



# ‘Health and ancestry start here’: Race and prosumption in direct-to-consumer genetic testing services

Sibille Merz

## abstract

This article argues that online direct-to-consumer genetic testing (DTC GT) companies such as deCODEme, 23andMe, and Pathway Genomics are not only paradigmatic of the participatory turn in scientific research, but also of the conflation of production and consumption in post-industrial capitalism. It analyses the activities of one of the largest DTC GT companies, 23andMe, to contend that, far from constituting a gift exchange, consumer participation represents a central aspect in the production of the company’s (bio)value. However, targeting especially African Americans and other participants with African ancestry with research projects such as Roots into the Future and the African Ancestry Project, 23andMe cannot be understood outside the racial logics of contemporary genomic research practices, and of (bio)capitalism more broadly. The article therefore focuses on the interrelations between production, consumption and the reproduction of racial categories in this particular form of corporate online research. It concludes that 23andMe relies for its success on both the labour of African American ‘prosumers’ and on the prior system of racial signification through which corporeal matter and genetic information only appear interesting. As such, it exemplifies that raciality operates precisely through the inclusion, not exclusion, of racial subjects, here into the circuits of user-generated value creation. The specificities of black (im)material labour therefore cannot be grasped by contemporary theories on post-Fordist capitalism but need a deeper engagement with the structural legacies of slavery, colonialism and racial violence.

## Introduction

But standing on the shores of what is known as the ‘Slave River’ near the Cape Coast of Ghana, where men and women were once bathed before they were sold

into slavery, Mike felt a sense of peace instead of horror. ‘We had a ritual’, he said’ (Mike, 23andMe consumer).<sup>1</sup>

The California-based direct-to-consumer genetic testing (DTC GT) enterprise 23andMe, founded in April 2006, is currently one of the largest and most popular personal genomics companies (Tutton and Prainsack, 2011). As part of their African Ancestry Project, 23andMe offers free test kits to users of their services who have four grandparents from one or several of the African countries worst affected by the slave trade in order to provide African Americans<sup>2</sup> more insight into their own geographical ancestries. 23andMe claims to unite families by helping customers to ‘find DNA relatives and track [their] ethnic background’, hopes to ‘improve diversity in research’ and to ‘empower’ African Americans ‘both with their own health and ancestry information’. Mike’s story is therefore only one of thousands by African Americans who have used the company’s genetic testing services by 23andMe to fill in gaps in their family history and trace their ancestors several generations back. For many, this opportunity presents a much longed for personal and political goal and, in Mike’s words, a ‘powerful and healing experience’. The African Ancestry Project has thereby built on 23andMe’s previous Roots into the Future study which, as the company states, aimed to increase the understanding of the interrelations between DNA and health, especially for diseases more common amongst African Americans. In 2012, the company presented its research findings, drawing on the analysis of the genetic material of 10,182 African American participants, which reportedly confirmed genetic associations for BMI, height, osteoporosis, type 2 diabetes, lupus, and migraines.

23andMe’s recent move to include African Americans into their research – a study in 2011 had shown that around three-quarters of the company’s customers self-identified as being of European descent (Schubarth, 2011) – follows a larger trend of minority inclusion and diversification of bioscientific research practices, often as a result of the political struggle by patient groups and activists for equal

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1 All quotes are taken from the 23andMe website and blog, [www.23andme.com](http://www.23andme.com) and [blog.23andme.com](http://blog.23andme.com), last accessed on 25 October 2014. My findings are equally based on the analysis of the main 23andMe materials, including the company website, blog, privacy statements, press releases, and Facebook posts, focusing on the entries and comments related to Roots to the Future and the African Ancestry Project, as well as two research articles available by 23andMe researchers (Eriksson et al., 2010; Do et al., 2011).

2 I here follow 23andMe terminology and use the term ‘African American’, rather than the more inclusive and political concept of ‘black’ to highlight the necessity of having African ancestry to be included into 23andMe’s research projects. When I use ‘black’ I refer to the political concept that denotes people racially marked as black, independent of their concrete ancestries.

representation. As Steven Epstein (1995) illustrates, for example, HIV/AIDS activists in the US successfully fought for their inclusion into clinical trials and constituted themselves as credible participants in biomedical knowledge production during the 1980s. However, the services and practices by 23andMe differ significantly from such earlier endeavours. As Anna Harris, Sally Wyatt and Susan E. Kelly (2013) show, through the analysis of over 600,000 genetic markers across the human genome and marketing personalised risk profiles directly to their consumers to build up research databases, 23andMe distinguishes itself from earlier participatory projects by the digital dimensions of its research practices, and the large datasets the latter enables them to produce. Both allow the company to offer entirely new kinds and scales of customer involvement in scientific research. As a consequence, 23andMe, and its research arm 23andWe, owe a large percentage of their success (and annual revenue) to their concept of 'web-based', 'participant-driven', 'customer-based', and 'self-selected' research (Eriksson et al., 2010; Do et al., 2011).

