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Base assumptions? Racial aspects of US DNA forensics

INTRODUCTION

After two decades of acceptance in US courtrooms, forensic DNA analysis remains plagued with flaws even as its use burgeons. Instead of fomenting a dialogue with the public, US lawmakers have invoked the spectre of violent crime to promulgate the passage of legislation that permits the coercion of DNA samples from ever-expanding segments of society. This leaves US citizens, who prize both privacy and security, to confront momentous policy decisions without the benefit of comprehensive public education or debate.

This chapter largely focuses on events that encapsulate many of these issues, albeit in microcosm: the US conduct of DNA sweeps. Also called DNA dragnets or DNA mass screenings, this method is a species of 'cold hit' in which law enforcement essays to match DNA left by an unknown miscreant with the person who left it by obtaining samples from members of the community thought to contain the criminal. The discussion will explore how, via the use of DNA sweeps, local police exploit laws in order to expand the scope of DNA profiling, collection and storage to allow the apprehension of unknown miscreants on the strength of non-specific physical descriptors. However, the ethnically heterogeneous nature of US society and the overwhelming racial disparities in arrest and incarceration present challenges that have been largely ignored.

How do ethnic issues, and in particular the tangled calculus of race, inform the debate on DNA use and governance for the purposes of law enforcement? Are such questions particularly relevant for the US context or do other nations share these challenges? By discussing such concerns in the context of racialised DNA sweeps, I hope to contribute to the important discussion about how genetic databases should be

designed and governed to maximise citizens' security while protecting privacy, autonomy and social justice.

DNA NARRATIVES

The apparent omnipotence of DNA technologies to mediate justice has captured the popular imagination, with evidence of this abounding on television and film screens, in mystery novels and newspaper accounts. Such dramas broadcast the conviction that crime can no longer hide from the unerring Argus eyes of DNA detectives. Nightly, we absorb an armchair DNA education, accurate or otherwise, as we are treated to a staggering variety of plot twists that are unequivocally unravelled by the helical molecule of truth.

Of course, forensic medicine programmes such as *CSI, Crossing Jordan* and *Bones* are fiction, with a focus upon drama rather than on facts, imperfectly objective and brief with nuance and complexity. Such entertainment is pervaded with assumptions that the collection, rapid processing and interpretation of DNA evidence are ubiquitous and infallible. Such shows tend to ignore the untidy, uncomfortable truths of bureaucratic practice, of delay and deceit and of unduly violated privacy. They routinely overlook or even reinforce class and racial biases, and they turn a blind eye to the reality that some of the 'white hats' are cursed with feet of clay, capable of flouting laws or testifying falsely.

Instead, a 'good guys versus bad guys' mentality rules televised dramas and films. Police officers and prosecutorial teams are portrayed in environments that telegraph their sterling characters – brightly lit, orderly laboratories, manicured lawns and beautiful homes in clean, quiet, peaceful neighbourhoods populated by caring, virtuous, law-abiding people, most of them white. The acclaimed Home Box Office television series *The Wire* does present a unique exception to this rule as it deftly evades the pervasive racial assumptions and stereotypes, but it is far from a normative portrayal and the series makes fewer references to genetic technologies.

Most television programmes utilise environmental differences to alert viewers that they have entered an area where 'bad guys' live and where suspects abound. The palette turns dark or lurid, music becomes cacophonous and hostile people of colour with menacing scowls replace the 'good guys'. Denizens of these dirty, dangerous streets populate an unrelieved landscape where a bestiary of 'suspects' ply illegal trades, unlike real neighbourhoods of the poor and black, which

are mixtures of hard-working strivers, the law-abiding poor, criminals and others. One expects nuance, precision and even facts to be sacrificed to television drama, but drama is not the exclusive province of the screen. I submit that the most momentous influence of forensic DNA mythology has transpired in a different entertainment arena – the news media.

Readers in the USA are likely to learn most of what they know about forensic DNA strategies from their newspapers and magazines, but this information reflects the errors, unsupported assumptions and insufficiently examined claims of writers, law enforcement officers and of some scientific experts as well (Scheck and Neufeld 2007). Stories are spun tightly without confusing the plot line with messy hanging threads, possibly unreliable eyewitnesses, hyperbolic experts and fractious data or less-than-sterling mores and motives on the part of the good guys. Daily newspaper accounts, like television series, subscribe to the geography of evil, and when a suspect is encountered in a neighbourhood that readers have been taught to 'recognise' as a crime hotbed, be it Harlem, East Palo Alto or Compton, this telegraphs latent criminality.

