



Rethinking the 'Prejudice of Mark': Concepts of Race, Ancestry, and Genetics among Brazilian DNA Test-Takers¹

Repensando o "Preconceito de Marca": Ideias sobre Raça, Ancestralidade e Genética no Brasil

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RESUMO: Estudos sociológicos tendem a realçar a importância do fenótipo ("cor"), em detrimento da ancestralidade como orientação dos conceitos de "raça" no Brasil. O presente artigo apresenta uma interpretação alternativa do significado cultural e político da ancestralidade no Brasil contemporâneo. O estudo baseia-se em

entrevistas realizadas com 50 brasileiros que recentemente receberam resultados de testes genéticos de ancestralidade. As atitudes dos entrevistados quanto a sua ancestralidade são, por sua vez, interpretadas de duas formas. Primeiro, em relação ao mito nacional de mestiçagem e às ideologias eugênicas de branqueamento racial, que visaram apagar os traços das origens africanas da população brasileira. Segundo, em relação ao ativismo negro contemporâneo, que busca recuperar as histórias e memórias afro-brasileiros destas tentativas de obliteração.

PALAVRAS-CHAVE: Ancestralidade; DNA; raça; cor.

ABSTRACT: Sociological accounts usually emphasise the primacy of phenotype (cor, colour) over ancestry for orienting concepts of 'race' in Brazil. In this paper, I present an alternative account of the cultural and political significance of ancestry in contemporary Brazil, drawing on qualitative interviews conducted with 50 Brazilians who had recently taken personalised DNA ancestry tests. The interviewees' attitudes towards their ancestry are interpreted in relation to Brazil's longstanding national myth of *mestiçagem* and the history of eugenic Whitening ideologies (*ideologias do branqueamento*) that have sought to erase traces of Brazil's African origins. However, they are also interpreted also against the backdrop of contemporary Black Movement activism that aims to actively recovering Afro-Brazilian histories and memories from these processes of erasure.

KEYWORDS: ancestry; DNA; race; color.

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In March 2017, the Centro Brasileiro Britânico in São Paulo hosted the launch of a new multimedia art exhibition called *Somos Brasil*. Created by the British-born photographer Marcus Lyon, the exhibition featured large, high-definition colour photographs of 104 Brazilian citizens from cities and regions across the nation.² The participants were all chosen for their reputation as ‘agents for change’ in their local communities; they were racially diverse in appearance, and each was photographed against a neutral backdrop.³ In addition, the participants agreed to take a personalised DNA ancestry test, designed to estimate their genomic admixture in relation to DNA samples representing dozens of ‘ethnic’ populations around the world. In the exhibition the results were displayed next to the photo-portraits, in the form of pie charts and geographic maps, each person’s DNA report showing a mixture of at least two, and sometimes up to eleven or twelve different ‘ancestral’ populations. Additionally, visitors touring the exhibition were invited to download a smartphone app to access short, recorded monologues of each of the portrayed Brazilians describing their life’s work and motivations. The monologues were accompanied by a brief written summary, presumably produced by the exhibition curator. These different media yielded four distinct portraits of each participant, allowing them to be perceived simultaneously through the photographer’s lens, by their DNA analysis, in their own voice, and through the words of the exhibition curator.

Since my research deals with the social and political interpretations of DNA ancestry data in post-slavery societies, I was curious about how *Somos Brasil* represented the cultural and symbolic significance of ancestry for Brazilians. Over the past two decades, DNA ancestry testing has become a familiar device used in artistic projects, television documentaries and magazine features – in Brazil and elsewhere around the world – to delve into issues of race, ethnicity, and personal and national identity. The curators of these projects often encourage viewers to marvel at what our DNA can reveal about our biogeographical origins, and

² Néli Pereira, ‘Projeto com Retratos e DNA de 104 Brasileiros que Tenta Desvendar “Força” de Identidade Nacional’, *BBC Brasil*, 2 August 2016, https://www.bbc.com/portuguese/brasil-36945257?post_id=10153656746846357_10154212516826357&fbclid=IwAR370_870bhUi5kZ7_dG61HDn uA2_lzV0uvMZA5oqHfhphQdXGBvS35me4#_=_.

³ Flavio Cafe de Castro, ‘A Celebration of Brazil’s Diversity’, *Atlas of the Future*, 2020, <https://atlasofthefuture.org/project/somos-brasil-we-are-brazil/>. Lyon’s photographs from *Somos Brasil* can be viewed at <http://www.marcuslyon.com/artworks/somos-brasil/>.

emphasise the disparity between common-sense notions of 'race', on the one hand, and the 'truth' presented by genetic science, on the other.⁴

In *Somos Brasil*, however, there was very little commentary on the possible links between DNA ancestry and personal identity. On the contrary, the exhibition seemed to imply that Brazilians were unconcerned with their ancestry (genetic or otherwise). For example, the curator's note for the portrait of Josicleide do Nascimento de Oliveira and her young daughter Maria Auxiliadora related the family story that Josicleide's great-grandmother, as a child, was carried out of the forest by dogs, and brought up in the *quilombo* of Conceição das Crioulas, Pernambuco. The note continued:

pelo sim pelo não, o resgate da bisavó é o máximo que Josicleide sabe a respeito de suas origens. Mas quem vê os olhos claros tem certeza que genes europeus tomam parte no seu DNA. E a genética dos ancestrais do Velho Mundo foi forte a ponto de transmitir para a pequena Maria Auxiliadora o mesmo tom esverdeado da iris e os cabelos ligeiramente alourados. Josicleide, com seu jeito tímido, não aparenta ligar para nada disso.⁵

Similarly, the caption accompanying the portrait of Dayse Beatriz Barreto de Oliveira, of Acopiara, Ceará, noted that her 'olhos ligeiramente puxados' meant that she was often mistaken as Japanese-descendant, despite not knowing of any Asian ancestry in her family: 'mas a verdade é que a jovem cineaste não liga muito para isso. Tem muitas outras coisas para se ocupar'.⁶ Ancestry information, the curator seemed to suggest, is superfluous in a country where everyone is so mixed. In this article, I present an alternative account of the cultural and political significance of ancestry in contemporary Brazil. My analysis draws on qualitative interviews conducted with 50 Brazilians who had recently taken personalised DNA ancestry tests, as participants in a nationwide research study into Brazil's genetic admixture. As part of a broader research project focused on the cultural and biological legacies of the transatlantic trade in enslaved Africans,⁷ my interviews

⁴ Verlan Valle Gaspar Neto and Ricardo Ventura Santos, 'Biorrevelações: Testes de Ancestralidade Genética em Perspectiva Antropológica Comparada', *Horizontes Antropológicos* 17, no. 35 (2011): 227–55; Sarah Abel, 'Of African Descent? Blackness and the Concept of Origins in Cultural Perspective', *Genealogy* 2, no. 1 (2018), <https://doi.org/10.3390/genealogy2010011>.

⁵ 'Josicleide do Nascimento de Oliveira', *Somos Brasil* app, 2017.

⁶ 'Dayse Beatriz Barreto de Oliveira', *Somos Brasil* app, 2017.

⁷ This research comprised one part of my PhD study, which compared the impact of DNA ancestry testing upon conceptions of African ancestry in Brazil and the United States. The study was

focused in particular on participants' attitudes towards their African ancestry, but also looked more broadly at the relations the interviewees drew in their responses between DNA ancestry, colour (*cor*), and racial identity. Classic sociological studies have underlined the importance of physical appearance (*preconceito de marca*) rather than ancestry (*preconceito de origem*) as the focus of racism in Brazil – and therefore, also, as the main locus of racial identification.⁸ My analysis challenges this tradition by interpreting interviewees' attitudes towards their ancestry in the light of both the history of eugenic Whitening ideologies (*ideologias do branqueamento*) that have sought to erase traces of Brazil's African origins,⁹ and against the current backdrop of Black Movement activism that is concerned with actively recovering Afro-Brazilian histories and memories from these processes of erasure. I therefore understand ancestry not as an immutable biological or cultural fact, but as the product of selective intergenerational processes of remembering and forgetting, based on racialised ideas about *which* ancestors to remember, and *with whom* to identify. I begin with a brief overview of the science behind DNA ancestry testing and the academic debates surrounding genetics and identity in Brazil. I then convey the methodology and some of the key findings of my interviews with Brazilian DNA test-takers in Jequié, Bahia, and Porto Alegre, Rio Grande do Sul, relating these to broader trends in contemporary racial and antiracist thought and politics.¹⁰

The body as archive: DNA and ancestry

DNA ancestry testing is a technique that uses the genome as a lens into our biological ancestry, expressing the latter in relation to geographically defined populations. While humans are identical in around 99.5% of their genomic

conducted as part of the EUROTAST project ('Exploring the History, Archaeology & New Genetics of the Transatlantic Slave Trade'): see <http://eurotast.eu/>.

