus of others. The main target of Boas’ investigation was the coherence of racial classification. This was important because the identification of a sub-species requires a set of traits that are “concordant.” This means that variation in one of the traits

reflects variation in the others (Livingstone 1962: 279). For example, a mixed bucket of tennis balls, golf balls, and baseballs divides naturally into sub-groups because size, surface, and weight are concordant traits. Separating the balls by size yields the same sub-groups as partitioning by surface texture or weight. Surveying known cultures and languages, Boas showed that somatic form, language, and culture are not concordant. People with different body types may speak the same language (Black and White Americans speak English); persons with the same somatic form may speak unrelated languages (Finnish and Swedish are in different language families). Similarly, culture and language vary independently (Boas 1894/1974, 1911). Boas concluded that the three criteria (language, culture, and somatic form) together could not provide a consistent racial classification. This conclusion had two important ramifications. First, it began to rob the concept of race of its explanatory power. If humans did not exhibit systematic variation of somatic form, language, and culture, then race could not explain such differences. Second, it shifted the focus of the debate to human biology and physical anthropology. If concordant traits were to be found, they would have to be physical.

Early twentieth century research in physical anthropology continued to undermine the viability of racial theorizing. By studying changes in the children of immigrants, Boas showed that many of the physiological features used to classify race—head size, stature, etc.—depended on diet or other environmental factors. He also found that variation within racial groups on such measures was greater than the variation between them. By 1936, Julian Huxley and A. C. Haddon were able to argue that physical criteria for race were not concordant. Classifying people by blood type yields a different partitioning than a classification by skin tone, which is different from a classification by

hair texture, and so on. Moreover, Huxley and Haddon used the new science of genetics to argue that one would not expect concordant traits among populations of a species, like *Homo sapiens*, that underwent continual interbreeding. The lack of concordance among the physiological traits used to identify races was a severe blow to the explanatory power of the race concept. Human variation just was not systematic enough to form distinct sub-groups. Hence, any attempt to explain human variation by appealing to a hidden *nisus formatives* or by descent from an original pure racial stock was bound to fail. Haddon and Huxley concluded: “These considerations rob the terms *race* or *sub-species*, as applied to existing human groups, of any significance” (Huxley and Haddon 1936: 219).

Contributions to the Human Genome Center Workshop confirmed Huxley and Haddon’s conclusion. Compared with other species, human beings are remarkably homogeneous. For example, biologists generally recognize three subspecies of the common chimpanzee, *Pan Troglodytes*. Genetic variation within one of the Chimpanzee sub-species is roughly twice the genetic variation found within the whole human species (Fisher et al. 2004). Moreover, what little genetic variation there is within the human population does not cluster in a way that would constitute sub-species (Keita et al. 2004). In the sense of the word meaningful to biologists, there simply are no human races.

On the other hand, geographic variation is an important aspect of the concept of race, both in biology and in nineteenth century anthropology. Contemporary genetics has found that what little variation there is among modern humans roughly corresponds to the continental origin of their ancestors (Jorde and Wooding 2004). Does this show that human races exist? In their contribution to the Workshop, Jorde and Wooding answered

in the negative. Their analysis measured genetic similarity with one hundred *Alu* insertion polymorphisms and sixty short tandem repeat (STR) polymorphisms. The resulting clusters of similar genotypes roughly corresponded to the traditional geographical division of races. Jorde and Wooding argue that this result must be understood in the context of two further pieces of evidence. First, the variation among individuals was virtually continuous. So, a comparison of, say, a person from East Asia with another from Europe would show that each individual is more similar to individuals from the same geographic region than she is to those from the other region. But if the comparison included individuals from a region in between, like the Indian subcontinent, it would show substantial overlap with both European and Asian populations. While genetic differences reflect geographic separation and the history of migration, continual interbreeding has prevented sub-species boundaries from developing. Second, Jorde and Wooding's data confirms that the vast majority of human genetic variation occurs *within* continental populations. For the one hundred *Alu* insertion polymorphisms, 86% of the variation occurs between individuals and within continents; for the STR polymorphisms, 90% occurred within continents. Practically speaking, this means that for many significant genetic variants, continent of origin will be a very poor indicator of whether an individual possesses the variant. Jorde and Wooding conclude:

The picture that begins to emerge from this and other analyses of human genetic variation is that variation tends to be geographically structured, such that most individuals from the same geographic region will be more similar to one another than to individuals from a distant region. Because of a history of extensive migration and gene flow, however, human genetic variation tends to be distributed in a continuous fashion and seldom has marked geographic discontinuities. Thus, populations are never 'pure' in a genetic sense, and definite boundaries between individuals or populations (*e.g.*, 'races') will be necessarily somewhat inaccurate and arbitrary. (Jorde and Wooding 2004: S30)

As Haddon and Huxley concluded almost seventy years earlier, ‘race’ has little or no significance in human biology.

