

Profiling the DNA Databank:
Individual Identification and Power in Late Modernity

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ABSTRACT

Profiling the DNA Databank: Individual Identification and Power in Late Modernity

Sarah Janet Rayfield

This thesis explores some features of the relationship between power and knowledge as it is currently taking shape in the discourse and practice of forensic DNA data banking and addresses the limits of the existing theoretical discourse on power in capturing the kind of power effects that are emerging. The first chapter explores the social, political and historical context in which forensic DNA data banking has emerged. The second chapter examines relevant socio-cultural transformations in the nature of power that have been taking place since the Nineteenth Century, bringing together Foucault's concept of surveillance with more recent analysis of surveillance that suggests, that as a technology of power, surveillance is in the process of changing. Risk is considered as a major force in shaping surveillance practice and discourse, specifically its influence on crime control strategies is discussed. Chapter three first contends that modern themes, which were instrumental in legitimating the development of older identification technologies, continue to play a central role in the discourse legitimating the use of DNA data banking. It also reveals that DNA data banking is premised on an ambivalent notion of crime and 'criminality'. Foucault's theory on bio-power and Baudrillard's simulation theory are considered and it is suggested that these theoretical perspectives can elucidate the relationship between DNA data banking and the changing nature of power.

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TABLE OF CONTENTS

INTRODUCTION	1
CHAPTER 1 : DNA DATA BANKING AND ‘THE CULTURE OF THE TRACE’	10
CHAPTER 2 : CONTROL STRATEGIES IN LATE MODERNITY	47
CHAPTER 3: DNA DATA BANKING AND POWER	85
CONCLUSION	119
BIBLIOGRAPHY	128

INTRODUCTION

In the face of growing fear of crime, genetic identification technology has been presented as one of the most objective and efficient solutions to the problem of security in late modern societies. It was in the anxious climate following the attacks on the World Trade Centre of September 11, 2001 that Professor James Watson (co-discoverer of the double helix structure of Deoxyribo Nucleic Acid (DNA)) and then president of the Cold Harbour Laboratory in New York called for the creation of an international genetic data base to improve public security. Watson explained that despite the potential harm that storing personal genetic information may cause, its benefits far outweigh the risks, as a global genetic bank would, “make life safer” (Pyke 2003).¹ Watson explained that, “it’s hard to imagine that in 100 years from now we won’t have it [an international genetic bank]... with the increase in terrorism we want to know who people are” (Pyke 2003). Though no such data bank exists yet, the promise of life made safer through the collection and storage of our genetic profiles is powerfully appealing.

Since the attacks on the World Trade Centre of September 11, 2001, there has been an acceleration of initiatives, in the name of public safety, to expand the institutionalization of DNA technology in various spheres from immigration to policing (Lyon 2001; van der Ploeg 1999; Williams and Johnson 2004). As a result, an increasing number of people who were formerly exempt from DNA typing² or data banking are now compelled to

1 Watson made these comments in February 2003 in an interview with The Guardian.

2 In this thesis I am conscious of the semantic difficulties that surround the terms DNA ‘fingerprinting’, ‘profiling’, ‘testing’ and ‘typing’. These terms are often used interchangeably, however in a 1995 *Science*

participate (Nelkin and Andrews 2002). As Dorothy Nelkin and Lori Andrews have observed, “although the practice of testing and banking DNA is extending to a widening range of people - from soldiers who go to battle to chaplain’s assistants, from violent to non-violent felons, from immigrant families to foreign adoptees - there has been little public concern about the practice” (Nelkin and Andrews 2002: 108). While the use of DNA typing and data banking in certain sectors, such as insurance and employment, has generated some public debate, the use of DNA data banking in the criminal justice system has largely been welcomed as a means to make criminal investigations more time and cost effective (Andrews and Nelkin 2001: 100). However, in the context of the criminal justice system, where notions of security are intertwined with those of equality and justice, the stakes surrounding new genetic technologies are high.

Indeed, the value of a technology which has been able to exonerate wrongly convicted individuals, who were either in the process of serving lengthy sentences (like Canadians Guy Paul Morin or David Milgard) or, in a number of U.S. cases, facing capital punishment, and which has been instrumental in solving cases involving physical or sexual violence, can be neither ignored nor denied. However, as nations invest greater political and economic resources in the development of DNA technologies, there has been a limited amount of public time or space for critical debate and discussion about the social and political implications of such technologies. Many who question the social implications of wide-scale DNA typing and data banking by police and other public

Watch interview Sir Alec Jeffreys’, the scientist who pioneered the original DNA typing technique explains the differences (Amirani 1995). The term ‘DNA fingerprinting’ he suggests is no longer accurate in describing the forensic procedure used to develop a profile of an individuals’ DNA. DNA typing is the term used most frequently in this thesis.

organizations are labelled naïve or even morally suspect. Yet the inability of DNA technologies to reduce crime, fear of crime, or incarceration rates is all too evident.

DNA data banking and typing has become a politically and publicly popular crime control technology and yet its ability to guarantee public safety remains unproven. What problems or needs does DNA data banking promise to address? How does DNA data banking compare and fit with older identification technologies? How can the growing reliance upon DNA data banking be understood in relation to the general trends in crime control practices and discourses? How does it reflect current preoccupations with risk, public safety and individual responsibility? How does DNA data banking fit with theories on the dynamics of power in contemporary societies? What is new or different about DNA data banking as a form of surveillance? Is the relationship between body and identity being redefined by DNA data banking? Does DNA data banking create a form of identity that is increasingly digitized and less recognizably grounded in an individual physical body or does it ground individual identity further into the body?

This thesis explores some features of the relationship between power and knowledge as it is currently taking shape in the discourse and practice of forensic DNA data banking. It explores the social, political and historical context in which forensic DNA data banking has emerged, drawing on the work of social studies of science scholars and critical criminology scholars. While in many ways, DNA data banking can be understood within the context of a long history of identification technologies which sought to use the body as a source of identification, it is also redefining the relationships between identity and

the body in new ways. The way in which DNA data banking is redefining the relationship between body and identity can be better understood when it is examined within the control strategies central to crime control in late modernity. Surveillance, risk and simulation theories are explored in order to explore the relationship between knowledge, power and DNA data banking. This thesis argues that existing theoretical discourse on power does not adequately capture the kind of power effects that are emerging in the practice and discourse of forensic DNA data banking.

To date, there have been only a handful of sociological studies focused directly on DNA data banking. However, these studies are empirically and theoretically rich, and provide fertile ground for this thesis. Scholars like Dorothy Nelkin, Susan Lindee, Lori Andrews, Anne Joseph, Alison Winter and Neil Gerlach have explored different social and political dimensions of DNA data banking. They have each paid particular attention to the role played by popular culture in shaping the public imaginary of DNA and its forensic technologies (Nelkin & Lindee 1995; Joseph & Winter 1997; Gerlach 2002; Nelkin & Andrews 2003). Their work has raised important questions about the socio-political visions guiding popular representations of DNA data banking.

Nelkin and Lindee argue that the tendency to present the powers of the gene in a deterministic manner stems from what they identified as an emerging 'genetic essentialism', the view that an individual's DNA contains the essential of their identity (Nelkin & Lindee 1995: 151). Nelkin and Lindee argue that genetic essentialism "has become a resource for many institutions, helping them resolve ambiguous and difficult

problems” (Nelkin & Lindee 1995: 150-51). Joseph and Winter contextualize DNA data banking and typing, locating it socio-historically in relation to older ‘technologies of the trace’. Joseph and Winter argue that part of the powerful appeal of ‘DNA fingerprinting’ stems from its construction as a scientific technology which reproduces identity through careful, ‘objective’ and mechanical examination of the microscopic traces we shed unconsciously. The research of Joseph, Winter, Nelkin and Lindee provides a critical analysis of the ways in which popular representations of DNA typing inform, and are informed by, popular understandings of science. The ‘power of the infinitesimal’ and ‘genetic essentialism’ reflects the merging of popular myth and scientific idealism. It is in this context that DNA identification technologies, such as DNA data banking, enter the popular imaginary. This thesis raises questions about the role that ‘genetic essentialism’ and the ‘power of the infinitesimal’ play in establishing the legitimacy of DNA typing as a forensic technology.

Social studies of science scholars, such as Nelkin, Lindee, Winter, Joseph and Simon Cole, have produced historical analyses charting the scientific, political and social evolution of genetic science. Their research reminds us that genetics is not the first science to have been readily incorporated into the judicial system. Indeed, phrenology, anthropometry, and polygraphy have all enjoyed popularity with police at one time or another. These scholars suggest that forensic use of such technologies is not driven exclusively by scientific imperatives; rather there exists a host of political, economic and social imperatives that drive the partnership between genetics and forensics.

Scholars working in the field of surveillance studies have also been actively examining the socio-political visions guiding the integration of DNA identification technologies in various private and public institutions. Their work focuses on the social control applications of DNA identification technologies. Surveillance studies scholars have been particularly interested in examining the ways in which DNA identification technologies facilitate wider and more intensive surveillance of individuals and populations. These scholars, including David Lyon and Irma van der Ploeg, have suggested that DNA identification technologies are more properly understood as surveillance technologies. In particular, David Lyon argues that “in a world of identity politics and risk management, surveillance is turning decisively to the body as a document for identification, and as a source of prediction” (Lyon 2001: 72). The notion of the ‘body as document’, or the ‘body as text’ is pervasive in the discourse surrounding the DNA data bank. As van der Ploeg has argued, the idea that one’s identity can be ‘read’ from the body, suggests that identity is something which is stable, continuous and inscribed in the body (van der Ploeg 2001). Van der Ploeg argues that body ontologies “need to be seen as historically contingent and technology-dependent discursive constructions” (van der Ploeg 2001: 1). This thesis explores van der Ploeg’s ideas about the new primacy of the body in information technology, the problematic boundary between information about the body and ‘the body itself’, and Lyon’s ideas about disappearing bodies in postmodern surveillance technology’s reconfiguration of time and space.

Simulation theory is also explored to add to the understanding of the relationship between DNA data banking and surveillance. William Bogard’s work on the simulation of

surveillance suggests that simulation is surveillance taken to its conceptual limits (Bogard 1996). Simulation theory has looked at DNA as a canonical instance of simulation. It is suggested that simulation theory can help with the understanding of DNA data banking and social control.

The first chapter of this thesis explores the history of DNA data banking and the creation of the Canadian National DNA Data Bank. Drawing on the work of scholars such as Nelkin, Lindee, Cole, Winter, Joseph and Van Dijck, it provides a brief socio-cultural history of 'the culture of the trace'. It also explores the discovery of DNA and the role that popular representations have played in constructing DNA's legitimacy as an individual identifier. DNA typing is discussed as a technique that has bridged the gap between genetic and forensic science, making it possible to visualise individual genetic identity. The most recent forensic application of DNA technology is the DNA data bank. The last section of this chapter describes the Canadian National DNA Data Bank.

The second chapter briefly explores relevant socio-cultural transformations in the nature of power that have been taking place since the Nineteenth Century in order to provide some context for understanding the emergence of DNA data banking as a penal tool. This chapter brings together Foucault's concept of surveillance from his work *Discipline and Punish*, with more recent analysis of surveillance that suggests, that as a technology of power, surveillance is in the process of changing. Four themes that recur in the surveillance studies literature are explored. Understanding contemporary surveillance practices and discourse requires some discussion of the heightened role of risk in late

modernity. This chapter highlights pertinent theoretical analysis of risk and links risk to surveillance. Risk is also considered as a major force in shaping social control practice and discourse, specifically its influence on crime control strategies is discussed. This chapter maps some key theoretical landmarks for locating DNA data banking with the ambiguous governmental discourse and policy on crime in late modern Western societies.

Chapter three analyzes the emerging relationship between DNA data banking and social order in late modernity. The first section of this chapter contends that modern themes that were instrumental in legitimating the development of older identification technologies such as, mobility, crime as ‘epidemic’, recidivism and information management (efficiency), continue to play a central role in the discourse legitimating the use of DNA data banking. The second section suggests that in addition to these modern themes, DNA data banking is also resonating with the new themes underlying crime control strategies in late modernity. DNA data banking’s highly cultivated public image as a technology which improves the weaknesses of the criminal justice system, making it more objective, more efficient, and better at managing the risk of crime, means that it continues to be seen as a valuable crime control technology. DNA data banking is premised on an ambivalent notion of ‘criminality’, one that simultaneously operates on the assumption that ‘criminals’ are ‘monsters’ and ‘reasoning risk calculators’, just like you or I. The third section considers the way in which the literature on surveillance and simulation can be used in combination to better capture some of the emerging power dynamics of DNA data banking. It suggests that the theory on simulation and surveillance can further an understanding of the relationship between DNA data banking

and social order. It is suggested that like other surveillance technologies that are part of the “surveillant assemblage”, DNA data banking is involved in a re-definition of the human body’. In the fourth section the DNA data bank is explored in line with Foucault’s theory on bio-power and Baudrillard’s simulation theory. It is suggested that these theoretical perspectives can elucidate the relationship between DNA data banking and the changing nature of power.

CHAPTER 1: DNA DATA BANKING AND THE ‘CULTURE OF THE TRACE’

This chapter explores the history of DNA data banking. Drawing on the work of scholars such as Cole, Winter and Joseph, it begins with a brief socio-cultural history of modern human identification technology, emphasizing recurring themes and preoccupations regarding what Winter and Joseph have aptly called ‘the culture of the trace’ (Winter & Joseph 1997). Second, it explores the ‘discovery’ of DNA, drawing on the work of Nelkin, Lindee, and Van Dijck to highlight the role that popular representations have played in constructing DNA’s legitimacy as an individual identifier. Third, it describes the advent of DNA typing, arguing that this technique has bridged the gap between genetic and forensic science, making it possible to visualise individual genetic identity. Lastly, this chapter examines the emergence of DNA data banking. Using the Canadian National DNA Data Bank (NDDB) as an example, it highlights the history of DNA data banking policy in Canada and describes the DNA data bank. It argues that DNA typing is only the latest in a long line of individual identification technologies that have claimed to enhance public security by using bodily identification.

1. Brief socio-cultural history of modern human identification technologies

While basic forms of criminal identification have been used since ancient times, the development of sophisticated body based identification technologies did not begin in earnest until the modern period. As Joseph and Winter have remarked, “until a hundred years ago the only widespread ‘trace’ identifying an individual was the signature”

(Joseph and Winter 1997: 194). Although there were a number of factors that contributed to the flourishing of body based identification technologies in the nineteenth century, Cole has suggested that one key reason for this trend was increased mobility, which, as a consequence of industrialization, made “identification into a problem without a solution” (Cole 2001: 7). The dramatic social and economic changes brought by industrialization did more than accelerate physical mobility; they also had an impact on social mobility, for as “the divisions between the classes broke down, the characteristics that had marked membership in a particular class - such as language, dialect or accent, clothing, bearing, demeanor, and manner - became more fungible” (Cole 9). As traditional ways of identifying individuals became increasingly unreliable in urban centres, people without “settled connections” were viewed with increasing distrust and movements to formally criminalize mobility emerged (Cole 9). These movements were part of larger nineteenth century transformations in the role of the state, with institutions gradually giving way to bureaucratic governmental institutions which were for the first time interested in producing and storing information about individual citizens (Cole 9).

The earliest identification technologies were designed to control the flux of people in and out of states. France was the first country to use passports, making their use mandatory in late eighteenth century (Cole 10). Passports were, on the one hand, a reflection of the notion of citizenship that emerged in post-revolutionary France and, on the other, useful tools for dealing with anti-government forces, infiltration of foreign agents and suppressing vagrancy and crime (Cole 10). Other states followed, using passports as a means of dealing with crime and dissent (Cole 10). State institutions saw the potential in

identification technologies for recording the identities of convicted criminals, thereby creating a record of criminal identity distinct from criminals' bodies (Cole 10). Creating a record of criminal identity became particularly important as the use of practices such as branding and mutilation of convicts diminished, and greater mobility hampered efforts to track convicts. Whereas passport descriptions were often vague, greater detail tended to be provided in 'prisoner registers', which came into use in Europe and the United States during the late eighteenth century. As the number of convicts grew, prison administrators invested considerable time and energy in developing systematic ways of identifying prisoners (Cole 11). Though the detail of prisoner descriptions varied by and within prisons, innovations by staff in the early nineteenth century nevertheless led to the emergence of an increasingly standardized language of description (Cole 11).³ However, prisoner records were of limited use in determining whether a prisoner had been previously imprisoned as the records were not organized (Cole 11).

Nineteenth century "medico-legalists" devised ways of verifying an individual's identity in particularly challenging cases (Cole 12). They began to invent systems of identification based on "identifying marks" such as birthmarks and scars. In addition to these "natural" marks, medico-legalists also used marks that were characteristic of professional occupations.⁴ A number of high profile cases in the second half of the eighteenth century involving impostors who claimed that proof of their identity lay in

3 For example, at the Pennsylvania Penitentiary in Philadelphia, convict description dockets set out specific places in each entry for certain information including "birth place, age, occupation, complexion ("sallow," "fresh" or a racial classification), hair colour, eye colour and stature, plus a space to describe marks, scars or tattoos".

4 In 1865, French physician Ernest Morillon argued that "professional signs" such as "scars, nicks, cuts and abrasions characteristic of certain professions, such as knife grinding, laundering, butchering, and shoemaking" be used in conjunction with other characteristics to help establish identity (Cole 12).

their scars, raised serious doubts about the reliability of distinctive marks. By the mid-nineteenth century, bodily marks were confirmed as better sources of identification than handwriting, voice and memory (Cole 12-13).

By the late eighteenth century, the influence of classical jurist Cesare Beccaria led a shift to proportionate punishment in Europe (Cole 14). Classical sentences were fair (at least in the judicial sense) and reform oriented, but harsh and inflexible. As the sense that crime was becoming 'epidemic' grew in the mid-nineteenth century, a generation of reformers was critical of the classical approach to sentencing. Supported by better record keeping and crime statistics, these reformers argued that small numbers of "repeat offenders" were responsible for a disproportionate number of crimes (Cole 14). "Repeat offenders" were increasingly objects of scientific knowledge. Cole explains that "these habitual criminals were conceived of as deviant, fundamentally - in fact, biologically - different from "normal," law-abiding citizens" (Cole 13). The shifting conception of the habitual offender was reflected in the term 'récidiviste', developed in 1844 by Arnould Bonneville de Marsangy. Bonneville argued that punishment should be tailored to the criminal rather than the act (Cole 16). Central to Bonneville's argument was that there was a growing need to know the 'degree of recidivism' in order to punish proportionately (Cole 16).

For Bonneville, the problem lay in the organization of criminal records, particularly court registers. Reformists emphasized the need for criminal identification technologies in order to identify recidivists and thus address the perceived 'crime epidemic'. Bonneville

outlined a new method of criminal identification which approached the bodies of criminals as “a merchant treated consignments or as a librarian would keep track of books” (Cole 18). The system he developed used alphabetically organized index cards for each convict. The move from classical to reformist jurisprudence led to the development of new identification technologies (Cole 15).

