



CHICAGO JOURNALS



Nation and the Absent Presence of Race in Latin American Genomics

Author(s): Peter Wade, Vivette García Deister, Michael Kent, María Fernanda Olarte Sierra, and Adriana Díaz del Castillo Hernández

Source: *Current Anthropology*, (-Not available-), p. 000

Published by: [The University of Chicago Press](#) on behalf of [Wenner-Gren Foundation for Anthropological Research](#)

Stable URL: <http://www.jstor.org/stable/10.1086/677945>

Accessed: 24/09/2014 03:57

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



The University of Chicago Press and Wenner-Gren Foundation for Anthropological Research are collaborating with JSTOR to digitize, preserve and extend access to *Current Anthropology*.

<http://www.jstor.org>

Nation and the Absent Presence of Race in Latin American Genomics

by Peter Wade, Vivette García Deister, Michael Kent,
María Fernanda Olarte Sierra, and Adriana Díaz del Castillo Hernández

CA+ Online-Only Material: Supplement A

Recent work on genomics and race makes the argument that concepts and categories of race are subtly reproduced in the practice of genomic science, despite the explicit rejection of race as meaningful biological reality by many geneticists. Our argument in this paper is that racialized meanings in genomics, rather than standing alone, are very often wrapped up in ideas about nation. This seems to us a rather neglected aspect in the literature about genomics and race. More specifically, we characterize race as an absent presence in Latin America and argue that genomics in the region finds a particular expression of race through concepts of nation, because this vehicle suits the deep-rooted ambiguity of race in the region. To make this argument we use data from an ethnographic project with genetics labs in Brazil, Colombia, and Mexico.

Much recent work on genomics and race makes the argument that concepts and categories of race are subtly reproduced in the practice of genomic science, despite the explicit rejection of race as a meaningful biological reality by many geneticists. Often this conclusion emerges from studies done in the United States, where standardized social categories of race are already part of public discourse, policy, and research practice in medicine, including medical genomics.¹ In this paper, we use Latin American data to develop and diversify this argument by bringing the concept of nation strongly into the picture. In most countries in the region, the categories and language of race are a much less accepted feature of policy

and public discourse than in the United States, even after some two decades of multiculturalist reform that have given recognition to black and indigenous “ethnic” minorities. Even in Brazil, where categories of “color”—and, since 1991, “color/race”—have been used for many decades in the census, where race has long been an academic topic, and where it is accepted by many that racism and racial inequality are problems, there is a heated debate about whether racial categories are an appropriate tool for policy making in a country that is very mixed (Carvalho 2005; Fry et al. 2007; Guimarães 1999; Htun 2004). In many Latin American countries, race is an absent presence—both erased and denied, and yet present in an everyday sense and in some official domains. The way race appears—and disappears—in genomic science in Latin America reflects this deep-rooted ambiguity.

Our data indicate that race-like or racialized categories are visible in genomic science in the region, while the same science acts as a forum for the denial of race, as a biological reality, and, in some cases, as a relevant social category. Racialized categories are implied in the use of concepts of genetic ancestry—usually talked of in terms of African, European, and Amerindian components. For the geneticists, genetic ancestry (understood as very specific sets of genetic markers) is distinct from race (which they understood as a set of coherent biological-bodily types). But the constant reference to African,

Peter Wade is Professor of Social Anthropology at the University of Manchester (School of Social Sciences, Arthur Lewis Building, University of Manchester, Manchester M13 9PL, United Kingdom [peter.wade@manchester.ac.uk]). **Vivette García Deister** is Associate Professor at the Social Studies of Science Laboratory, in the Faculty of Sciences of the National Autonomous University of Mexico (Av. Universidad 3000, Circuito Exterior S/N, Delegación Coyoacán, C. P. 04510 Ciudad Universitaria, México D.F., México). **Michael Kent** is an Honorary Research Fellow in Social Anthropology in the School of Social Sciences at the University of Manchester (Arthur Lewis Building, Manchester M13 9PL, United Kingdom). **María Fernanda Olarte Sierra** is Assistant Professor at the Department of Design, University of the Andes (Cra 1 N° 18A-12, Bogotá, Colombia). **Adriana Díaz del Castillo Hernández** is an independent researcher with the consultancy firm Consultoría en estudios sociales sobre educación, salud, ciencia y tecnología (CESTA; Carrera 6 No. 48 A 77, Bogotá, Colombia). This paper was submitted 8 VII 13, accepted 17 X 13, and electronically published 8 IX 14.

1. For overviews, see Abu El-Haj (2007), Duster (2003), Kahn (2013), Koenig, Lee, and Richardson (2008), Krinsky and Sloan (2011), Marks (2013), Palsson (2007), Roberts (2011), Rose (2007:155–186), Whitmarsh and Jones (2010). See also, among many others, Bliss (2009, 2011, 2012), Fullwiley (2007a, 2007b, 2008), Montoya (2011).

European, and Amerindian ancestries evokes familiar racial meanings. This is a process of implicit racialization, insofar as the concept of genetic ancestry does not speak of “race” in explicit terms, but it nevertheless evokes meanings that are recognizably linked to a discourse of race, seen in all its historical variety. We define racialized discourses as those that—even if the word “race” is absent—interweave notions of physical appearance, heredity, nature-culture, and essences together with the classic historical categories of race produced by colonial and postcolonial domination (e.g. black/African, Indian/Amerindian/indigenous, white/European, Asian, etc.).² Race thus combines (a) certain ways of categorizing human difference, which link bodies and behavior in a naturalizing discourse—bearing in mind that what counts as “nature” varies by cultural and historical context; and (b) certain categories of difference that have their roots in a “modern” history of oppression. Race is thus a biosocial or natural/cultural fact (Hartigan 2013a; Marks 2013; Wade 2002).

It is important that race is usually not explicitly mentioned in this Latin American genetic science and in some cases is vehemently denied as a biological reality. It is thus an absent presence. This is both because race is a contested concept in genomics generally and because the particular instances of genomics science we are exploring here are located in Latin American nations, where race has long been an absent presence in society. This does not mean Latin American geneticists are compartmentalized into purely national or regional domains of knowledge production—on the contrary, they are part of a transnational scientific community—but the nation (and sometimes the supranational region) plays an important role in shaping the approaches of these scientists, as we show below.

Our argument in this paper is that racialized meanings in genomics, rather than standing alone, are very often wrapped up in ideas about nation. This seems to us a rather neglected aspect in the literature about genomics and race. More specifically, the absent presence of race in Latin American genomics finds a particular expression in concepts of nation, because this vehicle suits the deep-rooted ambiguity of race in the region.

The nation figures in critical commentaries on genomic patrimony and sovereignty (Benjamin 2009; Rabinow 1999). Nation is also important in studies of biobanks and national databases (Fortun 2008; Hinterberger 2012b; Pálsson 2007; Pálsson and Rabinow 1999) and in concepts of biological-genetic citizenship (Heath, Rapp, and Taussig 2007; Rose 2007; Rose and Novas 2005). The nation does not, however, figure much in studies—many of them focusing on the United States—of the way racialized meanings are reproduced and transformed in genomic science. When the nation does figure

more prominently, it tends to be for contexts outside the United States (e.g., Benjamin 2009 on Mexico and India; Kohli-Laven 2012 on French Canada; Nash 2012 on Britain). More generally, the nation tends to figure as the nation-state, with the focus on citizenship, inclusion, and exclusion, rather than on the nation as an imagined community or identity.³

Yet in Latin America and elsewhere, the intersections of race and nation are well known, particularly in relation to national identities. This paper explores the way race and nation interweave in genomic science in Brazil, Colombia, and Mexico. The aim is to show how the evocation and discussion of the nation, in genomic science, provides an arena for the deep-seated ambiguity of race as an absent presence that is articulated and rearticulated.

Race in Genomic Science

Since the 1980s, the era of “genomics,” enabled by huge advances in DNA sequencing, has allowed the study of whole genomes as well as complex gene-environment interactions. Geneticists have long been interested in the genetic dimensions of human variation, and genomic-era tools have allowed them to map genetic diversity in ever-greater detail, providing data that can help in exploring human evolutionary diversification and global migration histories, and in the search for genetic variants that may be linked, in as yet undetermined ways, to disorders such as diabetes and heart disease. The conceptualization and categorization of human diversity is thus of perennial interest to geneticists and to others concerned with their work. The question of “race” has been one area of discussion in these debates, especially as many geneticists reject the concept of race as a biologically meaningful category (Cooper, Kaufman, and Ward 2003), while others suggest that it has some biological validity in medical genomics (Burchard et al. 2003), indicating a lack of consensus.⁴

Studies, based in the United States, show us what can happen to racial categories in genomic practice. Fullwiley contends that use of “ancestry informative markers” (AIMs, which are specific genetic markers that help to indicate where a person’s distant ancestors came from) by US geneticists brings about “a correspondence of familiar ideas of race and supposed socially neutral DNA.” Thus populations of Africans, Europeans, and Native Americans are sampled and then used as “putatively pure reference populations” to define the genetic ancestry of what geneticists call “admixed” populations, such as African Americans, Mexicans, or Puerto Ricans (Fullwiley 2008:695). The simple use of social taxonomies in genomic research risks conflating social and genetic definitions of populations (Bliss 2009, 2011). Even in nominally

2. The erasure or sublimation of explicit reference to race is what Goldberg (2008) calls race being “buried alive” and others have called neo-racism (Balibar 1991a), new racism (Winant 2002), or cultural racism (Hale 2006:144; Taguieff 1990).

3. Rose (2007:155–186) and Roberts (2010) address race and biocitizenship—focusing on the United States—in terms of biosocial communities and processes of inclusion and exclusion, but without exploring the nation in terms of identity and belonging.

4. See also the references cited in note 1.

“race-free” software, used by geneticists to detect how samples cluster together in terms of their genetic similarity, concepts about the biogeographical origins of populations constantly filter into the analysis, as standard population samples representing African, European, and Asian ancestry are routinely used as reference points to organize and compare the data. This “genome geography” can approximate to familiar notions of race, even if the geneticists themselves are careful to avoid this language (Fujimura and Rajagopalan 2011).

Our ethnographic research in genetics labs in Brazil, Colombia, and Mexico revealed some of the same processes at work. Geneticists by now had generally rejected the language of race (Gómez Gutiérrez, Briceño Balcázar, and Bernal Villegas 2011; Pena 2008)—although some had made occasional reference to “the three races” (African, European, and Amerindian) 20 years before (Gómez Gutiérrez 1991), and talk of “racial mixture” as a biological process had been common up until the 1980s (Franco, Weimer, and Salzano 1982). In Brazil, in particular, geneticist Sergio Pena was very vocal in the rejection of race as a valid concept, genetically and medically (Pena 2005, 2008). Still, it was very common practice to analyze the genetic make-up of sample populations in terms of the contributions of African, European, and Amerindian genetic ancestry: there was a clear “genome geography” at work. This practice was not seen by the geneticists as involving a biological concept of race, because it made use of specific sets of genetic markers, often unrelated to phenotype. This was not a question of dividing up people into clear “races,” much less assigning them relative value. But the practice inevitably evoked the possibility—especially among those less versed in genetic science—to think about Africans, Europeans, and Amerindians as biologically distinct populations.

We also found that, using social criteria, geneticists routinely separated their samples into three sets of populations labeled as “African-derived” (or a variant thereof), “Amerindian” or “indigenous,” and “mestizo” (people popularly and scientifically understood to have a mixture of European, African, and Amerindian ancestry). Genetic data on these categories would frequently be collected and presented separately, even if the data also showed that these populations were, genetically speaking, often mixed and thus not biologically separable (García Deister 2011; Wade 2013). This could create the impression that the populations were not only socially but biologically different (Wade et al. 2014).

So far, so similar to studies of genomics and race in other regions. But we want to push the analysis further by approaching the relations between genomics and race from the perspective of the nation. Before we do this, it is helpful to look briefly at the relationship between race and nation in Latin America in more general terms.

Race and Nation in Latin America

The links between the concepts of race and nation have been well established. The way in which, in Europe from the eigh-

teenth century onward, the emerging concept of the nation and its people depended on ideas of blood and breeding, kinship and genealogy, (im)purity and sexual (im)propriety—all key features of contemporary ideas about race—have been explored in detail. The ways racism can thus be an expression of nationalism, and vice versa, have also been analyzed (Alonso 1994; Balibar 1991*b*; Foucault 1979; Gilroy 1987; Mosse 1985; Povinelli 2002; Stoler 1995; Wade 2002).

In Latin America, race and nation intersected in ways that were similar to, but also different from, those in Europe (Appelbaum, Macpherson, and Roseblatt 2003; Basave Benítez 1992; Gotkowitz 2011*b*; Graham 1990; Wade 2001, 2009*b*). European and North American ideas about race were influential in the ways elites thought about building their new nations, which were internally diverse. Colombia and Brazil, for example, had important black populations, with slavery in place until 1851 in Colombia and 1888 in Brazil, and Colombia and especially Mexico had significant indigenous populations. In all three countries, racial hierarchy was—and remains—very marked, with black and indigenous populations at the bottom of the social scale.

In this context, the fact of *mestizaje* (*mestiçagem* in Brazil), understood as the physical and cultural blending of “the three races” of Africans/blacks, Europeans/whites, and indigenous people, was a key point of reflection: in Brazil, Colombia, and Mexico, mestizos were the majority population. The mixture of races was held to be a degenerative process by European racial science, and this posed problems for Latin American elites and their mainly mixed citizens. Elites varied in their reactions. On the one hand, they generally saw black and indigenous peoples as inferior and refractory inputs into the developing nation; mestizos might also be seen as degenerate and difficult. The way forward was to encourage large-scale European immigration, which would “whiten” the population. On the other hand, mixedness was embraced by some as a different way forward that was not entirely beholden to European—especially Anglo-Saxon—definitions of racial hierarchy, which condemned Latin American nations to a biologically determined inferiority. These thinkers hoped there could be a “constructive miscegenation” (Stepan 1991) which, in their view, would actually enhance liberal democracy by erasing divides based on race—and which might, into the bargain, lead to a “whitened” society, as “white” traits were believed to prevail over black and indigenous traits.

The Colombian politician José María Samper talked of “this marvellous work of the mixture of races,” which he considered could “produce a wholly democratic society, a race of republicans” and would give “the New World its particular character” (Samper 1861:299). Later exemplars of the positive assessment of *mestizaje* included the Mexican politician José Vasconcelos, who described the Latin American mestizo as the founder of a future universal and superior “cosmic race” (1997 [1925]); and the Brazilian writer Gilberto Freyre, who painted a favorable picture of a tropical Brazilian society, in which mixture was a solution rather than a problem (Freyre

1946 [1933]). These are indications of a postcolonial concern with defining and defending a Latin American specificity, based on the image of mixture, in the context of global hierarchies of value, based on whiteness. At the same time, these global hierarchies retained their power, insofar as whiteness remained a highly valued trait in Latin American societies, linked to economic and political dominance.

From about the 1920s in Latin America, a public discourse explicitly about *raza* (race) tended to decline, with more emphasis given to “culture” (or terms such as “soul” and “spirit”) to refer to a people or a nation, although “culture” could retain many of the essentialist and embodied meanings often associated with the concept of race and the term “race” did not disappear (De la Cadena 2000; Gotkowitz 2011a; Restrepo 2007; Wade 2010). Everyday reference to, for example, *la raza negra* (the black race) remained and remains a possibility—although it is more common to hear references to *los negros*. In Mexico and among Mexican Americans, one can find public use of *la raza* to refer to a national collectivity, but one which imagines “a culture of mixedness, one in which biology [is] specifically downplayed” (Hartigan 2013:32). In the last two decades, multiculturalist reforms in many Latin American nations have given differentiated legal rights to black and indigenous minorities and, while public discourse around these reforms has generally used a language of ethnicity and culture, there has been renewed attention to the problem of racism—especially in Colombia and Brazil (Htun 2004; Meertens 2009; Restrepo 2012:180; Wade 2009a)—which in turn has placed the concept of race onto the table, quite explicitly in the case of Brazil.

This brief outline gives an indication of the ways race and nation have been woven together in Latin American contexts. Race has been quite explicit at some points, as in the 1920 book *Los problemas de la raza en Colombia* (Jiménez López et al. 1920); or in the use of *raza* to refer to collective groups, united by history and culture, but also common descent; or in the use of *raza* to refer to categories seen as phenotypically distinct—and especially subordinate (e.g., *la raza negra*). At other points, race has been quite implicit, for example, when it is only suggested by references to categories such as *los blancos* (the whites), *los indios* (the Indians), which do not use the word “race” but evoke racialized concepts. At yet other points, race has been denied, seen as a concept relevant to the United States or South Africa, but not Latin America; or seen as an outmoded concept redolent of racism and threatening to divide a basically nonracialized society.

The ambiguity of ideas about race, which has long roots in Latin America, is reflected in the way racialized meanings are at once present and absent in Latin American genomic science, an absent presence that is enabled by the invocation of the nation as a relevant, and often taken-for-granted, unit of analysis and concern. In what follows, we explore concrete examples of these entanglements.

Genomics, Public Health, and the Nation

In line with the fact that health improvement is a major driver for much genomic research, the Mexican state in 2004 set up and funded a new Instituto Nacional de Medicina Genómica, INMEGEN. Its first major project, starting in 2005, was the Mexican Populations Genomic Diversity Project, popularly known as the Map of the Genome of Mexican Populations (the title of a public dissemination booklet on the project).⁵ Already a slippage is evident in the move from the scientific “genomic diversity” to the popular “genome” of Mexicans, as if there were one specific genome.