While twentieth century physical anthropologists were busy eliminating the concept of race, social scientists and health researchers continued to use it to frame their research. They discovered apparently robust correlations between race and a variety of social and medical variables. Moreover, while genetic variation among human groups is small, some of that variation has medical significance. This situation raises the question of whether the social and medical sciences should continue to use a concept of race when that concept has no biological basis.

The contributors to the Workshop phrased the question as whether race might be useful as a “proxy” identifier of genetic difference so long as a more specific, individualized genetic test is lacking. The question is complicated, and none of the authors who published their opinions in the *Nature Genetics* Supplement argued for a definitive answer. While genetic variation clusters by geographic region, and thus roughly corresponds to ‘race’ as it is socially identified, there is substantial heterogeneity within any such group and overlap among groups. Clinically, this means that using socially identified race to indicate health risks can lead to tragic mistakes (Jorde and Wooding 2004; Rotimi 2004). The heterogeneity of racially identified groups can also lead to bias in epidemiological or clinical studies, if the relevant genetic variation is carried mostly by a particular sub-group (Tishkoff and Kidd 2004). On the other hand, race is useful as a rough indicator of genetic risk factors in the same way that age or gender is (Jorde and Wooding 2004; Tishkoff and Kidd 2004). Moreover, if the concept of race were eliminated from medicine or public health, it would become impossible to

identify injustices in the distribution of medical resources or environmental risk factors associated with racial discrimination.

Another facet of the question of whether race might serve as a proxy was not discussed by the contributors to *Nature Genetics*. What could it mean for 'race' to serve as a proxy? If we are to use one thing as a proxy for another, both parties to the relationship need to be well defined. We have a good grip on genetic variation, but what is 'race'? By what criteria is it to be identified? Is it possible to have a coherent and useful notion of race in the absence of concordant traits or systematic genetic variation? The brief history of racial theorizing sketched above is sufficient to demonstrate that these questions cannot be taken for granted. Before we can raise the issue of whether race might be useful as a proxy for genetic variation, we need to be clear on what the concept of race should be in medicine and the social sciences. In particular, how is 'race' to be conceptualized in medicine and the social sciences, given that there is no genetic or biological role for the concept?

The philosophical issue looming in the background is the question of how to understand conceptual change in the sciences. As scientific theories develop and replace one another, concepts emerge, change, and disappear. There are two specific questions about this process to which we must attend. The first question concerns conceptual content. In virtue of what does a scientific concept mean what it does? Some kind of answer to this question must be available if we are to identify conceptual change at all. For example, Galenic medicine explained disease phenomena (as well as psychological disorders and personality traits) in terms of the balance among four bodily fluids: blood, phlegm, black bile, and yellow bile. In Galenic medicine, blood was hot, and a

superfluity of blood produced fevers. When pathogens and lesions replaced the humors in explanations of illness, physicians still talked about 'blood', but the concept had apparently undergone a dramatic change. What changed, and why think there was a change at all? In the latter part of this essay, we will ask similar questions about 'race.' Is the twenty-first century concept of race the same concept as was used in the nineteenth? We will presuppose a view of conceptual content, but it is beyond the scope of this essay to inquire deeply into these matters. This essay will adopt a broadly Sellarsian notion of conceptual content (Sellars 1963). Two concepts have the same meaning insofar as they have the same explanatory role, that is, they explain the same phenomena and the same inferences can be made with them. In other words, the distinctive content of a concept is the difference it makes to the theory. The significance of the concept of race, then, is determined by the explanations and inferences in which it plays a role. As these explanatory roles change, the meaning or content of the concept changes.

The second specific question about conceptual change in the sciences concerns reductionism. Literature on this topic in the last fifty years or so has shown reductionism to be a multi-dimensional affair. For example, nineteenth century theories of electromagnetism postulated the existence of a medium, the ether, through which electromagnetic waves were propagated. The work of Lorentz and Einstein showed how space and time could be reconceptualized to make the 'ether' superfluous. The concept of ether disappeared entirely from physics. It was *eliminated*, and no concept fulfils a similar theoretical function. The concepts of space and time were not eliminated in the same sense. They were *replaced* in relativistic physics by the concept of spacetime,

which plays a role similar to that played by 'space' and 'time'. Because the elimination or replacement of concepts occurs within a scientific domain (physics), it has been called "intra-level" reduction by Robert McCauley (1984). A different set of questions about reduction arise when we think about theories arranged hierarchically, with medicine or psychology on a higher level than biology, and biology higher than chemistry. "Inter-level reduction" is at issue when we wonder whether social institutions can be reduced to the actions of rational individual agents, or whether beliefs can be reduced to brain states (McCauley 1984). Inter-level reduction has been sought by philosophers and scientists for two reasons: epistemic vindication and ontological economy. When it can be shown that the explanatory force of higher-level concepts or propositions can be exhausted (at least in principle) by an epistemically more secure lower-level theory, the higher-level theory gains support. In such a case, the concepts would not be eliminated from the higher-level theory; rather, they would be identified with the concepts of the lower-level theory. Such a reduction would also achieve ontological economy because the higher-level concepts would carry no new ontological commitments.