In Britain, which no longer could deport prisoners as readily as the French, a number of ways of dealing with recidivism were put forward, including the principles that first time offenders would be reformed through imprisonment, and recidivists would be imprisoned indefinitely (Cole 18-19).⁵ Despite some success in tracking convicts by name, the problem of aliases persisted; as a result, the British resorted to photography (Cole 19-20). The main advantage of photography in the eyes of the police was its superiority to the written word as a means of communicating a representation of the human body (Cole 20). Photography was seen as a particularly suited to identifying the highly mobile, anonymous ‘confidence men’ (Cole 21-22). Photography was also being used to focus on ‘the usual suspects’, “those who looked like criminals” (Cole 22). Cole argues that

“photography rejuvenated the search for a criminal physiognomy. The era of photographic identification coincided with the rise of “criminal anthropology,” the earliest fully articulated attempt to turn the study of the criminal into a “scientific” discipline, complete with theories, skills and methodologies and the prototype for the field of criminology” (Cole 22-23).

The leading figure in the field of criminal anthropology was Caesar Lombroso, author of the 1876 *Criminal Man*. Followers, including Enrico Ferri, together known as the Italian

⁵ Past offences became a relevant factor in sentencing for the first time with the passing of the 1869 *Habitual Criminals Bill* (Cole 19).

School, were known for their positivism and their belief that criminal acts could be traced back to an original cause (Cole 23). The Italian School was particularly interested in exploring criminality through the detailed study of the body of “the criminal” (Cole 23). Drawing on Darwin’s increasingly popular theories of evolution⁶, the Italian school argued that criminals were the product of “bad stock”. They popularized the notion of the “born criminal”, using tools borrowed from anthropology to measure bodily attributes including skull size and shape and tattoos. The Italian school was inspired by anthropologists’ conceptions of and reliance upon evolutionary theory and “race” (Cole 23).

Moreover, Dario Melossi has argued that Lombroso’s highly influential theory of the “born criminal” was itself informed by the hierarchical notions of ‘racial’, ethnic and regional identity which were flourishing in Italy in the 1860s (Melossi 2000: 301). Dario Melossi argues that:

Cesare Lombroso’s position cannot be separated from the historical context of Italian Unification in 1861 and the subsequent annexation of large provinces, especially southern provinces, in the ten years that followed, when Piedmontese (‘Italian’) army troops engaged in a bloody repression against peasant bandits who were portrayed as instruments of the previous regime and the Church (Melossi 301).

...it is hard not to see, in Lombroso’s theory, a sort of somatic transfiguration of a cultural difference so deep that it could not be understood on its own terms but had to be racialized in the difference between North and South, between Europe

⁶ Evolutionary theory played an important role in the development of criminal anthropology. For a good analysis of the cultural context out of which evolutionary theory emerges see *Evolutionary Theory and Victorian Culture* by Martin Fichman, 2002. Criminal identification technologies, like those developed by Lombroso and the Italian School, are products of the same cultural climate which produced evolutionary theory.

and the Mediterranean, between normality and atavistic pathology. Indeed many of the physical characteristics that were identified by Lombroso in criminals were also ascribed to the southerners (Melossi 301).

Cole explains that even with the help of composite photography,⁷ criminal physiognomists were unsuccessful in identifying unequivocal bodily signs of criminality; instead criminal physiognomy was used to create a 'scientific' identification system to legitimize prejudice and stereotypes about members of groups traditionally seen as 'criminal' (Cole 26).

While criminal anthropologists in Italy were "reading" criminality from the body, jurists and British officials were "using" the body as an index to link criminals to records. As Cole explains, "the most acute problem facing the nineteenth-century police and penal bureaucracies was not recording information, but ordering it. Methods of indexing, filing, classifying, archiving were the crucial techniques needed to make criminal identification possible" (Cole 29). As of the late nineteenth century, individual identification technologies are increasingly designed with the purpose of being easily searchable.

a) Bertillonage

As concern about recidivism grew, so did the volume of criminal records and photographs. Jurists began to see the futility of recording criminal identities without a systematic way to search them. Alphonse Bertillon sought to identify and distinguish

⁷ Developed by Francis Galton, also a key figure in the development of fingerprinting.

criminals through well established anthropometric tools used by anthropologists to measure the physical differences between the so called, “savage” and “civilized” “races” (Cole 34). The system he developed in the late 1870s, involved trained clerks taking eleven different anthropometric measurements from prisoners⁸ by using specialized callipers, gauges and rulers (Cole 34). Cole describes “Bertillonage” as an “elaborate dance” by the prisoner and the clerk (Cole 36). Descriptions of prisoners had been used before, but tended to be general and vague. Bertillon developed a descriptive language, what he termed a “morphological vocabulary”, in order to describe prisoners precisely and consistently (Cole 37). Prisoners’ anthropometric measurements and detailed physical descriptions were recorded on index cards, together with two photographs, one full face and one profile.⁹

While Bertillon’s system was more rigorous and systematic than previous identification technologies, the problem of how to organize information in a manner that could be searched efficiently remained. Aware of the importance of organizing the growing number of criminal records, Bertillon remarked that, “the solution to the problem of judicial identification consists less in the search for new characteristic elements of individuality than in the discovery of a method of classification” (Cole 45). Bertillon argued that the key to organizing information efficiently lay in using the anthropometric

8 Including such measurements as: head length, breadth, arm span, left middle finger length and right ear length). Bertillon went into minute details about how to describe amongst other things, eye lids, beards, ears and lips (Cole 39). He also developed a system for describing and recording distinctive marks like scars or tattoos, while the *British Register of Distinctive Marks* had been in use for some time already, Bertillon set out to develop a systematic way to record such marks, he took precise measurements and descriptions of marks and measured their location in relation to a fixed point on the body (Cole 40).

9 Bertillon pioneered many of the techniques in legal photography, including lighting and standard poses for mug shots. It was his fascination with the identifying potential of the ear which led to the inclusion of a profile shot in the mug shots (Cole 43).

measurements themselves, as they could be organized quantitatively (Cole 45). He saw anthropometry primarily as, “a mechanism for elimination”, demonstrating non-identity rather than proving identity. Identity, he argued, could only be established with judicial certitude if it is based on peculiar marks (Cole 45). In the Bertillon system, the anthropometric measurements, physical description and peculiar marks would allow cross checking (Cole 45). The Bertillon operator would check to see if the new prisoner’s anthropometric measurements matched any in the filing system, and if these measurements matched those on an existing card, the operator would then check to see if there was also a match between the peculiar marks (Cole 45).

The perception that Bertillonage could render the justice system more just, by preventing false identification, proved powerfully alluring. Capturing this optimism, one Paris newspaper at the time wrote,

“Bertillonage is the greatest and most brilliant invention the nineteenth century has produced in the field of criminology. Thanks to a French genius, errors of identification will soon cease to exist not only in France but also in the entire world. Hence judicial errors based upon false identification will likewise disappear. Long live Bertillonage, Long live Bertillon!” (in Cole 50-51)

The success with which Bertillonage was able to identify recidivists gave jurists and state officials’ new confidence: they were now able to legislate and sentence confident in the knowledge that they basically knew the identities of recidivists (Cole 51). This proved a very important development, for as Cole explains, “Bertillonage facilitated the realization of a new penal philosophy, one that had been fomenting for some time: the notion that criminals should be treated differently according to their “state of recidivism”” (Cole 51). Indeed Bertillonage was “a new way of visualizing criminality:

the authorities did not read criminality in the body itself, but rather used the body as an index to a written criminal record” (Cole 58). With their specialized instruments, Bertillon operators were able to compel the body to incriminate itself (Cole 58).

b) Fingerprinting

The history of fingerprinting is tightly intertwined with that of Bertillonage. Both systems actually developed around the same time, in the 1870's, both in response to growing concerns about crime and recidivism. However, while both Bertillonage and fingerprinting were designed to cure the same problem, they emerged from different socio-political contexts. While the former was developed in France, the latter was pioneered in colonial India. British obsession with law and order in South Asia, and being a “beacon of order and civilization in a world of darkness and barbarism” was at an all time high after the “Sepoy mutiny”¹⁰ of 1857, and it was in this context that a colonial official named William Herschell first used fingerprints as a form of identification (Cole 64-65). Though it was initially used only for civil purposes, it was not long before fingerprints were being used for criminal identification. In India, British preoccupation with the “habitual criminal” fused with ideas regarding ‘racial’ superiority and the importance of colonial control, to produce a new notion of criminality. Further, Cole explains that:

10 Cole explains that, “the birth of modern fingerprint identification came, not coincidentally, at one of the tensest moments in the history of British India. In 1857 Indian conscripts, known as “sepoys,” spurred by rumours that the grease that lubricated their rifle cartridges contained beef and pork fat - thus violating the dietary laws of both Hindus and Muslims - rebelled against their British officers and, for a time, took control of Delhi” (Cole 64).

Nineteenth century British conceptions of criminality in colonial India were inextricably bound up with contemporary evolutionary ideas about race. Although European jurists had already posited the existence of “habitual” or “professional” criminal, this concept took on new meaning in India. British amateur ethnographers believed that Indian castes, because of their strictures against inter-marriage, represented “pure” racial types, and they concocted the notion of racially inferior criminal castes or “criminal tribes,” inbred ethnic groups predisposed to criminal behaviour by both cultural tradition and hereditary disposition. Wandering nomadic groups were especially likely to be typed among these “criminal tribes”...Put in terms of caste, the habitual criminal became a “hereditary criminal,” a member of a genetically determined criminal group. Criminality became ethnic (Cole 67).

Colonial interest in keeping track of individuals who were seen as hereditarily predisposed to criminality led to calls for better criminal identification technologies (Cole 67). Bertillonage was initially adopted enthusiastically as a potential means to solve this problem. However, racist assumptions about the homogeneity of the Indian population and a high level of inconsistency between operators led colonial officials to the search for an alternate system.

The search for a more effective alternative to Bertillonage led British Henry Flauds to fingerprinting. Unlike Herschel, who approached fingerprinting as a bureaucratic tool for authenticating identity, Flauds, posited that they may reveal something more profound (Cole 98). Flauds saw fingerprints as, “codes that contained secret information about the history of the species, race, individual character, and even nature itself” (Cole 99). Flauds wrote to Charles Darwin about his work, who forwarded the letter to his cousin Francis Galton. Galton, like Flauds was fascinated by the deeper meanings of fingerprints, and he hoped that fingerprints might be the elusive markers of heredity he had been searching for (Cole 74). While conducting research on the relationship between

heredity and fingerprints, he developed a classification system where, “like Bertillon and Flaude before him, Galton translated identity from a visual image into language” (Cole 79). British colonial police officer, Edward Henry and his assistants Azizul Haque and Chandra Bose used Galton’s system to facilitate fingerprint searching (Cole 81). After some initial scepticism, Henry’s system was adopted by police departments across India, establishing Henry’s system as a legitimate rival to the Bertillon system “and the credibility of its underlying premise: that no two sets of fingerprints were alike” (Cole 90).

The notion of fingerprints as both individual identifiers and markers of common human heredity characterized the differing approaches to fingerprints. One group, headed by Galton, took an evolutionary or morphological approach to fingerprints; another, primarily composed of law enforcement officials, focussed on fingerprints as unique identifiers.¹¹ Cole argues that it is no coincidence that we no longer conceive of fingerprinting as anything other than an identification technique. There has been a conscious effort on the part of fingerprint examiners, who were often police and prison officials, to privilege the notion of fingerprints as an “empty signifier - a sign devoid of information about a body’s race, ethnicity, character, or criminal propensity...” (Cole 100).¹² Despite attempts by those who argue that fingerprints are “empty signifiers” to

11 Research into the relationship between fingerprints and criminality was still being conducted as recently as 1991, in his book *Crime and Mental Disease in the Hand*, Paul Gabriel Tesla claims to be able to determine “race” and diagnose “criminal tendencies” from examining finger and hand prints (Cole 117).

12 As occupational groups like police and prison officials began to rely increasingly on fingerprinting as an individualizing identification technique, morphological (or diagnostic) approaches to fingerprinting became seen as at best as irrelevant, and at worse a hindrance (Cole 112). By the 1920's interest in the biological community was shifting away from fingerprints towards genes and morphological researchers soon found

distance themselves from the diagnostic project of the morphologists, the purpose of fingerprinting remains that of identifying the “other”.

In the United States, on the other hand, fear of crime in the early twentieth century led to identification regimes focussed on immigrants, particularly Chinese immigrants. Notions of “racial” homogeneity in the United States fuelled the search for an identification system that would be faster, cheaper and easier to implement than anthropometry. Again, mobility and efficiency were central preoccupations for officials interested in fingerprinting technology. However, other than the fact that fingerprinting cost less and required less skill to implement than Bertillonage, fingerprinting at that time was not perceived to be as reliable or as scientific as anthropometry. However, fingerprinting was thought to be particularly well suited for identifying member of “other” races (Cole 139). One case claimed to deal the mortal blow to anthropometry. When an African-American man named Will West was admitted as a new prisoner, clerks checked his anthropometric measurement against the prisoner registry and discovered a William West with matching anthropometrics that had been convicted for murder. Will West denied he was William West. Clerks finally realized William West was already incarcerated in the same prison. Fingerprints of the two men were different. Though the historical evidence suggests this case was fabricated and fraught with racism regarding the challenges of distinguishing between African-Americans, this case was advanced as support for the proposition that fingerprinting was superior to Bertillonage (Cole 146). The supremacy

themselves outnumbered, as police and other law enforcement officials took a growing interest in the criminal identification capabilities of fingerprinting.

of dactyloscopy was ultimately secured by its lesser cost and its ease of use.

The triumph of fingerprinting over anthropometry in the United States did not put an end to racism in criminal identification; rather, it signalled a revival of visual imagery as a means of representing identity. Fingerprints were deemed more accurate than anthropometric measurements because the former did not rely on language to represent identity. Fingerprints, by definition, were impressions of the body itself (Cole 167).

Interestingly, forensic identification was not one of the purposes that early dactyloscopers had envisioned for fingerprinting (Cole 168). The conditions needed to ensure the viability of forensic fingerprint identification, particularly latent fingerprints, were considerably more exacting, requiring that the uniqueness of each fingerprint (not just the uniqueness of each person's set of ten prints) be established (Cole 168). The claim of forensic fingerprint advocates in the early twentieth century was that latent fingerprint analysis could lend a more powerful form of Truth to the criminal justice. Defendants, defence attorneys, judges and scientists argued that latent fingerprinting was based on weaker scientific evidence than anthropometry. Some of the pioneers of both fingerprinting (Galton and Flauds) and anthropometry (John Garson)¹³ spoke out against the use of latent fingerprints. These pioneers were highly critical of the way fingerprinting was used by fingerprint examiners, largely criminal justice officials and

¹³ John Garson was head of anthropometry at the Scotland Yard. Garson levelled an argument, which resembled that used by the defence against the DNA evidence in the O.J. Simpson trial. Garson argued that when used properly dactyloscopy worked well as an identification technology but the manner in which police were using it was problematic (Cole 173).

police officers (Cole 173).

By the 1920s and 30s, with the legitimacy of forensic fingerprint evidence well established in the jurisprudence of the United States, there was renewed concern in how to track an ever more mobile population. As a result, the United States government began to focus its attention on centralizing fingerprint records. The Federal Bureau of Investigation compiled an enormous data base of fingerprints which provided impressive support for the assumption that no two fingerprints are identical. The problem of how to organize, store and sort this collection became increasingly important. As centralized repositories grew across the world, so did the need to communicate the information contained in them.

By 1986 a digital Automated Fingerprint Identification System (AFIS) was adopted in the United States¹⁴ (Cole 253). AFIS was effective in identifying a small number of suspects automatically, yet still required manual verification (Cole 255). AFIS permitted “cold searches”, magnifying the criminal justice system’s focus on already targeted minority groups (Cole 258). The ease with which fingerprints could be taken and compared against others led to calls to expand the collection of fingerprints. It was argued that fingerprints should be taken from those who commit non-violent offences, because they are the same individuals who commit more serious offences. Cole has noted that:

Previous advances in identification technology allowed law enforcement agencies to create criminal records for ever pettier offenders. The ultimate effects of this

14 While digital AFIS was clearly becoming the system of choice, the brand of AFIS remained unclear (Cole 254). In 1992, there were three systems (Printrack, NEC and Morpho). The FBI and NBS are still in the process of establishing a universal standard. For a good description of AFISs see Cole (253-258).

shift was to make “recidivists” out of vagrants, drunks, prostitutes, and other repeat offenders who might otherwise have escaped notice because of the relatively minor nature of their crimes... If petty crime laws are enforced selectively – if marginalized people like racial minorities, the poor, and immigrants are arrested with greater frequency for petty crimes such as turnstile jumping and drinking in public – then these marginalised people are more likely to have arrest records. With AFIS technology, this means that young black people are far more likely to be “in the system” than whites (Cole 258).

There is continuing controversy about the effects of fingerprinting. There has been a lengthy and acrimonious debate regarding the reliability of fingerprinting identification methodologies employed by so-called expert examiners. Interestingly, this debate appears to have been largely settled, by a Royal Canadian Mounted Police constable, David Ashbaugh, who in the 1980s developed a methodology called “ridgeology”. Ashbaugh argued that ridge detail identification was determinative of identity. Citing Wilder, Whipple, Bonneville and Cummins, Ashbaugh argues that the uniqueness of fingerprints is rooted in the scientific disciplines of anatomy, embryology and histology. While ridgeology seems to have helped to salvage the legitimacy of fingerprinting as a reliable form of individual identification technology, it did not put an end to the search for even better identification technologies.

2. The ‘Discovery’ of DNA and its Representations

Deoxyribonucleic acid (DNA) is a long, double-stranded molecule that looks like a twisted rope ladder or double helix. Sometimes referred to as the blueprint of life, DNA is the fundamental building block for your entire genetic makeup. When sperm and egg unite, equal amounts of DNA from your mother and father come together. DNA is found in virtually every tissue in the human body. The DNA in your blood is the same as the DNA in your skin cells, saliva, and the roots of your hair. Highly discriminating, DNA is a powerful tool for identifying individuals. With the exception of identical twins, each person's DNA is unique to them (NDDDB web site, introduction, retrieved 24/08/04).

A new bodily trace has replaced fingerprinting as the ultimate identifier, DNA. Like the fingerprint, DNA is grounded in a complex socio-cultural and scientific history. This section briefly presents the history of genetics and the discovery of 'DNA', highlighting the popular images of DNA and genes.

The history of modern genetics is commonly traced back to the "re-discovery" of Gregor Mendel's work with garden peas during the 1860s by German botanists at the start of the Twentieth Century (Keller 2000). The term 'genetics' was coined in 1906 by William Bateson (Keller 2000). The term 'gene' was first used three years later by a Danish botanist, Wilhelm Johannsen, who developed the term to avoid the preformationism¹⁵ of earlier terms (Keller 2000). For the first forty years of the twentieth century, the exact material nature of the "gene" was largely unknown (Keller 2000). During the 1940s, attempts were made to identify the materiality of genes, and some researchers identified DNA as a carrier of genetic specificity (Keller 2000). Keller explains that:

...it was the triumphal announcement by James D. Watson and Francis Crick in 1953 which convinced biologists not only that genes are real molecules but also that they are constituted of nothing more mysterious than deoxyribonucleic acid. Thus, by midcentury, all remaining doubts about the material reality of the gene were dispelled and the way was cleared for the gene to become the foundational concept capable of unifying all of biology (Keller 2000).