From the beginning, the project had strongly nationalist overtones, seeking to put Mexico on the international genomic science map (cf. Bustamante, De La Vega, and Burchard 2011) and basing itself on the idea that the “genomic sovereignty” of the nation was at stake (Benjamin 2009; López Beltrán and Vergara Silva 2011). This idea, imbued with postcolonial sensibilities, implied that the nation should exercise custodianship over the genetic resources of its people (parallel to the way it has control over the animals and plant life in its territory) and that foreign use of these resources should be strictly regulated. But the notion also depended on the idea that, in the words of the institute’s director, Gerardo Jiménez Sánchez, “Mexico has a population of unique genomic makeup as a result of its history” (Schwartz-Marín and Silva-Zolezzi 2010:495). Project participants were reported to agree that “there are unique patterns of variation that might exist in sub-populations that have implications for the development of genomic diagnostics and therapeutics in Mexico” (Seguín et al. 2008:S5). The underlying idea was that Mexico was characterized by being mestizo, but also that its *mestizaje* was unique, because of a “unique history [that] resulted in a population that derives from more than 60 local Amerindian groups, Europeans, and, to a lesser extent, Africans” (Jimenez-Sanchez et al. 2008:1192). This meant that “genomic medicine in Mexico needs to be based on the genetic structure and health demands of the Mexican population, rather than importing applications developed for other populations” (Jimenez-Sanchez 2003:295–296).

The sampling methods of the project reinforced the standard geography of the nation: samples were taken during highly publicized trips to a number of cities and the data were organized and presented by the Mexican state, showing the proportions of African, European, and Amerindian ancestry for each state (Silva-Zolezzi et al. 2009). The very idea of a “map” of the Mexican genome was made concrete in a map of the nation (Haraway 1997:131–172).⁶

In effect, the nation was being geneticized and presented as a biological unit, with its own particular characteristics that

5. See http://www.inmegen.gob.mx/tema/cms_page_media/430/libro_ilustrado.pdf.

6. For this and subsequent examples, the reader is encouraged to view the maps and charts that form part of key scientific papers. Internet links are given in supplement A.

apparently differentiated it from other mestizo countries. The word “race” was barely mentioned in all this: it was not explicitly denied; it was simply almost completely absent.⁷ Yet the categories of Europeans and Amerindians (and Africans)—geographical and social categories given genetic dimensions and racialized in the sense defined at the start of this article—were constantly deployed to give meaning to the concept of mestizo (López Beltrán 2011:22–25; see also supplement A, sec. 1a, available online). The mestizo is a figure in which, as in the concept of *la raza*, biology might be downplayed in favor of history and culture but is still present as a trace. For the geneticists, what they were doing was far removed from race, because they were dealing with particular sets of genetic markers, which indicated certain ancestral origins in particular parts of the world where such markers were common; they were not defining populations as the racial types of late nineteenth-century racial science. Yet the way the data were presented often showed European, Amerindian, and African reference populations as separate clusters or points on a chart, apparently biologically distinct entities (Silva-Zolezzi et al. 2009; see also supplement A, sec. 1b). Claims about genomic sovereignty also suggested the genetic separateness of the national population. The way the data were collected and presented also reinforced a clear distinction between *indígenas* and mestizos as the key categories that constitute the Mexican nation. Even though the indigenous populations might be, from a genetic point of view, mestizos, they were still presented as distinct category (García Deister 2014).

The Mexican Genomic Diversity Project (MGDP) is a clear example of a discourse that is primarily about the nation, in a postcolonial context, in which ideas about race do not figure explicitly at all. It is evident, however, that racialized meanings are immanent in the use of concepts of biogeographical genetic ancestry, which can escape the particular definitions geneticists give to them and can evoke familiar ideas of *la raza negra* or *la raza india*. The key point for our argument, however, is that these racialized meanings gain particular traction from their articulation within the imaginative space of the “mestizo nation”; this is above and beyond the racialization that may result from the way in which genomic science deploys its concept of genetic ancestry or from the way this may be interpreted by nongeneticists in relation to existing popular concepts of race. It is the concept of the mestizo or Mexican nation that allows these racialized meanings to be both absent and present, in a characteristically Mexican way. The mestizo nation is a natural-cultural construct built on the idea of simultaneous biological and cultural mixture and rooted in the foundational mixture of distinct continental populations—Europeans and Amerindians (with Africans

having been systematically marginalized in Mexico, despite some recent moves to correct this).

Genomic studies in Brazil show the key role played by the idea of the nation as a space in which racial meanings are made both present and absent. One geneticist working on pharmacogenetics has affirmed that studies done elsewhere to link genetic profiles to drug response for “well-defined ethnic groups” are not easily applicable to Brazil where there is a “poor correlation between Color [the Brazilian census term] and [genetic] ancestry” (Suarez-Kurtz 2011:122, 132). The argument is that Brazilian geneticists should preferably use measures of genetic biogeographical ancestry (proportions of European, African, and Amerindian ancestry) rather than color/race self-identifications (Suarez-Kurtz 2011:123). Pharmacogenetic research in Brazil has “the potential to contribute relevant information toward personalized drug prescription worldwide,” by offering a focus on diverse and more admixed populations (Suarez-Kurtz 2011:132). The issue of race is broached in explicit terms, with the Brazilian census term *cor* (color) being taken as “equivalent to the English term ‘race,’” and simultaneously its relevance is denied because color/race terms are seen as inadequate to medically handle the variety of mixed ancestries in Brazil and indeed more generally, as “many populations” are admixed (Suarez-Kurtz 2005:196). Then, a racialized concept hovers in the background, as mixture is conceived in terms of differing proportions of European, African, and Amerindian ancestries. Throughout, it is the Brazilian nation that acts as the commonsense forum both for the denial of race and for reference to race or to racialized ancestries.

There is a similar pattern in the work of prominent population geneticist Sérgio Pena. He is explicit about the need to deracialize medicine (Pena 2005). He believes that “the only way of dealing scientifically with the genetic variability of Brazilians is individually, as singular and unique human beings in their mosaic genomes and in their life histories” (Birchal and Pena 2011:93). Pena maintains that race is not valid biologically and particularly makes no sense for the highly diverse Brazilian population.⁸

Alongside Pena’s antirace stance, the nation continues to play a key role and, as in Mexico, is a space in which race both disappears and reappears. In the popular science text “Retrato Molecular do Brasil,” or Molecular Portrait of Brazil (Pena et al. 2000; see also supplement A, sec. 2a), Pena explains the nonexistence of biological races, but also gives an analysis of the mitochondrial DNA of samples of Brazilians that apportion matrilineal ancestry into African, Amerindian, and European components. Pena takes the trouble of explaining mitochondrial DNA matrilineages and haplogroups, but the apportionment of ancestry in terms of biogeographical categories of continental dimensions still suggests the existence of three biologically distinct populations, which com-

7. In fact, an early account of the project, by two journalists for the international audience of *Nature Biotechnology*, did describe it as a “race-based genome project” (Guerrero Mothelet and Herrera 2005), but this is the only occurrence we found.

8. See the video by Pena to illustrate the “We R No Race” campaign, <http://wearenorace.com/> (see also supplement A, sec. 2c).

bine to create a biologically defined national population (see, e.g., Pena et al. 2009; and also supplement A, sec. 2b). Although there are no claims made about national uniqueness, the nation forms the taken-for-granted unit of analysis, and the article title recalls Prado's classic essay on Brazilian national characteristics, *Retrato do Brasil* (1931).

The idea of the Brazilian nation thus encompasses both a vehement denial of biological racial difference, highlighted as a national characteristic as well as a universal truth, and a portrait of the country based on the mixture of biogeographical populations that seem to be biologically distinctive—and correspond to familiar ideas about colors/races in Brazil—and that, when mixed, produce a distinctive genetic national profile. The nation creates a space in which it is common knowledge that Brazil is both a place where race might not really be relevant and a place founded by three biogeographically distinctive ancestral populations.

In grasping the role of the nation in articulating the absent-presence of racial meanings, it is important to appreciate that shifting scales of analysis can operate. For some purposes, it make sense for geneticists to present data and findings samples framed as “Mexican” or “Brazilian,” as we have shown, and this can be for national and international audiences. In other cases, the relevant unit of analysis is supranational—“Latin American mestizos,” “Hispanics,” “South America,” the “Americas,” or “tri-hybrid populations of the Americas” (Bedoya et al. 2006; Bortolini et al. 1995; Galanter et al. 2012; Suarez-Kurtz 2005; Wang et al. 2008). Or the focus may be on a particular region within the nation, such as northwest Colombia or southern Brazil (Carvajal-Carmona et al. 2000; Marrero et al. 2007). These scalar shifts show two characteristics.

First, the articles emphasize heterogeneity, pointing out that the supranational categories are very diverse in terms of their mixtures. Thus the argument that Suarez-Kurtz makes for Brazil, described above, he also makes for “admixed populations” in general, with the “tri-hybrid populations of the Americas” as exemplars. Pharmacogenomics needs to address increasing global patterns of admixture, which increases heterogeneity and leads in his view to greater “fluidity of racial and/or ethnic labels”; researchers are limited by a focus on “well-defined ethnic groups” (Suarez-Kurtz 2005:196).

Heterogeneity also occurs within nations: subnational regions may be quite varied (on Colombia, see Olarte Sierra and Díaz del Castillo H. 2013). For example, referring to admixture mapping techniques, which study admixed populations in the search for disease-linked genetic variants, one study commented that “optimal application of this approach [of admixture mapping] in Hispanics will require that the strategy used is adjusted to the specific admixture history of the population from where patients are being ascertained” (Bedoya et al. 2006:7238). That is, “Hispanics”—a category used by some North American researchers—were not all the same, but varied massively according to regional histories. What emerges is that the national origin of populations was

not always important. In that sense, genomics did not necessarily reproduce the nation as a foundational concept.

However, second, the data always reflect mixture, analyzed in terms of European, African, and Amerindian ancestries; in that sense the larger and smaller scales reproduce the dynamics that can be observed for nations. Race is not explicitly mentioned in the way it may be in publications more firmly located in the US science academy (Burchard et al. 2005), but it is evoked by the very concept of mestizo and mixture. In that sense, race as an absent presence works to articulate these different scales together.

In sum, the absent presence of racialized concepts could circulate with or without the idea of the nation as a powerful organizer, but they drew particular force from their articulation with the nation, because in Latin America the national frame has traditionally been and remains today the space for discourses about both the natural-cultural process of mixture and its originary populations, and the way in which mixture is thought to generate the possibilities for the transcendence and invisibility of race. The nation is a frame that permits both the idea (or rather ideal) of a “racial democracy” supposedly born of endless mixtures and the idea of racial difference, originary and persisting, which generates the possibility of mixture in the first place, but a mixture that produces anything but a racial democracy.

Multiculturalism, Affirmative Action, and the Nation

Since about 1990, multiculturalist political, legal, and constitutional reforms have been under way—unevenly—in much of Latin America, giving greater recognition and rights to indigenous and black or “Afro-descendant” minorities (Van Cott 2000; Wade 2010; Yashar 2005). These reforms are the cause and result of a contested and publicly debated process of reimagining the nation to be more inclusive of “ethnic” minorities, moving away from the a singular image of the (often lighter-skinned) mestizo as the unquestioned citizen. Typically, the debates are phrased in terms of culture and history, but race is always absently present, because the discussions concern the relative places of blackness and indigeneity in the nation (and, to a lesser extent, mixedness and whiteness, which tend to function as unmarked categories of normality). Meanwhile, the atmosphere of reform—plus the impact of the 2001 Durban conference on racism—has resulted in more public attention to questions of racism, increasing the public presence of “race” in some instances.

For example, in Colombia in 2009, the vice president's office supported the first National Campaign against Racism, as part of a government remit to combat racism, and in 2011 there was a state-sponsored local antiracism campaign in Bogotá. On February 14, 2011, a Colombian state TV channel aired a program about race and racism in Colombia, which asked people on the streets of Bogotá if they thought races existed. Many people said they did and some were happy to

say to which one they belonged.⁹ In Brazil, race has been more explicit as a term of reference. The census has long had a “color” question, asking people to identify as white, brown, black, yellow (meaning of Asian origin), or indigenous. In the 1991 census, as result of lobbying by black activists, the question changed to ask about “color or race” (Nobles 2000: 121). In 1995, the president publicly acknowledged that racism was a problem, which deserved redress through affirmative action policies, targeting the “black” population in the areas of higher education, employment, and health (Htun 2004). This culminated in the passing of the Statute on Racial Equality in 2010, followed on August 29, 2012, by the Law of Social Quotas, consolidating the *cotas raciais* (racial quotas) that had begun in 2004 in some public university admissions.

The way the nation and its internal diversity appear in genomic science is contradictory in this context and highlights clearly how, in genomics, the nation acts as a vehicle for articulating race as an ambiguous absent presence. On the one hand, some aspects of genomic science reinforce the multiculturalist version of the nation, highlighting racial difference. It was common practice in population genomics studies to distinguish samples along ethnic-racial lines. Thus mestizos, indigenous/Amerindian people, and black people (usually labeled, in English, “African-derived,” “Afro-descendant,” “Afro-Colombian” or, occasionally, “black”)—and, in Brazil, “white” people—were routinely treated as separate categories, giving rise to separate samples and presented separately in many publications. One overview Colombian study, for example, divided its various sample populations into categories labeled mestizo, Native American, and African Colombian; of the 24 samples, just one was African Colombian, apparently representing this entire category (Rojas et al. 2010; see also supplement A, sec. 3c and figs. A2, A3, available online).

The criteria for identifying populations were diverse—and not always very clear—but were generally social ones. They might be based on where people lived. For example, when Colombian researchers wanted a population that was “mainly Caucasian,” they went to highland Antioquia (Builes et al. 2004), an area reputed in Colombia to be quite “white” and which previous studies had shown to be “a Caucasoid group with very low Amerindian or Negroid contributions” (Bravo, Valenzuela, and Arcos-Burgos 1996). When the same researchers did a study of “African descent” Colombians, they did not specify how the sample was chosen but simply selected people resident in Chocó province (Builes et al. 2008), the so-called black province of Colombia (Wade 1993).

Criteria could also be perceptions of appearance: some Brazilian studies used “morphological classification,” “taking into consideration skin color and characteristics such as hair type and nose and lip shape” (Bortolini et al. 1999:552), and another “clinically classified” the samples using measurements

of phenotype (Parra et al. 2003:177). Criteria might also be based on self-identification: in the Mexican MGDp, volunteers were said to be “self-defined” as mestizos (Silva-Zolezzi et al. 2009:8616), and some Brazilian studies asked people to identify themselves, using census categories (Pimenta et al. 2006). Frequently, genealogical criteria were added to ensure volunteers that were good ancestral representatives of a given locality or group: individuals were asked to confirm that their four grandparents had lived in the same locality (or spoke an indigenous language).

Thus, using criteria of place of birth and/or descent and/or appearance and/or self-identity, the nation’s population was broken up into categories of people who were, effectively, black, indigenous, mixed or, in Brazil, white. As the criteria for differentiation were ones used in everyday social life, it is to be expected that this kind of categorization reproduced rather faithfully the image of the multicultural nation, with its separate “cultures,” which, in the Latin American case, are usually defined as either Afro-descendant, or indigenous, or neither of the above. The internal diversity of the nation was not defined in simple genetic terms—and race itself was either not mentioned or actively denied. Yet the way the samples were defined and the fact that the samples were then profiled genetically meant that a racializing slippage between culture and nature was immanent, opening the possibility, especially for nongeneticists, of thinking about difference in biological mode. This way of using cultural categories makes them “appear to be genetic units; indeed it would *make* them genetic units” (Marks 2003:203).

But this is not the whole story, because, at the same time, other aspects of genomic science challenge this multiculturalist perspective of a nation structured in terms of familiar cultural-racial categories. These aspects instead produce a second genomic version of the nation that emphasizes overall national mixedness and is thus orthogonal to the recently minted image of the multicultural nation, with its emphasis on black and indigenous ethnic minorities. Much of the overall thrust of genomic science in Brazil, Colombia, and Mexico emphasized the category that has tended to go unmarked in multiculturalism—the mestizo majority.

The mestizo—especially the light-skinned version—as the normal, unquestioned, majority and unmarked citizen, has long underpinned the national identities of Brazil, Colombia, and Mexico. The mestizo is a deeply racialized character, because it is seen as the outcome of racial mixture, yet it appears raceless because that mixture is said to have blurred racial identities and boundaries. The mestizo’s apparent racelessness allows a blindness to racial difference and inequality, permitting these to be evaded (on color blindness, see Bonilla-Silva 2003; Frankenberg 1993; Reardon and TallBear 2012).

