

Racism and Racial Surveillance

Modernity Matters

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Chapter 10

The (re)invocation of race in forensic genetics through forensic DNA phenotyping technology

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Introduction

“The Night Stalker” is a criminal case that involved a series of burglaries, rapes and sexual assaults of elderly victims, predominantly women, across South East London for almost 20 years between 1992 and 2009. During the London Metropolitan Police investigation, also known as “Operation Minstead,” forensic DNA phenotyping (FDP) technology – which uses DNA found at crimes scenes to infer probabilistic information about externally visible characteristics and biogeographical ancestry – was utilised (Skinner, 2018b, pp. 3–4), unravelling the suspect’s ancestry as sub-Saharan African and, more specifically, from the Caribbean. Through a controversial collection of DNA samples from “volunteer” police officers with a known ancestral link to the Caribbean, the London Metropolitan Police was able to narrow down the suspect’s ancestral profile to the Windward Islands (Johnston, 2006). During this period, the police were accused of intimidating those officers who refused to cooperate, leading to controversy among members of London’s Metropolitan Black Police Association (Sankar, 2012) and critical questioning in the House of Commons (Williams & Wienroth, 2014, p. 75). However, having wrongly judged which Caribbean island the suspect’s ancestors were from, a second mass DNA screening¹ was carried out, collecting more than a thousand biological samples from “volunteers” (Ford & Tendler, 2004). At the end of this case, neither FDP technology nor DNA profiling would end up playing a central role in capturing the criminal. Following a CCTV lead, the police defined a specific geographical perimeter and carried out a major surveillance operation, which resulted in the arrest and subsequent identification of the suspect (Dodd, 2011).

In addition to this, there are other cases in different European countries where FDP technology has been used (Jong & M’charek, 2017; M’charek, 2008a; Wienroth, 2018). Each of these cases raises different issues and concerns intrinsically relating not only to each country’s colonial, enslaved and migratory histories (M’charek, 2020) but also to their technopolitical background. “Operation Minstead” is an exemplary case of the potential for

overinvestment in forensic DNA innovation technologies, and of how police investigations can be misled or misdirected when DNA phenotyping technology is used for intelligence purposes, specifically when targeting minority racial/ethnic groups. It also demonstrates that police officers need clearer guidance in using and interpreting results from FDP technology to avoid the risk of discrimination (Skinner, 2018a). The use of this technology within police investigations, especially without supervision or guidelines, potentially augments the risk of reinforcing governance, surveillance and social control (Garland, 2001), operating more intensively on certain populations and thus increasing their visibility as a target of suspicion and policing (Queirós, 2019). Consequently, the application of this technology in criminal investigations can enhance the (re)production of new forms of discrimination, giving a “new look” to existing forms of racial and ethnic stigmatisation.

Working from a perspective embracing the field of Social Studies of Science, this chapter discusses the interrelations between forensic genetics and race through the study of expectations towards FDP technology. Underpinned by the concept of contemporary synthesis (Fullwiley, 2014) it: (i) explores how FDP combines and conflates ideas about human biological differences that are both race and population-based (2014, p. 803), and (ii) demonstrates how attempts to deconstruct race within science can also, potentially, converge in its reconstruction, (re)creating dynamics of collectivisation of suspicion over specific population groups. Based on interviews conducted with forensic geneticists in different European countries such as Germany, the Netherlands, Poland, Portugal and the United Kingdom, the chapter explores how their expectations around FDP’s development and application (re)invoke race in different domains. These countries were selected because they present different characteristics of interest for the study of FDP technology, namely the existence or absence of regulation and, in some cases, the experience of its application in criminal cases.

The emergence of forensic DNA phenotyping technology in forensic genetics

In recent decades, forensic genetics has witnessed a shift in investment from identification technologies to criminal intelligence technologies. That is to say, technological tools offering the possibility of guiding future activities of social control over certain targets (Innes et al., 2005, p. 42), exploring new ways of constructing knowledge about the identity of subjects. Among the most recent innovations is FDP. This technology results from the use of forensic techniques² that aim to infer visible physical characteristics of suspects, such as eye, hair and skin colour, and biogeographical ancestry. The inference of biogeographical ancestry is based on the analysis of informative markers to estimate the genetic inheritance individuals carry from their ancestors (Phillips, 2015). These estimations are generally made on a continental level, therefore giving probabilistic information about a person’s

genetic ancestors as being of Afro-American, Southern Europe or Northern Europe geographical-genetic origin, among other regions.

The emergence of DNA phenotyping dates back to the early 2000s, with the development of some physical characteristics to be investigated for forensic purposes (Kayser, 2015). Since then, this technology has been presented by several forensic experts, who advocate its bright future in supporting criminal investigations, once it is provided with strict precautionary principles and if good scientific and ethical practices are observed (Granja & Machado, 2020; Queirós, 2021; Samuel & Prainsack, 2018; Wienroth, 2018).