Existing scholarship on DTC GT companies has critically engaged issues such as the ethical dimensions of providing genetic (risk) information to participants outside of the clinical context (Prainsack and Wolinsky, 2010); questions of data security and privacy (Hall and Gartner, 2009); different subject formations emerging from participation in genomic research (Tutton and Prainsack, 2011); and the reliability of self-reported data (Levina, 2010). However, it has not robustly addressed the implications of these developments for the broader economic and cultural structure of contemporary capitalism. The contribution by Harris et al. (2013) represents a notable exception here. Drawing on Tiziana Terranova's concept of 'free labour' to describe the various activities of online users through which they contribute to the creation of economic value, for example for Google (Terranova, 2000; see also Moulrier Boutang, 2012), they argue that by contributing genetic information through online surveys and spit kits, consumers of 23andMe's services are central to the production of the company's scientific success and economic value. While 23andMe does *some* work 'in terms of organizing the analytical and research network and providing a platform for exchange', as Harris et al. (2013: 250) write, this work can be characterised as merely adding to what is often seen as an altruistic donation or gift exchange by the consumers of the company's services. As they therefore argue, 23andMe consumers are central to the production of biovalue for the company. While the company's research might be rewarding for consumers in terms of acquiring information about their own genetic risk factors, 'ultimately 23andMe accumulates the greatest (financial) benefit' (Harris et al., 2013: 243).

In this article, I follow Harris et al. in their focus on the labour that is involved in research participation and the consumer contribution to economic value creation.

However, I expand their argument in mainly two ways. First, I read the services by companies such as 23andMe as illustrating the changing forms of value creation in contemporary capitalism, rather than merely representing recent changes in medico-scientific research. I argue that the practices by 23andMe are paradigmatic for larger transformations in the capitalist mode of production that not only distort the boundaries between production and reproduction but also between production and consumption. Drawing on the concepts of 'free labour' (Terranova 2000), 'prosumption' (Ritzer and Jurgenson, 2010; Toffler, 1980) and 'clinical labour' (Cooper and Waldby, 2014), I highlight the ways in which forms of commercial online research dislocate the relationship between production and consumption. Second, I focus on 23andMe's services that specifically target African Americans, and thus on the racial logics underlying DTC GT projects. As the abundant literature on the reification of race as a quasi-biological category suggests, the economic and cultural practices of companies such as 23andMe cannot be understood outside the racial logics of contemporary (bio)capitalism. With projects such as Roots into the Future and the African Ancestry Project, 23andMe capitalises on the revival of scientific ideas about a shared genetic makeup amongst members of what is perceived as the same 'racial' group. 23andMe hence not only benefits from the unremunerated contributions by their consumers but also through the assumption that African Americans differ from their white counterparts *qua* biology. Such an understanding misses the complex interplay of genetic and socio-cultural factors, not least the enduring legacies of colonial racism and slavery. Drawing on Denise Ferreira da Silva's (2007) and Barnor Hesse's (2007) arguments about race as a structuring attribute of European modernity that marks specific bodies for economic exploitation, I show that 23andMe's interpellation of racial subjects reproduces the effects of racial violence at the level of signification, and hence allows for the continued extraction of value from their unremunerated labour. By bringing together these two bodies of literature on the interrelations between information capitalism and medico-scientific research, and on the re-emergence of the scientific interest in race, I contribute to a critique of the distortion between work and consumption in contemporary biocapitalism more broadly, and to its racial underpinnings more specifically.

To build this argument, I first sketch some of the central arguments on the forms of labour and prosumption in the era of Web 2.0 to show how production and consumption become increasingly blurred. I particularly focus on what Melinda Cooper and Catherine Waldby (2014) have termed 'clinical labour' to describe the experiences of today's surrogates, organ donors and clinical trial participants as another form of (often free) labour in contemporary capitalism. 23andMe consumers, as I argue, perform both free/online and clinical/material labour to create profit for the company. The second part of the paper links this

literature to the recent resurgence in genomic and biomedical interest in conceptualising race as a scientifically meaningful category and draws out how 23andMe capitalises on the reawakened acceptability of race as biological reality. This, I contend, shows that the production of scientific or 'expert' knowledge about race continues to produce African Americans as essentially different, and hence recuperates the logic of racial signification lodged in the discourse of modernity. I argue, following Silva (2007), that raciality constitutes a strategy of power that is productive of specific bodies and spaces, rather than operating merely through exclusion. As such, the neoliberal discourse of equality and the inclusion of African Americans into the circuits of biocapitalist value creation does not mark the end of racial violence but represents its very foundation.

### **Production and consumption in post-industrial capitalism**

In order to describe the shift from industrial to post-industrial forms of labour and larger transformations in the capitalist mode of production since the early 1970s, Tiziana Terranova (2000) develops the concept of 'free labour' to understand the strategies of valorisation in the digital economy. Drawing on Maurizio Lazzarato's notion of 'immaterial labour', defined as the labour that 'produces the informational and cultural content of the commodity' (Lazzarato, 1996: 133), she argues that such a conceptualisation provides a useful lens through which to analyse the labour performed in the digital media industry. It particularly illuminates the free labour of internet users participating in reading and commenting on websites, blogs, chat rooms and mailing lists.<sup>3</sup> Fifteen thousand 'volunteers', for example, hosted AOL chats for several years without being offered compensation for their labour. While some have turned against AOL and asked the US Department of Labor to investigate whether the company owed them back wages, most stayed on, attracted to the creative possibilities their contributions may offer. As Terranova argues, criticising perspectives that represent the internet as the manifestation of principles of self-organisation and democratisation, the provision of such free labour is 'a trait of the cultural economy at large, and an important, and yet undervalued, force in advanced capitalist societies' (2000: 33).