As in *CSI*, a newspaper's 'DNA opera' tends to deliver an orthodox climax of unambiguous justice, limning a world where DNA never offers up ambiguity, never becomes degraded or lost and is never subverted or misrepresented by good guys gone bad. In the USA, however, these things happen with appalling frequency (e.g. Anon. 1993; Scheck and Neufeld 2007). However newspapers, magazines and news programmes, unlike television dramas, are extensively relied upon as credible information sources. Therefore, their failure to address certain ethical, legal and social consequences of forensic DNA practices has greater real-world repercussions. Lay people who derive their understanding of the issues from news accounts use their votes to usher in policies that have accelerated forensic DNA collection and have permitted the racialised DNA sweeps upon which this chapter will focus (Cole 2007). In short, like *CSI*, the news media tend to portray DNA analysis as an unalloyed tool of justice.

Sometimes DNA is exactly this – as in the case of DNA exonerations.

DNA EXONERATION: AN AMERICAN JANUS

On January 14, 2008, US newspapers announced that Ronald Gene Taylor, who was serving a 60-year sentence in a Texas prison, had

become the 220th American to be exonerated of his crimes and freed from prison by DNA testing (Tolson and Khanna 2007). Since 1989, DNA testing prior to conviction has proven that tens of thousands of prime suspects were wrongly accused, wrongly identified and wrongly pursued. But those who, like Taylor, are wrongly convicted and sent to jail serve an average of 12 years before being released: Taylor served 14 years (Tolson and Khanna 2007).

Like most of the imprisoned who have found liberation in DNA testing, Taylor was convicted of a violent sexual assault, and like most of those liberated, he is black. Each year since 2000, between 50 and 70% of the incarcerated men freed by DNA technology have been black or Hispanic. Most of the convictions disproved by DNA evidence involve African American men wrongfully convicted of assaulting white women (P. Neufeld, personal communication). The pertinent ethnic crime statistics are discussed below, but, first, I will consider the fact that the unambiguously celebratory news media coverage suggests that this forensic use of DNA is an unalloyed blessing for black men.

If forensic DNA identification was such a blessing, it would be an anomaly, because historically, genetic technology has had a checkered past among black Americans (Bowman 1977; Guthrie 1998). Every key advantage in disease protection, identification or in detection imparted by genetic technology seems to have spawned a doppelgänger that bears racially mediated error, punitive effects and/or stigmatization. As a result, fears abound that recently tested or employed identification techniques, applied in a highly racialised context, may share these racial-bias errors. Such errors also threaten to perpetuate the punitive effects and the stigmata (Washington 2007: 299–324).

These historical attributes of genetic innovation are quite important when discussing racial applications, for three reasons. The first is that iatrophobia (fear of medical applications and treatment) is a response of many African Americans to genetic technologies; this response has its origins in the systematic harms that have emanated from clumsy or biased application of genetics to medicine (Bowman 1977; Bowman and Murray 1990; Washington 2007: 299–324). The second reason that this history is pertinent is that scrutiny of past US genetics research and practice reveals a tendency toward scientific errors or unsupported assumptions that enshrine assumptions of black difference, inferiority and criminality (Kahn 2004; Washington 2007: 21, 299–324).

The final reason is that DNA profiling, like other earlier genetic technologies, also risks the reification of racial assumptions should it

not be analysed with scrupulous logic without assumptions that spring from ethnic bias (Bowman and Murray 1990; Kahn 2004). For example, profoundly flawed intelligence testing has long been used to promote the heritable intellectual 'genetic inferiority' of African Americans, supporting other cherished social agendas, such as racially selective sterilization, on a specious logical basis. For many, this further impugns the credibility of research labeled 'genetic' in toto (Gould 1992; Guthrie 1998).

To appreciate this, it is important to understand that, quite obviously, genetic testing for disease risks or susceptibilities such as sickle cell disease or phenylketonuria, or even, farther afield, for intelligence-quotient testing, can utilise very different techniques from the DNA profiling employed for purposes of identification or exclusion. However, all these assessments employ the analysis of genetic information in a context that carries a high risk of stigmatization, whether in diseases that code for racial status (such as sickle cell disease) or for 'identification' tests that use not only legal but also medical paradigms in order to narrowly focus upon members of a single race, even purporting to identify the race of an unknown suspect. Each of these assessments has also been conducted within a politicised context, and their results have served to bolster questionable social policies hostile to African Americans (Bowman 1977; Washington 2007).

Furthermore, in the contexts under discussion here, the vaunted differences among different types of genetic technology have far less impact on the general public, whose votes drive policy, than do the overarching labels 'genetic' or 'DNA'. From the viewpoint of the lay patient–consumer–voter, these two labels powerfully convey either infallibility ('DNA doesn't lie') or untrustworthiness ('Faulty genetic research has erred in labeling blacks as "unintelligent", "ridden with sickle cell disease" and "violent": Why trust it now?') depending upon that person's sociological experience (Duster 2006). For this long, consistent history of misinterpretation, misdiagnosis and stigmatisation in African Americans also bolsters profound distrust of genetic technologies by the affected population, which tends not to make distinctions between medical testing and medically mediated identification when considering whether to embrace novel genetic technologies such as DNA profiling (Bowman 1977; Washington 2007). Consider, for example, the overwhelmingly negative reaction *ab origine* among African Americans to DNA sweeps in municipal sites such as Charlottesville (Glod 2004) and Ann Arbor (Grand 2002).