Genomic science explicitly pointed to these countries as quintessentially mestizo nations—an image that is backgrounded in multiculturalist discourse. In doing so, genomics both marks the mestizo category and racializes it by constantly referring to its ancestral make-up in terms of European, Af-

9. See <http://www.canalcapital.gov.co/defensor-del-televidente/3976-televidente-capital-14-de-febrero-de-2011> and <http://www.youtube.com/watch?v=LDHXls8wdu0&p=292C776DB8B3121B>.

rican, and Amerindian genetic contributions. Studies of Brazilian whites revealed that they had appreciable amounts of Amerindian and African ancestry, while blacks and *pardos* (browns) had significant European ancestry (Alves-Silva et al. 2000; Pena and Bortolini 2004; Pena et al. 2000). Mexican populations were routinely labeled mestizo (Silva-Zolezzi et al. 2009). Many Colombian researchers described their samples as mestizo or detailed their mixed ancestries (Bedoya et al. 2006; Carvajal-Carmona et al. 2000; Rojas et al. 2010; see also supplement A, sec. 3a). Overview studies traced variation among Latin American mestizos (Wang et al. 2008). Other studies in Brazil and Colombia, while they might categorically separate black and indigenous populations from others, also showed that the former, especially the black populations, were often actually quite mixed in terms of genetic ancestry (Bortolini et al. 1999; Rojas et al. 2010).

The emphasis on mixture was partly a reflection of the priorities of international genomic science, from whose perspective Latin America had two things going for it: indigenous populations, which could help researchers find out about the past and might give clues about disease-causing variants among contemporary mestizo populations; and mestizos themselves, who could be useful genomic objects in the search for these same genetic variants. Yet the image of genetic mixture also fed back into taken-for-granted ideas of the character of Latin American nations as the products of *mestizaje*.

The emphasis on mixture in Brazil was reflected in the way some geneticists lobbied against the affirmative action policies that allocated racial quotas for some university admissions. Sérgio Pena, for example, criticized these policies on the basis that they had no foundation in biology—it was impossible to biologically define a category that could be the recipient of quota places for “blacks.” He acknowledged that social policy had to take into account social realities but insisted that policy makers should also be aware of the scientific evidence (Pena and Bortolini 2004)—and in 2010 the Supreme Court called him to give evidence in hearings on the constitutionality of the quotas.

Pena also made more general statements against what he saw as the tendency of racial quotas to heighten racial division: “We strongly believe we should avoid this effect in Brazilian society. Biology contributes effectively to a nonracist conception of mankind. And in Brazil, the consciousness of the weak correlation between colour and ancestry meets the utopian wish of a nonracist society” (Birchal and Pena 2011: 93). Pena also criticized public health policies aimed at the “black” population on the grounds that this social category did not define a medically and biologically meaningful population (Pena 2005; Santos et al. 2009). In these controversies, “it is not just social policy that is at stake, but the country’s understanding and portrayal of itself” (Htun 2004:61). At issue is the image of Brazil seen as a country where “race” has not had, and should not acquire, a strong grip on the public imagination. This is an image built in part on an implicit comparison with the United States—a comparison

that has been self-consciously developed by some Brazilian intellectuals over many decades in a dialogue with the United States (Seigel 2009). Some Brazilians fear that race-based affirmative actions threaten to crystallize and heighten racial divisions in a country where, although racism and racial inequality are undeniable, some believe that they are best combated by an attack on class inequality, not by emphasizing racial identities (Fry et al. 2007). Pena was by no means alone in criticizing race-based affirmative action policies, but what is notable is the use of a genetically validated emphasis on the mixed nature of Brazilian society to undermine multiculturalist priorities about the way the nation should be conceived and built, with special attention given to underprivileged ethnic and racial minorities.

In Colombia, the predominant emphasis on the mestizo as the typical member of the national population was combined with a highly flexible and varied definitions of mestizo by different geneticists. This allowed a number of different readings, which slipped between the genomic reiteration of the multiculturally diverse nation and the genomic insistence on mixture. Everyone was seen as mestizo, but some were seen as more mestizo than others, whether in terms of the relative proportions of biogeographical ancestries or their location in a racialized geography of the country (see below). This geography meant that, according to some geneticists, cities were more mestizo than rural areas or specific regions were more genetically indigenous or more African than others. In short, the emphasis on the mestizo coexisted with the possibility of defining Afro-Colombian and indigenous peoples or regions as different and other (Olar Sierra and Díaz del Castillo H. 2013).

In Latin American multiculturalism, the nation acts as an important frame for the way racialized meanings both appear and disappear in genomic science, paralleling the way they are absently present in the political domain. As race has become increasingly publicly present, especially in Brazil, in terms of political and social identities, often marked by phenotype within the nation, genomics is playing an interesting role. It denies the biological validity of race in general and highlights the mixedness of Latin American national populations; yet it also routinely uses familiar categorical distinctions to define both populations and their mixture—Africans, Europeans, Amerindians, Afrodescendants, mestizos, and so forth. Genomics racializes the mestizo and marks it—the usually unmarked category—as the center of the nation, thus potentially drawing the mestizo into a politics of identity that is generally reserved for racial and ethnic “minorities.” Yet genomics still retains the apparent racelessness of the mestizo, because it denies biological race in general and in particular in a nation of mestizos.

On the social level, the implications of these contradictory practices—implications only sometimes made explicit by geneticists—are likewise twofold: the irrelevance of the increased political salience of race as a point of identification and the inadequacy of categorical distinctions based on racial iden-

tities; and yet also increasing possibilities, especially among nongeneticists, for imagining a genetic basis for social categories that may, or may not, be named as “racial.” In a context in which race is becoming socially more present, genomics acts to make its presence more absent, without actually erasing it and indeed providing the conceptual wherewithal to biologize it in the public domain. Thus when BBC Brazil asked Sérgio Pena to do ancestry tests on nine Brazilian celebrities and the famous black musician Neguinho da Beija Flor (little black man of the Beija Flor samba school) was revealed to have 60% European ancestry, some commentators ironically renamed him Branquinho da Beija Flor (little white man . . .).¹⁰ These genomic facts were used as authenticators of racialized social identities, despite the fact that Sérgio Pena is a keen exponent of the invalidity of race as biology.

Regionalization, Race, and the Nation

A final example of the entanglements of race and nation in genomic science comes from the way Colombian geneticists dealt with the country’s regional diversity (Olarte Sierra and Díaz del Castillo H. 2013). In 2003, a team of Colombian and Spanish forensic geneticists, based in institutes of legal medicine, published a paper with tables of allelic frequencies, defining four regional populations that could be used as reference points for Colombian forensic experts trying to match DNA samples (Paredes et al. 2003).¹¹ The Colombian Institute of Family Welfare and the public prosecutor’s office then adopted these tables as the standard tool for DNA matching in paternity suits and the identification of living individuals and corpses. Like initiatives in Mexico and Brazil, this obeyed an underlying rationale of creating databases tailored to the character of national populations, rather than using imported ones.

The regional populations in question were established by Paredes et al. using a combination of two methods. First, secondary sources were used to define four regions, rooted in historical demographic patterns said to have followed a “model of fragmented settlement and later unification” (Paredes et al. 2003:67). Second, genetic data from 1,429 individuals were classified by department (administrative-territorial unit) of origin and the departments were grouped into clusters, according to genetic similarity, using a simple statistical technique. The clustering “showed a complete correlation of the genetic data with the historical classification.” The resulting map (see fig. A1, available online) shows four regions (Paredes et al. 2003:68; see also supplement A, sec. 3b):

- (a) African-descendants population inhabiting the North Colombian Pacific coast and the Caribbean island of San

10. http://www.bbc.co.uk/portuguese/reporterbbc/story/2007/05/070424_dna_neguinho_cg.shtml; see also <http://news.bbc.co.uk/1/hi/6284806.stm>.

11. For an example of how race/ethnicity enters into the definition of reference populations, see M’charek (2005, chap. 2).

Andrés, (b) “Mestizo” populations from the Colombian mountain range of Los Andes and populations settled in the Amazonian region and Oriental flats (Orinoquian region), (c) populations from the Southwest Andean region (with an important Amerindian component), and (d) African-descendant populations inhabiting the Colombian Caribbean coast.¹²

The regional framing of the paper is rooted in commonplace descriptions of Colombia as a “country of regions” (Centro de Investigación y Educación Popular 1998; Zambrano and Bernard 1993). For example, the state’s Instituto Geográfico Agustín Codazzi (IGAC) divides the country into five “natural regions.” These or very similar regions are frequently used by scholars to describe the country’s cultural zones (Abadía Morales 1983; Ocampo López 1988), and they are common currency in tourist descriptions.¹³

Although regional differences are generally phrased in the language of culture, they are often given racialized dimensions: the Pacific coastal region is seen as the “black region” of the nation; the Caribbean coastal region is very mixed, but with a strong black presence; the central region of mountain cordilleras and valleys is generally seen as lighter-skinned mestizo, with a more obvious indigenous presence in the southwest; the Amazon and Orinoco basins are, in their more remote reaches, populated by indigenous peoples (Centro de Investigación y Educación Popular 1998; Wade 1993, 2000). Gutiérrez de Pineda (1975), for example, referred to regional “cultural complexes” labeled as “negroid,” “American,” “neo-Hispanic,” and “Antioqueño,” thus creating hybrid natural-cultural categories in which race both appears (especially in relation to black populations) and recedes. The IGAC’s 2012 map of cultural regions shows 11 regions, which are then grouped into three bigger categories by “anthropological origin”: Hispano-American, Amerindian, and Afro-American.¹⁴ Thus the nation acts as a frame in which racial difference may not always be named but can be evoked through a discourse of “cultural regions.”

Other genetics papers took a more nuanced approach than Paredes et al. One article started with a classic regional description (Rojas et al. 2010:13):

The population of mixed ancestry concentrates mainly in urban areas, particularly on the Andes. African-Colombians live predominantly on the Caribbean and Pacific coasts and islands. Native American populations concentrate mainly in the East (on the vast Orinoco and Amazon river basins)

12. In fact, there are no statistically significant differences in the allelic frequencies of the regions profiled in the paper, which makes the organization of the data into regional groups all the more striking. We are indebted to our colleague Ernesto Schwartz-Marín for this insight.

13. See the 2002 map at http://geoportal.igac.gov.co/mapas_de_colombia/IGAC/Tematicos/34813.jpg. For a tourist description, see <http://encolombia.about.com/od/ViajaraColombia/tp/Regiones-Colombianas.htm>.

14. See the map at http://geoportal.igac.gov.co/mapas_de_colombia/IGAC/Tematicos2012/RegionesCulturales.pdf.

and in rural areas of the SouthWest and North of the country.

But Rojas et al. did not geneticize four simple regions in the way Paredes et al. did. In fact they divided up their 24 samples into nine regional categories, and they made no attempt to describe each of these in genetic terms, emphasizing instead overall diversity. But they did reinforce the idea of a basic regional/racial structure by locating all their eight indigenous samples in “typical” indigenous peripheral regions, their single African Colombian sample in the Pacific coastal region, while the 15 mestizo samples came from the rest of the country. They also suggested that there is a “geographic structure in the patterns of genetic variation in mestizo populations,” noting, for example, high levels of African ancestry in the mtDNA and Y-chromosome DNA for the Caribbean and Pacific regions—but also “an important maternal African contribution” in North Santander, a province not usually associated with blackness.

For the geneticist Emilio Yunis Turbay, regional diversity, with its deep historical and cultural roots, is a problem for Colombia and is related to the political fragmentation of the country and its problems of violence. Yunis’s popular book title asks plaintively, “Why are we like this? What happened in Colombia?” and he seeks the answer in “an analysis of *mestizaje*” (Yunis Turbay 2009). Interestingly, he explicitly—and unusually—uses the language of race: he identifies the “regionalization of race” and the “regionalization of genes” in Colombia as a profound problem, dividing the country and causing social exclusion and inequality (2009:19). He identifies the “black,” “Caucasian,” and “indigenous” components of Colombia’s *mestizaje*, and his maps of Colombia reiterate the classic racialized regionalization that locates “black Colombia” in the Pacific and Caribbean, the “indigenous contribution” in the far southwest and the Amazon/Orinoco regions, while central regions have mestizos with a strong “Caucasian contribution” (Yunis Turbay 2009:349–372).

All these maps reproduce the regionalized nation, now in molecular idiom. Unlike Yunis, other researchers do not use the term “race,” yet Paredes et al. manage to make the racialized dimensions of region particularly explicit and effectively divide the country into mestizo, black, and indigenous regions, while even the more nuanced approach of Rojas et al. ends up underlining, in genetic terms, basic features of the regional/racial structure of the nation. The nation and its regions are the taken-for-granted vehicle for affirming the significance of racial difference, while race itself remains an absent presence, explicit at some moments and hidden at others.

Conclusion

The analysis of these examples from Brazil, Colombia, and Mexico reveals how crucial the nation is as a frame for un-

derstanding the way racialized concepts get reiterated and reworked in genomic science, in ways that make race both disappear and reappear. Public health, multiculturalism, and forensics are all political and policy domains that directly invoke the biopolitical nation and its people in terms of their well-being, their diversity and unity, and their biological relatedness in procreation, violence, and death. The governance of these domains is of central interest to the state. Genomics also intervenes in these domains, with the promise of better health for the nation’s people, representations of both diversity and unity, and techniques for connecting bodies in ways that, it is hoped, will lead to reconciliations and peace.¹⁵ The idea of race, in previous times, figured explicitly in the way all these domains were conceptualized in all three countries—*los problemas de la raza*, to recall the title of the 1920 Colombian book cited earlier on, concerned precisely health, progress, unity, diversity, and conflict in the nation. Race was of course not the only factor to be considered—violent conflict, for example, also followed cleavages of class, region, religion, or political faction—but it was an important way of thinking about difference and the problems it might cause within the nation. The demise of race as an explicit discourse for talking about these matters did not mean that racialized concepts disappeared. Geneticists and medics continued to be interested in the racial mixture of their national populations in relation to public health, cultural commentators continued to reflect on diversity in terms of black, indigenous, and mestizo cultural traits, and indeed forensic scientists continued to classify bodies in more or less explicitly racial terms.¹⁶ Genomics, characterized by its very detailed examination of the structure of DNA sequences, generally rejects a language of race, both biologically and, in Latin America, socially. Brazil, where color/race labels operate in some domains, is a partial exception, while also being the country where the most vocal rejection of race is to be found. Yet, as we have seen, racialized concepts continue to appear implicitly (and occasionally more explicitly) in genomic analysis and are frequently harnessed to the idea of the nation.

But genomics does not simply reproduce either nation or racialized versions of the nation in unaltered form. First, as we have seen, international genomic science may not be concerned with national framings: the interesting genomic object is often “the mestizo,” or different populations of mestizos, not necessarily organized by national borders. To the extent that Brazilian, Colombian, or Mexican geneticists address themselves to this international scientific community—and they certainly do this, as well as publishing in journals of more national scope and in popular outlets that are generally national in orientation—they undermine the significance of

15. On the promissory character of genomics, see Fortun (2008).

16. On public health, see Barragán (2011), López Beltrán, García Deister, and Ríos Sandoval (2014), Restrepo, Schwartz-Marín, and Cárdenas (2014), and Santos, Kent, and Gaspar Neto (2014). On cultural commentary see, e.g., Lomnitz-Adler (1992), Vianna (1999), and Wade (2000).

the nation, even if concepts of African, European, and Amerindian genetic ancestries continue to evoke race-like imagery. Second, the analysis of genomics and multiculturalism shows that geneticists may produce versions of the nation that are orthogonal to multiculturalist priorities in the sense that the genomic analyses highlight mestizos, thus marking the category that generally remains unmarked. Genomics produces the nation in another way, in which the mestizo is given a new and more explicit role in the molecular portrait of the nation.

Third, and most important, genomics operates in a space of contradiction that is common in the post–World War II world. On the one hand, a global consensus has emerged, driven by factors as varied as decolonization and genetic science, around the idea that race, a concept that had been hegemonic as a way of thinking about human diversity for over 200 years, is no longer acceptable or valid. On the other hand, racial inequality and racism continue as potent and even growing realities. Genomics participates in this contradiction. On the one hand, it puts the last nail in the coffin of the biological validity of race, although this has been an uneven and slow process (Reardon 2005). On the other hand, as we have seen, a minority of geneticists contend that genetically race has some degree of validity, many geneticists in the United States at least continue to explicitly use the social category of race to organize aspects of their data, and geneticists more widely deploy concepts of genetic ancestry that, although biologically speaking are far removed from the race of early twentieth-century racial science, nevertheless seem to evoke racial categories and ground them in a molecular reality. If a geneticist such as Sérgio Pena in Brazil reiterates familiar notions of Africans, Amerindians, and Europeans and their mixed offspring, we also have to contend with the fact that he is the most vocal and explicit debunker of the very idea of race. In this sense, genomics is not simply reproducing race or the racialized nation in a seamless continuity with the past. It is participating in the ongoing re-figuring of race as an absent presence, a presence that can be known through the quite precise measurements and calibrations of genetic ancestry, precisions that simultaneously indicate an absence of race. In all this, the nation remains as a key frame in which these contradictions are enacted, a frame in which the concurrent presence and absence of race can be apprehended.

