

# The Emperor's New Genes: Science, Public Policy, and the Allure of Objectivity

By  
RUHA BENJAMIN

This article addresses the politics of genomics through three diagnoses: The first, *diagnosing objectivity*, discusses how researchers involved in a large-scale population mapping initiative distinguish genomics as relatively objective, compared to other forms of knowledge production. The second case, *diagnosing nationality*, examines an attempt by the UK Border Agency to use genetic ancestry testing to vet asylum claims. The third case, *diagnosing indigeneity*, considers how indigenous councils in southern Africa engage genomic science in their struggle for state recognition and rights. I argue that genomics' allure of objectivity lends itself to such diagnostic attempts among both powerful and subaltern social actors and suggest that developing "technologies of humility" may provide one safeguard against the increasing uptake of genomics as the authority on human difference.

*Keywords:* race; genomics; public policy; objectivity

In some sense we don't want to talk to historians.  
There's a great virtue in being objective:  
You put the data in and get the history out.

—Daniel Falush of the Max Planck Institute  
for Evolutionary Anthropology in Leipzig,  
Germany (quoted in Wade 2014b)

**T**he specter of state-sanctioned eugenics can serve as a distraction from more routine, seemingly benign or even beneficent, scientific practices that are taken up in the policy arena. When attention is focused too narrowly on eugenic boogiemens, genomic saviors that seem to tell us a more true and complex story of population history, may elude critical analysis. A moratorium on the binary between good

*Ruha Benjamin is an assistant professor in the Department of African American Studies at Princeton University. Her recent book is People's Science: Bodies and Rights in the Stem Cell Frontier (Stanford University Press 2013). Her research examines innovation and equity, science and citizenship, and health and justice.*

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versus bad science as a mode of popular and scholarly critique is necessary, because the distinction sidesteps how much of what we deem as “bad” today was produced by respected researchers based in prominent institutions of the time. The normative distinction causes observers and analysts alike to be wary of practices that appear obviously bad and are often sensationalized (e.g., Tuskegee syphilis experiment), while overlooking normal workaday science produced with the help of multi-million-dollar grants by award-winning researchers vetted through peer-review. Although the critical response by the population genetics community towards *A Troublesome Inheritance* (2014a) by Nicholas Wade was celebrated by many who have been calling for greater reflexivity in the field, it underscores this binary: a letter signed by more than 130 researchers said that Wade had “misappropriated” their research to “support arguments about human societies” as it relates to IQ, political institutions, and economic development.<sup>1</sup> Certainly, misuse is an issue, but what also seems to fuel the uptake of genomics in support of such claims is the field’s allure of objectivity.

The hazards of workaday genomics, I suggest, have more to do with this allure than with its potential to construct hierarchies of superior and inferior groups. In this context, focusing on proponents of biological determinism *a la* Wade may serve as a distraction from the dexterity of genomics, in which different social actors draw on its diagnostic allure to make authoritative claims about group boundaries.

In framing this discussion as a set of interconnected processes of diagnosis, I draw on work that challenges the use of genetic ancestry testing as a diagnostic of group membership. For example, Bolnick et al.’s (2007) caution that

when an allele or haplotype is most common in one population, companies often assume it to be diagnostic of that population. This can be problematic because high genetic diversity exists within populations and gene flow occurs between populations. *Very few alleles are therefore diagnostic of membership* in a specific population, but companies sometimes fail to mention that an allele could have been inherited from a population in which it is less common. (p. 400, emphasis added)

While the critique above is directed at the private sphere (i.e., companies that capitalize on the willingness of consumers to pay for testing), the discussion here is concerned with how such tests are taken up in public policy where the parameters of political and social inclusion are being established or challenged. In the process of diagnosing group membership, genomic tools are deployed by varied