While the Watson and Crick 'discovery'¹⁶ helped secure consensus on the materiality of

¹⁵ Preformationism refers to the theory of preformation, "the now discredited theory that every germ cell contains the organism of its kind fully formed and that development consists merely in increase in size" (Webster's New Collegiate Dictionary:1974).

¹⁶ Rosalind Franklin's contribution to the 'discovery' of the structure of DNA is often overlooked. It was her X-ray diffraction images which lent a crucial clue to Watson and Crick. Sexism and a competitive zeal

genes in the scientific community, the challenge of securing public acceptance of genes, DNA and genetic science would require careful public image management.

The work of Watson and Crick have helped to establish the scientific legitimacy of DNA. More generally, Pat Spallone has observed that the 'gene' has displaced looser concepts of 'the biological' and 'heredity':

So rather than say as we might have done 15 years ago, 'it runs in the family' or 'it's inherited', we hear ourselves saying, 'it must be in their/my genes'. These developments suggest a marked shift since the 1980s whereby a broad idea of 'the biological' has been subsumed under a more particular category, 'the genetic'. During this time the project to map and sequence all of the human genes has proceeded (Spallone 1998: 50).

José Van Dijck has identified four dominant popular images of the gene¹⁷ since its 're-discovery'; gene as code, monster, governor and map (Van Dijck 1998). The first image, that of gene as a code or a language, resulted from a fusion of ideas, in the 1950s, from the fields of science, science fiction, environmentalism, feminism and business; this notion helped to establish the materiality of the gene and signalled a new conception of the body as a 'rule governed' system of communication which could be 'read' by genetic experts. A second and more politicized image of the gene, that of the 'gene as lab

culminated in her data being shown (pre-publication) to Watson and Crick, by a colleague of Franklin, Maurice Wilkins. The 1962 Nobel Peace Prize was awarded to Watson, Crick and Wilkins. Franklin died four years before the award was given. In Crick's view, if Franklin had lived, "it would have been impossible to give the prize to Maurice and not to her" because "she did the key experimental work." (Time: retrieved 25/08/04, <http://www.time.com/time/time100/scientist/profile/watsoncrick02.html>).

¹⁷ A good deal of slippage occurs around a number of related terms used in the field of genetics. In basic scientific terms, DNA is a chemical structure that forms chromosomes, while, a 'gene' is a "piece of a chromosome that dictates a particular trait. In everyday parlance, however, the two terms are used interchangeably.¹² Likewise, the genome, which comprises "all the genetic material in the chromosomes of a particular organism", is also described in ways which mirror descriptions of genes and DNA.

monster', emerged in the 1970s and reflected the fear that geneticists were modifying genes and being careless about their containment and ability to contaminate. This fear led to a campaign by genetic scientists to reclaim control over the popular image of the gene involving a social marketing campaign. Thirdly, the gene was portrayed as 'governor'. In the 1980s, the rise of sociobiology and the diminished political significance of environmentalism allowed for the gene to be once again viewed in a positive light. The gene was represented as a master molecule, capable of governing an organism's development with businesslike efficiency. Lastly, the gene has been portrayed as a 'map' since the 1990s as a result of the Human Genome Project (HGP) and the emergence of genomics.¹⁸ Van Dijck argues that the cartographic representation of the gene is both dynamic and complex and, as a result, differs from its earlier portrayals.¹⁹

Older linguistic representations of the gene co-exist with its cartographic representation. The notion of the 'gene as a code' which provides information about our individual and collective identities remains popular.²⁰ DNA is simultaneously represented as, on the one hand, highly individual, and, on the other, universal. This double image of DNA, for

18 Genomics results from a fusion of genetic science and computer science.

19 The gene as a map is a rich metaphor, one that has been called the 'Holy Grail of Biology', the 'Book of Man', and the 'Code of Codes' (Spallone 1998: 50).

20 Nelkin and Lindee have found that, "Some scientists borrow their images [of the genome] from the computer sciences: the body is less a conscious being than a set of "instructions," a "program" transmitted from one generation to the next. People are "readouts," of their genes. If scientists can decipher and decode the text, classify the markers on the map, and read the instructions so the argument goes, they will be able to reconstruct the essence of human beings, unlocking the key to human ailments and even to human nature - providing ultimate answers to the injunction "know thyself"...Other metaphors used by scientists imply the possibilities of prediction, encouraging the use of their science for social policy. They call the genome a "Delphic oracle," a "time machine," a "trip to the future," and a "medical crystal ball"" (Nelkin and Lindee 1995: 6).

example, is reflected in a special edition of Time Magazine celebrating the 50th anniversary of the Crick and Watson discovery that states,

Our DNA provides a history book of where we come from and how we evolved. It is a family Bible that connect us all; every human being on the planet is 99.9% the same. On the other hand, we are learning that each letter in that text can spell the difference between blond and brunet, tall and short, life and death (Gibbs 2003: 28).

These two conceptions however, are inseparable and, in fact, deeply interwoven.²¹

Nelkin and Lindee argue that popular representations of DNA and genes reflect (and contribute to) their status as cultural icons. For Nelkin and Lindee the power attributed to DNA and genes through these descriptions and metaphors, reflects and feeds a growing “genetic essentialism” (the view that an individual’s DNA contains the essence of their identity), which arguably has become an indispensable resource for institutions keen on finding solutions to notoriously complex problems (Nelkin and Lindee 1995). Nelkin and Lindee explain that “the popular powers of the gene seem to promise that DNA, if comprehensively known and accurately understood could explain both past performance and future potential” (Nelkin and Lindee 2004: 150).

Scientific representations of DNA continue to rely on the notion of the gene as a code and a language. Jacqueline Stevens has argued that,

from its inception, DNA has been regarded as a “code,” as an array of amino acids that appear through the “transcription” of strings of U (Uracil), G(Guanine, C (Cytocine) and A (Adenine). ... The entire lexicon of DNA research is a grammatical one. DNA is analyzed as “fragments,” “sentences,” “libraries.”

21 In chapter three, we will see that separating these two characteristics, in part through the use of the concept of ‘junk DNA’, has been key in establishing the legitimacy of DNA typing as a forensic technology.

They control their replication through “editing,” translation,” and even “proofreading” (Stevens 2002: 126).

Stevens argues that language itself is material to genetic research, explaining that “to see how genes, like language, are malleable and subject to political organization - we need to recognize that the codes of DNA are no more or less metaphorical than the codes outside DNA” (112).

Highly politicized notions of the gene, such as the notion of the gene as a ‘lab monster’, are not presently common. One notable exception is the environmentalist discourse surrounding genetically modified foods. Another is the discourse of a ‘gene’ for anything and everything which, as a result of their use in popular media have been controversial. Unlike the former, the later discourse tends to present geneticists positively. Nevertheless, geneticists have shied from the discourse of a ‘gene’ for anything and everything in favour of more dynamic notions of the gene which focus on the relationship between genes and environment. Most significantly, this shift is reflected in the research regarding the genetic and biological causes of crime.²² Spallone has argued that in recent research on the biological roots of criminality, “genes are not static entities acting in mechanistic ways; genes act developmentally and probabilistically” (Spallone: 1998, 54). In much of this research “genes are not the overarching concept, biology is” (Spallone 54).

The gene has been represented in numerous ways since its discovery. Today, multiple

²² In the late 1980s, this shift formed part of the mainstream research on criminality and genetics. See, for example, Walters and White 1989 p. 475.

images of genes co-exist, working together to construct a powerful yet ambiguous image of both DNA and genes. In a number of ways, Nelkin and Lindee suggest that in popular culture DNA functions as a magical and almost sacred entity, rather like a secular version of the Christian soul:

Independent of the body, DNA appears to be immortal. Fundamental to human identity, DNA seems to explain human difference, moral order, and human fate. In capable of deceiving, DNA seems to be the locus of the true self, therefore relevant to the problems of personal authenticity posed by a culture in which the 'fashioned self' is the body manipulated and adorned with the intent to mislead (Nelkin and Lindee 1995: 2).

Images of DNA as an entity with the potential to solve some of the major mysteries of humanity contribute to its popular fascination and appeal and play a key role in shaping public conceptions of DNA, genetic science and genetic identification technologies. The technology of DNA typing, the history of which is presented in the following subsection, is crucial to the development of the DNA data bank.

3. The History of DNA Typing

The use of forensic DNA analysis in solving crime is proving to be as revolutionary as the introduction of fingerprint evidence in court more than a century ago... DNA analysis is the next generation of human identification in the science of police investigations and is considered a major enhancement for the safety of all Canadians (NDDB web site, retrieve 20/08/04).

"If we had called this "idiosyncratic Southern blot profiling," nobody would have taken a blind bit of notice. Call it "DNA fingerprinting," and the penny dropped" (Alec Jeffreys 1996, quoted in Cole 2001).

The development of DNA 'typing' (also known commonly as DNA 'fingerprinting' or 'profiling') marked an important turning point in the history of genetics and the history of the trace for it has made it possible to visualize individual genetic identity. DNA typing

is fundamental to DNA data banking: DNA typing is the technological bridge between the ‘discovery’ of DNA and DNA data banking. Like fingerprinting before it, DNA typing promised to facilitate linking criminals to their criminal records, but also to the search for bodily markers for criminality itself. In 1985, Alec Jeffreys developed DNA typing while studying the possibility of using genetic variants to trace heredity. As Cole explains, Jeffreys’ goal was:

to render inheritance visible, using the late-twentieth century biological marker of choice, DNA, instead of the late-nineteenth-century marker, the fingerprint. And like Galton in his pursuit of hereditary markers, had almost accidentally stumbled across a new identification technique (289).

Finding a reliable method to identify one’s DNA was challenging given the cost and time commitments required, and the fact that 99% of genetic material is common to all human beings. Jeffreys succeeded in identifying areas of DNA sequences that varied significantly from person to person, which he called, Variable Number Tandem Repeats (VTNRs).²³

Jeffreys’ technique for identifying VNTRs involved using Restriction Fragment Length Polymorphisms (RFLPs) (a common form of variation in DNA). VNTRs are identified by extracting DNA from blood, semen or tissue samples. The DNA is separated and transferred onto a nylon membrane. X-ray films of membranes produce a ‘DNA profile’, visible tagged sequences resembling a bar code on a price tag or a library book (Joseph

23 VTNRs are: “loci where the genetic code, the sequence of proteins that forms the “blueprint” for every organism, “catches” and stutters,” repeating a sequence of DNA base pairs - pairs of two proteins bonded together that compose the double helix strands of DNA - over and over. The length of the stutter varies widely among individuals (hence “variable number”). One’s individual genome might repeat a certain VNTR thirty times; another might repeat it hundreds of times. Individuals could be distinguished Jeffreys realized, according to the length of their VNTRs” (Cole 289).

and Winter 205).

While the first applications for DNA typing were in establishing paternity in immigration cases in the United Kingdom, the case that put DNA typing in the spotlight involved a murder and rape investigation (Cole 287). Without any leads, police contacted Jeffreys with the hope that his technique of DNA typing could help solve the case. From material recovered from the victims' bodies, a single DNA profile was produced. The profile permitted the exoneration of the lead suspect. The police then went about collecting 'voluntary' samples from 4,000 men in the town.²⁴ This first DNA 'sweep' failed to yield a match, but eventually a suspect, Colin Pitchfork, who evaded testing, was found to have a profile that matched. The sweep did not find Pitchfork directly but succeeded in flushing him out (Cole 292). There have been a number of DNA sweeps since throughout the world (including Canada).

Like the West case, the Pitchfork case highlighted an identification technique which promised to identify otherwise undetectable criminals. However, the claim made by Jeffreys and others differed from that made by the dactyloscopers in that it was probabilistic rather than absolute. As Cole explains,

“genetic identification is more like the other forensic sciences, which frame their conclusion in terms of probabilities, than like fingerprinting, which frames its argument in terms of uniqueness and absolute certainty” (290).

Geneticists quietly abandoned the term 'genetic fingerprinting' in favour of more measured terms like 'DNA typing' and 'DNA profiling', for fear that the former term

²⁴ The project became known locally as the 'blooding'.

misrepresented the nature of the genetic information (Cole 290). DNA typing constructs a profile from only a portion of a person's genome. Each person's DNA profile is not perfectly unique but the probability of two identical DNA profiles is infinitesimal. Matches between two DNA profiles are calculated through a statistical analysis of the frequency of an occurrence²⁵ of polymorphic alleles within "a given racially-based population" (Smith 1993: 7). This "racially-based population" is modelled using population genetics. Population genetics has been a major source of controversy surrounding DNA typing, it was the subject of intense debate in the early 1990s' in what have been called the "DNA wars" in the United States (McDonald 1998: 4).²⁶ The debate centred around the issue of "linkage equilibrium" or "random DNA inheritance", and the use of the product rule when calculating frequency estimates (McDonald 4). On the one hand, a group of scientists believed that the ethnic substructuring within 'racial' population groups could negate the linkage equilibrium and therefore erode the reliability of DNA analysis (McDonald 4). They claimed that the fact that certain population subgroups exhibit particular genetic traits provided support for the proposition that the inheritance of genetic traits is not random (McDonald 4). An opposing group of scientists, on the other hand, argued that genetic diversity is statistically insignificant and that any non-randomness was compensated by conservative frequency calculations

25 An allele is "an alternative form of a gene; any one of several mutational forms of a gene" (HGP, link to Kansas University Medical Centre glossary <http://www.kumc.edu/gec/glossnew.html>). Polymorphic refers to "the quality or state of being able to assume different forms: as" (Merriam-Webster Online Dictionary <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=polymorphic&x=17&y=12>).

26 For a precise synopsis of both sides of this debate please see (McDonald 4). In 1994, one of the main critics of the use of population statistics, Eric Lander, and Bruce Budowle of the FBI, published a letter in a scientific journal that declared an end to the 'DNA Wars' and declared that all of the issues that had previously prevented DNA evidence from being used in courts had been resolved through "testing, debate in the literature, and standards of quality control" (McDonald 5).

(McDonald 4). The American National Research Council Committee on DNA Technology and Forensic Science recommended that the “ceiling principle”, an “ultra conservative limit”, be used when calculating frequencies of allelic expressions in ‘racial’ populations until more testing could be conducted on population substructures.

The basis of this recommendation was criticized by scientists and lawyers (McDonald 4). The controversy was largely put to rest in 1996 when a new committee reversed the “ceiling principle” and fully supported DNA testing for individual identification purposes (McDonald 4). However, questions remain about such testing. Joseph and Winter note that there is much doubt that “standard racial and ethnic categories even work anymore” (212). Smith argues that this concern is reason enough to warrant large geographic population databases that would allow for the identification of population subgroups that have allelic frequencies that differ from the population norm (Smith 7). Smith notes for example that the Hispanic population in New York City would likely have different allelic frequencies than the Hispanic population of San Diego. The concerns about population genetics and their potential to discriminate, which have not been resolved through scientific testing, raise questions about the increased likelihood of false positive matches of members of particular ‘racial’ groups. The possibility of a false positive match is a significant problem in the criminal justice system, where certain ‘racial’ groups are consistently over represented. The likelihood of being convicted of a crime and the likelihood of a false positive match is greater for members of particular ‘racial’ groups. There results a “double bias” against members of these ‘racial’ groups.²⁷

27 There is a considerable amount of controversy in Canada around the adequacy of population databases

Without estimates of match probabilities, DNA typing would be of little use in cases where identity is in question. Despite the scientific conservatism that prevents scientists from drawing definitive conclusion about the relationship between DNA samples, juries and judges must ultimately determine culpability, a definitive conclusion. If the comparison population for the match is not entirely random, the probabilities put forward by forensic experts could be misleading. Even if the method for generating match probabilities was sound, a number of scholars argue that the way in which DNA match probability findings are presented raises questions about the impact of DNA typing on juries and judges. The Canadian legal community has recognised the problematic effect that DNA evidence has on finders of fact. The complexity of DNA match probability calculations renders them incomprehensible to the average finder of fact without expert ‘translation’. McDonald explains that, “the aura of infallibility that has surrounded this tool of identification since its inception has led countless juries in North America and elsewhere to convict criminal defendants despite, in some cases, a complete absence of corroborating evidence” (McDonald 3). Further, McDonald explains that DNA evidence’s reputation as the ‘ultimate identifier’ has had serious effects on the trials of individuals accused of sexual assaults. McDonald explains that, “the scarcity of credible explanations upon a finding of a “DNA match” has resulted in an increase in guilty pleas, particularly for crimes of sexual assault” (McDonald 3). One of the major controversies regarding the effect of DNA evidence on finders of fact has concerned the possibility that

being used to establish match probabilities, where the accused is a member of a First Nation (Smith 9).

finders of fact could be biased by the use of DNA match probability estimates.²⁸

While DNA typing was initially the focus of intense scientific and legal debate, its overall credibility has been reaffirmed and reproduced through expert narratives about its scientific objectivity. Recent challenges to the reliability of DNA evidence have been unsuccessful, to the point where the overall accuracy and reliability of DNA evidence is no longer in question (Chayko & Gulliver 1999: 296). Earlier controversies about the assumptions of the science of DNA typing have been displaced by the discourse concerning the need to standardize collection and testing procedures.

4. The Emergence of DNA data banking in Canada

For Canadians [the National DNA Data Bank] means safer streets and safer communities. For police and the courts it means saving considerable time and money on investigations and bringing stronger cases to trial. It means the DNA data bank is working for all of us in providing timely, reliable service to police agencies in every part of the country and eventually around the world (Annual Report of the NDDB 2002-2003).

The National DNA Data Bank is a shining example of the increasing importance of science and technology in modern law enforcement. Our complex, globalized world has created a whole new set of challenges for police. To stay ahead of the criminals, we must make better use of cutting edge science, such as forensic DNA (NDDB web site, retrieved 08/20/04).

28 One issue that has received considerable attention is the “prosecutor’s fallacy”, so named for its tendency to favour the prosecution in a criminal case. The ‘prosecutor’s fallacy’ is explained, by Richard Overstall, using the following two questions: 1.) “what is the probability that the defendant’s DNA profile will match the profile from the crime sample, if he or she is innocent? 2.) What is the probability that the defendant is innocent, given that his or her DNA profile matches the profile from the crime scene” (Overstall 1999: 3)? Low probability answer on the first question does not imply a low probability answer to the second, and while the first answer is often able to be calculated with some certainty by forensic experts, the second will depend on the assessment of the defendant’s guilt or innocence (Overstall 3). The first answer, in effect, presumes the defendant is innocent and questions the chance of getting a match. The second question assumes that the defendant’s genetic profile matches the sample taken from the crime scene and questions his or her innocence (Overstall 3).

