# What's the Use of Race?

## Modern Governance and the Biology of Difference

edited by Ian Whitmarsh and David S. Jones

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# 1 Governance and the Uses of Race

**Ian Whitmarsh and David S. Jones**

Race in America at the start of the twenty-first century remains in a turbulent ferment. The erosion of segregation in schools, workplaces, marriages, and politics—an erosion symbolized by the election of the first black president—is accompanied by, and masks, persistent racial inequalities and injustices. Although some crises, such as Hurricane Katrina or the state of American prisons, have brought continuing racial injustice into the public eye and led to calls for remediation, legislatures and courts in the United States have retreated from affirmative action and other traditional policies that sought to compensate for the history of racial inequality. Yet even as the government backs away from race-based social welfare policies, it has established the importance of race in medical research and practice: federally funded research must now examine racial difference, and both the Patent and Trademark Office (PTO) and the Food and Drug Administration (FDA) have sanctioned the concept of race-specific pharmaceuticals.

Such government action on race is in line with broad interest in addressing racial disparities through technological means. The marketplace is now flush with products advertised as solutions for racial injustice. Race-specific vitamins offer to rescue dark-skinned peoples from the vitamin deficiencies they suffer as a result of having moved—or been moved by slavery—from the sunny tropics to temperate climates. Race-specific genetic tests can recover the ancestral histories of African Americans whose heritage had been erased by the slave trade. Nike has even marketed race-specific jogging shoes, designed specifically for the supposedly thicker feet of American Indians, to combat the epidemic of obesity and diabetes on impoverished reservations.

The current tumult in race commerce and governance can be traced, in part, to recent and surprising developments in the science of genetics and race (Koenig, Lee, and Richardson 2008). Coming out of the civil rights era, many scientists and scholars joined a consensus that found race to be nothing more than an arbitrary social construction. They hoped that policies would be enacted to address the existing social injustices that had been created by past false beliefs about race and racial hierarchies. Once this remediation work was done, race would be able to disappear, taking its place among history's other misguided and unnecessary concepts. Such social reforms never came to fruition: race continues to be a powerful social force in America, shaping the distribution of health, wealth, and power in this country. The failure of reform and the persistence of racial inequality are not a surprise. What is unexpected, however, is the way in which the relevance of race as a social, legal, and medical category has been reinvigorated by science, especially genetics.

The persistence and revival of race science calls for critical reflection. New knowledge, practices, and products have elicited excitement and curiosity alongside the concern and confusion of social analysts. This book seeks to intervene on this conundrum. Generations of scholars have turned their analytical talents to the uses and misuses of race. What can be said about those areas in which some use of race is considered still warranted amid this critique? What can we make of the appeal of race in spheres in which some attention to difference is an ethical necessity? The essays in this collection look to areas in which difference must be addressed—in medicine, law, and science—to ask how we can most appropriately understand and use race in our era of genomics. Taken as a whole, this collection complements existing work on genomics and race (Koenig, Lee, and Richardson 2008) by focusing on the promise and dangers of genetics, race, and governance.

Genetics has been promised to be, for the twenty-first century, what physics was for the twentieth century. It has captured the public imagination and offers solutions to an astonishing range of problems. Genetic research hopes to unlock the secrets of disease, yielding improved diagnosis and treatment. Genetics will decipher the mysteries of evolution, improving our knowledge of the history of life on earth and of the human race. Genetics can restore justice to those falsely convicted, with many incarcerated inmates having now been set free on the basis of new genetic analyses. Genetics even offers the ultimate in consumer indulgence for the hyperrich: full sequencing of your genome.

This rise of genetics, in terms of both its science and public profile, has had an enormous and unexpected impact on race (Koenig, Lee, and Richardson 2008). Until quite recently, many scientists and politicians had hoped and thought that genetics would show once and for all that race had no basis in science. When Bill Clinton, Tony Blair, Craig Venter, and Francis Collins shared a stage in June 2000 to celebrate the completion of the Human Genome Project, they focused on the finding of human sameness: with all humans sharing 99.9 percent of their genetic code, theories of racial difference or hierarchy could not possibly have any basis in genetics. As Clinton stated so eloquently, "I believe one of the great truths to emerge from this triumphant expedition inside the human genome is that in genetic terms, all human beings, regardless of race, are more than 99.9 percent the same. . . . The most important fact of life on this Earth is our common humanity" (Clinton 2000, paras. 17–18). Within only a few years, however, scientists began to argue that the degree of variation was actually larger than this, and that this variation maps naturally onto conventional categories of race.