The high expectations around FDP technology are related to the ambition of forensic genetics with regard to the possibility of obtaining additional information on criminal suspects in certain scenarios: when DNA samples collected at a crime scene do not match any of the profiles stored in forensic databases (Børsting & Morling, 2015; Kayser, 2015; Kayser & de Knijff, 2011) and when there are no eyewitnesses (Kayser, 2015) or other clues that would allow new lines of criminal investigation inquiry to be developed (Claes et al., 2014; Kayser, 2015; Kayser & Schneider, 2009, 2012; Walsh & Kayser, 2016) – so-called cold cases (Innes & Clarke, 2009). Furthermore, it is also expected that this technology might generate new leads in the identification of human remains and missing persons³ (Kayser, 2015; Kayser & de Knijff, 2011; Kayser & Schneider, 2009).

Conjuring up views that refer to the objectivity, immutability, impartiality and greater reliability of DNA, as opposed to the mutability and unreliability of eyewitness accounts, ever since its emergence, FDP technology has been directly compared to the use of eyewitnesses in the criminal justice system. Coupled with a construct of scientific and technological progress, it is first and foremost professionals in forensic genetics creating this narrative that associates FDP technology with a construct that presents it as a “biological witness” (Kayser, 2015, 2018; MacLean & Lamparello, 2014; Walsh & Kayser, 2016).

Despite the statements and expectations touted by various forensic scientists, extolling the role of FDP as a unique source of criminal intelligence for police investigations (Kayser, 2015, 2018; Kayser & de Knijff, 2011), this technology breaks with the aura of scientific objectivity socially attributed to genetics (Lynch et al., 2008). Unlike other more traditionally and routinely used forensic tools, the results of FDP technology do not enable the identification of the criminal suspect, nor are they communicated to the police with definitive certainty. Each characteristic inferred during this process of molecular (re)construction of criminal bodies (Granja et al., 2020) is presented using probabilistic representations (Granja & Machado, 2020; Hopman, 2020; Hopman & M'charek, 2020; Vailly, 2017; Wienroth, 2018) that reveal a series of variable biological characteristics shared by certain population groups to which the criminal suspect may belong. The usefulness of this technology is, therefore, not seen in terms of evidence. It is

constructed and projected taking into account the contributions it can make for criminal intelligence purposes (Scudder et al., 2019; Walsh & Kayser, 2016; Wienroth, 2018), that is to say, supporting decision-making on which paths to take in an ongoing police investigation (Innes et al., 2005; Scudder et al., 2019; Wienroth, 2018).

The interrelations between race and genetics

Nowadays, a concise, socially diffuse ambiguity endures, perpetuating the interrelations between concepts such as race, ethnicity,⁴ population, ancestry, nationality and belonging. The (re)invocation of race in the field of genetics has given rise to numerous controversies given the multiple meanings these concepts convey, related not only to the identification of certain traditional, cultural and identity characteristics of human life, but also to the historical, political and social meanings attributed to the notions of belonging, descent and identity (Bliss, 2012; Fullwiley, 2007b, 2008b, 2015; M'charek, 2000; M'charek et al., 2014a, 2014b; Skinner, 2012, 2018b).

An in-depth understanding of these phenomena entails the theoretical and analytical challenge of thinking about race and its interrelations with genetics, but also about the legacy that colonialism left to contemporary post-colonial societies (Santos, 2007, 2018). In these societies, while race is surreptitiously steeped in the most diverse practices of the social world, it continues to conjure up a powerful image of belonging to the colonial and Nazi past (Boulila & Carri, 2017; Jerónimo & Monteiro, 2020; Kattmann, 2017; M'charek et al., 2020). The historical, political and social importance and memory of these same periods mean that race remains a taboo subject in contemporary societies, often excluded, silenced and neglected from scientific and official discourses (M'charek et al., 2014a, p. 462). Although it discusses the interrelations between race and the field of forensic genetics in the context of an emerging and innovative technology, in this section this debate is bounded by understanding its historical, techno-scientific and socio-political relationships with the field of biomedicine and genetics (Chow-White & Duster, 2011; Fujimura & Rajagopalan, 2011; Fullwiley, 2008a, 2008b; Ossorio & Duster, 2005; Wallace, 2005).

Despite the announcement, spread around the world, of the end of race as a biological category, the end of the Human Genome Project⁵ brought with it an unpredictable U-turn for genomic research with the return of race as a major research focus (Bliss, 2012; Duster, 2003, 2015). Since then, several authors have studied the subsequent actions of this renewed interest of genetics in race (Bliss, 2012; Duster, 2003, 2015; Fullwiley, 2015), raising awareness of the usefulness, recognised by many geneticists, of using race categories to measure and improve health disparities. Among these, Duana Fullwiley's work in the field of pharmacogenetics has revealed how geneticists adopt, sometimes non-critically, categories of race in their work, acknowledging in them some

genetic validity (2007b, 2008b). Although motivated by the intention to reduce health disparities, the author's study showed that when geneticists communicate their work and/or publish their results, they convey potentially dangerous associations between genetics and race (2008b, 2015). Thus, despite the goal of reducing health inequalities, the way in which genetics and medicine incorporate race into research processes poses a high risk of increasing inequalities and stigmatisation of ethnic minorities (Fullwiley, 2007b).

