Concluding Remarks

Social Justice Requires Biocritical Inquiry

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I would like to address some aspects of our dialogue that have important consequences for future discussions of genetics, race, and social justice. Social constructionism is an organizing principle for many scholars working on race and science. As a guiding concept—based on the premise that human differences are shaped (if not entirely then at least partly) by social conventions, practices, and institutions—it draws together scholars across the social sciences, law, history, ethnic studies, philosophy, religion, and health sciences. These various fields have trained us in particular ways, shaping how we account for the differences within the social body. Thus the color of social constructionism—which is to say how this organizing principle affects our research agenda—changes according to our disciplinary training. For some, political and economic relationships are of utmost importance. For others, history, culture, and belief require unique attention. There are some of us who look to the sociological dimensions of knowledge and practice. Our debate put these varying priorities on display.

Despite this intellectual diversity, a social constructionist approach does not mean an opposition to science or to genetics in particular. As scholars working in the wake of the UNESCO "Statements on Race" in the 1950s–1960s, the subsequent debates in the 1970s and 1990s over IQ and sociobiology, and then the sequencing of the human genome in 2000, social constructionists recognize that humans are genetically more similar than they are different and that social definitions of race do not actually describe the biology of living people.[1] We recognize this partially *because of* the research and developments within the biological sciences. This is a point often forgotten in debates with geneticists who wrongly claim that social constructionists ignore the work of scientists. In the last two decades there have been more discoveries by biologists disproving the notion that race is a direct factor in health and behavior than there have been studies demonstrating causal connections among genes, race, health, and behavior.[2]

If we were to generalize, we could say that social constructionism involves being suspicious of correlations between race and genetics for reasons that are

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much larger than science. These are issues tied to the limits of language and epistemology, the influence of cultural factors on knowledge production, and the economic realities that order social life. Social constructionism involves recognizing that all knowledge is a historically contingent human activity and therefore the concept of "genes" is not a natural category. It also involves recognizing that the effects of this social concept within bodies are also shaped by political, economic, and environmental legacies.

Our debate here, among social constructionists, has pivoted precisely on this issue. Unjust social and political systems necessarily alter the biological lives of marginalized groups and populations. Therefore legacies of discrimination, pernicious policy decisions, and economic inequality must be framed as causal factors in the emergence of health disparities and human biodiversity more generally. Social justice requires what I term a "biocritical inquiry," which reverses the orthodox practice of situating genes as the base, foundation, and unmoved movers of human health, behavior, and perceived racial difference. Instead, biocritical inquiry aims to denaturalize genetic differences, revealing the social inequalities and historical legacies of violence, conflict, and discrimination that are inseparable from human biological diversity. This approach would abandon the prelapsarian fantasy that scientific research must control for social factors, as though human biological development is best understood in a state of nature free of social and political relationships. It would turn on its head the belief that genetic processes are the precondition for social life. A biocritical inquiry would conceptualize human biology and society not as separate entities but instead as interdependent co-arising phenomena.[3] This means that for better or worse the structures that govern and shape society also manifest within human biology. It also means that human biology is intelligible only against the backdrop of the observer's sociohistorical context as well as the social forces shaping the lives of those being observed. Taking this enmeshment of biology and society as a starting point for scientific research prepares us to answer the question of whose sociopolitical institutions and which social practices are responsible for the unequal distribution of illness and premature death across so-called racial groups.

This biocritical orientation puts into a different light the question of whether or not race ought to be used within biomedical research aimed at social justice. As Michael Montoya argues, if we remove race from the discourse without correcting the underlying social practices of stratification, inequality, and discrimination that shape biomedical research, we will have done nothing to move the needle on social justice. This means, then, that biomedical research oriented toward social justice requires a working definition of race that avoids naturalizing human variation. As Montoya suggests, researchers may never fully agree on a single definition of race given that its deployment is always context specific and oriented toward a particular set of problems and issues. Race may have varying

uses, but some have more discriminatory potential than others. To critique how race is being used in a given study or how it frames a specific research question is to interrogate the intellectual scaffolding—the set of commitments, beliefs, and reasoning practices—that sits behind its use. I have no doubt Montoya would agree with me on this point. To go a step further, if we realize that society and human biology are codependent entities that cannot exist without each other, then we should be capable of identifying patterns in the ways race is deployed in scientific practice—patterns that are predictable in their discriminatory logic, reductionism, and tendency to efface the political conditions involved in health and behavior. Diagnosing these discriminatory formations in science is crucial for social justice work, and thus not all conceptualizations of race can or ought to be tolerated.