These developments draw on the long history of changing meanings of race and biology. Human plurality—bodily, culturally, physiologically—has long been a seductive object of study going back to classical history. The Mediterranean basin, for instance, collected a diverse enough group of people into a small region that early Greek writers, such as Herodotus and the authors of the Hippocratic Corpus, often commented on the existence and consequences of the differences. Difference here did not connote fixed racial types. Ancient Greek medicine, for instance, focused on environmental malleability and attributed the plurality of appearances, susceptibilities, and customs to the influence of climate, foods, and modes of living (see Stepan 1982). This focus on malleability persisted into the early modern period. The early colonists of Europe's age of exploration and conquest worried about the ways in which they, and especially their children, might be transformed by their move to exotic environments (Harrison 1996; Chaplin 2001). The eighteenth century saw a transition in thinking about difference, as naturalists attempted to create systematic classifications of human variability that were complete (see Augstein 1999; Banton 2000; Stepan 1982). In 1781 Blumenbach used skull formations to classify all humans into five varieties: Caucasian, Ethiopian, Malay, Mongol, and American. By the nineteenth century, such classifications were taken to describe radically distinct groups with internal physiological logics, as in Cuvier's hierarchies of intelligence, moral aptitude, and body (see Banton 2000; Graves 2001; Stepan 1982). Historian Nancy Stepan (1982, 18) notes the significance of these attempts at total classification: "differences that Blumenbach had treated as relatively superficial racial markers, such as head or nose shapes, were now treated as signs of deeper differences in biological organization." This transition inverted the pre-nineteenth-century relationship of environmental malleability and human variation: the variable contexts and experiences that had shaped bodies and physical attributes were now a background, revealing the rigidity of the internal processes that shaped the progress of each race. This approach—by which visible physical characteristics are quantitatively measured to indicate the abilities, character, and history of peoples—became foundational to nineteenth-century uses of race. The shift toward the intrinsic character of living beings contributed to the formation of what has been called the *epistemic space* of heredity (Müller-Wille and Rheinberger 2007). By the mid-nineteenth century, notions of heredity and race were firmly entrenched among the elites of western Europe and North America.

The mode of classification was more stable than the content. Stepan (1982) shows that the science of race in the nineteenth century created hierarchies of, variably, Africans, Mediterraneans, Jews, Caucasians, Asiatics, Gypsies, and other groups. Racial theories were also used to constitute political legitimacy of nation-states, as western

Europe was divided into the racial types of Celts and Anglo-Saxons, Gauls and Franks, Germans and Slavs (Augstein 1999). This relational character of racial classification—its ability to integrate divergent, sometimes contradictory contents—has been foundational to its extensive scientific and medical use (Ernst 1999). But this radically variable content did not preclude extraordinarily precise attempts to measure it. Technological measurements were critical to the nineteenth-century science of race; for example, skull measurements were used to give exact numbers on intellect, moral worth, capacity for civilization, level of spirituality, cultural complexity, technological sophistication, and so on. The result was a science that examines visibly physical characteristics as constituting historical trajectories of biologically distinguishable populations (Hammonds and Herzig 2009).

Blood was central to this nineteenth-century science of race. Taboos of mixing and the association with disease in perspectives on immigrants, populations in the colonies, and those considered black in the United States revealed an obsessive interest in race being carried in the blood (see Banton 2000; Foucault 1997/2003; Jacobson 1998; Stoler 1995). In the twentieth-century United States, this scientific link between blood, race, and disease came under the purview of the new science of genetics. In the 1920s and 1930s, the genetics of race was mutually constituted with the genetics of disease (Kevles 1985/1995). Racially mixed populations were valued as genetically variable, taking the (conceptual) place of hybrids made in controlled experiments. This mixing relied on the idea of pure groups, whether as abstract ideal populations or as in existence somewhere (i.e., the races prior to or unaffected by hybridization). The scientific interest in the genetics of racial subgroups helped generate the emerging human genetics (e.g., in blood group research). Such analyses of race reframed former meanings, geneticizing blood-race links, pure races, and the associations of disease and race. In the United States, sickle-cell anemia exemplified the new ties made between blood, race, disease, and genetics in the early twentieth century. Keith Wailoo (1997, 134–161) shows the ways in which Mendelian genetics was used in the 1920s to shape the meaning of sickle-cell anemia as a "potential disease" within "negro blood." Such links between diseases, races, blood, and heredity were implicated in brutal practices toward particular populations, as Wailoo, Kevles, and others have documented, including immigrant sterilization and other eugenics programs (Kevles 1985/1995, 2004), faith in the eventual extinction of American Indians (Jones 2004), medical discrimination (Wailoo 1997), and the Tuskegee study on syphilis (see Brandt 1978; Jones 1981; Reverby 2009).

The increasingly authoritarian interventions of eugenics began to trigger a backlash in the 1930s. Skeptics worried that eugenic science had overreached and that policies simply implemented long-standing race and class biases. The links between race science and Nazism had a decisive impact on the sciences of race and eugenics in the United States in the 1940s and 1950s. In her historical analysis of race in twentieth-century science, Reardon (2005) shows that new moral and political stances were taken in opposition to the association of racial distinctions with moral and mental hierarchies. Population geneticists distinguished their work from political implications that were no longer tenable in the climate of the United States. Reardon points out that these shifts did not include a widespread rejection of a biological basis for racial distinctions; instead, geneticists and anthropologists attempted to delineate more precisely the biological meaning of race. The genetic links of blood, race, and disease became explicit objects of evaluation in this process. This reanalysis led some postwar anthropologists to argue that the biological concept of race was a myth (Livingstone 1962; Montagu 1942/1997). They worked to shift focus, instead, onto ethnicity, a cultural category, in place of race, a biological category.