Something similar has occurred in the field of forensic research. In addition to the medical field, Fullwiley also broached the use of racial categories in forensic genetics. The forensic use of biogeographical ancestry, one of the techniques within FDP, represents one of several cases that the author explored in this field. Fullwiley argues that this product of contemporary science is not only based on "old" racial types of population classification but also, under a new techno-scientific guise, legitimises the (re)production and perpetuation of certain racial beliefs (2014). Although they ally themselves with a construct of progress, the author argues that the processes inherent in the use of these new technologies refer to an emerging dynamic, which she calls "the new synthesis of race science" (2014, pp. 805–806). The use of this concept within this chapter allows us to (i) understand how FDP technology combines and conflates ideas about human biological differences that are both race and population-based (2014, p. 803) and (ii) demonstrate how attempts to deconstruct race within science and to promote an anti-racist science education model can also, potentially, result in its reconstruction (2014, pp. 805–806).

Despite possibly enabling a reduction in the number of suspects considered in the context of a police investigation, by moving the locus of the police investigation from the suspect towards a collective population (Hopman & M'charek, 2020; M'charek, 2020), the use of phenotyping inference can as much lead to the exclusion of suspects, as to imply criminal suspicion on entire population groups (Queirós, 2019; Wienroth, 2018), thus reinforcing racialised stereotypes of criminal suspicion (Hopman & M'charek, 2020; M'charek, 2013, 2020; M'charek et al., 2020; Skinner, 2018b). This process, at times called "convergence" (Cole, 2018, p. 3), at others "oscillation" (Hopman & M'charek, 2020, p. 2) between the individual and the collective, poses a potentially high risk of enhancing governance, surveillance and social control (Machado et al., 2019), which operates more intensively on certain racialised populations, increasing their visibility as targets of suspicion and policing (Queirós, 2019; Skinner, 2018b).

Revealing that in the field of science the use of racial categories is not consensual, generating different stances within what is a broader discussion concerning the focus on difference versus the focus on similarity (Fujimura & Rajagopalan, 2011), efforts are being made in the field of medicine to avoid the use of race as a category in genomic research. Fujimura and Rajagopalan (2011) have sought to understand how and under what circumstances group categories overlap with social categories of race. They

have observed that some geneticists were against the use and publication of clusters of individuals grouped on the basis of genetic variation criteria, and only allowed their use for quality testing. By focusing on differences in individuals – which represent less than 1% of the human genome – built on the basis of DNA, the use of these clusters not only highlights them, but their publication may also lead to misinterpretation. The conviction of these scientists that the use of racial categories in genetic research leads to bad science practices (2011, p. 22) has led to the quest for new technological tools, particularly computer software, which would enable them to perform their work without resorting to racial categories. However, despite the effort made in the attempt to re-conceptualise the human genome, the dark and unstable character of race has led to the categories of ancestry used being lost in translation (2011, p. 20), giving rise to new racialised geographies of the human genome (2011, pp. 19–21). The authors of this study concluded that as long as categories of ancestry continue to be assigned to explain the clustering of individuals based on the existence of similar genetic variations between population groups, the risk of their association with racial issues will remain. The use of biogeographical ancestry in forensics, incorporated in FDP technology, thus gives rise to major controversies as it operates in a field intersecting the domain of scientific objectivity with some conceptual ambiguity and different possibilities of social translation.

Catherine Bliss has also looked into how geneticists understand and make sense of race in genomics. However, in her research, she came across a group of elite scientists with a new scientific ethos, committed to and politically aware of the social implications their work involves (Bliss, 2012, pp. 4–7). Although we find within the field of genomics a recognition of the ambiguities of the concept of race, incorporating either different social and political meanings or different ethical concerns surrounding the implications of its use (Bliss, 2011, 2012), human genome research continues to use race categories as entry points into various domains (M'charek, 2000), including forensics. There is, therefore, a duality: genome sciences have perpetuated the (re)invocation of race and, at the same time, its concealment.

Arguing for the importance of undertaking further studies into the potential application of FDP technology, some social science scholars have called into question the conceptual ambiguity associated with the concept of origin and its interrelations with racial categories (Fullwiley, 2007b, 2008b; M'charek et al., 2020; Queirós, 2019; Skinner, 2018a, 2018b; Vailly, 2017). First and foremost, they stress that the ambiguity that characterises the results of this technology can confer: (i) scientific legitimacy to existing readings that reinforce that race represents a category of differentiation with genetic validity (Fullwiley, 2007b, 2008b; Vailly, 2017, p. 77); and also, (ii) contribute to an increase in the vulnerability and exposure of certain groups to both criminal suspicion and policing (Duster, 2008; M'charek, 2013; Osorio, 2006; Skinner, 2018b).

Racial (re)invocation and the collectivisation of criminal suspicion

This chapter is based on a broader project that explores the societal, cultural, ethical, regulatory and political impacts of the use of forensic DNA technologies in the European Union (EU). Its empirical material stems from 34 interviews conducted with forensic geneticists based in five European countries – Germany, the Netherlands, Poland, Portugal and the United Kingdom – between March 2016 and May 2018. Looking at the views on FDP technology of forensic genetics professionals in these five European countries, a more thorough analysis is made of the controversial character associated with the (re)invocation of race in science. The empirical eye concerning the views of these professionals is due to the unique position they occupy in the processes of development and application of this technology. Understanding their views and expectations requires, however, a close look at the many ways in which past and present memory intersect and at the role and meanings that these temporal elements present in the construction of potential technological futures (Brown et al., 2003; Brown & Michael, 2003; Van Lente, 2012).