⁸ Oracy Nogueira, 'Preconceito Racial de Marca e Preconceito Racial de Origem: Sugestão de um Quadro de Referência para a Interpretação do Material sobre Relações Raciais no Brasil', *Tempo Social* 19, no. 1 (2006): 287–308; Marvin D. Harris, 'Racial Identity in Brazil', *Luso-Brazilian Review* 1, no. 2 (1964): 21–28.

⁹ Thomas E. Skidmore, *Preto no Branco: Raça e Nacionalidade no Pensamento Brasileiro*, trans. Donaldson M. Garschagen (São Paulo: Companhia das Letras, 2012).

¹⁰ A longer version of the findings of my study are scheduled to be published in an upcoming monograph.

sequence,¹¹ over the course of our more than 200,000-year history as a species, demographic events involving migrations and admixtures have affected gene flow and genetic drift among human populations, giving rise to patterns of genetic variation between and among groups. These variations are manifested in our genome as characteristic mutations, which geneticists are attempting to progressively map and identify. Variants that are found in different frequencies among populations known to originate in particular geographic regions are classified as 'ancestry informative markers' (AIMs). Their presence of these DNA markers in a person's genome is therefore taken to indicate that the individual has ancestors (whether recent or ancient) originating in that region.

Broadly speaking, there are two main types of DNA ancestry test. The first are 'uniparental' tests, so-called because the two parts of the genome they analyse – the mitochondrial DNA (mtDNA) and the Y-chromosome – are transmitted matrilineally and patrilineally, respectively, each representing a single lineage in our biological family tree. Uniparental ancestry testing consists of comparing an individual's mtDNA or Y-chromosome against a reference database composed of DNA 'lineages' from populations with known geographic origins. The discovery of a match with one or more of these populations can be used to estimate the origins of the individual's early matrilineal and/or patrilineal ancestor.¹²

The second type are 'admixture' tests. These focus on the DNA contained by our autosomes: the 22 pairs of chromosomes that make up our genome (minus the sex chromosomes – X and Y – and the mtDNA). Unlike uniparental markers, the autosomes are made up of segments of DNA, inherited in roughly equal proportions from the individual's biological mother and father, and transmitted randomly via genetic recombination. Since this process is repeated for each generation, our autosomal DNA comprises genomic contributions from direct biological ancestors going back several generations. As with the uniparental lineages, geneticists have identified loci across the autosomes at which the genetic sequence varies between populations around the world. In basic terms, admixture tests are conducted by

¹¹ Claudia Gonzaga-Jauregui, James R Lupski, and Richard A Gibbs, 'Human Genome Sequencing in Health and Disease', *Annual Review of Medicine* 63 (2012): 35–61.

¹² Patrilineal DNA tests can only be taken by biological males (those carrying a Y chromosome), whereas matrilineal tests can be taken by males and females, who both inherit their mtDNA from their biological mother.

analysing these 'ancestry informative' markers across the genome and, based on the incidence of different variants, estimating the percentage of DNA an individual has in common, respectively, with a panel of defined reference populations.

Personalised DNA ancestry tests of these kinds have been developed since the 1990s, using techniques from the fields of forensic, medical, and evolutionary genetics. From the early 2000s, they began to be sold online to members of the public by biotechnology companies based principally in North America and Europe.¹³ They have been advertised, variously, as tools to help individuals deepen the scope of their genealogical research beyond the historical record; as a way to test putative ancestral relationships (i.e. by comparing portions of their DNA with those of potential genetic relatives); and as a window into one's 'ethnic' origins. Over the past twenty years, DNA ancestry testing has changed from a niche market into a multi-million-dollar global industry, led by giant genealogical corporations and biotech companies like Ancestry.com, 23andMe, and MyHeritage, among others. To date, an estimated 30 million personalised ancestry testing kits have been processed worldwide.¹⁴

Notwithstanding their retail success, geneticists and social scientists have called for caution when interpreting the results of DNA ancestry tests. In particular, they have drawn attention to a number of technical and epistemological issues that limit what the analyses can reveal about our ancestry, which I will outline briefly here. Firstly, the range of possible results provided by a DNA ancestry analysis depends entirely on the genetic markers surveyed, and the contents of the reference database used. Uniparental tests, for instance, look at two specific sections of the genome, representing a small and historically distant portion of a person's ancestral inheritance; however, some critics have argued that this is not always made clear to test-takers, who may mistakenly take the results as a summary of their entire ancestry.¹⁵ The technology for admixture testing has changed greatly over the past

¹³ Catherine Nash, 'Genetic Kinship', *Cultural Studies* 18, no. 1 (2004): 1–33.

¹⁴ Christina Farr, 'Consumer DNA Testing Has Hit a Lull — Here's How It Could Capture the next Wave of Users', *CNBC*, 25 August 2019, <https://www.cnbc.com/2019/08/25/dna-tests-from-companies-like-23andme-ancestry-see-sales-slowdown.html>.

¹⁵ Charles N. Rotimi, 'Genetic Ancestry Tracing and the African Identity: A Double-Edged Sword?', *The American Journal of Human Genetics* 86 (2003): 661–73; Ricardo Ventura Santos, Maria Cátira Bortolini, and Marcos Chor Maio, 'No Fio da Navalha: Raça, Genética e Identidades', *Revista USP* 68 (2005-2006): 22–35.

two decades: ten or fifteen years ago, it was common for them to survey between 30 and 200 AIMs across the genome, comparing the test-taker's DNA to just three or four 'world populations'. Today, many commercial autosomal tests analyse up to 750,000 genomic loci, comparing clients' DNA to tens or even hundreds of reference populations. Generally speaking, the more markers that are surveyed, the greater precision a test is likely to have for estimating ancestry. Nonetheless, there are other factors that can affect the results, such as the number of samples that make up each reference population; the possibility of sampling bias (i.e. over- or underrepresentation of certain groups or regions); and the methods used to decide whose DNA will be used to represent a given population (these issues also apply to uniparental analyses). Generally, the reference samples used for admixture testing are taken from individuals whose four grandparents were all born into the same group or locality, and whose recent ancestry is therefore considered relatively 'unmixed'. As social anthropologist Peter Wade has noted, 'this avoids statistical "noise" created by recent migrations: the technique selects people who are genealogically rooted and works to "purify" the sample genetically'.¹⁶ In doing so, this approach produces an artificial representation of group membership – one that focuses solely on biological kinship and excludes other socially recognised forms of belonging.

Furthermore, while admixture tests give a much fuller account than uniparental tests of our individual genomic inheritance, they cannot tell us everything about our ancestors' origins. Since we inherit only half of each of our parents' genetic material, a significant amount of DNA is 'lost' between every generation. This means that the more generations separating us from a direct ancestor, the less DNA we are likely to have inherited from them.¹⁷ Our genomes can therefore only give us partial glimpses into the genetic makeup of our ancestors.¹⁸ In addition, it is important to note that since these tests are based on

¹⁶ Peter Wade, *Degrees of Mixture, Degrees of Freedom. Genomics, Multiculturalism, and Race in Latin America* (Durham and London: Duke University Press, 2017), 34.

¹⁷ Hence, we share roughly 25% of our DNA with each biological grandparent; 12.5% with each great-grandparent, 6.25% with each great-great-grandparent; 3.125% with each great-great-great-grandparent, and so on.

¹⁸ One way of getting around this problem is to compare the DNA of several people who are known to descend biologically from the same ancestor. Since genetic recombination is random, biological siblings (except for monozygotic twins) all receive a slightly different mix of DNA from their parents, so collectively their genomes may be used to reconstruct a larger proportion of a given ancestor's DNA.

comparisons between *contemporary* populations, they are not able to give a truly *historical* account of our ancestry. In the words of biological anthropologist Jonathan Marks: ‘when recreational genomic ancestry tests tell you information about your geographical ancestry, what they are actually summarizing is your genetic similarity to the DNA they have collected from discrete and distant indigenous populations’.¹⁹ Since the genetic composition and geographical location of human populations are constantly evolving due to biological and cultural processes, the further we go back in time, the more different the human genetic landscape should look.²⁰ This nuance is not usually captured by personalised DNA ancestry tests, which tend to present ‘ancestral’ populations as geographically fixed and genetically stable through time.