DNA data banking has emerged as one of the most sought after policing technology in contemporary societies. As a growing number of these societies struggled to deal with a rising fear of crime, many, including Great Britain (pioneers of forensics), Canada, and the United States rushed to enact DNA data banking legislation (Kimmelman 2000: 213). The British National DNA Data Base (NDNAD) stands out as both the oldest and most “aggressive” DNA identification system (Kimmelman 213).

As of 2003, there were over two million profiles in the NDNAD. It is expected that the NDNAD will soon contain profiles from one third of all men aged 16 to 30 (Wade 1998). The NDNAD was created in 1995 by the *Criminal Justice and Public Order Act*, which authorizes police to collect “non-intimate” samples (such as hair follicles or mouth swabs)²⁹ from any person suspected of, about to be reported for, charged with, or convicted of, a recordable offence.³⁰ British authorities have justified the collection of samples from people suspected of committing less serious offences by pointing out the high number of matches they were making (Kimmelman 213). NDNAD’s high match rates have helped British police convince the government to require that non-intimate

29 A full legal definition of intimate and non-intimate samples is provided in section 58 of the *Criminal Justice and Public Order Act* 1994. An intimate sample includes bodily fluids like blood and semen, dental impressions, and swabs from body orifices other than the mouth. Non-intimate samples include hair samples (not pubic hairs), nail samples, a body swab including the mouth (but not from any other orifice), a saliva sample, or a footprint (or other bodily impression other than a part of the hand).

30 A “recordable offence” is any offence which may result in a prison sentence. People who are suspected of or convicted of having committed a crime are not the only ones whose profiles are data based. Police officers who join the service are now required to provide a DNA sample (Secretary of State for the Home Department, Mr. Bob Ainsworth, April 8, 2003, <http://www.parliament.the-stationery-office.co.uk/pa/cm200203/cmhansrd/vo030408/text/30408w24.htm>).

DNA samples be provided by anyone suspected of a recordable offence. This position has been inspired by the argument that "people who commit serious crime very often have convictions for petty crime in their history, so if you could get them on the data base early you may prevent serious crime," (Wade 1998: 1). The cost-efficiency of DNA data banking is also invoked in support of widening the circumstances in which people are obliged to provide DNA to the police. In addition to storing profiles from individuals who are never charged or who are acquitted, the NDNAD also includes samples from volunteers in DNA sweeps (Kimmelman 213). By June 1998, there had been over eighty such sweeps carried out in Britain, resulting in the solving of twenty-six crimes (Kimmelman 213).

DNA typing and data banking legislation in Canada has always enjoyed widespread public support.³¹ In the mid to late 1990s, representatives from across the political spectrum came together and passed DNA legislation very quickly despite concerns expressed by a number of public interest groups, including the National Council on the Status of Women. First, 1995 amendments to the *Criminal Code and the Youth Criminal Justice Act* set out the procedures by which, in the course of their investigations of certain designated offences, police could apply to a provincial court judge for DNA warrants to seize hair roots, saliva, mouth swabs and blood samples.³² Second, following two years of consultation with police associations, victims' rights groups, the Privacy Commissioner, bar associations, and women's groups, the *DNA Identification Act* was

31 In 1995, a national public opinion poll showed that 88 percent of Canadians thought that suspects should be forced to give DNA samples to the police (Thanh Ha 1995, A1).

32 These amendments can be found in the Canadian Criminal Code, Part XV Special Procedures and Powers, Forensic DNA Analysis: sections 487.04 through 487.09.

passed in 1998, creating the NDDB. Managed by the Royal Canadian Mounted Police, the NDDB is designed to work in conjunction with the DNA warrant scheme. The Act is based on the premise that “the protection of society and the administration of justice are well served by the early detection, arrest and conviction of offenders, which can be facilitated by the use of DNA profiles” (*DNA Identification Act*, S.C. 1998, c-37, s. 4a).

The stated purpose of the NDDB is to assist law enforcement agencies in solving crimes by: “(1) linking crimes together where there are no suspects, (2) helping to identify suspects, (3) eliminating suspects where there is no match between crime scene DNA and a DNA profile in the NDDB, and (4) determining whether a serial offender is involved” (NDDB Annual Report 2003-2004: 12). The Canadian government hopes that the NDDB “will result in more effective crime investigation, with the concomitant effect that there will be fewer trials, shorter trials, more guilty pleas, and a greater certainty, particularly with respect to murder trials that the right person has been convicted. Not to be forgotten in this analysis, is that all of these consequences also have the effect of saving the government money” (Parfett 2002: 38).

The NDDB has two main components, the Convicted Offender Index (COI) and the Crime Scene Index (CSI).³³ At present, there are at least 72,117 DNA profiles in the COI and 19,222 DNA profiles in the CSI (NDDB website, retrieved 02/9/05). The number of profiles in the COI and CSI has doubled in the past year (NDDB Annual Report 2003-

33 Not to be confused with the hit American television series, featuring a team of crime solving forensic scientists!

2004: 27).

The COI is an index containing tissue samples, DNA profiles and other information from offenders convicted of primary and secondary designated offences.³⁴ Primary designated offences are generally offences which involve serious violence and which are deemed to “pose a substantial risk to public safety” (Parfett 40), such as murder, sexual assault, and kidnapping. Primary designated offences also tend to be offences where DNA would likely either be left at or taken from crime scenes (Parfett 40). Secondary designated offences are less serious violence, such as death by criminal negligence, assault and arson. Julianne Parfett explains that:

Section 487.051 of the *Criminal Code* requires a court order before a sample can be taken from an offender. It provides that an order *must* be made where the offender is convicted of a primary designated offence and that an order *may* be made if the offender is convicted of a secondary designated offence. Even where the court must order that a sample be taken, it can decline to make the order if the offender shows that the taking of the sample would impact on his right [*sic*] to privacy or security in a way that would be grossly disproportionate to the public interest in protecting society. Where a secondary designated offence is involved, the court is required to look at a variety of factors relevant to both the offender and the public interest (40).³⁵

Police groups have been vocal advocates for expanding the list of designated offences to include more minor offences, arguing that those who commit these minor crimes are

34 Under the *National Defence Act*, there are also a number of military offences which require DNA data banking, such as: mutiny with violence, violence to person bringing material to force, and striking a superior officer or a subordinate.

35 A recent article in the *Globe and Mail*, suggests that judges are making use of their judicial discretion. Christie Blatchford, writes “Canadian judges across the country are regularly failing, or outright refusing to order those they convict to give DNA samples” (Blatchford, Christie, *Globe and Mail*, February 24, 2004: A9). Her article is critical of this trend, and suggests that Canada consider the advice of law enforcement officers, such as Toronto Police Chief, Julian Fantino and look to England for ways to ‘improve the system.’ For example, by allowing samples to be taken at the time of arrest and by expanding the list of designated offence to include a greater number of less serious offence (Blatchford 2004).

more likely to have committed more serious offences and storing their DNA profiles in the NDDB for less serious crimes would deter crime.³⁶ In the wake of September 11, 2001, the list of primary designated offences was expanded to include a range of terrorist activities.

In addition to the COI, the DNA Data Bank also stores samples from crime scenes. More specifically CSI contains DNA profiles created from samples retrieved:

- (a) at any place where a designated offence was committed;
- (b) on or within the body of the victim of a designated offence;
- (c) on anything worn or carried by the victim at the time when a designated offence was committed; or
- (d) on or within the body of any person or thing or at any place associated with the commission of a designated offence” (*DNA Identification Act*, S.C. 1998, c-37, s. 3).

Police may only submit samples to the NDDB if they know or believe that they belong to perpetrators (Parfett 41). No samples thought to belong to victims are included in the NDDB (Parfett 41). Each time a new sample is added to either the COI or to the CSI, a cross-reference is automatically made. In addition to being linked, the COI and the CSI are linked to an automated criminal conviction records retrieval system that contains fingerprints and other information from criminal records. The NDDB uses the Combined DNA Index System (CODIS), as does the FBI and ten other countries, which facilitates

36 This logic is expressed in the 2002-2003 Annual Report of the NDDB. The report emphasizes the importance of including samples from individuals convicted of, “breaking and entering”. They write, “evidence in other countries have shown that offenders who commit violent offences like murder and sexual assault, are also likely to have committed non-violent offences like break and enter. The NDDB’s ability to generate “hits” on the more serious offences will rise steadily as the number of samples for secondary offences are entered into the Convicted Offender Index” (NDDB Annual Report 2002-2003: .9). According to NDDB statistics, 15 percent of the matches for secondary designate offences also match the most serious kinds of primary designated offences, like murder and sexual assault (NDDB Annual Report 2002-2003: 27).

the exchange of DNA information. The RCMP has signed an agreement with Interpol regarding the sharing of DNA information for international criminal investigations.

Samples and information (such as DNA profiles) in both the COI and CSI are kept indefinitely.³⁷ Interestingly, samples from offenders who have been pardoned under the *Criminal Records Act* are kept separate from convicted offender profiles and are not subject to forensic analysis. Though there was considerable debate as to whether or not original biological samples should be destroyed once DNA profiles were generated, in the end, it was decided to keep biological samples because DNA technology was rapidly evolving. In fact, the *DNA Identification Act* specifies that forensic analysis can be done on stored bodily substances if it can be demonstrated that significant advances in testing technology have been made since the sample was originally taken.

The *DNA Identification Act* is retroactive. Samples may be taken from offenders already in custody if they have been declared a “dangerous offender”, been convicted of more than one murder, or been convicted of more than one sexual offence, for which they are in the process of serving at least a two year sentence.

The *DNA Identification Act* addresses privacy issues in two ways: by limiting access to

37 There are exceptions. Access to information in the COI will be “permanently removed” and biological samples destroyed if an individual’s conviction is quashed, or if he or she is acquitted or discharged, or if an individual is not convicted of another offence with one year of his or her absolute discharge or is not convicted of another offence during the three years following a conditional discharge. When a young person has a sample and profile in the COI, there are special provisions for destroying the sample and closing access to their information which adhere to the rules on access to records set out in the *Youth Criminal Justice Act*. Samples are destroyed and access to information closed when the last record of the offence for which the youth was required to submit material to the NDDB is destroyed in accordance with the law.

DNA profiles and other information in the NDDB to those law enforcement agencies approved by the RCMP Commissioner, and by limiting the use of samples to law enforcement purposes. There are criminal penalties for violating the terms of access to the NDDB. The NDDB also contains measures that reflect a concern for individual privacy. The first measure is methodological, and involves separating genetic and personal data. At the time a sample is taken from an offender, a bar code is assigned to the sample and from that point on the bar code is the sole identifier during the DNA analysis process. When samples arrive at the NDDB, the fingerprints on the sample collection forms and fingerprint identification forms are checked to ensure that they match. Once a confirmation of identity has been made, the DNA sample is separated from the fingerprint information. Once a DNA profile has been generated, a "flag" which states "DNA on known offender data bank" is added to the offender's file in the Criminal Name Index (CNI) at the Canadian Police Information Centre (CPIC). If a match is made, the bar code in question is provided by the NDDB to a RCMP identification unit and the identity of the individual is communicated to the appropriate police unit. If a match is made during an automatic search of the CSI, upon the addition of a new sample, this information may be used to obtain a DNA warrant.

The main priority set out for the NDDB in its latest Annual Report is to increase the population of both its COI and the CSI. As the report explains, "there is a simple equation at the core of this priority: as more samples enter the Data Bank, there is a corresponding increase in the number of convicted offender and crime scene hits (NDDB Annual Report 2003-2004: 9). Other objectives include increasing the use of automation

to boost the speed and volume of samples processed, and increasing the number of break and enter crime scene samples in the NDDB as “there is strong evidence linking the perpetrators of these crimes with other more serious offences such as murder or sexual assault ... DNA profiling that is used to solve break-and-enter investigations may link perpetrators to unsolved serious crimes” (NDDB Annual Report 2003-2004: 9). The statistical evidence provided by the NDDB does indeed show a correlation between the size of the COI and CSI and the number of hits. The statistics provided on the NDDB web site show that where the NDDB has been most useful has been in assisting the investigation of “break and entering with intent, committing offence or breaking out” (NDDB web site, stats, 02/7/05).

Conclusion

This chapter explored the history of DNA data banking. It began by presenting a brief socio-cultural history of modern human identification technology, highlighting recurring themes and preoccupations in the development of individual identification technologies. Secondly, the chapter provided a history of the ‘discovery’ of DNA and explored the role that popular representations of DNA have played in constructing its legitimacy as premium source of individual identity. Thirdly, it described the development of DNA typing, arguing that this technique has proven to be a crucial technique in the history of the development of individual identification technologies, making it possible for the first time, to visualise individual genetic identity. Lastly, this chapter examined the emergence of forensic DNA data banking, specifically the establishment of the Canadian National DNA Data Bank (NDDB).

In light of the historical context in which technologies, such as DNA data banking, have emerged, and the kinds of problems that they have been designed to address, we now turn to situate DNA data banking within the current trends in crime control.

CHAPTER 2: CONTROL STRATEGIES IN LATE MODERNITY

This chapter explores the context in which DNA data banking has emerged within the criminal justice systems of Western industrial societies. Crime control strategies in late modernity are highly varied, and

appear to have little stability, cycling rapidly through all alternatives from 'prison works', 'short sharp shocks' and 'boot camps', through 'community corrections' and 'reintegrative shaming' via 'therapeutic rehabilitation' to 'nothing works' and 'three strikes you're out' (Rose 2000: 321).

Understanding how DNA data banking fits within these diverse and often seemingly contradictory approaches to crime is facilitated when these approaches are viewed through a wide-angle, socio-historical lens. This chapter serves as that lens, bringing into focus some of the broader social, economic and political shifts that have taken place since modernity which have influenced contemporary crime control strategies. Beginning with the work of Foucault on the changing nature of power relations in modernity, this chapter highlights the particularly central role that surveillance has played as a technology of power. Drawing on recent analyses of surveillance by theorists such as Mark Poster, David Lyon, Irma van der Ploeg, William Staples, Kevin Haggerty, Richard Ericson and William Bogard this chapter builds on Foucault's conceptualization of surveillance and focuses on the evolution of surveillance in contemporary society. Risk, as a concept, which takes on intensified social and political significance in late modernity, is discussed and its relationship to contemporary surveillance is considered. Risk is shown to play a major role in shaping current crime control discourse and practice. The final section of this chapter identifies emerging trends in crime control from the work of scholars such as

David Garland, Malcolm Feeley, Jonathan Simon, David Shichor and David Cayley. These scholars have suggested that over the past 40 years, a ‘new penology’ has developed – one with new discourses, objectives and techniques. Risk plays a central role in this new penology, as discourses of clinical diagnosis and retributive justice are replaced with the language of probability and risk. These techniques designed to group and manage offenders as aggregates are used with increasing frequency (Garland 1996: 450). Yet while the new penology reflects a move towards a more distanced and managerial approach to crime, one that is preoccupied with internal efficiency and the use of actuarial methods to identify ‘risky’ groups, older approaches and discourses, such as those that focus on ‘dangerous’ individuals, persist. This chapter highlights some of the tensions between crime control strategies, and their visions of crime and ‘criminality’.

1. Roots of the Current Penal Order

Contemporary social theorists acknowledge that current crime control discourses and practices are rooted in the broader social, economic and political transformations that took place in the eighteenth and nineteenth centuries. One of the most influential studies of the effects that these transformations have had on the penal order is Foucault’s *Discipline and Punish*. Foucault begins *Discipline and Punish* with a description of the public torture and execution of Robert Damiens, a man found guilty of regicide in 1757. It is a gruesome spectacle, one that seems to go on interminably, and which culminates in the quartering of Damiens. The revulsion that the description evokes in the reader sets up Foucault’s first point, namely, that we now view public execution as a cruel, excessive

and archaic form of punishment. Foucault explains that:

at the beginning of the nineteenth century ... the great spectacle of physical punishment disappeared; the tortured body was avoided; the theatrical representation of pain was excluded from punishment. The age of sobriety in punishment has begun. By 1830-48, public executions, precluded by torture, had almost entirely disappeared (Foucault 1979: 11).

Foucault is critical of the assumption that the disappearance of public torture is a sign of a more humane approach to punishment. Rather, he sees the disappearance of public torture as a symptom of much larger transformations in the form and function of power in modernity. For Foucault, the move away from public execution was indicative of the decline of sovereign power, which claimed the right to punish acts which offended the body of the king, through the use of marks of ritual vengeance that it applied to the body of the condemned. In the nineteenth century he argues, the economy of power changes and a new 'political economy' of the body emerged (Foucault 1979: 25). The old economy of power had been ill equipped to handle the economic, juridico-political and scientific changes taking place in the eighteenth century, including the increase in population size and mobility, and the growth and complexity of the capitalist mode of production (Foucault 1979: 218). In this context, there was a strong push to: 1) exercise power for the lowest possible cost, 2) bring the effects of this social power to the maximum intensity and 3) to increase the docility and utility of all elements in the system (Foucault 1979: 218). In 'disciplinary societies' the power to punish is carried out not in the name of the king but in the name of 'society'; crimes were those acts that offended the 'social body'.

Foucault's complex portrait of power relations since the nineteenth century marked a

departure from the traditional structuralist approaches to social control and penology that focused on the roles which institutions played in repressing and controlling individuals. New forms of power require new analytic approaches, he argues, which focus not only on the repressive effects of power and its technologies, but also on the productive effects of such power relations (Foucault 1979: 24).

Foucault explored the confluence of the history of human sciences and the history of penal law, which have given rise to two interlinked projects, namely the “humanization” of the penal system, and the increasingly detailed knowledge of “man” (Foucault 1979: 24). Foucault argues:

beneath the increasing leniency of punishment, then, one may map a displacement of its point of application; and through this displacement, a whole field of recent objects, a whole new system of truth as a mass of roles hitherto unknown in the exercise of criminal justice. A corpus of knowledge, techniques, ‘scientific’ discourses is formed and becomes entangled with the practice of the power to punish (22-23).

By exploring penal leniency as a “technique of power” Foucault sought to discover how “man, the soul, the normal and abnormal individual” have come to “duplicate crime as object of penal intervention” and what processes, what “specific mode of subjection” enabled the study of “man” as a scientific object (Foucault 1979: 24). Foucault saw the spectacle of public execution being replaced with a series of techniques designed to gather knowledge about the ‘individual’. The aim of these new disciplinary technologies is not to punish the bodies of those they target, but rather to tame, harness, and multiply the productive forces of their bodies in order to produce ‘individuals’. Foucault studied the ways in which specific “technologies”, whether administrative (such as prison

schedules or examinations) or architectural (such as Bentham's design of the panopticon and its various incarnations) provided the requisite access points or conduits for the spread of a new type of power, which he calls "disciplinary power". The panopticon³⁸ epitomizes this form of power. Normalizing³⁹ judgement and hierarchical observation come together in the design of the panopticon to produce the 'normalizing gaze'. Through its architectural arrangement of space, light and bodies, the panopticon is able to induce in the inmate, patient, soldier or pupil (for this model was not only used for prisons) "a state of consciousness and permanent visibility that assures the permanent functioning of power" (Foucault 1979: 201). In the panopticon the operation of power becomes "automatic" as the persons enclosed become aware of their position within this visible order (internalizing the 'normalizing gaze'). In this schema it is surveillance, not torture, which is the technology through which power operates.