At stake in this dialogue is determining which formations of race are consistent with the ethical and political commitments that follow from social constructionism and which are not. Put differently, which uses of race in science expand our understanding of the sociopolitical factors that influence human biological diversity, and which uses ignore and suppress them. Science in the United States and across the Americas cannot be politically neutral on the use of race within biomedical research: Western biomedical research is supported by and conducted within a sociopolitical environment that has a well-documented living legacy of racial discrimination.

Part of our exchange in this journal issue has involved retracing, yet again, the effects of this inheritance in genetic research. In our analyses we have shown how the study of human biodiversity gives expression to contextual factors past and present: Eurocentric cultural commitments, exploitative economic realities, and racist political projects. This is perhaps most clear in the narratives attached to genetic claims about humanity's ancient ancestors. James Doucet-Battle and Gabriela Soto Laveaga, for example, document the legacy of colonization to illustrate inherited forms of knowing and practices of exclusion that shape the SIGMA type 2 diabetes study. For Doucet-Battle, framing metabolic risk in Mexico creates the opportunity to reiterate colonial legacies of power and classification that once erased the humanity of Africans and indigenous groups in North America. To redress this legacy, Soto Laveaga asks readers to consider how these tainted racial concepts may be necessary for memorializing the dead. She argues that the categories of race enable researchers to recount the European project of exploitation and dehumanization of the Black body through deliberate acts of displacement and erasure. To simply abandon race in science would leave hidden the social and political effects of being signified as African in the so-called New World. Debates about the social construction of race cannot take place around those bodies that do not exist in the historical record, whose absence is not registered as a lack or gap in the dominant view of history.

Narrative formations in science, however, involve more than reconstructing the past. They also make claims about the future. What exactly is the purpose of excavating the genetic traits of our ancient ancestors if not to tell us something about our life chances and those of our descendants? Ruha Benjamin asks readers to consider speculation as a key conceptual device in scientific work, enabling the exchange of ideas between fictional and factual race-making and ultimately the creation of capital. Benjamin explains that there are geneticists who use the discourse of "perhaps-possibly-maybe" to prophesy about correlations among genes, race, and disease in living groups. Then there are capital interests (both public and private) who fund the research of geneticists with the hope of producing future goods to be sold in the health market to the perpetually sick. According to Benjamin, the past is only half of the equation that produces racial science; the other half involves a future being narrated now by capitalism, in which market speculators invest in race science "whether or not they fully believe racial prophecies about inherent group differences."[4]

Benjamin offers an important challenge to my own position on this. I ultimately take her point as something broader than a binary proposition claiming that either it is intellectual history *or* it is materialism driven by capital that shapes the persistence of race in science. Benjamin's argument, as I understand it, prompts social constructionists not to lose sight of capitalism in their assessments of scientific ideas of human biodiversity.

But in the spirit of friendly debate, let me deal directly with Benjamin's criticism and use it to develop more clearly the links between capitalism, race, science, and belief. It was a self-conscious decision on my part to place Frederick Douglass within the lineage of social constructionists on race. Rarely is Douglass cited by historians of science as a contributor to research on the social determinants of health and behavior. As someone who believed in a common human ancestry for explicitly Christian reasons, Douglass used this belief as an orienting principle for contesting the idea that humans were fixed biological units: How could the races be static and impervious to the effects of the environment if they all were the descendants of a shared form? Following this line of inquiry, Douglass then imagined how the social structures of slavery, poverty, and exploitation could shape the human body in ways that were passed along multiple generations. Douglass made his argument for the social causes of human biodiversity (racial environmentalism, as it was understood in the nineteenth century) within the context of what Cedric Robinson called "racial capitalism."[5] The wealth generated by the Atlantic slave trade was premised on the subordination of African bodies and the ascendancy of largely Protestant, Euro-American whites. Douglass's environmentalism was designed to show how these racialized material interests effaced the social factors that naturalized white supremacy and justified Black subordination. When Black–white differences were believed

to be caused by nature and not society, ethnologists were effectively naturalizing the social hierarchy required by racial capitalism. Douglass is important for the history of race in science because his writings on ethnology diagnose how capitalism can shape accepted views of nature, the valuing of human bodies, and, perhaps most importantly, beliefs about what is real.