A long scientific tradition in the USA links blacks and a hereditarian view of criminality. This includes the nineteenth century work of the American School of Ethnology (Johnson and Mead 1934; Washington 2007: 246–251). By the early twentieth century, the forensic psychology of Cesare Lombroso perhaps did most to provide hereditarian biological underpinnings to the ascendant medical view of blacks as 'born criminals'. Lombroso anointed southern Africa's Dinka tribe as the iconic exemplars of his 'criminal man' and he wrote: 'There exists a group of criminals, born for evil, against whom all social cures break as though against a rock' (Lombroso 1911).

Drawing upon the influential work of Lombroso and others, US medicine has long stigmatised blacks as harbouring marked criminal tendencies. Today, this stigmatisation continues unabated in some quarters. Much US research has given short shrift to environmental factors such as readily available guns and drugs, racial and financial inequities and a culture that glorifies violence in favor of a Quixotic search for putative genetic predictors of violent behaviour – the quest for an elusive 'mean gene' (Balaban *et al.* 1996). This search has been focused upon African American populations (Katz 1972; Washington 2007: 271–293). In 1969, the National Institutes of Mental Health's Center for Crime and Delinquency awarded a three-year US$300 000 grant to Digamber Borgaonkar. Under the aegis of Johns Hopkins University, Borgaonkar scrutinised the genomes of approximately 15 000 Baltimore boys, with about 85% of them black, for the XYY chromosomal anomaly that was then associated with criminality (Katz 1972; Washington 2004). About 30 years later, in the late 1990s, New York City researchers gave fenfluramine to black boys (white boys were specifically excluded by the research protocol) in a parallel attempt to indirectly identify markers for genetically medicated violent behaviour (Cherek 1999; Washington 2007: 271–278).

Such studies share the foci of the Violence Initiative, a government-funded matrix of studies that ostensibly proposed to study violence in 'inner cities' – a phrase that narrowly denominates black communities. The Violence Initiative and similar projects were planned to avoid dramatic environmental, social and financial stressors in order to investigate a possible genetic link between violence and black children, especially boys. The initiative attained national visibility in 1992 when Director Frederick Goodwin of the National Institute of Mental Health's Alcohol, Drug Abuse, and Mental Health Administration appeared before the National Health Advisory Council to champion it. He did so by comparing young black boys to

'hyper-sexed', violent rhesus monkeys in the jungle, which outraged many of his auditors (Hilts 1992; Leary 1992; Marks 1995: 231–234). Goodwin's remarks championed genetically mediated medical testing for violent propensities and dwelt upon the importance of not *treating* but of genetically *identifying* future violent criminals.

Critics have challenged both the factual basis and constitutional validity of the now-defunct Violence Initiative, but although many similar studies do not exactly mimic its funding and organisation paradigm, they share its stigmatising features and its silence on non-genetic risk factors (Sellers-Diamond 1994). Such issues of forensic genetic determinism with children are not unique to the USA. In the UK, Scotland Yard forensics chief Gary Pugh evoked similar concern when he suggested in March 2008 that DNA testing should be employed to identify those children who will become violent criminals. Such modest proposals provide examples of the persistent associations drawn between genetic identification and diagnosis in medico-forensic theory and practice (Page 2008).

Is DNA exoneration the purely benign exception to the cavalcade of Janus-faced genetic technologies? Not in the view of some legal scholars. 'These [exonerated inmates] are mostly African American men convicted of raping white women', says Peter Neufeld, a professor at the Cardozo School of Law in New York: 'Only 10 percent of reported sex assaults are allegations of white women attacked by black men. Yet 54% of all unjust conviction cases involve African American men wrongfully convicted of assaulting white women. This is a crime that seems associated with many wrong convictions.' The emphasis, Neufeld says, should be on the many men, disproportionately black and Hispanic, who will never be freed by DNA. 'The real significance is not that DNA got them out, but that DNA provides a window into the criminal justice system to see what went wrong with the system to let so many innocent people be convicted' (P. Neufeld, quotations from a telephone interview in 2001) (Washington 2001).

COLOR-CODED JUSTICE

What has gone wrong? The USA, which imprisons a larger percentage of citizens than any other nation, has seen the proportion of its black and Hispanic prisoners balloon over the past century (Sampson and Lauritsen 1997). Blacks currently constitute only 12.9% of the nation's population but more than 40% of those behind bars: together, blacks

and Hispanics make up 60% of prisoners. Therefore, any discussion of US incarceration must address race.