38 The panopticon was first conceptualized by Jeremy Bentham in 1791 in a printed collection of letters he had written to a friend, to which he gave the very long but informative title, *Panopticon: or, The Inspection-House: Containing an Idea of a New Principle of Construction Applicable to any Sort of Establishment, in Which Persons of any Description are to be Kept Under Inspection; and Particular to Penitentiary-Houses, Prisons, Poor-Houses, Lazarettos; Houses of Industry, Manufactories, Hospitals, Work-Houses, Mad-Houses, and Schools with A Plan of Management Adapted to the Principle* (Staples 2001: 28). In it he detailed an architectural design for a building with a central watch tower (containing the "inspector's lodge"), surrounded in a circular form, by cells that had two windows, one at the back to let light in and one in the front to allow the inspectors in the central watch tower to see into the cells. Prisoners in the cells could be observed at any time, and while this was not always the case, the design of the building made it impossible for the prisoners to know when they were being observed. Although it was never adopted exactly as Bentham had designed it many of the panopticon's design elements were incorporated into buildings and the concept generated considerable discussion about new techniques for social control (Staples 2001: 29).

39 Foucault argued in disciplinary power, the distinction between crime and abnormality is blurred. He explains that,

a certain significant generality moved between the least irregularity and the greatest crime; it was no longer the offence, the attack on the common interest, it was the departure from the norm, the anomaly; it was this that haunted the school, the court, the asylum or the prison ... You will end up in the convict-ship, the slightest indiscipline seems to say, and the harshest of prisons say to the prisoners condemned to life. I shall note the slightest irregularity in your conduct (Foucault 1979: 299).

2. Surveillance as a Technology of Power

Our society is one not of spectacle, but of surveillance; under the surface of images, one invests bodies in depth; behind the great abstraction of exchange, there continues the meticulous, concrete training of useful forces; the circuits of communication are the supports of an accumulation and a centralization of knowledge; the play of signs defines the anchorages of power; it is not that the beautiful totality of the individual is amputated, repressed, altered by our social order, it is rather that the individual is carefully fabricated in it, according to a whole technique of forces and bodies. (Foucault 1979: 217).

Foucault's observations about the emergence of surveillance as a technique of disciplinary power in *Discipline and Punish* remain relevant today. Surveillance studies theorists make ready use of Foucault's concepts to explore the way in which power operates in contemporary societies. These theorists develop analyses which are, on the one hand, conscious of surveillance's modern legacy and, on the other hand, reflective of the particularities of its late-modern or post-modern milieu. In my analysis of these theorists, four themes emerge in the surveillance studies literature. These are 1) the 'everyday' nature of surveillance, 2) the body, 3) pleasure and desire, and 4) simulation. Each of the themes point to the changing nature of surveillance and will be drawn upon to develop an understanding of the relationship between surveillance and DNA data banking in the final chapter of the thesis.

Surveillance and the 'Everyday'

A number of surveillance studies theorists situate surveillance practices along a

continuum, ranging from the 'soft', which includes practices such as electronically tagging merchandise and customer data bases, to the 'hard', which includes practices including drug and alcohol testing. Increasingly, however, people encounter surveillance practices of all types in their everyday lives. Surveillance is no longer confined to disciplinary institutions, like prisons, mental asylums or reformatories. Rather, surveillance is "localized" in (Staples 1997) or "designed in" to the flows of everyday life (Rose 2000). Foucault anticipated the generalization of surveillance in *Discipline and Punish*, in which he associated this process with the "swarming of disciplinary mechanisms" (211-212). He associated the "de-institutionalization" of disciplinary mechanisms with the emergence of disciplinary society (Foucault 1979: 211-212). While we still rely on 'social quarantine' as a means of social control in late modernity (incarceration is still a major form of control), there is evidence that the "carceral web" is widening, raising questions about the operation of power in late modernity. Surveillance, as a technology, plays a key role in extending disciplinary power.

Surveillance studies theorists have questioned the extent to which George Orwell's 'Big Brother' and Foucault's 'panopticon' metaphors capture the contemporary developments in surveillance (Haggerty & Ericson 2000, Lyon 2001b, Staples 1997). Lyon has argued that, "both the Weberian-Orwellian and the Foucauldian perspectives depend on a fairly centralised understanding of surveillance" (Lyon 2001b: 1.15). Lyon writes,

No central watchtower dominates the social landscape, and few people feel constrained, let alone controlled, by surveillance regimes. Most of the time, most people cheerfully comply with requests to show their identification, or acknowledge that they divulge personal data to companies, believing that the benefits are greater than the costs, or that if they have done nothing wrong, they

have nothing to hide or to fear. (Lyon 8-9).

He sees this kind of compliance with surveillance systems as a form of “social orchestration” (Lyon 7). He suggests that surveillance can be understood as a kind of social performance. Surveillance works if the ‘social players’ play their parts, that is, if they willingly comply with the surveillance systems that they interact with everyday. In contemporary “surveillance societies” (as Lyon calls them) willing and continuous participation in everyday surveillance systems is key to social participation.

Poster associates this willing participation in our own surveillance with “the reorganization of everyday life from the 1920s onwards which saw individuals increasingly constituted as consumers and as participants in their own discipline and surveillance” (Poster 1990: 93). This spread of consumerist activities was not simply an economic change but also a political one, part of “the reciprocal control of the population by itself” (Poster 93). Poster argues that

the rough, dirty, illiterate, unruly swarms of nineteenth-century cities, the “dangerous classes” have been replaced in part by a fashion-conscious, intelligent, educated and well behaved populace... The populace has been disciplined to surveillance and to participating in the process (Poster 91-93).

Poster extends Foucault’s analysis of the panopticon to make sense of the way in which databases work as technologies of power within the current postmodern mode of information. Poster argues that “today’s “circuits of communication” and the data bases they generate constitute a Superpanopticon, a system of surveillance without walls, windows, towers or guards” (Poster 93). Digitally encoding all information in the data base and using strict categories or ‘fields’ for ordering the information allows databases

to “constitute individuals by manipulating relationships between bits of information” (Poster 96). While the information in the database produces a simplified “profile” of an individual, it is not a reductive technology. Ultimately databases seek to generate the individual through the creation of a ‘data double’. Poster explains that databases need to be seen:

not as an invasion of privacy, as a threat to a centred individual, but as the multiplication of the individual, the constitution of an additional self, one that may be acted upon to the detriment of the “real” self without the “real” self ever being aware of what is happening (Poster 97-98).

Kevin Haggerty and Richard Ericson acknowledge that while Orwell’s ‘Big Brother’ and Foucault’s ‘panopticon’ have drawn our attention to important features of surveillance, they have been unable to capture some of its more recent dynamics. Formerly discrete surveillance systems are converging, and in this context, Haggerty and Ericson suggest that contemporary surveillance systems can best be conceptualized as “assemblages” (Haggerty & Ericson 2000: 3). Drawing on the work of Gilles Deleuze and Felix Guattari, they explain that

‘assemblages’ consist of a ‘multiplicity of heterogeneous objects whose unity comes solely from the fact that these items function together, that they work together as a functional entity’. They comprise of discrete flows of an essentially limitless range of other phenomena such as people, signs, chemicals, knowledge and institutions (Haggerty & Ericson 3).

The structure of the ‘surveillant assemblage’ mirrors the root structure of rhizomic plants. Unlike arborescent plants, which have deep root structures and which grow out from a central trunk, rhizomic plants ‘grow in surface extensions through interconnected vertical root systems’ (Haggerty & Ericson 7). The expansive and regenerative properties of the ‘surveillant assemblage’ resemble rhizomatic systems (Haggerty & Ericson: 7).

Bodies

The body is an important theme for surveillance studies scholars. These scholars have pointed to the way in which new surveillance discourses and practices are changing the relationships between knowledge, power and bodies. Surveillance scholars differ in their analyses of the role that bodies play within the late modern political economy of power. For Lyon, “the rise of surveillance societies has everything to do with disappearing bodies” (Lyon 15). He argues that the disappearance of bodies is fundamentally a modern problem that is a consequence of our increasingly disembodied social relations and the growth of communication and information technologies (Lyon 15). He argues that

to compensate for the growing difficulties of embodied surveillance that watches visible bodies, social agencies have arisen that keep track of personal traces. They try to hold together or at least coordinate that which is now fragmented, ephemeral, almost inconsequential. These agencies use surveillance practices as a means of making visible that which is being lost from sight; our bodies and the bodies of those with whom we relate (Lyon 15).

While Lyon acknowledges that the social world is not fully disembodied, he argues that communication and information technologies have been multiplying electronically mediated interactions and have had the effect of separating bodies from personal experience (Lyon 15). Combined with “fresh configurations” of ‘time-space’ and increased mobility a surveillance situation has developed wherein “traces rather than tradition are what connects body with place” (Lyon 19). This situation also results in a

blurring of the boundaries between ‘public’ and ‘private’, between the inside and outside of the body (Lyon 19).

While Lyon argues that the ‘digital personas’ are increasingly being used for surveillance purposes rather than embodied persons, and that ‘bodies are disappearing’, other surveillance studies scholars have argued that rather than displacing the body, surveillance systems are involved in re-structuring the relationship between bodies, knowledge and power by placing a greater emphasis on the former. Staples argues that rather than backing away from the body, there is an obsession with developing technologies in late modern societies that can reveal the body’s inner truth. Staples explains that:

today, there is a proliferation of postmodern disciplinary technologies that are founded on deriving knowledge from the body... it is no longer considered effective or efficient to simply gaze at the body - or to train it in hopes of rendering it docile – rather, we must surveil its inner evidence and secrets. I call this a “pornography of the self” because it is an obscene gaze which attempts to lay bare an individual’s “true” identity” (Staples 92-93).

Mandatory drug and alcohol testing programs, polygraph tests, the “plethysmograph” (which is designed to measure sexual arousal), mandatory HIV testing, biometric identification, genetic testing, information data banking, and workplace health screening programs are involved in producing the “pornography of the self” (Staples 121).

Van der Ploeg takes the issue of the body’s position within surveillance even further, arguing that ‘biometric’ technologies for identification and verification of individual identities raise questions about the “mutual reinforcing and constituting relations between

technologies, bodies, and identities” (van der Ploeg 1999: 1). She argues that biometrics raise questions about “how bodies will be related to identity, and what the normative and political ramifications of this coupling will be” (van der Ploeg 1999: 1). Questioning this relationship between bodies and identities involves questioning the assumption that there is an unproblematic distinction between ‘the body itself’ and information about or digital representations of same (van der Ploeg 1999: 2). Van der Ploeg argues that the growing use of biometrics, such as fingerprinting, for criminal identification, passenger identification, for identifying citizens, illegal migrants, is connected to the emergence of a new body ontology, one which redefines the body as information (van der Ploeg 2002). Biometric technologies, like fingerprinting, assume that identity is fixed, something that can be ‘read’ from the body (van der Ploeg 1999, 1). Van der Ploeg explains that

unlike the body rendered *knowable* in the biomedical sciences, biometrics generates a *readable* body: it transforms the body’s surfaces and characteristics into digital codes and ciphers to be ‘read’ by a machine... thus transformed into readable “text”, the meaning and significance of the biometric body will be contingent upon “context”, and relations established with other “texts” (van der Ploeg: 1999, 1).

Rather than see biometrics as technologies that read existing identities from bodies, van der Ploeg suggests that biometric technologies may be better understood as “ways to establish identity, in the sense that ‘identity’ becomes that which results from these efforts” (van der Ploeg 1999: 300).

Somewhere in between the ideas of van der Ploeg and Lyon, lie those of Haggerty and Ericson. Haggerty and Ericson suggest that contemporary surveillance practices and discourses are producing a new kind of body. They argue that rather than approach the

body as a single entity to be punished or moulded, the 'surveillant assemblage' approaches the body as something to be 'known'. Haggerty and Ericson argue that,

The surveillant assemblage is a visualizing device that brings into the visual register a host of heretofore opaque flows of auditory, scent, chemical, visual, ultraviolet and informational stimuli. Much of the visualization pertains to the human body, and is beyond our normal range of perceptions (Haggerty & Ericson 5-6).

By abstracting bodies from their territorial settings and sorting them into a series of discrete "flows" the surveillant assemblage seeks to make the body into information so that it is more mobile and more easily comparable (Haggerty & Ericson 5). Consequently, the body monitored by the surveillance assemblage is increasingly a cyborg one "a flesh-technology information amalgam" (Haggerty & Ericson 5). While the surveillant assemblage is directed at cyborg like, combinations of bodies and technologies, it is producing a new type of individual, one which is entirely composed of information, the 'data double' (Haggerty & Ericson: 7). Like Poster, Haggerty and Ericson argue that, contemporary surveillance practices multiply the individual, generating additional 'selves' which are, "differentiated according to how useful they are in allowing institutions to make discriminations among populations" (7).

Pleasure and Desire

Surveillance studies theorists argue that while surveillance is definitely about control, it is also about pleasure and desire. Lyon has argued that surveillance both enables and constrains (Lyon 3). He suggests that the growing density of surveillance practices in everyday life "is the outcome of the complex ways in which we structure our political

and economic relationships in societies that value mobility, speed, security and consumer freedom” (Lyon 2). As a result, for example, while biometric⁴⁰ identifiers are used to make social services (employment insurance, health care, welfare, etc.) more efficient by minimizing/ preventing “double dipping”, they also promise to make air travel more convenient (van der Ploeg 1999; Lyon 2001). Surveillance technologies are also about privilege. The ‘double face’ of surveillance is also particularly visible in the development of ‘national identity’ or ‘citizenship’ cards. These controversial cards promise to both limit the flow of illegal immigrant or refugees and make the process of exercising citizenship rights more convenient for ‘legitimate citizens’(van der Ploeg 1999; Lyon 2001). Rather than having to carry multiple identification documents like a birth certificate, a driver’s license, and a passport, identity can be verified through a single card with a biometric identifier. The citizen’s body thus becomes implicated in the distribution of benefits, services, and rights (van der Ploeg 1999; Lyon 2001). The cards themselves however may just be familiar intermediary technologies, for once biometric identifiers are stored in data bases – things could get even more ‘convenient’ – rather than scanning the ID card to verify identity, the body itself could be scanned.

Desire and seduction are themes explored by other surveillance studies theorists. Staples has suggested that there is a seductive ‘courtship’ that accompanies the merging of bodies and technologies designed to extract the “truth” from bodies (123). Desire plays an important role in the construction of the ‘surveillant assemblage’. Haggerty and Ericson

40 Biometric technology generally “involves the collection with a sensing device of digital representations of physiological features unique to an individual, like a fingerprint, pattern of the iris, the retina, the veins of e.g. a hand, physiognomic features, shape of the hand or voicepatterns; they may also include typical behavioral patterns like typing or writing a signature” (van der Ploeg 1999: 1).

argue that desire secures the flows that make up assemblages, securing them and giving them their structure (Haggerty & Ericson 3). The theme of desire is also present in Poster's analysis of surveillance. His work draws attention to the political and economic shifts whereby people have become increasingly as constituted as consumers, who fuelled by their consumptive desires become increasingly active participants in their own surveillance (Poster 1990).

Simulation

The relationship between surveillance and pleasure is of particular interest to simulation theorists including William Bogard who argues that while surveillance is most often analyzed as a social technology of power, it also needs to be understood as a "fantasy of power" (Bogard 8). Simulation is the "panoptic imaginary" (Bogard 19). Bogard explains that:

we are dealing first of all with a hyperpanoptics – instead of architectures of control wall and floors and viewing locations, we need to talk about cyberarchitectures, digital structures, and environments, instead of ordering space and time, virtual space-time and the coding conventions for displaying them onscreen; instead of visibilities and temporal series, about virtual light, programmed images, and cyber loops (Bogard 19).

Surveillance is simulated in telematic societies;⁴¹ it has become hyperreal. The hyperreal is a 'sanitized' (Bogard 41) supped-up version of the real, one which tries to redefine the 'real' exclusively in relation to the hyperreal (Baudrillard 4). Unlike dissimulation,⁴²

41 Telematic societies are societies which seek to solve the problem of perceptual control at a distance, using technologies which try to transmit information instantaneously (Bogard 9).

42 Baudrillard explains that, "to dissimulate is to feign not to have what one has. To simulate is to feign to have what one hasn't. One implies a presence, the other an absence" (Baudrillard 5).

simulation undermines the 'reality principle', destabilizing and challenging the distinctions between 'true and 'false, 'real' and 'imaginary' (Baudrillard 5). Baudrillard argues that

the real is produced from miniaturized units, from matrices, memory banks and command models – and with these it can be reproduced an indefinite amount of times. It no longer has to be rational, since it is no longer measured against some ideal or negative instance. It is nothing more than operational. In fact since it is no longer enveloped by an imaginary, it is no longer real at all. It is hyperreal, the product of an irradiating synthesis of combinatory models in a hyperspace without atmosphere (3).

In 'telematic societies' (where simulation is the reigning scheme of appearance), "the real is not only that which can be reproduced, but that which is always reproduced - the "hyperreal" (Baudrillard 146). Bogard argues that both surveillance and simulation are strategies of the 'real' but "while simulation masks the absence of the real, surveillance unmasks its presence" (Bogard 19-20). Bogard explains that "if surveillance is about the real, simulation, in the end is about the hyperreal. Surveillance uncovers, but simulation, we could say is the cover. Surveillance always looks through or behind something; simulation is the projection onto something" (Bogard 22). Rather than analyze surveillance and simulation in opposition, Bogard argues that simulation is the fantasy that drives contemporary surveillance technology (Bogard 9). He argues that

Surveillance without limits is exactly what simulation is all about. Simulation, that is, is a way of satisfying a wish to see everything, and to see it in advance, therefore both as something present (or anticipate) and already over (past). What sells simulation technology today is the seductive claim that any image is observable, that any event is programmable, and this, in a sense, foreseeable (once you discover the algorithm of a video game, you can master it, the game's "future" becomes clear; once you decipher the secret of the genetic code, the body's "destiny" is transparent and securable) (Bogard 15-16).

Simulated surveillance is a 'paradox of control', "it is a fantasy of absolute control and

the absence of control at the same time, total control and the end (perfection, cancellation) of control” (Bogard 22). Simulation theory assists in understanding the direction that surveillance is taking today, “a movement that is more about the perfection and totalizing of existing surveillance technologies than some kind of radical break in their historical development” (Bogard 22).