The direct extraction of surplus value from online contributions in the form of genetic information and self-reported data on phenotypic traits, habits and

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3 Engaging the various legitimate critiques of the concept of immaterial labour (see for example Dyer-Witheford, 2001) is beyond the scope of this paper; I contend that its main argument, the increasing significance of cultural content, services, and other intangible commodities for the generation of value, remains central to our understanding of the shifts from industrial to post-industrial capitalism.

lifestyles, as well as communications in chats, blog posts and community forums by 23andMe's customers, is therefore paradigmatic of the forms of valorisation in post-industrial capitalism. Consumers of 23andMe's services double as producers of online content and are therefore, in the process, transformed into 'prosumers' (Fuchs, 2010; Ritzer and Jurgenson, 2010; Toffler, 1980). Even though prosumption is not an entirely new phenomenon (Ritzer and Jurgenson, 2010), the recent spike in the significance of web-based, user-generated content points towards the increasing centrality of prosumption as a model of value creation. While the degree of exploitation might often be difficult to assess, as users seem to enjoy what they do and voluntarily devote long hours to it (or, as in the case of 23andMe, receive 'wages' in the shape of crucial information about themselves), they argue that such business models exploit their consumers similar to the way in which subsistence wages were paid to workers in industrial capitalism. While the early capitalists 'underpaid' their workers to reap high profits, today they 'overcharge' their consumers not only by having them bear the costs of production, but also through their production of increasingly 'unreasonable' profits (*ibid.*: 20).

However, the labour performed by 23andMe customers also involves the very material ways in which human *in vivo* biology is enrolled into the contemporary labour process through the transfer of bodily tissue or the production of experimental data. As Cooper and Waldby explicate, the 'life science industries rely on an extensive yet unacknowledged labor force whose service consists in the visceral experience of experimental drug consumption, hormonal transformation, more or less invasive biomedical procedures, ejaculation, tissue extraction, and gestation' (2014: 7). These contributions to pharmaceutical and biomedical capital, they state, constitute a form of 'clinical labour' rather than an altruistic donation that could be grasped through the lens of bioethical evaluation and standards. Instead, they need to be located in the realm of capitalist value production. What distinguishes this new form of low-level service work in the knowledge economy from others such as cleaning or catering, however, is that their labour is fully internal to the creation of value in the biomedical industries: the data generated by clinical trial participants, for example, is immediately fed into the development of a new drug application (*ibid.*: 9). Hence, while Cooper and Waldby acknowledge the contributions of critical theorists such as Lazzarato and Terranova on the centrality of the forms of free immaterial labour in post-Fordist capitalism, they rightfully point out that existing work too easily glosses over distinctions within the post-industrial economy. It often ignores the endurance of industrial as well as the rise of specifically post-Fordist forms of material labour and their gendered, classed, and racial divisions.

The economic and cultural practices of 23andMe, as this brief review has illustrated, are paradigmatic of the logics of post-Fordist valorisation and the conflation of production and consumption. The free, immaterial labour of contributing information online, as well as the free – but very much material – clinical labour of submitting saliva samples for genetic analysis constitute central revenue generators for the company. Indeed, 23andMe's business model closely resembles that of Google. It is perhaps unsurprising that Google founder Sergey Brin had been married to 23andMe co-founder Anne Wojcicki and has invested USD3.9 million in his wife's company (Pálsson, 2009: 295). But not only overlaps in personnel and financing illustrate the bond between Google and 23andMe. A brief glance at its privacy statement reveals the extent to which the company, like Google, directly or indirectly valorises user information: 23andMe may, for example, provide 'Personal Information to...third-party service providers' or 'disclose to third parties, and/or use in our Services...Aggregated Genetic and Self-Reported Information', including information about disease conditions and other health-related data, as well as information about personal traits, ethnicity and family history. While users may decline to participate in additional surveys and request to keep their personal information anonymous, the company reserves the right to share the anonymized, aggregated forms of consumers' genetic and self-reported information. It also utilises user content, that is, all information transmitted 'whether publicly or privately', as 'text, software, music, audio, photographs, graphics, video, messages, or other materials', as well as web behavioural information such as IP address, browser type, operating system, clickstream data, Internet Service Provider, referring and exit pages, and date and time stamps. This data, as the statement elaborates, can be sold on to any third party the company wishes to cooperate with: '23andMe may enter into commercial arrangements to enable partners to provide our Service to their customers and/or to provide you access to their products and services'. Harris et al. (2013) rightfully take this as evidence that user contributions through the internet constitute a central resource for the company's accumulation of pharmaceutical and diagnostic biocapital.