Acknowledgments

This article draws on a collaborative project, “Race, genomics and mestizaje (mixture) in Latin America: a comparative approach,” funded by the Economic and Social Research Council (ESRC) of the United Kingdom (grant RES-062-23-1914) and the Leverhulme Foundation (grant RPG-044). It was directed by Peter Wade, with codirectors Carlos López Beltrán, Eduardo Restrepo, and Ricardo Ventura Santos; Research Associates Vivette García Deister, Michael Kent, María Fernanda

Olarte Sierra, and Sandra González; and Research Assistants Adriana Díaz del Castillo H., Verlan Valle Gaspar Neto, Mariana Rios Sandoval, and Roosbelinda Cárdenas. See <http://www.socialsciences.manchester.ac.uk/subjects/social-anthropology/our-research/projects/race-genomics-and-mestizaje/>. The ideas expressed here are indebted to the conversations and exchanges of ideas with project team members. Ethnographic research was conducted in several labs, including ones located in the Universidade Federal do Rio Grande do Sul in Porto Alegre, Universidade Federal do Pará in Belém, the Universidad de Antioquia in Medellín, and the Instituto Nacional de Medicina Genómica in Mexico City. This article draws on these ethnographic data and on the scientists’ published papers.

Comments

Maria Cátira Bortolini and Caio Cesar Silva de Cerqueira

Department of Genetics, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil (maria.bortolini@ufrgs.br)/School of Medicine, Universidade Federal do Rio Grande, Rio Grande, RS, Brazil. 12 II 14

Based on a study of blood group, serum protein, and red blood cell enzyme loci, geneticist Richard Lewontin (1972) estimated the fraction of genetic diversity within and between the seven human “races” (Caucasians, Black Africans, Mongoloids, South Asian Aborigines, Amerinds, Oceanians, and Australian Aborigines). Note that Lewontin already used the word “race” with quotation marks. He concluded that these human “races” are remarkably similar to each other since more variation is found between individuals within a “race.” This pioneering investigation was followed by others, including those using DNA markers. These studies corroborated the fact that the genetic diversity pattern of *Homo sapiens* was molded by a demographic expansion from Africa, where migrants carried only subsets of the variation found in their parental populations. New population or geographical-specific alleles that emerged after this initial dispersion are rare, but they exist. Some of these variants code for visible phenotypes (often associated with “race” categories), such as blue eyes, blond hair, and lighter skin color, as observed in Northern Europeans. At least one of these traits—lighter skin color—is also found in East Asia, probably due to distinct alleles, and is associated with adaptation to diverse environments after the initial dispersal of *Homo sapiens* from Africa (see Cerqueira et al. 2011; Jablonski and Chaplin 2010; McEvoy, Beleza, and Shriver 2006; Norton et al. 2007; for extensive reviews). Numerous other examples of biological particularities could be cited.

Summarizing and returning to the central question: pairs of individuals from different geographical regions tend to be

only slightly more genetically different than pairs of individuals from the same region. But, the accumulation of small differences across large numbers of genetic loci makes it possible to infer geographic (or continental) ancestries. In many cases, it is also possible to estimate a geographical origin at the more restricted population level (Rosenberg 2011). For instance, using 40,000–130,000 single nucleotide polymorphism loci and a new biogeographical algorithm identified the country of origin of 83% of individuals from a worldwide sample. When applied to over 200 Sardinian villagers, this method placed a quarter of them in their villages and most of the remaining within 50 km of their villages (Elhaik et al. 2014). In other words, everything depends on the selection and number of genetic markers, the methodological design, and the goals of a given study, which can further be enriched with geographic information and normal or pathological phenotypic data. The immense number of studies that describe human genetic diversity is not surprising, because beyond obvious medical and forensic uses, they have revealed details about our evolutionary and demographic history. In conclusion, independent of the nomenclature used to define populations or any worldwide human groups, they exist with their particular biological identities.

Peter Wade and colleagues' major conclusion that "the way race appears—and disappears—in genomic science in Latin America reflects [a] deep-rooted ambiguity" is essentially correct. As mentioned above, biological diversity exists, and identifying it at individual, population, or continental levels is relevant in many academic and applied contexts. For instance, our ancestry studies with Latin American populations refer to African, Amerindian, and European ancestries. Yes, it is possible to identify genetic particularities in these major human continental groups, independent of the level of genetic diversity inside them. However, under certain circumstances, reporting data has become very complicated. The choice of nomenclature to identify groups of research interest, for example, is an almost impossible task. Thus, the mentioned ambiguity is expected. It is noteworthy that one of the reasons for this ambiguity was not mentioned in the Wade et al. paper: the systematic attempts to criminalize biological diversity, as well as to criminalize all who insist on investigating it. Unlike cultural diversity, which is celebrated in the academic socio-cultural environment, biological diversity has become a taboo for some influential scholars. Our clear impression is that biological diversity per se is considered "the problem." Has it become a crime to speak of African ancestry? This is unacceptable. We must remember that intolerance to difference, rather than to biological (or cultural) differences per se, is the major reason for conflict and discrimination.

While cultural differences make our existence more stimulating, biological differences constantly remind us that we belong to a species with a rich demographic and evolutionary history, which deserves to be revealed. Both cultural and biological diversities must be celebrated and any intolerance toward them rejected.

Acknowledgment

We thank Professor Francisco M. Salzano for a critical discussion and final review of this text and Rosanna Dent for English editing.

Duana Fullwiley

Stanford University; 450 Serra Mall, Building 50; Main Quad; Stanford; CA 94305-2034; U.S.A. (duana@stanford.edu). 4 III 14

Race Never Stands Alone: Genomic Science in Latin America and Beyond

Peter Wade et al.'s "Nation and the Absent Presence of Race in Latin American Genomics" reports on the place of race in genomic science in Brazil, Colombia, and Mexico. With many caveats and exceptions they argue that in Latin America

racialized meanings in genomics, rather than standing alone, are very often wrapped up in ideas about nation. This seems to us a rather neglected aspect in the literature about genomics and race. More specifically, the absent presence of race in Latin American genomics finds a particular expression in concepts of nation, because this vehicle suits the deep-rooted ambiguity of race in the region.

One can appreciate the authors' effort to present regional nuance, their global reach, and their aim to push the literature further. Yet, at times, Wade et al. approach the goal we all have for scholarship with a superficial engagement of the relevant literature. This is coupled with an unnecessary attempt to narrowly define what counts as "nation" and "race."

On the first issue, they aim to set themselves apart from others by defining nation as "an imagined community or identity." Even if we limit ourselves to this frame, they overlook these issues in my work on Mexican-American geneticists who advance admixture genetics to resolve asthma disparities in Hispanics. Here imagined community and identity surface multiple times. To convey this imaginary, I present the reader with several reproduced images of Diego Rivera's art that adorned these scientists' walls, including a reproduction of *The Great City of Tenochtitlàn* at the National Palace in Mexico City (Fullwiley 2008:709). My ethnography with this team detailed how the principal investigator explicitly wanted to include Latinos in what he saw to be "the genomic revolution" broadly (Fullwiley 2008:726). As a Mexican-American himself, he articulated his efforts within US racial discourses of civil rights, that is, political inclusion and census representation (Fullwiley 2008:710). In my view these articulations of "nation" in no way run counter to the imagined community of Latino geneticists that my key informant actively fosters in California. (These aspects of nation are strangely parsed in Wade et al.'s introduction.) It is within this community that the scientists I studied openly embraced "ancestry" as

the genetic component to race for their Latino-focused admixture genetics. Thus race framings for genetic admixture in the United States cannot be said to “stand alone” (Wade et al., first mention). Wade et al. correctly cite my emphasis on the ways that social categories of race and genomic ancestry tools conceptually resource and reiterate each other. But one cannot stop there. When reading further one can see certain US-based Latino geneticists carving out a scientific enterprise, creating large databases for their universities, and amassing resources in order to “care” for their “own communities” (Fullwiley 2008:720). This has much as much to do with their hope to bolster their Latino-focused science as it has to do with their feelings of neglect by the larger American polity.

Another anthropologist who explores the coarticulation of nation and racialized admixture genetics is Michael Montoya whom, surprisingly, Wade et al. do not textually engage. This is strange since *Making the Mexican Diabetic* is an exemplary case of how genetic science on admixture in some regions is structured by race and nation specifically around concepts of hybridity and politically divided geography. Montoya lays out many instances of historical dispossession on the US/Mexico border to argue that American national interests have made people who live there more susceptible to this illness. He shows how the social history of Anglo-Mexican-Native American relations makes its way not only into the bodies of diabetics but also into scientists’ conceptions of DNA-based diabetes risk (Montoya 2011:99–100). One key finding for Montoya was that scientists combined logics of borderland geopolitics and racial admixture in their discovery of a “polygene” that put Mexican Americans at a higher risk for diabetes. He writes: “One very important aspect of the polygene discovery that is implied rather than stated . . . is that the genetic material that confers susceptibility is allegedly acquired through admixture—one bit from European ancestors and another from Indian ancestors” (Montoya 2011:106). In Montoya’s work, race never stands alone either.

Last, on the issue of race and ancestry, it is unclear why the authors go to such lengths ultimately to say that although Latin American genomic scientists do not usually explicitly use the word “race,” they nonetheless use racialized terms, racial logics, racial history, racial ideologies, and racialized territory. The use of race goes beyond an explicit linguistic embrace. It is a practice—a practice of racially binning samples, a practice of racially apportioning the global population, and a practice of racially envisioning the nation. It is these practices that are present (not convincingly absent) that we see here time and again.

Sahra Gibbon

Anthropology Department, University College London, 14 Taviton Street, London, WC1E 6BT, U.K. (s.gibbon@ucl.ac.uk). 3 III 14

The article provides a welcome and useful addition to the

burgeoning interest in examining the paradoxical ways that race is reproduced and transformed in diverse domains of genomic research. The focus on contrasting examples within the neglected Latin American region and the attention to contestation and contradiction in how concepts of nation facilitate and enable ambiguous and ambivalent expressions of race and genomics bring a much-needed comparative perspective to these recent discussions. This raises vital questions about the extent to which the kind of “categorical alignment” (Epstein 2007) that has witnessed a worrying conflation of social and natural categories of biological difference in the United States, is applicable elsewhere. As Hinterberger usefully points out, “a process of molecularization may hold little meaning with regard to human difference outside of the specific technologies, histories and populations it is used to describe and analyze” (2012b:86).

For the authors the concept of nation in this region provides a vehicle for the expression of race through genomics where it is constituted as an absent presence, denied and silenced, yet also implicitly reproduced through the “imaginative space of the ‘mestizo nation.’” While we see how these dynamics emerge in subtly different ways in Brazil, Colombia, and Mexico the authors also usefully point out the extent to which the nation is not always the ground for the figuring of race through genomic research, showing how regional differences, as in the case in Colombia, or the supranational can supersede the focus on the nation. While acknowledged the transnational also seems an important and somewhat neglected dimension given that, as the authors mention, many of the leading scientists cited collaborate with international partners or publish in leading international journals. It would be useful to hear more about how the contradictions of race and genomics enacted through the nation in Latin America travel. How is the effort to valorize mixture and mark the “unmarked category” of mestizo on the part of South American researchers received, rejected, or transformed in the transnational research setting? Are such findings transmuted within a broader political economy of publications? How are they incorporated or rejected as the need and desire for diverse population data gains momentum in the context of a push toward “Big Data”?

I wonder then if the notion of race and racialization through genomics research as an “absent presence” does justice to the complex dynamics that constitute the practices that are currently unfolding within and beyond these national borders. Embedded in their discussion and specifically in relation to this orientating concept there is perhaps an implication of “passivity” on the part of South American researchers. I suggest that this does not fully reflect the active desire, particularly evident in the case of Brazil and pharmacogenetic research, to radically challenge notions of population difference as defined by genetic ancestry, race, and color categories. It must be remembered that this is a critique which is importantly emerging from inside Brazilian genomic science. As other colleagues and I have highlighted, the necessary initial re-

course to use of racially classified samples or biogeographically classified genetic ancestry reference populations in Brazilian pharmacogenetic research, itself a product in part of the transnational domain of such research, must be understood as part of a strategy of “racializing to de-racialize” (see Santos, Silva, and Gibbon 2014). The second move is evident and notable in the explicit emphasis by Brazilian geneticists on genetic admixture as “a continuous variable” characterized by “clinal” understandings of inherent individual genetic mixture. The argument that there is an “implicit” racialization in the use of tri-hybrid classifications of genetic ancestry does not fully illuminate the concerted effort by certain Brazilian geneticists to challenge moves toward standardizing and universalizing algorithms for drug use in pharmacogenetic research.

The research presented refers mostly to interviews with scientists and the discourses (both public and scientific) surrounding their publications. This raises many questions about how, as the authors also note, those “less versed” in genomic science respond to these developments. As recent emerging research with different patient and public communities illustrates, it seems likely that contestation and contradiction are going to be a defining feature where nation as both imagined community and nation as citizenship, rights, or inclusion are central to a highly dynamic contemporary politics of health and education (see, e.g., Biehl and Petryna 2011). Yet given the diverse histories of social medicine in Latin America and the ways that early twentieth-century neo-Lamarckian ideas of inheritance have historically informed public health interventions across the region it seems likely that these understandings will continue to exceed and complexify race as an absent presence. In this case it will be important to monitor how local understandings of the biological and the body in the region as inherently malleable and plastic (Edmonds 2011; Gibbon 2013; Roberts 2010), intersect with and are informed by scientific awareness of the deep entanglements between genes and environments as part of a growing field of epigenetic understanding (Lock 2013).

John Hartigan

Américo Paredes Center for Cultural Studies and Department of Anthropology; University of Texas, Austin; 2201 Speedway, C3200; Austin; TX 78712-0303; U.S.A. (johnhartigan@austin.utexas.edu).
4 III 14

Wade et al. develop a powerful model for comparatively framing the role of race in genomics research. They account for “the entanglements of race and nation in genomic science” across Latin America and in relation to international practices and institutions. Wade et al. construe the nation as a framing device, by which forms of genetic science (where “race is usually not explicitly mentioned”) can be shown to be saturated with racial meanings and ideas. In applying and confirming this basic observation in several national contexts,

Wade et al. demonstrate the importance of “shifting scales of analysis” for understanding race, in attending not just to how its meanings may vary across regions but also to the differential assumptions evident in international geneticists’ interests in indigeneity and “mestizos.” Their central finding or claim—that “in many Latin American countries, race is an absent presence”—is a generative means for extending and elaborating this approach to race in genetics.

An immediate question is how this rendering of race relates outside of Latin America. As the authors register, there may be strong similarities with the “color-blind” discourses in the United States, which similarly erase and deny an attention to race, at a political moment when racial inequalities are pressing. There may, too, be commonalities with the ways whiteness operates in Anglo spheres as “unmarked” and “normative”—an identity regarded as absent of or without race in racially stratified societies. This raises another comparative question: how do we think about these similarities while also being cognizant that “whites” in the United States, for instance, would view “mestizos” as racially marked or at best as only provisionally white, since they are depicted—in genetics and political discourse—as “admixed” or “Hispanic” populations? The comparative frame, shifting scale and scope, presents the need to characterize not just “racial meanings” or objects but racial thinking broadly as it operates in various settings, historically and contemporarily.

Does racial thinking, though, inform genomics, or does genetics alternately affirm or challenge tenets of racial thought? Wade et al. characterize “the imaginative space of the ‘mestizo nation’: as “above and beyond the racialization that may result from the way in which genomic science deploys its concept of genetic ancestry.” This is an important formulation because it construes racial thinking in overlapping but not entirely equivalent domains. But this again leads to more questions. My own ethnographic work at INMEGEN showed that researchers there construed the “Mexican genome” as a cultural, historical artifact, one that reflected distinct processes of colonization and settlement across the country. This is in stark contrast to geneticists in the United States who consider racial genomes largely as pure types, fixed in a distant past, and only recently subject to distorting, contaminating “admixture.” How can racial thinking render genetics and genomes in such contrasting manners in neighboring countries?

One answer lies in the concept of *raza*—a term that likely originated in Italian (circa 1400) and made its way into English, as “race,” via French. The authors address its various connotations and the particular “ambiguity of ideas about race.” But *raza* also usefully highlights an important blind spot in anthropological approaches to race: we assume racial thinking is singularly about humans. But it is not, as *raza* makes clear: in common Spanish parlance, there are races of dogs, horses, bulls, sheep, and importantly, maize. These uses considerably preceded the application of race to human beings—the Enlightenment’s scientific “idea of race”—and they

continue to be just as widespread or perhaps even more common today. Racial thinking, in this regard, is not just about ancestry; it is about breeding, the rendering of species as malleable and plastic. This might confuse at first, since there remains a tendency among anthropologists to equate race with typological thinking. But it has just as commonly been applied to elastic rather than fixed forms. Perhaps we struggle so to identify race in discourses and practices—where it does not seem to be mentioned, at least not explicitly—because we have too narrow a view of what constitutes racial thinking; its focus is not just on humans, nor is it uniquely typological. The same, of course, is true of genetics, which is arguably far more widely applied to agricultural breeds than to humans; it also serves up constant reminders that species are hardly fixed types (Hartigan 2013b). Cultural anthropologists approaching genetics today as a means to critique or challenge racialization need to be cognizant that the forms of racial thinking they encounter may be far stranger and more complicated than they initially imagined. If racial thinking seems to remain elusive in such discourses and practices—its “absent presence”—this is partly because we have yet to grasp fully its scope and depth as it ranges across genetic, biological, and cultural domains and objects.

