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Re-centering and De-centering ‘Race’: an Analysis of Direct-to-Consumer Genetic Testing Organizational Websites

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
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Dedication

For people from “cultures like mine” that dare every day to take space in ‘science.’

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ABSTRACT

As direct-to-consumer (DTC) genetic testing technologies become an ever-expanding business in the United States, this dissertation project investigates the ways in which two leading organizations, AncestryDNA and 23andMe, utilize discourses of ‘race’ to connect with their customers. This study is particularly significant because it opens up new avenues of research in the field of organizational communication by engaging with a new genre of organizations and the complexities of biocapitalism, in which genetic data is commodified for consumption. Blending computational scraping of data and manual qualitative analysis of organizational texts and videos available on the corporate websites, while using postcolonial studies and critical race theory, this study demonstrates how these organizational websites simultaneously: a) re-center (reify) ‘race’ as fixed and biological through discourses of ethnicity and ancestry, and b) de-center the realities of ‘race’ and medical racism through discourses of health.

My analysis brings forth the following themes: The Ancestral You, The Ethnic You, The Knowledgeable You, The Healthy You, and The Empowered You. These themes suggest that the organizations enable customers to be their authentic, ancestral ethno-racial self as well as healthy, knowledgeable, and empowered self. At a meta level these themes represent discourses of race and health—they communicate the promise of a “racially complete” self and a healthy self.

This dissertation also examines how discursive whiteness can operate within organizational infrastructures that prioritize postracial approaches to genetic testing. While constructing an aspirational “self” for the customer, the organizational discourses continually de-center and re-center race and demonstrate the organizational websites as infrastructures of whiteness. These ideas speak to ideas of biocapitalism and explain how racial logics are produced.

I argue that these organizations both deploy discourses of ‘race’ to create ethno-commodities and bio-value for their possible customers and use ideas of ‘discovery’ to engage with a system of biocapitalism. I further argue that they engage in new modes of exploitation, foster new forms of racial membership based on genetic race, and advance race as technology. The theoretical implications of this study draw attention to the roles that corporations have in the U.S and their relationship with their customers in the context of contemporary biocapitalism. Above all, I contribute to discussions of white supremacy and whiteness in the organizational communication processes, an understudied area of research in the discipline.

CHAPTER I: INTRODUCTION

The last decade has seen an impressive technological advancement in the areas of personal genomics for both health research and entertainment purposes (Majumder et al., 2021). More importantly, these advancements have become accessible and normalized through direct-to-consumer (DTC) genetic testing (Borry et al., 2010). This service, offered by many organizations in the United States such as AncestryDNA, African Ancestry, 23andMe, Genomelink, and National Geographic's Helix, provides customers with varied information about their ancestry, racial composite, and health patterns in exchange for their genetic data (Nelson, 2016; Thiebes et al. 2020). These companies have situated genes and human DNA as the "ultimate source of power and knowledge" with "magical powers to access the truth" in the realms of biology, racial differentiation, ethnicity, and culture (Nelson, 2016, p.4). This type of technology, part of the trend of personal genomics, has seen an unprecedented upwards expansion, projected to have "another ten-fold increase by 2021, with upwards of 100 million genotyped individuals" (Khan & Mittelman, 2018., p.1). In the United States alone, the two leading DTC genetic testing companies, AncestryDNA, and 23andMe have up to 25 million customers combined. Calculations are that by 2025, up to 60 million Americans will have had their genetic information sequenced by these or other companies (Khan & Mittelman, 2018).

The goal of AncestryDNA, the leading company that provides this service, is clear for anyone that accesses their website: "Using only a small saliva sample, we analyze your DNA using state of the arts science, giving you details about your ethnic origins and our extensive DNA database connects you to living relatives around the world. All of this can guide your journey of self-discovery in exciting new directions, sometimes in ways you never imagined." These technologies treat the human body as a recipient of measurable statistical contents, organizing the body as a machine affected by regulatory controls and organized within static identity categories of race, ethnicity, and nationality (Foucault, 1990). Using technology developed in human genomic research, these organizations are able to track their customers' ancestry through maternal and paternal lines of descent, offering information regarding ancestral origin based on associations with "either four or five continental groups" of human populations (Roberts, 2011, p.227). Many customers gravitate towards these services in search for racial belonging to a specific group or trying to connect to unknown family members or a broader community. Other customers are interested in the potential health information these services might uncover, as in many cases they can use the customers' genetic data to pinpoint predispositions to certain diseases.

With a market value of over 789 million dollars and with a projected reach of 2,361.12 Million dollars by 2028 (Verified Market Research Report, 2021) these companies have capitalized on the social quest for identity within the medical, forensic, and genealogical fields while becoming the ultimate repository for big data when partnered with pharmaceutical giants such as GlaxoSmithKlein, and technological behemoths such as Google and Calico Life Sciences, (Roberts, 2011). According to sociologist of science Dr. Alondra Nelson (2016), the interest in genomics and ancestry in the United States stems from the country's history as a "nation of immigrants and migrants – both voluntary and shackled travelers – arriving from elsewhere and fraying family ties along the way" (p. 4). These technologies have become a tool for American customers to deal with the questions of racial identity, geographical connection, claims of citizenship, and the re-making of the self (Nelson, 2016; Venkatesan, 2006).

The appeal of these companies lies in providing their customer database with tools for self-exploration. In an ideal world, these types of DTC testing technologies would allow customers to make informed health care decisions, transform understandings of race and identity, and personalize choices based on an individual's genetic predispositions (Bliss, 2012). However, in the United States, these companies have been criticized because of their lack of accuracy, potential harm to customers, and possible privacy issues when handling genetic data (Caulfield & McGuire, 2012).

Significance

In popular discourses, DNA is seen as an encrypted and unchangeable code, a symbol that is constituted as the ultimate source of scientific truth and knowledge (Condit, 1999; Nelson, 2016). The AncestryDNA organizational website contributes to this narrative of DNA as being fixed and all-determining when telling customers: “Your DNA plays a big part in defining who you are, it contributes to your personal traits and can even unlock mysteries from your recent past” (AncestryDNA, 2019). At the beginning of the 21st century, when DNA sequences of human genomes were being collected, researchers involved in the Human Genome Project announced race not to be a meaningful biological concept (Beckwith et al., 2017). The Project declared DNA sequences around the world are 99.5% identical to one another, regardless of geographical location. They determined that the other 0.5% did not include race-related genetic variances, effectively showing that there is no group of "race" genes. Much research has been devoted to the 0.5% of genetic variance, but more than solving for “race” it provides "a way for exploring human origins, migrations patterns, and the ancestry of modern populations" (Beckwith et al., 2017, p.525)

DTC genetic testing technologies create profiles by comparing genetic samples from a range of populations around the world, typically those that have been racially isolated from cosmopolitan populations which they consider “untouched” (Kopec, 2014; TallBear, 2013). These population's allele frequencies are very specific to rough geographic areas, something that scientists call "meta-populations." A customer’s ancestry might be calculated by comparing their DNA and allele frequencies to a database to calculate geographical origin (Kopec, 2014). The customer is then provided with specific quantified details about “truths” regarding origin and ancestry, which in itself gets racialized when tied to specific nations/geographic areas.

Institutional power exists within an organization in many ways. Fleming and Spicer (2014) identify the idea of power "through" an organization, which occurs when “an organization as a whole becomes a vehicle or agent to further certain political interests and goals” (p.7). DTC genetic testing organizations such as AncestryDNA and 23andMe then become actors with the ability to naturalize racial constructs in particular ways through discourses and influence power/knowledge relations with DTC genetic testing customers (Fairhurst & Putnam, 2004). Organizations have influenced the world of genomics and the content of racial science throughout modernity, but it is only now that the commercial corporation has become a tool for racial meaning-making through consumption (Mirowski & Sent, 2008).

Organizational communication scholars (Cheney et al., 2010) define an organization as “a network of contributions from its members and from people and groups outside of its boundaries" (p.8). Broadly, this approach looks at organizations such as AncestryDNA or 23andMe as a system of symbols, messages, and meaning-making tools implicated within interactions, networks, and broader discourses in which power is always present (Cheney et al.,2010; Deetz & Mumby, 1990). What this means is that organizations, or companies, in this case, do not exist in a vacuum, they are always historically situated and imbued with value discourses and cultural contexts that directly affect the organization’s identity, goals, and interactions with customers or other organizations. In this sense, it would be impossible to fully understand companies that provide DTC genetic testing without taking into account their geographic and cultural positions in the United States. They are by themselves “discursive constructions” that prioritize certain approaches to knowledge-making and that function according to internal and external cultural values (Fairhurst & Putnam, 2004, p.5).

Additionally, these organizations are in the business of knowledge-making, attracting customers because of the potential for genomic and ancestral self-discovery they offer. According to Borry et al.'s (2010) study on DTC genetic testing technologies, the principal marketing devices of these organizations are the client's autonomy and empowerment as well as prevention of health risk, accompanied by an emphasis on convenience and privacy. However, through a quick analysis of 23andMe’s website, which can give us insight into their organizational culture and identity, we can see discourses at play (Fairhurst & Putnam, 2004; Eisenberg & Riley, 2011). By promoting itself as “The first and only genetic service available directly to you that includes reports that meet FDA standards for clinical and scientific validity” (23andme.com, website) this organization positions itself through its corporate texts as a genetic authority right at the tip of the customer’s fingers. By writing “Ancestry percentages are derived from our powerful, well-tested system that provides you with ancestry estimates down to the 0.1%” (23andMe, 2019) and linking these percentages to geographical locations, this organization reifies discourses of race and blood as fixed and intrinsically biological. In this sense, the website of the organization serves as an organizational text where “artifacts are symbolically framed, and regulatory environments are fostered in ways that have consequences for consumption” in the realms of the customer’s body, self-identification, and knowledge about racial constructs (Boczkowski, 2008, p.960).

A post-colonial organizational communication approach to DTC genetic testing locates companies as organizations operating within structures of power and discourses that have been influenced by colonial and post-colonial racial inequality in the United States (Shome, 2016). But more than that, it lets us understand that organizations are centers of knowledge production and implementation, especially when these institutions deal with modernized versions of racial science. As we situate racial constructs within science discourses, a postcolonial perspective problematizes these supposedly scientific understandings of racial identity. Considering that an overwhelming amount of genomic data collected and analyzed through these tests have been derived from European ancestral populations, a postcolonial lens makes a case for a clinical bias that might be affecting understudied populations in matters of both health and policy (Popejoy et al., 2018).

Post-colonial studies attempt to understand forms of power (e.g. race, class, ethnicity, gender, sexuality) within geographical, geopolitical, and socio-cultural settings as a consequence of historical and ideological domination within and across nation-states (Broadfoot & Munshi, 2009; Shome, 2016; Shome & Hegde, 2002). The basic idea is that constructs such as race and sexuality as experienced by a population have been historically affected by experiences of colonial domination. I argue that the ways in which racial constructs function in the United States are a consequence of colonial conditions, and the history of slavery, subjugation, and domination in the Western hemisphere. The United States can be studied as a center of both post-colonial and neo-colonial domination. Postcolonial theory questions how cultures create different identities after colonization, the ideological subjugation of knowledge and histories of the colonized, and the use and misuse of knowledge about the colonized by the colonizers in a way that transcends geographical boundaries (Chavez, 2009). Within this field of study, which focuses on decentering hegemonic perceptions of Western nations and the Global South, organizational communication offers an entry point to (re)organize systems of meanings through discursive practices (Broadfoot & Munshi, 2009; Shome & Hegde 2002). Postcolonial studies offer possibilities to expand the field of organizational communication, which has usually centered on Euro-American intellectual tradition while ignoring global patterns of exploitation, colonization, and inequality of privilege and access, oftentimes perpetuated by organizations (Broadfoot & Munshi, 2009). Scholars have theorized ways in which postcolonial theory and organizational studies can converge to demonstrate and challenge the "continued reproduction of historical patterns of imperialism" (Jack et al, 2011, p.286) and the roles and consequences of colonization on capitalist economies. In order to understand the phenomenon of DTC genetic testing using a post-colonial lens, we must understand the field of genomics as derived from colonial racial science. The creation of a thriving market of "new genetic commodities" based on DNA data seems to be the culmination of a long history of modern population tracking and race-based control (Nash, 2006, p.78).

Studying Direct-to-Consumer Genetic Testing Organizational Websites

Studies in the field of communication have considered how these types of heritage tracing technologies have affected consumers' family narratives and social constructions of race (Foeman et al., 2015; Lawton & Foeman, 2017; Lawton et al., 2018). While it is important to ask how these new technologies might affect the personal lives and identities of test-takers, I am more interested in critically examining how these DTC genetic testing organizations engage in discourses of biocapitalism and how they communicate ideas of ‘race.’ In doing so, I bring discourses of race in conversation with critical organizational communication, an understudied area of research in our field. Additionally, I contribute to postcolonial organizational communication scholarship, where the intent is not simply to examine organizational discourses but to interrupt their flow, and recontextualize and politicize them to enable alternative and more ethical ways of thinking (Jack & Westwood, 2010).

More specifically, this project attempts to deconstruct the underlying discourses in modern DTC genetic testing used by two companies, AncestryDNA and 23andMe, as well as the assumptions these technologies rely on when dealing with the “science” of genomics-based racial identity. This project, situated in critical organizational communication, further explores how these organizations frame the idea of racial identity as an object to be sold, processed, and consumed by their customers.

The following Research Questions guide my study:

RQ1: How do DTC genetic testing organizations discursively construct the idea of ‘race’ for their potential customer through their corporate websites?

RQ2: How do DTC genetic testing organizations engage in discourses of bio-capitalism?

To address these questions, this project analyzes two DTC testing organizations’ websites—AncestryDNA and 23andMe—as artifacts to understand how organizational websites utilize and promote ideas of racial identity, health, and community as embedded in DTC genetic testing. Organizational websites allow organizations to present themselves to their potential customers, clients, workers, investors, and other stakeholders. Power is negotiated in organizations, especially in the case of corporations that only provide services online (or sell their products online), the organizational website allows for understanding power as an interactive process in which stakeholders are connected through discourse (Hoffman & Cowan, 2008; Mumby, 1993). In many cases, the organizational website becomes a “virtual storefront of the company” and a repository of semiotic resources that socially construct the organization for individuals (Sun & Fu, 2019, p.217).

This project utilizes a postcolonial framework as well as Critical Race Theory and Whiteness Studies to position DTC genetic testing organizations within the context of the United States’ colonial history and construction of racial science. This study examines the critical role of science played and continues to play in the creation of racial categories and identity. Considering that modern perceptions of racial constructs are tied to colonial histories of scientific thought, examining the narratives of the two American companies from a post-colonial perspective becomes necessary. The location of these companies within the United States is relevant because of the country’s long history of racial discrimination, enslavement, and eugenic movements (Tallbear, 2013). Using a post-colonial organizational communication approach to examining these technologies can help us understand how organizations can use the idea of racial identity for profit in all its complexities. Using Critical Race Theory and Whiteness Studies helps me position these organizations and their infrastructures in conversation with systemic inequalities and structures of power, such as White supremacy. Through mixed-methods analysis of the two leading organizational websites for DTC genetic testing, the study aims to understand the role of online media as organizational text constituting organizational identity and selling racial identity. This project first uses a mixed approach to analyze the organizational website content of both AncestryDNA and 23andMe, blending quantitative scraping, manual coding, and qualitative content analysis to discover emerging trends in the discourses used by these organizations.

Furthermore, this project will conduct a qualitative media analysis to examine how these trends are reflected in promotional videos found on the two organizational websites. This multi-method analysis will set the basis for my future chapters.

As a way to ground this project, the literature review section in the following chapter provides an overview of some of the salient arguments on organizational discourse, organizational identity, and corporate websites in relation to the concept of biocapitalism in the United States, the system in which the DTC genetic testing companies mainly operate. Furthermore, I proceed to explore relevant literature in the fields of genomics and post-colonial studies against the backdrop of the history of racial classification in the US.

CHAPTER II: LITERATURE REVIEW

This literature review first discusses the concepts of organizational identity and organizational discourses as applicable to DTC genetic testing companies and their corporate websites. Afterward, it will explore the concept of biocapitalism and its significance for organizational studies. The third section will provide background on the field of genomics and its different approaches to race, uncovering how the concepts of racial difference and heredity have been historically used as biopolitical tools. The fourth and final section explores the relationship between postcoloniality and the study of genomics, introducing the usefulness of understanding genomic research as a hybrid of both natural and cultural sciences and its ‘truths’ as always influenced by socio-historical context. My ultimate goal is to emphasize that DTC genetic testing corporate websites are organizational texts that warrant postcolonial interrogation.

Organizational Discourses

This section will go over the basics of organizational discourse within organizational communication scholarship. To do so, it will foreground the role of the organizational website as a vital artifact connected to an organization’s identity. Organizational culture can be considered a set of “artifacts, values, and assumptions that emerge from the interactions of organizational members” (Keyton, 2011, p. 28). In the case of both the companies this project will examine, AncestryDNA and 23andMe, their organizational culture is produced by the artifacts used to communicate about their product such as advertisements and online social media campaigns. These artifacts discursively construct their official corporate website. The corporate website in this case is vital, as it is the main mediator between the organization and its customers—the space in which organizational stakeholders interact. Through the website, potential customers can access information about DTC genetic testing, read and listen to other customers' testimonies, and order and pay for the genetic testing kit to be delivered to the address of their choice. After using the genetic testing kit and filling a small tube with a sample of saliva, customers use traditional mail to send their biological samples to the organization's laboratory to be processed. Afterward, the website serves as a hub for the customer to check their genetic testing results, connect to potential DNA matches, and access genetic health records. The corporate website in this sense becomes a visible and tangible artifact that demonstrates organizational beliefs, as well as vision and mission statements (Keyton, 2017). As such, the corporate website becomes a vital part of organizational culture, mediating values, assumptions, and the ethos of the organization, and serving as the forefront of the DTC genetic testing organization.

Websites are cultural artifacts that portray organizational ideologies through symbols, analysis of these symbols and the corporate language they use enables us to understand organizational ideologies and identities (Hoffman & Cowan 2008). Online spaces such as the "About Us" section, the home page, or the "Frequently Asked Questions" section, give us insight into strategic messages and organizational identity. Additionally, corporate websites create a level of legitimacy and transparency (Garcia et al., 2017). Putra et al.'s (2017) study also shows us how an official website can build corporate social responsibility communication by creating spaces for the organization and its stakeholders to connect, positioning the organization as willing to listen and adapt to possible claims, and fostering involvement with the community to portray trust.

Corporate websites also serve as platforms for stakeholders to communicate with each other. Websites are used to “maximize” connection with stakeholders, distributing information about activities and values (Putra et al., 2017, p.234). Organizational websites have been used in the past as hubs for people from different geographical locations to share solidarity and create spaces for activism and resistance (Pal & Dutta, 2012). They have also been used to foster a sense of community and collective action (Knudsen & Nielsen, 2019), as well as identification with the corporation or organization (Larson & Pepper, 2011). Websites additionally create shared premises for decision-making, framing concepts and values through official organizational texts (Hoffman & Cowan, 2008). In the case of AncestryDNA and 23andMe, both corporate websites are used first and foremost to connect the possible customer to the organization when providing the product, connecting the customer to their genetic testing results, and eventually connecting test-takers to other test-takers with shared DNA sequences. Although neither AncestryDNA nor 23andMe offer discussion boards for their customers through their organizational websites, the websites serve as the main site in which the customer interacts with their own genetic information, always through discourse mediated by the organization. The corporate website, thus, aids in the creation of shared promises, and the identification and framing of possible services or products.

When studying the corporate website as an organizational artifact, we must first understand that organizations and corporations naturally pursue their own self-interest, in many cases using the corporate website to defend their practices or substantiate their legitimacy (Boyd & Waymer, 2011, p.480). In their study of corporate website architecture, Proferes and Shilton (2018) explain that in many cases, specific values can be tacitly or explicitly embedded in the corporate website during the design process, something that might produce inherent bias or framing of the information, a technology that in many cases will guide customers or stakeholders to purchase the product or maintain a positive view of the organization (Benjamin, 2019; Noble, 2018). This teaches us that through studying organizational discourses found on the corporate website, we can further understand the DTC genetic testing organizations' approaches to their services as well as their organizational identity.

Studies that deal with organizational discourse start with the assumption that language has power, as it "depicts, denounces, or reveals something critical about organizational functions" regardless of the possible forms that discourse might take to connect to the potential customer (Putnam & Cooren, 2004, p.324). In many cases, organizational discourse can depict the way the organization functions, as well as the origin of the organization, constructing the organization through social reality through the production of oral, written, and visual texts (Putnam & Cooren, 2004). Discourse, more than an artifact, can constitute and determine the organization as an entity that gets produced and re-produced through interactions of the organization's stakeholders, which, in this case, are these companies' customer bases, potential clients, workers, lab technicians, website operators, marketing teams, CEOs, among others (Kreiner et al., 2015). Media texts, such as the corporate website, do the work of participating in the daily production and reproduction of organizational phenomena, reifying structures and mediating stakeholders' interactions (Putnam & Cooren, 2004). Additionally, more than just text, Discourses with a capital "D" can also give us insight into historical and hegemonic powers that might affect "local discourses, contingencies, and cultural assumptions that, in turn, shape social reality" (Jian et al., 2008, p.301).

For example, AncestryDNA.com's slogan, "Welcome to You," positions the organization as open and personable, inviting potential customers to "discover" themselves through the products available for purchase. When 23andMe’s corporate website uses the slogan “Live in the Know,” this artifact constitutes the company as intimately associated with knowledge-making and research, but also uses emotion to connect to potential customers by positioning the organization as a vital participant in their customers’ lives. As such, this text is both lower-case discourse, as it deals with organizational rhetoric, and capital “D” Discourse, as it engages with broader constructs that deal with knowledge and power both inside and outside the organization. In both of these examples, the corporate website as an artifact gives us insight into organizational discourses and how the organizations themselves use them to define their organizational identity.

Organizational identity is usually theorized in relation to both organizational culture and image, as it depends on both the dynamic internal and external definitions of the organization by different members and participants (Hatch & Schultz 1997, Hatch & Schultz 2002). Organizational identity in this case is important because it allows for organizations to have a certain level of differentiation from other organizations that provide the same services and products. As companies evolve in unpredictable markets, differentiation becomes a way of positioning the organization with specific values and emotions that will distinguish it from its competition (Hatch & Schultz, 2001). Even though AncestryDNA and 23andMe offer basically the same service and product, that of DTC genetic testing providing ancestry and ethnicity estimates, these organizations differentiate themselves from one another through positioning, discourse, and branding, leading to different organizational identities. AncestryDNA, for example, brands itself as being more focused on family and community-building, letting their customers access archival family records and create genealogical trees, as part of their parent company Ancestry.com. 23andMe instead, positions itself as centered on customer’s health and agency. Organizational identity is thus culturally embedded and reflected in organizational text and discourses. The corporate websites are “projected outwards and absorbed back into the cultural system of meaning by being taken as cultural artifacts and used symbolically to infer identity” of the corporation they represent (Hatch & Schultz, 1997, p.361). The ways in which these corporate websites represent concepts such as race, ethnicity, ancestry, immigration, and health, thus become representative of organizational ethos, affecting both discourses and Discourses inside and outside of the DTC genetic testing organization.

The role of race and discourses of ‘race’ in the field of organizational communication tends to be understudied (Allen, 2007; Ashcraft & Allen 2003). Although in the last decade we have seen more interest in understanding organizations’ relationship with ‘race,’ research tends to focus on racial diversity in the workplace (Mease, 2016; Liu, 2017), experiences of leadership as racial minorities (Parker, 2004; Liu & Baker, 2016), and racial identity negotiation within the organizational setting (Redden & Scarduzio, 2018). The phenomenon of DTC genetic testing has been previously studied in the areas of sociology (Roberts, 2011; Kahn, 2015; Nelson, 2016), critical race theory (Bliss, 2012; Chun, 2013; TallBear, 2013), science studies (Boczkowski et al., 2008; Hedgecoe & Martin, 2008), health genomics (Borry et al., 2010; Nash, 2006), and interpersonal communication (Lawton et al., 2018; Lawton & Foeman, 2017). However, most of these approaches have focused on the test and the test-takers motivations and journey of self-identification. Little attention has been given to the organizational entities that have developed the genetic tests as a racial scientific tool and profit from it. I believe that DTC genetic testing needs to be further examined from a post-colonial organizational communication perspective to consider these organizations as sites of knowledge and power intricately connected to racial histories in the United States (Broadfoot & Munshi, 2009; Shome, 2016; Shome & Hegde, 2002). More importantly, we should be examining these organizations’ texts and cultural artifacts such as their websites, to understand how they contribute to the organizational culture of DTC genetic testing companies, and their framing of racial identity for consumption. To further understand the roles that these organizations might be playing in the American market, we should also understand that these companies work under the system of biocapitalism, in which bios (or “life”) has become a product to be produced, sold, and consumed.

Biocapitalism and the Organization

This section will go over the concept of biocapital and the system of biocapitalism. It will also provide a brief overview of biogenomic research industries, centering on the modern DTC genetic testing organization and the business of genomic research. Capitalism in the modern age is considered a political-economic system that is always dynamic, mutable, and ever-changing. Citing Karl Marx, Rajan (2006) explains that capitalism traditionally functions through the production and trading of commodities as a means to produce surplus, with the “commercial activity” being “an end in itself” (p.8). In this sense, organizations that provide DTC genetic testing are capital-oriented corporations that are driven by profit, even when answering to the public, such as investors, stockholders, workers, and customers (Rajan, 2006). Just like other organizations that deal with life sciences, such as pharmaceuticals and stem cell researchers, genetic testing organizations are “overdetermined by the capitalist political economic structures within which they emerge,” being dependent on and coproduced within capitalist structures (Rajan, 2006, p.7). Furthermore, these organizations, because of their management of genetic material, engage in a system called “biocapitalism” that deals with converting basic units of “life” such a genes and the information they generate into a commodity to be traded and sold.

Biocapitalism, which has also been called "Genomic capitalism" (Peters & Venkatesan, 2010; Rajan, 2003), is seen as a system that prioritizes healthcare through the development of science and technology as part of the "new genetic revolution" after the Human Genome Project (Peters & Venkatesan, 2010, p.100). Biocapitalism involves systems of exchange and circulation within life sciences as “life” becomes a material reality to be commodified and used through informational terms. Biocapitalism makes DNA data into “biocapital,” to be circulated and exchanged for money and commodity. As such, information becomes a particular form of currency (Rajan, 2006).

The first definition of “genes” was coined by Czech scientist and friar Gregor Mendel whose work on hereditary traits had been buried for decades before being rediscovered in the early 1900s. After Watson and Crick’s postulation of the double helix structure of DNA in 1953, the word “gene” became the “universal language of life” (Peters & Venkatesan, 2010, p.101). This catapulted decades of research in the area of genetics and genomics. The 1970s and 1980s in the United States saw the beginning of a burgeoning biotechnology industry in which new sciences and technologies based on “the cutting up and joining together of DNA molecules in labs” heavily impacted the legal, pharmaceutical, and market structures in place (Rajan, 2006, p.5). The initial attempts of genomic science were focused on mapping and sequencing human genomes for the generation of public and private databases (Rajan, 2006). The current field of genomics has been enabled by computer technology, as most analyses handle gigantic amounts of information and genetic data and comparisons within pre-existing databases (Rajan, 2006).

The DTC genetic testing company capitalizes on genomic research and customers’ growing interest in genealogy, ancestry-searching, and health concerns. This existing interest in genealogical knowledge and explorations of family history is in many cases shaped by globalization and a drive towards self-exploration and certainty that intersects with “categories of ‘native’, ‘settler’, ‘national subject’ and ‘immigrant’” (Nash, 2006, p.79). Customers of DTC genetic testing companies have their DNA compared to existing genomic databases belonging to the organization. Modern genomics by itself is a field that deals with informational science, and as such it involves a multiplicity of scientific perspectives, using biological concepts, as well as mathematics, molecular genetics, cell biology, computational biology, and statistical analysis, to be able to accurately predict genetic information (Rajan, 2006). A system like biocapitalism requires behaviors and forms of communication that unethically position the *other* as less than human, objectifying them and generally converting customers into bodies to be used and discarded. Mumby (2011) explains: “the other becomes an object for measurement and manipulation rather than someone with whom one engages in genuine dialogue” (p.92). Even though corporate ethics, social responsibility, and environmental concerns have been used strategically in the past by successful brands to connect with customers (Borgerson et al., 2009), it has proven difficult for organizations that deal with genetic information to disentangle themselves from a long history of oppression as they work within the racialized and White supremacist culture of the United States. Indeed, distancing themselves from problematic practices might also be difficult when operating in a biocapitalist system that rewards the medicalization of customers’ issues.

Another characteristic of biocapitalism, as it manifests itself in DTC genetic testing organizations, is the organizations’ reliance on consumers’ participation. Instead of being a traditional capitalistic exchange of capital for goods or services, the consumer participates as the generator of the product, which in this case is genetic information (Merz, 2016). The organizations collect this data, generate genomic databases to be sold to third parties, process the genetic information, and eventually resell the product to the customer/consumer.

Merz (2016) understands the services provided by DTC genetic testing companies in relation to contemporary trends in capitalism, such as a mode of production in which boundaries between production, reproduction, and consumption are continually distorted (p.122). The author sees the role of the customer within the organization as free labor, in which the customer transforms into a producer and consumer of online genetic research. In the very specific case of African American communities, genetic testing organizations monetarily capitalize on heritage and ancestry tracing, which becomes an emotional and necessary endeavor because of the United States' history of slavery, while at the same time revitalizing racial science. The success of many of these organizations depends then on the idea of being participant-driven and customer-centered, and much of their revenue exists because of this unequal relationship between the customer and the organization that eventually turns them into "pro-sumers." They are the producers and consumers of biocapital, contributing their labor to the organization, the main beneficiary of this relationship (Merz, 2016). The creation of biocapital, or the selling of what constitutes "life" or genetic information, doesn't fully fit within traditional understandings of Marxist political economy (Rajan, 2006). Instead of dealing with the capitalist and the patient-consumer as diametrically opposed to each other, biocapitalism engages with an organization or corporation, its market value, and the potential consumer/producer continually contributing to organizational power through the creation of the biocapital (Rajan, 2006; Merz, 2016). As part of the creation of this biocapital, other types of genetic data such as racial composites and biogeographical ancestries go through a process of fetishization that involves "the displacement of social relations onto an object" as well as the "transformation of fantasies into figures"

(Ahmed, 2013, p.5) in which the actual genetic information can be interpreted through a social lens to be mined for meaning.

Merz (2016) provides a good example of the process of fetishization. Merz (2016) analyzes one of 23andMe's initiatives, the now-defunct African Ancestry Project, which offered free genetic testing kits to users with four grandparents born in one of the several African countries that had been most affected by the slave trade. The benefit of this project was offering customers the ability to "uncover" their "African Roots" (23andme.com website, 2020). While claiming to empower African Americans with health and ancestry information, 23andMe reproduces racial logics of difference and revalorizes the organization's biocapital.

This cultural phenomenon, which will be further explored in the following section, occurs in a variety of settings and situations that go beyond the studied organizations and their scope. Speaking of Henry Louis Gates' *Faces of America*, a TV series that examined the DNA roots of invited guests, Nakamura and Chow-White (2013) for example, position the use of DTC genetic testing for entertainment as a "new form of racial technology, posed as a curative to the older racist techne of enforced forgetting and information erasure or management" (p.3). Through a TV show, genetic testing was framed as a "truth-telling or re-membering device that can recover a lost past" situated firmly as an aid for racial identity construction (Nakamura and Chow-White 2013, p.3). In this sense, technology becomes one of the many ways in which race and the 'discovery' of race becomes an integral part of the DTC genetic test.

Race and Genomics

This section will provide insight into the field of genomics and its fraught relationship with the idea of ‘race.’ It will also go over the history of racial differentiation in the United States, the link between heredity, and eugenics, and past biopolitical uses of race. This section will introduce the concept of ‘biogeographical ancestry’ as a term that DTC genetic testing organizations utilize as a heuristic for racial constructs.

It is important to note that from the beginning of genomic research, United States’ interest in large-scale laboratory science did not necessarily originate in the university sector, but as a commercial initiative (Mirowski & Sent, 2008). The fields of science and genomics have always been characterized by “shifting alliances” between the American state, the commercial corporation, and academia (Mirowski & Sent 2008, p.673). As such, DTC genetic testing cannot be disentangled from national endeavors that fostered genomics as a field in the 1950s or eugenics state programs that depended on the idea of race as measurable and quantifiable (Schuller, 2018). Rudimentary heredity studies and the beginnings of the burgeoning field of genetics and genomics were marked by the American public’s interest in scientific racism (TallBear, 2013). Modern genomics research can be understood as ‘science’ that has always had a market focus, creating a synergy between the “production of genetic knowledge and the production of capital” (Robert, 2011, p. 149) and radically transforming our cultural conceptions of science.