Indeed, 23andMe is currently involved in Alzheimer research which may lead to new findings about, or potential treatments for, the prevention of the disease. It has already filed patent applications for novel polymorphisms associated with Parkinson's disease after a successful cooperation with the Michael J. Fox Foundation and the Parkinson's Institute (Ray, 2011). According to the market research start-up Crunchbase, this business model has allowed 23andMe to yield over USD111.9 million from eleven different investors such as Russian billionaire Yuri Milner, Google, Johnson & Johnson Development Corporation and, most lately, the US National Institutes of Health (Anon., 2014). Hence, what Terranova and others have identified as the free labour that is central to capitalist

valorisation in digital economies, 23andMe illustrates by reaping the profits created through the contributions of its consumers. The labour performed by consumers thereby consists of both the submission of information online and of saliva samples for DNA analysis, and hence also constitutes a form of what Cooper and Waldby have termed clinical labour.<sup>4</sup>

As I argue in this paper, however, the contributions of African Americans present a particularly valuable resource for 23andMe. Richard Tutton and Barbara Prainsack (2011: 1088) highlight the company's assumption that 'customers interested in genealogy represented a significant market share', driving the company's decision to split their services into separate strands for ancestry tracking and health testing (as well as increasing the fees for both strands). The respective projects targeting African Americans, the African Ancestry Project, and Roots into the Future, promise to provide statistical information on different ancestries and geographical origins, allowing African Americans to recreate their genealogy distorted by the slave trade. The company also claims to have found evidence hinting at African American's genetic susceptibility for numerous health-related conditions and diseases such as osteoporosis, type 2 diabetes and migraines. This focus on 'African American genomes' can only be understood through the recent re-emergence of bioscientific interest in race as a biological category and the economic interest in product differentiation and personalised service delivery.

In the next section, I briefly trace this re-emergence of race as a scientific variable to explore how the new expert discourse on race shapes 23andMe's business model, and inflects the understanding of how the conflation of production and consumption in the contemporary economy is deeply structured by the racial logics of neoliberal capitalism. As I will show, 23andMe's concept is indicative of how science continues to produce knowledge about race – albeit in a flattened, egalitarian, neoliberal frame – that has been central to the inscription of race in modernity.

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4 In contrast to the labour performed by surrogates, clinical trial participants, or tissue donors, who generally receive at least some form of compensation, the labour of 23andMe customers remains entirely unremunerated. Similarly, it does not take place in a carefully controlled, clinical environment but is based on the post-Fordist logics of outsourcing labour processes to the home and the individual contractor. As such, the labour performed by 23andMe customers challenges existing concepts of both free and clinical labour, and points towards the increasing trend of digitising and commodifying health services, centrally based on the contribution of (potential) patients and the valorisation of their data.



## 23andMe and the new value of race

Scientific research into racial differences has only recently recovered from the horrors of World War II. While the idea that race had a biological basis was not entirely abandoned in the aftermath of the War, as often assumed, but was reinterpreted and added an egalitarian claim (Reardon, 2005), the decades up to the 1990s were characterised by the politically and ethically motivated colourblindness of bioscientific research, careful to avoid the charges of scientific racism. In the early 1990s, however, this insistence on sameness made way for a race-positive paradigm of diversity and inclusion. The renewed interest in race was, in part, sparked by the potential for commercial gains by pharmaceutical companies such as NitroMed, the company behind the world's first race-specific drug BiDil, and private ancestry testing services such as 23andMe. The search for medically salient racial differences is certainly in line with the broader neoliberal interest in commodifying racial disparities and fuelled by the prospect for lucrative intellectual patents. It was, however, a whole set of factors and developments in policy, research, and anti-racist activism that triggered this new interest in racial difference (Epstein, 2008). The failure of the Human Genome Project to include ethnic and racial minorities, for example, led to the launch of the Human Genome Diversity Project as an 'affirmative action' response, called for by anti-racist activists as well as scientists who often view their own work as a vital contribution to the elimination of racial inequality (Bliss, 2012; Fullwiley, 2008).<sup>5</sup> The fusion of biomedical and governmental aims has led to an 'inclusion-and-difference-paradigm' in biomedicine or the 'inclusion of members of various groups generally considered to have been underrepresented previously as subjects in clinical studies; and the measurement, within those studies, of differences (by sex, race, ethnicity, and age) with regard to treatment effects, disease progression, or biological processes' (Epstein, 2008: 802).

The increasing popularity and technological sophistication of genomics has thereby led to the re-emergence of the belief in significant biological differences between social groups conceived as races, as well as their differential disease predispositions. Shortly after the findings of the Human Genome Project

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5 Stanford population geneticist and founder of the Human Genome Diversity Project, Luigi Luca Cavalli-Sforza, for example, states that one of the aims of the HGDP was to 'make a significant contribution to the elimination of racism' (Cavalli-Sforza, 2005, cited in Olson, 2001). Diana Fullwiley (2008) in her ethnographic study of the Genetics of Asthma Laboratory at the University of San Francisco's (UCSF) General Hospital has also shown that genomicists, and biomedical scientists more generally, often have a vested interest in producing racial difference for anti-racist and egalitarian aims, and name their own biography and experiences of racism and exclusion as one of the main reasons for their career choices (see also Nelson, 2008).

revealed that we share 99.9% of our genetic code with every other human being, the US National Institutes of Health launched the Pharmacogenomics Research Network that assumed that the 0.1% that we do *not* share was actually quite considerable for the understanding of human diversity (Fullwiley, 2008). Some population geneticists were soon convinced that genomic research had finally confirmed the existence of five major continental populations that correspond roughly to what are commonly understood as races (Andreasen, 1998; Edwards, 2003; Risch et al., 2002). Even though most of the current research on genetic ancestry and disease predisposition does not insist on the existence of biological race per se – wary, perhaps, of the political and ethical implications – and perceives race as a biosocial assemblage, it often uses race as a proxy for variations in the distribution of single nucleotide polymorphisms (SNPs) and other genetic markers, allegedly until the discovery of a less biased term to describe such differences.<sup>6</sup> As such, genomics may revive older discourses of biological determinism, even though it departs significantly from the argumentation of nineteenth century scientific racism.