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social actors to make competing claims about who belongs and who does not. Extending Pollock's (2012) application of the Derridean concept of *pharmakon* to race-based medicine—as both remedy and poison—the discussion here illustrates the normative dexterity of genomic claims in public policy (Benjamin 2015). It draws three examples together through the idiom of *diagnosis*, to conceptualize the connection between the authoritative representation of the field and its political circulation. The first case, *diagnosing objectivity*, discusses how representations of a large-scale population mapping initiative distinguish the objectivity of genomics from other forms of knowledge production. The second case, *diagnosing nationality*, examines an attempt by the UK Border Agency to use genetic ancestry testing to vet asylum claims. The third case, *diagnosing indigeneity*, considers how indigenous councils in southern Africa engage genomic science in their struggle for state recognition and rights. I argue that the field's allure of objectivity lends itself to such diagnostic attempts by powerful and subaltern social actors alike. Finally, I suggest that developing “technologies of humility” (Jasanoff 2007) may provide one safeguard against the increasing uptake of genomics as a means to arbitrate the parameters of political and social inclusion.

## Diagnosing Objectivity: Genomics and Disciplinarity

The early work of sociologist of science Bruno Latour (1987) distinguishes between the public perception of science and what scientists do in the day-to-day production of scientific facts. He utilizes the two-faced Janus image from Roman mythology to highlight the tension between *ready-made science* (with a capital “S”) and *science-in-the-making* (with a lowercase “s”). The former is depicted as having greater certainty, insularity, and objectivity than ethnographers find when they study the day-to-day work of researchers. The allure of ready-made science is created not only in the way that researchers depict their work but also in how science is popularized and reported in the media.

For example, the epigraph of this article is taken from a *New York Times* piece by journalist Nicholas Wade titled “Tracing Ancestry, Researchers Produce a Genetic Atlas of Human Mixing Events” (2014b). Among the presumably more elaborate statements made by the researchers in interviews, Wade punctuates his piece with a final quote where one of the scientists says, “In some sense we don't want to talk to historians. There's a great virtue in being objective: You put the data in, and get the history out. We do think this is a way of reconstructing history by just using DNA.” But with very little probing, one finds that the Genetic Atlas team had a much more nuanced approach than this in engaging other disciplinary approaches to population history.<sup>2</sup> In a paper responding to frequently asked questions about the project, they answer the question, “How is history, as historians tell it, related to genetic admixture,” by saying,

Good question! Our approach aims to identify the movements of peoples that resulted in interbreeding or DNA exchange at different periods in human history, and quantify

the proportion of DNA transmitted to the present day. Because it does not use other forms of information in doing so, the results can be compared and combined with historical information. Although we have tried to interpret our findings in the light of well-known historical events where appropriate, our work concentrates on the genetic analysis and we are not historians! We note that it is extremely difficult to predict the genetic legacy of even well known events—and whether we descend from the architects of these events—without examining DNA directly. This is because the extent to which different events—e.g., empires, or the transmission of materials and cultures—result in genetic mixture occurring is unknown, and deserves further systematic study. The idea of combining history and genetics—to provide exciting insights into both—is one motivation of our work. (Hellenthal et al. 2014)

The Genetic Atlas researchers are, in other words, not opposed to engaging historians; in fact, they welcome it. Although when they welcome it, it is worth reflecting upon.

For researchers across a variety of fields, not only genomics, cross-disciplinary engagement is usually considered worthwhile after initial findings have been established. This way of structuring knowledge production, and interdisciplinarity more broadly, is not inherently problematic but partial. This partiality becomes consequential if and when such findings are used to make claims that shape wider social discourses and impact public policy, and because genomics speaks to fundamental ideas of group belonging, it appears to be drawn in to this wider context more than other scientific fields. Panofsky (2014) elaborates on this point, saying, “Because it aims to tell us about human similarities and differences, capacities and potential for change, there will always be a public politics to genetics.”