To understand the ways in which companies such as AncestryDNA or 23andMe work, we must first understand the intricate relationship between race and genomics as a field of study. While recognizing ‘race’ to be a complex term filled with social meanings and constantly being transformed, Omi and Winant (1986) propose a definition of ‘race’ as a “concept which signifies and symbolizes social conflicts and interests by referring to different types of human bodies” (p.55). ‘Race’ first denoted a “group of people connected by common descent”, such as a noble family or kindred (Chun et al.,2011, p.40). After enlightenment, the term shifted to encompass geographically-bounded groups of people marked by what were seen as “common” characteristics such as skin color or phenotype (certain physical traits such as eye shape, nose, ear size, hair texture, etc.).

However, race is not necessarily a tangible thing but a political category. It has been used to differentiate human beings from one another along murky racial lines that upon close examination seem contextual and imprecise (Omi & Winant, 2014). For example, in the United States, many African American self-identified individuals might possess a lighter skin color than Italian-Americans who might see themselves as ‘White’ (Bayor, 2009). Another example of how racial categories are not clear-cut is demonstrated within Latino communities throughout the Americas. They might be considered part of one racial category in the United States, but in practice, individuals from Latino communities might consider themselves White, Indigenous, white-passing, mixed-race, multi-racial, and of African descent depending on their cultural identification and racial identities (Wade, 2017). Because of the impossibility of accurately distinguishing race according to skin color or phenotype, scholars dedicated to the study of race believe that it is more productive to actually think of race as a “set of relationships” between people in a community who are perceived to be different from the dominant social class or majority culture (Spickard, 2010). It is this socially-constructed difference that leads to situations of socio-cultural (and in many cases economic) inequality.

Our understandings of race as a construct depend on context and have always had political connotations since its formation. The idea that race is a social construct doesn't mean that race is not real. Its status in society as a political grouping and mediator of social interactions means that our perceptions of race have very real consequences on populations' access to health, opportunities, wealth, and status (Roberts, 2011). This means that how we understand 'race' in different cultures is born out of the necessity to rationalize some type of difference between majority and minority populations. Renowned race theorist, Dorothy Roberts (2011) establishes a difference between what she calls the two meanings of race, as a biological grouping (which tends to encompass physical features such as skin color and hair texture) and as a political grouping (p. 5), with both of these categories always being interconnected

All across the globe, race has served the purpose of differentiating between populations, and as such racial dynamics have affected and been affected by historical tensions, colonialism, and imperialism (Omi & Winant, 2014). "Race" and perceived difference have been used to justify slavery and exploitation of certain populations, restrict political power of others, control access to resources in newly formed societies, formulate laws regulating marriage and reproduction, and systematically eliminate groups of people (Duster, 2004). Because of these discriminatory practices based on race, race is considered not to be a "biological category that is politically charged" but a "political category that has been disguised as a biological one" (Roberts, 2011, p. 4). Biological distinctions that may or may not be there, that may or may not be perceived, have been used to regulate populations' rights. 'Race' has been used to justify inferiority, inequity, denigration, and overt discrimination towards groups of people seen as different than the majority of the population in a given setting, and thus racial dynamics are the outcome of global relations of power (Omi & Winant, 2014; Roberts, 2011,).

Although the critical race studies framework understands race and modern systems of racial differentiation as relatively modern concepts, they were "prefigured in various ways by ethnocentrism, and [took] preliminary forms in ancient concepts of civilization and barbarity, citizen and outsider/slave" in the European Middle Ages and that were eventually solidified by legal structures (Winant, 2000, p.172). In the United States, race and law have been historically intertwined. Gross' (2009) research on racial identity trials exemplifies the creation of racial categories in the country was a consequence of ideological and legal work that helped draw the line between Black and White citizens of the United States and their rights. Law was also effectively used as a tool of racialization that helped break up multiracial alliances and justified the expropriation of Native American lands at the beginning of the colonization period (Gross, 2009, p.297). Creating racial categories demarcated by law also served the function of strengthening the institution of slavery by making it congruent with race while encouraging poor White people to identify with White elites (Gross, 2009, p.297). At the beginning of the 20th century, legal definitions of race served to separate White immigrants with ease of access from Asian and Mexican immigrants that were considered to be inassimilable to a White nation (Gross, 2009, p.297).

Critical race theory embraces the social construction of race while at the same time acknowledging biological implications on lived experience. Lopez (1994) defines race as " a vast group of people loosely bound together by historically contingent, socially significant elements of their morphology and/or ancestry" (p.193). Winant (2000) expands on this definition, acknowledging the materiality of racial differentiation and adding that 'race' is "a concept that signifies and symbolizes sociopolitical conflicts and interests in reference to different types of human bodies" (p.172). At its most basic level, critical race theory understands that the term ‘race’ can refer to a multiplicity of things that get associated with biologically-based human characteristics or human features “for purposes of racial signification” (Winant 2000, p.172).

After the Second World War, the concept of “race” sees a significant shift toward social constructionism. Instead of objective or ‘real’ physiognomy demarcating racial difference, we see an understanding of race as related to objective or ‘real’ social structures. Winant (2000) explains three different trends: 1) Ethnicity-based theories of race, which saw race as a “culturally grounded framework of collective identity”, 2) class-based theories of race, which derived from Marxism and perceived race in “terms of group-based stratification and economic competition,” and 3) Nation-based theories that understood race “in geopolitical terms” related to the decolonization process of the postwar era, tying race with citizenship and “peoplehood” (p.178). Although these theories presented an advance over essentialist views that tied race only to biological constructs, postwar understandings of race were limited and reductive. Even then, these understandings of race are alive, and inescapable, having permeated social life and modern discourses on ‘race.’

At the end of the 20th century, with the mapping of the Human Genome Project, critical race theorists would include genetic testing and ancestry as a factor in racial formation. Lopez (1994) recognizes race and race difference as a “social phenomenon in which contested systems of meaning serve as the connections between physical features, faces, and personal characteristics” with race groups being akin to social groups and “not genetically distinct branches of humankind” (p.193). With the impact of the DNA revolution and the technological advances that characterized it, Gilroy (2000) would use the term “raciology” to signify a new shift that would shift and destroy “the virtual realities of ‘race’”, with technological and genetic approaches affecting the “mechanisms that govern how racial differences are seen, how they appear to us, and prompt specific identities.” (p.11).

Gilroy (2000) claimed that this shift would change the meaning of racial difference and the relationship between human beings and nature in what he termed a “crisis of raciology” (p.15). His argument exhibited a certain level of hopefulness associated with the beginning of the century, claiming that DNA mapping would have a profound transformation on the idea of “race” and its representation, offering up DNA and genomic information as part of a possible abolitionist project. Gilroy (2000) also warned that this “crisis of raciology” would involve the swapping of ‘race’ as it had been defined in the past (through biological science and pseudo-science) for wider blanket terms such as “culture” or “ethnicity” that would take center stage in human differentiation and social hierarchies.

As a way to bridge biological race and socially-constructed race, the “new racial theory” of racial formation associated with critical race theorists would include recognition of comparative/historical dimensions to race and racialization, as well as a racially conscious conception of agency, that would recognize social and racial reforms as linked to modern political movements (Winant, 2000). The racial formation approach: 1) understands race and racial identities as unstable and politically contested, dependent on context, 2) views racial formation as affected by intersecting and conflicting discursive and structural “racial projects,” and 3) understands different concepts of race, leaving space for local, global, individual, and organizational agency (Winant, 2000, p.182). Most importantly for this research, however, this new racial formation approach would understand racial signification and social structure as affected by micro and macro aspects, in which “human interaction rather than natural differentiation” is understood as the basis and source for racial categorization (Lopez 1994, p.196).

The racial formation approach will provide this research with ways of understanding organizational discourses on ‘race’ as existing “racial projects,” not necessarily purposely harmful, but always already existing in relationship with social systems of power, on a micro-scale (establishing a hierarchy of values and operating between customers and organizations) or on a macro scale (establishing specific ways of understanding ‘race’ in a system of biocapitalism). Additionally, critical race theorists understand that the concept of ‘race’ and discourses tied to it is experienced in a number of conflicting dimensions that might include various spheres, such as an individuals’ self-identification, how they are perceived by others, skin color, or other phenotypical traits, racial ancestry, etc (Roth, 2016). These dimensions are in many ways tied to one another; however, they are not the same and, in many cases, might even operate in conflict with one another. Even though ‘race’ is a catch-all term used to identify these and other dimensions, Roth (2016) argues that much race scholarship and public discourse on ‘race’ actually compares “across several distinct, albeit correlated, variables” (p.1310).

Roth (2016) breaks down different dimensions of the concept of "race" as found in discourse. These include: 1) racial identity, 2) racial self-classification, 3) observed race (which includes appearance-based observed race, and interaction-based observed race), 4) reflected race, 5) phenotype (which includes skin color, and other features such as hair texture, facial shapes, etc), and 6) racial ancestry (known according to family history, or genetic-based). All of these dimensions of ‘race’ as a concept can be found on the organizational websites and play a part in DTC genetic testing organizations’ discourses on ‘race’ and thus, offer a framework of analysis.

In the United States specifically, race and coloniality have always been connected. The meaning of race in the American continent has its political roots in the colonization of Native American tribes and the existing economic system based on slave trade and exploitation, and thus ‘race’ has served a “political function over the four hundred years since its inception” (Roberts, 2011, p.5). In revolutionary America, perceived biological difference was “essential” to justify the enslavement of Africans and African Americans in a nation ironically advocating for the ideals of “liberty, equality, and natural rights” (Roberts, 2011, p.24). Furthermore, racial theorist Kyla Schuller (2018) identifies the American 19th century as a time and age in which race, more than a “fixed” construct of “individualized matter”, primarily functioned as a way to produce “hierarchies of somatic capacity” with the overall goal of unevenly distributing resources through national territory (p.12). During the 19th century, the concept of ‘race’ helped produce a pecking order with the central goal of managing the American population and sorting them into social groupings based on pseudoscientific biological demarcations (Roberts, 2011; Schuller,2018). Racial classification in the newly-created United States followed the need for a modern system of power and economic exploitation based on inherited status that saw ‘race’ as something passed down from mother to child, as children’s status as enslaved or free was determined by their mother’s status based on existing law (Roberts, 2011).

During American colonial times, keeping track of racial ancestry served as a way to differentiate populations (Schuller, 2018). The perceived biological difference associated with ‘race-fueled American law and social relations. Through census and record-keeping as well as blood quantum and anti-miscegenation laws that limited civil rights and prohibited marriage between people from different races, difference was established through heredity (TallBear, 2013; Nelson, 2016). Following post-European Enlightenment racial constructs, the human body was seen as a biological repository of distinct racial substances associated with phenotypes passed through generations (physical characteristics such as skin color, eye color, hair texture) and that determined an individual’s place in the nation’s racial hierarchy (Schuller, 2018; Roberts, 2011). Customs such as the “one-drop rule,” determined that having ‘one drop of Black blood’ and/or one known African ancestor made one ‘Black’(Spickard, 2010, p, 335). These rules were sometimes built into state laws. Other laws regarding interracial marriages and ‘admixture’ between races, as well as immigration restrictions, were also justified by racialized science that argued for the existence of only four or five distinct races of humans (Usually White-European, Native American, Asian, and African) claiming racial mixing to be unnatural and immoral (Spickard, 2010).

Throughout centuries the idea of ‘race’ as a biological fixed construct would fuel systematic oppression of minorities in the United States. Even after the passing of the 13th amendment to the U.S. constitution in 1865 which abolished slavery, the Jim Crow era still upheld an anti-black system and was heavily marked by racial division and segregation that required a clear demarcation of racial difference (Alexander, 2011). The practice of eugenics science at the beginning of the 20th century was only the natural evolution of this system, which depended on the idea of race as a measurable and quantifiable construct. Eugenics as a socio-historical movement, which was popularized on American soil from the 1880s to the 1930s, defined race as biological, emphasizing the “breedability of the human species” and measuring breeding populations and their ancestry through quotas as a result of a “complex negotiation between culture, society, and biology” (Chun, 2013, p.45). Eugenic science, following ideals of scientific racism, also marked humans as “carriers of eternal characteristics” associated with race meant to be stored and transmitted to the next generation and served to promote the ideals of

White and Aryan supremacy (Chun, 2013, p.46). Arguing for reproductive control of population groups deemed ‘impure’ or genetically deficient, an ideal that eventually was adopted by Nazi Germany, the Eugenics movement expanded through American governmental institutions spearheading compulsory sterilization of minorities, “better babies contests,” genetic engineering, and euthanasia programs for those considered “feeble-minded” (Duster, 2004; Schuller, 2018). The consequences of the Eugenics movement can still be seen today in instances of medical racism in communities of color, discriminatory treatment towards disabled individuals, and forced sterilization of minorities and immigrants. In this system, ‘race’ and its links to blood relations became an important element in the mechanism of power because of its symbolic function (Foucault, 1990). Heredity and racial ancestry became a way to distinguish the “moral” and the “worthy” subjects of the state from the disposable and exploitable. Rudimentary heredity studies and the beginnings of the burgeoning field of genetics and genomics marked the American public’s interest in scientific racism (TallBear, 2013).

After the horrors of WWII and the Holocaust, the Eugenics scientific movement and their conception of race as a purely biological construct started to be questioned by the international community. In 1950, the world experienced a discursive shift of the term ‘race’ when the United Nations Educational, Scientific, and Cultural Organization (UNESCO) issued a landmark essay called “Statement on Race,” in which race was declared a social phenomenon that was cultural and context-specific rather than a purely biological one, emphasizing that “human populations share most of their traits” (Roberts, 2011, p. 43). This was the beginning of the idea of ‘race’ as a social construct linked to concepts such as culture, religion, ethnicity, ancestry, language, and geographical background.

The idea of race as a social construction was solidified at the end of the 20th century, after long decades of trying to isolate racial genetic differences (Condit, 1999), with the mapping of the human genome in 2000, which declared racial differences to be not biologically meaningful. Through the collection of human genomic sequences around the world, scientists of the aforementioned Human Genome Project announced sequences around the world to be 99.5% identical to each other, regardless of geographical location, with the other 0.5% not including race-related genetic variances. The findings effectively showed that there is no scientific basis for "race" genes (Roberts, 2011). DTC genetic testing attempts to solve for “race” in the remaining 0.5% of genetic variance, which is believed to be related to migratory patterns and ancestry (Beckwith et al. 2017). In this way, through statistical probability and assumptions about gene relations, time, space, and identity, as well as ideas of ancestral purity and genetically cohesive populations, these technologies introduce the idea of ‘race’ into the genome (Kahn, 2015; Roberts, 2011). After the Human Genome Project, the science of genomics was seen as “a milestone in human intellectual development, a sign of the arrival of geopolitical unity, and evidence of the essential fraternity of humanity” (Bliss, 2012, p.1). Genomics was also lauded as a technology that finally had “closed the door” on the idea of biological race, but had become the new authority on what race would mean in the new millennium (Bliss, 2012, p.1)

Genomics can be considered a new type of modern racial science in which human beings are placed in distinct racial categories for research purposes (Roberts, 2011). Just like racial demarcations were used in the past to justify social inequities between racialized populations, genomics relies on a classification system that understands race as immutable and the body as a static repository of genetic material, a trend in the biomedical sciences known as “racial-genetic determinism” (Gravlee, 2009, p.49). Genomics and the existing work on human-population genetics draws from pre-existing understandings of race as biological. Mixing this with contemporary thoughts on cultural diversity and human multiculturalism, genomics reconfigures races as genetic and scientific categories for exploration (TallBear, 2013).

Anthropologically speaking, ‘race’ is indistinguishable from human genetic variation, even when genetic technologies available to the public seem to conflate the two. Gravlee (2009) argues that there are "seldom clear genetic boundaries between populations” (p. 50). The traits used to distinguish "race” (such as phenotype or skin color) cannot predict other biological aspects, and human genetic variation is minimal across racially defined groups. The genetic variation found in humans is not consistently grouped in genetically distinct categories or discrete units corresponding to ‘race’. Each person’s genome, their complete DNA, occurs in a “continuum that cannot be partitioned by clear boundaries” and that doesn’t correspond to popular racial categories (Roberts, 2011, p.51). Even genes that contribute to phenotypical appearances, such as physical characteristics like skin color or hair texture, are considered to be statistically insignificant and cannot accurately reflect distinct genetic variation or fall neatly into racial categories (Roberts, 2011). Because of this, the entire mapping of the Human Genome was seen as a discovery that would start a supposed ‘post-racial’ era in which human genetic difference would defy typical racial classifications (Bliss, 2012).

So how does the field of genomics or genetic testing technologies account for the concept of ‘race’? The answer is: in a roundabout way. The main technique used by genome scientists to identify common genetic patterns in different populations involves mapping something called “haplotypes” and how they might repeat themselves around the world. A haplotype is defined as “the set of alleles found on a single chromosome” located in a DNA strand. In many cases, the order in which proteins are arranged becomes so specific that it can serve as a marker when looking at DNA variation and heredity (Benjamin, 2009, p.342). Through determining haplotype and “allelic variation” on the DNA of a specific customer, DTC genetic testing is able to match the sample to other samples in an existing database, finding other customers with similar strands of inherited DNA and making probabilistic guesses regarding ancestral location (Benjamin, 2009, p.343).

Even though there is no genetic boundary for being classified into racial groups, the genetic differences that exist among populations are associated with changes across geographical regions (Roberts, 2011). So even if there are not necessarily ‘genes’ that indicate a percentage of ‘Black-ness’ or ‘Asian-ness’ (which by themselves are fraught categories) per se, genetic testing can make probabilistic guesses on individuals’ so-called ‘biogeographical ancestry,’ based on genomic information and statistical probability (Bliss, 2012; Roberts, 2011).

There are three overarching models in the field of genomics that exemplify distinct approaches to race: 1) the biologically deterministic model that relies on race as a “proxy for biological distinction” (Bliss, 2012, p.100). This model relies on historical taxonomies of races as inherently different and distinct from each other, and thus, quantifiable. 2) “the weak correspondence” model that claims that there are no genetic races but “socially meaningful groups having significant biological commonalities” (p.101), and 3) the social constructionist model, which understands race as a product of cultural, historical, and social interaction and follows the idea of race not as inherent or quantifiable, but existent through the social process of racialization. Bliss argues that genomicists continually “move between these models as working models, elevating one or another according to the different practical and social concerns that pertain. In fact, because race signifies a set of interlocking notions of difference, its re-signification can be witnessed in the space of a single definition, argument, or even sentence" (Bliss, 2012, p.101).

However, despite the possible intentions of genomicists, genomics as a field still relies on the quantification of race to maximize and minimize similarities and differences between studied 'racial' groups depending on the need to consider race as a biological or socially constructed category (McCann-Mortimer et al., 2004). Genomicists that question the idea of biological 'race' consistently focus on minimizing differences and maximizing similarities, while genomicists that argue for a scientifically valid construct for 'race' use quantification to emphasize found difference between the 'racial' groups studied (McCann-Mortimer et al., 2004). This demonstrates that 'race' and genomics have a variable and fraught relationship that needs further study. Although 'race' is widely used as a variable in social scientific and medical research, it is mostly used as a proxy in genomics for an "unspecified combination of environmental, behavioral, and genetic factors". The idea of racial difference as purely genetic leads to racial inequalities in public health approaches and misconceptions (Gravlee, 2009, p.49). In this setting, the effects of possible environmental racism have been reinterpreted as conditions that might be genetically determined. However, race should be understood as an "interdependent nexus of biological, cultural, and social dynamics," such that even when race does not exist biologically, the idea of "race" does, and human biology is affected by this performativity of race and the different experiences and exposures to structural racism and exploitation (Merz, 2016, p. 130).

Bliss (2012) widely documents genomics' struggle to create an "ethically conscious new science of race" despite genome scientists' attempts to be anti-racist or even post-racial (p.5). Offering a more positive outlook, she argues that genomics as a field "does not [necessarily] mark the re-emergence of a prior science of race" but rather "a new understanding of race" that brings together molecular science, public health, and bioethics in order to recast 'race' in what she describes as "historically conscious, yet politically empowering terms" (Bliss, 2012, p.9).

"Scientific" discourse in DTC genetic testing is entrenched in racial discourses that stem from choices and assumptions "made by scientists embedded in culture" (Kahn, 2015, p.71). In other words, racial categories, origin, or "race" do not necessarily enter the field of genomics because they fundamentally exist in the genome, but because scientists and corporations are introducing and locating specific subsets of data as "race" in relation to "genes, time, space, and identity" (Kahn, 2015, p.71). This is not to say that the entire field of genomics is wrong and unable to biologically determine difference, but that when difference is located it is always already framed and understood within cultural and social paradigms of race. In a way, this type of "science" is always embedded in culture and affected by dominant racial theories that follow a "common sense" approach to difference, always categorizing individuals in racial terms (Omi & Winant, 2014, p.11). This "common sense" regarding difference gets replicated in the levels of production and consumption of genetic testing which attempts to use seemingly obvious categories of race to understand biological factors (Omi & Winant, 2014, p. 11).

The quantification of racial difference that DTC genetic tests engage in, and the subsequent sorting, analyzing, and distributing within population groups of genetic data, are oddly reminiscent of past biopolitical projects linked to "capitalist development and expansion" such as slavery and hierarchies of subordination that were able to shape social, political, and economic relationships in the United States (Ross et al 2017, p.189). These testing practices cannot be distanced or disentangled from very rich histories of "racisms, colonialisms, and oppressive religious and nationalist doctrines" (Tallbear, 2013, p.202), as population sciences in the United States are derived from Euro-American colonial doctrines of race-mixing. In this sense, it is impossible to talk about race without talking about biopolitical projects of population control. Eugenics as a movement defined race as biological, emphasizing the "breedability of the human species" and measuring breeding populations and their ancestry through quotas as a result of a "complex negotiation between culture, society, and biology" (Chun, 2013, p.45). Eugenic science also marked humans as "carriers of eternal characteristics" associated with race to be stored and transmitted to the next generation (Chun, 2013, p.46). So, the Eugenics movement was intrinsically biopolitical, as it served to regulate the American nation. Biopolitics, and the exercise of biopower, functions through "the diagnosis, surveillance, and subjectivization of the docile body" and has the ability to transform the individual into biologically distinct groups to be "measured, administered, and regulated" throughout generations (Schuller, 2018, p.14).

Historical exercises in biopower during American colonial times operated around the notion of heredity as a way to serve the "bio-political goal of differentiating within a population, rather than simply tracing familial commonality" (Schuller, 2018, p.29). Through the establishment of difference through heredity, the body was thought to be a biological repository of an immutable racial substance that was "passed on from generation to generation" and that determined the nature of individual identities (Schuller, 2018, p.30). Although twentieth-century events such as the global chastisement of the eugenics movement and the Civil Rights Act of 1964 gave way to a more nuanced understanding of race as culturally and socially constructed rather than biologically based, the field of racial genomics did not cease to engage with racial constructs as purely scientific (Nash, 2006). Using the framework of "state of the art science", race is commodified through an ever-expanding genealogical market for population genetics (Nash, 2006). In this way, these types of testing technologies help "reconfigure both race and indigeneity as genetic categories” in ways that can both reinforce difference for purposes of discrimination or self-determination (TallBear, 2013, p.147). Postcolonial studies offer an entry point to engage with difference rooted in colonial relations of race.

Genomics and Post-coloniality

This section provides a brief overview of how postcolonial studies can be used to understand race and genomics. It also deals with the concept of ‘genomic sovereignty’ as an existing tension within the Global North and the Global South when developing international genomic research. Furthermore, this section theorizes the potential benefits of engaging and understanding genomics as a science that borrows from both nature (biology) and culture (historical context).

Postcolonial studies is a "theoretical project that thinks through the relations and problematics of colonialism" and forces us to think about power in the context of geopolitical concepts such as nationhood, national identity, and borders (Shome, 1996, p.205). Postcolonial scholarship strives to understand forms of power (e.g. race, class, ethnicity, gender, sexuality) within geographical, geopolitical, and socio-cultural settings as a consequence of historical and ideological domination within and across nation-states (Broadfoot & Munshi, 2009; Shome, 2016; Shome & Hegde, 2002). Within this field of study, which focuses on decentering hegemonic perceptions of Western nations and the Global South, communication becomes a way to de-mystify and re-organize systems of understanding through discursive practices (Broadfoot & Munshi, 2009; Shome & Hegde, 2002). I highlight some of the intellectual resources offered by postcolonial studies in this section to situate them as my theoretical framework.

As mentioned before, the term “genomics” is linked to the new world of molecular genetic sciences and information sciences generated by different human genome projects in different localities such as the United States, Mexico, India, and Japan (Fujimura, 2003). However, it also relates to the commodification of genetic material by biotechnology companies and further application of this data to medical settings as well as the possible ethical, legal, and social consequences of genomics (Fujimura, 2003; Rajan, 2006). The birth of genomics as a field radically altered the production of knowledge, transforming our “understandings of life, bodies, disease, health, illness, relatedness, identities,” and our concepts of both humanity and nature (Fujimura, 2003, p.177). Historically, genomics has also been given the power to transform social relations while “remaking categories of identity” such as racial background, ancestry, citizenship, blood relationships, health, and privacy (Richardson, 2013, p.216).

This approach still understands the “gene” as a malleable symbol that encompasses both biological and socially constructed ideas of race (Condit, 1999; Nelson, 2016; Roberts, 2011). Nowadays, DNA is seen as the ultimate beacon of knowledge and as such, it goes unquestioned by both the organizations that provide this type of testing and their potential customers (Nelson, 2016). Nelson (2016) writes about the apparent invincibility of genetics and the tinge of racial authority conferred to DTC genetic testing services. A post-colonial organizational communication approach critically examines this authority exerted by genomics and DTC genetic testing, viewing them as modern iterations of early 20th century racial science. A post-colonial organizational communication framework also explores the ways in which genomic discourse can be used to “other” existing populations like Native Americans as “ancient, remote, less evolved, less enlightened ancestors of more modern living people” while remaining racially ‘pure’ (TallBear, 2014, p. 202). Additionally, taking this approach would force us to grapple with the idea: who are the real beneficiaries of these types of technologies?

Racial theorists Omi and Winant (2014) argue that the ways in which the concept of ‘race’ is theorized and understood are then shaped by “actually existing race relations in any given historical period” (p.11). In the context of the United States, and as I have explored in previous sections, racial dynamics are considered to be “products of colonialism” (Omi & Winant 2014, p.37). American race theorist Dorothy Roberts (2011) writes: “Colonial landowners inherited slavery as an ancient practice, but they invented race as a modern system of power […] Race radically transformed not only what it meant to be enslaved but also what it meant to be free” (p. 12). As such, biological conceptualizations of inherited race in the United States context have always had a political and ideological function. This biological view on race and demarcated biological difference was used to justify the enslavement of Africans and the genocide of Native American tribes in a nation “founded on a radical commitment to liberty, equality, and natural rights” (Roberts, 2011, p. 24).

Post-colonial studies take on genomics engages with these biopolitical projects and their specific background of colonization and hegemonic racial scientific constructs by “rethinking” the effects of colonialism on social life and the complex relationships between past and present histories of colonization and globalization (Ahmed, 2013, p.11). By recognizing that the idea of ‘race’ as used by DTC genetic testing has its roots in slavery and colonialism, rather than following precise or exact biological categories, it understands DTC genetic testing and its conception of race as a social, political, and historical construct.

Additionally, Abraham (2006) argues that using a postcolonial perspective allows scholars to understand the so-called global trends of techno-science, like the field of genomics, as produced under colonial and post-colonial regimes that have affected many of its hegemonic practices and claims. For instance, the study of what is called a "post-colonial technoscience" (p.210) offers an entry point to interrogate certain ways of doing science. A postcolonial frame locates the dominant approach to scientific inquiry within geopolitical structures of domination, and processes of capitalist globalization and challenges our dominant understanding of what might be considered rational and valuable knowledge of science. In this way, DTC genetic testing organizations are deeply embedded in colonial and hegemonic forces that center knowledge-making as deeply intertwined with a history of race relations. Their location within the United States, the country that spearheaded the development of global (or international) genomics and shaped the conversation on and dominant understanding of it as “science” offers them the power base (Harvey, 2017) and sustains epistemic coloniality (Anderson 2009, Ibarra Colado, 2006). Postcolonial studies are concerned with issues of “epistemic coloniality”—the power to produce and institutionalize knowledge—considered necessary for the “conquest of identities through knowledge” (Ibarra Colado, 2006, p.464). I intend to demonstrate organizational discourses produced by DTC genetic testing organizations as a particular example of epistemic coloniality.

Our understandings of genomics are thus affected by modernization theory, which is rooted in the belief that Western scientific rationality is “value-neutral” and the key to social progress (Harding, 2012, p.2). This idea, derived from Enlightenment, positions rationality and thought processes from the West as “science” that must replace traditional beliefs of knowledge-making in the Global South. Associated with “religious beliefs, myths, and superstitions about nature and social relations,” knowledge from the non-West is seen as backward and as such, ought to be eradicated (Harding, 2013, p.2). This exceptionalist view of modernity positions

"Western views of science and technology" as the end-all, assuming that only the Global North is capable of fully understanding and pursuing science ensuring "the regularities of nature and social relations" (Harding, 2013, p.6). Scientific rationality in terms of instrumental rationality is considered to be the most accurate tool for measuring and understanding the social order universally, and the Western society the only culture able to achieve it (Harding, 2013).

Like other sciences, genomics was built from this view, and as such cannot be distanced from modernist hegemonic power. Throughout historical exercises of genomic science, bio-genetic material from indigenous groups has been extracted and patented in what is considered a modern form of bio-colonialism (Nash, 2006). "Indigenous" genetic material is considered a vital source of knowledge to understand migratory history, and as such genomics projects such as the Human Genome Diversity Project and the Genographic Project have both capitalized on this collection under the guise of research. In a wide-known example of this type of bio-colonialism, American biological anthropologists researching genetics and human evolution traveled to the Amazonian jungle to collect blood from the Yanomami tribes throughout the 1960s (Goodman et al., 2003). In what is thought to be one of the grossest genomic violations of health ethics, these biological samples were collected under the rationale that the relative isolation of the Yanomami, which populate the Venezuelan and Brazilian Amazon, would give researchers the chance to study what they imagined to be pre-historic human's DNA and genomic information. Embedded in this quest for genetic information is the association of the Yanomami as backward, isolated savages (Goodman et al., 2003). In the late 1990s and early 2000s, this case was publicized by a media-savvy Yanomami group, the pro-Yanomami Commission, that started a campaign "to bring the samples back" to their original communities and eventually spill them into the Orinoco River (Goodman et al, 2003, p.xv). Later genomic exercises of power, such as the Genographic Project attempted to create collaboration between indigenous populations and genomic researchers through voluntary participation, avoiding associations with medical or pharmaceutical research. But still, most genomic initiatives fail to consider possible inequities embedded in research (Nash, 2006).

Other types of historical genomic projects haven't included many countries in the Global South, and are dominated by European and American interests, even when branding themselves as "global" or International. In the first phase of the International Haplotype Mapping Project, for example, samples were collected only from Japan, Nigeria, China, and the United States. In the United States, this project targeted diasporic populations in the US, such as the Mexican-American community in Los Angeles, and Gujarati Indians in Houston, as "part of the appeal in targeting them was their relative compliance to the sampling protocol" (Reddy, 2007, as explained by Benjamin, 2009). Harris (2011) argues that a post-colonial approach to academic inquiry requires us to understand "the dynamics of scientific practice" (p.76) and the ways in which they are tied to places of origin, communication, distribution of natural and human elements, and geopolitical and diasporic relationships that might be affected by (or replicate) historical patterns. Postcolonial analysis, as an ethical critique, is concerned with what is known as the "geography of knowledge" (p.64) drawing attention to the center of knowledge production and the modernist notion of "science" imbued with biopolitical exercises of old and new colonial patterns. Different knowledge-making projects, in this case, the ones centered on genomic data, result in "differing patterns of traces" (p.76), yet center on the ways in which the Global South and the Global North are connected and affected by each other.

As a reaction to exploitative genomic trend, many postcolonial countries have framed their interest in genomic science and genetic projects of development through the frame of genomic sovereignty, seeking to protect their citizens' genetic material from large scale global genomic projects and companies that might seek to profit from this perceived difference.

However, different genomic sovereignty policies in post-colonial nations do the conflicting work of cultivating both scientific autonomy and reinforcing dependence on foreign capital and knowledge networks (Benjamin, 2009). This is because the global structures of power, hierarchical in nature, mediate genomic knowledge practices, and distribution of scientific, economic, and technological resources undemocratically globally. They end up establishing genomic categories of human racialized differences as linked with national identities. For example, the Mexican HapMap initiative was developed because "researchers in these regions do not consider the International HapMap's diasporic samples to be a satisfactory snapshot of the genetic diversity of their national [Mexican] populations." (Benjamin, 2009, p.346).