One field where simulation has become a central component of surveillance is crime control. Both public and private institutions rely on surveillance technologies that produce simulated and often electronically digitized images/representations of individuals, groups or places. These technologies often do not require an actual human observer, CCTV cameras, for example are commonly used to capture images ‘automatically’ (they may be on all the time or they may be triggered by movement or some other stimulus) and without being seen. CCTV is a classic example of what Williams and Johnson define as ‘preconstructive’ surveillance.⁴³ Other kinds of surveillance techniques exist which are ‘reconstructive’ that is they, “seek to [retroactively] capture information that will facilitate the identification of individuals whose bodily presence and actions were invisible to any direct observation technologies in the place and at the time they happened” (Williams & Johnson 2004: 4). Techniques that make visible bodily traces such as fingerprints or blood are ‘reconstructive’ forms of surveillance (Williams & Johnson 2004). The power of either ‘preconstructive’ or ‘reconstructive’ surveillance technology, “lies in closing the gap between initial

43 ‘Preconstructive’ surveillance, Williams and Johnson argue, “gathers information about any member of a population of individuals whose bodily actions and appearances are observed and recorded by their operators in the course of their accomplishment” (Williams and Johnson 2004).

observation and subsequent identification. In other words, to close the circuit of surveillance so that identification follows from observation” (Williams and Johnson: 6). ‘Ideal’ surveillance technologies produce identity in much the same way as simulation produces the ‘real’, via the hyperreal. Identity in closed surveillance systems is hyperreal.

3. Risk

The development of simulation based surveillance technologies is fuelled in part by the growing preoccupation with ‘risk’ in late modernity. Risk has become an important ‘object’ of study in virtually all academic and technical fields. From criminology to computer science, specialized areas of research and technology now exist to study risk, such as risk analysis and risk management. In most academic and technical fields risk is seen from a realist perspective and is managed using what Lupton refers to as a ‘techno-scientific’ approach. Fields such as, engineering, statistics, actuarial science, psychology, epidemiology and economics, all adopt techno-scientific understandings of risk that combine the notion of danger with that of calculability. In these fields risk is defined as, “the product of the probability and consequences (magnitude and severity) of an adverse event” (Lupton 1999: 17-18 quoting Bradbury (1989)). Risk is taken to be a social fact in the techno-scientific fields and debates in these fields tend to focus on the accuracy with which risk can be identified, calculated, and measured (Lupton 18). As a result the nature of risks is taken for granted, and the ways in which risks are socially constructed are not considered (Lupton 18). Lupton explains that, “risks according to this model, are pre-

existing in nature and in principle are able to be identified through scientific measurement and calculation and controlled using this knowledge” (Lupton 18). In cognitive science (the most prevalent social scientific approach) the focus is on developing a psychological model (psychometric) of people’s behavioural and cognitive responses to risk (Lupton 19). Risk, in this literature is taken as an objective and calculable fact, while people’s perceptions and reactions to these risks are seen as subjective (Lupton 19). Risk calculations, carried out by experts, are understood as ‘objective truths’ and the assumptions underlying the definition and measurement of these risks are taken for granted (Lupton 19). Techno-scientific approaches to risk are based on a particular concept of the individual. Psychometric analyses of risk are based on a theory of rational behaviour which posits an “ideal rational investigator” and a “rational, risk perceiving agent” (Lupton 21). Lupton explains that, “they represent the individual as an information-processing unit, taking in information about risk and dealing with it in certain ways that are typically represented as limited or biased” (Lupton 21).

Since the 1990s, theorists in the social sciences have also been looking beyond the ‘techno-scientific’ approaches to risk and have been studying the increasing role that risk is playing in maintaining social order. One of the most influential of these studies has been that of Ulrich Beck. Beck argues that risk has become such a powerful organizing rationale in late modernity that contemporary Western societies can increasingly be characterized as “risk societies” (Beck 1992: 2). A risk society is characterized by a shift from the logic of wealth distribution to the logic of risk distribution (Beck 15). In risk society the problem becomes: “how can the risks and hazards systematically produced as

part of modernization be prevented, minimized, dramatized, or channelled” (Beck 16)? Beck defines risk as, “a systematic way of dealing with hazards and insecurities induced and introduced by modernization itself” (Beck 16).

The ontological insecurity that accompanied the loss of traditional means of understanding the world at the end of the Twentieth Century, together with the dramatic changes in modes of living, have been linked to the increased concern with security (Pratt: 2001: 108). Notably, Pratt points out that since World War Two, there has been a heightened concern with the protection of populations (Pratt 108). The preoccupation with security in late (reflexive) modernity has been linked by risk society theorists to two parallel trends: individualization and responsibilization. As fate and fatalism were substituted with notions of responsibility and choice, individuals were increasingly conceived of as “choosing agents” (Lupton 4). The individual then becomes the loci for choice and responsibility. Lupton explains that, “we now think of ourselves as exercising a high level of control over the extent to which we expose ourselves to danger and therefore as culpable for becoming prey to risk” (4). In this sense, risk is closely associated with the management and production of human responsibility (Lupton 4).

Like Beck and other ‘risk society’ theorists, governmentality theorists like Francois Ewald, Pat O’Malley, and others, draw attention to the increased emphasis on individual responsibility in contemporary Western societies. This focus on individual responsibility is part of what they have termed the “new prudentialism”. This new prudentialism, they argue, is playing an increasingly important role in current governmental discourse, as

older notions such as welfare and social insurance are replaced by strategies for individual risk management (Lupton 5). However, while responsibility for risk management in this context is often highly individualized, risk always implies population. Indeed, Ewald explains that, “risk only becomes something calculable when it is spread over a population” (Ewald 1991: 203). Risk and insurance are intimately interwoven in modernity, Ewald explains, arguing that, “risk is a neologism of insurance” (Ewald 198). Ewald argues that insurance, as a means of calculating and managing risk, is a practice which embodies a powerful type of rationality (Ewald 200). He explains that, “as a technology of risk, insurance is first and foremost a schema of rationality, a way of breaking down, rearranging, ordering certain elements of reality” (Ewald 199).

Governmentality scholars tend to take a strong constructivist approach to risk. This is reflected in the conceptualization of risk offered by Ewald, who writes that “nothing is a risk in itself; there is no risk in reality. But on the other hand, anything can be a risk; it all depends on how one analyzes the danger, considers the event” (Ewald 199). Rather than investigating the objective nature of risk itself, governmentality theorists explore, “the forms of knowledge, dominant discourses and expert techniques that serve to render risk calculable and knowable, effectively bringing it into being” (Lupton 6). For these theorists, “risk is understood as one of the heterogeneous governmental strategies of discipline by which populations and individuals are monitored and managed so as to best meet the goals of democratic humanism” (Lupton 4). The underlying narratives of self-governance that prevail in dominant risk discourses are increasingly mediated and directed through channels of expert knowledge, governmentality theorists argue. These

networks of expert knowledge are closely tied to the emergence of modern systems of liberal government, which privilege technologies of self-discipline as the favoured form of social control (Lupton 4).

4. Crime Control Strategies in Late Modernity

Given the role that risk appears to be playing in maintaining the social order in late modern societies, it is not surprising that risk figures centrally in the field of crime control. In late modernity, crime is seen as a risk to be negotiated and managed (Garland 446). Despite the fact that crime has an uneven social distribution, and that high risk victimization is very much a pocketed, concentrated phenomenon, crime is widely experienced as a prominent fact of modern life (Garland 446). For most people, crime is no longer an aberration or an unexpected, abnormal event. Instead, the threat of crime has become a routine part of everyday risk to be assessed and managed (Garland 446). Garland argues that the perceived normality of high crime rates and the growing distrust of the ability of criminal justice agencies to deal with crime has led to the erosion of the sovereign states' ability to provide security (Garland 448).⁴⁴

In light of this predicament, the nation state is qualifying and relinquishing its exclusive

⁴⁴ The legitimacy of the early modern European nation states was secured in part by their exclusive control of legitimate and organized violence (Garland 448). Over time this resulted in the pacification of the population and the reinforcement of the states' authority (Garland 448). The disintegration of the myth of the sovereign state coincides with its inability to provide the order and security that has come to be expected (Garland 449).

role as the provider of security and crime control notwithstanding the political costs of such a venture. The state's attempt to deal with this predicament has resulted in "a remarkably volatile and ambivalent pattern of policy development" (Garland 449). Garland suggests that the state has responded to this 'crisis of penal modernism' in two ways. On the one hand, the state has developed adaptive strategies to innovatively deal with this crisis, and, on the other hand, the state has systematically denied its existence by availing itself of the myth of sovereignty (Garland 449).

Adaptive Strategies: 'Governing Crime'

While conspicuously high incarceration rates in Western societies are clear evidence of the ongoing centrality of strategies of 'social quarantine' to the current penal order (Cayley 1998, Garland 1998, Snider 1998), recent developments suggest that crime control is also evolving along different lines (Garland 450). Garland suggests that recent developments, which seek to adapt the penal project to the conditions of late modernity, can be described as new modes of "governing crime" (Garland 450). Garland argues that these adaptive responses are visible in a new criminological discourse that has found favour in the United Kingdom since the mid-1970s. This new genre is made up of "a set of cognate theoretical frameworks, including rational choice theory, routine activity theory, crime as opportunity and situational crime prevention theory", which Garland collectively describes as "the new criminologies of everyday life" (Garland 450). These criminologies assume that crime is a normal feature of modern societies (Garland 450). Instead of seeing crime as pathological or abnormal, it is seen as continuous with a broad range of social interaction (Garland 450). In this new conceptualization, crime becomes

“a risk to be calculated or an accident to be avoided, rather than a moral aberration which needs to be specially explained” (Garland 451).

Government policy makers have begun to adopt this approach in order to develop new techniques for dealing with crime. These new programmes take for granted the ineffectualness of the state and enlist the assistance of civil society in dealing with crime (Garland 451). Garland writes that “the new programs are directed not towards individual offenders, but towards the conduct of potential victims, to vulnerable situations, and to those routines of everyday life which create criminal opportunities as an unintended byproduct” (451). This focus on ‘supply side criminology’ has meant that:

instead of relying upon the threat of deterrent sentences, or the dubious ability of the police to catch villains, it set about replacing cash with credit cards, building locks into the steering columns of cars, employing parking lot supervisors and city centre close circuit TV cameras, coordinating the closing times of rival discos, laying on late night buses and special routes to and from football games, advising retailers about security, encouraging local authorities to co-ordinate the various agencies that deal with crime and, of course, encouraging citizens to set up Neighborhood Watch schemes (Garland 451).

This new criminological approach brings with it a different conception of the ‘criminal subject’ (Garland 451). The criminal subject is no longer a social misfit who was the victim of poor socialization and who is in need of assistance but rather an illicit entrepreneur or “opportunistic consumer” who must be barred from consuming legitimate social goods. This new subject is sometimes referred to as “situational man”. ‘Situational man’ “lacks a strong moral compass or any effective internal controls, aside from a capacity for rational calculation and a will to pleasure” (Garland 451-452).

Efficiency

Faced with their inability to effectively reduce crime rates, states have redefined the objectives and priorities of the penal enterprise (Garland 455) by placing less emphasis on the ability of the criminal justice system to reduce crime through rehabilitation and the reduction of recidivism. Increasingly, states are adopting a business-like approach to crime control emphasizing economy, efficiency and effectiveness (Garland 455). Such a managerial approach to crime control is coupled with the privatization of certain criminal justice functions and a greater focus on the 'customers' of criminal justice (Garland 456).

Feeley and Simon write that:

the new penology is neither about punishing nor about rehabilitating individuals. It is about identifying and managing unruly groups. It is concerned with the irrationality not of individual behaviour or even community organization, but of managerial processes. Its goal is not to eliminate crime but to make it tolerable through systematic coordination (Feeley & Simon 1992: 455).

The rise of the new penology is particularly evident in the declining significance of recidivism. Once an indication of programme failure, recidivism is today lauded as evidence of a parole system's effectiveness (Feeley & Simon 455). Feeley and Simon argue that such a shift in understanding is significant because "in shifting to emphasize the virtues of return as an indication of *effective* control, the new penology reshapes one's understanding of the functions of penal sanction" (455). Deviance is taken as immutable, and rather than focus on the 'success' or 'failure' of a parolee, the discourse on correctional programs emphasizes the control of aggregates and system management (Feeley & Simon 455).

Feeley and Simon argue that the technocratic rationalization that is central to the new penology tends to insulate institutions from the unpredictable demands of the social world by avoiding variable indicators. This focus on internal efficiency is both a response to the increasing emphasis on accountability and rationality coming from the criminal justice system during the 1970s, and a reflection of the declining expectations of the penal system resulting from its failure to fulfill its ambitious promises (Feeley & Simon 456). Feeley and Simon argue that:

... in the end, the inclination of the system to measure its success against its own production processes helps lock the system into a mode of operation that has only an attenuated connection with the social purposes of punishment. In the long term it becomes more difficult to evaluate an institution critically if there are no references to substantive social ends (456-457).

The result, according to Feeley and Simon, is a decrease in expectations about criminal sanction (Feeley & Simon 456). They explain that “these altered, lowered expectations manifest themselves in the development of more cost-effective forms of custody and control and in new technologies to identify and classify risk” (Feeley & Simon 456). These include: low frills, no service custodial centres, different kinds of electronic surveillance systems designed to function as wall-less prisons, and calculations of risk and predictions of dangerousness (Feeley & Simon 456). While such new custodial arrangements and technologies are relatively new, crime statistics have been part of official state discourse for over 200 years (Feeley & Simon 453). However, Feeley and Simon argue that unlike earlier generations that relied on statistics to monitor the responses of different normatively defined groups to punishment, today one talks of “high rate offenders” and “career criminals” who are defined exclusively by their statistics. In the new penology, actuarial classification “has come increasingly to define

the correctional enterprise itself' (Feeley & Simon 454).

Responsibilization

One key strategy that flows from this new criminological approach is the "responsibilization strategy". Rather than act directly through state agencies (courts, prisons, social work etc.) the government seeks to act indirectly by enlisting the active support of non-state agencies and organizations that it identifies as having the capacity to reduce criminal opportunities. Further, having identified these people and groups, governments must assess whether they have a responsibility to attempt to reduce situations of criminal opportunity and whether this responsibility can be enforced (Garland 452). These joint ventures have yielded such well known programs as Safer Cities Schemes and Neighbourhood Watch (Garland 453). These programs serve as templates for more significant cooperation between private and public entities. As Garland explains, "The recurring message of this approach is that the state alone is not, and cannot effectively be, responsible for preventing and controlling crime" (Garland 453). In other words, the motto of the responsibilization strategy is, 'we're all in it together'; from the property owners to the town planners and parents - we all need to recognize our duty and act to minimize criminal opportunities and increase informal controls (Garland 453).

Garland however, cautions against interpreting the 'responsibilization strategy' simply as a way for the state to shirk its role as the primary provider of crime control and public security. The 'responsibilization strategy' is a new mode of governing crime (Garland

454). Garland describes this new governmental strategy for crime control as a step towards a means of governing at a distance (Garland 454). The aims of the responsibilization strategy are considerably more ambitious than those of the penal-welfare approach. Indeed, the former seeks to:

implement 'social' and 'situational' forms crime prevention which involve the reordering of the conduct of everyday life across the social field. ... Where the state once targeted the deviant for intensive transformative action, it now aims to bring about marginal but effective changes in the norms, the routines, and the consciousness of everyone (Garland 454).

Nikolas Rose and other governmentality theorists have argued that:

individuals, families, firms, organizations, communities are urged to *take upon themselves* the responsibility for the security of their property and their persons, and for that of their own families. Protection against risk of crime through an investment in measures of security becomes part of the responsibilities of each active individual, each responsible employer... (Rose 2000: 327).

Rose argues that the role of the state is recast. The dominant metaphor is no longer that of the state as manager or provider but rather that of the state as animator or facilitator (Rose 327). Individuals are conceived of as 'risk subjects' who actively and knowledgeably work to secure themselves against crime risks (Rose 328).

Strategies of Denial: 'Get Tough' on Offenders

The discourse and strategies explored so far have reflected one side of the state's response to what Garland has termed the 'predicament of crime control in late modern society'. While the strategies discussed above attempt to govern crime by 'designing crime control into' the circuits of everyday life, by focusing on preventative measures

and by redefining the aims of the criminal justice system and the penal enterprise, there has also been a strong tendency on the part of the state to re-assert its sovereign power to punish (Garland 461).

One striking example of this is the rise in prison populations (Garland 1996; Cayley 1998; Snider 1998; Bauman 2000). Leading the way in prison growth is the United States, where there are more people in prisons (or awaiting sentencing) than students attending college or university (Bauman 2000: 212). Canada's incarceration rate is relatively low but has been increasing since 1979. The 1980s were the most punitively repressive years in Canadian history (Mandel 1995: 242). Garland explains that:

in the face of evidence that crime does not readily respond to severe sentences, or new police powers, or a greater use of imprisonment, the British government (like others elsewhere) has frequently adopted a punitive 'law and order' stance that seeks to deny conditions which are elsewhere acknowledged and to reassert the state's power to govern by force of command (Garland 460).

Snider argues that states continue to rely on 'law and order' policies, such as incarceration, despite the fact that crime rates are falling in "all major Anglo democracies" (Snider 1998: 35). Snider acknowledges that whether rates of crime are falling or not, there is little doubt that Canadians are increasingly fearful (Snider 38). Snider also emphasizes that punitive crime control strategies contribute to increased public fearfulness, which in turn sets up the conditions necessary for a 'tougher' political discourse of crime (Snider 38). Like Garland, Snider suggests that new kinds of criminals have been constructed since the 1970s (Snider 33). She argues that the media's transformation of crime into entertainment, and the emergence of victims' rights movements have fuelled the drive towards punitive approaches to crime control by

creating “new urban monsters”: “the mugger, the crazed cocaine addict, the rapist, or “young thug,” all folk devils outside the moral boundaries of the law-abiding citizen” (Snider 33-34).⁴⁵

Garland has also suggested that punitive crime control policies are based on conceptions of criminals as “monsters”, arguing that “punitive policies are premised upon characterizations of offenders as ‘YOBS’, ‘predators’, ‘career criminals’, ‘sex beasts’, as ‘evil’, ‘wicked’, or member of an ‘underclass’” (Garland 461). Unlike the criminologies of everyday life which have translated into policies which focus on prevention and defining down,⁴⁶ where offenders are characterized as ‘rational consumers’ through a ‘criminology of the self’, the ‘criminology of the other’, which informs punitive ‘law and order’ policies, view offenders as ‘others’, outcasts, and social rejects. While the former serves to routinize crime, curb escalating fear of crime rates, and renew interest in preventative programs, the latter serves to portray the criminal as a monster, stir public fear and anxieties and reinforce the need for state punishment (Garland 461). The

45 Feminist scholars, such as Susan Miller have also highlighted the role that fear and media play in motivating ‘law and order’ penal policy (Miller 1998). Clair Renzetti has argued that “the get-tough on crime control rhetoric often appeals directly to women, playing on our fears and promising us safety”(Renzetti in Miller 186). Renzetti is critical of this, she suggests that “fear is a powerful motivator - and a useful political ploy- such that even many who see themselves as liberal feminists have added their voices to the litany of crime-fighting rhetoric without carefully considering the effects of specific policies and practices on women and children (Renzatti in Miller 182). The law-and-order discourse, is a gendered discourse (Renzetti in Miller 182). Metaphors of the get-tough policies are often masculine, with military metaphors being particularly prevalent, for example, “war” on crime, drugs etc., and the notion of crime control policies as “weapons” (Renzatti in Miller 182). Policies which take a different approach are derided as, “...weak, ineffective, coddling - in a word, feminine” (Renzetti in Miller 182).