Intensive study of ethnicity did not resolve long-standing dilemmas. First, race persisted as a relevant category of analysis. Second, these studies revealed that both race and ethnicity functioned as radically relational categories. Focus on the Americas alone reveals this plurality. In Trinidad the category “mixed” (Afro-Trinidadian and Indo-Trinidadian) unsettles U.S. strict divisions. A similar vexation of American racial binaries is also found in countries such as Jamaica and Brazil, where fine distinctions of skin tone are paramount, making for multiple categories within what would be one category of black in the United States. In Canada, as in much of Latin America, markers of indigeneity make racial divisions that do not map onto American ones. And these are only the official uses of race. Anthropologists have shown that ethnic identities are contradictory and multiple in ways not reducible to racial classifications throughout the world. Racial and ethnic categorizations interweave unpredictably with gender, class, and religion in discourses distinguishing others (see, e.g., Avruch 2002; Gabbert 2004; Hartigan 1999; James 1999; Khan 2004; Lesser 1999; Warren 2001; Whitmarsh 2008). Some biologists and population geneticists joined in this effort to delegitimize race. Most famously, Richard Lewontin (1972) argued that the very structure of human variability—with most variation existing within populations and very little variation distinguishing between populations—undermined the scientific credibility of race (see also Bolnick 2008; Dupré 2008; Marks 2008).

This emerging anthropological, historical, and biological critique of the concept of race as a biological category, however, never managed to contain the ideas and practices of race. Despite now long-standing critiques of the concept, race continues to thrive as a category of analysis among scholars and pundits and in conventional wisdom. Researchers routinely collect data about racial and ethnic subpopulations in their studies. Journals in fields as diverse as genetics, public health, and sociology report data on race and ethnicity and use these variables as significant factors in their analyses. This pursuit of race has produced overwhelming documentation of racial disparities, from birthrates to education, income, crime, punishment, disease, medical treatment, and life expectancy. As a result, genetic research on race is often framed in terms of social justice (Lee 2008). Meanwhile, courts use racial analyses to interpret DNA tests and predict the appearance of perpetrators, and the FDA allows the marketing of race-based pharmaceuticals. These ongoing practices have found new legitimacy in recent reanalyses of human genetic variation that seem to reverse Lewontin's claims. The completion of the Human Genome Project has facilitated large-scale genomic analysis of human populations, much of which uses "ancestry" to map genetics onto traditional racial categories (see Bolnick et al. 2007; Dupré 2008; Nelson 2008). This all contributes to what Troy Duster (2005) has identified as the molecular reinscription of race.

With genetics fueling old ideas about race and race difference, it is important to analyze and understand the ways in which race is being used today. At one level, this is a descriptive pursuit: exactly how is race used by the government (e.g., U.S. Bureau of the Census, PTO, FDA, National Institutes of Health [NIH]), by researchers (e.g., NIH Revitalization Act, reporting data by racial groups), in courts (e.g., DNA fingerprinting), in health care (e.g., studies of health disparities, efforts against them), or by businesses (e.g., GenSpec, Nike)? Cataloging these uses of race is crucial to making visible and drawing attention to an important development that has gone largely unnoticed. One recent book makes a substantial contribution to this endeavor (Koenig, Lee, and Richardson 2008), offering the first interdisciplinary discussion of the use of race in the advent of genomic research and tests. The authors explore the uses of race in science, markets, and media, with specific analyses of population genomics, ancestry tests, and medical research. The editors emphasize the need for continuing and deeper interdisciplinary dialogue about these issues.

We hope to build on this start by exploring what happens when the descriptive question becomes a normative question. *What's the Use of Race* asks both how race *is* being used and how race *should* be used. Should the concept of race be invoked to further the goals of science or social justice? Do racial and ethnic distinctions produce natural categories for scholarly or political analysis? Do the benefits of including diverse populations in research outweigh the potential harm caused by reifying racial and ethnic distinctions? Will efforts to improve the precision of these categories with subtler distinctions based on ancestry or genetic markers increase the utility of the resulting data? What role do funding agencies (whether governmental or philanthropic) have as gatekeepers for the appropriate use of racial and ethnic categories? What hopes and conflicts are embedded in analyses of race as a scientific, medical, or social category? This book probes these quandaries by bringing together researchers in medicine, science, law, and social science to explore the competing interests that make studies of race both feared and desired.

The history of BiDil illustrates this well (Jones, Dorr, and Pollock 2008). In the 1980s, medical researchers proposed that a combination of two existing medicines, hydralazine and isosorbide dinitrate, both of which affect nitric oxide metabolism, would have synergistic effects for the treatment of heart failure. Although initial clinical data were disappointing, retrospective analyses were used to suggest that the combination might actually have benefited the few African American patients in the trial. Obtaining a patent on the use of this combination specifically in this one group of patients, the researchers consequently conducted a new clinical trial that only enrolled patients who self-identified as black. This trial found that BiDil substantially reduced mortality from heart failure. Supported by the National Medical Association, the Association of Black Cardiologists, the National Association for the Advancement of Colored People, and the Congressional Black Caucus, BiDil won approval from the FDA in 2005. This was the first and, so far, only time that the FDA has approved a medication specifically for use in a specifically described racial or ethnic group. Although the FDA has vigorously defended its decision (Temple and Stockbridge 2007; Ellison et al. 2008), the approval of BiDil has received scathing criticisms from a range of scholars, who have argued that it represents a cynical exploitation of loopholes in U.S. patent regulation (Kahn 2004) or a naive effort to redress social injustice through pharmaceuticals (Roberts 2008).

Similar tensions run through the broader literature on health disparities. Even as medical outcomes are routinely differentiated by race, their causes remain open to interpretation: differences in genetics, physiology, socioeconomic status, and access to medical care are noted as potential causes of disease disparities. Genetic uses of race in medicine show similarly troubling reconfigurations of older notions of essential differences (see Tate and Goldstein 2008). Ethnographies have shown that the strange contradictions and ambiguities of race also extend to the science of genetics (Dingel and Koenig 2008; Fullwiley 2007; Montoya 2007; Reardon 2008; Whitmarsh 2008).