McCauley's distinction between inter-level and intra-level reduction sharpens the issue about race. In the nineteenth century, race played a role across the hierarchy of the sciences. Racial difference explained human variation in phenotype, psychology, language, culture, and disease susceptibility. Because the traits used to distinguish the races were not concordant, the concept of race underwent an intra-level reduction in human biology and physical anthropology. Insofar as 'race' no longer has an explanatory role at this level, we can say that the concept has been eliminated. Robust correlations between race and health, as well as between race and social variables, meant that the

concept race did not undergo an intra-level reduction in medicine and sociology. This left a concept of race operating in the higher level science without a correlate in the lower level science. If inter-level reduction is an important goal of science, then a higher-level concept without a lower-level correlate concept would seem problematic. The uncertainty about using race as a proxy for genetic difference thus reflects a deeper philosophical question. Does the intra-level reduction (elimination) of race at the lower, biological level force an intra-level reduction (elimination) of race in medicine or the social sciences?

The rise of non-foundational epistemologies and continued research into the complexities of inter-theoretic relations has led many philosophers of science to reject the goal of inter-theoretic reduction. Post-positivist philosophers like Richard Miller (1987) and John Dupré (1993) have argued that scientific disciplines are both epistemically and ontologically autonomous. They are epistemically autonomous in the sense that the theories of a particular discipline can be fully supported by observations and methods that do not reduce to theories at a lower level. Inter-theoretic reduction fails, but this does not undermine the epistemic status of the unreduced theory. Dupré and Miller also argue that unreduced theories have autonomous ontological commitments. Dupré dubbed this position “promiscuous realism” (1993: 7). Several recent writers on race, including Michael Root (2000), Ron Sundstrom (2002a; 2002b), and Richard Miller (2000) have defended promiscuous realism about race. They argue that race has an ineliminable explanatory role in medicine and the social sciences. As a result, these disciplines are committed to the existence of race. Since ontological commitments are autonomous, this commitment is not undermined by the elimination of race in physical anthropology.

Promiscuous realism about race permits a solution to the puzzle about what to make of racial generalizations in medicine, when there is no such thing as race in human biology. The distinctions among races cause people to be treated differently and to have different life opportunities. Some of these differences are relevant to health. Racial health differences, or at least some of them, are thus explained by the social reality of race. Notice that this position is distinct from the relatively weak claim that race is a good proxy for genetic differences. The promiscuous realists argue for the stronger claim that as a social kind, race directly explains health outcomes. Notice that, from this stronger position, promiscuous realism can answer the question about what it means for race to be a proxy. Treating race as real social kind, in the way that the promiscuous realists do, provides a robust conception of what race *is*. Hence, we can raise and answer the question of whether there is a correlation between genetic variation and the races of a particular time and place. The “time and place” qualification is essential. Races arise out of treating people in a particular way, and this varies significantly with location and historical period. Assuming that the correlations between race and genetic risk factors are robust enough to be useful, the promiscuous realist’s position supports the use of race as a proxy.

Promiscuous realism about race thus provides a tidy answer to the cluster of questions we are exploring. By adopting an anti-reductionist ontological stance, it provides an account of ‘race’ that is not troubled by the intra-level reduction of ‘race’ in physical anthropology. By treating race a real social kind, it explains the significance of medical and social scientific generalizations about race. Finally, it provides an account of the conditions under which race might be a useful proxy for genetic variation in the

diagnosis and treatment of disease. Before we acquiesce in this happy solution, two further issues need to be explored. First, we need to look more closely at the explanatory role of 'race' in medicine and the social sciences. What kind of explanations are these? Why do they not collapse without a biological basis for race? Second, we will return to the issue of conceptual change raised above. Is the concept of race as articulated by the promiscuous realists the same concept as was used by nineteenth century racial theorists? If it has changed significantly, to what extent is promiscuous realism a kind of realism about *race* at all?

2 Race and inter-theoretic reduction

The promiscuous realists want to hold that race is a social kind, and that commitment to the existence of this social kind is supported by its ineliminable role in social and medical explanations. To evaluate their position, we need to understand the precise role of race in social and medical explanations. We will proceed on two weak assumptions: (1) that being an answer to a why-question is a necessary condition for being an explanation, and (2) that explanatory autonomy is a necessary condition for ontological autonomy. These assumptions are weak enough to be shared by proponents and critics of promiscuous realism, yet they are robust enough to permit a substantial analysis of the explanatory autonomy of 'race.'