Despite these limitations, some genealogists have been successful in combining their genetic ancestry results with traditional forms of genealogical evidence (oral histories, documentary records) to fill in lacunae in their family trees and deepen their understandings of their personal histories.²¹ These technologies have also been received with anticipation by adoptee advocate groups, who regard the spread of online genetic-genealogical networks as a resource to learn more about their biological relatives and medical histories, among other things.²² Similarly, DNA ancestry testing has been hailed as potentially important for reconstructing the histories of groups who have undergone forms of collective trauma, such as experiences of enslavement, war, genocide, and forced migration,

This technique has been pioneered by scientists in Iceland; see for example: Anuradha Jagadeesan et al., ‘Reconstructing an African Haploid Genome from the 18th Century’, *Nature Genetics* 50 (2018): 199–205.

¹⁹ Jonathan Marks, *Is Science Racist?* (Cambridge, UK and Malden, MA: Polity, 2017), 118.

²⁰ This hypothesis has been borne out by ancient DNA studies, which use DNA extracted from ancient archaeological samples to reconstruct an image of human genetic variation at different points in the past. See for example: Joseph K. Pickrell and David Reich, ‘Toward a New History and Geography of Human Genes Informed by Ancient DNA’, *Trends in Genetics* 30, no. 9 (September 2014): 377–89.

²¹ Matthew Stallard and Jerome de Groot, ‘“Things Are Coming Out That Are Questionable, We Never Knew About”: DNA and the New Family History’, *Journal of Family History*, 2020, <https://doi.org/10.1177/0363199020906853>; Sarah Abel and Gísli Pálsson, ‘Dépister l’ancestralité: Machines et techniques généalogiques dans la reconstruction des histoires de famille’, *Ethnologie Française* 2, no. 178 (2020): 269–84.

²² Natalie M. Baptista et al., ‘Adopting Genetics: Motivations and Outcomes of Personal Genomic Testing in Adult Adoptees’, *Genetics in Medicine* 18, no. 9 (2016): 924–32; Elizabeth Kopacz, ‘From Contingent Beginnings to Multiple Ends: DNA Technologies and the Korean Adoptee “Cousin”’, *Adoption & Culture* 6, no. 2 (2018): 336–52.

which led to the severing of kinship ties and the loss of identity.²³ Such approaches treat DNA as a kind of biological archive that retains culturally relevant information about historical kinship links, even when such details have been lost to living memory or purposefully excluded from written records. Sociologist Alondra Nelson, for example, has examined how DNA ancestry tests are being used by African Americans in the US to claim personal ethnic links to contemporary African communities. Nelson characterises these practices as a strategic way of seeking cultural reparations and political reconciliation among these groups in the wake of slavery.²⁴ Nonetheless, the idea of reorienting ethnicity or other forms of personal identity based on DNA ancestry data has been criticised by others as encouraging biological-essentialist notions of identity. Regarding the American company African Ancestry, which specialises in matching customers to African ethnic groups via uniparental markers, sociologist Dorothy Roberts has argued: 'African American [DNA test-takers] are paying for a false sense of connection to a contemporary ethnic group in Africa, a connection that could be established through other, more authentic means'.²⁵

As I explore later on, questions around the truth and authenticity of genetic and social identities are also central to the way many DNA test-takers interpret and conceptualise their genetic ancestry information. In this respect, test-takers tend not to be uncritical consumers of science; rather, they engage in practices of negotiation and truth-seeking to test the claims of their DNA analysis, drawing on various alternative forms of ancestral knowledge. At this juncture, however, I want to draw attention to how 'genetic' and 'social' forms of identity are often treated within these debates, as ontologically contrasting and mutually exclusive. In Roberts' words, for example, trying to construct an ethnic identity based on genetic information is *less authentic* than, for example, building solidarity through collective political and social action. In contrast, scholars like Nelson have argued that

²³ Nadia Abu El-Haj, *The Genealogical Science: The Search for Jewish Origins and the Politics of Epistemology* (Chicago and London: University of Chicago Press, 2012).

²⁴ Alondra Nelson, *The Social Life of DNA: Race, Reparations, and Reconciliation after the Genome* (Boston, MA: Beacon Press, 2016).

²⁵ Dorothy Roberts, *Fatal Invention: How Science, Politics, and Big Business Re-Crete Race in the Twenty-First Century* (New York & London: The New Press, 2011), 253; see also: Paul Brodwin, 'Genetics, Identity, and the Anthropology of Essentialism', *Anthropological Quarterly* 75, no. 2 (2002): 323–30; Kim TallBear and Deborah A. Bolnick, "'Native American DNA" Tests: What Are the Risks to Tribes?', *The Native Voice* D2 (2004).

contemporary uses of DNA data provide evidence of new *biosocial* practices in which genetic information is being incorporated strategically into social processes of identity construction.²⁶ These technologies may be changing the way societies think of race and ethnicity and the links between identity and the body; alternatively, they may be shedding light on, or reactivating the biological imaginaries that have long been subsumed within these concepts.²⁷ Before going on to examine these claims in relation to my own research with Brazilian DNA test-takers, in the next section I give an overview of the socio-political uses and scientific debates surrounding these technologies in Brazil over the past two decades.

Genetic imaginaries of race, national identity, and African ancestry in Brazil

Brazil has long been a site of key interest for studies in human population genetics due to its well-known history of mixture among diverse groups. Since the founding of the country's first university genetics labs in the 1950s, this theme has been pursued by geneticists at home, as well as abroad.²⁸ This research is oriented towards medical issues (e.g. the inheritance of genetic disease risk), evolutionary questions (e.g. the relationship between genotype and the expression of phenotypic traits), and historical inquiries (e.g. the biogeographical origins of Brazilian's founding populations). Additionally, in both scientific and public discourse, population genetics studies have often been used to talk about questions of national identity (usually through the lens of the country's tri-hybrid 'racial' mix), and to intervene in debates about racism and the very concept of 'race' in Brazil.²⁹

²⁶ Alondra Nelson, 'Bio Science: Genetic Genealogy Testing and the Pursuit of African Ancestry', *Social Studies of Science* 38, no. 5 (2008): 759–83.

²⁷ Peter Wade, Carlos López Beltrán, and Ricardo Ventura Santos, 'Genomics, Race Mixture, and Nation in Latin America', in *Mestizo Genomics: Race Mixture, Nation, and Science in Latin America* (Durham and London: Duke University Press, 2014), 1–32.

²⁸ Vanderlei Sebastião de Souza et al., 'História da Genética no Brasil: Um Olhar a Partir do Museu da Genética da Universidade Federal do Rio Grande do Sul', *História, Ciências, Saúde – Manguinhos* 20, no. 2 (2013): 675–94.

²⁹ Ricardo Ventura Santos and Marcos Chor Maio, 'Qual "Retrato do Brasil"?: Raça, Biologia, Identidades e Política na Era da Genômica', *MANA* 10, no. 1 (2004): 61–95; Michael Kent et al., 'Building the Genomic Nation: "Homo Brasilis" and the "Genoma Mexicano" in Comparative Cultural Perspective', *Social Studies of Science* 45, no. 6 (2015): 839–61. This tendency is not unique to Brazil, but can be seen across Latin America, as well as in other parts of the world: Peter Wade et al., eds., *Mestizo Genomics: Race Mixture, Nation, and Science in Latin America* (Durham and London: Duke University Press, 2014); Gísli Pálsson, *Anthropology and the New Genetics* (Cambridge: Cambridge University Press, 2007).

In recent years, social science studies have focused in particular on how genetic population studies and personalised DNA ancestry data have been mobilised in relation to the introduction of racially targeted affirmative action initiatives at public universities.³⁰ Throughout the 2000s, some Brazilian geneticists participated prominently in the debates, penning scientific articles and public commentaries, and even acting as expert witnesses in legal cases relating to the university quotas.³¹ Their arguments – which in particular underlined the extensive admixture characterising the nation, so that most phenotypically White Brazilians could be considered genetically Afro-descendant, while many phenotypically Black Brazilians are likely to have a large proportion of European genomic ancestry – were adopted frequently by opponents of the university quotas, including in a manifesto delivered to the Supreme Federal Tribunal, which argued that the policies should be ruled unconstitutional due to their racial character.³² Quotas that relied on dividing the country into distinct racial groups, the signatories implied, were at odds with both Brazil's republican constitution, and its very genetic make-up.