FDP encompasses a series of forensic techniques, variables and categories, which, paraphrasing Fullwiley, operationalise and translate highly racialising notions of “Old World” human “types” (2014, p. 804). It does so through a process of accumulating information that has been collected and compiled based on the idea of reconstructing colonial encounters and migratory patterns throughout history. This reconstruction process relies on notions of continent-based racial types and involves the collection of DNA samples of those considered to have descended from the “Old World populations” (Duster, 2015; Fullwiley, 2014, 2015; Hopman & M’charek, 2020).

Moreover, these concepts and notions are nowadays intertwined and blended as much with new technologies such as FDP as with attitudes towards inclusion, multicultural diversity and antiracism (2014, pp. 805–806). Through Fullwiley’s (2014) concept of contemporary synthesis, this section explores the specific case of FDP technology to understand the convergence of this absorption of “old race thinking” into contemporary science innovations, and to call into question the many ways in which race appears (re)invoked in the field of forensic sciences.

The analysis of the expectations of the forensic genetics professionals involved in this study reveals a projection of the future of FDP associated with the informative character that this technology fosters in police investigation processes, as intelligence (Scudder et al., 2019; Walsh et al., 2011; Wienroth, 2018). However, the way this technology builds criminal intelligence incorporates characteristic elements of a type of racial surveillance techno-security (Skinner, 2018a) that takes the form of a panoptic “white gaze” (Browne, 2015; Byfield, 2019). This means, as Byfield explains, that it involves a set of “techniques [...] and processes used for surveillance that divides the society into racial groupings of those with access to the power

and benefits of full state membership and those excluded” (2019, p. 6). In this regard, FDP technology not only represents an important instrument of biopower and governability (Ericson & Haggerty, 1997; Foucault, 2003) but also, as the following interviewee alludes to, translates and corresponds to a Eurocentric view of the world. In his words:

When you think about hair, skin and eye colour, that’s an European invention. I mean, no forensic scientists in, let’s say at the Far East would even think about hair colour because everyone has black hair, so there’s no point in doing it.

[O13]

Furthermore, it is important to understand that in some contexts, such as Portugal, the United Kingdom, Germany and the Netherlands, given their colonial experience, this Eurocentric view of the world is also close to a colonialist view of the nation’s imagery. Although Poland did not go through this experience, it also experienced mechanisms of racialisation/human differentiation within Nazi thought. Given the influence and weight of their historical past, some authors argue that in Europe race remains silenced and invisible in “official” narratives, but present in several domains of social life (M’charek, 2008b; M’charek et al., 2014b; Skinner, 2018a). This means that the scientific and political (re)configuration of racial surveillance over the *Other* has been developed in a political context of invisibility, working to legitimise its growth and expansion. In the case of FDP technology, despite this surveillance being camouflaged, it concerns anyone who visibly presents on their body markers that allow their differentiation in a given legal, political, social and cultural configuration (M’charek et al., 2014b). Phenotyping inference thus represents a scientifically refined instrument that perpetuates racial surveillance over the *Other*.

Together with the controversial history that has accompanied the interrelations of race with technological development in genome sciences, the analysis of the (re)invocation of race also involves confronting the social discomfort felt concerning this concept and its public discussion. The following excerpt illustrates the rhetoric of negating race as a scientific object. Explaining that it is society, not genetics, that racialises the results of forensic investigations – whereby this racialisation may result in discriminatory effects on certain population groups – the interviewee rejects the contribution of science to the (re)construction of race as if it were socially neutral (Fullwiley, 2008b, p. 698) and immune to “social contagion.” Therefore, as the following excerpt shows, he prefers to use the term “ethnic group” to distinguish population groups, not reflecting that this too is the result of a socio-political construct (Machado et al., 2010; Ossorio & Duster, 2005; Skinner, 2006):

The race issue is never a scientific problem, it is a problem of society. I don’t get confused by an essay saying that that person is black. In other

words, it is not the fact that the person has a certain skin colour that will distance that person. It is society looking at them, having that skin colour, that will distance them, or not. I don't believe that technology can do that. Now, that technology will enable us to know some things that can be used to make that differentiation between groups, it can. I don't really like the expression 'racial.' I prefer to say ethnic groups because I think that racial, in biological terms, makes no sense at all.

[N23]

The incorporation of these terms and their discursive expression not only have deep historical and political roots (*idem*), but also enable the observation of the dynamic and eminently social character of the phenomenon of the racialisation of science (Skinner, 2012, 2018a; Wade, 2014), to which both genetics and the professionals working in it are susceptible. Although it assumes a defensive rhetoric that rejects the role of science and forensic genetics in the racialisation of certain characteristics of physical appearance, the following excerpt allows us to observe how professionals in forensic genetics discursively materialise and incorporate in their professional practices the use of race (Skinner, 2018a). By highlighting the potential investigative value of FDP technology, the interviewee stresses not only the ability of its results to indicate whether the criminal suspect is of the "black race" or has "dark eyes and curly hair," but also to add him to and/or distinguish him from groups of "Asian," "blond" or "black skinned" individuals. Within that range of characteristics, the interviewee not only explicitly mentions race but also, proving that he has lost himself in the translation of the different elements that he lists (Hopman & M'charek, 2020, p. 17), produces a racialisation of these same differentiating elements. In his own words:

When there is a biological sample at a crime scene and you have no idea who that evidence comes from, phenotypics can say if it is from a black individual, with dark eyes and curly hair, and that will restrict the range of suspects. It is completely different to restrict it to a group of blond individuals or black skinned individuals or Asian individuals, than to be looking for a suspect in a global universe of people.