The erotetic model is a well understood analysis of explanation that treats explanations as answers to why-questions (Garfinkel 1981; Lipton 1991; Risjord 2000; van Fraassen 1980).² The formal machinery of the erotetic model will be useful in our analysis because it permits a fine-grained understanding of the different roles of concepts and propositions that appear in explanations. According to the erotetic model, an

explanation is an answer to a why-question, and why-questions have the form “Why *P*, rather than {*Q*, *R*, ...}?” *P* is the *topic* of the why-question and the set of propositions, {*Q*, *R*, ...}, are the *foils*. The answer to a why-question must discriminate between topic and foils, and the *relevance criterion* specifies how such discrimination is to be made. The topic, foils, and relevance criterion entail a set of presuppositions for the why-question (Risjord 2000: 72-79; van Fraassen 1980: 141-146). These must be satisfied if the question is to be appropriately asked. For example, the topic of a why-question is presupposed to be true, and the foils are presupposed to be false. It makes no sense to ask “Why are the lights on (rather than off)?” when the lights are, in fact, off. While a full treatment of presuppositions is impossible here, it has been argued that the why-questions of different domains have distinct presuppositions. This has important consequences for the issue of inter-theoretic reduction. The erotetic model lets us specify the conditions for reduction quite precisely, and it lends itself to a general argument that explanatory, inter-level reduction is not always possible (Garfinkel 1981; Risjord 2000).

Let us turn to the explanations on which the promiscuous realists rely. Root and Sundstrom emphasize the explanatory power of racial norms. Root writes that norms “have great explanatory power, for a social scientist can explain why blacks are underrepresented in some trades or professions by citing a past or present rule or regulation which says to keep blacks out” (Root 2000: S633). The form of this explanation is relatively clear. The topic is a population-level phenomenon, a distribution of occupation or disease. Why, we ask, do people identified as ‘Black’ in the United States have a higher blood pressure than those identified as ‘White’, rather than having the same blood pressure? The explanation is that there is a rule which recommends

differential treatment of Blacks and Whites. The differential treatment then causes a difference in average blood pressure between Blacks and Whites. Suppose this sort of explanation were shown to be autonomous. Would it support promiscuous realism about race? It does not seem to do so. The promiscuous realists hold that race is a real social kind. In the above explanation, however, it is not any social kinds, but the rules, that do the explanatory work. Norms and rules make distinctions among people, and they sometimes thereby create or presuppose social kinds, but they do not always do so. For example, imagine a rule saying that no person who is less than four feet tall, is pregnant, or has a pacemaker may ride the rollercoaster. The existence of such a rule does not make “being less than four feet, being pregnant, or having a pacemaker” a social kind. The ineliminability of norms in social or medical explanations would show only that discriminatory norms, not race, have an explanatory role.

A related kind of explanation is suggested by Sundstrom when he observes that "Discrimination has been linked to high levels of blood pressure, stress, anger, and emotional and psychological distress in communities of color" (Sundstrom 2002a: 97). Sundstrom here refers to a number of epidemiological studies that correlate discrimination with negative health outcomes. These studies try to control for socio-economic variables and all of the known risk factors in order to isolate exposure to discrimination as the independent variable. They find that individuals who take themselves to have been subject to discrimination have higher blood pressure (Krieger and Sidney 1996), lower birth rate (Collins et al. 2000), etc. If we take this to be an explanation, then the why-question must be asking about the difference between White health outcomes and Black health outcomes, *e.g.* Why do Blacks have higher blood

pressure than Whites, rather than the same? Unlike the previous example, the answer is not a norm or rule. Krieger, Collins, and their colleagues suggest that perceiving oneself to be the subject of discrimination explains the difference in health outcome. Of course, these perceptions may well reflect actual discrimination, and such discrimination may be sanctioned by the larger White community. But these background facts are not part of the explanation. The explanation would succeed even if the perceptions were largely mistaken, since it is the perception alone that is supposed to explain the difference. Being Black or White plays no role in the answer to these questions, so we cannot conclude that race has any explanatory power of its own.

Identity has become a popular area of inquiry for the social sciences. Miller emphasizes the role of race in the formation and maintenance of racial identities in his discussion of the explanatory power of race. Thinking of oneself as Black is, in particular times and places, a grounds for identifying with a community, adopting its goals as one's own and caring for its members (Miller 2000: S649). Again, the form of this explanation is relatively clear. The topic is the actions and decisions of an individual, and the question is why she did this, rather than something else. The answer refers to the person's belief that she is a member of the community, and perhaps the value she puts on being a member. Explanations of this sort are, no doubt, important in the social sciences. But once again they do not give any interesting role to race; the explanation relies entirely on beliefs and values.

The three examples canvassed so far have been disappointing. The concept of race appears, but race as a social kind does little or no explanatory work. All of the heavily lifting is done by something else: norms, perceptions, beliefs, or values. The

mention of 'race' only specifies these as norms of racial discrimination, perceptions of racial discrimination, or beliefs about racial identity. Having a race, even a socially identified race, plays no explanatory role at all.