Similar critiques can be made of the other commercial ventures inspired by the new sciences of race. Genetic tests of ancestry stand accused of radically overextending claims about what they actually deliver (Bolnick et al. 2007; Dupré 2008; Nelson 2008), with California going so far as to issue a cease-and-desist order to several prominent companies. New attention to people with “skin of color” from dermatologists and Nike’s assertions of race-specific jogging shoes have more to do with identity marketing than with any credible claim of addressing substantial biological differences in an effort to alleviate inequalities. This commerce in racialized products has a certain fervor: there is a mania to the use of racial and ethnic categories to sell shoes, skin products, and ancestry tests. In the United States, such commercialism is supposed to have a certain excess: marketers are expected to make a pitch, which the customer knows is exaggerated. Americans have long associated commerce with hucksterism, and the claims of marketing are seen as having, at best, a dubious truth to them.

But if the market in racialized products is expected to have a certain mania, what of governance, those practices by which the nation-state studies and acts on its population? The claims of the absurdity of race in commerce often imply the existence of contrasting and appropriate uses of race in the arenas of law, medicine, and science. Arguments about race from these institutions often carry an authority not given to marketplace claims. What happens as these arenas employ biological meanings of race?

Racial and ethnic designations have been integral to the nation-state since its inception (see Bhabha 1994; Comaroff and Comaroff 1991; Fanon 1963; Foucault 1997/2003; Prakash 1999; Stoler 1995). As Frantz Fanon (1963) showed, the colonial state tied bodily health, population health, and eradication of disease intimately to moral worth, religious conversion, and proper and civil behavior. Michel Foucault (1978) called such a set of governing techniques around the body *biopolitics*: state governance was constituted in an increasing array of rules and interventions around sex, health, and illness. Biopolitics was dispersed in state institutions such as the army, schools, and medicine. A proliferation of economic, military, and medical analyses and practices around the population were produced to maximize economic and social productivity. This configuration of knowledge and techniques tied together the social body and the subject's body. Anthropologists, historians, and sociologists have since taken up Foucault's concept of biopolitics to interrogate the way populations are categorized and acted on, ranging from public health ventures and biotechnological endeavors to military interventions and penal systems. For example, the configuration of commercial, governmental, and nongovernmental organizations (NGOs) around AIDS in Africa and South America has been explored by anthropologists looking at how populations are defined for treatment and what groups and health interventions are excluded (see Biehl 2007; Fassin 2007; Nguyen 2005). Such literature has explored the set of techniques, policies, and practices that govern sexuality, health, and bodies in different locales: the ways that new techniques, forms of power, and ethics take shape around life itself (see also Rabinow 1992; Rose 2007; Sunder Rajan 2006; Whitmarsh 2009).

Through biopolitics and the idioms of race, the state has revealed its contradictory impulses. It acknowledges the importance of privacy, while maintaining an obsession with watching and documenting, routinely focused on immigrants and poorer urban communities. The heralding of individual freedom allows constraints on sexuality to be imposed, from laws banning miscegenation to eugenic sterilization programs that target poor minorities. Acting for the sanctity of life and public safety entails a police system marked by brutality and a death penalty whose burden has fallen heavily on minorities. Caring for the ill includes categorizing those unfit to be cared for, and racialized populations have been alternately left outside the system and exposed to the most regressive aspects of state power, at times in the name of "public health." And amid the rhetoric welcoming others to join our inclusive and tolerant polity, the state repeatedly cordons off its borders through racially selective immigration policies.

At the center of changes in the governance of race is technology. As forensics, medical practice, and regulations of scientific research increasingly attempt to address difference, they all rely on genetic technologies as the foundation of authority for claims around race. Genetic technology promises to make explicit what had once only been assumed. Traditional racial categorization relied on physical appearance, especially skin color and hair color and texture; but as has been well known, looks can be deceiving. Genetics now offers a seemingly more fundamental method of differentiation: the analysis of genetic sequences. To the extent that we are products of our genes, the sequence contains fundamental information about individual identity and can, in theory, serve as a fundamental measure of difference. This has made genetics irresistibly appealing to those interested in difference, fueling the questions this book addresses.

Biopolitics, governance, and race all raise fundamental questions about how we define ourselves, both biologically and socially. How do we understand our biological relationships to people beyond our families? How do we situate ourselves in society, and what obligations do we feel toward others? What are the intersections of biology and citizenship? It often seems counterintuitive to think about citizenship and biology. After all, citizenship is traditionally seen as a phenomenon of civic behavior (e.g., obeying laws, voting, etc.). But increasingly biological, especially medical, concerns come under the domain of citizenship, from government concern about health behaviors (e.g., smoking, diet) to citizens' concerns about access to and quality of health care. In these domains, individuals, families, and communities make use of scientific designations to identify themselves for recognition by the state and NGOs. Central to all of these issues are questions of difference. How is difference defined? How is it relevant? This book explores areas in which the state is obligated to address difference, and especially racial difference, in forensics, medicine, and scientific research.