Although the Atlas researchers never explicitly make the claim, Wade (2014b) reports that “based on these patterns, geneticists can scan a person’s genome and assign the ancestry of each segment to a particular race or population.” This statement casually underwrites one side of a very heated debate between proponents and critics of “biological race”—the notion that human groups are inherently different and that this difference can be found in DNA. It is vital to note that the two members of the Atlas team (Hellenthal and Falush), whom Wade interviewed for his story, are among the signatories of the letter decrying the journalist’s appropriation of their work, stating,

Wade juxtaposes an incomplete and inaccurate account of our research on human genetic differences with speculation that recent natural selection has led to worldwide differences in I.Q. test results, political institutions and economic development. We reject Wade’s implication that our findings substantiate his guesswork. They do not.<sup>3</sup>

The popularization of genomics in the work of Wade and others contributes to the allure of objectivity that surrounds the field. But how do researchers contribute to the authority of ready-made science that appears insulated from social and political assumptions? As Bliss (2012) describes, “Though scientists are responsive to criticisms of biological determinism, and though they adopt gene-environment models for understanding race, they nevertheless build genomics as a special expert science of race on the basis of its superior knowledge of biological ancestry” (p. 17). For example, the Atlas team describes the dataset on which its

analysis is based as consisting of 1,490 individuals sampled from ninety-five worldwide groups. And when explaining how they defined a “group,” they state,

There is a long-standing debate spanning several scientific fields about what constitutes a “group” or “population”. For our analysis here, we define a “group” to be a set of individuals whom all have a similar genetic make-up. This is initially *based on labels given by researchers* during the sampling process (which are *dependent on self-identification*) but in some cases we refined groups to better reflect genetic similarity using the fineSTRUCTURE algorithm. (emphasis added)<sup>4</sup>

Despite explicit acknowledgment of “labels assigned by researchers” and “individuals’ self-identification,” the team maintains that the Atlas was produced using “no other forms of information” beyond DNA itself. One implication of only engaging humanistic and social scientific insights after the data have been produced, when at all, is that researchers unwittingly overlook the social and political origin of these DNA sample labels (Fullwiley 2007). In so doing, they contribute to what Fullwiley terms a *contemporary synthesis* in which genomics absorb “old race thinking into modern race projects of a liberal persuasion” (2014, 804). She explains how it becomes hard “to pinpoint where the pernicious aspect of race in science starts or stops. In the present, the potential for racism is often embedded in good intentions. . . . As such, an acceptance of race as genetic is becoming ever more entrenched in medicine, law, science education, genomic research, and personal identity” (2014, 812, 814). It is this push and pull between the old and the new, hegemonic and subversive, that I describe as the dexterity of the field that is taken up by those seeking to expand and curtail political rights.

To the extent that science reporters opt to present ready-made science rather than science-in-the-making and researchers wait to engage other disciplines until after the genetic facts have been established, it is likely that genomics will continue to be drawn into a broad spectrum of controversies that the field is unable to resolve. The next sections present two such cases.

## Diagnosing Nationality: Genomics and Refuge

In 2009, the UK Border Agency (UKBA) initiated the Human Provenance Pilot Project (HPPP), with the aim of using genetic ancestry testing and isotope analysis to vet asylum claims.<sup>5</sup> If, over the course of a standard interview, caseworkers grew suspicious of an applicant’s story, they would request samples of saliva, nails, and hair. The primary targets of the project were East Africans. Somali applicants escaping persecution were eligible for asylum, so if the tests indicated someone was from Kenya—a phenomenon dubbed “nationality swapping”—he or she was scheduled for deportation. The entire process was essentially an experiment. Yet over the course of the project, actual cases were vetted using these methods. A letter from the deputy director of the project, Phil Douglas, stated that “all samples will be provided voluntarily,”<sup>6</sup> but caseworkers were encouraged to regard refusal to submit samples with suspicion. The official protocol instructed:

If an asylum applicant refused to provide samples for the isotope analysis and DNA testing the case owner could draw a negative inference as to the applicant's credibility. ... There must be other compelling evidence which also clearly demonstrates that the applicant has attempted to conceal information or mislead the UK Border Agency. It must not be stated within the RFRL [Reasons for Refusal Letter] in isolation and must certainly not be stated as a primary reason for refusing the applicant's asylum claim.<sup>7</sup>

Following the protests of refugee advocates and the work of journalist John Travis—and not through any regulatory or oversight governing body—the project came under widespread scrutiny. In the process, academic scientists expressed shock and disgust, insisting that the techniques used could not diagnose nationality in the way that the project assumed. David Balding, a population geneticist at Imperial College London, noted that “genes don't respect national borders, as many legitimate citizens are migrants or direct descendants of migrants, and many national borders split ethnic groups” (Travis 2009).