These polemical public representations of genetic ancestry data have made some Afro-Brazilians – in particular activists associated with the Black Movements – wary of DNA testing as a tool for shedding light on their personal ancestry and identity.³³ As one activist told me during my fieldwork in 2013, a year after the passing of the quotas law (Lei 12.711),

nós temos que pensar nessa informação para que façam bem para a coletividade. A gente tem que pensar muito bem para quê que vai ser usado [...] porque o que discrimina, o que humilha, o que agredi,

³⁰ Michael Kent, Ricardo Ventura Santos, and Peter Wade, 'Negotiating Imagined Genetic Communities: Unity and Diversity in Brazilian Science and Society', *American Anthropologist* 116, no. 4 (2014): 1–13; Michael Kent and Peter Wade, 'Genetics against Race: Science, Politics and Affirmative Action in Brazil', *Social Studies of Science* 45, no. 6 (2015): 816–38; Abel, 'Of African Descent?'

³¹ Sérgio D. J. Pena and Maria Cátira Bortolini, 'Pode a Genética Definir Quem Deve Se Beneficiar das Cotas Universitárias e Demais Ações Afirmativas?', *Estudos Avançados* 18, no. 50 (2004): 31–50; Sérgio D. J. Pena, *À Flor da Pele: Reflexões de um Geneticista* (Rio de Janeiro: Vieira & Lent, 2007); Sérgio D. J. Pena, *Humanidade sem Raças?*, Ensaios, Reportagens, Entrevistas, Série 21 (São Paulo: PubliFolha, 2008); Sérgio D. J. Pena, *Igualmente Diferentes* (Belo Horizonte: Editora UFMG, 2009); Kent and Wade, 'Genetics against Race', 823.

³² 'Cidadãos Anti-Racistas Contra as Leis Raciais', *Folha de S. Paulo*, 14 May 2008, <http://www1.folha.uol.com.br/fsp/cotidian/ff1405200807.htm>.

³³ Kent and Wade, 'Genetics against Race', 823. The authors also mention a front-page feature in *Globo* newspaper in 2011, about a study by Pena et al that characterised Brazil as 'a more European country'. The editorial claimed that 'science has proven the nonexistence of the Afro-Brazilian' (825). See also Sérgio D. J. Pena et al., 'The Genomic Ancestry of Individuals from Different Geographical Regions of Brazil Is More Uniform Than Expected', *PLoS One* 6, no. 2 (2011): 1–9.

o que tira a nosso povo de lugares e de circulação, o que possa ter opinião em vós, é o fenótipo, não é o genótipo.³⁴

One of the problems with using DNA to weigh in on questions about racial inequality is that genetic theory presents a vision of humans as biologically equal, in which phenotypic differences relating to skin colour and other racialised attributes are rooted in statistically minor molecular variations. Based on this logic, one might argue (as indeed some geneticists have)³⁵ that in an *ideal* society, skin colour would be socially meaningless. Yet, such discourses can be counterproductive when they are used to negate or downplay the *real* ways in which traits like skin colour are likely to influence a person's life course and opportunities, due to ingrained cultures and structures of racism that rank phenotypic Whiteness as ideal.³⁶ Hence, as anthropologists Michael Kent and Peter Wade have observed, Black geneticists who were sympathetic to the quotas tended to highlight the different meanings that are given to 'race', 'ancestry' and 'colour' in society versus in genetic theory, arguing that the latter should not simply be projected onto discussions about racism and social inequality.³⁷

Numerous social scientists have remarked on the tendency for genetic ancestry studies in Brazil (as well as other Latin American nations) to be conducted and interpreted in ways that feed back into longstanding national myths of racial mixture (*mestiçagem/mestizaje*).³⁸ In Brazil, the question of 'how genetically mixed we are' has been used in the press to make claims about the country's overall racial identity. The results of a 2011 study, for instance, were reported on the front page of the newspaper *O Globo* as confirming that Brazil is genetically 'um país mais europeu'. According to Kent, Santos and Wade, 'that day's editorial established a direct connection with the debate on affirmative action, stating [...] that "now it is

³⁴ Interview, 15 August 2013.

³⁵ E.g. Pena, *Igualmente Diferentes*.

³⁶ Graziella Morões Silva and Marcelo Paixão, 'Mixed and Unequal: New Perspectives on Brazilian Ethnoracial Relations', in *Pigmentocracies: Ethnicity, Race, and Color in Latin America*, ed. Edward E. Telles and Project on Ethnicity and Race in Latin America (Chapel Hill: University of North Carolina Press, 2014), 172–217.

³⁷ Kent and Wade, 'Genetics against Race', 827.

³⁸ Wade et al., *Mestizo Genomics*; Vanderlei Sebastião de Souza and Ricardo Ventura Santos, 'The Emergence of Human Population Genetics and Narratives about the Formation of the Brazilian Nation (1950-1960)', *Studies in History and Philosophy of Biological and Biomedical Sciences* 48 (2014): 97–107.

science that proves the inexistence of the “Afro-Brazilian”’.³⁹ These discourses resonate uncomfortably with the late 19th and early 20th century theories of eugenic Whitening (*embranquecimento*), which aimed to gradually eliminate Indigenous and African ‘racial’ elements from the Brazilian nation through policies of incentivised European immigration and the endorsement of ‘racial’ mixture.⁴⁰

Yet some research studies have attempted to use genetics to cast a new light on Brazil’s population histories, for instance by looking at the genetic make-up of specific Afro-Brazilian populations, such as *quilombolas*, or estimating the particular regional origins of Brazil’s African ancestry, as a way to learn more about the origins of the country’s enslaved populations.⁴¹ Geneticists have also taken regional approaches to studying Brazil’s genetic ancestry, finding the contributions of African, European and Indigenous ancestry (as well as those of other migrant populations) to vary significantly according to each region’s demographic history.⁴² In addition, some geneticists and activists have used DNA testing in different ways to challenge the cultural legacies of Brazil’s Whitening ideology and shed light on the African origins of Afro-Brazilians. For instance, Kent, Santos and Wade note that Black activists working with the Associação de Anemia Falciforme do Estado de São Paulo (AAFESP) have used research into the origins of genetic variants associated with sickle-cell anaemia as an indicator of patients’ ancestry in parts of Africa. Patients are encouraged to use these data as a basis for identity formation, in a way that conjures up ‘an imagined supranational genetic community consisting of black Brazilians and Africans’.⁴³ Similarly, in 2016, a documentary film called *Brasil: DNA África*, produced by the studio Cine Group, showed Afro-Brazilians from Bahia, Pernambuco, Maranhão, Rio de Janeiro and Minas Gerais receiving the results of mtDNA analyses, provided by the US-based company African Ancestry.⁴⁴ The series followed five of these test-takers as they each travelled to an African country to

³⁹ Kent, Santos, and Wade, ‘Negotiating Imagined Genetic Communities’, 8.

⁴⁰ Skidmore, *Preto no Branco*.

⁴¹ Ana Angélica Leal Barbosa et al., ‘Microsatellite Studies on an Isolated Population of African Descent in the Brazilian State of Bahia’, *Genetics and Molecular Biology* 29 (2006): 23–30; Tábita Hünemeier et al., ‘Niger-Congo Speaking Populations and the Formation of the Brazilian Gene Pool: MtDNA and Y-Chromosome Data’, *American Journal of Physical Anthropology* 133, no. 2 (2007): 854–67.

⁴² Kent, Santos, and Wade, ‘Negotiating Imagined Genetic Communities’.

⁴³ Kent, Santos, and Wade, 8.