The burgeoning imprisonment rates of dark-skinned minorities are driven not by rapes, murders or other violent crimes, but by a racially inequitable response to drug abuse (Human Rights Watch 2008). Prison rolls have grown threefold since the late 1970s in a manner that targets blacks because the harshest penalties for drug use are not colourblind. For example, the smokeable 'crack' form of cocaine is used by black addicts at twice the rate of whites, and much harsher penalties for crack cocaine are mandatory, forcing judges to impose incarceration even for the possession of small amounts of these drugs. Penalties for the powdered cocaine preferred by whites include drug treatment, probation or even suspended sentences (Beiser 2001; Amnesty International 2004: 39). Black women, who constitute the fastest-growing group in prisons, abuse drugs at the same rate as whites (Chasnoff *et al.* 1990) but are 10 times more likely to be incarcerated for 'drug use while pregnant' (Smith and Dailard 2003: 97–108).

Also, although 80% of US cocaine users are white (Harris 1999b: 3; Washington 2007: 300–307), law-enforcement tactics focus on the inner city (Levine 2008) and culminate in more frequent, longer sentences for blacks and Hispanics. This inequity fosters a perception that blacks make up the majority of drugs users (Chasnoff *et al.* 1990; Roberts 1997).

SOURCES OF ERROR

Judicial error also drives the incarceration rate of black Americans, particularly laboratory error, eyewitness identifications, false confessions and jailhouse informants (whose testimony is likely to be false). Yet the celebratory press coverage fails to ask why most of the exonerated are black, or to ask about the many other innocent men who will never be freed because of DNA samples that have been lost, degraded or whose very existence technicians and experts deny. An independent review of the Houston Police Department Crime Laboratory found 275 cases in which biological material was detected but never accurately tested.

A subsequent audit uncovered deficiencies within a section of Houston's DNA Laboratory that resulted in its closure in 2002; another independent review found hundreds of other affected cases (Khanna and McVicker 2007). Nationwide, laboratory error and junk science contribute to 65% of cases being reversed by DNA evidence. Factual

and numerical errors also abound, including the erroneous matching of DNA samples or inflating the odds against a DNA match with someone other than the criminal (Ungvarsky 2007).

Eyewitness identification provides the most common source of racialised error: 48% are transracial, yet studies suggest that persons are less able to recognise faces not of their own race (Rutledge 2001; Brigham *et al.* 2007). Fully 77% of DNA-reversed convictions are attributable to mistaken eyewitness identification. False confessions, often delivered under duress, drive 25% of reversed convictions; of these, 35% are procured from the mentally disabled or from children under 18 years. Finally, intentional fraud is not unknown in the nation's state and municipal forensic laboratories (Innocence Project 2009).

Therefore, a quality-control crisis pervades America's forensic DNA laboratories, resulting in justice that is delayed, subverted or pressed into service to exacerbate racial bias.

DNA SWEEPS AND RACE

The DNA technology utilised to provide freedom for the fortunate innocent has a hideous obverse for African Americans. The same genetic technologies used for exculpation can compound the trend toward racialised incarceration, because DNA technologies, in themselves neutral, target blacks when applied through racial filters in forensic settings. One such filter is the racialised DNA sweep. This DNA sweep or dragnet (intelligence-led mass screening) is an especially fraught species of 'cold hit' in which law enforcement attempts to match DNA left by an unknown assailant with the person – typically but not always a man – who left it (Matejik 2008). If police find no match in available databases they can resort to fanning out through a community that is thought to contain the criminal, confronting large numbers of men on the street, in their homes or on their jobs. Police 'persuade' each man in the targeted community to undergo a buccal swab – a scraping from the DNA-rich interior of the cheek – to be tested against the crime-scene sample. The Fourth Amendment of the US Constitution, which protects against unreasonable search and seizure, makes forcing persons who have not been arrested or convicted to surrender their DNA illegal in the absence of compelling evidence against *the individual* – not a group. Therefore, such sweeps hinge upon police ability to persuade, not to compel – at least in theory (Matejik 2008).

Citing the per capita cost of obtaining and testing samples as prohibitive, police often narrow the search by race (see Chapter 3). In

the frequent absence of reliable eyewitness accounts that could pro-
vide detailed phenotypic information, the police work from a racial
identification that is highly speculative. Of the 18 major municipal US
DNA sweeps undertaken and studied, the very first one in the USA was
designed to test black men only (Walker 2004). In 1990, police in San
Diego tested more than 800 African American men in an attempt to
identify the serial intruder who stabbed six people to death in their
respective homes (Chapin 2005). Sharp *intentional* racial disparities are
applied as police target a municipality's 'Hispanic community' or
'black community' as they search for a suspect. Police also erroneously
use race as a proxy for ancestry, by which I mean they approach
persons whose racial or ethnic identity is often undefined while seek-
ing a suspect whose race is often unknown. Meanwhile all they know
about this suspect is what their DNA sample can reveal, which is
information about ancestry but not racial identity (Duster 2006). To
make matters worse, instead of referring to a genetic distinction such
as the presence or absence of specific alleles that are particularly
common or uncommon within an ethnic group, police often rely
upon eyewitnesses who divine race from features or even from images
of inadequate resolution (M'charek 2008). Moreover, said features are
frequently ambiguous and such eyewitness identifications rest upon
pronouncements of race or upon racial criteria that are devoid of
definition, and are, as we will see, frequently wrong.