Mark Thomas, a geneticist of University College London, who called the HPPP “horrifying,” contended that determining a person's ancestry—as distinct from nationality—is more problematic than many believe. “[Mitochondrial] DNA will never have the resolution to specify a country of origin. Many DNA ancestry testing companies have sprung up over the last 10 years, often based on mtDNA, but what they are selling is little better than genetic astrology,” he said. “Dense genomic SNP data does have some resolution ... but not at a very local scale, and with considerable errors” (Travis 2009). Likewise, Alec Jeffries, one of the pioneers of human DNA fingerprinting, wrote,

The Borders Agency is clearly making huge and unwarranted assumptions about population structure in Africa; the extensive research needed to determine population structure and the ability or otherwise of DNA to pinpoint ethnic origin in this region simply has not been done. Even if it did work (which I doubt), assigning a person to a population does not establish nationality—people move! The whole proposal is naive and scientifically flawed. (Travis 2009)

An isotope specialist at Durham University, Janet Montgomery, explained that “unless the border between Somalia and Kenya represented some major geological or hydrological division, I cannot see how isotopes will discriminate between people living there let alone living at/on the border” (Silverstein 2011). Montgomery specified, “Isotopes do not respect national borders or convey some inherent national attribute. They are not passports” (Silverstein 2011).

Despite such severe criticism from the scientific community, the HPPP did not initially shut down; nor did it rule out the possibility that it would reintroduce a similar initiative in the future. In their own defense, representatives of the Border Agency insisted that only asylum-seekers who had already failed linguistic tests (another contested method of determining nationality) would be asked to provide mouth swabs, hair, and nail samples.<sup>8</sup> It also released the following written response to scientific criticisms:

Ancestral DNA testing will not be used alone but will combine with language analysis, investigative interviewing techniques and other recognized forensic disciplines. The results of the combination of these procedures may indicate a person's possible origin

and enable the UKBA to make further enquiries leading to the return of those intending on abusing the U.K.'s asylum system. This project is *working with a number of leading scientists in this field* who have studied differences in the genetic backgrounds of various population groups. (Travis 2009, emphasis added)

Several prominent scientists, who had been interviewed by Travis, said they suspected that private labs that were under much less regulatory oversight had been involved in the project. And while the UKBA has since tried to downplay the significance of the project, in the words of Pearson, "It's peoples' lives we're dealing with."<sup>9</sup>

The idea that the HPPP was voluntary conceals the threat of deportation if applicants did not consent to testing. It is coercive to say one has a choice, when one of those choices is automatically penalized. As Tutton, Hauskeller, and Sturdy (2014) explain, "In the UK, official and popular attitudes to those who request sanctuary have become dominated by a hermeneutic of suspicion. Public and policy discourses portray asylum seekers as mostly 'bogus' refugees seeking admission to the country for economic, not humanitarian, reasons" (p. 739).

The quest for scientific tools to determine ancestry and arbitrate group membership continues apace toward a variety of political and biomedical ends. The near uniform criticism on the part of scientists toward the UK project serves to highlight a key feature of the underlying science—its refusal to adhere to "terms of use" in so far as the UKBA was unwilling to completely shut down the project. Furthermore, essential for this discussion is that

such technologies of identity do not simply offer more objective means of confirming or disconfirming conventional identity claims. They actually redefine the social categories of identity on which immigration and asylum decisions are based. ... The HPPP stands as a salutary warning of the ways in which supposedly objective technologies of identification are increasingly being used at international borders as a way of further disempowering the already vulnerable. (Tutton, Hauskeller, and Sturdy 2014, 749)

But due to the dexterity of the field, supporting as it does competing ideas about peoplehood and belonging, it has also been enrolled in initiatives that seek to empower groups that have been historically dispossessed, as the next section illustrates. The latter, as I argue, should attract as much careful analysis as the HPPP, because of the way that the authority of genomics may displace other forms of group-making and political mobilization.