⁴⁴ Mônica Monteiro and Luciana Pires, *Brasil: DNA África*, Documentary (CineGroup, Globo Filmes, GloboNews, 2016).

meet members of the ethnic group to which they had been genetically matched. One of the test-takers, Zulu Araújo, a Bahian Black Movement leader and president of the Fundação Cultural Palmares from 2007 to 2010, described his 'genetic roots voyage' to Cameroon as a deeply empowering experience. In his words: 'a viagem me completou enquanto cidadão. Se qualquer pessoa me perguntar de onde sou, agora já sei responder. Só quem é negro pode entender a dimensão que isso possui'.⁴⁵

Social interpretations of DNA ancestry

The present study contributes to a growing literature on perceptions of personalised DNA ancestry data in Brazil. In 2009, Santos et al. published the results of an 'experiment' conducted among 90 high-school students of different colour categories (*branco/a*, *pardo/a* and *preto/a*) in Rio de Janeiro, each of whom were given DNA ancestry tests and then interviewed in groups upon receiving their results.⁴⁶ The study produced a number of findings: 1) none of the students claimed *a priori* to be 100% descended from a particular continental group (European/African/Amerindian), but rather described themselves as 'racially' mixed, to varying degrees; 2) students' genomic results typically diverged from their perceived ancestry (which was assessed using questionnaires before taking the DNA test), so that levels of European genomic ancestry tended to be higher than predicted for members of all three 'colour' groups – something that many found surprising and disconcerting; 3) most students said their ancestry predictions were based primarily on their phenotype (for instance rather than extensive family history knowledge); 4) the students agreed almost unanimously that DNA tests would not have a great impact on their lives, and made consistent distinctions between their affirmed identity (usually rooted in their phenotype) and their genetic ancestry. On the other hand, several of the students made speculative comments about the potential relevance of their DNA ancestry results for gaining access to university

⁴⁵ João Fellet, "'Na África, Indaguei Rei da Minha Etnia por que nos Venderam como Escravos'", *BBC Brasil*, 14 January 2016, http://www.bbc.com/portuguese/noticias/2016/01/160113_dna_africano_zulu_jf_cc.

⁴⁶ Ricardo Ventura Santos et al., 'Color, Race, and Genomic Ancestry in Brazil: Dialogues between Anthropology and Genetics', *Current Anthropology* 50, no. 6 (2009): 787–819.

quotas. Overall, Santos et al. conclude that their findings 'point to a low correspondence between color/race and genomic ancestry', something that has been observed independently in other Brazilian population genetics studies.⁴⁷

Some of the findings of Santos et al.'s study have been echoed in research among other Latin American populations. In their study among DNA test-takers in Colombia, Ernesto Schwartz-Marín and Peter Wade found that phenotype (e.g. skin colour, nose shape, cheekbone morphology) was used as an important predictor of ancestry, although participants also emphasised the significance of family history, geographic origin within Colombia, and a sense of cultural affiliation for defining their racial identity.⁴⁸ They also note that test-takers' ideas about the ontology of race (e.g. biologically rooted versus socially constructed) varied significantly according to whether they were students of the biological or social sciences. Elsewhere, Nieves Delgado et al. report that DNA test-takers in Mexico relied on racialised conceptions of their phenotype, as well as elements of family histories and clues from their surnames, to predict their genomic ancestry results.⁴⁹ Additionally, they observed that participants routinely compared their own self-perceptions with the views of others to establish their 'colour' or racial category, a fact that reinforces the idea that these categories are not fixed but subjective and context-dependent. A slightly different approximation to exploring the relationship between race, ancestry, and the body can be found in a 2010 study by Elena Calvo-González and Vera Silva Rocha, based on interviews with the families of Bahian individuals who had been diagnosed genetic carriers for sickle-cell anaemia. Whereas Santos et al. treated 'colour' and 'race' as more or less synonymous in their study, Calvo-González and Rocha interrogate this relationship, attempting to schematise their participants' emic modes of racial categorisation. Sickle-cell anaemia is considered a highly racialised disease in Brazil, which is often associated with Black populations,

⁴⁷ Santos et al., 798; Flavia C. Parra et al., 'Color and Genomic Ancestry in Brazilians', *Proceedings of the National Academy of Sciences* 100, no. 1 (2003): 177–82; Juliana R. Pimenta et al., 'Color and Genomic Ancestry in Brazilians: A Study with Forensic Microsatellites', *Human Heredity* 62 (2006): 190–95; Guilherme Suarez-Kurtz et al., 'Self-Reported Skin Color, Genomic Ancestry and the Distribution of GST Polymorphisms', *Pharmacogenet Genomics* 17, no. 9 (2007): 765–71.

⁴⁸ Ernesto Schwartz-Marín and Peter Wade, 'Explaining the Visible and the Invisible: Public Knowledge of Genetics, Ancestry, Physical Appearance and Race in Colombia', *Social Studies of Science* 45, no. 6 (2015): 886–906.

⁴⁹ Abigail Nieves Delgado, Vivette García Deister, and Carlos López Beltrán, '¿De qué me ves cara?: Narrativas de herencia, genética e identidad inscritas en la apariencia', *Revista de Antropología Iberoamericana* 12, no. 3 (2017): 313–37.

and so the authors consider whether detection of the sickle-cell allele may be interpreted by patients as a marker for racial Blackness, regardless of the person's colour. Instead, they note, 'o que nossa pesquisa aponta é um quadro mais complexo onde ideias prévias sobre "raça", ancestralidade e Nação influenciam a interpretação dos discursos sobre "raça" e políticas de ação afirmativa (do âmbito da educação ou da saúde) e são, por sua vez, influenciadas por estes'.⁵⁰ In my analysis, I take a similar approach to that of Calvo-González and Rocha, seeking to understand how test-takers' narratives of ancestry, race, and colour are influenced by scientific, political, and activist discourses (both historical and contemporary) as well as national myths of Brazilian identity. As I mentioned earlier, I also pay attention to the degree of 'truth' and 'authenticity' that test-takers attribute to their DNA ancestry reports, relative to other sources of ancestral knowledge (e.g. family histories, phenotype, etc.), as a way of analysing the ontological status that these individuals attribute to the concept of 'race'.

Methods

My analysis is based primarily on qualitative interview data, collected from Brazilian DNA ancestry test-takers in 2013. For my research, I interviewed a cohort of volunteers whose DNA was analysed through the CANDELA project (Consortium for the Analysis of the Diversity and Evolution of Latin America), a research study funded by the Leverhulme Trust in the UK, which collected genetic data among populations in five Latin American countries between 2011 and 2012.⁵¹ The Brazilian branch of the project, titled 'Fenótipo, genótipo, dinâmica da mestiçagem no Brasil', was led by Professor Maria Cátira Bortolini and a team of geneticists at the UFRGS, and sought broadly to investigate the relationship between genotype and phenotype in admixed populations.⁵² Participants were asked to donate a blood sample for DNA extraction; they also underwent various anthropometric measurements and filled in a sociological questionnaire. In return, they were delivered a personal DNA

⁵⁰ Elena Calvo-González and Vera Rocha, "'Está no Sangue": A Articulação de Ideias sobre "Raça", Aparência e Ancestralidade entre Famílias de Portadores de Doença Falciforme em Salvador, Bahia', *Revista de Antropologia* 53, no. 1 (2010): 290.

⁵¹ See <https://www.ucl.ac.uk/biosciences/departments/genetics-evolution-and-environment/candela/>.

⁵² This part of the CANDELA project received additional funding from the Brazilian research agencies CNPq, CAPES and FAPERGS.

ancestry estimate in the form of an autosomal admixture test, which calculated participants' ancestry in terms of their 'African', 'European', and 'Indigenous' components. The genetic analyses were based on 40 AIMs, chosen for their efficacy in assigning ancestry in relation to the test's reference populations: Yoruba individuals from Nigeria, Spaniards from southern Europe, and Native Americans from across North, Central and South America.

With kind permission and assistance from the leaders of the CANDELA project, I conducted semi-structured interviews, lasting between 30-60 minutes, with 50 volunteers who had recently received their DNA ancestry results.⁵³ For the most part, the interviewees were students, with a smaller number comprising teaching and administrative staff; 37 were women, and 13 men. Eight interviewees were based at the UFRGS in Porto Alegre, while the other 42 were based at the Universidade Estadual do Sudoeste da Bahia (UESB) in Jequié. The interviewees were recruited on a semi-opportunistic basis: an email advertising my study was sent out to all CANDELA volunteers in Porto Alegre and Jequié, and those who responded were invited to attend face-to-face interviews or, alternatively, to fill in an email questionnaire. The CANDELA scientists also put me in touch directly with certain individuals whom they remembered had a particularly enthusiastic reaction to their DNA results. My interview questions were designed to learn about the participants' motivations for taking part in the genetic study, their expectations regarding their DNA ancestry test, and their reactions (along with those of their family and friends) to the actual results. In particular, participants were asked about how they interpreted the results in relation to their own identity and ancestry, and whether they felt they bore any significance for discerning a person's 'race'.