[N06]

While their nature is intended to be indicative, the results of FDP technology represent scientific tools that allow the police to construct a type of probable knowledge about suspects, setting priorities (Wienroth, 2018, p. 7) and informing future activities of social control (Innes et al., 2005, p. 42). Their application, as the following interviewee highlights, finds an appealing context in hard-to-solve cases. Cases in which, despite the presence of a DNA sample from the alleged suspect, there are no other clues to guide the criminal investigation. As the following interviewee points out,

even if they do not enable a specific individual to be identified, FDP technology results can reduce the number of suspects to be considered, allocating resources to one population group that shares certain distinctive physical traits, in this context racialised:

In cases where you have no DNA match, but also no other investigative lead. Where you are completely lost as police in whom you are looking for. That would be the ideal cases where you would like to apply those things, simply to start somewhere and to make this typically very large group of potential suspects, in case you do not know anything, smaller. To focus at least on a target group.

[A02]

Given that absence of information is one of the most recurring scenarios in which this tool is presented as an innovative aid to criminal investigation (Kayser, 2015; Kayser & de Knijff, 2011), a more in-depth ethical questioning into the meanings and implications associated with the use of racial categories is required. Emphasising the positive impact of using FDP technology in the police investigation phase, the next interviewee reaffirms that restricting the investigation to certain genetic – i.e., racial – information allows one to reduce the number of suspects to be considered:

It can help when there are no more leads because it will restrict the number of people to investigate. In other words, if in that bloodstain, everything points to an African individual, the population becomes smaller, enabling the police to investigate. It is a positive help.

[N15]

But what investigative value and what significance for the criminal investigation can be attributed to the information that the suspect is likely to be an “African individual”? Given the ambiguity between the concepts to which these categories refer, in all likelihood, outside the investigative context, this information will be socially taken as “the suspect is black” (Samuel & Prainsack, 2018, pp. 2–3).

FDP is part of a series of technological innovations that have brought about significant changes in forensics, especially because of the shift of locus from identification to the collectivisation of suspicion (Hopman & M’charek, 2020; Machado et al., 2019; Queirós, 2019; Skinner, 2018b). Paraphrasing David Skinner, one of the developments that these innovations have brought to forensics concerns the explicit use of race as a source of information in criminal investigation proceedings (Skinner, 2018b, p. 12). One moment recognised, the next denied, race remains one of the most controversial and contentious topics (Bliss, 2012), taking up an ambivalent space in the history of genome science. The following excerpt allows us to explore

the connections between its absent presence in science with various mechanisms for constructing scientific boundaries. These allude not only to the greater scientificity and accuracy of the results of FDP, compared to the use of eyewitness accounts, but also reinforce the objectivity and permeability of forensic sciences to what is designated by the interviewee as the construction of racial profiling. The racialisation of phenotyping characteristics and/or biogeographical ancestry is, thus, characterised in the narratives of forensic genetics professionals not only as a socially imbued element, but as, first and foremost, something external to forensic laboratory practice. In his words:

The more objective information we have the lower is the risk for racial profiling. If an eyewitness says: 'The suspect is someone with dark hair and dark skin,' of course, they [the police] would think about people, probably from the area of Northern Africa. If we say with the genetic testing, 'Well, we think that the person has dark hair and maybe darker skin,' it will lead in the same direction. But we could also say, yes, the person has probably dark hair but we think that by geographic origin is from somewhere in northern Europe. It is just a more objective version of what we already have.

[O13]

However, it is not only outside the investigative context that concerns around the significance and readings attributed to the racial characteristics inferred exist. The following excerpt allows a more detailed reading of the ubiquity of race in science and society. One moment invisible, the next hyper-visible, race remains present in contemporary science. As the following interviewee explains, the results of FDP technology are all the more useful for criminal investigations when their differentiation from a certain reference population is greater (Queirós, 2019):

If the investigation results that this is a typical European genetic background, what do you know? You know that the person is European. So maybe you can exclude some Africans and some people from the Middle East or some other areas. On the other end, if you know that somebody came from South Asia or Afghanistan, then you might look more into a particular group of people. And then the question is what do you do next, whether it would justify a mass screening in a certain population group.

[O01]

The question set out previously is, thus, raised with the same urgency: What does the information that the suspect has a "typical European genetic background" mean for the criminal investigation? The answer given by the

previous interviewee is clear. The usefulness of this information is measured by its ability to distinguish populations that have visually distinctive characteristics in relation to the population of a given geographical and political context. The success of this distinction may even define the adoption of other forensic tools, as mentioned by the interviewee and as portrayed in “Operation Minstead,” the criminal case mentioned at the beginning of this chapter. Finally, by stressing that the results of this technology make it possible to distinguish between “some Africans,” “people from the Middle East” or “from South Asia or Afghanistan,” the presented excerpt reveals, on the one hand, the existence of different constructions and interpretations surrounding the concept of race and its reduction to the prediction of genetic ancestry and a set of externally visible characteristics (Ossorio, 2006, p. 278). On the other hand, it also shows that forensic experts themselves are not permeable to the conceptual ambiguities that result from the (re)invocation of race in science.