The discussion so far has been unfair to the promiscuous realists insofar as it has taken explanations in terms of norms, perceptions, and identity to be independent. A more promising way to understand the promiscuous realists is to take norms, perceptions, and identity to be part of a more complex whole. Developing some of Root's ideas, Sundstrom contends that a constellation of three social forces causes race to become real at particular times and places (Sundstrom 2002a). First, racial categories need to be deployed. The concept of race needs to be used by members of a society to make distinctions among persons. Sundstrom and Root agree that not every social distinction creates a social kind. Two further features must be present. Individuals so divided need to think of themselves as Black, Hispanic, Asian, or White, and they need to act on that basis. Race thus needs to become a part of their self-identity and their grounds for identification with others. Finally, there need to be norms that depend on the racial category. These norms might be laws, like Jim Crow statutes, or they may be the more subtle and pernicious norms of racial discrimination. The norms need to distinguish among persons based on race and then prescribe differential treatment of some kind. The three criteria of division, uptake, and normativity define a particular sort of social kind, what we might call a *social status*. Having a social status is a product of being treated in a distinctive way and making that distinctive treatment part of ones' own reason for acting. Moreover, statuses are normative, with implications for ways in which the holder ought (not) to act and how others ought (not) to act with respect to them.

The three-criterion model of the social status of race permits us to distinguish between those norms and self-ascriptions of identity that create social statuses and those that do not. “Race is like crime,” Root writes, but unlike postal code (Root 2000: S630-S631). By this he means that while we divide ourselves by postal code, this does not say anything about us. Zip codes divide us into categories, and Post Office rules prescribe differential treatment, but division created is not undertaken by those so divided. Being a felon, on the other hand, is a real social status according to the model.

It is easy to find explanations where behavior—either individual acts or group patterns of action—are explained by social statuses. Root’s example of discrimination in occupation is best understood, not as an explanation by norms alone, but as an explanation by social status. Blacks are underrepresented in certain trades because they are *Blacks*. Being Black involves differential treatment and uptake of identity. The norm makes it difficult to enter the profession, and the undertaking of the identity means that individuals will be disinclined to try. Sundstrom cites Massey and Denton’s *American Apartheid* (1993), where they take race to explain segregated patterns of housing in American cities. Again, it is not just the discriminatory norms that explain the housing pattern, but the status of being Black. Unlike the foregoing examples, these explanations give a robust role to race as a social kind. The fact that the individuals share a social status explains differential outcomes in health, housing, employment, and so on. The Root-Sundstrom analysis of race as a social status involving distinction, uptake, and norms is thus crucial to their promiscuous realism about race. Having a race plays an explanatory role only if we take race to be a social status of this kind.

In the conception of race as a social status, we have discovered a robust explanatory role for race in medicine and the social sciences. Now we must turn to the question of whether this explanatory role is autonomous. That is, does talk of 'race' in such explanations do nothing more than abbreviate descriptions at a lower level? For instance, can appeal to the social role of race be replaced by appeal to the beliefs of individuals? This is the question of inter-level reduction.

Explanatory, inter-level reduction would occur when questions raised at one level could be answered by reference to only the entities of the lower level and their properties. Where the higher-level theory identifies a pattern, the reductionist explanation would explain the pattern as a product of only the lower level entities. The explanation of a higher-level pattern in terms of lower-level entities presupposes that the existing pattern is one out of all of the possible combinations of lower-level entities, and that all the combinations are possible. That is, there are no constraints on the lower-level entities that must be described in higher-level terms. The presupposition of the why-question is then satisfied, and the inter-level reduction is successful (Garfinkel 1981; Risjord 2000). In other cases, however, the presupposition of the reductionist why-question will not be satisfied and the why-question cannot be answered. In such cases, there are higher-level relationships that restrict the interactions among the lower-level individuals. Where the interactions are restricted, not every logically possible combination of individual states is a real possibility for the system. The explanation must then appeal to the relationship among the lower-level entities to explain the higher level pattern. The explanation can not appeal only to the lower-level entities, and there would be no inter-level reduction.

Consider an example where the social and the psychological levels are in play. Suppose we notice that on a particular bus in Atlanta the Blacks are riding in the back and the Whites are in the front. Imagine two different time-frames for this event: 1954 and 2004. If we ask “Why are the Blacks riding in the back and not the front of the bus (rather than both back and front)?” in 2004, the answer might be given entirely in terms of the beliefs, desires, and habits of the individuals. (This assumes, perhaps counterfactually, that in 2004 no discriminatory norms explain the segregation.) In this case, the why-question about a social-level pattern (the pattern of seating on this bus) is answered entirely in psychological terms. Here we have the beginning of a reduction of a social phenomenon (the seating pattern) to psychological phenomena (the attitudes of individuals). In 1954, however, matters are different. We cannot explain the seating pattern simply by referring to the motives of the individuals. While each person chose his or her seat, it would be false to say, baldly, that the Blacks are sitting in the back because they chose to. There is a law in force that commands a seating distribution of this kind. This sociological question about the seating pattern cannot be answered strictly in psychological terms. The law limits the possible seating patterns, and an adequate explanation must take it into account. Hence there is no reduction when we explain the 1954 seating patterns.