Amy Hinterberger

University of Warwick, Department of Sociology, Ramphal Building, Coventry CV4 7AL, United Kingdom (A.Hinterberger@warwick.ac.uk). 18 III 14

This essay masterfully explores significant recent developments in genome science in Brazil, Colombia, and Mexico. Having synthesized recent social science commentary on processes of racialization in genomics, Wade et al. turn to national case studies in order to understand both the persistent presence and absence of processes of racialization in science. They show us how shifts in biology to the molecular level have gone hand in hand with the nationalization of genome research and the conflation of group identities within the nation as biological. While the desire to utilize the tools and knowledge of genomics has offered opportunities for recalibrating the politics of race, Wade et al. show that understandings of race gain force not from the fixity of their essentialisms but from the ambiguity and malleability of their essences.

This brings us to a finer understanding of how the emergence and consolidation of “-omics” biologies are embedded within different national manners and styles that give shape and substance to the populations and publics of the contemporary life sciences. One of the central issues under investigation here is how social divisions are no longer made through the stable enforcement of nationally constructed racial taxa, but rather through their instability. The more timely notions of human difference offered through genetic biogeographical ancestry, mosaic genomes, and individual life histories cul-

tivate precision and care of data, yet the exactitude of these approaches never seems to fulfill their promise of being decoupled from histories of race.

In taking us through biologies of the global south in a variety of domains (the forensic, the biomedical) Wade et al. open up the question of the global postcolonial. When so much of the history of science, as well as contemporary anthropologies of bioscience, engage with the nation it is peculiar that this sometimes evades what might be called the “race and genomics” debate. This may be a reflection of the global and transnational biosciences themselves, in which North American models, measures, and standards come to occupy a kind of absent presence—only coming into relief once they are brought into tension with other kinds of local practices. The comparisons offered by the authors (both within Latin America and between Latin America and other regions) demonstrate that the political narratives drawn on to develop conceptual tools to understand genome science require expansion. They require a more worldly outlook. This includes questioning any unexamined exportation of US racial politics and technologies, which can sometimes pose categories and experiences as universal, rather than as part of specific historical or contextual developments. The case being made here then is not just for more accounts of genome science from outside Euro-American empirical situations, but that through these ethnographic comparisons we find theoretical substance.

Wade et al. point to some of the paradoxical mutations in the politics of multicultural and biomedicine where geneticists “produce versions of the nation that are orthogonal to multiculturalist priorities” by marking unmarked categories, such as “mestizo.” These comparisons draw our attention to the diversity of both racial formations and scientific practice. More broadly they illuminate how multicultural discourses are increasingly being absorbed into the spheres of biomedicine and health care, thus rendering untraceable the histories of demography, epidemiology, and population statistics upon which state policies have been built. These emerging “molecular multiculturalisms” (Hinterberger 2012a) open up into the world of “big data” and “big biology” where the ever-increasing capabilities of computers and analytic software are used to move and process data derived from DNA sequencing, biological samples, and molecular diagnostics. The argument in the paper, that genomics is not reproducing racialized categories congruent with the past, but rather “participat[es] in [its] ongoing re-figuring,” take on specific import in the context of postcolonial technoscience. In relation to the global postcolonial, the late Stuart Hall (1993) explained so eloquently that absence signifies as much as presence. In this vein, the authors of this piece demonstrate how the epistemic potentiality of the life sciences is not in opposition to what can sometimes be framed as old “dry” notions like the nation.

One way to take this point further is to consider it within the domain of the political economies of biology. While much has been made about the privatization of the biosciences, the

majority of investment and projects examined here (e.g., Instituto Nacional de Medicina Genómica) have a high degree of public funding. The promises of downstream revenues and commercialization are mixed with a number of charismatic national figures who hold attachments to both the public and private domains. Within these systems, new markets and international revenue streams figure as both a force and attachment to forms of racialization that bring with them both new possibilities and dilemmas.

Veronika Lipphardt

Max Planck Institut für Wissenschaftsgeschichte; Boltzmannstr. 22; D-14195 Berlin; Germany (vlipphardt@mpiwg-berlin.mpg.de). 3
IV 14

This paper provides a strong and convincing contribution to recent critiques of sampling and classification in human population genetics. The main argument, namely, that national frameworks and identities shape the scope and approaches of population genetics, develops great convincing power in the course of the text. Human population genetics has recently been covered by many Science and Technology studies (STS) in the United States. Curiously, both geneticists and STS scholars claim that US study designs cannot simply be transferred to Latin America—the latter on the basis of different discourses on diversity and mixture, the former on the basis of different patterns of genetic diversity.

Scientific endeavors to map Latin American populations have been in the focus of many historical studies. This paper, however, aims at a history of the present, by pointing to historical discourses formative for today's population genetics approaches, specific to each single country. By comparing the framing of genetic studies in Colombia, Brazil, and Mexico, the authors demonstrate that each national scientific community holds on to a specific version of the Latin American mestizo-natives-European-narrative. Transnational minorities could serve as a test case for the constraints of this explanation: how do geneticists tackle the challenge posed by these border-crossing populations?

The significance of this paper goes beyond the Latin American version of how race is both absent and present. The authors state, for one, that “in most countries in the region, the categories and language of race are a much less accepted feature of policy and public discourse than in the United States.” Race is, for two, “present in an everyday sense and in some official domains.” This should stimulate comparisons with other national contexts. In Germany, only the first part of this argument holds: categories and language of race are tabooed. Furthermore, human diversity is not so present in everyday life in Germany—for reasons dating back to colonial times—hence, the absence of race is not as paradoxicalized as in Latin America. “Race” is doubly absent in Germany and only present in condemnations of National Socialist racism,

or racism elsewhere. Due to this specific situation, debates about genetic diversity prompt a strong public unease in Germany.

Of particular significance is the authors' focus on inconsistencies and slippages of sampling and classification procedures, and on contradictions between antiracist proposals and the empirical usage of racial categories. Regrettably, they do not discuss possible reasons for these inconsistencies. Also, it would be interesting to learn how geneticists respond to these observations. The authors are careful to avoid any tone of accusation and often emphasize that particularly lay audiences could easily “misread” the publications and statements of geneticists, against the will of geneticists.

However, it is the scientists who use labels like “Europeans,” “Africans,” and “Asians,” and thus one might ask whether all of them would understand what makes a slippage a slippage. I argue that many scientists, just like laymen, would not agree that “Europeans,” “Africans,” and “Asians” are racial categories. They would understand these categories to be geographical or historical. But as the authors imply, they are in perfect concordance with commonsense racial classifications.

Asking why some can see slippages here, while others cannot, one might turn to the continuities between classificatory systems. Population geneticists seem to be most interested in patterns of diversity, expressed by episodes of “isolation,” “mixing,” and “migration” of groups. These concepts must be read against the backdrop of widespread biohistorical narratives about the history of humankind. Biohistorical narratives, for example, about the peopling of the Americas, seem to belong to the background beliefs of population geneticists. They are deeply rooted in society, school curricula, and national discourse. They have been used in population genetics and other depictions of the history of humankind with great continuity, in spite of all breaks with racial thinking, terminology, typology, classification, and hierarchy. Biohistorical narratives lend categories temporal depths, credibility, and historical plausibility. However, biohistorical narratives are not good proxies for group categories, especially if they echo older racial narratives.

It seems that the categories geneticists choose to use are often the most convenient and harmless ones, in spite of their vagueness and ambiguity. Convenient are those with the strongest backing in society: narratives about the categorized groups circulate easily between science and the public; they make categories sound meaningful to both sides. For example, on the level of narratives, the transformation of “Aryans,” “Europids,” or “Nordics” into “Whites” and “Europeans” was but a small step to take. Hence, as this paper helps to understand, the categories' denominations come with a historical baggage that undermines the claim of geneticists to work against notions of race.

Tellingly, the geneticists' willingness to avoid slippages seems stronger in the case of Latin American populations and less so with regard to reference populations. In order to avoid slippages, population geneticists should make an extra effort

to be precise: namely, explaining how a category, say, “Europeans,” is defined in their studies. By sampling location—that is, Europe? If so, where is “Europe”? Or by test subjects’ EU passports? By self-ascribed identities? Or by expert opinion? If so, by what criteria? Complexion? Genealogical information? Does the fact that not all EU states’ census register ethnicity play any role here? As long as geneticists are not explicit and precise about these issues, they cannot claim that slippages happen only on the side of the lay audience.

Amade M'charek

Anthropology of Health, Care and the Body; Faculteit der Maatschappij- en Gedragwetenschappen; Universiteit van Amsterdam; Ouderzijds Achterburgwal 185; 1012 DK Amsterdam; the Netherlands (A.A.Mcharek@uva.nl). 26 III 14

Race as an Absent Presence and the Politics of Slippery Objects

In the past two decades, as an effect of the increasing presence of the life sciences, race has become a growing concern in many societies. Yet, as an object of research in the social sciences, it is proving difficult to grasp. In the United States, race and racism issues tend to resonate with the legacy of slavery and the problem of color, whereas in many other societies, histories interfere with one another in describing the ways race differences come about. For example, the history of slavery is less present in Europe, whereas the colonial past, World War II, and postwar migration are far more salient for the ways similarities and differences are done. One most troubling, challenging, but fascinating aspect of race is its shadowiness, its tendency to slip through our fingers whenever we try to grasp it. How to attend to its slipperiness without trivializing it or subsuming all kinds of differences under the race banner? What is the politics of slippery objects and how to account for it? Here I think the notion of absent presence (Law 2004; Law and Singleton 2005) is extremely valuable. The notion helps us study objects that tend to shift and change across time and space. Absent presence suggests that *an object is a pattern* of things that are made present and absent, both. It implies that an object is not a singular, centered entity. It is relational, an assemblage produced from different elements (see M'charek 2013, 2014; M'charek, Schramm, and Skinner 2014a, 2014b).

With this in mind I welcome the paper by Wade et al. that analyzes race as an absent presence in Latin America and examines the ways it is wrapped up in ideas of the nation. As Wade et al. indicate, race is taboo in Latin America and therefore not part of the explicit discourse in science and society. Yet as an effect of genomic research, there is a tension between a homogenizing discourse of the *Mestizaje* and a politics of difference produced both by genetics and by certain groups in society, such as black communities in Brazil and

Colombia. This begs for questions about race. Wade et al. argue that even if race is not talked about explicitly or in cases vehemently denied by geneticists, it is refigured in the ways the nation is narrated in genomics research. This is a tantalizing argument, especially since neither race nor the nation are pre-givens and require further specification. Although I think that anthropologists can deal quite well with two unknown variables at the same time, this is exactly where I find the paper falls short.

The paper provides rich data on genetics research and how that is specific to the three countries studied, making it possible to see that different notions of the nation are at stake. Yet the paper's narrative does not explain the different versions and even less how they relate to what race is made to be. This leads to the risk of naturalizing the nation and essentializing race. Let me dwell a bit longer on race because one of the major challenges in race studies is the danger of our reifying race. Our very research helps to produce it as an object. This is a *sine qua non*. The question is how can we simultaneously denature race. The problem I see is that even in social sciences research, situated in the heart of social constructionism, race is ultimately located in the biological body: in phenotypes, the skull, the brains, the genes, and so forth. The assumption seems to be that when biologists do race they simply do biology. However, a glance at the history of (physical) anthropology gives us pause. For example, Karl Ernst von Bär's famous tables of major racial types (fig. 1) show that individual differences do not come by themselves. Faces come with ornaments, clothing, hairdos, tattoos, and so on. It is the mixture of faces and ornaments that makes racial types. Instead of reducing race to one or other biological marker, we should keep our eyes on these mixtures and uncover their specificities and processes of making. We need thus to raise the question, What is race made to be in this context?

Unfortunately, rather than using the potential of the absent presence concept to open up what race is, Wade et al. apply the notion in its most colloquial understanding, namely, as describing something that exists but is hidden from view. Despite the broad definition given at the beginning of the paper, race is dealt with as a matter of fact, at issue because geneticists work on genetic differences. Their goal is to unmask geneticists and the way they hide race under politically correct or socially accepted categories. Although the hiding might well be true, the paper does not examine what versions of race are hidden or wrapped up in concepts of the nation. Race is a slippery object, yet the force of the concept of absent presence is that it helps us attend to processes of making and unmaking. Here, in these processes, we can begin to understand the contemporary politics of slippery objects, the contemporary politics of race.



Figure 1. "Types Principaux des Différents Race Humaines" by Karl Ernst von Bär. A color version of this figure is available online.

Katharina Schramm

Institute for Social Anthropology, Martin-Luther-University Halle-Wittenberg, D-06099 Halle (Saale), Germany (katharina.schramm@ethnologie.uni-halle.de). 4 III 14

In recent years there has been a worldwide proliferation of large-scale genomic projects that operate on a national scope. This goes along with new debates on genomic sovereignty, the circulation (or confinement) of samples, data, and classificatory categories as well as legal and ethical issues connected to that. These new developments also call for a reconsideration of the troubled relationship of genomics and race that has been the focus of substantial critical scholarship by social and medical anthropologists and other social scientists. As Wade et al. rightly state, a large bulk of this work has taken the United States as a more or less implicit starting point for thinking about “race in a genomic age” (the title of one of the key contributions to this debate by Koenig, Lee, and Richardson 2008). If, however, the aim is to analyze the specific articulations of race in and through genomic practices and to understand how race is brought about as a “biosocial or natural/cultural fact” (2008:4), this perspective certainly needs to be expanded, as we have also attempted in our own volume on identity politics and the new genetics (Schramm, Skinner, and Rottenburg 2011).

Wade et al.’s collaborative project on “race, genomics and *mestizaje* (mixture) in Latin America,” on which the article is based, is another highly welcome step in that direction. The authors argue that in Latin American genomics, racialized meanings are intrinsically wrapped up in ideas about nation—and that these circle around the figure of *mestizaje*. This mirrors the “deep-rooted ambiguity” of race in the region: in political as well as scientific discourse, the emphasis on mixture serves to deny the existence of race, and yet race is an ongoing reality. It is “absently present” in the very conceptualization of mixture that apparently relies on conventional racial stereotypes.

“Absent presence” is the leitmotif that guides the reader through this article. If fully developed as an analytical framework (see Law 2004) it could indeed help to account for the underlying complexities of race by showing how it is relationally performed through a combination of elements—for example, of histories of knowledge production, the dynamics of purity and admixture, the unmarked normativity of *mestizaje* in relation to its various reference points of otherness, current sampling strategies, and so on. It could thus help us to grasp how it is possible that race comes to the fore in the very act of disproving it. Surely, there must be more to it than a reluctance on part of geneticists to acknowledge the obvious? Unfortunately, however, the article does not explore the analytical potential of the notion of absent presence to the full. Instead, the authors largely employ it metaphorically, as a way to describe resonances of race in contemporary genomic practice. Race itself is not called into question or brought forth as an object of analysis. The argument about the simultaneous

absence and presence of race is expressed by way of analogy: “race-like” categories become visible in genomic concepts of genetic ancestry that “[evoke] familiar racial meanings”; or genomic practice “could create the impression that the populations were not only socially but biologically different.” But what is it exactly that creates this impression? And for whom? Why do the geneticists who are involved in these studies not see these things? What makes them insist that their work is not about race? The authors initially define race as a combination of, first, a naturalizing discourse on bodies and behaviors that is assigned to groups and, second, categories of difference that are rooted in a long-standing history of oppression. In the course of the article, however, race in genomic practice is mainly reduced to the reference to biogeographic ancestry, that is, to the definition of sampling populations—I assume that geneticists would vehemently object to the equation of ancestry with race. And rightly so—because in order to understand how race is performed as a biosocial fact one needs to go beyond just one dimension. This is what absent presence would have allowed for. Regrettably, this article does not quite take us there.

Edna Suárez-Díaz

Science and Technology Studies, Facultad de Ciencias, Universidad Nacional Autónoma de México, Circuito Exterior, Cd. Universitaria, Coyoacán, 04510, México D. F. México (ednasuarez@ciencias.unam.mx). 14 II 14

For decades after World War II, historians and scientists sang the same tune: race was not a biologically meaningful category any more; populations defined by genetic frequencies substituted the notion of typological races, thus dismissing state-run eugenics (Barkan 1992; Dobzhansky 1951; Kevles 1995).

Although this depiction exaggerates the postwar consensus on biological races, and its blindness to racist manifestations rooted in biological distinctions, it still holds true for many scientific accounts of current developments in human genomics and pharmacogenomics. Supported by its huge capabilities for data collection and analysis, genomics reinforced the narrative of human genetically diverse populations and the inexistence of human races. But, paradoxically, cluster analysis and the use of genetic ancestries as reified categories associated with races (Amerindian, African, Caucasian . . .), brought biological race back to the fore (Dupré 2004; Gannet 2001).

In our post-Cold War, postcolonial, globalized world, numerous studies—some of them focused on places outside the usual centers of knowledge production—have helped produce a more complex historical view of postwar human genetics

and race.¹⁷ The paper I am commenting on is one of the best examples of what critical research on recent science means for our most cherished narratives.

The main argument in Wade et al.'s collaborative paper (resulting from a transnational research project) is that in Latin American countries ideas of biological race are wrapped up in ideas of nation. Although the argument has been exposed before, the authors give it a detailed meaning, advancing the idea that the absent presence of race, that is, the ambiguity of denying race while incorporating it in the official domain and the discourse of national identity, characterizes the countries in the region. This conclusion is supported by ethnographic research performed in laboratories in Colombia, Mexico, and Brazil. Here, I want to raise three interconnected issues that I see as relevant for advancing our reflection on the "absent presence" of race in Latin America.