## Diagnosing Indigeneity: Genomics and Reparations

In 2010 the academic journal *Nature* published the article "Complete Khoisan and Bantu Genomes from Southern Africa" (Schuster et al.). The investigators, who were based in the United States and Australia, reported the genetic structure of four Khoisan individuals and that of Archbishop Desmond Tutu. According to the paper, "Until now, fully sequenced human genomes have been limited to recently diverged populations. ... In terms of nucleotide substitutions,

the Bushmen seem to be, on average, more different from each other than, for example, a European and an Asian” (Schuster et al. 2010, 943). One of the headlines following the paper’s publication was that Tutu was found to have San ancestry that he did not know about, which is illustrative of the wider phenomena of *diagnosing identity*—the use of genomics to assess who belongs, or not, to a particular group.

Also important to note is that ethical review boards at Pennsylvania State University, the University of Limpopo Ethics Committee, and University of New South Wales, Australia, approved the *Nature* study. Readers were told that “all participants consented either in writing or via video-recorded verbal consent, and that the collection of human DNA in Namibia was conducted under a permit by the Ministry of Health and Social Services of the Namibian Government” (Schuster et al. 2010, 947). Alongside the publication, the *Nature* researchers hosted a public forum in Windhoek, Namibia, to present their findings. At the meeting, a member of the San community asked the researchers, “Why had they bypassed the community councils in the consent and sampling process?” In response, a representative of the research team stated that they had followed established informed consent protocol. In response to this series of events, concerned South African researchers, ethicists, and lawyers decided to convene a series of workshops in which elected council members from Namibia, Botswana, and South Africa came together to discuss issues they had with the *Nature* paper and genomics research more broadly.

In September 2013, I attended the first such workshop in Kimberley—a historic mining town located 478 kilometers southwest of Johannesburg, where mining for diamonds and genes share similar dynamics in terms of who tends to reap the benefit and who bears the burden. As Roger Chennells (2014), former legal advisor to the San and participant in the Kimberley workshop explained, one of the reasons that the San leaders were frustrated with the *Nature* paper was an issue of labeling: researchers referred to the community as “hunter-gatherers”—a label that brings associated stigma and discrimination. Connected to this issue of representation is that the researchers did not seek approval from the councils beforehand; instead, “uneducated community members had provided informed consent on this complex project without assistance, each participant being described in the paper as the oldest member of his tribe” (Chennells 2014, 188). A letter addressed to the editor of *Nature* by San leader Mathambo Ngakaeaja explains,

We were truly shocked when the article was published. None of the official San structures in Namibia had been approached in the customary and expected manner. The Namibian San Council has representatives of all the language groups, and such a project was clearly far too complex to be explained to simple rural San, particularly “tribal elders” in the words of the article, who were unlikely to have any form of education whatsoever. I can only conclude that no effort was made to contact the community leaders in the haste or alternative secrecy that drove the researchers. (Ngakaeaja 2011; cf. Chennells 2014, 188)

Given the serious breach of trust, the director of the South African Genome Programme hoped to begin a long-term partnership with the councils to establish best practices in the consultation, collection, reporting, and benefit-sharing stages of the Programme, assuming the councils were willing to engage. And while there were a number of important issues that emerged during the workshop, for the purposes of this discussion, I only highlight one that relates directly to the process of diagnosing identity.

Against the backdrop of Tutu's hidden San ancestry, as reported in the *Nature* paper, and in the context of ongoing struggles on the part of the San to have their status as indigenous people recognized in South Africa under the post-apartheid constitution, a key point of concern throughout the workshop was whether genomics could determine if someone was truly San. To begin to understand the particular stakes for diagnosing "San-ness," one must appreciate several features of the broader political landscape in South Africa.

Official data on the number of Khoisan (Khoi and San) people currently living in South Africa are nonexistent, because they "are not constitutionally recognized as Indigenous communities. The current legal institutions continue to classify them as 'Coloureds' just like the apartheid regime did" (La Fleur and Jansen 2013, 1). Whereas the constitution contains stipulations pertaining to traditional authorities, offering designated groups legal protections and rights, the Khoisan are not eligible as a distinct ethnic community. They "have been in ongoing discussion with government for the last 18 years to address this recognition of their indigenous leadership" (La Fleur and Jansen 2013, 3). In this context, one can appreciate the appeal of population genomics to legitimate San self-identity; when political redress hinges on the ability to claim a unique experience of discrimination and dispossession, distinguishing indigenous from Coloured ancestry becomes vital.