Racial categories themselves are confusing, fluid and overlap-
ping, and such interpenetrance sometimes renders racial labels mean-
ingless or misleading. This is the case particularly within the ethnically
heterogeneous borders of the USA. Phenotypic characteristics such as
hair texture, lip and nose width and breadth and skin shade are far
from definitive of race, which often is, as noted above, itself ill-defined.
Scholars have observed that even such identifiers of nationality as
Moroccan or Turkish, are often mistaken for ethnicity and race
(M'charek 2008). In the USA, police officers and law enforcement data
often make racial-identification distinctions between blacks and
Hispanics, although the racial conventions of the US dictate that
Hispanics constitute not a race but an ethnic group. Therefore, a
dark-skinned Hispanic man is also black, but the categories typically
are treated as mutually exclusive.

Television programmes and daily newspapers reinforce the per-
ception of geography as destiny, and this cultural context informs a
DNA sweep. So, as police descend upon the black areas so familiar
from television and newspaper accounts as 'crime saturated', the

resultant ethical breaches are rarely inveighed against by the news media even as the character of every black man in the neighbourhood is tacitly impugned, creating a collective presumption of guilt (Cole 2007).

DNA sweeps often arise from crime scenarios that preclude a useful eyewitness identification – darkness, a blindfolded victim, an attack from behind or a masked assailant. Yet, in such conditions, witnesses have still averred that the crime was committed by a black or dark-skinned man, and police investigators have accepted this 'description' (Walker 2004), despite a large number of high-profile cases in which a black male assailant was found to have been an invention, often made up by the actual criminal (Terry 1994; Bell 1996; John-Hall 2009). In fact, interpretation of genotypic (DNA) evidence sometimes *creates* the 'black' phenotype. In December 2002, the now-defunct for-profit firm DNAPrint Genomics contacted Louisiana homicide investigators to inform them, and the news media, that their search for a serial killer, predicated upon a detailed psychological profile produced by the Federal Bureau of Investigation (FBI), was misguided (Silver 2004). They should be looking for a *black* serial killer. The police accepted the company's offer to collaborate and gave DNAPrint a sample. DNAPrint's geographic analysis indicated an ancestry that was 85% sub-Saharan African and 15% Native American, and the company even portrayed for police the killer's putative skin shade. Here it should be noted that skin-colour assessments based upon African ancestry actually are illogical because they map erratically, even poorly onto genotype. Many people who appear phenotypically 'white' share a genetic complement that is largely African or otherwise 'non-white', and vice versa.

Nonetheless, a black man was duly convicted of the crimes (Lowe *et al.* 2001; Sachs 2004; Cho and Sankar 2004). But were DNAPrint's assessments really predictive? DNAPrint's DNAWitness programme uses genetic mutations called single nucleotide polymorphisms (SNPs), which occur more frequently in certain ancestral groups than others owing to a group's geographic separation, intermarriage or other genetic pressures. DNAPrint insisted that SNPs are 'highly informative of ancestry', but other scientists are loath to make phenotypic predictions and doubt whether a DNA screen can tell you anything more than whence one's ancestors probably hailed. Even the latter assessments must be informed by historical information to discern, for example, whether an SNP is suggestive of East Indian or of Native American ancestry. The point is that, accurate or not, DNAPrint's

claims gave a scientific imprimatur to racial biases entrenched within the US justice system (Henig 2004).

In Charlottesville, Virginia police searching for a serial rapist who attacked six women between 1997 and 2003 targeted 690 black men in the Charlottesville area and asked those black men whose samples were not already in the database to provide genetic samples. They often prefaced their request with a claim that the man had been looking or acting 'suspiciously', thus providing a putative, surely convenient, basis for individual rather than purely racial suspicion. A *Washington Post* story related how Charlottesville police confronted Jeffery Johnson at the restaurant where he worked as a cook. In front of his supervisor and customers, police informed him that he was a suspect but that he could easily clear himself by submitting a DNA sample on the spot. He complied but understandably was enraged (Glod 2004). The DNA sweep inflamed racial tensions throughout the city as many other black men complained that their civil liberties were curtailed as the sweep stigmatized and robbed them of basic human rights (Finer 2005) and their dignity.

By targeting black men, who constitute a mere eighth of the nation's male population, the police compile databases that largely exclude white men, the majority group. These sweeps miss most criminals. As Rebecca Sasser Peterson points out in the *American Criminal Law Review*: 'Optimal effectiveness, however, would require a universal DNA database that contains DNA fingerprint of *every* citizen, otherwise potential matches would be missed' (Peterson 2000). Consequently, racial profiling contributes to the ineffectiveness of DNA sweeps.