These arguments show that, in the right context, some questions about patterns of behavior cannot be answered by appeal to individual psychology alone. The explanation must also refer to norms and social statuses. In general, norms and the social statuses that depend on them have explanatory autonomy. The explanations identified by the promiscuous realists are an instance of this general pattern. The explanatory role of

'race,' when construed as a social status, depends on the existence of norms and patterns of uptake and response. Explanations that appeal to 'race' (again, construed as a social status) are therefore autonomous with respect to explanations that only appeal to properties of individual persons. There is no inter-theoretic reduction of race, at least insofar as this requires explanatory reduction. These are important conclusions because they vindicate the promiscuous realist position about race, at least partially.³ Having secured this result, we may turn to the second group of questions that ended Section 1. What is the content of concept of race we have shown to be autonomous, and how is it related to the nineteenth century concept of race? Is the intra-theoretic elimination of race in biology consistent with the failure of inter-theoretic reduction of 'race' in contemporary, medical and social scientific explanations?

3 Race and Intra-theoretic Reduction

The difference between the nineteenth and the twenty-first century conceptions of race should be quite clear from the foregoing discussion. The concept of race as used in contemporary medicine and social science is that racial identities create communities of persons who share goals and care about each other as members of the same race. Norms prescribe and proscribe behavior of those who have the race. The norms may be accepted as a positive expression of what it means to be a member of the community, or they may be challenged as unjust, oppressive, or stereotypical. The difference between this concept of race as a social status and the concept of race used in the nineteenth century is striking. Most importantly, race is no longer conceptualized a natural fact about a person. In the nineteenth century, 'race' was like eye-color; one had it independently of any social status. (Indeed, it is in virtue of this that race could be used as the explanation of

and justification for the social status of persons of color.) In the twenty-first century race is not taken to be a natural property of persons. It is nothing more (or less) than a product of how people are distinguished and treated and how those distinctions are internalized.

The change in the concept of race from the nineteenth to the twenty-first century is so profound that it constitutes an intra-theoretic elimination. While we still use the same word, the nineteenth century concept of race has been replaced. The twenty-first century concept of race has different implications, a different explanatory role, and it divides the social world in different ways. The idea that race is a social status thus represents the culmination of a line of conceptual development that to which Boas, Haddon, Huxley, Montagu, Livingstone, and many others contributed. In 1936, Haddon and Huxley were ready to draw the same conclusion:

In most cases it is impossible to speak of the existing population of any region as belonging to a definite "race," since as a result of migration and crossing it includes many types and their various combinations. For existing populations, the word *race* should be banished, and the descriptive and noncommittal term *ethnic group* should be substituted. (Huxley and Haddon 1936: 220)

The change in terminology from 'race' to 'ethnic group' reflects an important conceptual shift from the nineteenth to the twentieth century; it is not motivated mere political correctness. This change was forced by two developments discussed in the first section of this essay. When race was eliminated from physical anthropology, it could no longer be taken as a natural fact about humans. All that is left of the concept is its social elements. Second, ethnicity and the concept of culture were developed so that they would explain human differences without appeal to biological races. This essay began with the question of whether the intra-level reduction of race in physical anthropology forced an inter-level reduction of race. We can now see that matters are more complicated. The elimination of race in physical anthropology forced a dramatic change

in the concept of race as it was used in medicine and the social sciences. As a result of this change, the concept of race as a natural fact about humans has been replaced with the concept of race as a social status. Huxley and Haddon recommend marking this new conception with a new word: ethnicity.

It may seem like a confusion to conflate race and ethnicity. Sundstrom argues explicitly against it:

To use ethnicity, culture, or class to understand US history or various social indicators would be to miss key features of social organization in the USA. Blacks were not enslaved because they were simply from the African continent, inhabited a lower socioeconomic class, or were thought 'primitives' ...; no, West African blacks were enslaved and kept in slavery because they were members of the black race, and were judged to be moral and intellectual inferiors who were not deserving of human rights. (Sundstrom 2002a: 100)

Sundstrom's premise that United States history and social organization could not be understood without reference to race is surely correct. Race and ethnicity, however, are both social statuses constituted by differentiation, uptake, and norms. What is the difference, if any?