46 A number of scholars have noted that over the past 30 years there has been a move to “define deviance down”. Defining deviance down, in contrast with ‘net widening’ (a phenomena which has received a great deal of attention), is concerned with letting ‘minor’ offences pass without official sanctioning. Garland suggests that the trend towards defining down is part of a strategy which seeks to make the criminal justice systems more efficient and to save money (Garland 456-457).

emphasis on this notion of offenders as a “different species of threatening, violent individuals” for who there exists no help, fuels the sense that ‘something needs to be done’ and that the only practical way to manage these individuals is through long-term incarceration or judicial killing.

The trend towards a more punitive penal policy is also clearly reflected in the so called ‘three-strikes laws’ of the United States. These laws brought in mandatory life sentences for persons convicted of a three violent felony or drug related offence (Shichor 1997: 471).⁴⁷ Shichor argues that the discourse, objectives and techniques associated with the three-strikes laws can be understood as one manifestation of this shift towards a new penal rationality focused on efficiency and risk management. This is in line with the new penology as identified by Feeley and Simon. At the discursive level, the three strikes laws use terms such as “high-risk offenders” or “strikeable offenses”, to construct a category of criminality based on aggregation and statistical averages and to identify/signal a type of criminal act which will be systematically channeled into the “hard” end of the penal system. Shichor argues that the three-strikes discourse which focuses on “high risk offenders”, “career criminals” and “habitual offenders” reflects a hardening of criminal identity, and marks a shift away from traditional individual-based clinical diagnoses which emphasized retributive justice. These new subpopulations (as they are identified by officials) are increasingly targeted for intensive regimes of surveillance, aggregate management and selective incapacitation (Shichor 473). As for the system’s objective, Shichor argues that the language of risk and probability reflects a

47 In California, being convicted of three felonies of any kind triggers a life sentence.

prioritization of the efficient management and internal functioning of the penal system, characterized by a shift from a rehabilitative to a managerial focus (Shichor 473).

Shichor explains that three-strikes laws are based on the penal principle of incapacitation. The rationale underlying this principle is that “some crimes are produced exclusively by exceptional people, as come commodities are. If some of these people are incapacitated, production is reduced” (Shichor 474). Shichor argues that the tendency to focus on controlling “permanently dangerous people” “through increasingly severe punishment, and incarceration, is characteristic of the growing popularity and prevalence of social control policies that are based on a McDonaldized model of society” (Shichor 475). He explains that the founding principles of the fast food industry are based on the Weberian concept of “formal rationality” and have four basic dimensions: efficiency, calculability, prediction and control. Efficiency, in the context of three-strikes laws, is achieved through the incapacitation of “dangerous offenders”. Three-strikes makes incapacitation of “a specific discredited group, the “dangerous violent criminals who are mainly from lower class backgrounds”, not only mandatory, but also long lasting (Shichor 476-477). Further, three-strikes laws are supposed to make punishment quantifiable and thus easily calculable. By adopting what Zimring has called a “mechanical approach” to sentencing, presumptive sentences are established based on fixed criteria (for instance, the seriousness of the crime and the offender’s record) and it is assumed that the quality of justice is a function of the quantity (or length) of punishment (Shichor 477). Three-strikes laws also strive to curtail judicial discretion and thus produce greater predictability (Shichor 478). Lastly, control is enhanced through the increased resort to artificial technology. The “mechanical approach” to sentencing of three-strikes law relies on

“nonhuman aids” such as computer programs (for instance, to quantify sentences) and electronic surveillance and urinalysis (for instance, in the actual punishment of prisoners) (Shichor 479).

Governing Insecurity – The Criminalization of Poverty

A number of theorists have suggested that ‘law and order’ crime policies are elements of what has been dubbed the ‘government of insecurity’ in late modernity (Feeley & Simon 1992; Mandel 1995; Cayley 1998; Garland 1998; Snider 1998; Bauman 2000; Rose 2000). They have argued that current crime control discourses which present criminals as ‘monsters’ or ‘permanently dangerous’ individuals reflect a shift towards a more punitive (and cynical) approach in addressing capitalism’s social and economic inequalities.

Garland has argued that:

unlike the penal-welfare strategy, which was linked into a broader politics of social change and a certain vision of a social justice - however flawed in conception and execution - the new penal policies have no broader agenda, no strategy for progressive social change and no concern for the over coming of social divisions. They are, instead, policies for managing the danger and policing the divisions created by a certain kind of social organization, and for shifting the burden of social control on to individuals and organizations that are often poorly equipped to carry out this task (466).

Feeley and Simon are of the view that, “...the emergence of the new penology in the 1980s reflects the influence of a more despairing view of poverty and the prospects for achieving equality” (Feeley & Simon 468). The criminalization of poverty can also be seen as a response to a new and emerging understanding of poverty in the United States of America, one which revives the notion of “underclass” (Feeley & Simon 467).

According to Feeley and Simon:

The term *underclass* is used today to characterize a segment of society that is viewed as permanently excluded from social mobility and economic integration. The term is used to refer to a largely black and Hispanic population living in concentrated zones of poverty in central cities, separated physically and institutionally from the suburban locus of mainstream social and economic life in America (467).

This underclass were increasingly seen as a pathologically poor and marginal population that is incapable of permanent or stable employment, and so deficient of literacy, skills and hope as to render integration impossible (Feeley & Simon 467). Feeley and Simon explain that “conceived in this way, the underclass is also a dangerous class, not only for what any particular member may or may not do, but more generally for collective potential for misbehaviour” (Feeley & Simon 467). These authors suggest that viewed through the lens of the new penology, the developing linkage between penology and ‘race’, is likely to reinforce the “perception that the penal system can do no better than maintain custody over a large segment of this population” (Feeley & Simon 467). Feeley and Simon write that:

the hardening of poverty in contemporary America reinforces this view. When combined with a pessimistic analysis implied by the term underclass, the structural barriers that maintain the large island of third world⁴⁸ misery in America’s major cities can lead to the conclusion that such conditions are inevitable and impervious to social policy intervention. This, in turn can push corrections even further towards a self-understanding based on the imperative of herding a specific population that cannot be disaggregated and transformed but only maintained - a kind of waste management function (Feeley & Simon 469-)

48 The term ‘Third World’, in this context, is borrowed from James M. Doyle (1992) who uses the metaphors of “colonial”, “White Man’s Bruden,” and “Third World” in an essay drawing parallels between the careers of criminal justice officials and colonial administrators. Simon and Feeley draw upon Doyle’s metaphors of “colonial” and the “third world”, and Irwin’s (1985) notion of the underclass, arguing that “...both resonate with our notion of the new penology. They vividly explain who is being managed and why”(Feeley & Simon 469). Yet they use these terms cautiously, knowing that the terms themselves may be used to reify the problem, therein contributing to diminished expectations of the new penology (Feeley & Simon 469).

Bauman has also used the waste management metaphor to describe the role of the criminal justice system in the 'post-correctional age'. He suggests "you can consider the criminal justice system, punishment system, as a sort of sewage pipe or sewage gutters into which the waste products of society are channelled" (Bauman, quoted in Cayley 76). For Bauman, the evolving purpose of criminal justice reflects post-modernity's social, economic and political changes. He argues that prisons are no longer modelled on the panopticon. 'Panoptical control' was grounded in notions of correction and labour: "all kinds of panoptical-style houses of confinement were first and foremost *factories of discipline – more precisely, factories of disciplined labour*" (Bauman 2000: 210). Panoptic institutions attempted to bring unwilling potential labourers into step with the 'rhythm of factory labour' (Bauman 210). In post-modern societies, keeping up with the push towards 'globalization' and its appetite for 'flexible labour', requires the abandonment of the modern notions of 'work ethic' (Bauman 211). In this context, prisons no longer serve as training centres for employment but rather as "warehouses" for people for whom there are no jobs and for whom there is no need (Bauman 211). Prisons can thus be seen as an "alternative to employment" (Bauman 211).

Rose has also highlighted the role of prisons in the "government of insecurity" (Rose 336). Increasingly, Rose argues, exclusion itself is being criminalized, as crime control agencies focus on those practices that enable survival in the 'circuits of exclusion', like

49 See also David Cayley (1998) and Zygmunt Bauman (2000).

petty theft, drug use, loitering, etc. (Rose 336). Welfare budgets are continuously cut, while penal budgets balloon, creating a situation where police, lawyers, parole officers and others become key players in the 'management of exclusion' and the 'government of insecurity' (Rose 336-337).

Conclusion

This chapter provides some of the historical and theoretical context necessary to undertake an analysis in Chapter Three of the relationship of DNA data banking to the broader transformations in the nature of power that have been taking place since the Nineteenth Century. Drawing on the work of Foucault this chapter explored the move from sovereign to disciplinary power. In *Discipline and Punish*, Foucault argued that surveillance had replaced torture as the operational mode of power (the means of opening up the body to the circulation of power) and highlighted the role that the 'panopticon' played in making the operation of disciplinary power 'automatic'. Contemporary surveillance studies theorists suggest that surveillance itself, as a technology of power, is in the process of changing. They suggest that, new surveillance technologies and public desensitization to intensification of surveillance in late modernity raises questions about the appropriateness of either Foucault's 'panopticon' or Orwell's 'big brother' as a model for describing contemporary surveillance. Willing compliance with surveillance has become so central to social participation in contemporary Western societies that Lyon argues that these societies can be called "surveillance societies" (Lyon 2001). A number of surveillance technologies are emerging which seem to push the 'panoptic' model much

further than Foucault had originally theorized. Poster has argued that the widespread use of data bases to record and store all kinds of information that results from our everyday participation in the 'circuits of communication' is evidence of a shift in 'panoptic' control from surveillance of actual embodied people (and their own self-surveillance) to the surveillance of their 'data doubles' through the creation of a 'super-panopticon' (Poster 1990). The 'super-panopticon' multiplies the individual, creating additional selves (data doubles) that it creates out of the manipulation of bits of information stored in the data bases (Poster 1990). Surveillance studies theorists have picked up on Poster's work and have begun to explore the ways in which surveillance technologies may be re-configuring the 'individual', and particularly the relationship between individual identity and the body. There are differing approaches to theorizing this changing relationship, some theorists such as Lyon have suggested that more and more surveillance is based on our 'virtual' identities and not our embodied (corporeal) identities, while others such as van der Ploeg, suggest that the growing reliance on surveillance technologies which have some sort of biometric component, raises questions about the extent to which information (or data) about the body and the body itself can be considered as distinct. Van de Ploeg suggests that biometric technologies are part of an emergent body ontology, one that defines the body itself as information (van der Ploeg 2002). The body is being redefined along the same lines as surveillance itself, Haggerty and Ericson suggest. Like surveillance itself, bodies are becoming 'assemblages' whose unity comes largely from the relationship between disparate bits of information. These 'assembled' bodies serve the surveillant assemblage by multiplying the 'individual'; maximizing the utility of the body.

The chapter has highlighted some features of late modern society which have influenced the relationship between new surveillance technologies and the body, and which might help make evident some of the social and political implications of this dynamic relationship. In a crime control climate that is deeply sceptical about rehabilitation or other social-welfare approaches to crime, surveillance technologies which claim to be able to use the body to guarantee continual 'bio-surveillance' over 'offenders' are publicly and politically popular. With the heightened focus on 'public safety' risk management becomes a powerful governmental imperative-rationale. As the state slowly abdicates from its traditional role as guarantor of public safety, a vacuum is opened up, one which is largely filled by the public (often in partnership with the state or private institutions) who are now constructed as responsible for their own safety. In this context communities are encouraged to mobilize and fortify themselves against the widely perceived omnipresence of crime. Initiatives to improve the social conditions that foster inequalities and contribute to crime are sidetracked in favour of focusing the states' limited budget on better way to detect and keep track of those particularly 'dangerous', 'habitual' criminals. By reasserting its own 'sovereign myth' through shows of punitive force and technological innovation, the state is able to legitimate itself and appear to be "getting tough on crime". It is in this context that genetic identification technologies such as DNA data banking become institutionalized in the criminal justice system.

CHAPTER 3: DNA DATA BANKING AND POWER

Conceptions of punishment and security in contemporary societies have become intimately connected with technologies that call into question ‘who we are’. Public security is deemed best ensured by investing in individual identification technologies, such as DNA typing and data banking, which promise to cut through the complexities of the question and provide a clear answer.

Genetic identification technologies have been presented as crucial technologies for enhancing public safety and fighting terrorism in Canada. This is articulated in the legislation that established the Canadian National DNA data bank (“NDDB”), which provides in part that, “the protection of society and the administration of justice are well served by the early detection, arrest and conviction of offenders, which can be facilitated by the use of DNA profiles”.⁵⁰ DNA profiles are seen as playing a key role in establishing ‘who’ an offender is, so that he or she can be arrested and convicted as quickly as possible. Such a focus distracts however, from the more basic question of why it is important to know who one is. How does answering this question advance public safety and what does it suggest about our conception of social order?

This chapter explores the relationship between technologies, which claim to reveal our ‘true’ identities, and the intensified focus on public safety in late modernity. The first section of this chapter contends that modern themes that were instrumental in legitimating the development of older identification technologies such as, mobility, crime

50 *DNA Identification Act*, S.C. 1998, c-37, s. 4a.

as 'epidemic', recidivism and information management (efficiency), continue to play a key role in the discourse legitimating the use of DNA data banking. In addition to these older themes, new themes have emerged which foster the expansion of DNA data banking. Drawing on the work of theorists such as Garland, Haggerty, Ericson, Feeley, Simon, Bauman and Rose, DNA data banking is explored in relation to these new themes which emerge from the contradictory and multiple approaches to crime control that co-exist in contemporary societies. It is argued that in a number of ways, DNA data banking corresponds with (and reflects) this ambivalent approach to crime and 'criminality'.

The second section of this chapter, analyzes DNA data banking using theory from the literature on simulation and surveillance. It is suggested that by bringing together these two fields of theory it becomes possible to ask new questions about the relationship between DNA data banking and social order. Drawing on recent surveillance theory, this section suggests that DNA data banking can be understood as a new kind of surveillance technology, within the 'surveillant assemblage'. It is argued that like other surveillance technologies that are part of this assemblage, DNA data banking is involved in a re-definition of the body. Simulation theory is used to explore both the simulated nature of identity and surveillance in the DNA data bank.

In the third and final section of this chapter the DNA data bank is explored in line with Foucault's theory on bio-power. Foucault has suggested that a new form of power has slowly been emerging over the last few centuries alongside disciplinary power. It is argued that if we are now in the age of simulation, then the distinctions between the two

poles of bio-power are only generated through the model of the code of the hyperreal. If it is a third order simulation, and by definition hyperreal, it is suggested that DNA is blurring the distinction between these two poles. New genetic information technologies such as DNA data banking, may signal a mutation in bio-power. Bio-power may be mutating into a more radicalized form.

1) Themes that Mobilize Support for DNA Data Banking

Viewed through the lens of the historical context and current crime control climate of the preceding chapter, this first section of the chapter focuses on the modern themes which were useful for validating older identification technologies and analyzes their continuing viability for mobilizing popular and political support for DNA data banking. This section suggests that there are also new crime control themes and approaches, which are buoying support for the institutionalization of DNA data banking. It begins by identifying and analyzing modern themes such as mobility, crime as epidemic, recidivism, justice and information management which are drawn upon by police, government officials and victims rights groups to legitimize the establishment and expansion of the National DNA Data Bank.

Mobility

The history of individual identification technologies has been closely linked to the attempts by nation states to control the mobility of its population. DNA identification

technologies have been presented as means to keep track of increasingly mobile populations. DNA testing and data banking have been adopted in a number of fields including the immigration⁵¹ and criminal justice systems. In the context of the criminal justice system, the NDDB is presented as a means to make it easier for police officers to identify offenders. Officials at the NDDB see the data bank as a tool to streamline police services and intelligence gathering across Canada (Commissioner G. Zaccaradelli Royal Canadian Mounted Police, Annual NDDB Report 2003-2004: 5).

But officials at the NDDB see even greater potential for the data bank. They have argued that:

The borderless nature of crime has forced police to look beyond their own borders and work more cooperatively with partners around the world to be truly intelligent – led in a global alliance against common threats to public safety and national security (National DNA Data Bank Annual Report 2001-2002: 18).

Criminal activity is not limited by geographical or jurisdictional boundaries, making information sharing with our national and international partners more critical than ever before (Commissioner G. Zaccaradelli Royal Canadian Mounted Police, National DNA Data Bank Annual Report 2003-2004: 5).

Officials at the NDDB describe the NDDB as an important technology for addressing the “borderless nature of crime”, suggesting that the NDDB is particularly well equipped to deal with the new policing challenges in late modern societies:

51 In Canada DNA testing is used to establish parental relationship in immigration and refugee cases where other proof of this relationship does not exist. The cost of DNA testing is substantial and is born by the immigrant or refugee. Immigrants and refugees from ‘southern’ countries and particularly countries where there are armed conflicts, are less likely to have proper documentation to establish the validity of their relationships and therefore more likely to be required to provide DNA evidence of a parental relationship (Canadian Council on Refugees, ‘The Impact on Children of the Immigration and Refugee protection Act’, November 2004 <http://www.web.ca/~ccr/children.pdf>).

The National DNA Data Bank is a shining example of the increasing importance of science and technology in modern law enforcement. Our complex, globalized world has created a whole new set of challenges for police. To stay ahead of the criminals, we must make better use of cutting edge science, such as forensic DNA (NDDDB Web Site, main, retrieved 18/3/05).

The NDDDB is also described as a technology which helps the RCMP meet its strategic objective of “integrated policing”, by sharing DNA with agencies from other countries:

The success of the National DNA Data Bank is having a positive impact on the global law enforcement community. Particularly through the RCMP’s international agreement with Interpol. This accord allows for the sharing of DNA information, while at the same time, protecting the privacy and safety of the individuals involved. As these international trends towards integration have intensified in the post 9/11 global environment, I am gratified that the sharing of DNA information with rest of the world supports the RCMP’s strategic objective of integrated policing. The international activities of the NDDDB are a model for institutions and governance systems that are moving towards greater collaboration, integration and interoperability (Commissioner G. Zaccaradelli Royal Canadian Mounted Police, National DNA Data Bank Annual Report 2002-2003: 3).

The DNA data bank appears to form part of a response to the increased emphasis on the international interoperability of police information systems following the events of September 11th 2001. Indeed, DNA data banking is presented as a solution to crime in a “globalized world”, a world where “cutting edge” science is increasingly called upon to “stay ahead of the criminals”.

Crime Epidemic: “Protect Women & Children”

Fear of crime plays an important role in legitimating the DNA data banking. Much like the development of earlier identification technologies, the development of contemporary identification technologies is fuelled by a growing sense that crime (in late modernity

particularly violent sexual crime) has reached 'epidemic' proportions.