Expanding on Benjamin's criticism, we have to say that the operations of race in science entail material history, intellectual history, and matters of faith. We also must realize that one does not mine for genetic traits in ancient bodies without believing that such traits can be found and will have material consequences of interest for a capitalist health-care industry. Similarly, the oil barons of the nineteenth and twentieth centuries sought this ecologically destructive resource, in the most treacherous terrains, because the profits to be made were enormous. The Paul Gettys of the world ultimately believed the oil was there—even if it was buried deep under the earth's surface where no one could see it. They also knew where to look and contracted the help of geologists, the knowledge of locals, and of course the expertise of scientists, engineers, and mathematicians to point them in the right direction. Geneticists backed by billionaires are no different from the scientists who worked with the oil barons of the past. Carlos Slim, one of the world's wealthiest men, is financing the research of biologists who believe genetic traits have consequences for human health and behavior. Does Slim believe race is real? Surely yes, if he is looking in the very same place geneticists explore when making claims about the origins of human racial differences. Moreover, his investment hinges on the possibility that geneticists will unearth things that can be translated into a product for Mexicans and other Latin Americans on the health market. To use Benjamin's language, Slim stands to *profit* from the work of scientists who *prophesy* that in time science will identify the genetic resources to produce drug therapies for the perpetually sick.

If Doucet-Battle, Soto Laveaga, and Benjamin use social constructionism to imagine the science of human biodiversity as an extension of colonial power relationships, practices of erasure, and capital interests, John Hartigan moves in the opposite direction by drawing attention to what he believes are the limits of social constructionism to account for human genetic variation. In his view, the legacy of colonization and recent social history should not overdetermine assessments of the SIGMA study. The possible association between ancient human conditions and contemporary disease risk provides "an opening to go where social constructivists—concerned principally with critiquing representations—generally will not tread, and that is into the genetic and sexual history of our species."[6] Hartigan explains how modern notions of the state, the subject, and recent socioeconomic history inevitably filter through definitions of the social, which may then be read back into the ancient past—often at the expense of other biological mechanisms (e.g., sexual reproduction) at work in human history.

Surely there are limits to the conceptual models used to critique scientif-

ic racism. But if we give sexual reproduction causal power without providing an account of the social conditions under which such practices take place, are we not simply locating agency outside human history? Is there not an implicit biological determinist argument here, one in which the need to reproduce—assumed to be innate and therefore presocial, acultural, ahistorical—is given epistemic priority in accounting for where racial differences come from? How far removed is this thinking from nineteenth-century Darwinian notions of sexual selection? Indeed, in this effort to use sex to escape presentism, have we not replaced one set of contemporary preoccupations with another?

Perhaps this is unavoidable. But if that is the case, there ought to be a set of principles and commitments that inform and orient these decisions. To ask if social constructionism is a prerequisite for health-disparities research is a way of providing this orientation by privileging those representations of biology and society that clarify the policies, practices, capital interests, and forms of social governance responsible for the disparities being examined. There is room in this model for recognizing genetic factors involved in human biological variation. Human genes, however, operate only within a social environment. Researchers need to abandon the belief that gene–environment interactions occur within an ecological system unaffected by human decision-making, culture, and social life. This is the point of Claudia Chaufan's analogy between type 2 diabetes and speaking Spanish. By likening genetic risks to language acquisition, Chaufan emphasizes that the incidence of type 2 diabetes could be determined only by the cultural environment that Latin American people find themselves in, much like the ability to speak Spanish requires a specific social environment to shape linguistic behavior and thought. An empirical measurement of type 2 diabetes or speaking Spanish relies fundamentally on quantifying the effects of society on human biology. In the case of diabetes it involves knowing the developmental history of the disease, a story that returns to colonialism. Chaufan explains that the starvation of indigenous populations following the dispossession of their land resulted in an intergenerational fetal environment that produced insulin-resistant babies with low birth weights. Subsequent exposure to life on a reservation created the conditions for diabetic mothers to give birth to children who themselves would become diabetic. Chaufan explains that this very recent social history can account for diabetes rates without needing to consider any of the potential genetic risk factors assumed to be involved in the development process of this disease.