Claiming a certain level of genomic sovereignty involves countries exercising "protective ownership over the DNA of their populations" (Benjamin, 2009, p. 341). The idea of countries having genomic sovereignty "strategically (re)biologize[s] the nation-state" by asserting that nations in the Global South, considered less powerful by many international institutions, could be able to protect their population's genetic information from nations considered more powerful (Benjamin, 2009, p.343). Through genomic sovereignty, institutions, in many cases affiliated with governments in the Global South, can claim new biopolitical entities such as "Mexican DNA" or "South African DNA" prioritizing socio-political categories (like nationality or ethnicity) over scientifically produced ones such as genotype (Benjamin, 2009). Through legislation, these institutions frame the genetic data of a population as a "national resource" for nation-building (Benjamin, 2009, p. 344). Genomic sovereignty is then linked to the idea of postcolonial genomics, in which nations and initiatives from the Global South can use genetic technologies for "liberatory and empowering ends" in new scientific contexts (Benjamin, 2009, p.342). For example, the 2008 Mexican legislation prohibits and penalizes the use and research of Mexican-derived human genome data by foreign genomic enterprises and corporations. The legislation qualifies this genetic material as the property of the Mexican government, not to be sold for profit or exploited by multinational pharmaceutical companies (Benjamin, 2009). Other similar policies have been passed in India, Thailand, South Africa, and China.

However, we must take into account that the recent turn toward genomic sovereignty also contributes to the fallacy of genomic homogeneity as linked to geopolitics and nation-states, linking citizens as biologically distinct from other populations in the name of national self-determination and protection against globalization. For example, Benjamin (2009), studying the ways in which the Mexican Institute for Genomic frames its genomic inquiry, realizes that in many ways, this institution follows the national discourse of “mestizaje” as law, understanding genomic data and information through a very specific lens that values Mexican cultural and genetic hybridity (p.349). Staying in line with a pre-existing national discourse, which reinforces racial mixture and denies racial differentiation, the Mexican Institute for Genomics, creates a brand for the government and the nation-state, further attracting interest and economic support from existing public health, academic, and religious institutions in the country. But more importantly, this genomic endeavor, firmly situated within the national discourse of “mestizaje” solidifies the idea of homogeneity as tied to the nation-state and geopolitical borders. This is an example of how our priorities in science, as well as the concepts or ideas we culturally pay attention to, and the ways in which genetic data is framed and understood can be shaped by current socio-historical conditions. Another example of this would be how in India, genomic researchers use caste-linguistic groups as anchors in genome mapping instead of perceived ethno-racial backgrounds (Reich, et al. 2009).

A postcolonial approach to genomics is also able to see the potential that genomic science has to create new identities and global understandings in the Global South. New genetic knowledges, the ones acquired through engaging in genomic projects, have the potential to produce “active, informed, and self-actualizing” communities in the Global South through collective membership and cultural ownership (Nash, 2006, p.79). Also, postcolonial genomic science challenges strict categories of understanding by which citizens can be considered “immigrants,” “settlers,” or “indigenous”, and as such has a great emancipatory potential (Nash, 2015, p.174). Even when many DTC genetic tests connect specific DNA sequences to a supposed geographical origin or ancestral place, they acknowledge that at some fundamental level that test-takers “naturally belong elsewhere,” disrupting, in many cases, hegemonic ideas of geopolitical borders and national politics of belonging (Nash, 2015, p.174). However, this logic also emerges under the idea that communities should have some level of genetic similarity and shared ancestry in order to be valuable, connected, meaningful, and able to achieve a level of collective identity (Nash, 2015). In this sense, it leaves no space or potential for social, racial, genomic, or cultural differences.

The existence of postcolonial technoscience as a field of inquiry can cross geopolitical boundaries, as it concerns itself with flows and transmissions of knowledge, "the travels and circuits of scientists, knowledges machines and techniques" (Abraham, 2006, p.210). It is a critical way of understanding science and technology by examining knowledge claims, reminding us that "due to the complex intersection of science, colonialism, and modernity, postcolonial technoscience can never be only about science.” (Abraham, 2006, p.213). Because existing ideas of “science” have enabled colonization efforts and formed the basis of colonial and post-colonial nations, articulations of science exist as “history, as myth, as political slogan, as social category, as technology, as military institution, as modern western knowledge, and, as an instrument of change” (Abraham, 2006, p.213). The expanse literature discussed in this chapter is fundamental to my data analysis. I describe details of my method in the following chapter.

CHAPTER III: METHOD

In this chapter, I describe the multimethod approach in this study. Based on the idea of organizations as discursive constructions that “naturalize the world in particular ways,” (Fairhurst & Putnam, 2004, p.8) organizational communication studies have previously used content analysis, a research method that is widely considered to be both systematic and objective when describing and quantifying phenomena or other types of information (Elo & Kyngas, 2008). Content analysis has been used to study the proliferation of messages in mass media and internet sites (Manganello & Blake, 2010). In the area of genomics, Nordgren and Juengst (2009) have conducted a rhetorical content analysis of selected DTC genetic testing websites before, exploring their use of essentialist terms to construct racial identity. However, DTC genetic testing corporate websites haven’t been systematically examined through a multi-method approach. As mentioned in the introduction to this project, these are the research questions that guide my study:

RQ1: How do DTC genetic testing organizations discursively construct the idea of ‘race’ for their potential customer through their corporate websites?

RQ2: How do DTC genetic testing organizations engage in discourses of bio-capitalism?

To address my RQs, I use a mixed-method approach of computer-assisted quantitative scraping, qualitative thematic analysis of the two leading DTC genetic testing companies’ corporate websites, AncestryDNA.com and 23andMe.com, as well as media analysis of advertisements available on their websites. While computer-assisted quantitative scraping indicates the frequent occurrence of codes and demonstrates their importance, the qualitative thematic analysis leads to the finding of themes in the artifacts’ texts, providing a rich and complex account of the data (see Vaismoradi, Tarunen & Bondas, 2013). Additionally, this dissertation engages in media analysis of advertisements easily available through the two corporate websites.

Procedure

Data set. This study examines discourses found on the organizational websites of the two leading DTC genetic testing organizations, AncestryDNA, and 23andMe. Corporations consider websites important platforms for online corporate communication strategies whose usability depends on how the product information and the corporate content are purposefully displayed (Garcia et al., 2017). Additionally, they are a strategic and meaningful corporate text that adds to the existing organizational identity. Instead of examining how corporate websites are effective, I am interested in understanding what the content found on these organizational websites "says about the organizations themselves" (Hoffman & Cowan, 2008, p.229) and says about how they discursively engage in biocapitalism and utilize racial constructs.

AncestryDNA was launched in May of 2012 as a subsidiary of Ancestry.com, a private company with headquarters in Utah, dedicated to genealogical records and consumer genomics. AncestryDNA was launched as a service providing DTC genetic testing for customers interested in using genomic technology to trace genealogical lines. Based on information available through its corporate website, Ancestry.com claims to have "more than 16 million people in its consumer DNA network" through AncestryDNA, effectively making AncestryDNA the largest DTC genetic testing organization in the United States (AncestryDNA, 2021). Ancestry, AncestryDNA's parent company, has a calculated revenue of around 1 billion dollars. According to an official public record filing with the United States Security Exchange Commission in 2015, AncestryDNA’s self-reported revenue mostly comes from customer testing and paid membership access to genealogical records.

23andMe is a private company located in California offering DTC genetic testing services to around 5 million customers since its creation in 2006 (Sandler, 2020). Although financial records are not public, 23andMe’s calculated value is speculated to be around 2.5 billion dollars with investors such as Google, Johnson and Johnson, and the National Institutes of Health providing around 830 million dollars since its inception (23andMe Company Profile, 2020). 23andMe had a calculated revenue of 475 million dollars in sales in 2018 (Sandler, 2020). Even though 23andMe is considerably a smaller company compared to Ancestry, its focus has changed towards health research, partnering up with American laboratory corporations and pharmaceuticals in the last couple of years, accounting for most of their income.

First and foremost, corporate websites display product information and organizational content, such as the organizations’ different objectives and regulations at the moment of the websites’ creation or edition (Garcia et al., 2017). Corporate websites usually offer “multiple semiotic resources such as audio, video, text, image, graphic, and hyperlinks” that explicitly connect to the organizations’ goals and purposes (Sun & Fun, 2019, p.218). These semiotic resources can be read as discourses that are being used for multiple purposes, such as helping potential customers differentiate between companies providing the same service (DTC genetic testing in this case) through the positioning of organizational values and emotions (Hatch & Schultz, 2001, p.1041). More importantly, however, the corporate website does the job of a) constructing organizational identity, and b) offering space for strategic communication and organizational messaging between stakeholders.

The websites to be analyzed, Ancestry.com/DNA and 23andMe.com serve as the main link between these organizations and their potential clients, as they are used to provide information about DTC genetic testing, guidance to interpret results, customer stories, and charts explaining the details of the tests offered. They are also the main ways in which customers can purchase and order the test to be delivered at their preferred addresses. These websites are public and "intentional means of communication" between the organization and potential customers (Herring 2004, p.53). In this sense, the contents of the site are readily available and observable for further research.

Data collection. Herring (2004) considers the website's homepage as the minimal unit defining a corporate website, as it is the "part that users are most likely to encounter" and "the most salient and important part to analyze." (p.52). In the case of AncestryDNA and 23andMe, the homepage is the main place of interaction between the organizations and their clients, as most advertisements explicitly direct the customer to their respective websites in order to purchase the test. The website portals then serve as the base of these organizations, which only offer their product through online means. Additionally, after registering through the website and purchasing the DTC genetic test, these respective websites function as the hub for the tests' results, guiding the customers and giving them the chance to connect and compare results, analyze their genetic data, and understand their genetic make-up through breakdowns, charts, and animations. The websites also function as sense-making devices which provide background on racial identity, giving customers information about different types of heritage, their possible ancestors' migratory trails, and in the case of 23andMe, possible health outcomes associated with genetics. Because of these reasons, both AncestryDNA and the 23andMe homepages serve as the backbone for the data collected. This means that other types of visual material such as online advertisements, television advertisements, the DTC genetic testing package, information found through third-party vendors, or the companies' YouTube channels were outside the scope of this project.

The data collected for this dissertation comes from the main website/homepage and all the links are easily accessible and readily available on the homepage. I collected the website data using MaxQDA, a mixed-methods analysis software that allows for quantitative scraping and direct collection of websites as a particular extension of Google Chrome web navigator. Additionally, to have access to pop-ups and images that MaxQDA finds difficult to collect, I took screenshot images of the data, collecting these in a Word document. I collected data specifically from the http://ancestry.com/DNA and http://23andMe.com/ homepages and hyperlinks, on 4 different Mondays throughout August 2020. This allowed me to monitor these websites, distinguishing possible changes in content, generating 4 different data sets. I did this following a snowball sampling pattern, starting from the homepage, followed by other pages accessible through hyperlinks to the homepage (Ban, 2016). These other linked webpages also constituted part of the data, avoiding the potential problem associated with determining the actual boundaries of a website (Herring, 2004). Choosing the homepage and all webpages linked from the homepage as the data to be analyzed also helped to hold the size and nature of the sampling somewhat constant (see Herring, 2004). This type of sampling was done to avoid other types of sampling procedures such as convenience samples and “non-random Internet samples” that might affect and skew the data (Miller et al. 2011, p.11). Through the examination of corporate websites, I was able to only access discourses crafted specifically by the organizations. After data collection I had collected a “map” (See Table 1.) of both of these websites and their content over one month, amounting to around 4 sets of 200 pages of data, which mostly overlapped as these websites suffered very minor changes throughout the span of four weeks.

This map included the following web pages:

Table 1. List of collected "web pages"

AncestryDNA Home page	**23andMe Home page**
1) Collected through MAXQDA a. Main Page See Courtney's Ancestry Story https://youtu.be/LWith5YzlXA Watch our privacy video b. Covid FAQ c. Buy Now d. Explore AncestryHealth e. List of All Regions 2) Collected through Screenshot/word document a. What your results will include b. See a sample community c. See a match list d. Explore AncestryDNA traits e. FAQ – Top Questions about AncestryDNA	1) Collected through MAXQDA a. Main page b. Covid 19 study c. Our services i. Health + ancestry service ii. Ancestry + traits d. How it works i. How it works ii. How it works Youtube video: https://www.youtube.com/watch?time_continue=1&v=C6O9xKdCl9U&feature=emb_logo iii. Our science iv. Your privacy v. Research participation e. Privacy (same as your privacy) f. Shop

Additionally, this project entailed media analysis of 28 video advertisements, as organized in the tables (See Table 2 and Table 3) below. These video advertisements, which center on "Customer Stories" were available through the studied corporate websites and produced by the studied organizations. The duration of the videos spanned from 28 seconds to 5 minutes. These videos were accessed throughout the month of August 2020 and were manually transcribed and coded for analysis, amounting to around 50 pages of transcriptions and over 60 pages of notes.

Table 2. List of analyzed 23andMe's videos and their categorization within the organizational website

23ANDME VIDEOS	CATEGORIZED BY 23ANDME AS
1. Charlie's Story	Health
2. Jill's Story	Health
3. Jordan's Story	Ancestry
4. Hilary's Story	Health
5. Anne's Story	Health
6. Alix's story	Health
7. Josh's story	Health
8. Chris + Colleen's story	General DNA
9. Kristin's story	Health
10. Sarah's story	Health
11. Angelina's story	Ancestry
12. Pat's story	Ancestry
13. Winnie's story	Ancestry
14. Debra's story	Ancestry
15. Kamal's story	Ancestry
16. Roy's story	Ancestry
17. Mandy + Jason's story	Ancestry
18. Erika + Kristen's story	Ancestry
19. Gwen's story	Research

Table 3. List of analyzed AncestryDNA's videos and their categorization within the organizational website

ANCESTRY DNA VIDEOS	CATEGORIZED BY ANCESTRY DNA AS
1. Courtney's Story	None
2. Privacy video	None
3. Reactions: Introducing Elizabeth	Ancestry
4. Reactions: Introducing Alex	Ancestry
5. Reactions	Ancestry
6. Reactions: Charlotte	Ancestry
7. Reactions: Ellen	Ancestry
8. Reactions: Jan	Ancestry
9. Musician inspired by family history	Ancestry

Following the premise that examination of an organization's online texts can give us insight into organizational culture and identity (Eisenberg & Riley, 2011), I posit that organizational websites (and the video advertisements they produce and distribute) are "cultural products in themselves" in which symbols play a defining role in sustaining, creating, and circulating meaning (Boczkowski, 2008, p.955). Modern organizations, especially the ones that mostly operate through online means, are embedded in existing sociotechnical networks in which certain choices are made and artifacts are symbolically framed according to the organizational culture (Martin, 2008; Boczkowski, 2008). In this sense, the choices these DTC genetic testing companies make when branding themselves and their product for consumption, articulate their fundamental values with their cultural context and their customer base (Gillis, 2006).

Data Analysis

Quantitative computational scraping. After collecting the data from the websites using MaxQDA and screenshots, I first analyzed the data by doing a computer-assisted quantitative scraping of the data, which I used to calculate word frequencies and narrow the data from the organizations (as shown in Appendix 1 and 2). This helped me generate the dominant words within the organizational discourse, analyzing and counting a total of 31,556 words (using stop words/exclusions such as “and,” “the,” “of,” etc.). These dominant words were used to do a preliminary analysis of common word usage by the organization. Furthermore, by placing these 150 dominant words into context using a MaxQDA feature called MaxDictio, I was able to contextualize these words within sentences for further thematic analysis.

Originally, I hoped that this quantitative scraping would provide the “opportunity to narrow the search down to relevant content” (Neumann and Coe, 2012, p.22), as the software would determine words with increased use and significance, patterns of repetition, word associations, and clusters of words while offering insight on contextual information. This type of computational approach can be used to understand how different constructs are framed within the text utilizing cluster algorithms (Matthes & Kohring, 2008). Computer-assisted content analysis maximizes reliability while dealing efficiently with large amounts of data, minimizing human biases and maximizing the generalizability of findings (Su et al. 2017). However, it is a method that might not fully grasp latent meanings in the data in the same way that human researchers might. In my research process, it was soon apparent that the computational scraping of the data failed to pick up discourses of “race” in the data. This is because “race” is never outright mentioned on the organizational websites, just implied. At the same time, this method was useful in leading me to look at other patterns in the data that I originally hadn’t intended to study, such as how the organizations handle discourses of health and technology. Hence, the computer-assisted scraping of the data was useful in highlighting the keywords from a sea of information. Simultaneously, it was useful in showing that a certain keyword I expected to be central to the dataset (such as race) is completely absent. Even then, the computational scraping of data helped me analyze large quantities of data, and the keywords served as a lower order of abstraction that aided with the creation of categories during my second stage of analysis.

Finally, human labor is still considered superior for the coding of latent content by making sense of the socio-cultural and historical contexts informing the data. Scholars argue that it is most beneficial to blend computational and manual methods in content analysis (Lewis et al., 2013).

Qualitative thematic analysis of organizational websites. The next step in analyzing the data involved manual coding of themes, using iterative analysis to find patterns within the organizational websites’ data (Lindlof and Taylor, 2009; Tracy, 2019). Throughout this analysis, I developed themes based on theoretical sampling (Corbin and Strauss, 2008), looking for relationships between the concepts, and paying attention to the re-occurrence of patterns and repetition of concepts. I further conducted multiple close readings of the collected websites, marking examples that would further help demonstrate the theme (Ban and Dutta, 2012). Each sentence in the data served as a unit of analysis, helping me examine key themes in each of the collected webpages, creating ‘Open Codes’. Furthermore, these Open codes were compared to one another, as I examined possible interrelationships among these codes to create Axial coding categories that further cemented my selective coding categories (Charmaz, 2006), which set the basis of chapters 4 and 5, my first two analytical chapters (as shown on Table 4 below). Identification of these themes followed an inductive and deductive process data, as it involved a close reading of the websites to create these categories. My data analysis was reflexive in nature and iterative (Charmaz, 2006, 2009).

I assigned labels to mark racial and biocapitalistic undertone in the data (induction) and at times I labeled data based on concepts in theories (deduction). Throughout this iterative process, I decided to focus on categories of "Race" and "Health" as these made up the bulk of the data. Other categories identified, such as the codes for "Technology" and "Community" will be further explored in post-dissertation research.

For my analysis illustrated in chapter 6, I largely follow the method of abduction (Charmaz, 2009; Pal & Buzzanell, 2013). Intrigued by my findings in chapters 4 and 5, I used abductive logic to re-visit my data to double-check the inferences with more data and theory for theory construction. I wanted to probe deeper into my inferences on race being de-centered and re-centered. The process of data "abduction" involves "creatively inferencing and double-checking these inferences with more data" (Timmermans & Tavory, 2012, p. 168). Researchers argue that abduction allows for a more radical rethinking between data and theory construction (Timmermans & Tavory, 2012).

Table 4. Codes for thematic analysis

	OPEN CODING	AXIAL CODING/CATEGORIES	SELECTIVE CODING
RACE Chapter 4: Re-centering Race through discourses of ethnicity and ancestry	History Geography Difference Self-discovery Identity Family Ethnicity Ancestry Origin	1) Race as tied to Ancestral lineage and Biogeographical Ancestry: History, geography, origin, ancestry, family 2) Ethnicity as code for race – Race as both personal and collective identity: difference, self-discovery, identity, family, ethnicity	“The Ancestral You” “The Ethnic You”
HEALTH Chapter 5: de-centering race through discourses of health	Risk Epigenetics Validity Knowledge Choice Personalization Proactivity Control Privacy Science	1) Scientific thought: science, knowledge, validity 2) Preventive care: personalization, epigenetics, risk 3) Customer Agency: Choice, proactivity, control, privacy	“The Knowledgeable You” “The Healthy You” “The Empowered you”
TECHNOLOGY	Information Access Materiality Interactivity	1) Human Processes: Access, interactivity 2) Machine Processes: materiality, information	NOT IN SCOPE
COMMUNITY	Altruism Connection Migration Self-actualization Belonging Nationality	1) Self-interest: altruism, belonging, self-actualization 2) Relationship with others: connection, nationality, migration	NOT IN SCOPE

The potential for theory generation by abduction depends on the researcher's positionality to stimulate insights and choice of theory. My positionality as a postcolonial and critical race studies scholar led me to engage with literature on whiteness in Chapter 6 to gain more insights into the data. The abductive logic, resting on the "potential relevance" of the data as related to theoretical background (Timmermans & Tavory, 2012, p.173), made it possible for me to demonstrate possible biases and discriminatory design in the organizational (website) infrastructure in Chapter 6.

In sum, my data analysis reveals that themes position the customer as The Ancestral You, The Ethnic You, The Knowledgeable You, The Healthy You, and The Empowered You. At a meta-level, these themes represent discourses of race and health and indicate that race is continually being de-centered and re-centered. I further re-examined the inference that allowed me to demonstrate the organizational websites as infrastructures of whiteness. Next, I conducted a critical media analysis to understand how the findings played out in the organizations' storied advertisements.

Critical media analysis of video advertisements. The third step in analyzing the data involves cross-referencing themes found through qualitative thematic analysis with patterns in the 28 analyzed video advertisements. Videos shown on AncestryDNA.com and 23andMe.com were used to promote DTC genetic testing, and in many cases show narrativized "Customer Stories" with customers being interviewed about their experience with DTC genetic testing. All of these videos show the organizations' official logos and utilize their slogans. To conduct a critical media analysis of these videos, the videos were watched multiple times, transcribed, and close-read for emerging patterns. These were compared to the emerging themes generated through the thematic analysis, with the purpose of understanding how the organizational videos and the corporate websites are in conversation with one another.

Organizational videos do the work of "enhancing public impression of the organization's products or services, put a human face on the organization, and ultimately build the brand (Waters and Jones 2011, p.249). This type of advertising is common on health-related organizational websites, as they help in many cases to inform about treatment or procedures, enhance compliance, and "help consumers make better-informed health care decisions" (Kaphingst et al. 2004, p.516). Both the analyzed websites use these types of narrativized advertisements to connect with potential customers.

Using a Multi-Method Approach

In the past, mixed-method approaches have been used to further understand organizational phenomena (Garner, 2015; Bergman et al., 2016) and to comparatively study corporate website content (Tang et al., 2015). Arguing for the implementation of mixed approaches to the area of organizational communication, Miller et al. (2011) claims that " the vitality of organizational communication scholarship depends both upon insightful and heuristic theory and upon rigorous and diverse methods" (p.5). This type of research helps with converging and triangulating any findings, offering complementary discoveries to supplement the other methods in use. My purpose when choosing a mixed approach to the AncestryDNA and 23andMe corporate websites was to analyze them through three comprehensive analysis methods that will complement one another in terms of reliability and validity. Using this type of method for an organizational communication research project allows researchers to see the potential of studying corporate websites as an integral part of the organization.

Summary

Computational scraping of the data from the corporate websites of AncestryDNA and 23andMe, coupled with further thematic analysis of 200 pages of data and media analysis of 28 videos, led to my findings, which I illustrate in my next three chapters. The computational scraping determined words with increased use and significance in the first stage of analysis (see Appendix A). This helped create a framework of the most repeated words and common phrases in the data. The computational scraping helped me analyze large quantities of data and served as a lower order of abstraction that aided with the creation of categories during my second stage of analysis, in which I developed open, axial, and selective coding categories as part of my thematic analysis of the data. I emphasize the contextuality of the data, opening up more possibilities for interpretation of the information and identifying broad themes and patterns on the organizational websites. The words/phrases (or codes to which each concept is mapped) are then put into context to create themes, which show a bigger picture of what is being discussed by the organizational websites (Castleberry & Nolen, 2018). The inferences were further examined to demonstrate the organizational websites as the infrastructure of whiteness. Finally, a critical media analysis of the videos was conducted to understand how the visuals and texts work synergistically. The next three analytical chapters thread together the findings and show how the themes are reflected in the available video advertisements found throughout the websites. All along, I have been guided by the research questions, the theoretical frameworks of postcolonial studies and critical race theory, and relevant literature. I believe the multi-method approach and triangulation of data have been particularly helpful in gaining insights into the complexities and richness of the data.

CHAPTER IV: RE-CENTERING RACE THROUGH DISCOURSES OF ETHNICITY AND ANCESTRY

My findings demonstrate that the organizations construct race by positioning the customers as *The Ethnic You* and *The Ancestral You*. Such discursive positioning constructs 'race' as something discoverable, fixed, and quantifiable through the scientific method and modern technological advances. The narratives center 'race' in two specific ways: by the use of the term 'ethnicity' as a code for race, which emphasizes race as a personal and collective identity, and by the use of the term "ancestry" as a code for race, emphasizing geo-spatial markers and origin. Both of these strategies contribute to the idea of race being fixed and immutable, and quantifiable. I begin by recapping salient arguments from relevant literature and my theoretical frameworks to emphasize the context in which this study is grounded before moving on to presenting my analysis.

As discussed in the introduction and literature review, direct-to-consumer genetic testing technologies use the customers' DNA to make probabilistic claims and genomic associations, often explaining "common disease in racial terms" (Bliss, 2012, p.31). These companies ask their customers to "affiliate themselves" with a pre-established racial or ethnic group so that in many cases the organization can comparatively focus on specific sections of their database, effectively reading results and possible risks through an already racialized rubric (Bliss, 2012, p.31). However, understanding these organizations' use of "race" and racial discourses could prove more complicated than expected since these organizations have historically avoided mentioning race and have tried to distance themselves from racial constructs and the act of racialization. Being recreational genomic companies, they have “carefully avoided making racial associations” by, in many cases, focusing on the “tailoring” of “genomic knowledge to the individual consumer” (Bliss 2012, p.31). In this sense, even though in many cases these DTC genetic tests end up being racializing technologies, the perception of their ability to make probabilistic terms about genomes helps these organizations avoid using racializing terms (Bliss 2012). This is reflected in the studied data, as the initial quantitative scraping revealed no mention of “race” or derived words. However, this doesn’t mean that discourse on race or racialized constructs are not prevalent within this technology.

My theoretical frameworks of critical race theory and postcolonial studies guide me to make sense of the organizational websites’ discursive patterns and bring forth the themes of *The Ethnic You* and *The Ancestral You*. As mentioned above, I argue that the organizational websites discuss ‘race’ and issues related to ‘race’ through other mechanisms such as: a) using ‘ethnicity’ as a substitute for race, promising customers access to an authentic ‘ethno-racial’ self as well as connection to a collective or communal ethno-racial identity, and b) using ‘ancestry’ as a substitute for race, using genomic science to tie information to historic geospatial markers which are faultily racialized.

The Ethnic You: Ethnicity as a code for ‘Race’

The first pattern that emerges from the data is that these organizations utilize ‘ethnicity’ as a substitute for the term ‘race.’ I argue that instead of explicitly addressing race or racialization, the organizations prefer to use the term ‘ethnicity,’ following the trend started by the DNA revolution (Gilroy, 2000), which fostered cultural and ethnic approaches to race at the beginning of the 21st century to substitute the biological-based old understandings of race.

AncestryDNA promises that their service “helps you understand who you are, where your DNA comes from and your family story” through “ethnicity estimates,” instead of making the link between biological genetic data and cultural identity. Phrases such as providing “details about your ethnic origins” appear on the organization’s videos too. 23andMe’s website cautions customers that their “ethnicity may affect the relevance of each report and how [their] genetic health risk results are interpreted.”

As these websites construct ethno-racial identity based on biological or personal traits, essentializing social categories of identity, DTC genetic testing organizations additionally promise access to uniqueness and authenticity as guaranteed by genomic science. In the following section, I will go over how these organizations utilize ‘ethnicity’ as a way to explore both individual and collective racial identities, by promising both access to the ‘authentic’ ethno-racial self and a sense of connection to an extended genetic community.

One of AncestryDNA’s videos, “AncestryDNA – Courtney’s Story” available on the main website, exemplifies the phenomenon of ethnicity being used as a code for race. In this video, a phenotypically black customer called Courtney describes growing up within an African-American family. Courtney describes: “When I was growing up, I knew very little about my family history. My family is African-American and a lot of African Americans really don’t have a knowledge about where we’re from.” However, she describes taking a DTC genetic test with AncestryDNA to see the regions where her family “came from.” She describes: “You know, it’s also given me a good amount of information on the ethnic groups that I’m most likely associated with through my DNA, and the primary one in Ghana was the Akan tribe.” In this video, Courtney makes a direct link between her experiences as an African-American and her ethnicity. She goes on to say to the camera: “To actually SEE the regions of the specific ethnic group was really powerful for me." This soundbite is also written and used throughout the website as a customers' testimony, with added capitalization on the word "see."

Another video 23andMe called "Angelina's story" also equates race and experiences of racialization with 'ethnicity.' In the video, a black woman called Angelina is presented as a 23andMe customer. Throughout the video, Angelina tells the viewer about her experiences growing up in Brooklyn: "I grew up in Bed-Stuy, Brooklyn, and in Bed-Stuy, being black and our blackness is rooted in the culture." She describes growing up having an understanding of blackness because of the names of the streets and the celebrations of the African diaspora and its history. She also describes how at home, her mother was focused on having "those firm roots". She describes reading books with black main characters and having black dolls growing up, "providing an opportunity for [her] to be grounded on [her] identity as a black woman". She then describes how the rest of the world perceived her as "crazy" for identifying as black, in many cases her teachers at school asked her if she was native American or "Puerto Rican". In this narrative, we also see categories of identity such as "Native American" (culture, ethnicity) or "Puerto Rican" (geographical) being put in opposition to being Black, as if these categories were mutually exclusive.

Angelina describes not knowing much about her father's background: "My father was absent from pretty much the beginning of my life. I have a picture of him, I met him as a baby, but like… I don't know my fathers' race and ethnicity." Here 23andMe presents ethnicity as interconnected to race, presented interchangeably. Angelina explains that growing up she would ask her mom about her dad's race and ancestry but would get pushback from her mom, "there wasn't any room for any sort of complexity there". She eventually describes what pushed her to take the 23andMe test, "It's a human thing to want to know more about yourself, and you can't get any more knowing about yourself than by processing your DNA". Angelina describes taking the test with her mother, who also wanted to know more about her roots and "where [she] came from." When Angelina received her test results she was really looking for "closure" on her identity, she was surprised at the ancestry breakdown. "I thought I would be like 80% African, and I am not". She was able to compare her results with those of her mom. "I began to piece together the puzzle of who my father was and I learned that he had South Asian roots, heavy Native American roots and that felt exciting". "I [now] feel so comfortable in my own skin and it was something I needed and wanted for a long time." Angelina's story presents a great example of ethno-racial genetization of identity, characteristic of a genomic era in which popular understandings of race, ancestry, and ethnicity have been used to reaffirm different classifications of humans according to genetic characteristics (Carter, 2007). As Angelina "finds" her roots, she is able to connect to her South Asian and Native American heritage, expressing that this affected her own ethno-racial identity, which becomes inextricably linked to genetic information instead (or in combination) with her lived experiences as a Black woman.

Both of these narratives exemplify DTC genetic testing customers utilizing the test in the search for an 'authentic' ethno-racial self. This pattern specifically emerges when these organizations present the customers' stories of Black people. 'Angelina' for example, uses the DTC genetic test to "find peace in her identity," claiming that after the test she felt "very much at peace with my identity and who I am as a woman. I feel complete." When presenting the audiovisual story of a black man called Jordan who purchased a 23andMe genetic test, the company claims he has found "a pathway to a stronger sense of himself."

Both the websites additionally make references to finding an authentic and individual ethno-racial identity through DTC genetic testing. 23andMe's promotional slogans found on their website make reference to this by saying to their customers: "*Know what makes you, you. Explore your traits*." Through the technology provided by their organization, they urge their potential clients to "*Know your personal story, in a whole new way."* Another written testimonial says "*It's [the test] helped with my family ancestry work and I find that it helps me learn more of what makes me who I am. (sic)*." AncestryDNA also follows this narrative line. The corporate website for the AncestryDNA DTC genetic test claims it to be "the most complete genetic breakdown on the market, and the most comprehensive portrait of you yet." Through these claims, they position their service as a vehicle for achieving authenticity, especially when concerning racialized bodies. These discourses present ethnic identity as 'authentic' only in relation to a genetic self and a genetic community, which is also closely tied to one's racial identity. The organizational discourses emphasize individualized identity as the modern ideal of authenticity, as the DTC genetic test helps customers find their "true" and "ideal" selves (Taylor, 1997, p.28). This idea of 'identity' as linked to 'authenticity' is also central to the development of a racial identity (Taylor, 1997).

While the term 'racial identity' usually refers to "a person's subjective self-identification" (Roth 2016, p.1313), racial identity is usually seen as dialogical, based on personal discovery and further negotiation with others (Taylor, 1997). Studies done on customers of DTC genetic testing indicate that usually genetic information on ethnicity gets incorporated into the customers' own narratives of identity, becoming a "placeholder" that is woven into "a broader narrative of selfhood in relation to the past" and in conversation with other social structures such as family narratives (Scully et al., 2016, p.177). Although this genetic information is not essential for self-conception, DTC genetic testing organizations discursively present the promise of discovering a racial identity or authentic self (Scully et al., 2016).