DNA sweeps share troubling features that mingle racial bias, elements of coercion, incomplete disclosure and a disregard for the privacy of the selected subjects (Duster 2006). In 1994, police descended upon black communities, businesses and homes in Ann Arbor, a Michigan college town with a small black population, their aim being to acquire 'consensual' DNA samples from black men only of which they collected 160, even though the Fourth Amendment is supposed to protect an individual against 'unreasonable searches and seizures'. However, imprecision of language has led to frequent legal skirmishes. The Supreme Court has clarified: 'A search or seizure is ordinarily unreasonable in the absence of individualized suspicion of wrongdoing' (Esmaili 2007; Anton 2008). This better defines the parameters within which sweeps may be conducted because by definition the sweep conveys no individualised suspicion; potential suspects must submit voluntarily.

Police have confronted male suspects on the streets, in their homes, in restaurants and bars and in their workplaces to procure DNA samples, and many black residents complained that they had been coerced by police officers who ignored their alibis and threatened to prosecute them if they refused to submit. Significantly, the Ann Arbor killer refused to provide police with a DNA sample and was later identified only after he was arrested for an unrelated crime, after which he ~~then~~ could be forced to give a sample (Grand 2002). All the Ann Arbor men who gave samples proved innocent, but police still stored their DNA data in local databases to be tapped when next seeking a perpetrator. Although the 2004 Justice for All Act continues the proscription against depositing 'voluntary' DNA data from state databases into the federal Combined DNA Index System (CODIS),[1] this law is sometimes flouted, as Louisiana did when it inserted data from 120 men garnered during a DNA sweep. San Diego police similarly pressured 800 black men in order to catch a serial killer described only as dark-skinned (Esmaili 2007).

Not one of the black men in Ann Arbor who were induced to surrender DNA during the sweep was guilty, and this fits the national pattern. It is the innocent who are cajoled, intimidated or coerced into yielding their DNA. Of the more than 7000 DNA samples obtained by US sweeps between 1995 and 2002, only one identified a suspect and that one came from an atypical, relatively tiny sweep of only 25 people in a nursing home (Esmaili 2007). This makes the DNA sweep an ineffective but very expensive forensic technique (see also Chapter 3). Moreover, error and fraud is pervasive throughout the USA; for example, a probe that began in 2003 found 180 cases by 2007 at the Houston Police Department Crime Laboratory that were marked by 'major issues' in both criminal and administrative violations, including improper record keeping and false and scientifically unsound reports; this resulted in forced resignations and the suspension of the laboratory's operations (Khanna and McVicker 2007). Another example was in 1988, when a Los Angeles County Sheriff's Department expert from the California State Laboratory at Riverside fraudulently characterised DNA evidence, which resulted in the erroneous conviction of Herman Atkins of Riverside County for a rape and robbery he did not commit (Neufeld and Scheck 2007). According to the West Virginia Court of Appeals, Fred Zain, the former director of the West Virginia State Crime Laboratory had testified for the prosecution in 12 states, but he

[1] Federal DNA Index System. Available from: www.fbi.gov/hq/lab/codis/national.htm.

fabricated results and offered false testimony in hundreds of cases (*Philip A. Ward* v. *George Trent* 1999). Zain was on trial for fraud when he died in 2002 (Ross and Castelle 1993; US District Court for the Southern District of West Virginia 1999; Scheck and Neufeld 2001).

Federal laws have focused upon expanding the FBI's national CODIS database, which began in 1990 as a pilot scheme between 14 laboratories and was initiated with DNA samples from 8000 unsolved crimes (National DNA Index System). Initially, only one particularly repugnant breed of criminal – convicted child molesters – was compelled to produce DNA samples for the database. But within a decade, CODIS expanded to require samples from certain categories of convicted felons, and in 2002 the US Attorney General ordered the FBI to generate a plan to expand CODIS from 1.5 million to 50 million profiles (Simoncelli and Steinhardt 2006). Gradually, in an instance of function creep, which describes the tendency to expand the use of sensitive, narrowly applied technology to progressively broader uses, legislators successfully marketed the widening compulsion of DNA samples as a measure to protect women and eventually even larger groups of the population. At the same time, these legislators and the news media tend to maintain silence regarding the ethical cost of such laws (see Chapter 12).

Lawmakers have also ignored the communitarian dangers of publicly approaching all of an area's black men as potential criminals (Rushlow 2007). They ignore the possibility that DNA databases will be racially skewed by police stop-and-search policies that target blacks and Hispanics, resulting in a heavily black-based database that constitutes a collective presumption of guilt. Proponents also ignore the freighted cultural context: The rationale of protecting women taps into a prominent racial trope that recalls the history of deploying officially sanctioned violence (Allen *et al.* 2000) against black men who have been accused of sexually assaulting white women.