As Nadia Abu El-Haj (2007) shows, in the early stages of racial science, race thinking was primarily typological thinking; researchers aimed at producing scientific truth about race through measurability. Here, research into race constituted a ‘taxonomic enterprise’ which involved collecting more and more data ‘on the basis of which racial differences were specified and demonstrated, garnering a body of scientific evidence regarding those differences believed to index the distinctions between “natural kinds”’ (Abu El-Haj, 2007: 286). Once Darwinian ideas took hold, however, it became increasingly difficult to perceive races as static, unchanging essences. In the wake of World War II, ‘race’ had been redefined as ‘population’, which allowed for the possibility of existing genetic heterogeneity and changeability. It also allowed for these genetic differences among populations to be quantitative or relative rather than qualitative and absolute (Gannett, 2004); typological thinking was replaced by statistical thinking. In contrast to both typological and population thinking though, genomic ideas about race focus on the individual rather than on the population as a whole. In line with the molecular optic of contemporary bioscientific research practices, race has been ‘molecularised’ (Fullwiley, 2007). Unlike earlier practices in the phenotypically based race sciences, today’s molecular biological laboratories establish correlations of disease risk and racial

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6 Pharmacogenomics is a case in point: while the ultimate aim of personalized medicine is to tailor pharmaceuticals to the unique genetic makeup of an individual, race has been used as the concept that comes closest to describing actual genetic subgroups of the population.

difference by 'reading race in the DNA' (Fullwiley, 2008: 697).<sup>7</sup> While genomics may not have ultimately confirmed the existence of biological races, it has certainly resuscitated the public, and seemingly scientific, debate about real existing genetic differences between so-called races without unleashing an ethical crisis over the stakes of race-positive research.

### *Roots into the Future*

The services offered by 23andMe draw on – and significantly benefit from – this new understanding of race. Roots into the Future, for example, aims to 'increase understanding of how DNA plays a role in health and wellness, especially for diseases more common in the African American community'. It establishes an unmediated link between the genetic makeup of African Americans and their likelihood to develop hypertension, heart failure, or type 2 diabetes. While the attention to racial health disparities is, without doubt, much needed, the representation of a purely genetic relationship between racial group and disease predisposition is misleading at best, and dangerous at worst. The geneticisation of causality risks ignoring that existing inequalities are most often the result of environmental racism, lack of health care provision, segregation in unhealthy neighbourhoods or constant exposure to stress (Duster, 2004). Higher rates of heart disease and hypertension among African Americans, for example, have mistakenly been interpreted as associated with intrinsic genetic factors rather than as, for instance, an outcome of constantly elevated levels of cortisol in the blood. High cortisol levels are often produced by the human body under stress and lead to severe disruptions in the endocrine, metabolic, cardiovascular, and immune systems (Roberts, 2011). Similarly, the exposure to industrial toxins or environmental pollution more generally has been shown to be linked to increasing cancer rates, and to neurological and developmental disorders such as autism (Pellow and Brulle, 2006). As racial minorities disproportionately tend to live near toxic waste facilities in highly segregated neighbourhoods, they bear a larger share of the harmful effects of such a hazardous environment. Environmental racism, the racial division of labour as well as everyday forms of racist discrimination, rather than only genetic makeup should also therefore be the target of scientific attention, and government policy and funding.

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7 As Jenny Reardon (2005) has shown though, scientists have insisted on the existence of race-related traits and the possibility of different mental or intellectual capabilities having racial origins throughout. Drawing a boundary between scientific and social notions of race allowed them to advocate for racial equality in society, while at the same time continuing to use and work with race as a scientific, biological concept. While scientific notions of race, according to them, should not be instrumentalised for any particular political or social end, their existence as such cannot be refuted.

Instead of accounting for such external factors though, hypertension has been prematurely explained by companies like 23andMe as causally correlating to a mainly biological predisposition. The effects of environmental racism have been reinterpreted as genetically determined conditions, occurring disproportionately amongst African Americans. This misconception of race as genetic and biological reality misses that race is a political invention, albeit one that has direct or indirect effects on the biochemical, neuro-physiological, and cellular dimensions of the body. Not genetics, but the articulation of biological matter and its environment, or the 'biocultural *interactivity* of racial formation' (St Louis, 2004 41, emphasis in the original) confer explanatory force upon the concept. As science scholar Anne Fausto-Sterling (2008) equally argues, race should be understood as an interdependent nexus of biological, cultural and social dynamics; while race does not exist biologically, human biology is certainly influenced by the performativity of race and the differential experiences of living in a society structured by racism and exploitation.<sup>8</sup>