By sharing narratives of finding this ‘authentic’ ethno-racial identity, the organizations also establish the importance of genetics, giving moral importance to an innate genetic self that customers must find or claim. Since this authentic ethno-racial identity is presented to be closely aligned with customers’ genetics, the organizational discourses close off possibilities of social and historical phenomena coming into play for identity construction. Nelson and Hwang (2013), when studying the effects of DTC genetic testing on consumers also use the term “racial authenticity” to talk about the “process of subjectification in which one’s identity is shaped from without by ‘social phenotypes’ and rigid expectations – including genetic determinism – that delimit individual’s social options” (p.286). By claiming to provide access to an ‘authentic’ ethnic self, these organizations capitalize on this modern ideal of authenticity, promising “self-fulfillment and self-realization” through the ‘discovery’ of an ethno-racial identity (p.31).

However, this ends up being a false equivalence. Personal ethno-racial identification and genetic information on ethnicity do not necessarily overlap. A customer from these organizations might as well identify as a member of a particular race or ethnicity or might have family stories and a phenotype consistent with that identity, while at the same time having “a genetic marker associated with another group” (Foeman et al., 2015, p.3). In this way, the idea of utilizing a DTC genetic test to ‘discover’ a personal and ‘authentic’ ethno-racial identity is faulty, as inherited genetic markers are in many ways disentangled with lived experiences of race and racialization (Foeman et al., 2015). Promoting DTC genetic testing as a means to finding an ‘authentic’ ethno-racial self also promotes ideas of racial determinism, while being based on "highly contestable statistical probabilities" that in the end contribute little to ethno-racial identity (Merz, 2016, p. 132).

The data also reveal that the texts and the videos used by the organizations often use ethnicity, nationality, race, and other cultural traits interchangeably, not distinguishing them from one another. For example, AncestryDNA's video, "Reactions: Introducing Alex" presents this confusing approach to race and ethnicity. In it, the viewer sees an ethnically ambiguous man, presented in black and white. He narrates: "Hello my name is Alex. I thought that I was half Polish, half Caribbean." We see him smiling in slow motion, opening his eyes, reacting to somebody off-camera. Alex's voice-over says: "This is the moment my AncestryDNA revealed I'm actually a Viking." Then the feminine voice of an AncestryDNA spokesperson says: "Discover your unique ethnic mix and relatives you never knew existed. Order your kit today at AncestryDNA.com." In this 18-second commercial, the organization presents multiple ideas tied to Alex's background—nationality (Polish), a geographical marker (Caribbean), and a cultural identity (Viking)—which are explicitly linked to what they call a "unique ethnic mix."

I posit that this focus on "uniqueness," and unwillingness to distinguish ethnicity from race, culture, nationality, or geography, allows these organizations to depict a genetization framework, where new models of identity are tied instead to individual genetic markers. These narratives used by AncestryDNA and 23andMe prioritize the idea of race and ethnicity being rooted in biology, science, and the DTC genetic test. This means that through the organization, customers can discover themselves based on "ethnicity results that reveal your origins" (23andMe) and "genetic ethnicity" (AncestryDNA), and this new genetic self will take precedence over other cultural or social identities.

Reinstating trait-based ideas of self suggests genetic reductionism, by which the organizational discourses equate the self with genes or “genetic ethnicity” as a way to redefine identity. By subjecting customers to scientific objectivism, the organizational discourses reduce the self to a biological identity, in some ways erasing the social, political, and historical contexts of ethno-racial identities. This promise of individual uniqueness and new-found ethnic identity, however, has little weight or correlation with contemporary views on genomes and identity (Carter, 2007). Carter (2007) further contends that this claim towards ethnic genetic identity instead reinforces physical matter and genomes as the makers of traits, contributing to a type of genetic reductionism in which “a person’s authenticity of social status and belonging becomes a matter of biology.” So even if genomics as a field ‘dissolves’ racial categories, DTC genetic testing reconstitutes them at a deeper genetic level by linking them to “new truth(s) about human identity” and the semblance of a biological ‘ethnicity,’ a term that until now has mostly been associated with culture (Carter, 2007, p.554). Historically, racism and racial subordination in the United States have also conflated race with culture, is based on both ‘racial science’ and racial performance (Gross, 2009). Because racism and discrimination have expressed themselves in what Gross (2009) calls ‘cultural terms,’ race and culture have been connected as a way to reinforce the existing racial hierarchy that reinforces some ‘cultures’ or ‘ethnicities’ as more desirable than others. Although these organizations avoid explicitly using the word ‘race,’ they utilize constructs such as racial identity and racialized collective/cultural identity under the more palatable term ‘ethnicity’ to avoid being deemed ‘racist’ and to distance themselves from historically racist exercises of power.

Besides capitalizing on the idea of ‘discovering’ an authentic and personal ethno-racial identity, both of the organizational websites studied communicate the promise of ‘discovering’ a collective ethno-racial identity, offering potential customers possibilities to connect to their "ethnicity" through the idea of community and access to an extended genetic family. AncestryDNA's website, for example, urges customers to purchase the genetic test to be able to "connect with *your people* in new ways" (Emphasis added), capitalizing on the ideas of connection and community.

One of these narratives presents the love story of "Chris" and "Colleen," a phenotypically white heterosexual couple, who is described by the organization as "two self-described nerds in love." The video explains to the viewer that Chris and Colleen are very interested in genetics and science, deciding to take the DTC genetic test together as part of a romantic St. Valentine's "date" early on in their relationship. The video shows them organizing their wedding and enjoying their wedding with their guests. As part of the reception, Chris and Colleen decide to share their passion for genetics. Chris describes: "We're going to do a little game where people get to guess our genetic traits […] there are eight genetic traits that either Colleen or I have." Guests are the wedding are shown laughing and playing along, discussing whether Chris or Colleen might have more Neanderthal DNA. Even though the advertisement seems to be tongue-in-cheek, offering a comedic and 'quirky' approach to DNA testing, Chris is presented as a genetics savvy 23andMe customer that seems invested in DTC genetic testing technologies as a means for connection. He explains his rationale: "This is the key to your genome, this is the key to your past, where you can see where your ancestry is from, and your present, like, how you are made up from your genes… and sort of your future, what this could mean for you as far as genetic traits." This video advertisement presents DTC genetic testing primarily as a mode for romantic connection, but also as a mechanism for connecting to present and future genetic communities.

AncestryDNA's "Privacy" video, accessible through the organizational website emphasizes this idea of connection: "Our extensive DNA database connects you to living relatives around the world, all this can guide your journey of self-discovery in new, exciting directions, sometimes in ways you never imagined." Some of 23andMe's written "Customer Reviews," located on the organizational website also emphasize this. In them, "Kathy", from Minnesota writes: "I love how 23andMe zeros in on a particular country where your ancestors came from. By using one of those areas, I was able to find information on both of my Norwegian grandparents, great grandparents as well as Great great great grandparents!." In another highlighted customer comment, Heather, from Missouri, writes: "You hear stories of where your ancestors come from, but it's all stories. With 23andMe, these stories are brought to life and new family connections are made that for some reason through the years have been broken." Jason, from Texas, reinforces this rationale for using DTC genetic testing for connection: "I bought my kit to research more about my roots and where I came from. 23andMe has helped me a lot in finding family, connecting dots, and learning about my ancestry."

Throughout the websites' discourse, these organizations offer up opportunities for their customers to connect to an extended genetic community, so that "you," as a customer can "Find your people, open your world." (23andMe, main website). This idea of biological connection fosters a genetic approach to collective ethno-racial identities in both family and community settings. This process is presented as fulfilling for customers and as a positive consequence of DTC genetic testing.

For example, in one of 23andMe's "Customer Stories" video advertisements, we follow "Winnie," a 76-year-old White woman adoptee from California finding her birth family. Winnie narrates: "You always wonder, who does make you who you are? Is it nature? Is it nurture? Is it a combination of both?” She describes knowing she was adopted and having lived a fulfilling life but feeling like “there’s a piece that’s not complete.” Through a DTC genetic test, Winnie is shown connecting to her long-lost siblings. The video shows Winnie and her newly found half-siblings visiting their deceased mothers’ grave. Winnie narrates: ‘I felt a peace that I’d never… it was the end of the search”, she looks at the camera with tears in her eyes. The video then transitions to a small indoor gathering. We hear a champagne bottle being popped and see a member of Winnie’s family lighting candles on a cake, she is situated in the center while her half-siblings sing to her “Happy Birthday.” Winnie reflects before blowing the candles: “What else can I possibly wish for? I mean, this is utopia.” One of her half-sisters kisses Winnie on the cheek. “All of my life I knew nothing, now I know: this is me, this is who I am.” This video presents an idealized story of using DTC genetic testing to foster genetic family connections. Another 23andMe Customer Story also emphasizes this idea of connection to extended family and collective identity. “Pat’s story” is a video advertisement that tells the story of a phenotypically white woman trying to connect to her heritage. Pat tells us that both of her parents were adopted, so she had no clue about her heritage or “where [her] family came from”. Doing the DTC genetic test eventually leads her to find her mothers’ side of the family, helping her connect to her mother’s long-lost siblings. In the video we see 23andMe representatives arranging for Pat and her mother to meet the rest of the family for a winter holiday celebration. Using reality show angles, we see Pat and her mother taking a flight to Kansas and knocking on the door of their newly found family. A woman wearing a Christmas sweater opens the door and hugs Pat and her mother, while emotional violins swell, they kiss each other on the cheek while crying. “You look just like my mom,” the woman says. Throughout the video we see images that signal “Christmas’ such as lights in the form of bells, reindeer, and snowmen. Pat and her new family walk and laugh among the neighborhood Christmas lights. Pat narrates as a voiceover: “If you don’t try and search out that information, you are never going to know…I feel like a whole new world has opened up for me”. The video advertisement ends with a hashtag, for possible customers to use on their social media: #DNAstory.

The promise of connection becomes especially salient when the organizations present the perspectives of black customers, again presenting the DTC genetic test as a way for customers to connect to an extended community or collective ethno-racial identity. The previously mentioned customer story, which presented the experiences of a black man called Jordan, has him explaining the importance of the test for the black community: “For a lot of African Americans we simply do not have those [genealogy] records, we do not have paper trails because slaves were not included on census records before the mid-1800s.[…]Once my paper trail stopped I realized I’ve been carrying around the records I’ve been looking for my whole life, and that’s DNA, so I decided to do a 23andMe test (sic).” The video shows Jordan connecting with a phenotypically white extended cousin and discovering his genetic connection to a slaveholder. Another customer story has an older black woman called Debra again emphasizing the importance of DTC genetic testing: “My great grandfather was a slave, and when he gained his freedom, he and his adult children were able to acquire this land… cause of slavery, most African Americans we don’t know much about our ancestries, history was just passed along word of mouth, so far back as I could go was my great-grandfather Nick, and that’s it. Okay, I know that I am African… but where do I come from? I don’t know that. I just want to know my family, and I wanted to know who I was.” She looks directly at the camera, enunciating her words: “ALL PARTS OF ME.” Both of these customer stories present us with DTC genetic testing as a way to connect to an extended genetic family or community, fostering some semblance of collective ethno-racial identity.

“Debra’s story,” located on the 23andMe organizational website, has more of a religious focus, as it narrates Debra’s experiences with both Christianity and Judaism and what eventually pushed her to take the DTC genetic test. Debra narrates: “There are events in life that will make you go searching for answers, that will make you understand that you have to find something outside of yourself to help you through. For me, it meant looking into my faith”. We see Debra in her church, with her congregation filled with black people singing, clapping, and swaying to the music. Debra tells the viewer about being raised missionary Baptist and going through a divorce. She mentions how a minister had talked to her about Christianity’s Jewish roots, a conversation that would push her to “her quest” to learn about the Jewish faith. She explains: “I just had this unexplainable curiosity about Judaism, I really got so into learning I remember telling my boss ‘Oh I think I am Jewish’ and when I would say it people looked at me like I was crazy, I really didn’t care. It’s like a part of me that was missing all of my life.” In Debra’s story, the DTC genetic test serves as a way to connect to an ethno-racial identity, not only exploring her African-American “roots” but her possible Jewish heritage, which she connects to her experiences with faith and religious communities. In this advertisement, 23andMe focuses on the idea of connection to ethno-racial identity and community building.

Both of these customer stories also present an existing tension with DTC genetic testing. The black community in the United States has been systematically affected by the historical erasure of official records because of the legacy of slavery. These stories make it evident that DTC genetic testing is considered an opportunity by the black community similar to claims by Lawton et al. (2018). The authors argue that many African Americans consider genetic ancestry data as a “gift that helps them fill in blanks in their cultural background and verifies cultural lore, which is a source of affirmation” (p.2). DTC genetic testing organizations have thus catered to the black community, “allowing African Americans to recreate their genealogy distorted by slave trade” (Merz, 2016, p.125). With these types of technologies serving as genealogical aids for the black community (Roberts, 2011), these organizations have capitalized on the African diaspora and the potential black customer. These monolithic narratives also reify the assumptions that African Americans share a certain genetic marker and are biologically distinct from white communities. Such a singular focus on understanding communities through the language of science misses the complex interplay of sociocultural factors, particularly the colonial legacies of racial hierarchy and slavery (Go, 2018).

Another AncestryDNA video advertisement, centered on a phenotypically black customer called Christian, emphasizes the power of DTC genetic testing for African Americans wanting to connect to their ethno-racial identity. The video advertisement tells us the story of Christian, a musician, who describes being the only African-American kid in his class growing up and not knowing much about his family’s history. He narrates: “Discovering my family’s history on Ancestry has been an amazing experience[…] I’m curious to have that peace of mind but also share it with my family when I have children when I get married, and those kids can share with their kids.” Eventually, taking a DTC genetic test helps Christian trace back his family lineage to an activist and musician from Cape Verde, Africa. Christian reacts: “Wow. That’s amazing… to have that direct connection now to Africa.” Christian is further able to connect to this ancestor because of their shared interest in music, claiming that after his results he will be interested in knowing more about Cape Verdean culture and music. This story presents Christian as connecting to his ethno-racial identity through connecting to his ancestor and his unborn children, through the power of shared genetics and inherited family history and interests.

In some ways, these organizations do fulfill the promise of connecting to an extended genetic family or ethno-racial community. The organizations provide ways for customers to connect with genetic "matches" among other possible customers, allowing them to message each other privately, connect their family trees, do genealogical work together, and compare their genetic information and traits. For certain customers, such as adoptees looking for potential family members, this promise of connection is a gigantic draw to DTC genetic testing organizations. For other customers, connecting to a genetic community or 'discovering' this collective ethno-racial identity presents them with the possibility of figuring out family secrets or possibilities of belonging to other cultures.

For example, another 23andMe customer story centers around a phenotypically brown-skinned middle-aged man named "Kamal" taking the DTC genetic test. He speaks to the camera about his experience, where he wonders: "What identifies us as Arab? How do we become 'Arab'? What constitutes an Arab person? That left me with an open question as to what my identity really was, and that remained so for a very long time until a friend of mine told me about 23andMe […] I expected to be Middle Eastern, and then I find out there's 9% specifically Italian and I'm like… you know, that is very interesting, I always felt a part of me was Italian, I speak with my hands, you know, and I like Martin Scorsese movies, and I like watching The Sopranos, and I have an affinity for men's jewelry… none of my friends do, so that explains the Italian very well." In this customer story not only do we see the 'genetization' of identity in full force, but the organization presents us with the genetic test as a way to connect to an extended genetic community, we also see some level of connection to a recently discovered collective ethno-racial identity, even if it is based on popular cultural stereotypes of 'Italian' identity.

The customer in this story longs for cultural identity based on what showed up in his genetic test. This analysis resonates with findings by other studies done on DTC genetic testing that suggest these organizations' framing of collective ethno-racial identity and the experience of taking the test might affect customers' own perspectives, with some of them wanting to "claim a cultural identity more fully because it showed up as part of their genetic background" (Lawton & Foeman 2017, p.79). When customers receive conflicting genetic testing results that contradicted existing narratives of ethno-racial identity, customers were led to "reconcile these pieces of information."

These reactions to genetic information make sense in the context of the United States, as historically race has been continually linked to the idea of family, resting on "biological classifications legitimated by science and legally sanctioned by law" (Hill Collins 1998, 70). The belief is that blood ties or genetic links naturalize members of what Collins (1998) calls "kinship networks" in which race and family end up intertwined (p.69). Historically, racialized communities in the United States have been grouped by law through "notions of physical similarity, such as skin color, facial features, or hair texture" with members of racial groups being seen as connected by a "common bloodline" and thus sharing "similar physical, intellectual, and moral attributes" as supported by the legal system (Hill Collins, 1998, p. 70). This had led to an existing understanding of race groupings as family, which these organizations emphasize through discourse. Consider groupings by language of science. Terms like "DNA relative", "DNA data", "DNA matches", "genetic insights" for gaining "more insights into your genealogy and origins" or for tracing "your ancestors' journeys over time" are found on both the websites suggesting a biogenetic model of kinship, family, and genealogies over relational and cultural meanings of lineage. I engage further with this argument in my discussion on "racial ancestry." This claim to a collective ethno-racial identity is also related to what Nelson and Hwang (2013) describe as "affiliative self-fashioning" or "the constitution of individual identity through and toward the goal of association with others, including ancestors and DNA kin," an aspiration held by many customers of these DTC genetic testing organizations.

The Ancestral You: Ancestry as substitute for 'Race'

This theme, 'The Ancestral you,' shows how the concept of 'race' on these organizational websites is applied through ideas of 'ancestry.' We see this happening when the AncestryDNA website promises customers with the ability to "expand [their] knowledge with population-specific reports that offer a granular view of their ancestry background." The organizational websites analyzed also conceptualize 'race' as tied to different historical and geospatial markers, usually associated with family ancestry and some type of 'ancestral' origin. The DTC genetic testing organizations in this study claim to "revolutionize the way you discover your family history" (AncestryDNA, website) and change your experience of ancestral race. They claim that the probabilistic technology they use is able to trace back ancestry through databases of genetic material, which is tied to specific historic and geospatial markers. AncestryDNA's website claims to map "ethnicity going back multiple generations" providing customers with "insight into such possibilities as what region of Europe your ancestors came from or whether you're likely to have Southeast Asian heritage." 23andMe provides customers with information about their "Ancestral History," claiming that their test can help "Trace your path back thousands of years," motivating customers to "Travel back in time to gain a clearer picture of where you came from, where your ancestors lived and when they lived there." Even though there is no explicit mention of race, these promises refer to the idea of "racial ancestry" (Roth, 2016, p. 1319).

Racial ancestry is a "dimension of race" that is connected to and influenced by other dimensions, such as observed race, phenotype, and racial identity (Roth, 2016, p.1319). In the context of the United States, racial ancestry has been historically used for legally determining Blackness and Indigeneity (Roth, 2016), as racial classification in North America in many cases has historically relied not only on observable characteristics such as physical differences but on some idea of ancestral lineage. These organizations contribute to this racializing discourse. 23andMe's organizational website even promises to let you "explore your genetic connection to famous historical figures" such as Nelson Mandela, Marie Antoinette, or Alexander Hamilton, claiming that "They might share a distant ancestor with you." These claims center the idea of the DTC genetic testing organizations helping the customer connect with family ancestry, their ancestral origin, and their racial ancestry.

Throughout the organizational websites, racial ancestry is additionally connected to geographic locations, with customers' results referencing specific countries and geographically bound communities. For example, AncestryDNA promises to "include information about your geographic origins across 1000+ regions," while 23andMe explains that their DNA laboratory can read "hundreds of thousands of locations in your genome." One of AncestryDNA's videos "Reactions: Elizabeth" plays with this idea of ethnicity being tied to a specific geographic origin. In this short ad, Elizabeth, a white woman from Northampton is shown in black and white, reacting in slow motion to something off-camera: "My name is Elizabeth, and I always thought I was just Liz from Northampton. This is the moment when my AncestryDNA revealed I'm

Russian, Italian, and Middle-Eastern." As in other videos from the "Reactions" ads, a voiceover from an AncestryDNA spokesperson repeats the familiar "Discover your unique ethnic mix and relatives you never knew existed. Order your kit today at AncestryDNA.com."

Another AncestryDNA video shown on the main website keeps telling "Courtney's Story." In this advertisement we are shown a Black woman dressed in kente cloth in the center of the screen, she is wearing a dress and walking among a group of people; behind her we see other women wearing traditional Ghanaian smocks and holding spears (Fig. 3). Courtney narrates as a voice-over, as the scene focuses on the Black women's faces: "Dear foremothers, your society was led by women who governed thousands, commanded armies, yielded to no one." In the background, the viewer hears battle drums and chanting. Courtney continues: "When I found you in my DNA, I learned where my strength comes from." The image changes to Courtney for the first time on the screen; she is a phenotypically brown light-skinned woman wearing an afro; she is surrounded by mountains, and she is staring intensely at the horizon. Behind her a graphic pops up, showing a pie chart with her genetic ancestry. We see Courtney's supposed genetic ancestry breakdown: Ireland 21%, Great Britain 21%, Europe W. 7%, Benin/Togo 5%, Nigeria 9%, Ivory Coast/ Ghana 15%. The advertisement then emphasizes this last region, showing a map of Ivory Coast/Ghana, focusing on "the Akan region." Courtney explains: "My name is Courtney McKenney, and this is my ancestry DNA story." Then we hear the voiceover of an AncestryDNA spokesperson: "Now with two times more geographic detail than other DNA tests, order your kit at AncestryDNA.com"

Both of these videos tie ethno-raciality to ancestral locations or specific geographic markers, emphasizing racial ancestry as a fixed and quantifiable construct, easily accessible through the DTC genetic test. Geo-spatial locations or "geographic origins" refer to biogeographical ancestry, which is considered a biological or genetic component of race based on seemingly “pure” DNA population databases (Roberts 2011, p.227). ‘Biogeographical ancestry’ in the world of genomics is based on the idea of a biological or genetic “component of race” based on genetic markers and their correspondence to DNA databases collected from “pure” populations groups (Roberts, 2011, p.227). Although the database groupings used are not labeled explicitly as ‘races,’ these tend to overlap with familiar racial classifications of scientific racism: White European, Black, Native American, and Asian (Roberts, 2011, p.228). ‘Biogeographical ancestry’ is a handy term for genomicists and bio-ethicists, as it operates within the idea of ‘race’ with less controversial and maybe less dangerous connotations—a commendable attempt when taking into consideration the discriminatory history of racial science (Roberts, 2011). This reconfiguration of ‘race’ as biogeographical ancestry within genomics is supposed to sanitize racial connotations, offering populations a “more objective, scientific, and politically palatable alternative to race” through re-packaging (Roberts, 2011, p.57).

Companies that offer genetic testing services might avoid “making racial associations.” However, their use of ‘biogeographical ancestry,’ their quantification of it, their use of ‘racial terms,’ and familiar racial classification systems might lead customers to read their genetic results only “through a racial rubric” (Bliss, 2012, p.31). The databases used by these organizations as a comparison and for categorization are based on clusters of economic variation working in concordance with “socially organized racial groups” (Chow-White and Green, 2013, p.3) and a system of racial classification that mirrors “cultural, racial, ethnic, national, and tribal understandings of the humans who study them” instead of actual biological phenomena (Tallbear, 2013, p.6). So when viewers of “Courtney’s story” see Courtney’s supposed ethnicity breakdown, they are able to see percentages of different categories used by AncestryDNA, some of which seem very broad (Europe West, Ivory/Coast) or very specific (Akhan region).

Most genetic ancestry tests place customers within categories of "biogeographical ancestry" (Such as "broadly Southern European" or "Western Africa") that get conflated with racial identities. This concept of biogeographical ancestry is based on the premise of static populations that have not migrated or mixed over time, with an underlying notion of pure ancestral population groups, which might not even exist. This makes these types of testing possibly faulty and inaccurate, as they are based on a more static view of the world and do not necessarily consider prehistoric/historic migratory patterns (Kahn, 2015; TallBear, 2013). The concept of “biogeographical ancestry” in many cases gets tied to ancestral race, as it is a concept that implicates not only descent but scientific assumptions about time, space, and racial background of populations as tied to specific geographies (Kahn, 2015). Regarding this, Native American researcher Kim TallBear writes: “Notions of ancestral populations, the ordering and calculating of genetic markers and their associations, and the representations of living groups of individuals as reference populations all require the assumption that there was a moment, a human body, a marker, a population back there in space and time that was a biogeographical pinpoint of originality” (TallBear, 2013, p.6). Assuming the existence of aboriginal untouched populations as racial categories (such as the ones the test uses: Western African, Native-American – Mexican, Sicilian, etc.), as well as selecting moments in history in which these categories start or stop being transformed (Like 1492, the ‘discovery’ of the Americas), genetic scientists can determine social reality using racial constructs.

The concept of biogeographical ancestry gets further complicated because of the historical mixing of human groups and migration patterns that populations have engaged in since the beginning of time (Roberts, 2011). Most genetic ancestry tests place individuals within categories of ‘biogeographical ancestry’ (Such as "broadly Southern European" or "Western Africa") that get conflated with racial identities. The ‘ancestral origins’ databases used to make probabilistic guesses are based on DNA collected from populations understood as genetically “pure” and assumed to be virtually untouched by migration or intermixing, something that is impossible to verify and that doesn’t necessarily consider prehistoric/historic migration patterns, or instances of colonization, imperialism, or genocide (Kahn, 2015).

Additionally, genetic testings’ understandings of purity are constructed not only by artificially bounding geographic areas. In many cases, they are constructed according to current geopolitical lines, ignoring previous historical contexts, and also by arbitrarily designating specific points in time as the cut-off for “marking the temporal moment of purity” (Kahn, 2015, p.70). For example, an individual taking a genetic test might receive results based on probabilistic ‘biogeographical ancestry’ that might indicate ‘Mexican’ descent. Considering Mexico’s colonial history and its own history of shifting geopolitical borders, what does this result indicate? To an untrained eye, a ‘Mexican’ category might be associated with an Indigenous Mexican tribe such as the Aztecs or the Mayans, however, ‘Mexican’ as a category might also encompass associations with Afro-Mexicans, or might indicate descent of White Spanish colonizers. Additionally, this “Mexican” category used by DTC genetic testing goes directly against Latino-American understandings of the “Mestizo”’ the “ethno-racially mixed citizen-subject” (Benjamin, 2009). How has this “Mexican” category been constructed, and by whom? At what point did possibly ‘Mayan’ or ‘Spanish’ DNA become ‘Mexican’ DNA? Is “Mexican” as a category a distinct combination of ethnicities and races? When and how did this category shift from being a nationality to becoming ‘science’ and what does this mean?

In the end, these technologies only end up capturing one "aspect of biological descent," the likelihood that a contemporary racial group might share common ancestors (Roth, 2016, p.1328). There are also other possible faults in utilizing these databases as a sounding board, even if these are not acknowledged by the organizations. For example, these databases do not include samples from Native American tribes that might have been exterminated through colonization but still contributed to the current genetic profiles of many Americans (Roberts 2011). They also erroneously define distinct ethnic groups such as the African Yoruba and Mende as naturally genetically related, when these cultural groups have been created by "Geopolitical forces that arose out of European colonialism (Roberts, 2011, p.248). However, this doesn't keep the organizations from presenting racial classifications as unbiased, with these ancestry-tracing technologies depicted as objective, reliable, and scientific (as found in the idea of DNA kin discussed earlier) even when ancestry results are probabilistic and dependent on the organizations' existing databases, and thus bound to change through time depending on the genetic information of incoming customers. The use of 'biogeographical ancestry' ends up being a heuristic of race that reinforces what Roberts (2011) identifies as three fundamental myths about race: the existence of 'pure' races, that each race is distinct and fundamentally different from others, and that races can be "biologically demarcated" or classified (p.228). Genetic identity becomes fixed at a certain point in time, being taken at face value and becoming a modern way to talk about 'race.'

Another 23andMe customer story exemplifies this view of racial ancestry as a scientific and objective reality: "You hear stories of where your ancestors come from, but it's all stories. With 23andMe, these stories are brought to life and new family connections are made that for some reason through the years have been broken." Throughout the studied organizational discourses, the idea of ancestral race is used as a proxy for genetic variation and distribution. They do so by utilizing the language of race as a framework to understand the difference. The role of these organizations is presented as bridging the gap between past and present by bringing racial ancestry into an ever-present racialized "you." This mechanism allows the organizations to operate within the idea of ancestral race in a less controversial manner and avoid making outright racial associations that might harm the credibility and reputation of the organization (Bliss, 2012). In the world of DTC genetic testing constituting a race-centered technology, the worst thing that could happen to these organizations is to be labeled 'racist' by their customer base or potential clientele.

There is also something to be said about the link between racial ancestry and specific geographic locations or nationalities. AncestryDNA's organizational website presents written customer testimonies that refer to this ("To actually see the regions of the specific ethnic group was really powerful for me…"). These "nation-oriented accounts" of ancestral race can be considered problematic because they assume national heterogeneity regarding race, and fail to take into account diasporic racial identities, historical migrations, and modern ease of movement in the postcolonial era (Winant, 2000, p.179-180). Gilroy (2000) understood the trend of utilizing nationality as a code for race as one of the characteristics of a "new racism" at the beginning of the 21st century. A type of racism deemed more acceptable by its "strong culturalist and nationalist inclinations," but that still understood "historic nations" as having homogeneous and "discrete cultural fillings," aware and fearful of new migrations and settlements (p.32). This contributed to the nature-culture divide by endorsing the idea of "natural difference" by establishing "mutually exclusive national cultures" with little space for overlaps (Gilroy, 2000, p.33). Almost in contradiction, organizational discourses also recognize racial ancestry as a construct tied to human migrations, with the 23andMe organizational website promising their customers they will be able to "discover the origins of your maternal and paternal-line ancestors and how they moved around the world over thousands of years." Interestingly enough, AncestryDNA also promises "curated content on the history, food, and popular travel destinations" connected to the customer's 'ancestral' origin, and, in some ways, embraces a somewhat cultural side of ancestral race. Despite these occasional references, their organizational discourses regarding ancestral race predominantly frame the idea of race being something fixed and naturally occurring, with historical ties to nationalities, geographies, and locations that are marked as an "origin" to be discovered.

In sum, discourses of race primarily manifest on the organizational websites through the use of 'ethnicity' (individual ethno-racial identity and collective identity) and the use of 'ancestry' and other geospatial markers, frame "race" as a concept that is discoverable, fixed, and quantifiable, and within the consumers' reach because of scientific and technological advances. The following chapter discusses themes that, I argue, de-center race.

CHAPTER V: DE-CENTERING RACE THROUGH DISCOURSES OF HEALTH

The themes in this chapter—"*The healthy you*", "*The knowledgeable you*", and "*The empowered you*"—emerge primarily from discourses of health and serve to de-center race. Before delving into my analysis, I discuss relevant literature on heritability and health that have been relevant for examining the narratives on health on the organizational websites.

Specifically, in the last decade, the fields of public health and medical research have seen an increase in interdisciplinary methods that combine traditional demographic and genetic approaches with revolutionary genomic methods of research attempting to understand human traits and health patterns within the context of heritability (Bliss, 2018). While the field of genetics generally studies the roles of individual genes and how they are inherited, genomics mostly focuses on studying genetic material as a dynamic system that interacts with other non-genetic or environmental factors, such as a person's lifestyle patterns and health choices related to exercise, smoking, and diet (Moore, 2013). Having access to genomic information and family history can be a "useful contributor to understanding personal health risks and preventing disease" (Greenberg, 2015, p.93). Thus, this type of genomic testing in a clinical setting has been used to improve understanding of human experiences of diseases such as asthma, diabetes, celiac disease, and high blood pressure and has become widely available because of their predictive and diagnostic purposes (Wynn & Chung, 2017). In the past, genetic testing has been applied to personalized medicine as ways to predict risk or susceptibility to future diseases, identify inherited genes, and function as a type of clinical or pre-natal diagnosis (Greenberg, 2015).

Genetic tests are in demand because of the aging demographics around the world and the steady rise in chronic illnesses, making these technologies part of an ever-expanding service-based market, especially in the United States (Bliss, 2019).

The organizations studied, AncestryDNA and 23andMe, offer direct-to-consumer genetic health tests. These can be considered part of a general turn towards genetic testing advancements and medicalization in the public and private sectors, emphasizing personal genomics, inherited health conditions, and prevention (Holton et al., 2017). DTC genetic health tests study alterations or mutations occurring in the customer’s genetic makeup, search for genetic disorders and serve for predictive and diagnostic purposes as some type of personalized medicine (Greenberg, 2015). This type of health test has seen unparalleled growth in the last decade and is projected to have up to 100 million people genotyped by 2025, enabling these organizations to collect genetic databases and utilize genealogical algorithms to both connect people with relatives, infer ancestry matches, predict traits, and ideally prevent illnesses (Khan & Mittelman, 2018).

This type of personalized medicine can aid customers (and eventual patients) to make more informed lifestyle choices, opening spaces for behavioral changes, preventative actions, and a wider range of possible treatment options (Roberts, 2011; Greenberg, 2015). Studies have documented several reported benefits of this technology. For instance, Savard et al. (2020) noted that the participants in their research indicated that the DTC genetic testing enabled them to a wider range of medical choices, and the tests provide them with knowledge about ancestry or health family history, and enough information to "guide their actions, to define their narratives, [and] to tell them something meaningful" (p.68). Accessing this genetic information was perceived as “valuable," as they claimed that it "enabled them to progress their diagnostic journey" (Savard et al., 2020, p.68). The genomic information provided by the test was assumed to be confirmatory and explanatory of existing or potential symptoms and illnesses in an overwhelming majority of cases.