Since a social status is constituted by differentiation, uptake, and norms, *differences* in differentiation, uptake, and norms must create differences in status. The constitutive differences among statuses may be divided into two kinds: differentiation criteria and behavioral expectations. Differentiation criteria are used to identify those who have (or are eligible for) the status. For example, to qualify for the role of a married person in the United States, one must not already be married. To qualify for the role of a police officer, one must complete the right sort of training. These are part of what distinguishes the social status of being a police officer from the status of being married. Differentiation criteria may be regarded by the participants as a natural fact about people, or they may regard the criteria as dependent on other social statuses. 'Being a police

officer' and 'being married' have social differentiation criteria. Race is different, for race is a status one is born with, not one that is acquired. Like the status of having royal blood, being an untouchable, or (in some societies) being a witch, having the right ancestors is an essential differentiation criterion for race. When thinking about differentiation criteria, it is important to remember that social roles are not all of a piece. Some are clearly defined and well-policed; others are more nebulous or contested. The differentiation criteria may even conflict with one another and create marginal or contested cases. Differentiation criteria for the social status of race, as it is treated in the United States, are a heterogeneous lot. As is often pointed out, the criteria have often been contested and have changed over time. In the nineteenth and early twentieth century, the "one drop of blood rule" defined a person as non-white if they have any non-white ancestors. Whiteness is not so carefully monitored today. Phenotype is also an important differentiation criterion. A blue-eyed, blond-haired, light-skinned person with one Black great-grandparent is unlikely, today, to have the status of Black herself. Being Hispanic is a troublesome case for those who want to draw clear racial lines, because neither the ancestry nor the phenotypic markers are so clear. Cultural and behavioral markers, like speaking Spanish, are crucial for the differentiation of Hispanic status.

Behavioral expectations constitute a second way in which statuses are distinguished. They are the distinctive ways of acting created by uptake of the status and the norms that govern it. In the United States, we expect a police officer to carry a gun; we expect married persons to share income and residence. As with differentiation criteria, the consequences of uptake and the character of the norms vary enormously among social statuses. Some norms have the force of moral obligations and may be

backed by the law (*e.g.* the obligation of married persons not to commit adultery); others may be little more than stereotypes. Uptake of some statuses may be central to how a person thinks of herself (*e.g.* being a mother), while others are contextual or temporary (*e.g.* being the referee of an intramural baseball game). The behavioral expectations of some statuses encompass authority and dominance hierarchies as well. Teacher/student, parent/child, manager/employee all carry expectations of dominance and authority. (Whether they *should* do so and the character such authority should take are important political questions.) When we turn to race, we find that the expectations for, and norms of, behavior are the most hotly contested aspects of racial status. Economic mobility and educational opportunities since reconstruction have wrought profound changes to the status of having a race in the United States. The Civil Rights Movement brought more, and it explicitly aimed at eliminating behavioral expectations having to do with the subordinate and oppressed status of being non-White. It remains an open question whether there are or should be any distinctive norms or expectations associated with being Black, Hispanic, Asian, White, or Native American. For our purposes here, it is enough to notice that insofar as discrimination based on racial distinction remains, these statuses still have a claim on us.

Considered as a social status, then, race does not differ significantly from ethnicity. Like race, one has to be born into an ethnicity; to be Danish one must have some Danish ancestors. In addition, ethnicities are distinguished by somatic features, culture, and language. Like race, the behavioral expectations of ethnicities arise from the identification with others of the same ancestors. Like race, both the differentiation criteria and the behavioral expectations of ethnicities are sometimes closely policed; in other

times and places they are diffuse. What then, are we to make of Sundstrom's (correct) point that to conflate race and ethnicity is to fundamentally misunderstand American history and society? Two considerations modulate Sundstrom's point. First, since 'race' has no place in human biology, we cannot take the difference between the enslaved and the enslavers to be a natural difference. The difference can be nothing more than social status, and this already collapses 'race' into 'ethnicity.' The key player in American history is a particular status: being Black. We can admit that being Black and Danish in some small Midwestern towns are similar, *qua* social statuses, without thinking that being Danish had anywhere near the same significance for American history.

The second consideration is that we must bear in mind the difference between the conceptual commitments of those who make social distinctions and the conceptual commitments of the social scientists who study them. Social distinctions are often taken by the members of the society to reflect natural differences among people. Social scientists can recognize the social roles of such a society without agreeing that the social roles correspond to natural differences. The Azande, for example, believed that a witch had a unique substance in his or her abdomen. When a purported witch had been killed, the family could demand an autopsy to determine whether the person was really a witch. The Azande thus took 'being a witch' to be a natural fact about people, not a social status. E. E. Evans-Pritchard, who wrote about them, did not share this commitment. He did not confuse the Azande's concept of being a witch with his own. He treated 'being a witch' as a social status, and used it to explain cultural phenomena (Evans-Pritchard 1937). Similarly, when we recognize the profound role that being Black has played in American history and society, or the differences in experience that attend this status, it is

important to understand that Americans have taken race to be a natural fact about people. Historians and sociologists, however, need not and should not inherit this commitment.