However, the conceptualisation of race as an *a priori* medically significant category functions as a highly remunerative generator of pharmaceutical and biotechnological profits. Manufacturing drugs narrowly targeting a specific racial group, for example, has been shown to increase chances for patent protection and drug approval (Kahn, 2008), centrally contributing to the accumulation of capital. This creation of capital contrasts sharply with the alternative of devoting a significant share of government spending towards ameliorating the outcomes of a racially discriminatory health care infrastructure. What has recently been identified as the new biopolitics of race (Bliss, 2005; Roberts, 2011; Rose, 2006) is therefore not merely the scientific redefinition of race as a genomic category, but equally the transformation of that category into racially specific products by pharmaceutical companies and genetic testing services. Race, it seems, has become central for the creation of value in an allegedly post-racial society, and in a capitalist era in which difference rather than sameness secures the constant expansion of profit margins (Rothstein and Epps, 2001). As I will show, scientific knowledge about race continues to invoke theories of genetic inherence as legitimate tools for marking certain populations as different, therefore permitting their economic exploitation; as such, it constitutes not only a denominator of a specific social identity but also a strategy of power which produces certain bodies and spaces as innately different (Hesse, 2007; Silva, 2007). As Barnor Hesse notes, the anthropological and sociological conflation of race with physiognomy

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8 Ironically, 23andMe focuses on specifically complex diseases and traits, which are the result of the interplay of both genetic and nongenetic factors, rendering 'the predictive value of the genetic markers tested...typically very small' (Tutton and Prainsack, 2011: 1086).

obscures its structural function, namely to bring into being what he describes as a distinctively modern 'onto-coloniality' (2007: 658-9).

### *The African Ancestry Project*

The African Ancestry Project, the company's research arm for tracking African American ancestries, equally aims at serving the African American community and diversifying bioscientific research. The Project promises to restore racial justice, providing African Americans with a sense of belonging by tracing their ancestry to a specific ethnic group in contemporary Africa. Such knowledge often constitutes, as Dorothy Roberts argues, a 'valuable possession that most Americans have always been able to claim if they wanted to' (Roberts, 2011: 233). The description of the project reads: 'For many African Americans searching for their ancestral roots, finding where their family story begins on that great continent is nearly impossible, because the slave trade severed those connections'. Hoping to 'empower' their consumers by giving them access to their genetic data and information about different ancestors as well as aiming at improving diversity in research, 23andMe displays its commitment to the values of racial equality and justice.

The logics of the African Ancestry project, however, are deeply flawed. Admixture tests, such as those used by 23andMe, deploy DNA samples to assign percentages of a consumer's lineage to large continental populations, mirroring what are conventionally understood as races. They thereby reify the idea that distinct and pure populations, or races, even though often not labelled as such, existed at some point in the past. This is an erroneous idea: races in the sense of genetically homogenous populations do not exist in the human species and there is no evidence that they have ever existed in the past (AAPA, 1996).<sup>9</sup> Also, the adequacy of a statistical probability always depends on the study design, and particularly the size and reliability of the reference database used in comparison with a customer's DNA. Even though 23andMe 'filters aggressively' to 'ensure a clean dataset', the reference set remains necessarily incomplete. In the case of missing reference samples for matching up a consumer's DNA, the software programme used will automatically compensate for such a lack with the closest match available in the database – which may be from an entirely different population. Many studies of genetic clustering have also relied on samples taken from widely separated and socially defined populations. Once samples were analysed from individuals who were more evenly distributed geographically,

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9 Moreover, for most African Americans, discovering that they have white (as well as Native American) ancestors in addition to their African heritage hardly comes as a surprise given the common yet most brutal form of 'admixture' during slavery: rape.

clustering becomes much less evident (Roberts, 2011). As human genetic variation is clinical rather than categorical, many individuals may also affiliate with two or more continental groups as their geographical origin. Hence, genetically based ancestry will always be accompanied by sizeable uncertainties. While for some 23andMe customers such as Mike, cited in the epigraph of this paper, learning about one's ancestors allows for a certain peace of mind and sense of belonging, others experience what Alondra Nelson refers to as 'genealogical disorientation' (Nelson, 2008: 770) following new, unexpected, or even contradictory test results that collide with familiar and not necessarily purely biological kinship concepts. Such genealogical disorientation is particularly common given the myriad sampling methods and statistical approaches to genealogical testing used by different companies, leading to diverging and often competing outcomes.

Nonetheless, 23andMe promotes the authority of genomic science for the determination of ancestral information and contributes to the belief in racial continuities traceable over generations. Capitalising on African Americans' history of slavery and sense of uprootedness, genetic testing services therefore disguise what is a highly contestable statistical probability as a definitive scientific evidence of a person's geographical ancestry. Most lucratively, it seems: a recent report by market research firm IBIS on ancestry research services in the US shows that these have registered a growth of over 10% in the last four years, creating an overall revenue of over USD1 billion from 2009 to 2013 (Anon., 2013). Worldwide, the over 400,000 23andMe customers have contributed significantly to what experts estimate to be a USD2.3 billion market of genealogy products, likely to increase to USD4.3 billion by 2018 (Lee, 2014). The valorisation of what are presented as specifically African American genomes, and the unremunerated labour of African American prosumers, therefore have to be understood against the backdrop of both the grammar of post-industrial capital, and the operations of raciality as indicative of black dispossession.