Amid the talk of a future of personalized medicine and individualized identification, these chapters analyze the ways race becomes part of new scientific, medical, and legal techniques. How does the precision of genetic technologies give credence to racial categories and associations in forensics? What problematic connections of race, blood, and illness persist in biomedical techniques attempting to address race and disease disparities? How do concepts of ethnicity, diversity, and inclusion undermine or instantiate older concepts of race in the science of genomics and biobanking? In exploring these issues, the collection addresses how these legal, medical, and scientific institutions might think about race without reification amid the increasing use of genomic technologies. The authors draw on extensive ethnographic, historical, and epidemiological research to show the problems and possibilities found in addressing difference in governance in an era of genomic technologies.

We have organized the chapters into three sections—"Ruling" (law and regulation), "Knowing" (science), and "Caring" (medicine)—in an attempt to reflect the three spheres of governance. Analyses of governance from Weber to Foucault have shown that these domains are mutually constitutive: that knowing is a kind of ruling, caring is a kind of regulating, and ruling is framed in how a population is known. Each of these sections explores this interplay in the modern governance of race.

These explorations begin with analyses of the legal and regulatory uses of the new genetics of race. The first section focuses on the areas of research regulation and forensics to see how genetic techniques of determining race are being integrated into the courtroom, law enforcement, and scientific oversight. In chapter 2, Jonathan Kahn discusses the use of race in presenting DNA evidence in criminal cases. When DNA fingerprinting was introduced in the 1980s, only a few genetic loci could be tested; probabilities were calculated within racial categories to increase their significance. Whatever utility this practice had, Kahn shows that the precision of genotyping technology today, based on an increasing number of loci, makes this use of race with DNA evidence entirely superfluous—yet this use persists, creating strange but common statistics in the courtroom, such as one in two billion African Americans versus one in three billion Caucasians. Kahn argues that "the only thing that race adds to the presentation of such DNA evidence is race itself." Race is added ostensibly to refine the evidence but, in fact, functions to associate the defendant with the crime through long-standing racial associations with violence. Kahn draws attention to the precision of DNA techniques to show the imprecision of racial designations: he finds a lack of attention to the technical complexities of using race among forensic DNA experts, which contrasts with the attention given to the technical sophistication of genetic technologies. Self-identification or visual ascertainment by police officers is uncritically accepted in generating racialized databases. Kahn argues that such unexamined means of identification would be disallowed for other types of data and evidence. In Kahn's analysis, the continued use of race in the courtroom to generate bizarre numbers is a flawed practice created out of the inertia of racial categories imprecisely used in racial databases and courtroom evidence. The law looks to the authority of scientific databases to justify such use, creating a self-perpetuating system of racialized evidence that has long been obviated by the same scientific technologies that supposedly underpin it.

In chapter 3, Pamela Sankar explores a new kind of racial profiling, forensic DNA phenotyping (FDP), which is poised to emerge into law enforcement practice. FDP is designed to provide law enforcement with a verbal portrait on which to base a search for suspects. Sankar notes the radical break of FDP from the use of racial identification and DNA in the courtroom that Kahn discusses. Rather than being used to confirm a suspect's identification, FDP is used to predict it. Sankar argues that this shift from genotypes associated with populations to individual profiles can create spurious searches that play into existing stereotypes of racial profiling. She explores how the authority accorded DNA gives new importance to racial designations: there is an acknowledgment that police either eyeballing or asking about racial identity is fallible, unscientific, and open to misuse—but who would dispute DNA? In this account, the authority attributed to DNA takes on a life of its own. Sankar shows that as DNA enters new arenas of law enforcement, it interacts with an older calculus of racial identification and assumptions, giving new authority to designations long problematized.

Steven Epstein closes this section with an analysis of how the research regulatory system in the United States has attempted to address race. With the 1993 NIH Revitalization Act, federally funded researchers faced a mandate to include diverse populations—by race, gender, and ethnicity—in their research. Epstein explores how interacting interests and institutions converged on this policy as a solution to the problem of race and health inequalities in the United States. He then describes the ways in which implementation of this policy has proven more complicated than anticipated, concluding with a discussion of possible alternative ways of addressing difference in biomedical research.

The second section of this collection turns from law to science, from the work of ruling to the work of knowing. These authors explore large-scale biological research projects to learn how race implicitly or explicitly becomes part of the genomic science that attempts to address human diversity. In chapter 5, Simon M. Outram and George T. H. Ellison set the stage by providing a taxonomy of the criticisms that have been leveled at the use of race as a biological characteristic in genetics and biomedicine. These critiques include social, genetic, and ethical misgivings: the lack of genetically distinct populations along racial lines; the reification of what are fluid and relational categories into biological and stable ones; the instability in the measurement techniques of changing categories over time and between countries; and the stigmatization and preclusion of attention to social causes of health disparities potentially entailed. Outram and Ellison depict a give-and-take between the use of race as biological and the critique of race as a social construct. As they show, human genetics research addressing race is an attempt to address health disparities, carrying a social justice argument that also undergirds the critiques of the biological notion of race. One of the consequences of this integration of the social critique into biomedical and genetic approaches has been that the term “ethnicity” has replaced “race” in medical research. In the process, while ostensibly drawing attention to a contingent identity, ethnicity is frequently reified as a given and immutable characteristic, according to Outram and Ellison. In their view, this uneven inclusion of criticisms into genetic and biomedical approaches constitutes a “selective engagement.” As a result, the ambiguity of racial categorization is employed to give credence to an underlying biological reality that only genetics or other biological research can determine. In this analysis, the creation of biological knowledge about populations is incorporating an interpretation of racial categories as politicized, ambiguous, and sociopolitical but leaves a biological reality to race intact.