While the recruitment email specified that the study was oriented toward test-takers' perceptions of their African ancestry, the respondents turned out to represent a spectrum, identifying variously as *européu/europeia*, *branco/a*, *pardo/a*, *mestiço/a*, *multiétnico/a*, *indígena*, *moreno/a*, *mulato/a*, and *negro/a*. All but two had been attributed some proportion of African genomic ancestry. I was given access to the sociological questionnaires filled out during the initial sampling

⁵³ I am particularly grateful to Maria Cátira Bortolini, Virginia Ramallo, and Ana Angélica Leal Barbosa for their assistance in recruiting volunteers for this study, and for granting me access to the CANDELA Brasil feedback questionnaires.

phase, and was therefore able to compare these data with the post-testing responses gathered in my interviews. In addition, I analysed 320 responses to a follow-up questionnaire sent round to all Brazilian participants of the CANDELA project (1,600 in total), which asked volunteers about their reactions to their DNA ancestry results.

Study findings

Before taking their DNA test, many of the CANDELA volunteers signalled that they saw genetics as potentially significant for informing their sense of racial identity. In the pre-test questionnaires they filled out for the CANDELA project, most of the volunteers ranked 'saber sobre meus antepassados', and 'sabe mais sobre minhas raízes' as the primary reasons for their interest in DNA testing, followed closely by 'saber mais sobre minha identidade'. As part of the questionnaire, participants were asked to estimate their genomic ancestry proportions (divided into African, European, and Indigenous categories), and explain the basis for their predictions. Only 10 of the 50 interviewees mentioned 'family stories' or 'genealogy' as the basis for these estimates, whereas 30 referred to their own 'colour' or 'appearance,' or those of their relatives. One of the trends discovered by the CANDELA project was that a majority of participants had higher levels of European genomic ancestry than they predicted, and lower levels of African and Indigenous ancestry than they expected – an effect explained elsewhere by geneticists as a result of 19th and 20th century immigration policies designed to racially Whiten the Brazilian population.⁵⁴ Since many of the CANDELA volunteers used skin colour as a proxy for estimating their genomic ancestry, this meant that those who identified with darker colour categories were more likely to receive a result that diverged strongly from their expectations. Indeed, after receiving their DNA report, two thirds (32) of the interviewees stated that the results differed from their expectations regarding their ancestry.

This was the case for Sâmela,⁵⁵ a student at the UESB, who was taken aback

⁵⁴ Andrés Ruiz-Linares et al., 'Admixture in Latin America: Geographic Structure, Phenotypic Diversity and Self-Perception of Ancestry Based on 7,342 Individuals', *PLOS Genetics* 10, no. 9 (2014), <https://doi.org/10.1371/journal.pgen.1004572>; Pena et al., 'The Genomic Ancestry of Individuals from Different Geographical Regions of Brazil Is More Uniform Than Expected'.

⁵⁵ The personal names used in this section are pseudonyms.

by her percentage of European ancestry (55%, rather than her predicted 0-20%). She arrived at our interview wearing a bracelet in the colours of the Pan-African flag, and explained that she saw her Black identity as a political statement: a recognition that Black Brazilians 'têm que lutar muito ainda [pela igualdade]'. She said she found her result surprising, and that it had provoked conversations at home about how it was 'possível de eu ter uma linhagem mais branca do que índia'. However, she stated, 'eu não acho que o teste genético influencia no que eu sento: se eu acho que sou mais negra ou se eu acho que sou mais branca. Mas causou uma reflexão ao respeito disso: saber da linhagem genética, é importante. Eu gostei de ter feito'. Here, Sâmela espouses one of the core principles of Brazil's Black movements when she claims that being Black in Brazil is not to do with any objective measure of ancestry or colour; rather, it is a *choice* to recognise and embrace one's African and Indigenous origins and traits, and by the same token to refuse the country's historical ideology of Whitening.⁵⁶

In other cases, though, the DNA results were perceived as helping confirm or *solidify* a claimed Black identity. Eduina, a student at the UESB, decided to take part in the CANDELA project because she thought it would help her identify an unusual surname that ran in her family. She knew that her family was 'very mixed' and, based on her 'cabelo caracolado', she thought she would have 'ascendência mais pelo negro'. In Eduina's words: 'realmente deu, e eu achei "oh, a certeza", tinha essa certeza [...] com o teste'. During our interview, Eduina spoke proudly and enthusiastically about how the test results (which attributed her 67% African ancestry) had helped her—and members of her family—to understand the truth about their racial identity:

Para mim [ser negra] é o reconhecimento; agora eu posso ter um reconhecimento melhor, falar 'olha, eu sou negra, minha origem é... maior... eu tenho origem das três raças mas a que predomina é negra', e tal. [...] Então é melhor, eu achei que melhorou para mim, eu me identifiquei mais, assumi mais minha origem; antes eu tinha um pouco de vergonha por isso que eu falei essa coisa, porque eu tinha vergonha de falar que era negra, que o povo cá faz uma resenha e tal. Mas hoje em dia eu não ligo, eu me sento bem, me sento feliz, e pronto. [...] E também, na minha família até melhorou também. [...] Até minha mãe mesma, que tem a cor como a minha, ela não se assumia como negra, ela achava que ela não era negra. Depois eu

⁵⁶ Nilma Lino Gomes, *Sem Perder a Raiz: Corpo e Cabelo como Símbolos da Identidade Negra* (Belo Horizonte: Autêntica, 2007), 147–50.

falei 'mãe, tal, é assim', e expliquei, ela melhorou, o nível dela de conhecimento dela também.

In her narrative, Eduina identified the experience of receiving the DNA results as a trigger in her own process of assuming a racial consciousness. Previously, she stated, she had always identified as *parda* – a label that suggests racial mixture, but which can be used to refer to Brazilians of diverse origins (African, Indigenous, Middle Eastern, among others).⁵⁷ In recent decades, Black movements have encouraged dark-skinned Brazilians to identify as *negro/a* on official forms as an affirmation of a politicized racial identity, rather than using intermediate categories such as *pardo/a*, *moreno/a*, and *mestiço/a*, which are deemed racially ambiguous.⁵⁸ According to Eduina, the DNA test helped her understand the truth in the Black movements' criticisms of intermediate categories, which they describe as a means of rejecting Blackness: 'tem muitas pessoas que afirmam que pardo não é cor; então antigamente eu achava assim, ignorante. Agora com o conhecimento do projeto eu me identifiquei como da raça negra porque tenho origem e parda é tipo assim como se você for camuflar a realidade, eu acho'. In Eduina's affirmation we can perceive a dichotomy between 'colour' and 'race', with the former regarded as an agent of the Whitening ideology, working to obstruct perceptions of Brazilians' 'real' (i.e. genetic) racial affiliations.

When I asked Eduina what she thought could be the societal importance of DNA ancestry testing, she brought up the topic of affirmative action, stating:

Ai é tanto que para a gente é bom porque quando a gente vai fazer um vestibular ou algum tipo de concurso assim, tem vezes que ele questiona, faz um questionário socioeconômico, aí quer saber a cor da gente se identifica, se é preto, branco, se é negro, branco, pardo. Eu geralmente colocava parda porque eu não sabia, e agora posso dizer que eu tenho origem negra. E aí é bom para a gente esclarecer porque esse negócio do pardo ele não existe. Ou é negro, ou é branco ou é índio, para mim, eu acho assim. Para isso é importante essa pesquisa.

Eduina was one of five interviewees who affirmed that DNA testing would be a good measure for determining who should benefit from the quotas. Three of the

⁵⁷ Marcelo Paixão and Luiz M. Carvano, 'Censo e Demografia: A Variável Cor ou Raça no Interior dos Sistemas Censitários Brasileiros', in *Raça: Novas Perspectivas Antropológicas*, ed. Osmundo Araújo Pinho and Livio Sansone, Second edition (Salvador: ABA, EDUFBA, 2008), 48–49.