To conceptualize races as social statuses distinguished by ancestry, somatic features, culture, or language is already to reduce race to ethnicity. This, again, is the sense in which the promiscuous realists have carried through the intra-theoretic reduction begun by nineteenth century opponents of racial theorizing. This reduction does not threaten to erase or minimize the social and historical importance of ‘race.’ There is an enormous difference between being Black and being Danish, both historically and in contemporary America. This difference is best understood as a difference in the historical or social significance of the status, that is, a difference in the behavioral expectations and consequences of being Black or Danish. This difference in content is recognizable precisely because both are in the same family of social statuses. To call this family of social statuses “ethnicities” is simply to emphasize the break between the social concept of race and its nineteenth century predecessor.

4 Race and ethnicity in medicine

This essay began with the question of how ‘race’ is to be understood in medicine and the social sciences, given that there is no genetic or biological role for the concept. Can race be used as a proxy for genetic difference, and hence for genetic risk factors? This essay has argued that the nineteenth century concept of race was replaced by the social concept of race, and that a consequence of this intra-theoretic reduction is that ‘race’ and ‘ethnicity’ are not significantly different. Race is a kind of ethnicity with a particularly important history in the West. So, the original question becomes: Is ethnicity a relevant factor when assessing health risks? On this question, we can venture a

qualified, affirmative answer for two reasons. First, ethnicity is a social status with differentiation criteria that depend on ancestry. Some ethnic groups have a relatively high degree of genetic homogeneity. This may be the result of a number of causes. The group may carefully police its boundaries or be so policed by others. Difference in language or customs may limit interbreeding. Accidents of migration history may produce geographic isolation and founder effects. In places where we can expect a strong correlation between ethnic status and genetic makeup, ethnic status will be useful as a proxy for genetic variation. Second, people who occupy the same social status are subject to the same norms. The norms that constitute differentiation criteria and the behavioral expectations may have health consequences. Discrimination in housing may force the Blacks of a particular town to live downwind of a smokestack belching toxins; Mexicans may be expected to spray pesticides on the lettuce fields. Given the right local conditions, there can be clinically significant correlations between ethnicity and health risks, even if the individuals are genetically heterogeneous.

Because ethnicity is a locally variable social status, the relevance of ethnicity to health can vary significantly among localities. Such variation may be either in the differential treatment or in the amount of genetic variation. The Danes in a small Minnesota town in may be genetically homogenous because they descend from a handful of homesteaders and have had little genetic exchange with outsiders. Such homogeneity is not true of everyone who might claim Danish status. It is almost certainly would not be true of the Danes in a nearby large city. The social significance of being Black is different in the suburbs of Atlanta, small towns in Louisiana, or the Chicago south side.

Insofar as the differences in status result in different treatment, the health consequences of being Black will differ in these locations.

Such local variation in both genetic homogeneity and in differential treatment has important consequences for the epidemiological study of ethnicity and health. Many epidemiological studies use the census identification of race. For many variables of interest, the five or six standard racial categories are not homogenous with respect to either genetic variation or variations in treatment. A person may count herself Black (and be so treated by others) whether seven of her eight great-grandparents were European or all of her grandparents can be traced to the same village in West Africa. Moreover, the social status of being Black has different consequences in different locations.

Generalizations about the health consequences of being Black, then, are meaningless unless we have reason to believe that there is relevant genetic or behavioral homogeneity among those who occupy this status. Moreover, since variation is local, statistically significant correlations between standardized races and health (or social) outcomes is likely to lack specificity. That is, the burden of the correlation will be carried by a sub-population that is relatively homogenous with respect to genotype or social treatment. To guard against a loss of specificity, researchers have to be sure that their ethnic categories identify groups that are locally meaningful. The downside is that such research is much more difficult; the upside is that it holds the promise of much better science.

There is no worry that genetic, health, or social research will resuscitate a nineteenth century conception of race. When the newspapers trumpet the discovery of a drug that works for Black Americans, this should not make us wonder whether biological races exist. That question cannot even be raised in the context of contemporary scientific

theories. The two concepts that replaced 'race'—ethnicity and genetic variation—do all of the legitimate explanatory work done by 'race' and have none of its spurious consequences. Moreover, the concepts of ethnicity and genetic variation are sufficient to expose the real medical and social problems we face: problems of inequitable access to health care, unfair distribution of resources and opportunity, discrimination in housing and occupation, and differential genetic risk factors. Scientifically, if not in popular culture, race is a thing of the past.

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² Some of these authors take the erotetic analysis of explanation to be both necessary and sufficient. The commitment of this essay is only that being a why-question is necessary, and that why-questions can be adequately analyzed in the manner of the erotetic model.

³ The qualification is necessary because we have been operating under the assumption that explanatory autonomy is a necessary condition for ontological autonomy. It may not be sufficient, and if not, then promiscuous realism would not be entitled to its ontological commitment to the existence of races (at least at some times and places). This further issue is not important for the main conclusions of this essay.