This chapter examines how the DTC genetic testing organizations studied, AncestryDNA and 23andMe, utilize discourses of health. My analysis suggests that the DTC genetic testing organizations in this study de-center race and engage in invisible medical racism. They do so by utilizing health differences as a system of classification that takes precedence over racial constructs, and positioning whiteness and the white customer as the default.

Direct-to-consumer genetic tests can be used to learn about genetic predispositions to certain diseases and genetic factors that might influence other life experiences, providing information in many cases about different genetic curiosities (Caulfield & McGuire, 2012). At the time of data collection, both AncestryDNA and 23andMe provided some type of “ancestry” report as well as a “health” report and a “genetic traits” report.

AncestryDNA provided a health reports service, which promises “Personalized, easy-to understand insights” that will help customers understand “DNA differences in the genes linked to certain inherited health conditions” and how they “could be passed down in [their] family.” AncestryDNA launched this AncestryHealth service in 2019, with the goal of “empower[ing] people to take action to address potential health risks identified in their genes and family health history,” for the modicum price of 179 dollars. However, this service got discontinued after 15 months because of undisclosed reasons. By July of 2021, AncestryDNA claimed that their AncestryHealth service provided a “major leap towards democratizing access to personalized health information,” but had decided to discontinue the service. At the moment of data collection, in August of 2020, AncestryDNA’s health service provided screening for hereditary

Breast and Ovarian Cancer Syndrome (BRCA1/BRCA2), colon cancer, Lynch syndrome, heart risks (Cardiomyopathy, hereditary hemochromatosis, hereditary thrombophilia), high cholesterol (familial hypercholesterolemia), carrier status (Cystic Fibrosis, sickle cell anemia, Tay-Sachs disease), Connective tissue disorders (Classical and vascular Ehlers-Danlos syndrome, Loeys-Dietz Syndrome, Marfan syndrome), and abnormal blood clots among other conditions. In addition, AncestryDNA also provided an "AncestryDNA Traits" service with fitness information (Endurance fitness, heart rate recovery, muscle fatigue, sprinter gene) and appearance (eye color, hair type, hair strand thickness, skin pigmentation, earwax type, finger length, etc.) AncestryDNA's organizational website, however, leaned more on ancestry-related discourses, perhaps as a way to emphasize genealogy and re-affirm their connection to the main Ancestry® brand, and possibly phasing out their health testing services.

23andMe started providing personalized health reports in 2007, quickly solidifying themselves as the main player regarding DTC genetic health test reports. At the moment of data collection, 23andMe offered for $199 a Health + Ancestry service that provided "personalized genetic insights and tools that can help make it easier for you to take action on your health." Among these insights were reports with information on health predispositions (Type 2 diabetes, BRCA1/BRCA2, Celiac disease among others), wellness (including muscle composition, genetic weight, and alcohol flush reaction), and carrier status (for cystic fibrosis, Sickle Cell Anemia, Tay-Sachs Disease and other 40+ reports). Additionally, 23andMe also offered an "Ancestry + Traits" service, which promised reports on physical features (hair photobleaching, eye color, flat feet, finger length ratio, freckles, skin pigmentation) and other "weird and wonderful" characteristics (Ice cream flavor preference, misophonia, motion sickness, asparagus odor detection, and ability to match musical pitch, among others.) In contrast to AncestryDNA's attempt at providing health information, 23andMe heavily emphasizes its commitment and resolve to offer genetic health tests (“the Future of medicine, powered by you”), predominantly featuring health discourses on their organizational website (“Health Happens Now. Take action to stay healthy”) and providing multiple customer stories related to health information-seeking.

To further understand the context in which both of these organizations operate, the following section provides background on the practice of genetization and its link with possible exercises of medical racism, positioning DTC genetic testing as a tool of racialized health. Against this backdrop, the following sections explore how both AncestryDNA and 23andMe represent discourses of health on their organizational websites and in their videos. The analysis draws from both AncestryDNA and 23andMe’s written texts but primarily focuses on 10 23andMe’s “Customer Stories” videos that have been classified as “Health” related videos by the organization. I argue that these organizational websites use discourses of health in three specific ways: by positioning DTC genetic tests as diagnostic tools for health (“The Healthy You”), by emphasizing the importance of knowledge and scientific information (“The Knowledgeable You”), and by offering possibilities for empowerment and agency outside or in conjunction with the traditional medical setting (“The Empowered You”). All these discourses of health position the organizations studied as useful and vital, and their genetic tests as necessary tools for wellness and self-actualization.

Throughout the data, it is impossible to fully distance organizational discourses of health from discourses of race. I argue that these organizational health discourses are implicitly connected to whiteness as the default, locating themselves within infrastructures of whiteness, as they typically present the perspectives of phenotypically white customers. As mentioned in the previous chapter, 9 out of the 10 examined “Customer Stories” videos focus on the experiences of phenotypically White customers engaging with the 23andMe health test. These organizational discourses emphasize the importance of being diagnosed, knowledgeable, and empowered to reach wellness as white customers, in direct contrast to the represented experiences of racialized customers (as White is considered to be the lack of ‘race’), who are mostly portrayed as focused on the ancestry portion of the genetic test. I argue that this focus positions the health experiences of white consumers as the default, exhibiting discursive strategies of whiteness as an implicit part of the organization.

The 'Healthy' You: Genetization and Medical Racism

I argue that the studied organizational websites and videos position DTC genetic tests as diagnostic tools, connected to ideas of genetic determinism. In this section, “The Healthy you” is a white customer by excellence, as 9 out of 10 videos studied presented the experience of phenotypically white customers. The “Healthy you” is a white customer that uses DTC genetic testing as a means of diagnosing present illnesses, understanding future risks, and reaching a certain level of “wellness.” There is very little mention or indication of variability or the role of epigenetics, behavior, or environment in achieving this wellness. Instead, wellness is necessarily achieved through the process of being diagnosed by the organization and being positioned as a pre-symptomatic patient.

In the past, DTC genetic testing organizations have been penalized and questioned by the U.S Food and Drug administration for offering health-related tests (Wynn & Chung, 2017). However, 23andMe since gained authorization from the FDA to offer health reports on various aspects including pharmaceutical metabolization (Jones & Roberts, 2020). Accessing health-related genetic information is perceived as "being very valuable" for customers as it "enabled them to progress their diagnostic journey" (Savard et al., 2020, p.68). This information is assumed to be confirmatory and explanatory of existing or potential symptoms and illnesses.

It is not a surprise then that the organizational websites position the DTC genetic test as a diagnostic tool. Although the 23andMe website doesn't outrightly call the test a diagnostic, it claims that using insights "backed by the latest science" you will be able to see how "your DNA can affect your chances of developing certain health conditions, and promises that through their service you will be able to "Learn how your genetics can influence your risk for certain diseases." AncestryDNA doesn't explicitly offer a diagnosis either, but an "understanding of your inherited health risks" and "insight about your well-being." Other sections of the AncestryDNA website promise DNA reports that indicate "if you are at normal or higher risk for conditions," promising "insights into inherited risks for some health conditions that can't simply be managed with healthy eating and exercise."

23andMe's website also offers some sort of "written reviews" from supposed past customers. In one of them, "Rhonda from Colorado" gives 23andMe a 5 out of 5 stars rating, claiming: "We found out through 23andMe that my husband has two variants for Hemochromatosis. He is able to now seek treatment before any damage has been done." She goes on to write that without the organization's diagnosis, they would "have NEVER known about this," and closes her review by thanking 23andme: "So from the bottom of my heart, thank you for saving my husband's life." Another customer, Wendy from Tennessee, also credits 23andMe for helping her "fix [her] health issues and probably saved [her] from further damage to [her] joints and organs." Gary, from California chimes in, saying that 23andMe helped him learn about his health and "specific genes that [he has] mutations for."

While the discourses presented by the organizational websites might seem magical and even inspiring, it may be noted that when DTC genetic tests diagnose health risks there are certain dangers to consider as they do so without certainty of accuracy or validity, and without the supervision of health care providers. When presenting results to test-takers, DTC genetic testing technologies do not present genetic risks as definite. They usually present “numerical ranges” or “descriptive terms” (such as ‘likely to develop’) for genomic information (Zhong et al. 2019, p.1). This adds a layer of uncertainty to the possible results and their interpretation, making risk management difficult for test-takers. The misinterpretation of test results could lead to negative health outcomes, such as test-takers choosing not to reduce behavioral risk factors because of reported low genetic risk (McBride et al., 2010). Another possible outcome could be test-takers negative psychological responses to the high genetic risk of developing certain diseases. This is especially problematic for some conditions such as Parkinson’s and Alzheimer’s disease, which have no known cure or preventive treatment (Wynn & Chung, 2017). This type of result could influence test-takers to “pursue extremely expensive, unnecessary treatment or falsely reassure them to forgo measures for prevention or definitive diagnosis,” (Wynn & Chung, 2017, p.125) effectively turning a regular test-taker with no evident symptoms into a “pre-symptomatic” patient, blurring the boundaries between patient and consumer, and bypassing the traditional medical institutions (Levina & Quinn, 2011, p.2).

Some of 23andMe’s “Customer Stories” that present DTC genetic tests as diagnostic tools also present these possible outcomes. Anne and Jill’s narratives present them discovering they have BRCA-1 gene mutations. In both of these stories, diagnosis is used as a way for them to “keep themselves healthy” and take pre-emptive measures against breast and ovarian cancer. Gwen’s story is about discovering she didn’t share any variants for Parkinson’s disease despite having relatives with Parkinson's, she mentions that while her results "don't eliminate the risk of getting Parkinson's disease, there is still some relief" in her 23andMe results.

It is important to note that the use of DTC genetic testing to "self-diagnose" also bypasses the work of genetic counselors, who traditionally work alongside other health care professionals to help individuals make informed decisions about their genomic health (Greenberg, 2015). In many cases the test-takers are left to interpret directions on their own, providing "only marginal health value" and achieving "little or no health benefit" (Caulfield, 2009, p.48). Additionally, the interpretation of DTC genetic testing results requires a college reading level, far above the average reading skill level of most adults in the U.S (McBride et al. 2010), making this genetic information very challenging for most test-takers to understand and bring into question the effect of possible gaps in genomic literacy.

Alix's story ("Understanding food intolerance helps a mom make a change") is the only "Customer Story" that presents the narrative of a non-white person. It introduces us to Alix, a phenotypically Asian woman born and raised in Taiwan. She is shown exercising, cooking, and taking care of her young child. In the story she describes to the camera a complicated history of stomach pains, guiding us through her frustrations with not getting a diagnosis from medical institutions. She acts out what doctors kept telling her: "There's nothing wrong with you. You are fine. It's in your head. Go home." Alix tells the viewer that she doubted her sanity because all the tests recommended by doctors were coming back negative. The 23andMe health test is presented as the tool that helped her confirm her suspicions that she was sick and finally gave her a diagnosis. 23andMe helped her discover that she was lactose intolerant and she was able to change her diet. The video ends with her thanking 23andMe: "Wow. I can do things. I have so much energy, and now I'm going to be healthy. This is a new body, this is a new me."

Medical information already tends to be complex, uncertain, and partial. However, in regular healthcare settings test-takers would be able to consult physicians and genetic counselors regarding this genomic information (Zhong et al., 2019). As exemplified by Alix’s story, 23andMe encourages customers to bypass medical advice, encouraging the organization’s diagnosis over other types of medical diagnosis. This could easily cause medical misunderstandings, as the DTC genetic test results do not include or provide the customer with information about genetic counseling or any directions for follow-up care.

Hereditary genetic testing is just one way of understanding risk of common diseases, the development of illness might also be tied to other factors such as diet, environmental exposures, behaviors, and lifestyle, which could also influence the onset of diseases and the manifestation of other conditions (Greenberg, 2015). In the US, genetic testing has been integrated with health operations within the medical community and other public health initiatives surrounding maternal and newborn screenings of diseases like cystic fibrosis and sickle cell anemia (Bliss, 2019). Other types of genetic screenings, like predictive testing on BRCA1 and 2 genes, have become common and are widely encouraged by medical practitioners. This interest in health screening and understanding of risks has fueled the market of DTC genetic testing, with this being one of the most common reasons customers engage in testing: the ability to learn about potential health and risk for diseases (Bliss, 2019).

The organizational websites studied simultaneously capitalize on and reinforce this interest through discourses on future risk. AncestryDNA’s website for example specifically positions their genetic health test as a way for customers to “see what [they] may pass on to [their] future children,” specifically warning potential customers that if “you’re thinking of starting a family," taking the test will help you find out if "you're a carrier for genetic variants linked to certain inherited health conditions."

"Kristin's story" focuses on a 23andMe customer, who narrates how taking a 23andMe test helped her get early detection of a severe protein deficiency. Kristin tells the potential 23andMe customer about taking the test to verify if she carried a variant for late-onset of Alzheimer's disease, as she wanted to "know it, so that [she] could do everything in [her] power to stay as healthy as possible." The 23andMe genetic test did not detect any variants associated with Alzheimer's, however, it diagnosed her with a deficiency of Alpha 1 – Antitrypsin. After consulting her doctor, which ordered other medical diagnostic tests, these verified the deficiency originally diagnosed by the organization. Kristin narrates: "The alpha-1 foundation told me that most people are not identified as having Alpha one [sic] until they were very sick and that with 23andMe they were finding more and more people like me finding out this early." Kristin reflects on the importance of having "caught" the disease earlier. "This has probably added years to my life." Kristin is shown throughout the video in different situations of 'caring' for her health, she is shown receiving medical care at home and jogging outdoors.

Kristin's story exemplifies not only the power of having a diagnosis but now taking a DTC genetic test can help with assessing future risks ahead of time, in preparation for future diseases.

Another 23andMe customer story presents Sarah in the process of "empowering herself." The website accompanies Sarah's story with a short descriptor for the video: "Understanding risk inspires one woman to prepare, plan, and be her best self." In her narrative, a phenotypically white woman called Sarah tells the camera about her story with 23andMe. She introduces the camera to her husband, Kyle. She positions herself and her husband as a "very forward-thinking couple” and “curious people” who “love science,” positioning her interest in genetic testing as something trendy, cool, and rational.

She confides that she grew up with a grandfather who suffered from Parkinson’s disease and a grandmother who suffered from Alzheimer’s, which impacted her view on health: “All of that experience… of watching both of those diseases take their toll… there’s so much of it that makes you feel so just caught off guard. Things that you just didn’t think you’re gonna (sic.) have to deal with. If I can, in any way, get more information so that I can start to prepare myself, then I am going to do that.” In Sarah’s story, she speaks about how 23andMe helps her “make a plan” for her health and whatever might be coming up health-wise as she ages. However, disease and illness are positioned as an inevitable fate and inescapable fact of growing old — concepts also tied to discourses of genetic determinism.

Although these organizations frame this experience as empowering for the customer, I argue that this is troubling as diagnosis and medicalization in this sense involve bypassing medical institutions. Such claims of empowerment promote a type of relationship between corporations and customers that might shift “responsibility for public welfare from the state to the market and individual” (Roberts, 2011, p.302). An estimate of only 26.5% of DTC genetic test-takers end up sharing their results with a genetic counselor, their health care provider, or their physician (Darst et al., 2014). However, the existence of possible risk is not a factor or a primary determinant of sharing behavior among test-takers assessed. What this means is that even when organizations engage in “diagnosing” genetic risks, the majority of customers do not receive additional information or cross-check with another diagnosis from other sources (their general physician, genetic counselor, healthcare provider, etc.) When comparing the demographic, attitudinal, and behavioral characteristics of the participants that end up sharing their results with their medical practitioner, these test-takers tend to be older with a higher income, and more "health-conscious" than other participants (Darst et al., 2014, p.105). The demographics suggest that there may be apparent gaps in genomic literacy among the customers of both organizations. In other words, genomic literacy comes across as a privilege tied to access, education, and socio-economic status.

However, the biggest implication in these organizations framing their genetic test as a diagnostic tool is the risk of engaging in genetic reductionism, a view that locates genetic material as stable and fixed, locating customers' bodies as repositories and by-passing the roles of epigenetics and lived experiences (Lee, 2015). Medical practice normally considers genetics as only one aspect of diagnosis, considering the roles of environmental, social, epigenetic, and other factors when diagnosing, treating, and considering the course of diseases and illnesses (Bolnick, 2015). Genetics is only one of the many factors that might contribute to patients' risk of developing diseases, other factors might include environmental exposure, diet, and lifestyle choices (Greenberg, 2015). In fact, most recent trends in the medical field take an epigenetic approach to understanding the human body's experiences of disease and health (Bolnick et al. 2015).

However, the popularity of genomic health advocacy stems from an existing tendency in the medical sciences to use “genetic explanations to describe differences between individual and group traits and behaviors,” a practice that sociogenomics researcher Catherine Bliss (2018) calls *genetization*. Genetization occurs when health professionals and researchers apply genomic models to human traits and behaviors, leading to a widespread acceptance of genetic essentialism, in which little attention is paid to gene-environment interactions. Instead, they focus on personal genetic biology as the “essence” of who a patient is (Bliss 2018, p.6). In the context of genetization, human difference is defined by genetic characteristics, making it easy for health researchers to understand health inequities and other social injustices as “genetically induced” (Bliss 2019, p.219).

When DTC genetic testing organizations prioritize a deterministic approach to these issues, they provide customers with a reductionist perspective on genetics, which privileges genes as the “fundamental basis for human behavior,” suggesting a stark opposition between science and culture (Lee, 2015, p.156). Genetic reductionism contributes also to the idea of racial identity as located within genetic variation instead of it being a socio-cultural construction.

The medical use of DTC genetic tests to diagnose patients or for self-diagnosis can reinforce certain beliefs of genetic determinism and racial difference. In their research, Parrot et al. (2012) examined the beliefs of 717 participants on genetic determinism. An overwhelming majority of the participants expressed their beliefs that genes determine health, associating diseases with specific genes, and being concerned about disease susceptibility and severity based on genetic information, effectively establishing that "the meaning of genetic determinism in health communication likely varies from the meanings derived in other contexts" (Parrot et al., 2012, p.763). Messages about genetics do not always increase the public’s belief in genetic determinism. However, when organizational discourses end up linking ideas of genetics, race, and health, they do enhance racist beliefs in the general population (Bliss, 2018).

Adding to that, DTC genetic tests as diagnostic tools always have a margin of error that should be recognized by the organizations. Especially when considering racial inequities regarding health, racial self-classification in many cases correlates better with experiences of health inequality than with genetic ancestry (Gravlee, 2009; Roth, 2016). In some circumstances, specifically in the case of African Americans living in the United States, experiences of racialization, socio-economic status, and measures of observed race by physicians are more predictive of blood pressure disorders than genetic ancestry (Gravlee, 2009; Perez et al. 2013). This suggests that many health disparities that occur along racial lines are explained by environmental factors instead of genetic causes (Roth, 2016). However, when organizations utilize these DTC genetic tests as diagnostic tools, these other dimensions of race as tied to health, or multidimensional understandings of health don't get acknowledged in favor of a genetic reductionism model.

Discourses of diagnosis and risk on the organizational websites contribute then to the "genetization" of health and disparities, reinforcing genetic essentialism and the use of genetic explanations for experienced group traits and behaviors (Bliss, 2018, p.6). This proliferation leads to a model that fails to understand the role of behavior, environmental interactions, and socioeconomic factors when diagnosing illnesses, contributing to medical racism in the health sciences.

This is especially troublesome when taking into account documented health disparities that exist within racially and ethnically defined groups in matters of disease, quality of medical care, health outcomes, and access, which heavily affect mortality rates (Bolnick, 2015). The turn towards genetization in many cases attempts to understand behavioral traits as inherited and race-specific, possibly having direct implications on matters such as "educational placement, college admissions, hiring, and criminal sentencing" (Bliss, 2018, p.8). The link between systemic racism and health disparities has been widely documented (See Gee & Ford, 2011; Feagin & Bennefield, 2014), and the effects of medical racism still persist in public health initiatives that fail to account for a long history of white supremacy and contemporary racist structures in healthcare.

The relationship between systemic racism and public health comes from its position as a research area dominated by "majority-white decision-makers" (p.8), including researchers, medical educators, policymakers, hospital administrators, insurance and pharmaceutical executives, and of course, medical personnel. Feagin and Bennefield (2014) argue that the majority of health care structures prioritize orientations that benefit usually the white majority, normalizing the notion of “biologically and culturally distinct racial groups” and justifying institutional inequalities in health care (p.8). In the case of DTC genetic testing, this bias has also been documented in the areas of genomic research, testing creation, database maintenance, and delivery of results (Bliss, 2012).

In recent years, with the turn towards genetization, the medical and public health establishment has prioritized race-targeted research as a way to compensate for past oversights, promoting the use of racial classifications to generate inclusion in biomedicine even though genetic ancestry and information cannot determine or account for classical racial categories (Bliss, 2018). This has led to increased minority recruitment into medical studies and long-overdue analysis of genomic health disparities, resulting in large-scale sequencing pharmaceutical projects that have affected the medical field two-fold: making genomic research even more racialized, and making the clinical concept of race an “irrevocably genomic imprimatur” (Bliss, 2018, p.12).

Using DTC genetic testing technologies in this sense can reinforce the idea of race and health as a biological and natural classification, providing alternative explanations for health inequalities that don’t account for existing discriminatory policies or systemic racism (Roberts, 2009). DTC genetic testing ends up promoting the view that “deepening racial inequities that result from neoliberal policies are caused by genetic differences between whites and other racialized groups" furthering the disenfranchisement of already oppressed minorities (Roberts, 2009, p.79).

Renowned sociologist of science Ruha Benjamin (2019) conceptualizes what she calls "The New Jim Code," a system that understands how the employment of new technologies can "reflect and reproduce existing inequities" while being promoted and perceived as "more objective or progressive than the discriminatory systems of a previous era" (Benjamin, 2019, p. 6). DTC genetic tests fall neatly within these new technologies as they utilize coded categories of race as linked to health. They facilitate surveillance of minoritized bodies by legal means under the guise of security or public health (Benjamin, 2019). While appearing to be neutral, DTC genetic testing, besides engaging in discriminatory design, end up amplifying hierarchies and social divisions through a re-emergent belief of biological difference and genetic essentialism, smartly hidden under a revolutionary culture of innovation and health advocacy (Merz, 2016).

The Knowledgeable You: the Organization as 'scientific'

The studied organizational websites also emphasize the importance of health information and knowledge. Knowledge, in the case of the DTC genetic testing discourses analyzed, is intimately associated with scientific constructs, validity, personalization, and the privacy of the customer. These discourses of knowledge emphasize a personalized approach to health based on personal responsibility and the use of "science" as a means for exercising agency and self-actualization. This is done by first emphasizing the importance of knowledge and health information through organizational discourses. The AncestryDNA website claims that "millions" of their customers have "uncovered something new" through their "cutting edge DNA science," inviting potential customers along. 23andMe promises that through them you might be able to

“Know your personal story in a whole new way,” claiming that by “Know[ing] your genes” you will be able to “own your health.”

The importance of health information is then solidified through “Customer Reviews,” readily available on the 23andMe organizational website. Bo, a 23andMe customer from California provides 23andMe with a 5 out of 5-star review: “I am glad and relieved knowing what genetic variants I carry… so that I can make changes in my diet and lifestyle. I am a firm believer that knowledge is better than not knowing (sic).” On the same website, Brent, from Washington, again centers on the importance of knowledge and health information by reviewing the organization’s service: “The money I paid to 23andMe was small compared to the life-changing information I learned about my health" (Health + Ancestry test, Pos. 67). On the same page, Wendy, a customer from Tennessee, explicitly addresses the organization: “Thank you so much for giving me the info that has saved my life.”

This is further emphasized in the video “Customer Stories.” Josh, a 23andMe customer, tells us about his own experience with the health test. He justifies his interest by saying: “Data is extremely important in my job, I want to be able to train as smartly and as accurately as I can, that is the reason why I did 23andMe.” The aforementioned “Sarah” recounts her story with 23andme by narrating: “I saw 23andMe as another tool in the toolset, where we can have this data about our health. I just wanted this information and learn more about myself.”

Another good example of knowledge being prioritized through discourse occurs in “Jill’s story.” Jill, a phenotypically white woman, tells the camera her story of discovering she carried the BRCA-1 gene for breast cancer. With tears in her eyes, Jill tells the 23andMe potential customer about her sister having breast cancer, and how she ended up using 23andMe as a diagnostic and preventive tool to see if she would run the same risk, even when her doctor told her it was unlikely. Throughout the video the audience sees photos of Jill and her sister growing up, we see Jill holding her child. She describes the moment she received her 23andMe results: “It was a life-changing moment, when we opened the results we found out that I had a BRCA-1 gene mutation and I was shocked. I Googled (sic) around quickly and within five minutes we knew that this was bad.” The results she receives from the organization eventually lead her to get a preventive double mastectomy, as she had a higher chance of developing ovarian and breast cancer. She centers the importance of information again, crediting the organization for saving her life: “I was able to take information about my genetic code and keep myself healthy. Why wouldn’t you want to know? Why wouldn’t you want to do something? […] If the 23andMe test didn’t exist, we would have at that point been dead. It changed everything. Looking back, I’m 100% thankful for 23andMe and I truly believe it saved my life.”

In these narratives, the organization is centered as the savior, with knowledge from the test positioned as lifesaving. At the same time, the customers’ bodies are reified as receptacles of information to be known and studied. At no point is the tests’ information questioned or second-guessed. The knowledge given by the organization is, for all intents and purposes, positioned as valid, reliable, and “scientific.” More than that, its validity is taken for granted. For example, AncestryDNA’s main webpage reads “Our cutting-edge DNA science is even better. So are your results.” There is no further explanation about what the organization considers to be “cutting-edge,” what passes as “DNA science,” or what they mean by “better.” Compared to previous tests? Compared to other organizations? Throughout this process, the customer is supposed to take these statements at face value.

At the moment of data collection, none of the websites studied explained the procedure of scientific analysis of the customers’ genetic data, except for vague terminologies in the “Our

Science" portion of the 23andMe website. Here the organizational website reads: "Your genetic data is analyzed, and we generate your personalized reports based on well-established scientific and medical research," and "Our scientists and medical experts use a rigorous process to develop the reports," but no further information about this process is given. In this same section of the website, we see the image of a supposed representative of 23andMe, who is only identified as "David H., PhD. Principal Scientist" a phenotypically white middle-aged man wearing glasses and a cardigan. He is shown with a quote overlapped over his body: "The high-quality genetic research we do at 23andMe is possible because of our customers who share their data and want to make a difference."

I argue that this part of the website is significant, as this is the only occasion in which we see the organization being represented by employees, the only moment in which the organization has a "face." This is used as a form of credibility to substantiate the importance of knowledge and the reliability of "scientific" information with the popularized images of "science," two white individuals wearing glasses and an Asian woman, demonstrating demographics with a higher level of representation in STEM and healthcare occupations (Min & Yang, 2015).

Another important thread in these narratives is DTC genetic testing being presented as a personalized service, providing customers with specific health information, and fostering personal responsibility. The 23andMe organizational website motivates you to "Take action to stay healthy," allowing you to "Get 150+ personalized genetic reports" through the click of one button. One of AncestryDNA's videos emphasizes the personalization aspect of this service: "DNA is unique to you, which is why Ancestry treats it with the care and respect it deserves."

As explored previously, these types of genetic health tests are individually tailored to an individual genetic makeup in the hopes that the customer can decide on possible treatment options or take further preventative actions (Greenberg, 2015). Ultimately, these DTC genetic tests end up generating "data," where these organizations are the ones in charge of mediating these data and shaping them into information to be consumed and sold (Savard et al., 2020). This personalization becomes one of the emphases on the websites studied, an integral part of how organizations use genetic data, re-package it, and sell it back to customers as information that is presented as scientific and accurate.

23andMe's website claims that as an organization, they are "all about real science, real data and genetic insights." In their "Research participation" tab, they also associate themselves with grants from the United States National Institutes of Health, claiming they "regularly publish our research in leading, peer-reviewed scientific journals" while collaborating with "some of the best and brightest talent in the world." Although not explicitly stated, these achievements are based on existing databases and the genetic information generated by their customer base's participation in DTC genetic testing, a service that customers purchase.

These narratives of accuracy and precision are associated with popular understandings of genomic science which feature the idealistic dream of tailored therapies at the beginning of the 20th century (Lee, 2015). However, these types of personalized tests have done very little to address possible health disparities among the population (Lee, 2015). Additionally, there is always the possibility that these buzzwords, that end up centering on ideas of individualization and customization, can mask "newfangled forms of classification and control" through discourses on health and technological means (Benjamin, 2019, p.151). An ongoing trend in the modern culture of innovation involves the use of these types of ideals to establish appealing racial fixes that end up being "wrapped in an aura of personalization" (Benjamin, 2019, p.151).

The type of information provided by these tests is framed as accurate and scientific, but also protected by the organization. Multiple parts of the analyzed websites bring up discourses of privacy to assure customers of the organizations' compromises to protect their data. AncestryDNA has a video specifically dedicated to issues of privacy, in which the organization promises the potential customer "security measures built into every stage of [their]process." In this same video, AncestryDNA promises to "work to protect your data and give you control over it" through secure databases and data encryptions. According to them, this is done to give the AncestryDNA customers control over their data at "every step of the way," as "privacy and security are at the core of everything [they] do."

23andMe's website wants potential customers to know that "We [at 23andMe] have your back" and that "Discovery should never come at the expense of privacy." They dedicate multiple sections of the website to explaining the process of data encryption, assuring customers that this information is "protected and under your [the customer's] control" as "You [the customer] decide what you want to know and what you want to share." Another section, however, contradicts this statement, explaining that 23andMe doesn't provide genetic information to law enforcement unless "required to comply with a valid subpoena or court order." These sections try to re-frame past conversations about 23andMe's unethical uses of customer information, as something empowering and voluntary for customers. In the past, 23andMe has been criticized because of disclosing customers' genetic and self-reported information related to health, disease, family history, personal traits, and ethnicity, to undisclosed third parties (Merz, 2016). There is no explicit mention of this or explicit mentions of third parties, however, the organization makes veiled references to "research partners."

AncestryDNA seems to emphasize ideas of control over data, reinforcing the importance of customer privacy, something that the organization considers “[Their] Higher priority.” Throughout the “Frequently Asked Questions” part of their website, for example, they claim that “You [the potential customer] own your data.” Things get a little bit murkier after that, as they don’t directly assure customers that they won’t be sharing the genetic data. They claim that they do not share customers’ names or other identifying information with third parties “except as legally required or with your explicit consent,” implying in some ways that if they share the data, the customer should be relieved that it is anonymized. These discourses about the importance of the production of knowledge over the privacy of genetic information are positioned to promise potential customers some type of control and agency over a process that occurs behind the scenes, a process that customers don’t have access to and is concealed by the organizations. The last pattern in the organizational discourses of health deals with how these websites position empowerment and proactivity as an integral part of the DTC genetic health test.

The 'Empowered' You: The Organization as Agency-giving

An all-pervasive theme on health across the websites suggests that the idea of using DTC genetic health tests serves to empower *yourself* as a consumer. Empowerment here, instead of meaning “total control over the health encounter” for patients seeking medical help, means total control over health information and what to do with it (Hsieh, 2013). This pattern can be noted in discussions of access to health, agency, control over one’s body, and ideas of proactivity to act upon diagnoses. A common story, reflected in many of the “Customer Stories” is the idea that when confronted with a medical establishment that limits their options for diagnosis and treatment, the genetic health tests open possibilities for customers to be proactive and seek treatment on their own terms. This theme also gets associated with futurity, as these narratives usually imply that the customers are connecting with their children and thinking about their imminent future. Post-diagnosis scenarios and long-term future are symbolized by their children and possible inherited conditions. Thus, DTC genetic health tests are positioned as tools for empowering the customer as a patient, taking control of their health, and achieving an optimum level of wellness, sometimes even proving the regular medical establishment wrong.

Many of these "Customer Stories" show a clear lack of trust in traditional medical diagnosis, showing customers describing a feeling of lacking agency when interacting with regular medical practitioners. Alix, the previously mentioned protagonist of "Alix's story" exemplifies this lack of agency, after failing to get a diagnosis from her provider and getting incorrect treatment: "You're like…. 'Am I crazy?' No matter what I did, I just didn't feel any better, I would put on a brave face on for my kid cause (sic.) I don't want her to see me suffer […] I remember being really sick and hearing my daughter laughing, playing with my husband outside, and I just… started crying, because I didn't know if I was going to get better." Here 23andMe offers the perfect solution for Alix; she finally receives a diagnosis from the organization, and this allows her to get the help that she needs for her lactose intolerance. She credits the genetic health test for helping her develop a new sense of normalcy. The diagnosis pushes her to start eating gluten-free. She narrates: "It's really changed my life, I finally feel like I'm normal […] you could say that my Celiac disease was really a hidden disease." She credits 23andMe for uncovering the "truth about [her]condition." She is shown in the rest of the video playing with her daughter outside, blowing bubbles, and running in a forest while smiling.