⁵⁸ G. Reginald Daniel, *Race and Multiraciality in Brazil and the United States: Converging Paths?* (University Park, PA: Pennsylvania State University Press, 2006), 245–46.

other volunteers who held this view were openly opposed to the quotas – for example, Darlene, a UESB genetics student who identified as *branca*, declared: ‘se você acusa que você é negro, vai fazer um teste desses e mostra lá. Todo o mundo é negro, então!’ The only other Black Brazilian in the cohort to support the use of DNA ancestry testing for quotas was someone who, like Eduina, found her claimed racial identity to be unambiguously supported by the DNA results.

For other volunteers, the question was not so clear-cut. Ludmila, a biologist working at the UESB, who identified as *mestiça* and was attributed 77% European genomic ancestry, wrote:

esses testes ‘bagunçariam’ muito mais nossos conceitos de raça. Eu por exemplo, poderia concorrer a vagas em processos seletivos por cota, baseada em minha aparência. Mas se fosse pedido esse exame, eu já perderia esse direito. Ficaria a pergunta: quem define nossa raça, características genotípicas ou fenotípicas? Eu, nesse momento, já não sei.

Notions of race seem to congeal around the question of quotas. The selection procedures for racially-targeted affirmative action initiatives require candidates to declare their race as a coherent, stable identity, in contradiction to how many Brazilians perceive their racial identities – as subjective, relational and context-dependent. If some of the CANDELA participants held the *a priori* belief that DNA analysis could offer an objective account of their ‘race’, the experience of comparing their personal DNA results with their self-described ‘colour’ often reinforced the impression of race in Brazil as something complex and multifaceted, rather than solid and self-evident.

Faced with the disparity between their DNA report and their perceived colour, many of the CANDELA volunteers concluded that colour was a ‘deceptive’ measure of a person’s ancestry. Some explained this divergence as an expression of the difference between a person’s *raça* (or, less commonly, their *etnia*) – qualities which they identified with their genomic ancestry – and their phenotype. As Nilson, a student at the UESB, stated in response to my question about whether the test could say anything about a person’s ‘race’:

eu acredito que os testes podem dizer o que realmente é. É uma questão do que eu acho, e uma questão do que é, que é completamente diferente. Acredito que é muito importante você poder comparar: o que você pensava antes e o que você está vendo através dum estudo que é mais detalhado, acho que é uma

coisa mais real. Eu acho que é muito importante você poder fazer essa comparação.

Given the broad disparities between their colour-based identities and their DNA ancestry results, the CANDELA participants were ambivalent about the significance they thought DNA ancestry data might have for Brazilian society. Six of the interviewees thought DNA ancestry testing had little or no societal relevance in Brazil because skin colour was more important than ancestry as a marker of racial difference. Sixteen of the 50 interviewees, on the other hand, maintained that if DNA ancestry testing was more widespread in Brazil it *could* help reduce prejudice by demonstrating 'how mixed everyone really is'. Within this group, nevertheless, the diagnoses of Brazilian racism were varied. Some thought DNA testing could help counteract to the legacy of the country's historic Whitening ideology by showing test-takers they had African and Indigenous ancestry, thereby forcing them re-examine their prejudices toward people with visibly 'African' and 'Indigenous' features. Others, on the contrary, felt that the tests' greatest advantage was to prove that there were no races, a fact they hoped could lead Brazilians to stop fighting about racial differences. It is notable that all these narratives seemed to diagnose Brazil's racism and racial tensions as rooted in 'bad mentalities' (people being prejudiced), or as a widespread misunderstanding of the facts of genetics ('there are no biologically pure races'). In other words, these were *ideological* problems to be solved by a change of mindset, which could potentially be triggered by the surprise of seeing one's ancestry in a new, objective light – rather than structural issues requiring broader political and societal changes.⁵⁹

Yet, the effectiveness of DNA ancestry tests for altering Brazilian conceptions of race is not unequivocally supported by my data. For a start, over a third of the interviewees (18) said that the test results coincided with their expectations about their ancestry (this proportion was higher among the 320 individuals who responded to the post-results questionnaire sent by the CANDELA scientists: 51% said their results were 'as expected'; 45% 'different from expected'; and 5% 'very different from expected'). As for the others who said their own DNA results contrasted with their

⁵⁹ See for example Carlos Hasenbalg and Nelson do Valle Silva, eds., *Estrutura Social, Mobilidade e Raça* (Rio de Janeiro: IUPERJ, Vértice, 1988); Eduardo Bonilla-Silva, 'Rethinking Racism: Toward a Structural Interpretation', *American Sociological Review* 62, no. 3 (1997): 465–80.

ancestry expectations, most found ways to rationalise this discordance. Many of the Brazilian test-takers pointed to the variation of phenotypes found in their own family trees as visible clues of this underlying genetic mixture, as well as to Brazil's national narrative of *mestiçagem*, whose thesis they found to be validated by the DNA results. As one interviewee stated, 'eu tenho um pouquinho de índio, tenho um pouco de europeu, tenho um pouco de africano, tem uma mistura, e é isso mesma que o pessoal fala. Acho que o pessoal que fala, o pessoal mais velho, só vem a confirmar isso através do resultado. É isso mesmo, o país é miscigenado, todo o mundo tem um pouco de tudo'.

Discussion

My findings coincide with the work of other social scientists by showing how seamlessly DNA test-takers incorporated their ancestry data into existing ideas about race and national identity.⁶⁰ Similar to Calvo-González and Rocha's study,⁶¹ I found that many test-takers interpreted the continental categories depicted in their results as signifying their 'biological race', which they saw as distinct from other dimensions of racial identity, such as *cor* (phenotype) and cultural or political affiliation (particularly relevant to Black identities). Despite some participants' surprise at the disjunction between their predicted ancestry and their genetic results, test-takers generally seemed familiar with the idea that 'racial' identities can be multifaceted and even internally contradictory. Some light-skinned individuals, for instance, stated that they identified with their 'Afro' roots because they associated them with a beloved older relative; however, they recognised that if they publicly affirmed a Black identity this might not be accepted in all contexts.

Overall, the volunteers attributed a high ontological validity to their DNA results, with some affirming that they gave a 'more real' account of a person's race or ancestry than colour, and many expressing that the tests validated 'what everyone knows' about Brazil's racial mixture. Nonetheless, like in Santos et al.'s study,⁶² most seemed to acknowledge that DNA would be less pertinent in social situations, in which colour tends to orient experiences of prejudice and privilege.

⁶⁰ Wade et al., *Mestizo Genomics*; Wade, *Degrees of Mixture, Degrees of Freedom*.

⁶¹ Calvo-González and Rocha, 'Está no Sangue'.

⁶² Santos et al., 'Color, Race, and Genomic Ancestry in Brazil'.

While some volunteers made idealistic affirmations about the relevance of these technologies for matters like racially targeted quotas, many observed that in their own case the test did not coincide with their claimed identity, or their experience of being racialised by society. These individuals were left feeling conflicted. Similar to the findings on DNA test-takers in Mexico and Colombia,⁶³ it is clear that many Brazilians harbour uncertainties about where they should fit into the bipolar racial model mobilised by some affirmative action policies.

There are some obvious limitations to my study. The small sample size and fact that the participants were almost exclusively university students makes it hard to generalise about how these attitudes correspond to broader Brazilian conceptions of race, ancestry, colour, and identity, which are likely to vary by class, age, region, and ethnic background, among other things. Although my study placed an emphasis on attitudes towards African ancestry, many of the volunteers I interviewed did not identify as *negro/a*, and I likely would have gained different results if I had attempted to focus my study towards people affiliated with the Black Movements. Indeed, the interviews I conducted with Afro-Brazilian activists revealed rather different approximations to ancestry. Several spoke to me of the importance – and challenges – of recovering Black family histories against the grain of the longstanding ideology of racial and cultural Whitening that has historically motivated Brazilians to conceal and forget, rather than identifying with, their Black and African ancestors.⁶⁴ Not all were convinced of the utility of DNA testing for resolving the kind of immediate questions Black and working class Brazilians have about their ancestry; as one activist from São Paulo pointed out to me, 'a maioria – vamos dizer, de 80 para cá, a maioria dos filhos da periferia são filhos de mãe solteira, eles não sabem quem são nem os pais. Outros não sabem nem as mães, como eu não sabia'.⁶⁵ Nonetheless, most of the Black activists I interviewed vehemently challenged what they saw as the widespread idea that Afro-Brazilians are uninterested in their ancestry; rather, they identified the difficulty of learning

⁶³ Nieves Delgado, García Deister, and Beltrán, '¿De qué me ves cara?'; Schwartz-Marín and Wade, 'Explaining the Visible and the Invisible'.