1. The nation as an "imaginative space": The *nation* has been labeled the "ether of the social sciences": it explains everything, but it escapes attempts to define its explanatory power (Pyenson 2002). Here enters the notion of nation-state. Adopting Patrick Carroll's (2006) suggestive idea of the "triangulating" state, the study and grouping of human populations could be seen as part of the state-idea (the discourse of sovereignty and identity), the state-system (the practices and institutions created around it), and the state-country (the ways in which population—and territory—are created, classified, and intervened). The main idea here is that the instruments and interventions of the nation-state on its population are inseparable from its discourse on identity. Indeed, the commented essay forcefully supports this "triangulating" view.

2. The postcolonial world: the countries of the region are doubly postcolonial and this fact should be at the forefront of critical analysis. Their discourse on identity took shape in the midst of European and US colonial domination of the hemisphere during the nineteenth century.¹⁸ Citizenships made up of "admixed" (mestizo), African, and indigenous populations were seen as problematic in a context that associated white supremacy with progress. As the authors of the essay remind us, the Latin American political elites reacted by praising the superiority of the admixed race, whether the dreamed "racial democracy" of Brazil, or the Mexican "cosmic race," while in fact this national discourse reinforced and obscured the inequalities of Latin American societies. The absent presence was thus born. But postcolonialism also means being part of the Third World. After World War II the

countries of the region were targeted for development programs (see below); more recently, they are seen and treated as potential markets of globalized pharmacogenomics. The North-South asymmetries continue to set the framework for "Hispanic" tailored drugs (for the US market) and the reaction of nationalized pharmacogenomics in Brazil, Mexico, and Colombia.

3. This brings us to the last point: before pharmacogenomics there was pharmacogenetics. Starting in the 1950s in Brazil, and the 1960s in Mexico, genetic studies of human populations were propelled by an intersection of factors: Cold War anxieties (measurement of the level of natural radiation in Brazilian indigenous populations), international health agendas (studies on the propensities of Third World populations to certain maladies, or health international programs), and research on the biology of human populations (exemplified by the International Biological Program of the WHO).¹⁹ The three were linked by the need to rationalize resources for development programs. In a sort of historical boomerang, recent critical work on the role of race in genomics (such as the one exemplified in the essay I am commenting on) has made historians aware of the continuities and historical reconstructions of the concept of race.

Reply

We would like to thank all the commentators for their thoughtful and helpful engagement with our paper and for their stimulating comments. We found these very useful in reminding us of (a) things we had overlooked in this article: Fullwiley reminds us of the way nation figures in her work and that of Montoya; in this respect, we also should have acknowledged more the work on race, nation, and genomics related to Europe (Heinemann and Lemke 2014; M'charek 2005, 2013; M'charek, Schramm, and Skinner 2014a, 2014b; Sommer 2012; Taussig 2009); (b) things we had not really considered: Hartigan points out the way *raza* figures in discussions about animal and vegetable biodiversity, which may take on national(ist) dimensions too (although it is worth adding that *razas* of maize may also be strongly associated with indigenous peoples, who may cultivate them for explicitly biopolitical reasons); and (c) things we were aware of but did not discuss: Suárez-Díaz reminds us of the need to see recent genomics in the longer histories of biology, genetics, race, and nation (see also Linde and Santos 2012). We will organize our reply under two main subheadings.

19. Ventura-Santos (2002) has written on Brazil's studies during the 1960s, and Suárez-Díaz on Mexico in the upcoming issue on populations and postwar health policies in *Studies in the History and Philosophy of Biological and Biomedical Sciences*, edited by Soraya de Chadarevian and Jenny Bangham.

17. For critical accounts to the traditional narrative, see Gannet 2004; Gannet and Griesemer 2004; and the papers collected in the special issue of *Studies in the History and Philosophy of Biological and Biomedical Sciences*, vol. 39 (2008). Particularly useful to deconstruct this narrative is Snait B. Gissis's contribution (Gissis 2008).

18. On US imperialism and colonialism, with an attention to territorial and economic expansion in Latin America, the classical work by William Appleman Williams remains a mandatory reference (Williams 2009 [1959]).

Race, Genetics, Relationality, and Slippages

We very much hope that our text did not convey the impression that we think that biological diversity is a problem, much less a crime, or that people who investigate it are criminals (comment by Bortolini and Cequeira). Nothing could be further from our intentions. We are interested in the effects that certain practices of investigation can have. To speak of “African ancestry” is not a crime, but it can have certain, perhaps unintended, effects depending on what the category is taken to mean by different people, which also depends to some extent on how it is deployed by geneticists. This is best explained by responding to the critiques raised by M’charek and Schramm.

There is no doubt that the idea of absent presence is more fully developed in their recent work, drawing on the ideas of John Law (M’charek, Schramm, and Skinner 2014a) than it is in our article. The concept of race as a relational assemblage (M’charek 2013) certainly provides a useful way of emphasizing that ideas and practices around race never stand alone and are always embedded in and entangled with other domains. We believe our article actually demonstrates this in specific ways and thus does not essentialize race or naturalize nation. In effect, we show that race is constituted in relation to (a) varying constructs of the nation and (b) genomic concepts of genetic ancestry. In all three nations race is understood as linked to histories of gendered race mixture, usually depicted in foundational narratives as rooted in early colonial encounters between European men and indigenous and/or African women: the way temporal narratives underwrite contemporary categories (comment by Lipphardt) was particularly evident here (Wade 2013). However, in each country that understanding of race takes a specific form.

In Colombia, race—above all blackness—is constituted strongly in relation to regional difference and to ideas of the country as fragmented and divided by history and by civil conflict; racial difference is located firmly in a cultural and moral topography, structured powerfully by ideas about heat and cold, highland and lowland, mountain and tropics. In Mexico, race has some regional associations (the north is seen as whiter, the south as more indigenous), but the key meanings of race are structured more centrally around the mestizo as the universal citizen who emerges after the Mexican Revolution. The Mexican mestizo is not exactly raceless, as mestizo is itself a strongly racialized category, but in the mestizo all races have merged and she or he thus represents an ideal or “cosmic” universality—not necessarily yet attained (Vasconcelos 1997 [1925])—which would render reference to race superfluous. Meanwhile, Mexico’s indigenous populations stand in a mutually defining relation to mestizos, above all as representatives of the nation’s roots. In Brazil, the image of the nation has been constructed also around an indigenous past, but above all in relation to the more recent assimilation of blackness and the driving role played by whiteness. This has led to claims about a national racial democracy—much

more explicit than in Colombia or Mexico—alongside a more overt public discourse about race. Thus, the common image of racial mixture and ideas about racial difference have taken on distinctive meanings in each nation, shaped by particular histories.

In each nation, too, geneticists are “doing biology,” but they are not therefore doing race. From their point of view, they are not doing race, because generally they do not see race as a valid biological category; genetic ancestry is not the same as race, in their view. The geneticists we worked with generally dismissed the idea that their work was relevant to our project on “race, genomics, and mestizaje” (for a similar experience, see Hinterberger 2012c:537). From our point of view, it is not the case that “when biologists do race they simply do biology” (comment by M’charek), because biology is not on its own enough to constitute race (Schramm, Skinner, and Rottenburg 2012a; Wade 2002). In effect “to understand how race is performed as a biosocial fact one needs to go beyond just one dimension” (comment by Schramm). But this is precisely what we do when we show how concepts of genetic ancestry, which at one level use a common language of global genetic science, become entangled in specific histories and social contexts. Thus data on genetic ancestry get entwined with ideas about the health of the Mexican mestizo nation, or in proposals to design drug treatments that cater to mestizo populations, or in debates about whether in Brazil a black category “really” exists that could be the legitimate object of affirmative action policies, or in the production of tables of allelic frequencies, differentiated by racialized region, which are a standard tool in forensic identifications in Colombia. We also show how race is performed as a biosocial fact when we show that geneticists routinely use social criteria to define sample populations—social criteria derived from specific histories that have, for example, constituted “indigenous peoples” in Mexico, “black regions” in Colombia, and “black villages” in Brazil, categories that are then used to define samples. Indeed, these social categories are themselves biosocial facts, as they have been constituted not only by demographic, economic, and political processes but also by scientific practices and discourses, dating from colonial times, which classified, differentiated, and diagnosed people. In short, race is indeed a highly flexible concept and a good deal of that flexibility is given by the way race assembles both natural and cultural components (comment by Hartigan).

These entanglements do not mean that geneticists are “criminals” because they talk about African ancestry; nor is it criminal to study the genetic biology of a socially defined population. For the geneticists, the “matters of concern” (Latour 2004) are advances in knowledge for medicine, population history, forensics, and so on. The categories deployed pragmatically in the pursuit of these objectives are subordinated to them. In addition, biogeographical genetic ancestry refers to small sets of very specific markers, not to biogeographical genetic types that could be seen as “races.” But certain “slippages” can result (comment by Lipphardt). We

know that in genetic science, there is caution about these slippages: many geneticists are aware of possible dangers and seek to avoid them (comment by Schramm, but also by Full-wiley who wonders why we spend so much time showing how Latin American geneticists racialize). The HapMap consortium insists that reference samples taken from, say, Yoruba in Ibadan, should not be used to stand in for “Africans” (International HapMap Consortium 2005).

But for social scientists, matters of concern are different and include the possible reifications that are entrained by the categories used by geneticists. Such reifications may occur when a HapMap reference sample is used to identify African genetic ancestry in Mexican mestizo populations (Silva-Zolezzi et al. 2009): the potential for slippage is there, even though the scientists are careful to name the HapMap samples. The potential is more obvious when Pena et al. (2011) plot the genetic ancestry of population samples in a triangle with vertices simply labeled Africa, America, and Europe, even if the vertices actually represent specific reference samples; or when Paredes et al. (2003) divide Colombia into four clearly racialized regions and list allelic frequencies in four separate tables. The potential for slippage is also there when Pena says that genetics cannot define social policy in relation to affirmative action for black Brazilians—because, like a good Latourian modern, for him science is one thing and society is another (Latour 1993)—but then also says that policy makers should take account of the genetic fact that race does not exist biologically (Pena and Bortolini 2004). Like a good Latourian modern, he mixes science and society together again, suggesting that the former should at least guide the latter. The slippage is from genetic ancestry to biosocial racial meanings and from genetic categories to social categories.

For whom do these constitute slippages (comment by Lipphardt)? In one sense, it happens when people do not really know what “African ancestry” means in genetic science, in which case the concept is easily assimilated to categories such as “Africans,” “blacks,” and on on. (For example, the BBC story about Neginho de Beija Flor reported in our article said that “67% of his genes are European”—a clear misunderstanding of the nature of genetic ancestry testing.) Rather than an ignorant “public” versus knowledgeable experts (cf. comment by Gibbon), this is a matter of different forms of knowledge, which overlap in some places, disconnect in others, and each of which has its blind spots. But in another sense, the slippage is immanent in the basic practice of defining sample populations in social terms and then characterizing them in genetic terms: the potential for the conflation of social and genetic identities is always there and may be realized among geneticists too, as when Pena argues that the nonexistence of biological race is relevant information for policy makers considering affirmative action for black Brazilians.

We are very aware that Brazilian geneticists such as Pena are intent on a project of “de-racialization” and challenging some global standards in drug prescription that marginalize

populations of mixed ancestry. It is a matter of judgment how temporary the “initial” racialization in this project will be (comment by Gibbon). But our point is more that the nation figures as a taken-for-granted frame within which some elements of a complex assemblage of racialized meanings and practices remain present during a project of de-racialization that erases other elements (M’charek, Schramm, and Skinner 2014b).

Postcolonial, Comparative, and Transnational Genomics

Several commentators focus on the transnational, postcolonial, and more “worldly” aspects of genomics and the need to place genomic practices in a broad comparative frame (e.g., Gibbon, Hartigan, Hinterberger, Lipphardt, Suárez-Díaz). This is an aspect that, in our focus on the nation, did not receive much attention in this article, but that we deal with in more depth in the book that arises from our project (Wade et al. 2014).

One dimension here is the comparisons and transnational practices of the geneticists. We have examined them mainly in relation to their national contexts, but all of them publish in international, mainly English-language journals and they all use international data sets. Many engage in international collaborations with North American, Asian, and European labs, and their data from their Latin American samples are used internationally. As we mentioned in the article, in relation to INMEGEN, one of their objectives, shared with Latino geneticists based outside the region (Burchard et al. 2005; Bustamante, De La Vega, and Burchard 2011), is to put Latin American populations on the genomic map (Suárez-Kurtz 2011), correcting the perceived bias toward data sets from North American and European populations. There are postcolonial sensibilities at work here, too, related to establishing Latin American genomic science as a global contender and to contesting globalized medical protocols and standards, which may be thought to be unsuitable for Latin American populations (comment by Suárez-Díaz). The role of public and private funding in promoting such endeavors needs further research (comment by Hinterberger).

An associated aim is to unpack categories such as Hispanic or Latin American, showing their internal diversity. A single study can figure in different ways in different contexts. Research on a provincial population in Colombia was used for an argument, aimed at an international audience in medical genomics, about the historical differences in processes of admixture across South America (Bedoya et al. 2006). Within Colombia, the same research spoke to national and indeed local interests in this particular population, reputed to be rather white and economically dynamic—known in the nineteenth century as the Yankees of South America. The way research can face in two directions at once and be part of diverse assemblages helps us to see how race is flexibly constructed in a relational way: the high levels of European ge-

netic ancestry in this population, combined with high levels of Amerindian ancestry in the mtDNA, meant different things in a national Colombian context (it said something about the history and identity of this province) and a transnational context (it said Hispanics vary widely in terms of genetic ancestry).

A second dimension is the comparisons we want to make as social scientists. Despite a long-standing tendency to see Latin America as something of an exception, the absent presence of race there and in Latin American genomics bears plenty of comparison with the United States, Canada, and Europe (Hartigan 2013a; Hinterberger 2012b; M'charek, Schramm, and Skinner 2014a, 2014b; Nash 2014, forthcoming; Schramm, Skinner, and Rottenburg 2012b; Wade 2007; Wailoo, Nelson, and Lee 2012). This is partly because of a global post-World War II trend toward antiracism, in which race is either marginalized in the public sphere as a potentially racist concept or is retained as a necessary term with which to measure and then combat racial inequality, under a regime of "inclusion" (Epstein 2007). The partial displacement of race by color blindness, race-evasive discourses, raceless racism, and cultural fundamentalism, alongside the continued presence of racism, racial inequality, and racialized practices—in a word, the absent presence of race—is thus part of a very broad trend (Bonilla-Silva 2003; Frankenberg 1993; Goldberg 2008; Hartigan 2010; Stolcke 1995). Latin American genomics, predictably, claims distinctiveness on the basis of mixture—as have ideas about "Latin American race relations" in the past. Latin America teaches us that the presence of high levels of mixture and the pervasive recognition of mixed identities is no bar to continued racial inequality, racism, and racialized difference. The strong emphasis on mixture in Latin American genomics on the one hand reinforces the ideal view, long cherished in the region, in which race is irrelevant but, on the other, provides a biologizing idiom as an additional tool—which may be deployed or not—with which to imagine racial difference.