The stakes for laying claim to a scientifically validated indigenous status have been heightened further in the wake of recent statements by President Jacob Zuma about the country's land restitution policy; he has implied that his administration was willing to consider "historical claims for land lost before the 1913 cut-off date," a change that would benefit the San (La Fleur and Jansen 2013, 4). In fact, five months before the genomics workshop discussed above, a two-day meeting with Khoi and San leaders attended by the Minister of Rural Development and Land Reform was held in Kimberley on April 16, 2013.<sup>10</sup> In the context of affirmative action policy in South Africa, as it pertains to land, employment, and educational equity, the ability of the San to distinguish themselves from Coloureds is of great practical importance. So if researchers could confidently use genomic tools to understand disease, as was described throughout the genomics workshop in Kimberley, then perhaps it would be possible to distinguish San from Coloureds, that is, to diagnosis San-ness. The researchers' response that, in fact, no such diagnosis of identity is possible was initially hard for some workshop participants to grasp given that medical genomics was presented with relative certainty as a means of predicting disease predisposition.

Here I underscore the point made elsewhere: that what the state owes particular groups is connected to scientific definitions of what constitutes a group in the

first place (Benjamin 2013; Jasanoff 2011). On the surface, we can see the desire for genomics to serve as an objective arbiter of identity and redress as a kind of *science for the people*, in so far as it could potentially provide a vehicle for an oppressed social group to seek reparations from a government that appears unwilling to fully acknowledge the ethnic self-identity upon which such grievances are based. And while the purpose of diagnosing identity in this context is dramatically different from the use of genetic ancestry tests by the UKBA, it is vital to consider the unintended ramifications of predicating political inclusion and redress on genomic authority.

Anthropologist Kim TallBear (2013) discusses the way that such efforts to base group membership on genetic ancestry testing can backfire and ultimately undermine the ability of groups to govern themselves. And with specific reference to the science of *Khoisan-ness*, sociologist Zimitri Erasmus cautions against “doing history and politics through genetics” (2013, 40). While she is critical of the construction and continued use of apartheid categories, including the Coloured classification with which the San seek to dis-identify, she illustrates how relying on genomics may resuscitate the faulty assumption that such classifications are biological, rather than political. In constructing “designer descendants,” and other well-meaning attempts to assert political rights based on genetic uniqueness, Erasmus cautions that the “concept ‘human life’ is hereby removed from its messy lived contexts mostly shaped by inequality and encased in artificial contexts: clinical laboratories, statistical databases and computer programmes. These places of ‘hard’ science are often understood to be outside of politics” (Erasmus 2013, 50).<sup>11</sup> Again, the boundary work involved in depicting genomics as more objective and value-free fuels its uptake across disparate policy arenas to support claims for state recognition, rights, and resources.

## Conclusion: Technologies of Humility

The power of and problem with genomics is its dexterity. The UKBA and San cases illustrate that genomics is useful at both ends of the line of power. The desire for science to diagnose citizenship and identity readily displaces other forms of group-making and mobilization. What is potentially “new” about the emperor’s genes, in this context, is that biological notions of race, ethnicity, and citizenship are at times resuscitated by subordinate social actors in the service of emancipatory projects, as much as by entities seeking to exercise traditional modes of surveillance and authority (Benjamin 2015).<sup>12</sup> The latter, what we might call the emperor’s “old” genes, is best illustrated by the UKBA’s use of genetic ancestry testing to corroborate the stories of asylum seekers, whereas the Kimberley workshop exemplifies a new mode of using genomics to increase recognition and rights for the subaltern. But to the extent that socially subordinate groups find it necessary to claim recognition and assert rights in genomic terms, such maneuvers should be understood as a form of co-optation and capitulation to science as the authority on group boundaries (Benjamin 2015).