Here we see a clear example of customer videos' tendency to show stories where health professionals are wrong, while 23andMe and their technology are presented as more accurate—

all of these done with the purpose of encouraging customers to empower themselves through DTC genetic testing. 23andMe here is framed as the solution and the mediator of health, allowing customers to not only achieve wellness but connect further with future generations.

Another 23andMe customers' story tells us the story of "Charlie," an adopted phenotypically white man that wanted to figure out his "DNA health" as he was suffering from some type of genetic gastrointestinal disease and had been put on a medication by his physician, something that made him feel better "but still not entirely normal." Despite his discomfort, doctors would tell him just to "deal with it." 23andMe is presented as the answer to all his health problems, as the genetic health test further confirms he has a genetic variant for celiac disease, finally giving him an explanation for many symptoms he had been experiencing. Here, 23andMe as an organization is used almost interchangeably with the health genetic test it provides. Charlie explains that 23andMe "Allows us to solve questions that haven't been solved before." The video is sentimental, using a soft piano music soundtrack, juxtaposing Polaroid images of Charlie growing up, and home movies of Charlie's childhood with images of adult Charlie with his children. Charlie is shown playing with his children, going swimming in a river, enjoying the weather. Charlie tells the story of going to his physician with his 23andMe results: "My gastroenterologist told me that most of the time they stop after one diagnosis." 23andMe is presented as an agency-granting organization, allowing Charlie to take charge of his own health through a diagnosis that supersedes traditional medical expertise. Charlie explains: "You could say that my celiac disease was a hidden disease. Without 23andMe, I am not sure I would have ever uncovered the truth about my condition. It changed my life." The video ends with one of 23andMe's slogans "Live in the Know."

Another customer story also represents mistrust in medical opinions, as it presents the narratives of “Erika” and “Kristin” (A different customer than the previously mentioned Kristin), a set of adult twins who decide to do a genetic health test with 23andMe. The video shows Erika and Kristin meeting each other in a cabin in the woods at an undisclosed location. Kristin narrates: “From the moment we were born, the doctor made a very confident statement that basically there was no possible way we could be identical because we each had separate amniotic sacks, but I had always suspected that we were identical.” Like other “health” stories, the twins are presented taking a walk, talking to the camera, and looking longingly at bodies of water. Through 23andMe, Erika and Kristin discover that what they had suspected all their lives was true: The genetic health test showed them as identical twins. For Erika and Kristin, this is empowering, as Erika explains: “Finding out that we were identical definitely changed our relationship in a positive way. I don’t have another relationship in my life that’s anything like this. Whatever your genetic makeup is, your life can end up being a whole variety of different things… you know, to see another person with your blueprint, with your genetics taking a completely different path…” Kristin adds: “Here we are, with happy different lives, and have found success in our own ways that are just utterly different from each other.”

Sarah, one of the previously mentioned protagonists of a 23andMe story in the Customer Stories, describes taking the test as “empowering”, feeling that if she started to develop symptoms related to hereditary diseases, she would feel more ‘prepared”. She explains that “Knowledge is power, and things like 23andme put that power right back in [her] hands.” She additionally describes that taking the test has helped her develop a sense of confidence to be her “healthiest and happiest” self. Sarah’s story also brings into view concepts of “wellness” or the idea of living an optimal lifestyle. The organizations situate DTC genetic testing as a tool that allows customers to achieve some level of self-actualization. Throughout the video, Sarah is shown taking a long walk on an empty beach, exercising, doing yoga poses, and stretching. She narrates: “It’s just important to me that every day I wake up feeling like I’m living my best life and I’m being my best self.” Sarah speaks about the importance of having “tangible information” to make sense of her health, positioning 23andMe as a predictive tool that allows her to feel equipped and organized for old age: “Your health is such a moving target, the more things that I can do to help me see what might be coming down the path allow me to really feel prepared and to plan.”

She explains her experience taking the test and how she was able to choose whether she wanted to receive information about the Parkinson’s or early onset Alzheimer’s variants in her genetic data. She describes feeling “peace” when getting her results back showing that she did have the variant for early onset Alzheimer’s. She claims: “It is just a possibility, it could happen, it could not happen.” The video’s focus on Sarah achieving “peace” in an older age, despite receiving less than optimal information about her probabilities of developing Alzheimer’s, show us that the organization perceives the test as more than a diagnostic tool—more as a wellness tool that can help customers in other aspects of their lives. Wellness is also discussed in terms of futurity. Sarah explains: “To be able to look back and reflect on my grandmother not having anything even remotely like 23andMe… I know that I will not be in the same situation that she was in. I think that’s just so empowering, to see down the road that if that were to happen, how many things can I do now to really feel my strongest, my best, and my most prepared.”

Another 23andMe Customer story presents “Josh,” a phenotypically White man who is “Striving for optimal health and fitness.” Josh is presented at the gym training, running up the stairs, jogging in an empty street. He tells us about his approach to genetic testing: “I want to be able to train as smartly and as accurately as I possibly can, that is the reason why I did 23andMe." He tells the story of growing up as an overweight kid, being bullied by his classmates, and eventually being drawn to exercise, becoming a fitness coach: "I am after optimal health, I'm after inspiring others through the actions that I do, [throughout my life] it's been this constant evolution of wanting to see what I could do next. What more can I do?" 23andMe is presented as the next logical step for Josh to be fulfilled as an athlete.

AncestryDNA's organizational website also promises that through a health test you will be able to "explore how your DNA relates to your lifestyle" and "discover what your DNA has to say about […] your diet, exercise, and sleep." As such, it is positioned as an aid that will provide multiple health benefits for customers.

Other customer stories emphasize not only mistrust in the medical establishment and aspirations of wellness, but they focus on DTC genetic testing as a tool for empowerment and proactivity. This is especially salient in narratives that center the experiences of phenotypically white Jewish women dealing with hereditary diseases such as BRCA. People with Ashkenazi Jewish ancestry have historically been associated with different genetic variants associated with Tay-Sachs disease and BRCA (Jones and Roberts, 2020). Among the Customer Stories videos studied, three out of ten videos present the experiences of phenotypically White women with Ashkenazi Jewish ancestry.

Jill, one of the previously mentioned customers of 23andMe describes dealing with hereditary BRCA and her experience taking a genetic health test as "very empowering." In her story, described earlier in the chapter, she describes meeting with genetic counselors and doctors and eventually deciding to have a double mastectomy. DTC genetic testing is credited with empowering her and giving her the tools she needed to make the best medical choice for her and her family. Throughout the video she explains the links between being Jewish and dealing with potential hereditary diseases: “Judaism has always been a really big part of my life and my identity, it’s important for me to raise my family Jewish, and I found out that because I’m an Ashkenazi Jew, I have such a high risk of having a gene mutation. It’s 1 in 40, instead of 1 in 400.” She argues: “I don’t understand why more Jewish people aren’t tested. After getting the results we met with a genetic counselor, we talked about options for treatment, we also did a genetic test and confirmed that I was BRCA1 positive.” Jill is shown attending synagogue with her family, and then having a conversation with her daughter. Throughout her narrative, Jill’s children are featured in the background, however they are ever-present in Jill’s narrative and how she understands her health and medical choices. She explains to the camera: “I am now really involved in helping to find a cure […] this is my cause, I don’t want my daughter to go through what I went through.” She explains the rationale behind choosing to have a double mastectomy: “Having been retested by the doctor, I found out that it was more like a 80% chance that I would have breast cancer in my life, if someone told you that there was an 80% likelihood that the plane was going to crash, you would not get on that plane.”

Throughout Jill’s story, 23andMe and the genetic health test it provides are considered to be instrumental in making Jill proactive about her health and think about her future and her children. In Jill’s story, this proactivity is encouraged because of her ethnicity and her inherited risk. Curiously, in two other narratives, Jewishness more than being linked to culture, religion, or ethnicity, is presented as being a synonym of a diseased body or equated to a hidden illness that further gets pathologized.

In “Hilary’s Story,” a phenotypically white customer called Hilary tells us that through 23andMe she “learned something [she] could be proactive about.” She narrates: “I assumed I knew everything about myself… I actually ended up taking steps that could have potentially saved my life." Through the genetic health test Hilary discovers a 38% percentage of Ashkenazi Jewish DNA, something that she describes not fully understanding, being "raised as a Christian." This is an example of Jewishness being pathologized and treated as a hidden health condition. Hilary explains her bewilderment: "I knew I was a little Jewish but not how much." Throughout the video, Hilary is shown being interested in genealogy, putting together her family tree, and looking through old picture albums depicting her ancestors. She is also shown exercising outdoors and contemplating nature while explaining to the potential customer the links between Jewish heritage and being BRCA positive. Through the test, Hilary discovers that her odds of getting breast cancer are greater: "It was shocking to me, because I would never had gotten this test taken, no doctor would have asked me to do this, because no one in my family had ever had breast cancer or ovarian cancer," she further describes herself as being "really really fortunate," crediting 23andMe with possibly saving her life. 23andMe is shown again as a tool that empowers customers to bypass the medical establishment, allowing customers like Hilary to have an advantage over their eventual diagnoses.

A similar customer story is repeated in "Ann's story," which centers on a phenotypically white woman called Anne who was conceived through a sperm donation, a shocking discovery that made her feel that "genetically […] half of [her] was a blank state." Throughout the video, Ann is shown with her children, eating dinner with her family, taking her children to school, exercising, and sipping coffee in front of a body of water, while Ann as the narrator tells us about her experiences. With the help of a 23andMe genetic health test, she discovers that she is 51% Ashkenazi Jewish and a carrier for a BRCA genetic mutation that put her at higher risk for breast and ovarian cancer. She was able then to tell her sisters and her mother to get tested, discovering that all of them are BRCA positive. This narrative emphasizes Ann's proactivity and her family's empowerment after getting tested: "I think that for both my sisters and my mother, we all feel tremendously lucky that we could make a decision about our bodies and our health from a place of being healthy." 23andMe is not only the facilitator in this process, but a life-saving organization in a family's health journey.

This focus on futurity is a running thread within the stories that deal with empowering customers through DTC genetic testing, also being reinforced by 23andMe's website features, which prompt potential customers to engage in genetic testing to further understand genetic diseases that might be passed on to future children. They caution that when reproducing it might be in your best interest to find out "if you are a carrier for genetic variants linked to certain inherited health conditions." Other parts of the website also play with this idea of thinking of the future. In one written review from a customer called "Brent" we see this discourse reinforced: "What I like best [about 23andMe] is that I am able to plan my future a little better, knowing that I might develop a certain disease later in life. I've changed my lifestyle to avoid developing that particular disease."

The last customer story to be examined in this chapter is "Gwen's story," a customer narrative that focuses on the importance of genetic research for Parkinson's disease and the development of connections for health-related purposes. In this story, Gwen explains to the potential 23andMe customer about the importance of participating in research and voluntarily sharing health information with the organization. She explains: "I realized that sharing genetic information is a path forward to find a cure." Gwen tells us about her connection to her dad, who suffered from Parkingson's. Pictures of Gwen and her dad spanning decades are interspersed with her medical experience. Finally, we see Gwen holding a baby, playing with her outdoors.

She explains to the camera: “I look at Laura and I have the hope that by the times she’s my age, Parkinson’s disease will be a thing of the past, it just strengthens our resolve to be a part of the research.” Gwen further utilizes the idea of her daughter’s future health prospects to make her argument in favor of genetic research: “I’m definitely comforted by the idea that my dad participated in 23andMe before he passed on. His genetic information is there in a larger pool, in order to help us find a cure so Laura can live in a world without Parkinson’s disease.”

Gwen’s story brings to the fore the vision of many of these DTC genetic testing companies to market the idea of customers actively participating in the processes of storing, utilizing, and researching their own genetic information as a means to achieve wellness and empower themselves and their communities (Borry et al., 2010). By doing this, potential customers not only engage in altruistic behavior, but they are able to better understand their genetic information while keeping sensitive information from employers, insurance companies, and healthcare professionals (Borry et al., 2010). Reflecting on the potential of DTC genetic testing, many customers actually remark on these types of tests enabling them to make better medical choices, as organizations provide them with enough genetic information to "guide their actions, to define their personal narratives, [and] to tell them something meaningful" (Savard et al. 2020, p.68) and reach wellness.

This emphasis on wellness and empowerment is not just based on present wellbeing but tied to the idea of future selves or future generations, which are presented almost exclusively (with only one exception) as White or White passing. What does it mean then when these organizations specifically utilize these discourses to only tell the stories of White customers? Why do none of these health narratives of empowerment feature the experiences of Black, Brown, or indigenous customers, who have been historically marginalized and would benefit from these types of ‘empowering’ technologies? What does it mean when these organizations exclude health narratives of BIPOC when presenting a healthy and empowered future? These implications will be examined in the discussion chapter.

Throughout the examined health discourses, my analysis has identified 3 main patterns: the positioning of the DTC genetic health test as a diagnostic tool for health-seeking purposes, the focus on scientific knowledge and customer’s genetic information, and the ability of these organizations to offer agency, empowerment, and futurity. Throughout these health discourses, 23andMe is positioned as useful and vital in the process of achieving wellness. However, all of these patterns occur in conjunction with structures that center the health experiences of White upper-middle class customers. As such, I argue that these White-focused health narratives, which are assumed to be the standard, present the ‘default’ experiences of customers when engaging with genetic health tests utilizing whiteness as normative. These health narratives discuss issues of agency, knowledge, futurity, and empowerment, but they only present this as possible for non-Black and non-Brown customers. These health narratives, thus, decenter the importance of race, racism, and historical marginalization in medical research, making the experiences of non-White customers invisible. In the best-case scenario, giving DTC genetic testing organizations the benefit of the doubt, these health narratives and the way they center organizational whiteness could be an honest mishap and a careless mistake. In the worst-case scenario, these health narratives could be seen as purposeful discrimination using customer-base segmentation as a ploy to center whiteness, directly contributing to possible medical racism.

The two chapters on findings bring forth an intriguing point about how the organizations discursively de-center and re-center race. In order to gain deeper insights into this inference, I re-visit my data and predominantly draw from literature on whiteness to enrich my understanding of the discursive construction of race in the next chapter.

CHAPTER VI: ABSENCE AND PRESENCE OF RACE IN THE STUDIED ORGANIZATIONS

The preface in this analysis section draws attention to particular theoretical concepts that are relevant for contextualizing the gene databanks and categories such as “health” and “ancestry.” In particular, I draw from discussions on Whiteness (Karikari, 2021; Nakayama and Krizek, 1995; Sammel, 2009) to analyze organizational databanks as political artifacts and locate the codes within colonial infrastructures of Whiteness. My analysis suggests that the dominance of data, associated with Europe, privileges Whiteness reifying its position of power. Additionally, I argue that organizational discourses on health bring forth a post-racial reality by making race invisible, while their narratives on ancestry re-center race in the realm of science. The following section elucidates normative ideas of Whiteness before moving on to a more specific discussion on *whiteness as organizational infrastructure*. The final section demonstrates the discursive construction of organizational websites as spaces of Whiteness and attempts to de-naturalize the universality and dominance of Whiteness.

The following section explores how infrastructures of whiteness and strategic discourses of whiteness might be operating within the narratives on the organizational websites. The goal is to demystify whiteness’ “normalizing position in the center,” by demonstrating the particularities of whiteness and challenge its universality (Nakayama & Krizek, 1995, p.294).

Discursive Strategies of Whiteness

The studied organizations position themselves within whiteness through several discursive strategies (Nakayama & Krizek, 1995). The first discursive strategy involves positioning ‘whiteness’ as tied to power/status. This is not done explicitly, as the websites’ organizational discourses do not contain any explicit mention of racial superiority or any acknowledgement of white customers having a privileged social position. Instead, the organizational websites position whiteness as tied to power and status in very subtle ways presenting its “naturalized dominance” that is not entirely hidden from potential customers. For example, if we take a look at the different categories that AncestryDNA utilizes for database purposes, we can see that customers’ DNA is measured against multiple regions around the world. Among these “1,400 global” regions that make up the ethnicities displayed in the test, there are only 14 regions within the African continent, despite the enormous genetic variety at display in African countries. An entire subdivision of these global regions is dedicated to African Americans in both the United States and the Caribbean, however, these samples are only limited to 21 distinct regions. Indigenous American categories exist within 4 main regions: the Andes Indigenous Americans (comprising Bolivia, Chile, Ecuador, and Peru), the Central Indigenous Americans (comprising Centro America), Indigenous Americans of Colombia and Venezuela, Indigenous Americans of Mexico, and Indigenous Americans North (comprising the entirety of the United States and Canada). These 4 broad genetic categories, associated to specific regions, fail to include any type of tribal affiliation beyond geographic markers.

In comparison, the AncestryDNA database offers 484 different regions in Europe customers’ DNA might be tied to, with specific genetic categories for each one of them. Many of these categories like “West Yorkshire” or “Puglia” are regions specified down to the county or city level. Other regions refer to “Additional European Communities”, and these refer to 643 distinct genetic communities in the Americas and Oceania that are classified as “Settlers.” This category includes, for example: “Jasper & Marion County, Iowa Settlers” or “Lake St. Clair & Essex, Ontario French Settlers.”

For the untrained eye, this would mean that people from Europe or European colonizers in the America really have that level of genetic variety. However, this is another example of discursive whiteness operating within the organization. The dominance and prevalence of data associated with Europe is never questioned, its position of power is embedded in the infrastructure of the database and thus its centrality remains hidden from analysis. A similar mechanism operates in 23andMe, which offers 45 different “reference populations” that at first sight might seem more equally distributed. However, the European reference populations are also particularly specific (“Luxembourg,” “Faroe Islands”) compete against broad categories in other continents (“Broadly Central and South Asian” and “Broadly East Asian and Native American”).

The types of databases used by these organizations are biobanks, “social artifacts” that help the organization build assumed boundaries to organize human genetic samples as informed by contextual sociohistorical taxonomies of difference, and as such, they are bound to change over time depending on cultural understandings of heritage and ethnicity (Lee, 2015, p.144). These biobanks can be considered political artifacts that are built on racialized logics of difference and might contribute to how we might understand global health disparities and biological differences between populations (Lee, 2015). In the past, database optimization efforts have taken whiteness “as a kind of unremarked optimum”, meaning that databases in many cases have been implicitly built with the white customer, user, and programmer in mind, helping sustain white dominance and reproduce racial hierarchies (Stevens et al., 2021, p.114). The works of Safiya Noble (2018), Simone Browne (2015), and Ruha Benjamin (2019) speak to these infrastructures of whiteness as related to instituted anti-Blackness and racialized exploitation of Black people through technological and algorithmic means.

In the case of the organizations studied, both the 23andMe and AncestryDNA website infrastructures center whiteness and Europeanness as a social position that gets privileged by the database, and as such, the Direct-to-Consumer genetic test ends up being more specific, and more accurate, for customers of European descent or that align their family history with “Settler” communities in the Americas. The DTC genetic testing technology further shapes itself to cater to the White consumer. Additionally, there is no indicative or acknowledgement on the organizational websites of any history of white supremacy, tribal genocide, or colonization. The realities of slavery and forced migrations of indigenous communities are seldom mentioned on the organizational websites, with slavery only being mentioned or acknowledged once within 27 videos, in one of 23andMe’s “Customer Stories” presenting the narrative of a Black man called Jordan (This narrative will be further addressed and analyzed in subsequent parts of this chapter). These historical facts are instead obscured and sanitized, as colonizers become “settlers,” Indigenous Americans become a broad category with no tribe affiliation, and Black Americans (in many cases, descendants of enslaved populations, forcefully brought to the Americas) have their ties to slavery erased. This sanitization of history ends up naturalizing “White” dominance within the organizations studied. This first discursive strategy serves to center “White” as powerful in invisible ways, and this dominance is naturalized through language (Nakayama & Krizek, 1995).

The second discursive strategy used by the organizations involved utilizing a “negative definition of white as opposed to a positive definition” (Nakayama & Krizek, 1995, p.299). This involves positioning “White” as a role that lacks any racial of ethnic features, and thus, the blank slate and the default. Whiteness, in this discursive strategy, means devoid of Blackness, Hispanicness, Asianness, etc. This positioning of whiteness as a non-color ensures that it operates as an invisible entity within the infrastructure, as “white” means “not having any other ‘bloodlines’ to make it impure,” marking then whiteness in reverse (Nakayama & Krizek, 1995, p.299).

In the U.S, racial discourses have been historically enacted within the binary of White/non-White, with White being constituted a firmly different social category of “relative purity” that defines itself in opposition to racialized bodies, considered non-white (Gallagher, 2001, p.147). We can see this divide in the ways in which these organizations choose to present their customers’ experiences. 23andMe’s 19 “Customer Stories” are divided by the organization and website structure in four different given categories, which include “Health,” (8) “Ancestry,” (9) “General DNA,” (1) and “Research” (1). For the purpose of this analysis and based on the content of said videos, the two videos classified within “General DNA” and “Research” categories have been merged under the “Health” category for further analysis, as they present customers explaining health-related constructs (See Table 5). Among these 10 “Health” videos, all but one present the experiences of phenotypically White customers. These “Health” videos are presented in categorical opposition to “Ancestry” videos (See Table 6), which present the stories of a diverse population of customers.

Table 5. 23andMe analyzed videos

23ANDME VIDEOS	Protagonist	23andMe given Category	Analysis categorization
Charlie’s Story	White man	Health	Health
Jill’s Story	White woman, Jewish	Health	Health
Jordan’s Story	Black man	Ancestry	Ancestry
Hilary’s Story	White woman, Jewish	Health	Health
Anne’s Story	White woman,	Health	Health
Alix’s story	Asian woman	Health	Health
Josh’s story	White man	Health	Health
Chris + Colleen’s story	White man and woman (couple)	General DNA	Health
Kristin’s story	White woman	Health	Health
Sarah’s story	White woman	Health	Health
Angelina’s story	Black/bi-racial woman	Ancestry	Ancestry
Pat’s story	White woman (Adoptee)	Ancestry	Ancestry
Winnie’s story	White woman (Adoptee)	Ancestry	Ancestry
Debra’s story	Black woman	Ancestry	Ancestry
Kamal’s story	Arab man	Ancestry	Ancestry
Roy’s story	Black man	Ancestry	Ancestry
Mandy + Jason’s story	White man and woman (siblings)	Ancestry	Ancestry
Erika + Kristen’s story	White women (siblings)	Ancestry	Ancestry
Gwen’s story	White woman	Research	Health

Table 6. AncestryDNA analyzed videos

ANCESTRYDNA VIDEOS	Protagonist	AncestryDNA given category	Analysis categorization
Courtney’s Story	Black/bi-racial woman	None	Ancestry
Privacy video	None	None	Misc.
Reactions: Introducing Elizabeth	White woman	Ancestry	Ancestry
Reactions: Introducing Alex	Racially ambiguous man	Ancestry	Ancestry
Reactions	Multiple people	Ancestry	Ancestry
Reactions: Charlotte	White woman	Ancestry	Ancestry
Reactions: Ellen	Racially ambiguous woman	Ancestry	Ancestry
Reactions: Jan	White man	Ancestry	Ancestry
Musician inspired by family history (Christian)	Black man	Ancestry	Ancestry

How does whiteness operate as an infrastructure here? On a surface level, 23andMe’s classification of these customer stories suggests health as a construct associated with whiteness, presenting the majority non-White customers as not interested on health tests. These categories are presented as separated, as if interests in both ancestry and health were exclusionary from one another. Health “Customer Stories” almost exclusively present the experiences of phenotypically white customers. Ancestry-related “Customer Stories” include the experiences of a diverse set of customers. However, white customers within these stories are normally adoptees or sets of siblings (that use genetic testing to connect to their families), as opposed to racialized Others (that use genetic testing to connect to ancestry, heritage, or nationality). This speaks to the “invisibility of whiteness,” which is manifested through its universality as a rhetorical construction (Nakayama & Krizek, 1995, p.293). Whiteness and the experiences of phenotypically white customers are positioned by the organization as the universal experience of health through genetic testing, showing narratives of white customers as the norm. Race (here operating as non-whiteness) becomes only visible in the case of black and brown customers, bearing little to no importance in discussions of inherited health, adoption stories, or family connections. This is one of the ways in which a white identity is positioned as one that is devoid of race or dissociated from issues of race—as a non-race. Ancestry, for white customers, is then about immediate family links, instead of cultural ties to nation(s) or ancestors. Race as connected to ancestry and heritage appears to be only important for racialized customers. It has no relevance and operates invisibly in the narratives of white customers, who are presented as devoid of race. The discourses surrounding phenotypically white customers are presented as the “norm from which Others are marked” (Nakayama & Krizek, 1995, p.294).

Here, we also see what Nakayama and Krizek (1995) call the “naturalization of ‘white’ with a scientific classification.” This occurs when ‘White’ is implicitly associated with superficial racial characteristics, with very little meaning behind being a descriptor. Whiteness is “drained from its history and its social status,” it becomes an unremarked category, disassociated from culture, ethnicity, ways of thinking, and epistemologies. Instead, it remains invisible and associated with labels of science and rationality that center whiteness with “cultural currency” (Nakayama and Krizek, 1995, p.300). The organizational websites are not explicitly presenting experiences of health and whiteness. For the uncritical eye they are merely presenting health categories, where whiteness is implicit and natural, associated with characteristics of health and progress.

In the case of AncestryDNA’s videos, we see this happening in a different way. These videos are not categorized within the website and offer the perspectives of a diverse set of customers, not mostly white customers. However, within AncestryDNA’s videos, infrastructures of whiteness are also apparent, as the “Reaction” videos are presented in grayscale, emphasizing the faces of the customers in black and white, making phenotypical traits difficult to discern and distinguish. The effect it produces is a sort of mirage, going hand in hand with another strategy of discursive whiteness as embedded in the organization, what Nakayama and Krizek (1995) termed “the refusal of whiteness to name itself.” Through this stylistic choice, the organization attempts to erase perceived phenotypical race, a mechanism that paired with narration, contributes towards positioning DTC genetic testing as a post-racial technology and AncestryDNA as a colorblind organization.

This third discursive strategy puts emphasis on the “ideology of individualism over subjectivity,” positioning whiteness as a “non-label,” and reifying the idea that race is not relevant or important as a way to mask whiteness (Nakayama & Krizek, 1995, p.301). By emphasizing discourses of individuality as opposed to communal ethnicity, White customers see themselves as devoid of race.

This occurs, for example, in one of the AncestryDNA “Reactions” video. In it, the potential customer sees the face of an older phenotypically white man called “Jan”. He is presented in black and white, talking directly to the camera. The video presents his reactions to his DTC genetic testing results, showing his ancestry. He reflects on his experience taking the test, first positioning himself as disconnected from the world, his ethnicity, or an specific genetic community: “I ought to know who I am, and her I am realizing that I don’t know who I am.” Jan receives his test results, he explains to the camera: “I kind of expected, you know, that there would be a mix [of DNA] in there, but it’s the specific of it that are absolutely fascinating.” Of course, we should not be surprised, as we know that AncestryDNA offers Europeans like Jan genetic region information to the littlest detail. He continues: “Some things that weren’t awfully surprising, a large percentage of English Lancastrian within me. I guess we’re sort of defined by our own immediate past and our memories and not so much by the things that we don’t know.” He further explains: “[there were] two enormous surprises, some Maori connection. I can’t even begin to imagine where that comes from. Then there was two percent Chinese. I kind of understand that phrase ‘Citizen of the World’ a bit better now. Maybe everybody should get this [test].” The screen fades into white, we see the AncestryDNA logo appear, and then a question from the organization: How will you react when you get your AncestryDNA results?

Here, “Jan” utilizes a strategic rhetoric of whiteness, defining himself through his individual experiences instead of the collective experience of belonging to a racialized community, equating his self-definition to his immediate past instead of his inherited ethnicity or ancestry. He then further situates his connection to his newly discovered ‘heritage,’ his Maori and Chinese percentages. The implication of the video is clear: If Jan did not see himself as a “Citizen of the World” before, taking a DTC genetic test that connects him to other ethnicities or parts of the world suddenly makes him one. He positions himself as a color-less ‘Citizen of the World,’ a privileged and generous metonym. Jan’s narrative is especially important because it is one of the only occasions within 27 videos in which we can see a phenotypically white person coming to terms with issues of ethnicity. Other videos featuring white customers present a post-racial reality by focusing singularly on health discourses or centering around an unrelated narrative of adoption.

This postracial discourse which centers the idea that race is irrelevant for the modern world, occurs in yet another AncestryDNA video. It features a diverse cast of "customers" explaining their reactions to their DTC genetic testing results: "It kind of makes the world seem a little bit smaller than you thought it was and everybody else seem a little bit closer than you thought they were."

Discourses of postracialism are also apparent in 23andMe "Customer Stories," specifically the ones that are labeled with "Ancestry." These narratives tend to be presented by non-White racialized customers, as phenotypically White customers don't tend to acknowledge race within organizational videos, a strategic way of coddling whiteness, locating the responsibility of conversations about race and difference on racialized bodies.

A good example of a post racial narrative occurs in "Angelina's Story," which was also explored in Chapter 4. In this customer video, 23andMe utilizes the tag "Breaking down stereotype barriers" To tell the story of Angelina, a phenotypically Black woman from Brooklyn, that self-identifies as Black throughout her narrative. She is shown walking through different streets with painted murals, holding a cup of coffee, and around her we see a buzzing and active neighborhood in which only Black people are shown. Angelina tells the story of using a 23andMe to figure out her father's ethnicity and verify her own experiences of Blackness, after having her Blackness questioned by others in her community. After receiving her results, she explains: "I [now] feel so comfortable in my own skin and it was something I needed and wanted for a long time, we are so much more alike than we are different." Angelina is shown in a classroom filled with Black girls. She is presented as the lecturer. She narrates: "These barriers separating ourselves do not really need to exist. It enhances conversations if we aren't looking at each other through the lens of what stereotype and what box do I put you in."

The websites' post racial take is perhaps most evident in the only video that explicitly mentions slavery. This customer story, "Jordan's story" stands out among the other 26 videos as it is the only video that explicitly tackles the U.S historical legacy of slavery and its significance for African Americans interested in tracing their ancestry. It is also the longest video on the organizational website, being six minutes and a half long. This video is coded by the organization as an "ancestry" video, with the tagline "A pathway to his past, a stronger sense of himself."

In this video, which centers around a 23andMe customer called Jordan, the potential customer gets acquainted with Jordan's personal story. He tells us about his interest in genealogy from an early age, and how difficult it was as a Black man in the United States to know about his heritage because of the lack of records of enslaved people. The video switches between Jordan's narrative and an unnamed white man's narrative, using family pictures to situate both men's families and ground their interest in genealogy. Jordan decides to take a 23andMe genetic test that connects him to possible relatives and that is how he finds a distant cousin, his co-narrator, Thomas Lawton, descendant of a powerful family of North Carolina slaveholders. Thomas Lawton narrates: "A couple of years ago, a cousin I'd never heard of asked me if I would help someone else try to trace ancestry by doing a DNA test with 23andme. He said 'You know, If you've got an issue with having an African-American relative… um, you might not want to do this' I said 'that's ridiculous, why should I have an issue with that, of course I'll help'."

This narrative, although seemingly well-intentioned, erases the realities of racial tensions in the United States, specially when concerning the history of slavery and the commonplace nature of sexual abuse and institutionalized rape of female slaves by slaveholders. It erases the reality of White descendants of said slaveholders in many cases refusing to acknowledge still instances of abuse in Southern plantations throughout the Antebellum and Post-Civil War years, inherently upholding White supremacist narratives that view slavery only as an economic necessity instead of an exploitative system of power.

Thomas Lawton, taking the protagonist's role in Jordan's story, is the man who further eases the audience into this White-washed and sanitized version of slavery: "When I learned about Jordan, it put my family in a whole different light. Sort of a world-shifting moment. […] The first time I saw a picture of Winnie Joe [Jordan's ancestor], I recognized my grandfather, and it made perfect sense to me then that Winnie Joe was a half-brother of my grandfather."

In the video, we see Jordan and Thomas inside a car with Thomas as the driver. We see them driving in an unpaved road, under magnificent oak trees. In the climax of the video, Jordan and Thomas are shown stepping out of the car and approaching the Lawton family plot. They explain they are in the Lawton family plantation in North Carolina, where Jordan's ancestors where once enslaved and Thomas' ancestors were the enslavers. Thomas narrates: "History can be a burden, it can make life complicated, it can also bring all kinds of nuance and meaning to stuff."

Both Jordan and Thomas walk among the graves, finally stopping in front of the grave of the grandfather of their common ancestor, a Confederate cavalryman that "had children" with a "formerly enslaved woman," something that Thomas subsequently describes as "mind-blowing." Thomas further guides us through some post-racial ideas of reconciliation: "But there is this notion of truth and reconciliation, and there can't be any kind of reconciliation about the issues until there is an acknowledgement of the truth." At this moment, the camera focuses on Thomas, Jordan nods silently, smiling and looking at his white cousin while he speaks. Then the camera jumps to only Thomas, being interviewed: "The experience of meeting Jordan has forced a lot of people to deal with things that may be uncomfortable, but you know, facts are stubborn things. We have to figure out how to face reality and how to deal with it."