In early 2008, New York City Mayor Michael Bloomberg proposed that *everyone* arrested for any crime whatsoever in New York State should be compelled to provide a DNA sample (McGeehan 2007). The laws in New York City are important because its forensic policies and techniques tend to become models for the nation. But a single infraction can inflate the database: marihuana possession, for which New York City has arrested 362 000 people since the mid-1990s. Of these, 55% are black and nearly 30% are Hispanic. Fewer than 15% are white, because police target poor minority neighbourhoods while ignoring college students and other whites likely to have marijuana (Levine

2008). In April 2008, the US Department of Justice announced its plans to collect DNA samples from each of the 140 000 people it arrests each year. This escalation is billed as a measure to prevent violent crime, but it raises concerns about the privacy of innocent people as well as that of the non-violent shoplifters, loiterers, marihuana users and jaywalkers who would be coerced into surrendering DNA. The anti-gun campaign run by the New York City police force incorporated pervasive racial profiling of pedestrians between 1998 and 1999, and again in 2007: 51% of all those stopped were black and 33% Hispanic, but few arrests resulted (Baker and Vasquez 2007). This phenomenon is confined to the USA. In the UK, blacks are five times more likely to be stopped than whites, but only 1% of resulted in arrests (Open Society Justice Initiative 2006). A variety of studies conducted in disparate manners by different researchers has yielded consistent results. Police officers tend to target blacks and Hispanics, not because of their actions but because of their race.

The most frequent site of encounters between police and civilians, traffic stops, is also commonly racialised in the USA. Between January 1995 and September 1996, David A. Harris determined that 70% of the 823 citizens detained for drug searches on a particular highway, I-95, were African American (Harris 1999a). In 2002, a larger study by Harris (2005) verified this as a national trend. In 2005, police stopped approximately 17.8 million US drivers (Glover 2005; MSNBC 2007) Of these, John Lamberth, who directed the Ethnic Profiling in the Moscow Metro study, found blacks to be five times more likely to be stopped than whites despite the fact that large controlled studies have found no racially-based differences in motorist behaviour, and despite the fact that blacks are less likely than whites to even have a car (Open Society Justice Initiative 2006).

In a landmark 1996 case brought by 17 African-American defendants (*State v. Soto* 1996), Judge Robert E. Francis, a Superior Court judge in a Gloucester County, New Jersey court, was convinced that the New Jersey State Police were engaging in unlawful racial profiling on the basis of statistical evidence revealing a wildly disproportionate number of traffic stops involving dark-skinned men that resulted in a paucity of demonstrated infractions. Francis ruled that state police troopers were targeting black and Hispanic motorists on the New Jersey Turnpike, stopping them simply because they had dark skin and searching their cars, harassing and threatening them, and in some cases assaulting them and then charging them with everything from traffic infractions to drugs offenses (Hefler 2009). In the wake of *State v. Soto*, charges

against nearly 300 motorists who had been improperly detained were dropped and the US Department of Justice imposed monitoring of the state's traffic stops (*State* v. *Soto* 1996).

This stricter scrutiny of blacks is rationalised by police who opine that blacks commit most crimes and that police are targeting the right people. 'Unfortunately, on the street the police perception is "The criminals are black"', says John C. Connolly, Chief of Police in Manchester, Missouri: 'Not that blacks are criminals: They *think* the criminals are black. So that is where they put their attention nine times out of ten, so that people are detained and arrested inappropriately' (Connolly, interview with the author 2008). Yet racially targeted stops yield lower hit rates than do stops that utilise no racial profiling. As with DNA sweeps, this inefficiency results from the fact that in ignoring whites, who constitute the majority, police are missing most criminals (Harris 2005: 68).

Non-genetic ethnic profiling of despised ethnic minority groups by law-enforcement authorities does not stop at US borders. Investigations in Bulgaria, Hungary and Spain document that police conduct frequent raids on Romani communities and subject immigrant neighbourhoods to intensive surveillance and searches. Their reports also describe complaints of selective police violence against ethnic minorities and the markedly disproportionate confrontation, harassment and arrest of minorities during police stops in Russia. For example, the Moscow Metro Monitoring Study found that while persons of non-Slavic appearance made up only 4.6% of the riders on Moscow's Metro system, they formed 50.9% of persons stopped by the police at Metro exits as part of their security surveillance (Open Society Justice Initiative 2006). This means that Moscow police are more than 10 times more likely to stop non-Slavs than Slavs, an extreme degree of harassment, particularly when compared with the fivefold greater stop rate of blacks in the USA.

Racial profiling in the development of forensic DNA databases is also not limited to the USA. In fact, the UK's database, the earliest and the largest in the world, was established in 1995 and holds DNA profiles of 37% of the nation's black men, compared with only 13% of its Asian men and a mere 9% of its white majority (Randerson 2006).