## Racial value and the logics of neoliberal capitalism

Both examples, Roots into the Future and the African Ancestry Project, illustrate how technological and scientific developments in genomics have reinstalled public belief in the existence of race as a biological reality, but also how this conceptualisation of race functions as a highly remunerative source for pharmaceutical and biotechnological capital. African American 23andMe consumers are therefore prosumers or co-producers in two main senses. First, through the consumption of the company's services, they are producers of online content and thus *use* value for themselves as the commodity thus produced

'directly satisfies [their] wants' (Marx, 1867 [2001]: 61). Retrieving information about potential disease predispositions or geographical origins may represent significant affective and ontological security, and contribute to a sense of identity. 23andMe prosumers are also co-creators of *exchange* value for the benefit of the company. As Ashlee Humphreys and Kent Grayson (2008: 8) have highlighted, the most important dimension of such a form of value co-creation is that prosumers engage in the production of exchange value, rather than merely of use value, 'that is co-opted by the company and resold for surplus-value', representing a fundamental change in economic organisation. While consumers have, for a long time, taken over steps in the creation of use value, for example when they dispense their own drinks at a fast-food restaurant, use self-issue machines at the supermarket, or assemble their own furniture, the production of exchange value, as they highlight, is a fundamentally different process. 23andMe consumers not only produce use value for themselves in the form of contributions to knowledge about human evolution and genetic predispositions for certain diseases. Crucially, they also provide genetic material and personal information for the production of a research database that is being valorised by the company. Therefore, they are central for the company's success in the marketplace qua the creation of exchange value. As Harris et al. (2013: 247) suggest, the building of a racially diverse and representative database may, in the long run, be an even 'greater revenue generator than the genetic tests themselves' given the emphasis on racial representation and diversification in contemporary research practices. Similar to Google as the emblem of cognitive capitalism, or enterprises like Amazon whose customers are often unaware that the information they provide through purchase patterns or product ratings has significant exchange value for the company (Zwick and Dholakia, 2004), 23andMe depends on the free provision of such data for their creation of profit. African American customers of 23andMe's services in particular constitute an indispensable source of free labour, both immaterial and material/clinical, for the company.

By consuming 23andMe's services, however, the company's prosumers also engage in the reproduction of the very idea of real existing biological races as representing human genetic variation. True, race has never been a purely biological concept and has been conceptualised as an assemblage of nature *and* culture throughout – as Peter Wade aptly argues, 'the whole apparatus of race (racial categorizations, racial concepts, racisms) has always been as much about culture as it has about nature' (Wade, 2010: 45; see also Hunt, 2011; Hesse, 2007). Nonetheless, the authority and legitimacy that biology in the form of genomic science is bestowed by the participation of racial minorities, and particularly African Americans themselves, in projects such as Roots into the Future, rehabilitate a racial realism long thought defeated. Through the

authoritative language of science, the racial hypothesis is granted external validity and moved ‘from the realm of spurious commonsense opinion to that of acceptable formal knowledge’ (St Louis, 2004: 35). Given their central function for the creation of the company’s economic as well as cultural capital, 23andMe customers *qua* their political and affective quest for belonging and identity therefore, paradoxically, also recuperate racial science, albeit in specifically neoliberal disguise.

In post-industrial cultural and economic practices, racialism, hence, is by no means dismantled but continues to operate through the productive strategies of scientific knowledge, most importantly genomics, and the neoliberal principles of market fundamentalism, individual responsibility, and the privatisation of care and community. Neoliberalism as a particular form of governmentality (and post-Fordism as a specific mode of production) follows the historical trajectory of liberalism as the conflation of modernity and racial violence in which the racial Other is produced to delineate a zone of disposability and demarcate the limits of liberal freedom. As Jodi Melamed (2006: 2) puts it, while historical articulations of race and capitalism have shifted,

with white supremacy and colonial capitalism giving way to racial liberalism and transnational capitalism and, eventually, to neoliberal multiculturalism and globalization – race remains a procedure that justifies the nongeneralizability of capitalist wealth. Race continues to fuse technologies of racial domination with liberal freedoms to represent people who are exploited for or cut off from capitalist wealth as outsiders to liberal subjectivity.

While Melamed most likely refers to forms of neoliberal racism that are more immediately recognisable as such, for example ongoing racial segregation, occupation, securitisation, physical violence, and death (Goldberg, 2008; Lentin, 2015), I suggest it might be fruitful to also focus on those more subtle instances of racial violence and dispossession that become almost intangible under the neoliberal doctrine of empowerment and diversification. I follow Silva (2007) in arguing that the inclusion of racially subordinated subjects only illustrates that raciality is productive and inclusive rather than strictly exclusionary. As she notes, accounts of racial subjection as exclusion from universality often omit the operations of raciality as a strategy of power that functions precisely through the enunciation of formal equality, assuming the obliteration of racial difference as being resolved in the contemporary post-racial, multicultural, or race-positive social configuration (Silva, 2007). Contemporary, plural multiculturalism, however, is constituted by the simultaneous recuperation of racial categories as cultural specificities and the flattening out of racial hierarchies through the corporate, managerial culture of neoliberal capitalism. It therefore reifies the notion of racial difference albeit in a ‘horizontal egalitarian frame instead of the



vertical hierarchical axes that denote supremacy and inferiority' (St Louis, 2004: 38).