In this moment, we see strategic silencing of historical truths surrounding slavery and reconciliation. Although what Thomas is saying seems progressive, specially in comparison to other 23andMe videos that purposefully obscure or fail to mention the legacies of racism and slavery, in this video there are no conversations about consent or violence between Jordan's ancestors or any mention of power differential in the described dynamic. This silence about issues of racial injustice and historical exercises of racial science and oppression, position whiteness as part of the infrastructure. Normalizing whiteness not only serves to perpetuate inequality, but also makes discussions about the real effects of racialization transgressive and divisive (Macalpine & Marsh, 2005). This type of discursive concealment serves as a hegemonic strategy and tool within organizations to center whiteness, coddling and comforting the potential (ideal) White customer. The fact that these types of discourses about 'reconciliation' are coming from a White man in a video that is supposed to be about Jordan's experiences, also shows the organization's inability to tackle historical realities of race because of their fear of appearing transgressive.

The video ends in an idealistic and postracial tone. Jordan talks to Thomas: "This just goes to show you look absolutely nothing like me, yet we share the same genes, the same makeup, the same blood. It's been amazing getting to know you."

Thomas: It's been amazing getting to know you too.

Thomas (Voiceover): "It's fascinating to how 23andMe has sort of exploded this body of knowledge, uncovering connections that would never have been known about, and I think the world is a better place for that."

The silencing that the organization engages in, sugar-coating the lived experiences of slaves in the US, silencing Jordan in his own story in favor of a White cousin that is positioned as more knowledgeable, is then framed as the ideal way to start talking about ‘reconciliation’ between White and Black Americans. This leads us to associate this idea of historical ‘reconciliation’ with post-racial rhetoric in which race doesn’t matter anymore. Here DTC genetic testing is seen as a tool with incredible potential to connect people across lines of difference, a theme that becomes a common thread in the organizational videos.

This sentiment is repeated in another AncestryDNA video, featuring a racially ambiguous man called “Alex”, he speaks to the camera about his reaction to his results: “What has it made me feel? It really… you know… with all that’s going on in the world, and Brexits, and Donald Trumps, and segregations and everything… it’s just like, it’s making me think, like, wow, like how… it’s just blown my mind. Me? I’m me, that’s it. It doesn’t, it hasn’t changed me, but it’s certainly making me think more.” Here “Alex” explains that AncestryDNA’s DTC genetic testing technology now allows him to connect himself to the global political moment, acknowledging histories of discrimination, and current tensions of belonging/non-belonging. In the end, he seldom says much, but this video shows us that Alex, once devoid of political grounding, and once unfazed by “Brexits,” “Donald Trumps,” and “segregations,” is now able to see himself implicated by these events.

Another 23andMe “Customer Story,” centers on Kamal, a self-defined Middle-Eastern man raised in the United States. In his narrative, he discovers that he has some Italian heritage: “When you find out that you have common ancestry, it gives you something to explore that you have in common with somebody else, you start to look at people maybe more favorably, and that’s a good thing.” Kamal is shown with his children, cooking Tabbouleh, a type of salad originated in the Middle East (Fig. 3). He is shown chopping Italian Parsley, as a callback to his newly discovered Italian heritage. “My hope is that… you know, through time, more people will become aware of what it is they share with other people. It’s irrefutable, right? It’s in the genes, you know, and I think it would really change the world. I believe that.” In a possible reference to the Israeli-Palestinian conflict, Kamal as an Arab man reflects on his results: “I also found out that in my DNA report I have a little bit of Ashkenazi Jewish. It made me wonder how people would feel if they realized that they all had common ancestry, they all share great-great-great-great-grandfather’s, and how that would… might change the way they perceive each other, that they’re mortal parts of each other’s universe. (sic)” In this narrative, DTC genetic tests are positioned as postracial technologies, capable of changing the world through incredible powers and idealistically bringing communities together.

Whiteness as Organizational Infrastructure

This analysis looks at Whiteness as a set of historically, culturally, and socially produced locations associated with discursive practices (Sammel, 2009). Whiteness is constituted as part of a legacy of domination in which phenotypically white individuals, white-passing individuals, or individuals aligned with whiteness by proxy do not fully see themselves as racialized, unable to understand their own social racial identity or historical privileges (Sammel, 2009). Whiteness is based on preserving white racial dominance through implicit white norms regarding social, political, and economic aspects, that allow white subjects to ignore and not acknowledge their own racial identity (Stevens et al., 2021). Within this system, Blackness serves as a “boundary object of whiteness” by which ideals of whiteness are measured, as whiteness is maintained and produced through marking non-Whites as ‘others’ (Stevens et al., 2021, p.115).

Whiteness is a structural and ideological phenomenon that seeks to maintain the status quo, and as such it is based on histories of privilege and subjugation in relation to race, class, and gender, among other intersections and experiences of social control (Sammel, 2009). Nakayama and Krizek (1995) interrogate the role of whiteness in US culture, which has historically taken the 'position of an uninterrogated space" being accepted as the norm (p.293). However, they position that whiteness is constituted through strategic discourses of domination, as whiteness as a discursive frame negotiates and reinforces White dominance in the United States (Nakayama and Krizek, 1995). Investigating whiteness within organizations and systems of knowledge necessarily involves looking at unfolding relations of dominance and how this domination "operates in normalized, seemingly non-racial, day-to-day ways" (Sammel, 2009, p.650).

Throughout this analysis, I approach whiteness as a discursive cultural construction through which the experiences of racialized "Others" are organized and calculated (Nakayama & Krizek, 1995, p.297). The next chapters will examine how AncestryDNA and 23andMe operate within whiteness through organizational discourses. Following Nakayama and Krizek's six strategies of discursive whiteness, I argue these organizations both: a) deploy discourses of health to decenter race and present the US as post-racial, and b) simultaneously utilize discourses of ancestry to center race and reify race as a biological construct. This mechanism solidifies AncestryDNA and 23andMe as organizations that operate within uninterrogated spaces and structures of domination; organizations that discursively construct and operate within infrastructures of whiteness, utilizing genetic testing as a racializing tool albeit in invisible ways.

When critically studying whiteness, it is important to note that it operates in "mundane practices" within organizations, that end up reinforcing and masking structures of power linked to privilege (Zhang et al. 2012, p.205). Whiteness operates invisibly, making it "difficult to name, insidious to (re)inscribe, and this hard to disrupt" (Zhang et al., 2012, p.205). Studying whiteness within organizations instead requires for us to see race as a verb, not necessarily a noun (Macalpine & Marsh, 2005). This is because whiteness is linked to ongoing organizational practices and institutional policies that center White as the default and the non-White as the 'other.'

A good example of how this operates within organizations would be the pressure faced by workers to change 'ethnic' names into 'easier to pronounce names,' ethnocentric institutional expectations around family leave that fail to consider non-nuclear families, undeveloped policies surrounding citizenship status and visa processing, and enforced work leave during Christmas time, among other issues (Macalpine & Marsh, 2005). These practices continually re-inscribe organizations as White spaces through policies, set-up, tasks, and structural embeddedness (Holck, 2017). When considering the study of whiteness within organizations, infrastructures of whiteness have been associated with the invisible creation of a predominantly white professional identity (Shrikant, 2018) that marginalizes Black (and other non-White) professionals in the workplace (Ferguson & Dougherty, 2021). It may be noted that these discourses of professionalism are typically embedded in whiteness in conjunction with neoliberalism and colonialism (Karikari, 2021). These practices normally coexist with silence about issues of race, colorism, or ethnicity and focus on abstract discourses of diversity instead that fail to acknowledge lived racialized realities, power differentials, and how whiteness is discursively constructed, reproduced, and naturalized in organizations. Discourses of neutrality and empty diversity statements within organizations do the work of obscuring power differences, as infrastructures of Whiteness become common-sensical (Macalpine & Marsh, 2005). Infrastructures of whiteness in organizations have also been linked to workplace environments in which certain workers are privileged, with workers of color being assigned low-level positions and tasks that might reinforce the organizational status quo (Wingfield & Alston, 2014). This has also been associated with the stagnant growth, sexualization, and commodification of Black women in executive positions, which culminates in their eventual exit from organizations (Forbes, 2009).

Whiteness as organizational infrastructure can also be connected to perceptions of leadership (Liu &Baker, 2016), low-levels of racial self-awareness among White activist organizing (Doering, 2016), forced assimilation of non-White academics (Dar, 2019), as well as discourses of diversity within organizations that fail to acknowledge the realities of racialization (Carrillo Arciniega, 2021). Organizational whiteness has also been linked to well-intentioned postracial discourses in neoliberal philanthropic organizations, which end up reifying gentrification and racial inequalities (Saifer, 2020).

When studying websites and other internet structures, whiteness can be reified through online networks, as the advent of the internet has prioritized a Westernized and classed way of interacting in the cyberspace in what Zhang and others (2012) called “digital whiteness” (Zhang et al., 2012). Even if websites are able to mask the race of users and creators, whiteness is still infused in most infrastructures through the use of language, the positioning of visual images, and other mechanisms that prioritize certain perspectives, marking users that don’t assimilate as “Other” (Anderson, 2018; Zhang et al. 2012). In these infrastructures, whiteness is implicit and associated with progress and technology, in contrast to non-Whiteness (Blackness and other marginalized identities), which are linked to regression, primitivism, and premodern ideas (Zhang et al., 2012). Such juxtaposition of modern and pre-modern and systematic naturalization of whiteness have always been central to sustaining colonial legacies. Any attempt to address whiteness within institutions is seen as divisive and as a practice of “unnecessary labelling” in an organizational space that is presented as diverse and equal (Macalpine & Marsh, 2005, p.443).

The first step of analysis of discourses of 23andMe and AncestryDNA using a framework of postcolonial whiteness involves identifying the organizational websites as “the space of whiteness” (Nakayama & Krizek, 1995). By effectively naming whiteness is a step toward displacing and second-guessing the centrality of whiteness within these infrastructures. Through naming strategies of discursive whiteness on the websites, this analysis reveals whiteness’ “invisible position” within the organizations (Nakayama & Krizek 1995, p.292).

This chapter has examined some of the ways in which invisible infrastructures of whiteness might be present in the discourse and design used in both of the organizational websites analyzed. This analysis demonstrates how discursive mechanisms of whiteness operate within organizations. The previous analytical chapters show how, beyond the infrastructure of these organizational websites, discourses are being used to de-center and center race simultaneously. Throughout these, I argue that these organizations also center race, reinforcing it as a naturally-occurring phenomenon and a scientific fact instead of a social construction, through the use of discourses of ancestry. At the same time, I argue that discourses of health do the work of de-centering race, utilizing health differences as a classificatory system that takes precedence over race, focusing on the white customer as the default, and making medical racism invisible. Both of these mechanisms work in tandem to situate DTC genetic tests as racializing technologies, and both organizations as institutions operating within and through infrastructures of whiteness.

Moving forward, it is important to note that even when considering race as a social construct based on contextual meanings of political power, this does not mean that race doesn’t exist. Instead, race is understood as a social location, tied to political status in a society and affecting social interactions, and thus a construct that affects diverse groups’ access to wealth, opportunities, cultural capital, and healthcare (Roberts, 2011). Through these infrastructures of whiteness, organizations obfuscate the realities and effects of race, as racial identity and racialized experiences either go unacknowledged or are considered a superficial characteristic to foster post-racial discourses of same-ness. I discuss the theoretical implications of my research and suggest recommendations for future research and practice in my following concluding chapter.

CHAPTER VII: DISCUSSION/CONCLUSION

The goal of my dissertation is to understand how DTC genetic testing organizations are embedded in the workings of biocapitalism and racial science. Using a postcolonial framework and critical race theory, and guided by relevant literature in biocapitalism, genomics, racial science, and organizational power and control, my research deconstructs the discourses of two leading DTC genetic testing corporations, Ancestry DNA and 23andMe. I use a multi-method approach involving computer-assisted scraping of data followed by a thematic analysis and media analysis to analyze the content available on these organizations' websites. I manually analyze specific organizational texts comprising 200 pages of data and 28 videos (see Chapter 3 for details) available on the homepage of these websites. Here are the research questions that guide my study:

RQ1: How do DTC genetic testing organizations discursively construct the idea of 'race' for their potential customer through their corporate websites?

RQ2: How do DTC genetic testing organizations engage in discourses of bio-capitalism?

My analysis brings forth the following themes: The Ancestral You, The Ethnic You, The Knowledgeable You, The Healthy You, and The Empowered You. These themes suggest that the organizations enable customers to be their authentic, ancestral ethno-racial self as well as healthy, knowledgeable, and empowered self. At a meta level these themes represent discourses of race and health—they communicate the promise of a "racially complete" self and a healthy self. While constructing an aspirational "self" for the customer, the organizational discourses continually de-center and re-center race and demonstrate the organizational websites as infrastructures of whiteness. My findings are tied to ideas of biocapitalism and explain how racial logics are produced. They primarily suggest that the organizations emphasize genetization of identity, highlight and obscure whiteness, and present scientific information as central to wellness and self-actualization.

The studied organizational infrastructures of DTC genetic testing corporations utilize discursive strategies of whiteness in both format and content of their websites. For instance, the experiences of North American "settlers" assume a naturalized position of power through both the organizations' bio-banks against which customers' genetic material gets compared (Lee, 2015). The presence of higher level of genetic variety for Europeans on the websites center power of whiteness tying it to the infrastructure of databases. The prevalence of whiteness is juxtaposed against limited geographic regions of genetic reference populations in the Global South. Another strategy positions whiteness as a "lack" (lacking of race) meaning whiteness is non-color and pure. White customers are shown to be interested in health advocacy, while ancestry and heritage are concerns of racialized customers. Hence, whiteness gets implicitly associated with health advocacy and scientific rationality. Finally, white customers are shown utilizing postracial discourses of sameness and global citizenship, and sanitizing the historical horrors of slavery and Native American genocide (which are not explicitly mentioned or referred to except for one occasion).

My findings on whiteness and health function in conjunction to exemplify how these organizations effectively both de-center and re-center race. Although race is never outright mentioned and discussed on the organizational websites or in the videos or texts, race is alluded to through other constructs. Race is de-centered, its existence and importance made invisible through discussions of health advocacy which take an essentialist approach to engage with genetic health/illness, center on white customers, and put forth post-racial discourses. At the same time, race is re-centered and emphasized through discussions of ancestry and biogeographical origin.

As health discourses are continually associated with the experiences of phenotypically white customers, which are presented as “devoid” of race and uninterested in ancestry, they position the white health advocate customer as the default. These websites utilize genetic health differentiation and determinism as a system of organization, positioning the DTC test as a diagnostic tool that helps (white) customers assess future health risks, providing them with agency and the possibility of empowering themselves. Throughout the organizational websites, these discourses seeking genetic health advocacy (for White customers) are presented in opposition to discourses seeking genetic ancestry (for non-White customers). The data further reveal how these organizational websites re-center race through the idea of ancestry as tied to ethnicity, promising customers access to an “authentic” ethno-racial self and connection to a collective identity. Hence, the key insight that addresses my RQs is that DTC genetic testing organizations are engaged in a sophisticated process of reinforcing whiteness as the prevailing organizational infrastructure, while at the same time subtly de-centering/re-centering race as a construct through health information-seeking and ancestry information-seeking discourses.

I organize my theoretical contributions under two broad areas, namely, advancing scholarship on postcoloniality and race in organizational communication, and theorizing new forms of corporate colonization in the context of biocapitalism. I argue that the number of theoretical implications I advance in these two broad areas have the potential to open up new vistas of research in our field. The following two sections expand on each of these contributions before moving on to limitations and suggesting recommendations for future research.

Theoretical Contributions

Discursively constructing race within organizations. The organizational communication discipline has been critiqued for inadequate engagement with race as epistemological category. Ahistorical and acontextual approaches to understand race in early studies did not quite grasp the complexities of race as a complex, socially constructed category (Allen, 1995; Ashcraft &Allen, 2003; Allen, 2007; Gist-Mackey & Hode, 2017). Over time scholarly engagements on race generated a body of research on organizational phenomena such as leadership, decision-making, professionalism, organizational performance among other issues. However, the empirical category predominantly hovers around the level of the individual such as performance, compensation, evaluation (Wooten, 2019). It is only recently that scholarship in the field has started drawing attention to white supremacy and whiteness in organizational communication processes (Ballard et al, 2020; Nkomo & Al Ariss, 2014).

My research joins this conversation and extends discussions on race in the field by shifting the analytic attention from people to organizations (Linabary et al. 2021; Walker and Rojas, 2020). My research brings forth the DTC genetic testing organizations as infrastructures of *whiteness* where racial logics are continuously re-configured and re-articulated. Furthermore, the discursive practices of these organizations present them as a new genre of organizations that are constructing race relations by crafting ethno-commodities and advancing reductionist idea of racial identity. The specific theoretical implications of discursive and material practices of these organizations are of enormous significance for organizational communication and our larger discipline of communication encompassing ideas of a) new modes of exploitation of marginalized communities for profit, b) new forms of racial membership based on genetic race, c) postracism for creation of capital and sustaining white dominance, and d) race as technology. I delineate each of these points below.

New modes of exploitation of marginalized communities

The DTC genetic testing organizations engage in the sophisticated articulation of de-centering and re-centering race in order to create value for the products they offer (the DTC genetic test) and reach a wider set of possible customers (White and non-white). This process is necessary for the organizations studied to craft "ethno-commodities" for customers to purchase and consume under the guise of 'discovery' of the self. This creation of ethno-commodities is then connected to the harvesting of genetic data and the creation of bio-value for both the customers and the organizations.

At the beginning of the century, impacted by the recent developments in the mapping of the Human Genome Project, Gilroy (2000) predicted that the "biotechnological revolution" would change the traditional ways of understanding race, difference, and identity. He then predicted that genetic information and its nano-politics would start operating within a capitalist system of profit, as culture would become "a form of property attached to the history and traditions of a particular group" in the name of racial difference (Gilroy 2000, p.24).

Racial constructs have historically been used as "a tool of subjugation" to establish differences between populations and render some people into "objects to be exploited, enslaved, measured, demeaned, and sometimes destroyed." (Chun, 2013, p.40). Foucault (1990) explains how centuries ago, power over life manifested itself through the disciplining of the body, and the regulation of the biological processes such as "propagation, birth, mortality, the level of health, life expectancy and longevity in what he names as the “biopolitics of the population” (p.139). He mentions “blood relation” is of vital importance to maintain this mechanism of power and control in a biopolitical society in which “power spoke through blood” (Foucault, 1990, p.147). Foucault (1990) located this link between power and biological processes in the seventeenth century when supervision and regulation of the body was seen as vital to maintain control over the population and life itself. Blood relations and heredity (and by extension, genetics) were an important and instrumental tool for maintaining power through a symbolic function (Foucault, 1990). As the United States’ difficult relationship with race-mixing and classification has taught us, quantification of blood and racial data can be considered an extremely powerful tool to maintain social hierarchies through “scientific” validity of “race” (McCann-Mortimer et al., 2004). The rise of national eugenic movements in the early twentieth century also relied on the idea of ‘scientific’ racial difference between groups to control populations (McCann-Mortimer et al., 2004). It is not surprising then that through the “production of knowledge in laboratory science” certain assumptions about race have been able to “turn” genetic lines into “affective objects” through which anxieties and prejudices can be articulated (Oikonnen, 2015, p.764). However, genetic information deals with the “nano-politics” of race and genetic information (Gilroy, 2000, p.19), as opposed to existing racial and biopolitical exercises of power. This dissertation, a study of how two DTC genetic testing organizations deal with the “nano-politics” of race through organizational discourse, only scratches the surface of how these organizations discursively construct issues of ‘race.’ Chapter 4 illustrates how these organizational discourses focus on customers discovering an “ethnic” or “ancestral” self, contributing to the idea of race being discoverable, fixed, and quantifiable, with the DTC genetic test serving as a discovery technology with the power of connecting customers to some type of ‘authentic’ ethno-racial self.

In Chapter 5, we observed how discourses of health put forward a reductionist approach to health and illness, with the DTC genetic test serving as a diagnostic tool for discovery of inherited health. What both of these chapters show is the predominance of discourses of discovery within these organizational websites. These discursive patterns tie ideas of 'race' to science and objective reality, discoverable through the scientific method, positioning race as an object to be discovered and conquered through technology.

My analysis makes it evident that these organizations advance the dominant ideology of science, knowledge, and search for truth as an objective and value-free process that is associated with human ingenuity and cultural progress. Historically, these dominant assumptions have been utilized by Western power for maintaining a hierarchical and unequal social structure (Glenn, 2015; Go, 2018; Mignolo, 2002). These organizations are no exception. It is then not a surprise that discourses of discovery utilized by these organizations through their websites eerily resemble colonialist discourses of discovery. The organizational websites utilize the idea of "discovery" of vital internal and genetic characteristics, whether that is race, ancestry, ethnicity, or health predispositions, or personal traits. AncestryDNA's organizational website, for example, explicitly claims to provide a product that will allow you to "revolutionize the way you *discover* your family history," at the same time it encourages customers to "get more of [their] inside story." This focus on knowledge and discovery of race is also present in the 23andMe organizational website through the analyzed 'Customer Stories' videos. The organizations promise a journey of self-discovery as tied to racial identity and uniqueness, with customers "finding themselves" through genetic testing and discovering relations to new ethno-racial identities and feelings of belonging to a community. 23andMe's website, for example describes their three varieties of DTC genetic test as "three easy ways to discover you."

Through promises of discovery (of health/illness, or ancestry/ethnicity), the organizations craft "ethno-commodities," new subjective self-identifications of race based on technology. In the process of creating ethno-commodities, 'race' is fetishized and commodified for consumption of the organizations' customers. Specially in the United States, as racial identities become distinct to each racial group, 'race' has been tied to difference and *jouissance* – induced fantasies of being (George, 2016). Ethno-commodities are based on these racial fixations on cultural diversity (Benjamin, 2019). As the 'other' is differentiated from the self, 'race' and 'racial identity' become objects to consume and identities to try on. This creation of ethno-commodities comes with new extensive marketing of ethno-racial identities, in a new mode of production that involves the exploitation of marginalized identities and stereotypes associated with them for profit (Comaroff & Comaroff, 2009). This marketing of racial identity leads to "self-parody and devaluation" but also appears to create new patterns of socialization and collectivity (Nash, 2006, p.86). Throughout this process, race still operates as a technology and a tool to be used, just that it now operates through supposedly unbiased scientific knowledge. Ethno-commodities (Nash, 2006) accrue value by generating possible profit when organizations sell genetic data to third parties or research partners. However, the creation of ethno-commodities is also fueled by customers' own reclaiming of "ethnic natures" and attempts at identity and community building (Nash, 2006, p.87). This process of creating and selling ethno-commodities as rooted in difference is based on "continued extraction of value from bodies marked as racially different," situated within strategies of racialization through scientific knowledge (Merz, 2016, p.135).

New forms of racial membership

For the organizations' customers, consuming ethnocommodities becomes "the pleasure of devouring difference" (Benjamin, 2019, p.149), as they get to know their 'genetic race' and play with new racial identities. The organizations provide customers with personalized briefs of food, history, music of these newly discovered ethnicities and culture, sometimes even offering travel itineraries, links to Spotify playlists based on genetic race, and discounts for Airbnbs in new countries based on genetic test results. The creation of ethnocommodities also follows in line with traditional Western and Euro-American values of property and privacy, where all goods and services can be owned and productively exploited, instead of understanding goods as communal and property as a responsibility (Reardon & TallBear, 2012).

Studies on DTC genetic testing (Jones & Roberts, 2020) have shown that White customers are more likely to change their racial identification after receiving DTC genetic tests results. This is most likely to happen when these new racial identifications are perceived to be beneficial, leading to economic opportunities (such as grants and scholarships), or facilitating cross-racial interactions. However, the most likely scenario is that White customers are more likely to embrace new racial identities to add “more interest to what they perceive as an otherwise ‘bland’ racial identity.” (Jones and Roberts 2020, p.1971). This of course brings up the discussion how these abilities to shift and bend racial identities without consequence might be a manifestation of White customers’ privilege. This is consistent with the idea that DTC genetic testing organizations commodifying aspects of racial identity for consumption through the creation and customer use of ethnocommodities. Consuming (or discovering) ethno-commodities creates new forms of possible racial membership for the organizations’ customers as based on genetic race (Morning, 2018). Genetic race, the emerging object of discovery promised by these organizations, in many cases involves the creation of new "DNA Citizens" to bolster claims to African ethnic groups (Nelson, 2016) or to American Indian tribal memberships (TallBear, 2014).

Post-racism and production of capital

Using the framework of “state of the art science”, these organizations commodify race through an ever-expanding genealogical market for population genetics (Nash, 2006). In this way, these types of testing technologies help “reconfigure both race and indigeneity as genetic categories” in ways that can both reinforce difference for purposes of discrimination or self-determination (TallBear, 2013, p.147). For instance, like in eugenic medical science, test-takers are marked as “carriers of eternal characteristics” associated with race to be stored and transmitted to the next generation (Chun, 2013, p.46). The widespread use of DTC genetic testing to access vital “proof” of race and ethnicity occurs under faulty racial logics of race being genetically discernible and quantifiable. Even then, test-takers have used test results to petition for things as tribal enrollment and affirmative action or to engage in race-based healthcare and race-based pharmacogenomics (Bates et al., 2004; Bliss, 2018). Race in these tests is used as a substitution for variation of genetic markers as in many cases. As we do not necessarily have the terms to describe such minuscule levels of differences, these organizations end up reinforcing certain aspects of old concepts of biological determinism. This new way of re-centering race does the work of subtly redefining race as a genomic category, offering opportunities to pharmaceutical companies for using and exploiting this information as a commodity and product, and creating capital in a seemingly post-racial society (Bliss, 2012; Merz, 2016). In this era of modern nanopolitics, “difference rather than sameness secures the constant expansion of profit margins” (Merz, 2016, p.130). Thus the idea of race becomes more than a specific social identity, being entangled with a corporate strategy that produces bodies and relationships as inherently different, if not inferior.

Furthermore, I argue that through creating ethnocommodities, these organizations also push their customers to develop some type of biological citizenship (Roberts, 2011) based on self-discovery and connection with other customers. Organizations can give customers the semblance of personal control over their health and also by connecting them to others based on their common genes and traits. Access to this type of knowledge might open the door to new relationships with present and future selves, as well as new responsibilities, especially when thinking about genetic risks or inherited illnesses (Hedgecoe & Martin, 2008). With this new biological citizenship, some customers might also start to see themselves differently, as part of new individual and collective identities. Some scholars consider that this approach and connection to some type of genetic community might eventually replace other options for "racial groupness" and belonging, eventually replacing historical legacies or collective social experiences (Bliss, 2012, p.36). However, utilizing only genetic information to achieve this biological citizenship in some ways strips race of its political meaning and power to create solidarity within historically exploited communities (Roberts, 2011, p.256).

It is difficult to say if customers take DTC genetic tests to purposefully contribute to the organizations' biobank, contribute to research, connect with a community, or for other undisclosed reasons. It is even more difficult to track whether taking the test leads customers to connect with others beyond the organizational interface, as the current website infrastructures don't allow for it. This biological citizenship as it relates to the organization would then seem limited. It is also important to note that technological tools of racialization are often "wrapped in the language of diversity" (Benjamin, 2019, p.148). And thus the creation of these ethno-commodities for consumption is touted by these organizations as socially just scientific advances. These organizations produce knowledge about race through discourses of health, ethnicity, and ancestry, utilizing a new egalitarian and neoliberal frame of biocapitalism. Histories of admixture, mestizaje, and "melting pots" are often framed in positive ways, connected to postracial discourses of citizenship and multiculturalism as nation-making exercises. These narratives are used to foster a national ethos "entangled with European and American colonial history," which sees citizenship, identity, and belonging as culturally and historically contingent (TallBear, 2013, p.153).

In many cases, organizations that deal with genomics see their labor and their focus on race as a form of anti-racism (Bliss, 2012; Fitzgerald, 2014), thinking that through the inclusion of minorities and their genetic code into scientific research they might be able to fill the gaps and right the wrongs of past biomedical racism. For many scientists working for these organizations, understanding race as biological, intrinsic, and discoverable is considered part of their commitment to ethical scientific approaches and social justice (Bliss, 2012). Postracialism comes across as an ongoing discourse throughout the data. In cases where ethnicity and race are mentioned, this is usually in conjunction with statements such as "we are so much more alike than we are different, these barriers separating ourselves do not really need to exist (23andMe, "Angelina's story) or "[the test] makes the world seem a bit smaller than you thought it was and everybody else seem a little bit closer than you thought they were" (AncestryDNA, "Reactions"). The concept of 'post-racialism' is a descriptor for a society "in which racial differences are no longer significant." (Fitzgerald, 2014, p.57). Discourses of post-racialism imply that racial and ethnic discrimination are no longer barriers faced by minorities in the United States. It also suggests multiculturality and same-ness be embraced, and that White privilege doesn't exist (Fitzgerald, 2014). Considering racism as a thing of the past, post-racialism fulfills the original hope in the field of genomics of "leaving race behind" in favor of new understandings of difference as race becomes less meaningful (Gilroy, 2000, p.29). Fitzgerald (2014) argues that the rise of racial genomics and DTC genetic testing might actually be tied to “keep[ing] our notions of race alive” in the face of white racial dominance being challenged in current United States’ culture, especially considering the ways in which these organizations “target their clientele along racial lines.” Sometimes there are specific tests offered for certain target minorities (Fitzgerald, 2014, p.60). As white dominance is perceived to be threatened by white people, science is being used to perpetuate racial dominance in a “seemingly nonracial way,” allowing structural racism to remain, even in a so-called post-racial nation (Fitzgerald, 2014).

Race as Technology

DTC genetic tests are able to pinpoint and “see” racial difference, something that is valued by these organizations as a celebration of identity and heritage based on cultural difference. However, the problem starts when this perceived ‘difference’ is painted as an objective and technological reality rather than a man-made construct (Benjamin, 2019). A decolonial lens allows us to politicize and historicize these organizational discourses, knowledges, and epistemologies that are presented as ahistorical, apolitical, and acontextual. The existing racial categories used to make sense of the genetic data are categories that have been constructed to “assist colonial and imperialist agendas,” in many cases to justify domination and exploitation (Fitzgerald, 2014, p.61), given the fact that racialization emerged in the United States in conjunction with the Atlantic commercial circuit (based on colonization, exploitation, and slavery as main modes of capital production) marking the making of colonial difference (Quijano, 2002). The colonial relationship itself was able to construct race, as the colonizer only existed in relationship to the colonized (Go, 2018), as such, blackness and indigeneity as categories only existed in relationship to whiteness. Racial categorization in the United States is thus linked to settler-colonialism, the establishment of black chattel slavery, and an economic system that viewed indigenous people as eliminable and black people as property (for productive and reproductive labor) as a way to increase settlers' access to land, property, and value (Glenn, 2015). The racial divide was mapped on other dichotomies, that became constitutive of the United States' identity as a nation, such as citizen/non-citizen, freedom/slavery, humanity/animality, civilized/savage, and property owner/property (Glenn, 2015).

Race is thus an intrinsic part of modernity and capitalism, what Mignolo (2002) calls coloniality of power—an epistemic and internal aspect of economic institutions that relied on producing and reproducing ethno-racial identities as a structure of domination in a way that seems "common-sensical" and in-line with American culture and nation-building (Narayan, 2019). Difference then, and discovery of this difference, just like in past centuries, becomes an integral part of the production of capital and DTC genetic testing organizations' engagement with stakeholders within the macrostructure of biocapitalism. The outcome is that these organizations capitalize on racial identity politics acknowledge racial differences for the purpose of market logic but depoliticize them by failing to acknowledge the social and economic implications of difference and discrimination (Swan, 2010).

This research then pushes us to understand 'race' within these organizations as not exclusively biological or purely socially constructed, not as a culture, but as a technology capable of organizing social relationships, with the power to turn the body into a "signifier" associated with racial markers (Chun 2013, p.43). Discourses of race operate within these organizations as technology, as the mediator between the organization and the customer—an useful tool that these organizations utilize in the search for profit and knowledge-making. Race is then a functional entity, an already existing mixture of science, nature, communication, and culture, and a concept that helps organizations establish meaning for the product they are offering and meaning for the eventual customer.

As the organizations studied commodify race and racial diversity for their own benefit, they derive social and economic value from the customers' discoveries and utilize the generated data to fortify their research databases. Both the studied organizational websites motivate consumers to voluntarily contribute their genetic information through spit test kits and heredity information through online surveys, with customers' labor being necessary for the production of biovalue within the organizations, distorting traditional roles of production and consumption within capitalism (Merz, 2016). The narratives of postraciality paired with the production of ethnocommodities and ideas of racial inclusion and racial difference operate to extract value from customers (Merz, 2016). At the same time, discourses of discovery and self-discovery are used to create bio-value, reifying colonial understandings of race. I argue that organizations' corporate colonization (Deetz, 1992; McClellan, 2017) continues in the neoliberal economy by way of colonizing life and genetic information. The apolitical understanding and normalization of the organizations' involvement in the construction of customers' identities by not situating them in the system of biocapitalism keep 23andMe and AncestryDNA away from scrutiny or from taking any responsibility towards their stakeholders. The following section emphasizes the implications of the organizational discourses in the context of biocapitalism.