In chapter 6, Richard Tutton, Andrew Smart, Richard Ashcroft, Paul Martin, and George T. H. Ellison take up how scientists themselves see this ambiguity in racial categorization. If, as Dorothy Roberts argues in chapter 12 of this volume, a genetic concept of race is central to the emerging concept of biocitizenship, muting attention to older ideas of race, Tutton and colleagues explore the point where these two forms of identification most explicitly interact. They explore the use of self-identification to establish racial and ethnic categories in large-scale, population-based biobanks, focusing on the British government's UK Biobank. Self-identification is the established technique in the United States and United Kingdom wherever governance addresses difference, including census, hospitals, prisons, and research. The authors draw on interviews with medical researchers studying common diseases and responses to medications to see how they envision the troubled shift from self-identification to biomedical or biological categories of race. The researchers interviewed depict self-identification as problematic for biomedical results, particularly framed in terms of a lack of standardization of categories and incorrect responses. Actual race or ethnicity is considered a real aspect of an individual that self-identification or other sociocultural forms of determining are flawed (but practical) tools for revealing. This actual race or ethnicity is, by turns, considered "genetic ethnicity," or "ancestry," or population history. As a result, practice often differs from explicit policy in such genetic research, and those administering questionnaires use physical observation to determine ethnicity or race. In large-scale genomics research like UK Biobank, the idea of race as a social, historical construct creates an uneasy perspective on the means by which the government generates a science of population and biology among its practitioners.

In chapter 7, Amy Hinterberger examines what happens when the creation of genomic knowledge about race, ethnicity, and populations becomes a national enterprise. The Canadian government has launched a federal endeavor, Genome Canada, to fund and manage genomics research. In looking at two sites of genomics-related research, the chapter traces national genealogies of citizenship and identity to demonstrate how racialized histories have come to shape the politics of inclusion in contemporary population genomics projects in Canada. Hinterberger draws on ethnographic work among Canadian researchers and bioethicists to show that the concepts of multiculturalism and diversity in genomics research, at times, transform social distinctions into stabilized biological ones, as the government grapples with how to include indigenous populations. She argues that the mapping of race, ethnicity, and population by genomics, like other cartographies, carries political and social histories. In her reading, there are continuities between the biopolitical practices found in colonial history and the government's current interest in including aboriginal populations, and other population groups, as a genetically unique group to be researched. Indeed, the meaning of diversity is at stake in the new genomics. As genomics projects recruit aboriginal groups and the founding populations of Quebec as genetically distinct populations, multicultural science comes to mean the inclusion of what are considered biologically distinct peoples. In turn, such groups can use life science institutionalization to make claims on the nation-state. Hinterberger and Tutton and colleagues join other ethnographers in revealing that the rhetoric of globalization can mask the fact that the nation-state is at the heart of the new genomics (see Pálsson and Rabinow 1999; Sunder Rajan 2006). In light of the growing number of national genomics strategies and the global aspects of major population genomic research projects, Hinterberger argues that the task should be not only to consider how race may be used in these projects, but to attend to the diverse histories and multiple meanings of race and ethnicity that compose *biosocialities*.

In chapter 8, Joan H. Fujimura, Ramya Rajagopalan, Pilar N. Ossorio, and Kjell A. Doksum use a sociomaterial approach to explore variations in concepts and technologies used in human genetic variation studies as they examine how race does, and does not, get used in new genomic studies of human disease. Somewhat in response to recent debates about and arguments against the use of race in biomedical genetics research, some geneticists have attempted to construct technologies for finding disease-related genetic markers without employing notions of race or ethnicity. Through ethnographic methods, Fujimura and colleagues investigate these attempts and focus, in particular, on the work of medical and population geneticists who emphasize that they are *accounting for* population differences due to different "ancestries," rather than *assessing* differences among racial groups. The authors examine the relationships between the notions of ancestry and race by examining the theories and practices that geneticists use to construct ancestry measures. Although one could regard ancestry as a concept produced using population genetics tools and race as a sociocultural set of understandings, the two are not so clearly separated in scientific or popular cultural deployments. By comparing the construction of ancestry in genome-wide association studies (GWAS) versus admixture mapping studies, they show that just as race is a socially constructed set of categories, so ancestry is also a constructed concept. They conclude that the relationship between race and ancestry is intricate and difficult to disentangle, which helps to explain the difficulties of separating the reading practices of consumers from the production practices of scientists. Nevertheless, they argue that with caution and care, GWAS technologies can provide alternative means to conduct searches for genetic markers associated with complex diseases, without relying on race or ethnic categories.

Although its implementation has proven problematic, the NIH Revitalization Act addressed a serious problem in the United States. The science of race and disease has produced a wealth of literature correlating race with disparities in disease prevalence, diagnosis, treatment, and mortality and morbidity rates (Good et al. 2002; Graves 2001; Smedley, Stith, and Nelson 2002). For instance, African Americans have higher mortality rates for tuberculosis, diabetes, pneumonia, ulcers, and heart disease (Graves

2001). Researchers have shown disparities in health insurance, health care delivery and availability, and exposure to hazardous waste and environmental toxins (Graves 2001; Smedley, Stith, and Nelson 2002). African Americans and Hispanic populations have been found to have higher rates of asthma in the United States, with considerably higher morbidity and mortality rates (National Center for Health Statistics n.d.; Nsieh-Jefferson 2003). As biomedicine addresses these disparities, race is integrated into attempts to interpret, treat, and diagnose patients. The final section explores what happens to race in the clinic, medical education, and medical research, as race is used to understand inequities of health and illness.