23andMe's interpellation of racial Others as consumers therefore not only disguises the latter's centrality as co-creators of economic value for the company itself, but also how the apparatus of raciality re-produces the effects of racial violence at the level of signification. When contemporary science argues for fundamental differences between human groups, it recuperates a much older system of signification that made race its primary unit of analysis, since, as St Louis argues, 'disinterested corporeal matter is fundamentally uninteresting' (2003: 83). The signification of specific diseases, genes or SNPs as *black* diseases, genes or SNPs, for example, is only legible in a particular social system in which differential value is attached to, here, blackness. Projects like Roots into the Future and the African Ancestry Project therefore rely for their success on both the material and immaterial labour of African American prosumers *and* on this prior system of attaching racial meaning to specific bodies through which corporeal matter or genetic information only appear interesting. As Silva argues, raciality today authorises instances of 'symbolic violence, which ensure capital's access to the total value produced by affectable persons and places' (Silva, 2014: 5). Behind tales of (post-)racial progress, the commodification of African Americans' search for ancestry and equal health reinstalls a much older logic of racial signification that rests on positioning the black body as inherently different. The neoliberal ethos of inclusion and difference thereby allows for the continued extraction of value from bodies marked as racially different without necessarily denoting them as inferior.

In some sense, then, 23andMe customers might be seen as a neoliberal *doppelgänger* of Henrietta Lacks, the working class black woman who involuntarily lent her name to the HeLa cell line now commonly used in biomedical research, having had her cervical cells harvested by scientists at Baltimore's Johns Hopkins Hospital without her consent or remuneration (Skloot, 2010). If we subtract from the practices by 23andMe the neoliberal language of personal liberty and freedom of choice ('informed consent'), individual responsibility ('take charge of your health and wellness today') and equal participation, diversification and empowerment ('research of, by and for the people, directed and advanced by you') parallels to Lacks' case abound.<sup>10</sup> The

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10 Interestingly, 23andMe anticipates criticism and mistrust by African American communities. As the company assures, 'in contrast with Tuskegee, our research platform has received and is being conducted only with standard Institutional Review Board (IRB) approval of the final protocol', referring to the infamous Tuskegee syphilis experiment during which the US Public Health Service studied the natural progression of untreated syphilis in rural African American men in Tuskegee,

(neo)liberal ethos of inclusion and non-discrimination in both instances hides that this inclusion is sought for the benefit of scientific research and commercial gains without offering adequate remuneration to the main contributors of the raw material while at the same time reproducing blackness as a location of dispossession. Surely, 23andMe customers participate as a result of their own decision-making and are informed about the consequences of their participation. Many, if not all, are certainly familiar with Lacks' story yet value the information retrieved through research participation as beneficial to their own health or understanding of genealogy. Nonetheless, while 23andMe's pursuit of racial equality in health care and the provision of ancestral information might be central for millions of African Americans, its method of valorising user-generated information and the simultaneous reification of racial concepts conceal that, once again, black labour is central for the advancement of scientific research and the accumulation of capital but remains not only unremunerated, but also largely unacknowledged as such.

## Conclusion

This article has shown that online DTC GT companies such as 23andMe illustrate the increasing conflation of production and consumption in contemporary capitalism, constituting a paradigmatic incidence of prosumption, or the co-creation of exchange value by consumers of the company's services. Critical theorising has highlighted the ways in which consumers and users are at the very core of value production in today's digital and biocapitalist economies. However, while these theoretical achievements are central to our understanding of such processes, they often omit to account for the myriad ways that raciality continues to operate through the productive strategies of scientific knowledge and neoliberal capitalism itself. Raciality not only continues to demarcate a dividing line between material and immaterial forms of labour, no matter how contested (Dyer-Witheford, 2001), but also operates through the inclusion of racial subjects into the very circuits of immaterial labour and web-based forms of production and consumption. As the very condition of possibility for (neo)liberalism and modern onto-epistemology, raciality not only produces the racial body as appropriate for the labour performed in today's industrial factories, coltan mines or garment sweatshops. Through the neoliberal inclusionary move and the practices of productive consumption, it *also* reproduces the racial Other as inescapably different and therefore accessible for differential capitalist

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Alabama. This anticipation of criticism and the positioning of the company as active against racial discrimination represents not only what Catherine Bliss has termed 'anti-racist racialism' (Bliss, 2012: 15), but also the silencing of (scientific) racism under neoliberalism.

exploitation in online genealogical research practices. Alarmingly, personal genomics thereby represents only one, even though a particularly characteristic, example of the interrelation between productive consumption and the valorisation of scientific ideas about race in contemporary capitalism. The interrelations of raciality and capitalism in the era of Web 2.0 certainly merit further critical analysis of the logics that govern both the creation and distribution of economic value, and the (re)production of racial bodies.

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### **the author**

Sibille is a PhD student in sociology at Goldsmiths, University of London, and a fellow of the Rosa Luxemburg Foundation. Her PhD explores the role of ethnoracial variability in transnational drug development, focusing on the clinical trials industry in India.

Email: [sibille.merz@gold.ac.uk](mailto:sibille.merz@gold.ac.uk)