Corporate colonization and biocapitalism. This section explores how these mechanisms of creating ethnocommodities and bio-value contribute to biocapitalism. I argue that these organizations engage in biocapitalism by producing ethnocommodities and bio-value for their customers, and posit that they do so through the constant de-centering and re-centering of race. Additionally, these organizations engage in biocapitalism by: a) creating meaning for customers and contributing to the corporate colonization of knowledge production, and b) utilizing discourses of organizational diversity, while maintaining and prioritizing whiteness as part of their organizational infrastructure. The discourses utilized by the organizations in the end position race as a commodity to be purchased, utilizing post-racial discourses while at the same time reifying the importance of genetic differences. The following section explores the details of this process as well as the possible ramifications that this study holds for the subsequent study of organizations like this.

Creating meaning for customers

One of the biggest challenges in organizational communication is to create nuanced understandings of the ways in which capital accumulation and life within neoliberal capitalism are intrinsically connected to organizations in the United States (Mumby & Plotnikof, 2019). Under traditional Fordist capitalism, the creation of value occurred through production in factory settings, as the point of conjunction between capital and workers' labor. However, Mumby and Plotnikof (2019) caution that under neoliberal capitalism, economic value in organizations is tied to meaning and information, encompassing life itself (p.51). We see this happening explicitly within DTC genetic testing organizations, where the economic value lies in the collection, sorting, analysis, and distribution of genetic information within organizational stakeholders and their connections to others. These organizations become an example of how "communication not only constitutes organization, it also constitutes capital" (Mumby & Plotnikof, 2019, p.51) and I add, constitutes coloniality of power.

While the organizations find capital in genetic information and their products, customers of both 23andMe and AncestryDNA find meaning through 'discovering' and connecting with their health, their possible illnesses, heritage, ancestry, particular types of ethno-racial identity, and extended family. The goal of critical organizational communication studies is to call into question hegemonic discourses and the production of meaning within organizations, especially concerning ‘common-sensical’ relationships between corporations and human experiences under neoliberalism (Mumby, 2016). As shown throughout the analytical chapters, the organizations’ production of ethno-commodities and bio-value for consumption has been naturalized through the organizational websites studied in terms of both infrastructure and content. Within a “knowledge economy” (Kuhn et al. 2017, p.10), data, knowledge, and information become the primary mode of capitalist production over land and physical labor. DTC genetic testing organizations in the emerging era of biocapitalism expand knowledge economy by collecting, utilizing, and harvesting genetic data as the primary means of producing value.

These organizations might be very well aligned with Dean’s (2014) conception of “communicative capitalism,” as they, in many ways, bring fantasies of community, connection, and participation in wider (global) citizenship to reality, while at the same time pushing customers down through networks of incessant production and possible surveillance. This view recognizes the importance of organizational knowledge production and its link with customer consumption and meaning-making. The meanings conjure value-based organizational discourses by creating a “branded product or service” based on either material or immaterial objects, such as genetic data, genetic race, perceived difference, or even heritage and family history (Mumby, 2016, p.894). Some research within critical organizational communication (Cheney & Sullivan, 2019; McDonald, 2017) has connected the idea of branding to customers’ symbolic identities. Branding is one of the main business processes in which modern organizations create commercial and social value (Cheney & Sullivan, 2019). Through the creation of “artifacts that assist consumers in the production of identity," organizations create and sustain their own identity as a 'brand' (Cheney & Sullivan, 2019, p.83). In contemporary times, the brand is seen as a flexible system that adapts to the market and the necessities of their customers, and branding becomes a new regime of power that shapes social realities and identities of its customers. For AncestryDNA and 23andMe, part of their "brand" and business model involves connecting with their customers' identity and creating meaning through interactions. AncestryDNA and 23andMe are in the end corporations that operate within neoliberalism, and that among other things, depending on the appropriation and the privatization of the commons (genetic communities, scientific knowledges, social interactions, racialized experiences) to create surplus value (Mumby, 2016). As such, we see how these organizations create meaning for customers, helping them 'discover' their own biosociality based on the appropriation and privatization of ethno-racial commodities. The goal of this practice is to both produce capital and uphold consumer interests by creating a community of customers that make and re-make themselves, sustaining this emerging model of biocapitalism (O'Riordan, 2017). This is especially evidenced when the organizations provide incentives for customers to get family and friends involved such as continual "Friends and Family" sales with the promises that the genetic data will be more accurate if biological family takes the test as well. They put pressure on customers for long-term paid subscriptions to organizational sites (such as Ancestry.com), which will aid in connecting to others. Even when the organizations don't provide much space for interactivity (through forums or discussions) within the website infrastructure, customers are invited to contribute to the community through their genetic data which becomes part of the database, fill out surveys which will be used to provide statistics about traits to other customers, and through incentives to find other customers for the organization, appealing to an imaginary public or feeling of community

(O’Riordan, 2013). This is the end result of the so-called “corporate colonization of the lifeworld” (Deetz, 1992) in which corporations can dictate many aspects of social life in neoliberalism and biocapitalism. Another important factor at play within these organizations is that they utilize discourses of organizational diversity to engage in biocapitalism, while at the same time prioritizing organizational whiteness.

Using discourses of organizational diversity

In many cases, discourses prioritizing whiteness and the experiences of White customers demonstrate an invisible ideology embedded in the technology used by the organization and/or the organizational website (shown in Chapter 6). The power of this discourse operates through its naturalization in the interfaces and features of the organizational websites. The naturalization of the processes of these types of technologies and infrastructures serve to remove accountability or blame from the organizations, making it impossible for stakeholders to assign responsibility. Part of the value of this study is its examination of these virtual infrastructures, calling into question their naturalization of hegemonic power and second-guessing the perception of science as value-free.

Discourses deployed within the organizational infrastructure do the work of naturalizing whiteness as a hegemonic strategy, effectively “coloring” organizations white (Macalpine & Marsh, 2005, p. 438). As explained in Chapter 4, both 23andMe and AncestryDNA’s organizational processes reinforce white power through silence about history, slavery, genocide, medical racism, and discrimination. Instead, the organizations studied operate through postracial discourses of diversity and equality which fail to engage with the lived experience of racialized customers. These organizations utilize discourses of diversity in the process of commodifying ‘discovered’ race and difference, such as when “Angelina’s Story” centers on “breaking down stereotypes” while solidifying her ethno-racial identity as a customer of 23andMe. Concepts of ‘race’ or perceived lack-there-of (whiteness) are tied to race stereotyping (like “Kamal’s” newly found Italian heritage serving as an explanation for liking men’s jewelry and talking with hand gestures) and belonging to a community (like ‘Debra’s 1% Jewish heritage pushing her to connect with the Jewish faith), not about present or past racial equality or inequality. Representations of ‘race,’ are then disjointed and disconnected from existing racial politics (Swan, 2010). Additionally, the studied organizations conceptualize the white customer as the norm, with non-white racial identities marked as exotic and different. A critical organizational communication approach enables us to see how assumptions about whiteness and non-whiteness are reproduced in the process of creating ethno-commodities and bio-value, with whiteness being maintained as an “invisible structural principle that legitimizes the social order” (Gist-Mackey & Hode, 2017, p.8).

Whiteness as a discursive function (Zhang et al. 2012) is strategically concealed and utilized by organizations to manage meaning about race. Such mechanisms construct and reproduce whiteness within the organizations, as discourses of race-neutrality successfully obscure possible power differences (Macalpine & Marsh, 2005). Whiteness becomes an “ever-present organizing structure” that reproduces the racial status quo. Taking a “raced” approach to studying organizations becomes extremely important to question whiteness within the infrastructure (Allen, Gist-Mackey & Hode, 2017, p.9). The overall consequence is that race becomes a product to be purchased; organizations de-center the importance of race (post-racialism) while re-centering the importance of difference. With the understanding that organizational knowledge is a social process derived from practice and interactions between stakeholders, I argue that organizational knowledge is something that can be continuously renegotiated by the organization and its customers (Lockwood Harris, 2017).

Taking a stand toward diversity and inclusivity can also become a way for organizations to connect with prospective customers, intersecting with customers' own identity construction (Cheney & Sullivan, 2019). The idea of difference, diversity, and inclusion within organizations has developed to take on a "functionalist and managerial connotation" (Parker & McDonald, 2019, p.147). The focus within many organizations is to highlight and value diversity as a way to increase organizational performance and become more competitive in a setting that deeply values specific types of cultural difference (Parker & McDonald, 2019). However, it is important to acknowledge that this emphasis on diversity doesn't mean a commitment to social justice or any other type of organizational action towards minorities or disadvantaged communities (Parker & McDonald, 2019). The studied organizations, for example, despite building their business model on ideas of (ancestral, health, genetic) difference, seldom articulate any contributions to initiatives that might serve minoritized communities. This process of creating and selling ethnocommodities rooted in difference serves the neoliberal agenda of extracting value from customers' data. This would be another instance in which "diverse bodies" are being viewed by the organizations as "resources that can be used to achieve organizational ends" instead of actual equilibrated attempts at some type of organizational diversity (Parker & McDonald 2019, p.147).

In line with a diversity management approach, these organizations also contribute to certain identities or ancestries being "tokenized," while normative (white) customers are seen as representing only themselves instead of entire communities (Parker & McDonald 2019, p.148). This type of organizational "diversity" is associated with "happy diversity" approaches, which conceal inequalities from the organizational view (Ahmed et al. 2006; Swan, 2010). However, these organizations take the extra step of engaging in “commodity diversity,” when their engagement with biocapitalism is built on selling difference, even though racial differences are simultaneously “acknowledged and ignored” (Swan, 2010, p. 95). Swan (2010) uses the term "commodity diversity" to highlight how organizations can utilize and commodify racial differences through visual images and postracial discourses of diversity. My research reveals Swan’s idea of organizational practices of commodity diversity by showing how they place stakeholders into already pre-existing cultural categories, viewing cultures, and races as static, singular, self-contained, essentializing difference, but in a relationship to the dominant white organizational culture. AncestryDNA and 23andMe’s handling of diversity falls in line with this commodified version of corporate diversity, which deploys postracial discourses as status quo where there is no obligation to acknowledge race and recognize its significance.

Practical Implications and Recommendations

Demonstrating the ways in which these types of organizations utilize whiteness, I argue that future studies need to use a decolonizing approach to examine how whiteness and its centeredness are taken for granted in the field of organizational communication. Additionally, considering the possible ethical issues involving the DTC genetic testing organizations, I call for further examination into how these organizations could develop a socially responsible model and ethics of care for their stakeholders. Finally, this research creates an entry point to understand the potential for citizen science and democratization of genomics within biocapitalism.

Decolonial focus in organizational research. As the field of organizational communication turns towards a critical standpoint in terms of interrogating its colonial legacies (Broadfoot & Munshi, 2007; Cruz et al. 2020; Pal, 2016), this research has proven the potential of utilizing a postcolonial approach to examine organizations, considering future organizational communication research should focus on critiquing instances of Whiteness, Western-centrism, and heteronormativity (Buzzanell, 2021). Throughout this research, I have used postcolonial theory to examine organizational discourses, trying to gain a deeper understanding of the ways in which these organizations utilize ‘race.’ When thinking about the contributions of this research, I can only hope to create intervention points for future decolonization of organizational communication studies. As postcolonial and decolonial approaches work hand in hand to dismantle colonial ways of understanding knowledge-making and racial identities, a decolonial/postcolonial approach proves useful to examine whiteness and how it operates implicitly within organizations and within scholarship that studies them (Cruz & Sodeke, 2020). A decolonial approach utilizes postcolonial thought to *demystify* the ways in which race can be used as a technology and the ways in which whiteness can operate to maintain the racial status quo within organizations. I suggest future studies examine how ‘race’ can be invisibly deployed by organizations in their diversity strategies, and how whiteness has become taken for granted by design and indiscernible to many stakeholders. Critical race theory, whiteness studies, and postcolonial theory have been vital to analyzing the websites of DTC genetic testing websites in this study to contest the “colonization of thought” and envision the decolonization of organizational practices of AncestryDNA and 23andMe (Mumby & Ashcraft, 2017, p.10). This approach aided me in “excavating” the “hidden layers of power” existing in the content and infrastructure of these websites, which in many cases had been normalized by the organizations

(Munshi et al. 2017, p.1), forcing me to deal with both what the organization was saying (post-racial discourses of ethnoracial ancestry) and what was being left out of the conversation (infrastructural whiteness, racializing discourses). The decolonial approach allowed me to understand the discursive practices of AncestryDNA and 23andMe in their different forms, namely, as systems of thought, and as knowledge-making entities that use race as technology. It led me to interrogate their search and discovery for scientific "truth" which these organizations position as "the truth" and as the "cornerstone for progress" and "modernity"—the strategies for maintaining racial hierarchies and colonial legacies within a neoliberal economy (Mignolo, 2002, p.80).

A decolonial focus puts the process of creating ethnocommodities and bio-value in conversation with the historical reproduction of ethno-racial identities as a way to establish and maintain structures of domination in coloniality (Mignolo, 2002). This has multiple implications for the study of organizations and their impact on United States culture. First, this pushes us to think about the importance of developing ethics of care in modern corporations and the necessity of a socially responsible corporate focus within these organizations. Second, this study opens the door to thinking about alternative conceptions of genetic communities and organizing within biocapitalism, considering the possibilities for citizen science for stakeholders of these organizations. Knowing the ways in which these types of organizations utilize whiteness, further studies might benefit from utilizing a decolonial approach to examine how whiteness and its centeredness are uncritically accepted in the field of organizational communication. Critical approaches such as postcolonial/decolonial theorizing can help us examine how whiteness might operate by design. Above all, the decolonial approach helps us understand how whiteness, imperialism, and racism are intertwined in implicit and explicit ways within micro and macro infrastructures of organizations.

Organizational ethics of care for DTC genetic testing organizations. The study conducted on these organizational websites, their framing of ‘race’ to create ethnocommodities and bio-value for their stakeholders and the organizations’ further engagement with biocapitalism open up important questions about possible ethical misgivings existing in this system. Organizations in the end can always be considered “ethical systems of practice” with deeply embedded ethical issues that should be examined (May et al. 2019, p.60).

There are basic ethical expectations of organizations such as creating sustainable social systems, treating employees fairly, not engaging in harm towards communities, providing ethically-made products and services, using honesty and accuracy, and generating value while being accountable and responsible to customers (May et al., 2019). While Corporate Social Responsibility (CSR) messages and practices can be used to further advance corporate interests and differentiate themselves from the competition (Tantalo et al., 2012), they can also be a way for organizations to legitimize their practices, establish trust, create societal good, and further connect with customers (Ban, 2016; May et al. 2019). CST serves as an instrument that “align[s] public and private interests,” with the potential of being the trustworthy and transparent nexus between corporations and the communities, to eventually generate value/wealth for all parts (Tantalo et al., 2012, p.136). In contemporary American corporations under the frame of neoliberalism, CSR has become an expectation of the ethical corporation, a philanthropic way for corporations to “give back” to society. This begs the question, in which ways are DTC genetic testing organizations ‘giving back’?

At the very best, both AncestryDNA and 23andMe have common traits with "hidden organizations" (Scott & Sahay, 2018), as key aspects of their enterprise and organizational structure cannot be accessible and transparent due to privacy issues. At its very worst, both AncestryDNA and 23andMe have the potential to operate narcissistically if they lose track of their stakeholders, lose their ability to learn and adapt to the cultural moment, and fail to change policies based on social demands (Iivonen & Moisander, 2015). As they stand, these organizations' focus on participation and customer agency fails to acknowledge how choices might be constrained by the mode of collection and processing of DTC genetic testing. Within these organizations, responsibility is "only discussed in the context of customer behavior" (Ban 2016, p.307), as these organizations don't explicitly elaborate on the possible harms of data-sharing or include specific information about 'research partners' that might also have access to the genetic data. The responsibility of making the ethical choice of sharing genetic information is put on the shoulders of the customers. This can be considered a strategy for exonerating DTC genetic testing organizations from corporate responsibility.

The idea of organizational care has been tied to social work environments and employee relationships within organizations, where organizational care is conceptualized as growth for employees in the service of larger communities (Bammens, 2016; McAllister & Bigley 2002). The implementation of care policies and practices has been thought of as vital for employee motivation and innovation in corporations (Bammens, 2016). However, little has been researched about organizational care for customers. It is particularly relevant for sophisticated systems of organizations such as the DTC genetic testing organizations that blur the lines of production and consumption (as customers become participants, creators, researchers, and data). In the case of corporations such as AncestryDNA and 23andMe, I argue that the unique position of their customers adds a new dimension of possible ethical responsibilities for them which they must take into account to effectively engage in carework. Customer organizational care would be vital for AncestryDNA and 23andMe to be truly people-centered and for maintaining their corporate reputation (Bammens, 2016). Customers should play a bigger role in the storing and protection of their genetic information (Borry et al., 2010). I suggest transparency is key to this process, where permission and consent should be sought at every step. I recommend customers have access to the list of “research partners” that will end up handling and utilizing their data. I suggest organizations disclose goals and shared initiatives that the data will be used for, and ask for permission as many times necessary to ensure full disclosure and consent from participants.

Considering that there is an astounding difference in the ways genetic test results are interpreted by customers and genetic counselors (Leighton et al., 2012), DTC genetic testing companies should facilitate access to one-on-one genetic counseling services and personalized help for customers. Additionally, organizations should be aware of their customers’ varying levels of science and genetic literacy, having strategies and information in place to fill in the gaps of their customers, to ensure both informed health care decisions and full understanding of the test and the technology at use. More importantly, these DTC genetic testing organizations should explicitly mention ‘race,’ providing different historical and sociological perspectives on race, helping customers understand what they mean by ethnicity and reminding them about ‘race’ being an unquantifiable, complicated, and flexible social construct.

Genetic communities and organizing. DTC genetic testing organizations are tied to other types of organizations/organizing. I recommend further research be done on other types of organizing that seem tangentially tied to both 23andMe and AncestryDNA, such as customers' creation of genetic communities or research communities surrounding health advocacy or family heritage. The DTC genetic testing organizations rely heavily on their communication about these other organizations to their advantage. For instance, they claim that taking the test can connect their clients to extended family or other ethno-racial communities. Furthermore, these organizations invite stakeholders to participate in data-sharing for altruistic and communitarian reasons, potentially convincing customers that they are "making a difference" and "contributing to science," or "preventing disease for future generations" (23andMe, main website). Some customers might find these types of interactions politically empowering, thinking that such actions might make genetic information meaningful in a biosocial way (Hedgecoe and Martin, 2008; O'Riordan, 2013).

Many of the negative reports about the use of direct-to-consumer genetic testing fail to address the adverse effect of this type of testing for specifically underserved communities. In contexts of health inequality, the use of DTC genetic testing technologies without the intervention of health providers can be seen as a type of citizen science, in which non-professionals can get involved and collaborate in scientific research to address specific health concerns (See Fiske et al., 2019). Citizen science embraces the possibilities of democratizing knowledge production through community participation, ensuring the avoidance of demographic biases in traditional medical research. This type of engagement with their own genetic material opens possibilities for public participation through online communities, effectively "changing what it means to be an informed and active patient" (Fiske et al. 2019, p.619). Indeed, these technologies have the potential to be revolutionary and agentic specifically for communities of color such as the African diaspora that has seen their genealogical records erased by the horrors of slave trade and systemic racism (Nelson, 2016). In many cases, DTC genetic testing is able to predict and pre-diagnose diseases, and with the help of health practitioners, offer possibilities for preventive health measures. However, in order to avoid exacerbating health inequalities in genomic research, a genomic initiative that would prioritize citizen science need to explicitly communicate possible benefits and harms of testing in greater detail, "anticipating who could be empowered and disempowered in the process," something that existing DTC genetic testing companies are far from doing (Fiske et al. 2019, p. 620).

Sometimes customers of these organizations find alternative ways of connecting with other customers as a way to explore their newly 'found' ethno-commodities (Roberts, 2011). As these types of organizational behavior mostly occur away from the organizational sites, it would be interesting to further analyze tangential organizing occurring through discussion boards on Reddit, or Facebook, where customers of these organizations are actively bonding. Some of these unofficial online boards, like "r/23andMe," and "r/AncestryDNA," have a collective of up to 100,000 members posting their online results, comparing between companies, sharing stories about genetic testing, asking questions about heritage and health, and informing others about family genomics. Facebook groups such as "DNA Detectives," "Genetic Family Search," connect DTC genetic testing customers sharing their findings, ethical conundrums, and requests for help reading results. Other groups like "I've Traced my Enslaved Ancestors and their Owners" are explicitly formed with the intention of consulting other customers in the process of using DTC genetic testing to trace extended family ties that have been severed because of slavery in the United States.

Although these communal discourses still suffer from many of the biases found in this study, in many cases reiterating the organizations' discourses, these public forums still open up spaces for important discussions regarding genetic privacy, ethnoraciality, and historical understandings of race. This type of collective organizing can eventually lead to political agency, ease of access to genetic information, democratization of science, and collective development of hope in scientific knowledge (Novas, 2006; O'Riordan, 2013). So even if AncestryDNA or 23andMe do not explicitly provide space within their organizational websites for these communities to develop or for customers to engage with their newly generated ethno-commodities or bio-value, I contend that these conversations and alternative community building are happening in different organizational spaces. They offer opportunities for researchers to see the impact of these technologies, and for DTC genetic testing organizations to adapt to more ethical practices (Lewis & Sahay, 2019).

Finishing Thoughts

I think it would be a disservice to my work, my method, and my training to not acknowledge the person behind the academic, the paradigm behind my research, or the very intimate way in which I've connected to my research in the last couple of years. I understand researcher reflexivity as an iterative process of continual engagement that forces me to engage with my position, privilege, and voice throughout this investigation, something vital for postcolonial epistemologies (Munshi et al. 2017). As a way to examine my positionality, my research process, and my possible limitations, I engage with my identity as a communication researcher across organizational contexts (Jensen et al., 2020). In this brief section, I negotiate with my own researcher identity in context, in constant conversation with the DTC genetic testing organizations that I have studied the last five years.

Very early on in my dissertation process I knew that I wouldn't be able to fully do what I wanted to do if I didn't put my body (My literal body and the data associated with it) in the line of research. I consider this one of the strengths (as well as one of the possible limitations) in my investigative process. Originally, I thought I needed to understand first-hand the thrill DTC genetic testing. I needed to fully *get* the customer side of the organizational sites I was researching. Even though I felt intrigued and a little bit terrified by the prospect of sharing my information with these organizations, I became both a customer and researcher of AncestryDNA and 23andMe.

I was terrified of this because, in the end, this was not only about my own genetic data belonging to these organizations. I was also, in some ways, giving access to my brothers' data, my parents' data, my extended family's data, even my future children's data, to the companies I was studying. The more I researched, the more daunting these possibilities became, specially not knowing the ramifications or the roles that these organizations might play in the future. Three years have passed since I spit in a tube to have my body and its data analyzed (dissected?) by the organizations I have been trying so hard to fully understand. Since then, my genetic data, those little numbers that are supposed to *make me,* have changed multiple times.

I try to move away from a simple positionality statement as a way to understand the writing and research process as something that incorporates "alternative forms, feelings, and embodied knowledge" beyond typical White Western approaches to understanding organizations and epistemologies (Jensen et al. 2020, p. 136). As I position myself and my body in the line of research, exploring my positionality, and engaging in reflexivity, I think of myself both as a researcher and as a customer, faced with the daunting possibilities of DTC genetic testing technologies. I think of myself as a researcher (skeptical, critical, fascinated) and a customer (entertained, curious, fascinated), knowing both identities to be blurry and compatible.

More than that, a commitment to postcolonial reflexivity requires me to engage in constant awareness and self-analysis (Linabary et al.,2015; Pal, 2014). My research is informed by critiques of science and organizational science that fail to recognize institutional power, and issues inherent within the search for epistemological ‘truth’. I understand the world of genetic testing as based on both nature-culture, whose scientific objectivity should be questioned. I believe it would be hypocritical to critically examine others’ methods of measuring “science” without acknowledging how I participate within my own paradigms of “science.”

Science comes from the word ‘scientis’, from the Latin ‘to know’. As I think of my own ways of knowing, I need to acknowledge my own background as an international scholar and my approaches to studying race and science. Who I am (a White Venezuelan) is a consequence of Spanish colonialism in Latin America and the Caribbean, and this is a story neither AncestryDNA or 23andMe tell. I grew up talking about racial and genetic diversity in school, where I was taught a post-racial and colorblind version of Pan-Venezuelaness and Pan-Latinoness in which all Venezuelans were “the same”: a mix of Spaniard white, Native American Indian brown, and slave African black, but all of us fully Venezuelan, definitely the most important category. My country, like many other Latin American countries has culturally absorbed the ideas of pan-Latin Americanism and genetic mestizaje to sweep issues of race and colorism under the rug (Wade, 2017). Even when Latin America has seen its fair share of enslavement, genocide, and erasure; conversations about white supremacy, racial inequality, and privilege are uncommon. Many Venezuelan citizens still suffer through endemic issues of race and colorism as tied to opportunities and socio-economic status. This reality seldom goes acknowledged. As racism and discrimination are naturalized, conversations that critically deal with race are seen as a “Gringo/Yankee” import, having no place within Venezuela as a nation.

My years of graduate school education in the United States have done a good job of problematizing these simplistic understandings of race and nation. I am able to understand my white privilege in both Venezuela (Where I am a white Latina) and the United States (In which I can pass as white Caucasian), something that I have carelessly been using my whole life, a marker of class, education, and economic mobility in both countries. When pursuing higher education in the United States, I gravitated towards postcolonial approaches because they seemed natural to me, they seemed a logical approach to my (Venezuelan) way of viewing the world. I was raised in a country that doesn’t shy away from examining its status as a former colony. The world I was brought up in was always imbued with the intergenerational trauma of colonialism and genocide towards indigenous and Afro-Venezuelan cultures, as well as neo-colonial relationships with other countries. Thus, my interest and approach to postcolonial studies is deeply personal.

I also grew up in a country and a culture in which ideas of science and spirituality are very much intertwined. For example, in Venezuela many doctors when treating infection might prescribe antibiotics, healing prayers, natural herbs, and a lit candle in the altar of a specific saint. This is a characteristic of the syncretic culture that I was raised in, something normal and naturalized within Venezuelan society, where people understand the body as interconnected with both physical and metaphysical characteristics. This approach sees the body and its relationship with the world as central to understanding ‘science.’ This combination of ‘Western’ rationality with Global South’ syncretism becomes vital to achieving ‘health,’ as it positions ‘scientific fact’ in conversation with both nature and culture, what Chun (2013) would call a nature-cultural approach to science. This type of approach to science is something that many Global North researchers might consider ineffective, irrational, and superstitious, but one that I would consider another way of knowing and experiencing the natural world, another type of ‘scientis.’

Once, when sharing this perspective in a PhD seminar, I had one of my fellow graduate students ask me: “Why should people from cultures *like that* have a space in science?” Initially, I was taken aback by the sheer ignorance, ethnocentrism, and deep-rooted prejudice in this question. It was only through digesting the comment afterwards that I started seeing how this question had served to keep people (me) “from cultures like that” (from cultures like mine) from engaging in White dominant spaces, where Western-centric views of “science” and epistemology are the only “acceptable” ways of doing science. Throughout my dissertation research, this question fueled me when studying the insidious ways in which white supremacy exists within discourses of science, race, and organizations. It also made me wonder about the mechanisms utilized by white supremacist institutions (whether it is academia or DTC genetic testing organizations) to prioritize Whiteness as organizational infrastructure, as the default, as an epistemological tool of inquiry, as the deciding factor on what makes science ‘science,’ knowledge ‘knowledge’ and fact ‘fact.’ It is my belief that there is space for cultures like mine in the realm of scientific inquiry, as I understand ‘science’ and what it entails to be variable and impermanent within cultural contexts.

Even though this way of seeing the world, this background, this cultural *baggage,* could be seen as a bias by many researchers in the Global North, I do consider that this way of understanding inquiry is one of the strengths in my research. However, I am aware that this perspective might make me overly critical of the organizations that I study, which in many ways capitalize on seeing science as “natural” biological fact instead of a “natural-cultural” approach (Chun, 2013).

Another limitation of my research is that this investigation mostly pertains to the United States context. Although these organizations operate in an international capacity, I have narrowed the scope of my research to only study the ways in which these organizations operate in the United States, by only analyzing the U.S version of the organizational websites. I have additionally studied these organizations through an understanding of ‘race’ that is deeply Western and U.S-centric. I have been trained in United States’ academic spaces and because of this my approach to the concept of “race” and all it entails stems from this training. I believe that studying the ways these organizations operate in other cultural contexts (with different understandings of race) might give me different results.

Being reflexive as a researcher is a vital part of the work I aspire to do. It was through this iterative process of reflection that I discovered that my ‘health’ codes also told a story of ‘race’ and racialized experiences, as they mostly portrayed the experiences of white customers. I recognize that at the beginning of my research, I too had fallen prey to discourses of whiteness that see the white customer as the default, the standard ‘customer,’ to the point in which whiteness had seemed invisible to my analytic eye. After this experience, by acknowledging my “failure,” (Jensen et al. 2020) my investigative process became more reflexive.

Conducting this research eventually became both an experience of: a) reading the data, analyzing what **was** there, and b) reading the data, analyzing what **wasn’t** there and the possible reasons why these discourses and “Customer Stories” were missing. Doing this research backwards seemed difficult, but it was an intuitive process that clicked when realizing that in order to study ‘race’ I not only had to rely on postcolonial studies and critical race theory, but I also had to study what had been historically perceived as “lack of” ‘race’—whiteness—and how it might operate in crafty and taken-for-granted ways in organizational spaces.

Although my dissertation originally was intended to explore only discourses of race, I discovered through alternating deductive and inductive analysis that race operated in many ways in these organizations. Besides offering a racial technology and a racializing product, the organizations were able to re-center (re-emphasize, reify) the importance of fixed race by furtively using discourses of ethnicity and ancestry. At the same time, their organizational discourses de-centered (de-emphasized, subverted) race as central to the offered technology by discussing health as if this was a concept entirely disconnected from medical racism and racial inequities that led to worse health outcomes, utilizing narratives of post-raciality. With this mechanism in place, the simultaneous re-centering and de-centering of race, these organizations utilize race as a technology. Prioritizing organizational whiteness, they are able to connect and sell racializing technologies, ethno-commodities, and some type of genetic social capital to their customers. This way, DTC genetic testing organizations engage directly with bio-capitalism in ways that perpetuate white supremacy as the standard.

I also acknowledge that even when this research is a comprehensive examination of the two leading DTC genetic testing organizations in the US, this is not an examination of *every* DTC genetic testing organization. Even when I am critical of the organizations I studied and their approaches to ‘race’ discourses, I would like to think that there are other DTC genetic testing organizations that have found more ethical ways of handling ‘race.’ Other smaller DTC genetic testing organizations, like “African Ancestry” (Which mostly caters to African Americans and has a comprehensive genetic database from African tribal affiliations) or “Somos” (Which mostly caters to the Latinx communities in the United States) probably have different approaches to genetic testing technologies, differing discourses on race and identity, and alternative connections to biocapitalism. In that way, my research is not universal to the world of DTC genetic testing organizations.

I think it is important to consider that I come to the context of the United States as an outsider—a scholar that has been living in the United States for more than a decade, but in the end (as papers and migration officials like to remind me), an outsider. Because of this I am lucky enough to approach my study without seeing myself and my family history directly implicated in the stories I research. The "science" that I study, the organizations I focused my investigation on, do not cater to me but to the American customer. Because of this, I have the privilege of approaching my data and knowing I won't be deeply hurt by the racializing discourses I encounter. Many of them will force me to be accountable and they will make me uncomfortable in my research process, but they won't be hurtful.

Something that up until now has gone unacknowledged in my dissertation is that I believe that these DTC genetic testing technologies have the potential to shift our cultural discourses regarding our individual bodies, our personal identifications (or identities), and our conceptualizations of race. Using my own experience of taking the test and receiving my ancestry results, situating my body as a site of inquiry, and dedicating myself to the qualitative and thematic analysis of these organizations, I more than ever understand the 'self' (researcher/customer) as a political unit, in which the personal has become political.

As I research 'scientific' discourses of 'race' within these organizations, I see these corporations as sites in which ideologies operate in both harmful and surprising ways, making customers' bodies into biopolitical subjects. While considering Ross et al. (2017)'s claim that the individual is trapped in history and that history is trapped in them (p.188), I now look as my customer body as a repository of knowledge in which ontological divisions of nature and culture are “always permeable and shifting” (Tuana, 2008, p.189), where genetic information is not simply information but what *it is made of it* by larger structures such as AncestryDNA or 23andMe. Or where ‘race’ is not simply genetic code, phenotype, ethnicity, recognition, nature, nurture, interaction, social-construction, and/or culture, but what *is made of it* as a biopolitical tool, how it is used, how it is remarked upon by the Venezuelan or American sociocultural context. When faced again with the question: “Why should people from cultures like that (cultures like yours) have a space in science?.” I look at my body (of knowledge) and I can answer: We already have it.

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