Similarly, the following excerpt also reveals how different descriptive racial categories configure the racialisation of certain population groups in the context of criminal investigations. The interviewee begins by using technical and scientifically objective language to explain the methodology and the type of scientific research that he carries out. However, as he progresses in his discourse, he not only refers to skin colour relations with information about biogeographical ancestry but also stresses the importance, for the context of criminal investigations, of maintaining a scientific focus on the distinction of “different tones of European skin.” As the interviewee explains:

We are currently finishing [scientific] validation for skin colour. And skin colour on a more complete level than only white and black, which of course you could do before. But if you want to do white and black you better do ancestry. So, it is, of course, the different tones of European skin colour that are important here.

[A02]

The intricate way in which he relates various categories of difference to geographical ancestry of certain populations enables us to understand the perverse effect of the (re)invocation of the race in science in the light of FDP technology. On the one hand, this technology stimulates and conjures up an image of scientific and technological progress. On the other, its application in criminal investigations leads to a racialisation of the differentiating elements that it itself allows to infer. FDP technology thus works by re-racialising the geography of the human genome (Fujimura & Rajagopalan, 2011, p. 17). In other words, it develops, operates and produces a rationality in which, to quote Fullwiley, “the population is race, and race is the population” (2014, p. 808). It thus results in an effect that the same author calls a “new synthesis of race science” (2014, pp. 805–806).

Aware of the relationship between the results of FDP technology and the “terrain of race,” the next interviewee stresses that dealing with the results of this technology requires some precautions to be taken. Above all, he seeks to convey a clear and conscious perspective on the risks and potential impact that the communication of this information may cause. As he says, if not properly transmitted, the results of this technology may lead to social discomfort and upheaval, influencing the way society looks at certain population groups. The identification and targeting of certain population groups in criminal investigations through FDP technology may, thus, reinforce the position of subalternity and social exclusion of some populations in certain geopolitical contexts (Noronha, 2019). However, despite relating a conscious view of the dangers, the same interviewee reveals the perverse effect resulting from the (re)invocation of the race in the light of this technology. The connection made by the interviewee between various differentiating elements (colour, bio-ancestry) and racial categories (race, ethnic profile) refers, once again, to a re-racialisation of the geography of the human genome (Fujimura & Rajagopalan, 2011, p. 17). Thus, despite the scientific rigour imputed and the efforts to de-racialise human biology, the following excerpt is particularly illustrative of the possibilities that FDP presents, both outside and within the investigative context, for its re-racialisation (Fullwiley, 2014, p. 808):

Now I am getting into the terrain of race and colour, but I promised the answer on the DNA situation on ethnical profiling [in a criminal case]. It was very clear that we were looking for a person of Turkish descent. Now there is the situation where you have to explain to the population that you are looking for a person of Turkish descent. That could lead to massive reactions from the left side or the right side politicians: “Those Turks...” or a public discussion in the area: “I always said these Turks cannot be trusted.” Or when you ask the Turks to participate and they do not, then you will have the discussion: “Well, you see, we are willing to cooperate, but they are not.” So, now you get a really slippery slope, where you can easily make mistakes. So now you have to be very, very careful.

[A07-01-02]

Ethical deliberations on the risks associated with FDP

The explicit use of race (Skinner, 2018b, p. 12) reveals the dark nature of the differentiating categories that FDP technology adopts (M'charek et al., 2014a) given that, depending on the geopolitical contexts in which they are applied, different social meanings will be attributed to them. The controversial environment that characterises the present moment allows us to capture

how actors construct and envisage the multiple ethical possibilities of the futures in which this technology is being projected. Expressing a reflection that dialogues with what Heeney called an “ethical moment” (2017), this topic calls into question a series of reflections on the risks, controversies and threats that the interviewed forensic genetic professionals associated with the use of FDP in certain contexts. The following excerpts set out their ethical deliberations concerning the differentiating power of the results of this technology. These deliberations not only echo the presence of the past and the historical memory of each country, but also reveal that ethics is contextual and dynamically shaped by the influence of different geopolitical scenarios. Thus, as the following interviewee explains, what in one context may be considered sensitive from an ethical point of view, may no longer be so in the light of the history and the memory of another place:

I think that estimation aspects of the phenotype are quite ethically sensitive, and it probably has broader connotations in the sense that, if you are finding aspects of phenotypes when you are in a country where these might relate to a particular ethnic group or ethnic minority, then evidence sensitivity is there.

[D11]

A concern also emerges among various professionals in forensic genetics about the social impacts of this technology, especially on certain population groups. The following excerpts from forensic geneticists in the United Kingdom and the Netherlands reveal a critical standpoint (Wienroth et al., 2014), which considers the socio-political role of FDP technology in reconfiguring and reinforcing social problems such as racism (Skinner, 2018a) in certain population communities:

That is my concern, these technologies and tools, they help in a certain way, but they can kind of create a lot of social problems, like discrimination, like racism.