In chapter 9, Jay S. Kaufman and Richard S. Cooper examine the use of racial categories in the clinic to make diagnostic and treatment decisions. They show that "significant differences" detected in research at the population level are often mistranslated by clinicians into decisions at the individual level. As the authors point out, the new genomic medicine, while promising a "post-racial" approach, continues to draw on outmoded concepts of race. Kaufman and Cooper argue that the use of race to make medical decisions, like other clinical practices, should be subject to evidentiary assessment. Toward this end, they recommend a model for analyzing the utility of employing race in making clinical decisions in the case of any given condition. They show that currently used techniques of evidentiary assessment in medicine, when applied to current diseases thought to be racially specific, usually reveal that the current use of race to make medical decisions is not a rational practice. They begin with the example of sickle-cell anemia, often considered the paradigmatic racially specific disease, to show that despite the fact that African Americans are six times more likely to have the condition than Caucasian Americans, the amount of information gained by using race in deciding who should be diagnosed is minimal, and any benefit is offset by the tendency to exaggerate the association. They then turn to the example of response to antihypertensives, an area in which many believe that race must be considered to make an informed medical decision. Once again, the authors show that there is little benefit from employing racial categories. Finally, they discuss chlamydia as a case in which race might be appropriately used in the clinic, demonstrating that social and political concepts of race have a utility in the clinic where biological meanings do not. In biomedicine, the racial identity of the patient is expected to reveal a biological history that confers the likelihood of an illness as well as the best way to intervene. Kaufman and Cooper show that in medical practice, this search generates a wealth of speculation: medical researchers and practitioners frequently posit strange connections between illnesses and imagined cultural histories, as older links of blood and race are integrated into the new medicine.

In chapter 10, Angela C. Jenks looks to what is happening with medicine and race in the daily work of practitioners. The interest in addressing racial disparities has given rise to the movement of "culturally competent" healthcare: training of medical personnel in what are conceived as the traditions, behaviors, and other practices of the populations being served. Because of a long history of inconsistent distinctions between race, ethnicity, and culture, cultural competence inevitably incorporates old traditions of racial thinking and stereotyping. Specifically, based on ethnographic work with cultural competency advocates, Jenks explores the ways "culture" is conceptualized as a cause of observed racial disparities in health status, and as a means to ending them. She argues that the attempt to address diversity has in some areas essentialized culture as a stable characteristic of a patient population, drawing attention away from structural inequalities organized along racial lines. Jenks finds an individualization of the concept in cultural competency programs, such that culture is considered to be what makes each patient unique, precluding attention to what communities who experience inequalities share. Culture is recast as a set of personality traits, rather than social positions and relationships between groups. Cultural competency thereby inscribes what Jenks calls "decontextualized difference," obviating attention to the power dynamics that create inequalities. In this reading, culture, like race, can become reified in the individualization of patients amid the rhetoric of diversity.

In chapter 11, Nancy Krieger argues that despite these varied critiques of race, the concept has a definite purpose. While she accepts the argument that race is not a valid biological entity in medicine, she does not think that use of the category should be discontinued. On the contrary, for Krieger, the continued use of race in state approaches to health and inequality is morally urgent and indispensable. Krieger draws on her study of preterm deliveries to argue that racial inequalities in health can only be understood by collecting data both on people's self-reported experiences of discrimination (implicit as well as explicit) and on racial/ethnic disparities in health outcomes and deleterious exposures. In this sense, race/ethnicity continues to be a critical marker to be studied. She points out that removing race from the census and other forms of state identification would only make invisible the extreme disparities in health and other experiences in the United States caused by racism and discrimination. Why is race still an important issue? Krieger makes a compelling argument based on studies of the biological consequences of racism. The experience of racism and other forms of discrimination becomes embodied in individuals, shaping their health outcomes in many ways. Studying racism, and its effects, is therefore essential to understanding health. Only once the effects of racism have been ended will it be safe to dispense with studies of the health effects of racism and race. In the meantime, it is essential that legislation continues to consider both racism and race. In her epidemiological studies on U.S. census data, Krieger shows that legislation is an effective means of reducing inequities, as disparities in the United States decreased in the 1970s, during the "war on poverty," and increased after 1980, with Reagan-era legislation. Krieger's essay offers an ecosocial model, in which disparities in exposure to economic and social deprivation, toxic substances, pathogens and hazardous conditions, social trauma, harmful commodities, and medical care create bodily differences in illness. Krieger forcefully calls for studies that analyze the mutual interaction of class, race, gender, and other forms of discrimination in determining our biological, psychological, and social health.

The analyses in this book are guided by the work of sociologists and anthropologists who, over the past two decades, have explored the genetic and cultural significance of genetic technologies. Inspired by Foucault's notion of biopolitics, Paul Rabinow (1992) coined the term *biosociality* in the early 1990s to describe the potential for social groups and identities to form around genetic information. Several anthropologists have explored the ways in which genetics takes on cultural significance, changing ideas of illness (e.g., Konrad 2005; Lock 2001/2002), kinship (Strathern 1999), and parenthood (Rapp 2000). As biological ideas of health have become increasingly salient in patient identities, public health ventures, and medicine, social scientists have observed the emergence of a new form of citizenship: a *biological citizenship* (Rose and Novas 2005). The state increasingly defines citizens by their biology, through prenatal testing, newborn screening, and government use of biometrics to determine medical access. Governance here is a mix of commerce and civic institutions acting on an individualized subject. Families, in turn, use biological meanings to affect policy, medicine, and science, through patient organizations, interactions with their doctors, and amassing biomedical information (Heath, Rapp, and Taussig 2004; Petryna 2002). What does this concept of biocitizenship teach us about the new science and medicine of race, and reciprocally, what do we learn about biocitizenship from the changes happening as the state takes up genetic technologies to understand racial differences?