To make colonialism a causal factor in type 2 diabetes risk, one must first look for the impact of this history on the human body. To do that involves a conscious decision to prioritize the effect humans have on living systems; it involves denaturalizing racial differences and offering a full account of the socio-political ecology under which disease risk is produced within humans and their ancient ancestors. It is easy to imagine that biogenetic research speaks through

a metalanguage that has emancipated itself from social life, cultural values, and historical contingency. However, genetic research on health disparities is always already enmeshed within society as a result of the structural conditions that make possible the study of disparities to begin with as well as the sociopolitical forces that sustain and exacerbate health inequalities—conditions that can be quantified and accounted for within the research design of scientific studies. We must ask and ultimately train the future pipeline of geneticists who study racial health disparities to be scientific subjects according to a new model: scientists with a biocritical orientation who can provide an account of their own social enmeshment as researchers and, most importantly, of the co-constitution of biology and society.

NOTES

1. UNESCO, *Four Statements on the Race Question* (Paris: UNESCO, 1969).

2. I refer here to a longstanding debate within genetic research on human variation that culminated in recent years with the response of geneticists denouncing science writer Nicholas Wade's claim that scientists have found causal evidence suggesting that genes explain the behavior and health of racial groups. For a critical review of Wade's work, see David Dobbs, "The Fault in Our DNA: 'A Troublesome Inheritance' and 'Inheritance,'" *New York Times*, July 10, 2015, https://www.nytimes.com/2014/07/13/books/review/a-troublesome-inheritance-and-inheritance.html. Also see the rejection of Wade's conclusion by more than one hundred faculty members in population genetics and evolutionary biology: Graham Coop et al., "Letters: 'A Troublesome Inheritance,'" *New York Times*, August 8, 2014, https://www.nytimes.com/2014/08/10/books/review/letters-a-troublesome-inheritance.html?module=Search&mabReward=relbias%3As%2C%7B%221%22%3A%22RI%3A5%22%7D.

3. My understanding of the interdependence of biology and society is inspired by Buddhist epistemology. Within Theravada and Mahayana Buddhism, "interdependent co-arising" (derived from the Sanskrit *pratītyasamutpāda*) is a nonlinear, multicausal theory of existence. It refers to a way of thinking that denies the distinction between cause and effect as well as the notion that causality is unconditioned. Interdependent co-arising posits instead that all things in nature (this includes mind, body, and objects of reality) are conditioned by other causes that cannot be understood in linear terms or in terms of first causes. *Pratītyasamutpāda* has its roots in Vedic literature dating back to the second century BCE and has multiple lineages of interpretation within Buddhist thought. However, within the Mahayana tradition, conditional causality is the root of all things, including thought itself. Thus there is no essence or permanent structure to mind, body, society, or nature. This nondualistic epistemology stands in stark contrast to Western notions of causality derived from Greek and Abrahamic faith traditions (Judaism, Christianity, and Islam). Within these Western traditions, created things are derived from an unconditioned first cause, an unmoved mover, or, in Christianity, a creator God. What I am suggesting here is that scientific research that reduces biological phenomena to their most rudimentary sources, especially genetic causes, reflects a Western Christian view of causality that—unlike the Buddhist notion of interdependent co-arising, *pratītyasamutpāda*—historically has reified the links between cause and effect. I contend that this linear, unidirectional concept of causality is at the root of scientific racism, which posits that genes are (implicitly) unconditioned causes of human racial diversity. For more on Buddhist epistemology and the notion of codependent arising, see Peter Harvey, *An Introduction to Buddhism* (Cambridge: Cambridge University Press, 1990); Jay Garfield, "Dependent Arising and the Emptiness of Emptiness: Why Did Nagarjuna Start with Causation?," *Philosophy East and West* 44, no. 2

(1994): 219–250; Rupert Gethin, *Foundations of Buddhism* (Oxford: Oxford University Press, 1998); Roderick Bucknell, "Conditioned Arising Evolves: Variation and Change in Textual Accounts of the Paticca-samuppada Doctrine," *Journal of the International Association of Buddhist Studies* 23, no. 2 (1999): 311–342.

4. Ruha Benjamin, "Prophets and Profits of Racial Science," *Kalfou: A Journal of Comparative and Relational Ethnic Studies* 5, no. 1 (2018): 46.

5. Cedric Robinson, *Black Marxism: The Making of the Black Radical Tradition* (Chapel Hill: University of North Carolina Press, 1983), 9–28.

6. John Hartigan Jr., "Facing Up to Neanderthals," *Kalfou: A Journal of Comparative and Relational Ethnic Studies* 5, no. 1 (2018): 20.