'STOP 'N SWAB': A SYNERGY OF BIAS

Police departments in the USA are eager to combine traffic stops and DNA collection, despite the pervasive racial profiling characterising

both. When he served as New York City Police Commissioner, Howard Safir vociferously supported DNA testing of suspects immediately upon their arrest, and after he resigned, Safir joined those vendors, assuming the CEO positions at Bode Technology and at Safir Rosetti (Smith 2007). Safir extols the virtues of forensics DNA analysis, including combining traffic stops with DNA sweeps (Safir 2007). The most popular proposed model has sought to employ a one-person ad hoc laboratory staffed by individual police officers and providing Record of Arrest DNA Testing (RADT) (Sosnowski 2006). Nanogen Corporation received a federal grant to develop a 'chip-based genetic detector for rapid identification of individuals' that allows a police officer to stop a motorist, take a buccal swab and then place it in on a credit-card-sized chip.[2] Inserting the chip into a device the size of a CD player creates a DNA profile within a few minutes. The police officer then transmits this information to a central database, which requires minutes to report whether the sample 'matches' any in the targeted database (Sosnowski 2006). Today, its website warns customers that this sort of device is no longer being supported by Nanogen, but other candidate devices have been explored (Anon 2004), including a palm-sized 'DNA fingerprinter' from the Whitehead Institute for Biomedical Research, which has been developed with a $7 million federal grant (Philipkoski 1998).

NON-DISCRIMINATION POLICIES

Unlike the situation in Netherlands, which has adopted prescient protective legislation ahead of the policy curve (M'charek 2008), US legislation often trails the adoption of database policies. For example, the federal Genetic Information Nondiscrimination Act (GINA), enacted in May 2008, bars employers and health insurers from penalizing those persons with flaws, anomalies or atypical disease risks that are revealed by genetic testing. It does not, however, prohibit life insurance or disability insurance companies from considering genetic data in making coverage decisions; neither does it extend protection to forensic applications of DNA testing. As such, GINA represents a significant boon to privacy rights but does so while continuing the long-term trend of enshrining legal protections to the *medical*

[2] ....gen, Inc. Briefcase-sized system for accurate, cost-effective DNA diagnostics (a portable genetic analysis system). Available from: www.nanaogen.com (accessed November 2007).

applications of genetic knowledge while failing to address *forensic* applications with parallel statutes (Matejik 2008).

There are also neglected consequentialist concerns for police officers who carry out racialised sweeps and traffic stops. Ethical analyses often overlook the brutalising effects of unjust coercion, violence or threatened violence on the perpetrators of such behaviours. The social-justice violations resulting from racialised DNA sweeps also nullify the supererogatory virtues associated with police officers. We expect police, as guardians of the law, to exhibit not only strength and authority but also a greater than usual level ~~of~~ truthfulness, fairness and emotional maturity and to be motivated by a dedication to the protection of the public, not by racial hatred. When police officers harass persons because of their race, this causes members of the public, black and white, to lose faith in and respect for them, and such behaviour ultimately sabotages the police's effectiveness on the streets and their credibility in court (Beauchamp and Childress 2001; Harris 2005: 69).

CONCLUSIONS: POLICY RECOMMENDATIONS

This chapter raises concerns regarding DNA profiling and databasing. In seeking better governance, the primary recommendation for addressing racial inequities that haunt forensic DNA technology is simple: better public education and awareness concerning DNA forensics, which is a necessary prelude to a wider public policy debate. It is the US public that risks life in a genetic dystopia or amidst genetically mediated racial repression. The public must be informed and invited into the conversations and policy dialogue about race, security and genetic science (Neufeld and Scheck 2007).

By association, another recommendation is that voting on future referenda, laws or policy decisions, unlike the passage of prior legislation, must be based upon fuller and more objective presentations of the facts and potential pitfalls of expanding the use of DNA data and samples in forensic settings (Secko *et al.* 2009). Similarly, jurists and jurors should be required to complete courses that will allow them to ~~assist them in evaluating~~ especially to detect hyperbole in) DNA testimony (Ungvarsky 2007). In addition, a moratorium should be imposed on the proposed marriage of DNA sweeps and traffic stops, and on federal funds to investigate such a marriage. This combination threatens to create a dangerous synergy of two technologies, the application of both being demonstrably fraught with profound racial bias.

It was a full decade ago that Ron Paul, Republican Congressional Representative for the 14th district of Texas, sought to halt all biometric profiles of US Americans in the form of DNA databases, photographs and retinal scans. But an absolute ban is not the answer. As illustrated by the exoneration of the innocent, by the identification of remains and by logical, unbiased forensic applications, varieties of DNA analysis technology unquestionably offer great promise in the forensic arena.

Instead, the challenge for good governance lies in determining how best to exploit genetic power without abusing it. One place to start is to abandon racialised DNA sweeps as inefficient, expensive, scientifically inaccurate and, most of all, as dramatic violations of social justice.

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