Connecting genomics' epistemological authority with its uptake in the policy arena, I turn now to reflect on what Jasanoff (2007) calls "technologies of humility"; this refers to methods of accommodating the "partiality of scientific knowledge. ... These technologies compel us to reflect on the sources of ambiguity, indeterminacy and complexity" (p. 33). If, as Jasanoff describes, uncertainty "has become the threat to collective action, the disease that knowledge must cure," then a fundamental way of intervening in the deployment of genomics as a way to arbitrate group boundaries is coming to grips with genomics-in-the-making. The latter refers to the uncertainties involved in the day-to-day work of creating genomic knowledge. Rather than wait until genomics has been "misused" or "misappropriated," (as with scientists' reactions to the HPPP and *A Troublesome Inheritance*) humility—as a mode of engagement—is preemptive:

Capacity-building in the face of uncertainty has to be a multidisciplinary exercise, engaging history, moral philosophy, political theory and social studies of science, in addition to the sciences themselves. ... Humility instructs us to think harder about how to reframe problems so that their ethical dimensions are brought to light, which new facts to seek and when to resist asking science for clarification. (Jasanoff 2007, 33)

In short, rather than play into the allure of objectivity only to be shocked when genomics is used to make decisions about who should be included or excluded in a political community, the partiality of knowledge is foregrounded from the start. Likewise, engagement with other disciplinary ways of understanding group boundaries should begin upstream as questions and methods are being formulated. This is not simply an appeal to interdisciplinarity as an academic framework; rather, the pitfalls of presenting DNA as diagnostic of populations extend far beyond the academy, impacting those whose lives become intertwined with policies predicated on genomic authority.

## Notes

1. Letter to the Editor. 8 August 2014. *New York Times*. Available from <http://www.nytimes.com>.

2. At first glance, this sentiment appears to contrast Bliss's (2012) findings, which show genomicists engaging "with the wider scientific community, with critics of genomics, and with the public" (p. 72). However, the timing of researchers' willingness to engage—usually downstream after scientific results have been produced—is important to highlight.

3. See <http://cehg.stanford.edu/letter-from-population-geneticists>.

4. See <http://www.well.ox.ac.uk/~gav/admixture/2014-science-final/resources/FAQ.pdf>.

5. "While genetic ancestry testing concentrates on tracing the genes of ancestors in contemporary human bodies, isotope testing is based on the way that the different environments in which an individual lives may leave distinctive traces in her or his body. The proportions of different isotopes of various chemical elements present in the environment vary from one locality to another. These elements are ingested in food and drinking water and are incorporated, over time, into body tissues. Consequently, assuming that a person consumes local food, water and air, the proportions of different isotopes present in her or his tissues will mirror those in the place where s/he lives. Moreover, because different tissues are laid down at different times in a person's life, they embody a record of the person's diet, and her or his movements over time" (Tutton, Hauskeller, and Sturdy 2014, 744).

6. Letter dated September 9, 2011, provided by journalist John Travis.

7. "Nationality Swapping Isotope Analysis and DNA Testing" protocol. Available upon request. The proposed language in the asylum report is as follows: "You did not give a reasonable explanation for failing to provide samples. It is considered that a person in genuine need of international protection would assist the authorities of a safe country in establishing the validity of his/her application for asylum. Your failure to do so undermines your claim to be a refugee."

8. "The true country of origin of an applicant must be assessed by reviewing and weighing up all of the available evidence—including documentary evidence, knowledge of the country in question, the language analysis report and the isotope and DNA test results." From "Nationality Swapping Isotope Analysis and DNA Testing" protocol. Available from <https://www.gov.uk/government/publications/ukba-s-human-provenance-pilot-project>.

9. *Ibid.*

10. See <http://www.sahistory.org.za/topic/timeline-land-dispossession-and-restitution-south-africa-1995-2013>.

11. Reich et al. (2009) state, "Some historians have argued that 'caste' in modern India is an invention of colonialism. ... However, our results indicate that many current distinctions among groups are ancient and that strong endogamy must have shaped marriage patterns in India for thousands of years" (p. 490).

12. Here, I acknowledge the article by Goldstein (1987), which used this title phrase.

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