Dorothy Roberts addresses these queries in chapter 12, arguing that race is fundamental to the emerging category of biological citizenship. In ancestry testing, pharmaceutical patenting, genetic testing, and assisted reproduction, the neoliberal logic of biocitizenship includes the racialized subject as a target for commercial and state interventions. If biocitizenship offers new ways of participating, creating novel forms of being a citizen, Roberts inquires over the obligations entailed. She argues that the use of cutting-edge genetic technologies to address race amid the disparities in health and incarceration reveals a biocitizenship based on the preclusion of other rights. As biomedicine and biotechnology focus on race, the concept loses salience in government social policy. As she puts it, "It is as if straining their eyes to see race at the molecular level blinds people to the continuing impact of race in society." In Roberts's analysis, the use of genetics to determine race offers a kind of citizenship in which high-technology expertise subsumes other forms of group membership: what does the use of genetics to understand identity do to religious, civic, and community ties? Where genetic technologies are used to determine historical kinship, the meanings of *race* and *family* are reconfigured (see Palmié 2007). As anthropologists, sociologists, and bioethicists have examined biotechnologies and bioscientific knowledge, they have tended to focus on the new, emerging perspectives on kinship, disorders, and patient identity that have been facilitated by the flood of technologies and data around "life itself." Roberts's dual lens, which juxtaposes social policies around people of color alongside the new technologies, broadens this perspective. By following the policy and science constituted around a racialized citizenship, Roberts is able to see biocitizenship not as a radically new set of possibilities and rights, but rather, as a nexus of policy, desire, and exclusion, as fraught with power as other approaches to race have been, are, and likely will be.

The essays in this collection pose a number of difficult questions for scholarship and policy. Although clear answers are rarely forthcoming, the essays do indicate a series of specific places where pauses are prescribed. The multiplicity of ethnic identifications requires further interrogation of facile adjudications of the biological and social dimensions of race. In descriptions of race for medical, scientific, and legal use, we need to attend to what is considered "the sociocultural" and "the biological." Often the sociocultural aspects of race are operationalized as factors that impinge on the biological, when biomedical and genetic researchers discuss changing categories across governments and historical periods. Rather than revealing a foundational ambiguity in racial or ethnic categorizations, the socially determined race is taken to be a poor approximation for a stable apolitical characteristic underlying this social confusion. This approach precludes the radically relational character of ethnicity/race, which shifts across geographic and historical spaces, and the contradictions that inhere in the multiplicity of ethnic designations. A more self-critical analytics opens up attention to the ways any adjudication on race is fraught with contradictions, as has been the case since the inception of the concept. These essays suggest that in the use of race for governance, recognition of this contradictory status is critical. Such recognition might institutionalize some doubt and humility about using race as a biological reality. This perspective might also enhance exploration of the criteria being used to categorize race by race. In current research, regulation, and care, the basis for racial designation is usually kept obscure. A focus on its contradictory character brings to view which criteria—appearance, genetic loci, self-identification on a form—are considered appropriate for the task at hand.

The motives for using genetic technologies of race are multiple: to market products, to redress racial disparities, to be an inclusive means of addressing ignored heterogeneity, to fine-tune law enforcement, and to increase health. As genetic technologies enter new arenas of governance, race is increasingly given an authority as a biological reality underlying the social identity. Discovering this reality is considered urgent where the nation-state addresses difference: in law, medicine, and science. This enterprise creates a new mix of the commercial and the ethical: the claims of addressing disparities are conjoined with increasing commercialization, particularly in securing investment for the biotechnological breakthroughs to come. Biocitizenship here pegs desire to responsibility. For the racialized biocitizen, this includes medical, legal, and scientific knowledge of the subject as an urgent need, responsibility, and potential. In this endeavor, new genotyping technologies and techniques are intimately tied to traditional ways of knowing populations. The essays collected here remind us that for abstraction of nucleotides to enter governance (or anything else social), they must be tethered to older means of judgment. The state works its techniques through statistics and the sciences of identity and difference. These inevitably incorporate ethics, histories, aversions, and enticements—these associations grant them significance in the daily operations of governance, whether in judging, penalizing, protecting, healing, warring, or knowing. In North America and Great Britain, this drama has always carried race. It is this mix of convoluted desires and taboos through which the hyperspecific, authoritative, and arcane DNA enters governance. The result is rarely predictable. One finds judges using the existence of scientific databases to give authority to DNA, databases that designate race from identifications made by law enforcement officers; medical texts excluding diagnoses based on hypothesizing over the blood of the presumed race of the patient; and researchers drawing on speculative racial histories of "culture and biology" to depict purities in some distant past to map out current hybridities. This reliance on older judgments throws into doubt the futuristic image of high-technology tools and methods bringing a new way of being, divorced from the past. The convoluted uses of race by the state to address difference—relying on emerging genetic technologies—constitute new (but somehow familiar) forms of biopolitics and citizenship.

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