—Peter Wade, Vivette García Deister, Michael Kent, María Fernanda Olarte Sierra, and Adriana Díaz del Castillo Hernández

References Cited

- Abadía Morales, Guillermo. 1983. *Compendio general del folclore colombiano*. Bogotá: Fondo de Promoción de la Cultura del Banco Popular.
- Abu El-Haj, Nadia. 2007. The genetic reinscription of race. *Annual Review of Anthropology* 36(1):283–300.
- Alonso, Ana María. 1994. The politics of space, time and substance: state formation, nationalism, and ethnicity. *Annual Review of Anthropology* 23: 379–405.
- Alves-Silva, Juliana, Magda da Silva Santos, Pedro E. M. Guimarães, Alessandro C. S. Ferreira, Hans-Jürgen Bandelt, Sérgio D. J. Pena, and Vania Ferreira Prado. 2000. The ancestry of Brazilian mtDNA lineages. *American Journal of Human Genetics* 67(2):444–461.
- Appelbaum, Nancy P., Anne S. Macpherson, and Karin A. Roseblatt, eds. 2003. *Race and nation in modern Latin America*. Chapel Hill: University of North Carolina Press.
- Balibar, Etienne. 1991a. Is there a "neo-racism"? In *Race, nation and class: ambiguous identities*. Etienne Balibar and Immanuel Wallerstein, eds. Pp. 17–28. London: Verso.
- . 1991b. Racism and nationalism. In *Race, nation and class: ambiguous identities*. Etienne Balibar and Immanuel Wallerstein, eds. Pp. 37–67. London: Verso.
- Barkan, E. 1992. *The retreat of scientific racism*. Cambridge: Cambridge University Press. [ES-D]
- Barragán, Carlos Andrés. 2011. Molecular vignettes of the Colombian nation: the place(s) of race and ethnicity in networks of biocapital. In *Racial identities, genetic ancestry, and health in South America: Argentina, Brazil, Colombia, and Uruguay*. Sahra Gibbon, Ricardo Ventura Santos, and Mónica Sans, eds. Pp. 41–68. New York: Palgrave Macmillan.
- Basave Benítez, Agustín Francisco. 1992. *México mestizo: análisis del nacionalismo mexicano en torno a la mestizofilia de Andrés Molina Enríquez*. México DF: Fondo de Cultura Económica.
- Bedoya, Gabriel, Patricia Montoya, Jenny García, Ivan Soto, Stephane Bourgeois, Luis Carvajal, Damian Labuda, et al. 2006. Admixture dynamics in Hispanics: a shift in the nuclear genetic ancestry of a South American population isolate. *Proceedings of the National Academy of Sciences of the United States of America* 103(19):7234–7239.
- Benjamin, Ruha. 2009. A lab of their own: genomic sovereignty as postcolonial science policy. *Policy and Society* 28(4):341–355.
- Biehl, J., and A. Petryna. 2011. Bodies of rights and therapeutic markets. *Social Research: An International Quarterly* 78(2):359–386. [SG]
- Birchal, Telma S., and Sérgio D. J. Pena. 2011. The biological nonexistence versus the social existence of human races: can science instruct the social ethos? In *Racial identities, genetic ancestry, and health in South America: Argentina, Brazil, Colombia, and Uruguay*. Sahra Gibbon, Ricardo Ventura Santos, and Mónica Sans, eds. Pp. 69–99. New York: Palgrave Macmillan.
- Bliss, Catherine. 2009. Genome sampling and the biopolitics of race. In *A Foucault for the 21st century: governmentality, biopolitics and discipline in the new millennium*. Samuel Binkley and Jorge Capetillo, eds. Pp. 322–339. Boston: Cambridge Scholars.
- . 2011. Racial taxonomy in genomics. *Social Science and Medicine* 73(7): 1019–1027.
- . 2012. *Race decoded: the genomic fight for social justice*. Stanford, CA: Stanford University Press.
- Bonilla-Silva, Eduardo. 2003. *Racism without racists: color-blind racism and the persistence of racial inequality in the United States*. Lanham, MD: Rowman & Littlefield.
- Bortolini, Maria Cátira, Wilson Araújo Da Silva, Dinorah Castro De Guerra, Gabriela Remonato, Rosana Mirandola, Mara H. Hutz, Tania A. Weimer, Maria Cristina B. O. Silva, Marco Antonio Zago, and Francisco Mauro Salzano. 1999. African-derived South American populations: A history of symmetrical and asymmetrical matings according to sex revealed by bi- and uni-parental genetic markers. *American Journal of Human Biology* 11(4): 551–563.
- Bortolini, Maria Cátira, Tania De Azevedo Weimer, Francisco M. Salzano, Sidia Maria Callegari-Jacques, Horacio Schneider, Zulay Layrisse, and Sandro L. Bonatto. 1995. Evolutionary relationships between black South American and African populations. *Human Biology* 67:547–559.
- Bravo, M. L., C. Y. Valenzuela, and O. M. Arcos-Burgos. 1996. Polymorphisms and phyletic relationships of the Paisa community from Antioquia (Colombia). *Gene Geography* 10(1):11–17.
- Builes, J. J., N. Alzate, C. Espinal, D. Aguirre, L. Gusmão, and M. L. Bravo. 2008. Analysis of 16 Y-chromosomal STRs in an African descent sample population of Chocó (Colombia). *Forensic Science International: Genetics Supplement Series* 1(1):184–186.
- Builes, J. J., M. L. J. Bravo, A. Montoya, L. Caraballo, B. Martínez, and M. A. Moreno. 2004. Population genetics of eight new Y-chromosomal STR haplotypes in three Colombian populations: Antioquia, Chocó and Cartagena. *International Congress Series* 1261(0):310–312.
- Burchard, Esteban Gonzalez, Luisa N. Borrell, Shweta Choudhry, Mariam Naqvi, Hui-Ju Tsai, Jose R. Rodriguez-Santana, Rocio Chapela et al. 2005. Latino populations: a unique opportunity for the study of race, genetics, and social environment in epidemiological research. *American Journal of Public Health* 95(12):2161–2168.
- Burchard, Esteban Gonzalez, Elad Ziv, Natasha Coyle, Scarlett Lin Gomez, Hua Tang, Andrew J. Karter, Joanna L. Mountain, Eliseo J. Pérez-Stable, Dean Sheppard, and Neil Risch. 2003. The importance of race and ethnic background in biomedical research and clinical practice. *New England Journal of Medicine* 348(12):1170–1175.

- Bustamante, Carlos D., Francisco M. De La Vega, and Esteban G. Burchard. 2011. Genomics for the world. *Nature* 475(7355):163–165.
- Carroll, Patrick. 2006. *Science, culture, and modern state formation*. Berkeley: University of California Press. [ES-D]
- Carvajal-Carmona, Luis G., Iván D. Soto, Nicolás Pineda, D. Ortiz-Barrientos, C. Duque, J. Ospina-Duque, M. McCarthy et al. 2000. Strong Amerind/white sex bias and a possible Sephardic contribution among the founders of a population in Northwest Colombia. *American Journal of Human Genetics* 67(5):1287–1295.
- Carvalho, José Jorge de. 2005. Usos e abusos da antropologia em um contexto de tensão racial: o caso das cotas para negros na UnB. *Horizontes Antropológicos* 11(23):237–246.
- Centro de Investigación y Educación Popular. 1998. *Colombia, país de regiones*. 4 vols. Bogotá: Cinep, Colciencias.
- Cerqueira, C. C. S., C. E. G. Amorim, F. M. Salzano, and M. C. Bortolini. 2011. Human pigmentation genes: forensic perspectives, general aspects and evolution. In *Forensic science*. N. Yacine and R. Fellag, eds. Pp. 85–106. New York: Nova Science. [MCB/CCSC]
- Cooper, Richard S., Jay S. Kaufman, and Ryk Ward. 2003. Race and genomics. *New England Journal of Medicine* 348(12):1166–1170.
- De la Cadena, Marisol. 2000. *Indigenous mestizos: the politics of race and culture in Cuzco, 1919–1991*. Durham, NC: Duke University Press.
- Dobzhansky, T. 1951. Race and humanity. *Science* 113:264–266. [ES-D]
- Dupré, J. 2004. Understanding contemporary genomics. *Perspectives on Science* 12:320–338. [ES-D]
- Duster, Troy. 2003. *Backdoor to eugenics*. 2nd ed. London: Routledge.
- Edmonds, Alexander. 2011. *Pretty modern: beauty, sex and plastic surgery in Brazil*. Durham, NC: Duke University Press. [SG]
- Elhaik, E., T. Tatarinova, D. Chebotarev, I. S. Piras, C. M. Calò, A. De Montis, M. Atzori, et al. 2014. Geographic population structure of worldwide human populations infers biogeographical origin. *Nature Communications* 5. <http://dx.doi.org/10.1038/ncomms4513>. Published online April 29, 2014. [MCB/CCSC]
- Epstein, Steven. 2007. *Inclusion: the politics of difference in medical research*. Chicago: University of Chicago Press.
- Fortun, Michael. 2008. *Promising genomics: Iceland and deCODE Genetics in a world of speculation*. Berkeley: University of California Press.
- Foucault, Michel. 1979. *The history of sexuality*, vol. 1, *An introduction*. Robert Hurley, trans. London: Allen Lane.
- Franco, M. Helena, Tania A. Weimer, and Francisco M. Salzano. 1982. Blood polymorphisms and racial admixture in two Brazilian populations. *American Journal of Physical Anthropology* 58(2):127–132.
- Frankenberg, Ruth. 1993. *White women, race matters: the social construction of whiteness*. London: Routledge.
- Freyre, Gilberto. 1946 (1933). *Casa-grande & senzala: formação da família brasileira sob o regime de economia patriarcal*. Rio de Janeiro: José Olympio.
- Fry, Peter, Yvonne Maggie, Marcos Chor Maio, Simone Monteiro, and Ricardo Ventura Santos, eds. 2007. *Divisões perigosas: políticas raciais no Brasil contemporâneo*. Rio de Janeiro: Civilização Brasileira.
- Fujimura, Joan H., and Ramya Rajagopalan. 2011. Different differences: the use of “genetic ancestry” versus race in biomedical human genetic research. *Social Studies of Science* 41(1):5–30.
- Fullwiley, Duana. 2007a. The molecularization of race: institutionalizing human difference in pharmacogenetics practice. *Science as Culture* 16(1):1–30.
- . 2007b. Race and genetics: attempts to define the relationship. *BioSocieties* 2(2):221–237.
- . 2008. The biological construction of race: “admixture” technology and the new genetic medicine. *Social Studies of Science* 38(5):695–735.
- Galanter, Joshua Mark, Juan Carlos Fernandez-Lopez, Christopher R. Gignoux, Jill Barnholtz-Sloan, Ceres Fernandez-Rozadilla, Marc Via, Alfredo Hidalgo-Miranda, et al. 2012. Development of a panel of genome-wide ancestry informative markers to study admixture throughout the Americas. *PLoS Genetics* 8 (3):e1002554.
- Gannett, L. 2001. Racism and the human genome diversity research: the ethical limits of “population thinking.” *Philosophy of Science* 68C:479–492. [ES-D]
- . 2004. The biological reification of race. *British Journal for the Philosophy of Science* 55:323–345. [ES-D]
- Gannett, L., and J. R. Griesemer. 2004. The ABO blood groups: mapping the history and geography of genes in Homo sapiens. In *Classical genetic research and its legacy: the mapping cultures of 20th century genetics*. H.-J. Rheinberger and J. P. Gaudillière, eds. Pp. 57–87. London: Routledge. [ES-D]
- García Deister, Vivette. 2011. Mestizaje en el laboratorio, una toma instantánea. In *Genes (&) mestizos: genómica y raza en la biomedicina mexicana*. Carlos López Beltrán, ed. Pp. 143–154. Mexico, DF: Ficticia Editorial.
- . 2014. Laboratory life of the Mexican mestizo. In *Mestizo genomics: race mixture, nation, and science in Latin America*. Peter Wade, Carlos López Beltrán, Eduardo Restrepo, and Ricardo Ventura Santos, eds. Pp. 161–182. Durham, NC: Duke University Press. Forthcoming.
- Gibbon, S. 2013. Ancestry, temporality and potentiality: engaging cancer genetics in Southern Brazil. *Current Anthropology* 54(S7):S107–S117. [SG]
- Gilroy, Paul. 1987. *“There ain’t no black in the Union Jack”: the cultural politics of race and nation*. London: Hutchinson.
- Gissis, S. B. 2008. When is “race” a race? 1946–2003. *Studies in the History and Philosophy of Biological and Biomedical Sciences* 39:437–450. [ES-D]
- Goldberg, David Theo. 2008. *The threat of race: reflections on racial neoliberalism*. Malden, MA: Wiley-Blackwell.
- Gómez Gutiérrez, Alberto. 1991. Entre los embera-epena. *Boletín Expedición Humana* 1992 10:8.
- Gómez Gutiérrez, Alberto, Ignacio Briceño Balcázar, and Jaime Eduardo Bernal Villegas. 2011. *Patrones de identidad genética en poblaciones contemporáneas y precolombinas*. Fundación Alejandro Ángel Escobar. http://www.faae.org.co/html/resena/2011-identidad-genetica.html?keepThis=true&TB_iframe=true&height=380&width=628.
- Gotkowitz, Laura. 2011a. Introduction: racisms of the present and the past in Latin America. In *Histories of race and racism: the Andes and Mesoamerica from colonial times to the present*. Laura Gotkowitz, ed. Pp. 1–53. Durham, NC: Duke University Press.
- . 2011b. *Histories of race and racism: the Andes and Mesoamerica from colonial times to the present*. Durham, NC: Duke University Press.
- Graham, Richard, ed. 1990. *The idea of race in Latin America, 1870–1940*. Austin: University of Texas Press.
- Guerrero Mothelet, Verónica, and Stephan Herrera. 2005. Mexico launches bold genome project. *Nature Biotechnology* 23(9):1030.
- Guimarães, Antonio Sérgio. 1999. *Racismo e anti-racismo no Brasil*. São Paulo: Editora 34.
- Gutiérrez de Pineda, Virginia. 1975. *Familia y cultura en Colombia*. Bogotá: Colcultura.
- Hale, Charles R. 2006. *Más que un indio (More than an Indian): racial ambivalence and neoliberal multiculturalism in Guatemala*. Santa Fe, NM: School of American Research Press.
- Hall, Stuart. 1993. Cultural identity and diaspora. In *Colonial discourse and post-colonial theory: a reader*. Patrick Williams and Laura Chrisman, eds. Pp. 392–401. London: Harvester Wheatsheaf. [AH]
- Haraway, Donna. 1997. *Modest_Witness@Second_Millennium: Female-Man@_Meets_Oncomouse™*. London: Routledge.
- Hartigan, John. 2010. *Race in the 21st century: ethnographic approaches*. Oxford: Oxford University Press.
- Hartigan, John. 2013a. *Anthropology of race: genes, biology, and culture*. Santa Fe, NM: School for Advanced Research Press.
- . 2013b. Mexican genomics and the roots of racial thinking. *Cultural Anthropology* 28(5):372–395. [JH]
- . 2013c. Translating “race” and “raza” between the United States and Mexico. *North American Dialogue* 16(1):29–41.
- Heath, Deborah, Rayna Rapp, and Karen-Sue Taussig. 2007. Genetic citizenship. In *A companion to the anthropology of politics*. David Nugent and Joan Vincent, eds. Pp. 152–167. New York: Blackwell.
- Heinemann, Torsten, and Thomas Lemke. 2014. Biological citizenship reconsidered: the use of DNA analysis by immigration authorities in Germany. *Science, Technology and Human Values* 39(4):488–510.
- Hinterberger, Amy. 2012a. Categorisation, census and multiculturalism: molecular politics and the material of nation. In *Genetics and the unsettled past: the collision between DNA, race, and history*. Keith Wailoo, Alondra Nelson, and Catherine Lee, eds. Pp. 204–224. New Brunswick, NJ: Rutgers University Press. [AH]
- . 2012b. Investing in life, investing in difference: nations, populations and genomes. *Theory, Culture and Society* 29(3):72–93.
- . 2012c. Publics and populations: the politics of ancestry and exchange in genome science. *Science as Culture* 21(4):528–549.
- Htun, Mala. 2004. From “racial democracy” to affirmative action: changing state policy on race in Brazil. *Latin American Research Review* 39(1):60–89.
- International HapMap Consortium. 2005. A haplotype map of the human genome. *Nature* 437(7063):1299–1320.
- Jablonski, N. G., and G. Chaplin. 2010. Human skin pigmentation as an adaptation to UV radiation. *Proceedings of the National Academy of Sciences USA* 107:8962–8968. doi:10.1073/pnas.0914628107. [MCB/CCSC]