⁶⁴ Abel, 'Of African Descent?', 14–15; France Winddance Twine, *Racism in a Racial Democracy: The Maintenance of White Supremacy in Brazil* (New Brunswick, NJ: Rutgers University Press, 1998), 122–32.

⁶⁵ Interview, 15 August 2013.

about one's African ancestry with a history of systemic and internalised anti-Black racism, as well as the purposeful destruction of potential genealogical sources pertaining to Brazil's African populations in the wake of the abolition of slavery.⁶⁶

It should also be noted that the volunteers' attitudes towards their DNA results are likely to have been highly influenced by the design of the tests themselves, whose outcomes were restricted to three ancestral categories (African, European, Indigenous). The definition of these categories – which were regarded by the leaders of the CANDELA project as the most apt for characterising the ancestral mixture of Latin American populations – inevitably framed the results in relation to the familiar, and highly racialised, myth of *mestiçagem*. A different test with a broader range of reference populations would have yielded more diverse results, which might have led to different reflections about in which *specific* regions and populations in Africa, Europe, the Americas (or elsewhere in the world) test-takers' DNA markers are most commonly found. In Brazil this approach could contribute, for example, to deconstructing the widely held, racist stereotype of African populations as culturally and genetically phenotypically homogeneous. On the other hand, such interpretations do not simply 'flow from the data', but must be guided to avoid test-takers falling back on traditional, Euro-centric identity aspirations. For instance, during my interviews I noted that while many volunteers recognised and repudiated Brazil's historical Whitening ideology, five participants asked for more information on the origins of their European ancestry, in comparison to just one who inquired about the origins of their African ancestry (no one made a similar request regarding their Indigenous ancestry).

Finally, in recent studies Brazilian geneticists have provided evidence that the selection of AIMS used for genomic ancestry analyses can affect the level of correspondence between individuals' continental genomic ancestry composition, their colour, and self-ascribed racial identity.⁶⁷ Since a majority of volunteers

⁶⁶ Amy Chazkel, 'History Out of the Ashes: Remembering Brazilian Slavery after Rui Barbosa's Burning of the Documents', in *From the Ashes of History: Loss and Recovery of Archives and Libraries in Modern Latin America*, ed. Carlos Aguirre and Javier Villa-Flores (Raleigh NC: Editorial A Contracorriente, 2015), 61–78.

⁶⁷ Thiago Magalhães da Silva et al., 'The Correlation between Ancestry and Color in Two Cities of Northeast Brazil with Contrasting Ethnic Compositions', *European Journal of Human Genetics*, 2014, 1–6; Fernanda Saloum Neves Manta et al., 'Analysis of Genetic Ancestry in the Admixed Brazilian Population from Rio de Janeiro Using 46 Autosomal Ancestry-Informative Indel Markers', *Annals of Human Biology* 40, no. 1 (2013): 94–98.

regarded their phenotype as their primary guide for estimating their ancestry, adjusting this variable could have a significant impact on test-takers' attitudes towards their results. This could include their ideas about the pertinence of DNA tests for orienting notions of personal identity and family history, and the perceived relevance of these technologies for the administration of affirmative action policies, an issue that continues to be polemical today.

Concluding remarks

I began this piece by describing a recent art installation, *Somos Brasil*, created by the British-born artist Marcus Lyon. In a TEDx talk, Lyon (who is married to a Brazilian woman and has two 'Brazinglish' children) said that he was inspired to do the project after being struck by the fact that – unlike in North America, where everyone has an ethnic identity as well as an American identity – Brazilians seemed content to be 'just' Brazilian. This was no doubt, he stated, a consequence of the country's 'all-encompassing culture'. Indeed, Brazil's national myth of *mestiçagem* has long been vaunted internationally as a formula for 'racial democracy', in comparison to North American and South African racial regimes based on *de jure* segregation. These claims have been progressively challenged, however, by Black activists and social scientists who have shown how the myth of *mestiçagem* has worked to conceal entrenched social inequalities and patterns of symbolic and physical violence that remain rooted in the racialised power relations of slavery and colonialism.⁶⁸ Studies have shown that the logic of racial Whitening continues to be active in Brazilians' choices of marriage partners, their relationships with lighter- and darker-skinned relatives, and the selective ways in which they remember (or forget) certain ancestors.⁶⁹ Far from a disinterest in family history, all of this points to an ongoing preoccupation with the management of one's ancestry.

In recent decades Afro-Brazilian activists and cultural associations have been working to recuperate and reconstruct the country's Black and African histories, to

⁶⁸ Abdias do Nascimento, *O Genocídio do Negro Brasileiro. Processo de um Racismo Mascarado* (Rio de Janeiro: Paz e Terra, 1978); Hasenbalg and Silva, *Estrutura Social, Mobilidade e Raça*; Christen A. Smith, *Afro-Paradise: Blackness, Violence, and Performance in Brazil* (Urbana, Chicago and Springfield: University of Illinois Press, 2015).

⁶⁹ Twine, *Racism in a Racial Democracy*; Elizabeth Hordge-Freeman, *The Color of Love: Racial Features, Stigma, and Socialization in Black Brazilian Families* (Austin: University of Texas Press, 2015).

counteract this Whitening ideology.⁷⁰ In the near future, it is possible that commercial DNA ancestry testing may be adopted by Afro-Brazilians (among others) to try to gain insights into their personal histories beyond what has been preserved by traditional records and living memory. Although the industry has been slow to gather momentum in Brazil (and importing tests from abroad can be prohibitively expensive), in recent years a handful of companies have begun to offer DNA ancestry services, sometimes partnering with commercial labs in the US to make the process more economically viable. The São Paulo-based company Genera, run by medical geneticist Ricardo Di Lazzaro, published a blog post in early 2020 stating that consumer demand for DNA ancestry tests rose dramatically in Brazil in 2019, a phenomenon probably linked to increased media interest and the falling price of DNA analyses.⁷¹

In other post-slavery societies, genetic and genealogical techniques have been used by activists, scholars and citizens to uncover family histories rooted in slavery.⁷² Doing so fruitfully requires mixed approaches, drawing on oral histories and archives to support clues from the genetic data, which must be evaluated critically with a keen understanding of the potential and limitations of this information. Moreover, while companies like Genera and its main competitor MeuDNA (a filial of the São Paulo-based biotech company Mendelics) claim to be 'democratising' DNA ancestry testing in Brazil,⁷³ it should be borne in mind that ancestry remains a deeply political and contested subject, and as a result the spread of low-cost personalised genetic technologies may play into the country's racial politics in multiple ways. In 2005, geneticist Maria Cátira Bortolini and anthropologists Ricardo Ventura Santos and Marcos Chor Maio wrote that genetics, race and identities

caminham no fio da navalha. A depender do contexto histórico e sociopolítico, os resultados genéticos podem vir a ser culturalmente 'ressignificados' e atrelados a perspectivas essencializadas e

⁷⁰ See for example Alexandre Emboaba da Costa, *Reimagining Black Difference and Politics in Brazil: From Racial Democracy to Multiculturalism* (New York: Palgrave Macmillan, 2014).

⁷¹ Grupo Genera, 'A Crescente Demanda por Testes de Ancestralidade no Brasil', *Genera* (blog), 14 February 2020, <https://www.genera.com.br/blog/a-crescente-demanda-por-testes-de-ancestralidade-no-brasil>. Genera currently offers autosomal DNA ancestry tests for R\$199, while its main competitor MeuDNA (another São Paulo-based DNA ancestry-testing service) offers a 'teste de origens' for R\$499.

⁷² Abel, 'Of African Descent?'

⁷³ Felipe Scherer, 'Conheça o Teste de Ancestralidade Desenvolvido por Startup Brasileira', *Exame.*, 10 June 2020, sec. Blog, <https://exame.com/blog/inovacao-na-pratica/conheca-o-teste-de-ancestralidade-desenvolvido-por-startup-brasileira/>.

tipológicas de raça. Ao mesmo tempo, os argumentos genéticos constituem uma das linhas de frente dos questionamentos da noção de raça em sua acepção biológica, com desdobramentos importantes sobre as políticas de identidade.⁷⁴

This assessment remains valid fifteen years on, and should serve as a note of caution against claims that genetics can easily, or objectively, resolve questions of race and identity.

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⁷⁴ Santos, Bortolini, and Maio, 'No Fio da Navalha', 34.

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