[A05]

There is a risk of stigmatization of communities. I mean, obviously, race relationships are not terrible in my country, but it takes a small thing to explode. [...] Statements like, “We are looking for an Asian man” are dangerous and can give fuel to people.

[D10]

It is, therefore, a recognition, also present among forensic genetics professionals, that the use of FDP can compromise the rights and freedoms of certain population groups. The following interviewee reinforces these concerns, not only about the risk that the results of this technology pose to the

target populations, but also with regard to the social discomfort that the inclusion in a suspected population group may cause to all those who are innocent:

Because this is going to be a very wide-ranging situation, including many people in the same group, it may cause some fear and apprehension on the part of the population, to find themselves involved in a process that they have nothing to do with.

[N22]

Finally, in their ethical deliberations, the interviewees also express the importance and significance of the historical past of some countries, marked by eugenic periods, dictatorial regimes and colonial experiences (El-Enany, 2020; Jerónimo & Monteiro, 2020; Kattmann, 2017). At the same time, their perceptions also allow us to explore their relationships to the ethical boundaries that limit the application of FDP in different countries (Samuel & Prainsack, 2018). In the following excerpt, the interviewee attributes to the context of a political dictatorship experienced in the recent past the reason both for the existence of a fearful culture vis-à-vis the vigilant role of the institutions of power in his country and of the delay in implementing some technological tools in the field of forensic genetics:

My opinion is that [my country] is very backward and it is a chronic problem in our society that is too fearful, for cultural reasons, and which has to do with the fact that we have been through a dictatorship and a political police force. Our politicians are conditioned by this. They do not reflect what the population understands but rather their prejudices. I think we are very behind in implementing all this.

[N04]

Giving visibility to the eugenic memory, still present today, several interviewees also revealed feelings of great surprise at Germany's openness to the possibility of legally regulating FDP for criminal investigation purposes. The moment in which the interviewees address and express surprise about this development exposes and allows us to understand not only the omnipresence of history and memory in politics (Jerónimo & Monteiro, 2017), but – above all else – new dimensions of analysis on the (re)invocation of race in science. The connection they make between the differentiating power of FDP results and the fear that Germany may revive, in a new guise, nuances of its eugenic and colonial past, materialises the presence and interrelations of race with different domains: scientific, political, social, ethical and cultural.

Now I am getting into deep politics. If you talk about Germany, they have the history of the war where they prosecuted Jews, and they are

still, rightly, so ashamed of that. And they are very, mainly the left politicians, or left-wing, that one should never look at anything like that in DNA because we will be brought up as Nazis, or whatever.

[A07]

Finally, alluding precisely to the intersection of forensics with history, culture, ethics, politics and society, the final excerpts address the controversial character of the futures that were recently under discussion in Germany and the potential consequences resulting from the (in)visible and unstable character of race that emerge within the rationale of FDP application. Given not only the historical significance that the use of categories of racial differentiation still has in Germany, but also the controversial reception of large numbers of refugees in the country, the following interviewees fear that the use of this technology will: (i) reinforce collective imageries that race represents a natural category that can be read and decoded from genes (Ossorio, 2006, p. 279) and (ii) (re)configure racialised stereotypes about population groups that already suffer from some type of social vulnerability:

From the forensic point of view and the societal and ethic point of view, I don't want to have in Germany a test for our skin colour because of this possibility to create stereotypes or translation to test stereotypes.

[O06]

Biogeographic origin might lead to more difficult discussions in our current situation with a lot of migrants being in Germany so that people fear that there will be a discussion of stating that the high number of refugees present in Germany perform all the crimes, which is obviously not true because most of the crimes in Germany are performed by Germans.

[O13]

Whether because of their unique position or because of the epistemic power of their statements, the ethical expectations and deliberations of forensic geneticists take on particular importance in the design and projection of certain technological futures (Pollock & Williams, 2010, p. 532). With regard to the discussion that this chapter calls for, the ethical deliberations of this group of professionals allude first and foremost to dimensions that call into question FDP technology as culturally sensitive (Wienroth, 2020, p. 9). That is to say, they connect with the ethically sensitive nature and with the social, cultural and historical dimensions involved in using this technology in different geopolitical contexts.

Contemporary societies, heavily mediated by the use of science and technology, need above all else “discutir de modo rigoroso e crítico, sem preconceitos e sem cedências, os passados do presente e os caminhos do futuro

que queremos” [to rigorously and critically discuss, without prejudice or compromise, the past of the present and the paths of the future that we want] (Jerónimo & Monteiro, 2017). Despite the importance of the expectations and narratives produced by these professionals, they only offer a partial portrait of the social reality with which the application of these innovative tools is confronted. The involvement of stakeholders and other actors in ethical deliberations on the introduction and use of new technologies not only allows us to obtain a more detailed understanding of their limitations and potential risks, contributing to a socially and ethically responsible implementation, but also, at the same time, enables us to broaden the possibilities of their “good governance” (Wienroth, 2020).