- Jiménez López, Miguel, Luis López de Mesa, Calixto Torres Umaña, Jorge Bejarano, Simón Araújo, Lucas Caballero, and Rafael Escallón. 1920. *Los problemas de la raza en Colombia*. Bogotá: El Espectador.
- Jimenez-Sanchez, Gerardo. 2003. Developing a platform for genomic medicine in Mexico. *Science* 300:295–296.
- Jimenez-Sanchez, Gerardo, Irma Silva-Zolezzi, Alfredo Hidalgo, and Santiago March. 2008. Genomic medicine in Mexico: initial steps and the road ahead. *Genome Research* 18(8):1191–1198.
- Kahn, Jonathan. 2013. *Race in a bottle: the story of BiDiL and racialized medicine in a post-genomic age*. New York: Columbia University Press.
- Kevles, D. J. 1995. *In the name of eugenics: genetics and the uses of human heredity*. Cambridge, MA: Harvard University Press. [ES-D]
- Koenig, Barbara A., Sandra Soo-Jin Lee, and Sarah S. Richardson, eds. 2008. *Revisiting race in a genomic age*. New Brunswick, NJ: Rutgers University Press.
- Kohli-Laven, Nina. 2012. French families, paper facts: genetics, nation, and explanation. In *Genetics and the unsettled past: the collision of DNA, race, and history*. Keith Wailoo, Alondra Nelson, and Catherine Lee, eds. Pp. 183–203. New Brunswick, NJ: Rutgers University Press.
- Krimsky, Sheldon, and Kathleen Sloan. 2011. *Race and the genetic revolution: science, myth, and culture*. New York: Columbia University Press.
- Latour, Bruno. 1993. *We have never been modern*. Catherine Porter, trans. London: Harvester Wheatsheaf.
- . 2004. Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry* 30(2):225–248.
- Law, John. 2004. *After method: mess in social science research*. London: Routledge. [AM, KS]
- Law, John, and Vicky Singleton. 2005. Object lessons. *Organization* 12:331–335. [AM]
- Lewontin, Richard C. 1972. The apportionment of human diversity. *Evolutionary Biology* 6:381–398. [MCB/CCSC]
- Lindee, Susan, and Ricardo Ventura Santos. 2012. The biological anthropology of living human populations: world histories, national styles and international networks. *Current Anthropology* 53(S5):S3–S16.
- Lock, Margaret. 2013. The epigenome and nature/nurture reunification: a challenge for anthropology. *Medical Anthropology* 32(3):291–308. [SG]
- Lomnitz-Adler, Claudio. 1992. *Exits from the labyrinth: culture and ideology in the Mexican national space*. Berkeley: University of California Press.
- López Beltrán, Carlos. 2011. Introducción. In *Genes (&) mestizos: genómica y raza en la biomedicina mexicana*. Carlos López Beltrán, ed. Pp. 9–28. Mexico, DF: Ficticia Editorial.
- López Beltrán, Carlos, Vivette García Deister, and Mariana Rios Sandoval. 2014. Negotiating the Mexican mestizo: on the possibility of a national genomics. In *Genomics, race mixture and nation in Latin America*. Peter Wade, Carlos López Beltrán, Eduardo Restrepo, and Ricardo Ventura Santos, eds. Pp. 85–106. Durham, NC: Duke University Press. Forthcoming.
- López Beltrán, Carlos, and Francisco Vergara Silva. 2011. Genómica Nacional: el INMEGEN y el Genoma del mestizo. In *Genes (&) mestizos: genómica y raza en la biomedicina mexicana*. Carlos López Beltrán, ed. Pp. 99–142. Mexico, DF: Ficticia Editorial.
- Marks, Jonathan. 2003. *What it means to be 98% chimpanzee: apes, people, and their genes*. Berkeley: University of California Press.
- . 2013. The nature/culture of genetic facts. *Annual Review of Anthropology* 42(1):247–267.
- Marrero, Andrea Rita, Claudio Bravi, Steven Stuart, Jeffrey C. Long, Fábio Pereira das Neves Leite, Trícia Kommers, Claudia M. B. Carvalho, et al. 2007. Pre- and post-Columbian gene and cultural continuity: the case of the gaucho from Southern Brazil. *Human Heredity* 64(3):160–171.
- McEvoy, B., S. Beleza, and M. D. Shriver. 2006. The genetic architecture of normal variation in human pigmentation: an evolutionary perspective and model. *Human Molecular Genetics* 2:R176–R181. [MCB/CCSC]
- M'charek, Amade. 2005. *The Human Genome Diversity Project: an ethnography of scientific practice*. Cambridge: Cambridge University Press.
- . 2013. Beyond fact or fiction: on the materiality of race in practice. *Cultural Anthropology* 28(3):420–442. [AM]
- . 2014. Race, time and folded objects: the HeLa error. *Theory, Culture and Society*. <http://dx.doi.org/10.1177/0263276413501704>. Published online January 27, 2014. [AM]
- M'charek, Amade, Katharina Schramm, and David Skinner. 2014a. Technologies of belonging: on the absence presence of race in Europe. (Introduction to Special Issue.) *Science, Technology and Human Values* 39(4):459–467. [AM]
- M'charek, Amade, Katharina Schramm, and David Skinner. 2014b. Topologies of race: doing territory, population and identity in Europe. *Science, Technology and Human Values* 39(4):468–487. [AM]
- Meertens, Donny. 2009. Discriminación racial, desplazamiento y género en las sentencias de la Corte Constitucional: el racismo cotidiano en el banquillo. *Universitas Humanística* 66:83–106.
- Montoya, Michael J. 2011. *Making the Mexican diabetic: race, science, and the genetics of inequality*. Berkeley: University of California Press.
- Mosse, George. 1985. *Nationalism and sexuality: respectability and abnormal sexuality in modern Europe*. New York: Fertig.
- Nash, Catherine. 2012. Genome geographies: mapping national ancestry and diversity in human population genetics. *Transactions of the Institute of British Geographers* 38(2):193–206.
- . 2014. *Geographies of relatedness: anti-racist science and the making of difference*. Pp. 55–84. Minneapolis: University of Minnesota Press. Forthcoming.
- Nobles, Melissa. 2000. *Shades of citizenship: race and the census in modern politics*. Stanford, CA: Stanford University Press.
- Norton, H. L., R. A. Kittles, E. Parra, P. McKeigue, X. Mao, K. Cheng, V. A. Canfield, D. G. Bradley, B. McEvoy, and M. D. Shriver. 2007. Genetic evidence for the convergent evolution of light skin in Europeans and East Asians. *Molecular Biology and Evolution* 24(3):710–722. [MCB/CCSC]
- Ocampo López, Javier. 1988. *Las fiestas y el folclor en Colombia*. Bogotá: El Ancora Editores.
- Olarte Sierra, María Fernanda, and Adriana Díaz del Castillo H. 2013. “We are all the same, we all are mestizos”: imagined populations and nations in genetic research in Colombia. *Science as Culture* 23(2):226–252. doi:10.1080/09505431.2013.838214.
- Pálsson, Gisli. 2007. *Anthropology and the new genetics*. Cambridge: Cambridge University Press.
- Pálsson, Gisli, and Paul Rabinow. 1999. Iceland: the case of a national human genome project. *Anthropology Today* 15(5):14–18.
- Paredes, Manuel, Aida Galindo, Margarita Bernal, Sandra Avila, Diana Andrade, Carlos Vergara, Magner Rincón, et al. 2003. Analysis of the CODIS autosomal STR loci in four main Colombian regions. *Forensic Science International* 137(1):67–73.
- Parra, Flavia C., Roberto C. Amado, José R. Lambertucci, Jorge Rocha, Carlos M. Antunes, and Sérgio D. J. Pena. 2003. Color and genomic ancestry in Brazilians. *Proceedings of the National Academy of Sciences of the United States of America* 100(1):177–182.
- Pena, Sérgio D. J. 2005. Razões para banir o conceito de raça da medicina brasileira. *História, Ciências, Saúde—Manguinhos* 12(2):321–346.
- . 2008. *Humanidade sem raças?* São Paulo: Publifolha.
- Pena, Sérgio D. J., L. Bastos-Rodrigues, J. R. Pimenta, and S. P. Bydlowski. 2009. DNA tests probe the genomic ancestry of Brazilians. *Brazilian Journal of Medical and Biological Research* 42(10):870–876.
- Pena, Sérgio D. J., and Maria Cátira Bortolini. 2004. Pode a genética definir quem deve se beneficiar das cotas universitárias e demais ações afirmativas? *Estudos Avanzados* 18(50):31–50.
- Pena, Sérgio D. J., Denise R. Carvalho-Silva, Juliana Alves-Silva, Vânia F. Prado, and Fabrício R. Santos. 2000. Retrato molecular do Brasil. *Ciência Hoje* 159:16–25.
- Pena, Sérgio D. J., Giuliano Di Pietro, Mateus Fuchshuber-Moraes, Julia Pasqualini Genro, Mara H. Hutz, Fernanda de Souza Gomes Kehdy, Fabiana Kohlrausch, et al. 2011. The genomic ancestry of individuals from different geographical regions of Brazil is more uniform than expected. *PLoS ONE* 6 (2):e17063.
- Pimenta, Juliana R., Luciana W. Zuccherato, Adriana A. Debes, Luciana Maselli, Rosângela P. Soares, Rodrigo S. Moura-Neto, Jorge Rocha, Sergio P. Bydlowski, and Sérgio D. J. Pena. 2006. Color and genomic ancestry in Brazilians: a study with forensic microsatellites. *Human Heredity* 62(4):190–195.
- Povinelli, Elizabeth A. 2002. *The cunning of recognition: indigenous alterities and the making of Australian multiculturalism*. Durham, NC: Duke University Press.
- Prado, Paulo. 1931. *Retrato do Brasil: ensaio sobre a tristeza brasileira*. Rio de Janeiro: F. Briguiet.
- Pyenson, L. 2002. An end to national science: the meaning and extension of local knowledge. *History of Science* xi:1–40. [ES-D]
- Rabinow, Paul. 1999. *French DNA: trouble in purgatory*. Chicago: University of Chicago Press.
- Reardon, Jenny. 2005. *Race to the finish: identity and governance in an age of genomics*. Princeton, NJ: Princeton University Press.
- Reardon, Jenny, and Kim TallBear. 2012. “Your DNA is our history”: genomics,

- anthropology, and the construction of whiteness as property. *Current Anthropology* 53(S5):S233–S245.
- Restrepo, Eduardo. 2007. Imágenes del “negro” y nociones de raza en Colombia a principios del siglo XX. *Revista de Estudios Sociales* 27:46–61.
- . 2012. *Intervenciones en teoría cultural*. Popayán: Editorial Universidad del Cauca.
- Restrepo, Eduardo, Ernesto Schwartz-Marín, and Roosbelinda Cárdenas. 2014. Nation and difference in the genetic imagination of Colombia. In *Genomics, race mixture and nation in Latin America*. Peter Wade, Carlos López Beltrán, Eduardo Restrepo, and Ricardo Ventura Santos, eds. Pp. 55–84. Durham, NC: Duke University Press. Forthcoming.
- Roberts, Dorothy. 2010. Race and the new biocitizen. In *What's the use of race? Modern governance and the biology of difference*. Ian Whitmarsh and David S. Jones, eds. Pp. 259–276. Cambridge, MA: MIT Press.
- . 2011. *Fatal invention: how science, politics, and big business re-create race in the twenty-first century*. New York: New Press.
- Roberts, E. 2010. *God's laboratory: assisted reproduction in the Andes*. Berkeley: University of California Press. [SG]
- Rojas, Winston, María Victoria Parra, Omer Campo, María Antonieta Caro, Juan Guillermo Lopera, William Arias, Constanza Duque, et al. 2010. Genetic make up and structure of Colombian populations by means of uniparental and biparental DNA markers. *American Journal of Physical Anthropology* 143(1):13–20.
- Rose, Nikolas. 2007. *The politics of life itself: biomedicine, power and subjectivity in the twenty-first century*. Princeton, NJ: Princeton University Press.
- Rose, Nikolas, and Carlos Novas. 2005. Biological citizenship. In *Global assemblages: technology, politics, and ethics as anthropological problems*. Aihwa Ong and Stephen J. Collier, eds. Pp. 439–463. Oxford: Blackwell.
- Rosenberg, N. A. 2011. A population-genetic perspective on the similarities and differences among worldwide human populations. *Human Biology* 83(6):659–684. doi:10.3378/027.083.0601. [MCB/CCSC]
- Samper, José María. 1861. *Ensayo sobre las revoluciones políticas y la condición social de las repúblicas colombianas (hispano-americanas): con un apéndice sobre la orografía y la población de la Confederación Granadina*. Paris: Thunot y Cia.
- Santos, Ricardo Ventura, Peter H. Fry, Simone Monteiro, Marcos Chor Maio, José Carlos Rodrigues, Luciana Bastos-Rodrigues, and Sérgio D. J. Pena. 2009. Color, race and genomic ancestry in Brazil: dialogues between anthropology and genetics. *Current Anthropology* 50(6):787–819.
- Santos, Ricardo Ventura, Michael Kent, and Verlan Valle Gaspar Neto. 2014. From “degeneration” to “meeting point”: historical views on race, mixture and the biological diversity of the Brazilian population. In *Genomics, race mixture and nation in Latin America*. Peter Wade, Carlos López Beltrán, Eduardo Restrepo, and Ricardo Ventura Santos, eds. Pp. 33–54. Durham, NC: Duke University Press. Forthcoming.
- Santos, Ricardo Ventura, Glaucia Oliveira da Silva, and Sahra Gibbon. 2014. Pharmacogenomics, human genetic diversity and the incorporation and rejection of color/race in Brazil. *Biosocieties*. <http://dx.doi.org/10.1057/biosoc.2014.21>. [SG]
- Schramm, Katharina, David Skinner, and Richard Rottenburg. 2012a. Introduction. Ideas in motion: making sense of identity. In *Identity politics and the new genetics: re/creating categories of difference and belonging*. Katharina Schramm, David Skinner, and Richard Rottenburg, eds. Pp. 1–29. Oxford: Berghahn.
- , eds. 2012b. *Identity politics and the new genetics: re/creating categories of difference and belonging*. Oxford: Berghahn. [KS]
- Schwartz-Marín, Ernesto, and Irma Silva-Zolezzi. 2010. “The Map of the Mexican's Genome”: overlapping national identity, and population genomics. *Identity in the Information Society* 3:489–514.
- Séguin, Béatrice, Billie-Jo Hardy, Peter A. Singer, and Abdallah S. Daar. 2008. Genomics, public health and developing countries: the case of the Mexican National Institute of Genomic Medicine (INMEGEN). *Nature Reviews Genetics* 9(suppl.):S5–S9.
- Seigel, Micol. 2009. *Uneven encounters: making race and nation in Brazil and the United States*. Durham, NC: Duke University Press.
- Silva-Zolezzi, Irma, Alfredo Hidalgo-Miranda, Jesus Estrada-Gil, Juan Carlos Fernandez-Lopez, Laura Uribe-Figueroa, Alejandra Contreras, Eros Balam-Ortiz, et al. 2009. Analysis of genomic diversity in Mexican Mestizo populations to develop genomic medicine in Mexico. *Proceedings of the National Academy of Sciences* 106(21):8611–8616.
- Sommer, Marianne. 2012. “It's a living history, told by the real survivors of the times—DNA”: anthropological genetics in the tradition of biology as applied history. In *Genetics and the unsettled past: the collision of DNA, race, and history*. Keith Wailoo, Alondra Nelson, and Catherine Lee, eds. Pp. 225–246. New Brunswick, NJ: Rutgers University Press.
- Stepan, Nancy Leys. 1991. *“The hour of eugenics”: race, gender and nation in Latin America*. Ithaca, NY: Cornell University Press.
- Stolcke, Verena. 1995. Talking culture: new boundaries, new rhetorics of exclusion in Europe. *Current Anthropology* 36(1):1–23.
- Stoler, Ann Laura. 1995. *Race and the education of desire: Foucault's “History of Sexuality” and the colonial order of things*. Durham, NC: Duke University Press.
- Suarez-Kurtz, Guilherme. 2005. Pharmacogenomics in admixed populations. *Trends in Pharmacological Sciences* 26(4):196–201.
- . 2011. Pharmacogenetics in the Brazilian population. In *Racial identities, genetic ancestry, and health in South America: Argentina, Brazil, Colombia, and Uruguay*. Sahra Gibbon, Ricardo Ventura Santos and Mónica Sans, eds. Pp. 121–135. New York: Palgrave Macmillan.
- Taguieff, Pierre-André. 1990. The new cultural racism in France. *Telos* 83: 109–122.
- Taussig, Karen-Sue. 2009. *Ordinary genomes: science, citizenship, and genetic identities*. Durham, NC: Duke University Press.
- Van Cott, Donna Lee. 2000. *The friendly liquidation of the past: the politics of diversity in Latin America*. Pittsburgh: University of Pittsburgh Press.
- Vasconcelos, José. 1997 (1925). *The cosmic race: a bilingual edition*. Didier T. Jaén, trans. Baltimore: Johns Hopkins University Press.
- Ventura-Santos, R. 2002. Indigenous peoples, postcolonial contexts and genomic research in the late 20th century: a view from Amazonia. *Critique of Anthropology* 22(1):81–104. [ES-D]
- Vianna, Hermano. 1999. *The mystery of samba: popular music and national identity in Brazil*. John Charles Chasteen, trans. Chapel Hill: University of North Carolina Press.
- Wade, Peter. 1993. *Blackness and race mixture: the dynamics of racial identity in Colombia*. Baltimore: Johns Hopkins University Press.
- . 2000. *Music, race and nation: música tropical in Colombia*. Chicago: University of Chicago Press.
- . 2001. Racial identity and nationalism: a theoretical view from Latin America. *Ethnic and Racial Studies* 24(5):845–865.
- . 2002. *Race, nature and culture: an anthropological perspective*. London: Pluto.
- , ed. 2007. *Race, ethnicity and nation: perspectives from kinship and genetics*. Oxford: Berghahn.
- . 2009a. Defining blackness in Colombia. *Journal de la Société des Américanistes* 95(1):165–184.
- . 2009b. *Race and sex in Latin America*. London: Pluto.
- . 2010. *Race and ethnicity in Latin America*. 2nd ed. London: Pluto.
- . 2013. Blackness, indigeneity, multiculturalism and genomics in Brazil, Colombia and Mexico. *Journal of Latin American Studies* 45(2):205–233.
- Wade, Peter, Carlos López Beltrán, Eduardo Restrepo, and Ricardo Ventura Santos, eds. 2014. *Mestizo genomics: race mixture, nation, and science in Latin America*. Durham, NC: Duke University Press.
- Wailoo, Keith, Alondra Nelson, and Catherine Lee, eds. 2012. *Genetics and the unsettled past: the collision of DNA, race, and history*. New Brunswick, NJ: Rutgers University Press.
- Wang, Sijia, Nicolas Ray, Winston Rojas, María V. Parra, Gabriel Bedoya, Carla Gallo, Giovanni Poletti, et al. 2008. Geographic patterns of genome admixture in Latin American mestizos. *PLoS Genetics* 4(3):e1000037.
- Whitmarsh, Ian, and David S. Jones, eds. 2010. *What's the use of race? Modern governance and the biology of difference*. Cambridge, MA: MIT Press.
- Williams, W. A. 2009 (1959 1st ed.). *The tragedy of American diplomacy*. New York: Norton. [ES-D]
- Winant, Howard. 2002. *The world is a ghetto: race and democracy since World War II*. New York: Basic.
- Yashar, Deborah. 2005. *Contesting citizenship in Latin America: the rise of indigenous movements and the postliberal challenge*. Cambridge: Cambridge University Press.
- Yunis Turbay, Emilio. 2009. *Por qué somos así? Qué pasó en Colombia? Análisis del mestizaje*. 2nd ed. Bogotá: Editorial Temis.
- Zambrano, Fabio, and Olivier Bernard. 1993. *Ciudad y territorio: el proceso del poblamiento en Colombia*. Bogotá: Universidad Nacional de Colombia.