Conclusion

The expectations of professionals working in forensics reveal a projection of the futures of FDP technology based on rhetoric focused on intelligence and the potential for criminal investigation associated with a model that constructs suspicion through collectivisation processes (Fujimura & Rajagopalan, 2011; Machado et al., 2019; Queirós, 2019; Wienroth, 2018). Exploring this rationality, this chapter is rooted in the concept of contemporary synthesis (Fullwiley, 2014), reflecting on the (re)invocation of race in science.

The work of Fullwiley (Fullwiley, 2007a, 2008a, 2014, 2015) was called upon in this chapter to problematise various initiatives that result from an effort to promote antiracist education in science and the inclusion of racial minorities in projects with impacts in terms of social justice. Research carried out in the field of medicine (Fujimura & Rajagopalan, 2011) has shown that the complexity of studying population differences easily leads to a (re) conceptualisation and synthesis of these same racial differences. Using the concept of contemporary synthesis of race, Fullwiley gives an account of the existence of racist practices that are simultaneously made invisible and legitimised under the mask of techno-scientific policies that allegedly seek to promote their abolition (2008b, 2014).

The analysis presented in this chapter on FDP technology reveals similar risks. Although they seek to distance themselves from the concept of race, rejecting any association between it and forensics, the views of the interviewed forensic genetic professionals revealed a discursive and material use of racial categories, including in the course of their work (Skinner, 2018a). While rejecting the interrelations of race and genetics, these professionals resort to mechanisms of direct comparison between the results of FDP technology and eyewitness accounts, advocating for the unproblematic character of genetic racial inference. They do so, on the one hand, by arguing for the greater accuracy and scientificity of the results of genetic technologies and, on the other hand, by reinforcing the objectivity and permeability of forensic sciences to race and racialisation.

Exposing some controversial aspects concerning the development and application of this technology, the narratives of interviewees also revealed ethical, cultural and social sensitivities on how FDP technology may find some resistance in particular EU countries with historical and cultural pasts associated with the hegemonic use of racially differentiated categories, eugenics and colonialism. At the same time, the analysis pointed towards a growing perception of FDP's utility, as its results enable the targeting of phenotypically *other* population groups. The analysis also revealed that the discursive materialisation of race and its incorporation into professional forensic practice coexist simultaneously with its negation and rejection. It, therefore, reveals the perverse effects of the contemporary synthesis of race (Fullwiley, 2014). As a technology that was born within a race-sorting logic, the development, application and calling into question of FDP's pros and cons cannot be undertaken or discussed without the acknowledgement of those "disturbing seed elements" (Fullwiley, 2015, p. 37).

Moreover, the shift in focus registered in the forensic field, from identification technologies to criminal intelligence technologies poses added social risks that are particularly harmful to certain population groups. The way FDP technology materialises the concept of population – as race – contributes not only to a perpetuation of existing conceptual ambiguities, but also to its transposition into the criminal sphere, which, despite being nothing new, gives them new (racialised) meanings.

On the one hand, FDP technology conjures up an image of scientific and technological progress. By encouraging police investigation with the differentiating power of its results, the application of this technology in this context results in nothing more than the racialisation of the characteristics that it itself makes visible. On the other hand, despite the illusion that FDP technology presents regarding the possibility of de-racialising subjects, its modus operandi simultaneously contains the possibility of re-racialising them (Fullwiley, 2014, p. 808). This genetic technology, therefore, allows the enactment of race through a circular logic that fuels and legitimises its (silent) perpetuation in science (*idem*). Within this context, FDP presents an increased potential to increase discrimination of certain populations by (re)configuring existing racial surveillance dynamics and practices (Skinner, 2018a, 2018b).

We are, thus, faced with a paradox: the (re)invocation of racial and ethnic categories result in a(n) (in)visible perpetuation of scientific and technological practices operating in the forensic and criminal fields. From a sociological point of view, the perpetuation of these practices conceals more than it reveals. First and foremost the possibility of involving experts from various fields in civic initiatives and platforms that bring together broad ethical and social reflection – politically engaged about both the role of genome science and the professional practices that it engenders concerning race (Bliss, 2012) – becomes lost. This chapter contributes to this debate through the problematisation of the views of forensic genetics professionals on the application of FDP technology in criminal investigations.

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Notes

- 1 In short, this technique involves the potentially large-scale "voluntary" collection of DNA samples from subjects in a particular population group with the aim of identifying the criminal suspect (Hindmarsh & Prainsack, 2010, p. 3).
- 2 The use of the term "technique/s" is intended to account for forensic techniques that analyse genetic markers where information about ancestry (AIM – ancestry informative markers) and markers that contain information about certain externally visible characteristics (EVC) are located. Each of these techniques can be applied together or separately. Their joint use, captured by the term "technology/ies," converges in the definition adopted to understand phenotyping inference.
- 3 In this particular context, the use of forensic techniques that make up phenotyping inference can assist in processes of exhumation and restoration of the historical memory associated with certain events that have occurred in a given geopolitical context (Ceasar, 2016; Ferrándiz, 2019).
- 4 In the context of this chapter, race and ethnicity are seen as "discourses and practices that deploy technologies that classify people and trace connections of natural-cultural belonging" (Wade, 2014, p. 594).
- 5 The Human Genome Project represented an international consortium created with the aim of sequencing and mapping the genes that make up the human genome. For more information about the Human Genome Project visit: <https://www.genome.gov/human-genome-project/What>.

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