In the period leading up to the creation of the NDDB in 2000, the media, police, victims' rights groups and government officials frequently made reference to horrific violent crimes involving women and children. Specific cases were used to highlight the urgent need for a national DNA data bank. Such cases feature prominently on the NDDB's web site and in its annual reports and sexual assault cases are described in graphic detail on the NDDB web site and the role of the NDDB bank in solving the case is highlighted. DNA data banking was presented as especially useful in solving 'cold cases' particularly homicides and sexual assaults, where there are no suspects (Solicitor General 1996: 2, Department of Justice Canada 1998: 6).

Two of the three case studies at the end of the NDDB 2001-2002 Annual Report are sexual assault cases. In the 2002-2003 Annual Report, all of the case studies involve sexual assaults. The RCMP which runs the NDDB, regularly portrays DNA data banking as a powerful weapon for the detection and conviction of "sexual predators". This is illustrated in a case study in the 2002-2003 Annual Report of the NDDB which includes a statement from a detective who led an investigation into a violent sexual crime explaining that the NDDB was key in leading the police to the suspect in the absence of other evidence. In this case a DNA profile in the NDDB from a later assault was used to link the offender to the sexual assault. According to the detective the case:

shows that the money spent on the database is leading to police finding and convicting sexual predators, where we had very little evidence. Without the National DNA Data Bank this predator would still be out there in our midst (National DNA Data Bank Annual Report 2002-2003: 32).

Though the prior assault conviction was not sexual in nature, this case is offered in support of the notion that a DNA data bank can help solve violent crimes by linking offenders to previous crimes. This also fits with the underlying notion of recidivism which is part of the RCMP's logic behind the data bank (which is discussed in the following sub-section).

Recently calls to expand the NDDB have also focused on the data bank's purported ability to prevent and solve violent sexual crimes. For instance, in a 2002 press release from the Ontario Ministry of the Attorney General calling for the expansion of the DNA data bank, women and children were described as key benefactors from the expansion of the data bank. The press release suggests that: "to protect women and children, especially, Ontario will advocate changes to make it easier to get a sample in cases of break and enter" (Ontario Ministry of the Attorney General, October 31, 2002). Ironically, women's groups have been among the strongest critics of the NDDB.

During the mid to late 1990s policy consultations were held by the federal government leading up to the establishment of the NDDB, a number of women's groups, including the National Action Committee on the Status of Women (NAC), which represented 670 Canadian women's groups, opposed the creation of a national DNA data bank as a solution to violent crimes, especially sexual assault (Kubaneck & Miller 1997: 1). In their 1997 essay "DNA Evidence and A National DNA Databank: Not in Our Name" Julia Kubaneck and Fiona Miller articulate the concerns of many of the women's groups

involved in the consultations. Women's groups have been critical of the media's focus on so called "random" violent crime often involving women and girls. Kubanek and Miller argue that:

Cases where DNA evidence figures prominently are popular with the sensationalist mainstream media, since they most often involve attacks by strange men on women and girls who can be more easily be portrayed as innocent and vulnerable. While these cases are not unimportant, it must also be emphasized that they are few in number and they are already those with the highest chance of conviction. The federal government should not pander to this myth of the dangerous stranger when in fact abuse is most often committed by an acquaintance, relative or intimate male partner (2).

Women's groups argued that because in most cases of sexual assault the attacker is known to the victim, what is at issue is not usually identity but rather consent (Kubanek and Miller 1-2). As Patricia Lee explains:

examination of court practices reveals that defense lawyers often focus on negative stereotyping of victims, on the meaning of consent and the significance of the complainant's past sexual history, rather than the difficult to dispute facts of the forensic evidence (Lee 2000: 7-8).

Women's groups have argued that the NDDB will neither address the "systemic failings of policing in male violence against women" nor issues of racism in the criminal justice system (Kubanek & Miller 1997, Lee 2000). A number of feminists have made reference to the Paul Bernardo case and the Campbell Report that followed, arguing that this case makes it clear that:

DNA data banking has the potential to feed into the hierarchies and inequalities already in existence in the prosecution process. There is an unfounded assumption that certain men's and women's accounts have more credence than others. Recall how, white, well-groomed, educated rapist and murder Paul Bernardo evaded prosecution for sometime and did not have his DNA tested while other men, such as those who are poor, Native and/or substance abusers are more likely to be targeted immediately (Lee 6).

The opposition of women's groups is significant given that advocates of the NDDB opine

that it will specifically help “protect women and children”. Feminist organizations argued that the NDDDB is neither cost-efficient, nor effective solution to violent crime, particularly violence against women. Rather, they called for more resources to be spent on women’s survivor and advocacy programs, and expressed concern about the amount of resources required to establish and operate a NDDDB.

Recidivism

Concern with recidivism has been a major force in the development of identification technologies. Gerlach has suggested that in the policy debates leading up to the establishment of the NDDDB, DNA data banking was framed by many participating agencies as the ‘obvious solution’ to the problem of recidivism (Gerlach 112). For instance, the Solicitor General said at the time that:

Stored DNA information will enable police to quickly identify suspects and repeat offender across police jurisdictions. In addition, by targeting certain high-risk offenders already in custody, the data bank will offer the hope of solving long outstanding crimes. And it will make the most dangerous offenders think twice about committing a violent offence again because their genetic imprint will be in the data bank for future identification (Solicitor General 1998: 2).

Terms such as “repeat offenders”, “high risk offenders” and “dangerous offenders” recur throughout the policy debates and are popular not only with police and government officials, but also with privacy advocates such as the Privacy Commissioner and the Canadian Bar Association (Gerlach 112). Gerlach observes that “there is almost unanimous agreement among participating agencies that the DNA policy is legitimated by the need to control repeat and dangerous offenders” (Gerlach 112). DNA data

banking continues to be presented as a means to quickly identify 'repeat offenders', solve old crimes, and prevent 'high risk offenders' and 'dangerous offenders' from committing violent crimes. The theme of prevention through early identification is raised regularly by police and government officials (Canadian Association of Chiefs of Police 1999; Ontario Ministry of the Attorney General Press Release Oct. 31, 2002).

DNA data banking is presented as a novel technological solution to the problem of recidivism, making it faster and easier to catch "repeat" and "serial" offenders. DNA data banking is presented as a means to end "criminal careers" early. The logic underlying the discourse of "early identification" is reflected in the following statement of a victims' rights group:

The simple fact of the matter is that criminals often commit lesser crimes - whether that be stealing to support a drug habit, assaulting a spouse or impaired driving. Criminal recidivism is a feature of the offender profile most likely caught by DNA evidence. It is clear that a disproportionately small number of offenders are responsible for a disproportionately large number of crimes. (Victims of Violence web site, retrieved 08/16/05).

In this sense, DNA data banking is discursively aligned with the logic of "penal incapacitation", which is based on the assumption that crimes are committed exclusively by certain people and that if some of these people are incapacitated the incidence of crime will be reduced (Shichor 474). Not surprisingly therefore, the discourse of 'early identification' is often accompanied by calls for expanding the range of crimes which require mandatory DNA sampling and data banking.

New identification technologies have proven their worth by claiming to assist in

identifying groups who have previously avoided detection and who are deeply feared. The popularity of DNA data banking has in part stemmed from its claim to be able to objectively and accurately identify the most violent and recidivistic offenders:

“This will be a great investigative tool”, said Scott Newark, executive director of the Canadian Police Association “...I can guarantee you that [once the data bank is set up], you will have a flurry of unsolved rapes and homicides cleared up”...Mr. Newark’s confidence is based on the widely held view that when it comes to violent sex crimes, such as the sexual assault and killing of Jessica States in the summer, a disproportionately small number of offenders are responsible for a disproportionately large number of offences. And because experts say that it’s unusual for violent offenders not to exhibit antisocial behaviour when they are younger, the hope is that by having their genetic profiles on record: police investigations will be made faster and more precise (Grange 1997: A6).

Justice Ministry officials brought in DNA typing and banking legislation as part of measures that fit with the ‘get tough’ approach to crime: “Mr. Rock [Canadian Justice Minister] said yesterday that the DNA Bill is part of a series of tough criminal measures he has advocated” (Thanh Ha 1995: A1).

Justice

Like older identification technologies, DNA data banking has been presented as a means to improve the criminal justice system. In addition to being represented as a tool which can make the identification of “habitual criminals” quicker and prevent “dangerous offenders” from committing future crimes, DNA data banking is also represented as a means to quickly eliminate “innocent” citizens from suspicion:

The National DNA Data Bank improves the administration of justice by ensuring that those who commit serious crimes are identified more quickly across all police jurisdictions in Canada while innocent people are eliminated from suspicion (National DNA Data Bank Annual Report 2000-2001: 4).

The notion that DNA data banking can provide justice for the innocent is a powerful theme in the popular media and among proponents of the DNA data bank. Gerlach has suggested that recent wrongful conviction cases have shaken the Canadian public's confidence in 'non-scientific' evidence and has fuelled the perception of science "as having an objectivity and precision that promised to increase the accuracy of judicial and jury decision-making" (Makin 2004: A1).

In the U.S. DNA data banking has been presented as a means to reduce racism in the criminal justice system. Smith, Kaye and Imwinkelried argue that,

a population-wide DNA data bank would combat both the appearance and reality of racism. Individuals who match crime-scene samples will be identified no matter what their race. If an innocent defendant goes to trial, crime-scene DNA evidence and the results of the database search would raise reasonable doubt about guilt, regardless of race" (Smith, Kaye & Immwinkelried 2001).

According to these legal scholars a DNA data bank which contains the genetic profiles of every person in the United States would help fight racism. Though their logic is different than Watson's the general assumption is the same, that there is a technological solution to complex social problems such as racism (or at least the appearance of it) and crime. Rather than being seen as a benefit, the suggestion that a population wide data banking could reduce the "appearance" of racism should be seen as a serious problem. In fact this is precisely the concern of many feminist, anti-racist and civil libertarian organizations, who have been highly critical of the claims about the objectivity and neutrality of genetic identification technologies (Kubanek & Miller 1997, Lee 2000).

The OJ Simpson case in 1994 brought the problems surrounding DNA technologies and racism to the fore in a spectacular way. All kinds of issues, from the problem of reliable crime scene and suspect sample collection and analysis procedures, to the accuracy of quantitative estimates of random match frequencies in a population group or subpopulation (issues about population genetics) were raised by the defence in the case. In addition to problematizing the validity of the techniques themselves, the OJ Simpson defence team raised concerns about the racism in the LAPD itself. Concerns about racism within the criminal justice system and in wider American society were galvanized around the trial and as Cole explains,

the trial quickly acquired racial overtones stemming from the Simpson's interracial marriage and white America's long history of using both violence and the justice system to punish such breaches of the colour barrier, as well as from the persistent history of racism in the Los Angeles Police Department (LAPD) and the recent videotaped beating of a black motorist, Rodney King, and the subsequent riot. These factors contributed, however indirectly, to the undercurrent of suspicion that DNA typing, the forensic technique that provided so much of the evidence against Simpson, might be tainted by racist judgements (Cole 299).

Though Simpson won his case and the case itself put the spotlight on a number of issues about racism and individual identification technologies, particularly DNA typing, the case is exceptional in many ways. Few defendants have the financial resources of Simpson and therefore access to the quality of representation. Since the Simpson case, the validity of DNA evidence has been reinforced in countless cases in the U.S. and Canada, making it even harder to challenge its trustworthiness. From policing to the court system and sentencing process; racism is a major problem in the criminal justice systems of both the U.S. and Canada. Understanding the specific relationship between DNA data banking and racism in the criminal justice system requires further analysis.

The history of individual identification has been intimately bound up with issues of racism and colonialism (some of which were discussed in chapter 1); this history should make us wary of any claims that the identification technologies alone can erase complex problems like racism from the criminal justice system.

Information Management

Historically identification technologies which gained widespread acceptance were those which were easily searchable. As Cole has argued, there was never a lack of theories to identify “criminals”, but what remained a challenge was always how to efficiently search the records once they were stored. Efficiency is a key theme in the discourse favouring DNA data banking. Efficiency actually drives the system itself. DNA data banking is in line with the logic of the post-1970s new penology which re-oriented the objectives of the criminal justice system to fit within the NDDDB system itself. Rather than measure the success of the criminal justice system by variables external to it, such as rehabilitation, its success began to be measured in terms of its efficiency measured by the identification of recidivists through technology. System efficiency as a measure of success is frequently articulated by members of the police:

After four years of operation, we are able to confirm that sample volumes play a pivotal role in forecasting success rates. It is a simple formula. The more profiles entered into the National DNA Data Bank, the more “hits” that are generated to help police solve serious crimes. Furthermore, statistics show that offenders are often involved in more than one offence or one types of offence. Every DNA profile from someone convicted of a secondary offence (e.g. break and enter) increases the prospect of linking it to a primary offence which is generally a more serious crime (e.g. homicide, assault) (Assistant Commissioner, JAJ Buisson, Chief of National Police Service, NDDDB Annual Report 2003-2004: 6).

In this statement, sample volume is equated with success. Thus, the greater number of profiles contained in the data bank, the more efficient the policing system. This logic is often invoked to justify the expansion of the NDDDB to include less serious offences, such as breaking and entering.

The notion that success is about sample volume forms part of the discourse demonstrating the cost saving benefits of the NDDDB to the criminal justice system. For example:

DNA can focus investigations, and will likely shorten trials and lead to guilty pleas. It could also deter some offenders from committing serious offences. The increased use of forensic DNA evidence will lead to long-term saving for the criminal justice system (Solicitor General 1996: 2).

While cost and efficiency obviously need to be part of the debate over the use of new technologies, the focus on internal efficiency without reference to a broader social objective, such as seeking to reduce the social inequalities which contribute to crime, is problematic. Given the high cost of developing and maintaining the DNA data bank and the cost of increased incarceration and other forms of penal custody, the claim that DNA is an efficient tool for reducing crime is questionable.

New Themes

Though it is clearly part of the punitive approach to crime control which involves a re-assertion of the 'myth of the sovereign state' through "get tough" discourse and crime

policies, which see offenders as ‘others’, ‘monsters’, ‘predators’ and ‘permanently dangerous’, DNA data banking also seems to be discursively aligned, by its advocates, with the strategies of crime control which are based on conceptions of the offender as ‘self’, ‘rational consumer’ and ‘risk calculator’. Comments by criminal justice officials reflect this:

...it will make the most dangerous offenders think twice about committing a violent offence again because their genetic imprint will be in the data bank for future identification (Solicitor General 1998: 2).

I tell the offender that his DNA profile will be in the DNA data bank for the rest of his life. If he commits another crime where DNA is left at the scene, he will be identified. You should see the look on the offender’s face. When I put it in those terms, I think he gets it (Justice Fraser, Alberta Judge, National DNA Data Bank Annual Report 2003-2004: 40).

The notion that, like ‘us’, offenders are rational risk calculators who will alter their behaviour if they perceive there is a higher risk that they will be caught if their DNA is in the data bank, fits in with the concept of criminality associated with the ‘criminologies of the self’ which purports that committing crime is a calculated choice. By making “dangerous offenders” aware of their status as permanent bio-suspects now that their “genetic imprint” is in the data bank, it is hoped that they will *choose* not to commit crimes. Using the term “dangerous offender”, which implies an individual who is somehow fundamentally different from ‘us’, in conjunction with the notion that committing a crime is a rational decision/calculation, seems contradictory. The idea (expressed in the judges’ comment) that the knowledge that an offender’s DNA is in the NDDB will “make them think twice” about committing another crime seems to fit with Rose’s notion that ultimately the pervasive image of the perpetrator of crime is:

not one of the juridical subject of the rule of law, not that of the bio-psychological subject of a positivist criminology, but of the responsible subject of moral community guided – or misguided – by ethical-self steering mechanisms (Rose 321).

At least in the way it has been described by the former Solicitor General and Judge Fraser, the DNA data bank is presented as a back up system for people whose ‘ethical-self steering mechanisms’ are broken, or who in others words have not played their role as responsible consumers properly. Though this particular representation of DNA data banking’s ability to deter offenders is not nearly as common as those which emphasized the NDDDB’s ability to catch “dangerous offenders” and take them out of circulation, it does suggest that the vision for DNA data banking includes a conception of the offender as a self-governing ‘risk manager’.

The preoccupation with risk in late modernity as described in Chapter two figures centrally in the discourse on DNA data banking. DNA data banking is seen as a means to reduce both the risk of crime and the risk of human error in identification by relying on genetic science and statistics. Technologies that can manage risk ‘objectively’, and authoritatively make the link between the present and the future are highly valued in security conscious societies. In a way, the NDDDB is presented by police, victims’ rights groups and criminal justice officials as an insurance system against the potential risks of a faulty criminal justice system (Gerlach 2004). If crime is seen as a risk rather than an aberration, then insurance rather rehabilitation becomes the preferable approach. A data bank that relies not on social identity but on genetic identity is seen as a more efficient, objective, and scientific system. DNA is presented as a stable, unbiased and searchable

version of 'us'. In this way, I would argue that the body itself is becoming the premium insurance policy of the criminal justice system that is always looking for credible witnesses to prove guilt or innocence. Proponents present the NDDB as: better equipped to solve and prevent crime in a world where racism, sexism, homophobia and other forms of discrimination impede fair treatment. DNA data banking meets the needs of a society which is looking for alternative ways of identifying individuals which are less socially and politically contentious. While less contentious, the DNA data bank may merely serve to harden the identities of those groups who have historically been over represented in the criminal justice system. This may in part be attributed to the fact that the DNA data bank it is not tied to a wider political program of social change that could reduce the inequalities that promote crime.

2) Surveillance, Simulation and the Body

Simulation and surveillance theories offer some footholds for analyzing the emerging relationship between DNA data banking and social order. Taken together, these two theoretical perspectives raise new questions about this relationship.

Surveillance and the DNA data bank

Foucault has argued that Western societies have moved away from 'sovereign power', which relied on spectacular displays of punishment directed at the body, towards 'disciplinary power', which uses new technologies such as surveillance to discipline the body in order to produce individuals. For Foucault, the panopticon epitomized this new

form of power. According to Poster, in the nineteenth century the disciplinary effectiveness of the panopticon was becoming limited due to its reliance on the actual presence of both the observer and the observed (Poster 91). By the end of the twentieth century those limitations were quickly disappearing as new technologies emerged to extend disciplinary power to those outside of the panopticon's gaze.

In the postmodern period it is through the 'superpanopticon', which is the product of the accumulation of information through the circuits of communication, through the proliferation of data bases, that power accesses the body and produces the individual (Poster 97). Rather than seeing databases as tools for constraining the individual, Poster suggests that databases multiply the individual, creating a 'data double' (Poster 97-98). Haggerty and Ericson see surveillance as an 'assemblage' which works by breaking down the body much in the same way that Poster has suggested. They argue that the body, which is monitored by the 'surveillant assemblage', is increasingly a 'cyborg' body (made of flesh, technology and information). This concept seems to fit with the way in which the body exists within the DNA data bank. In the NDDB, both the digitized genetic profile and the actual bodily sample from which the profile was generated are stored.⁵² In the period leading up to the creation of the NDDB there was considerable debate among the police, criminal justice officials and privacy advocates over whether or not the actual biological samples should be retained. In the end, the police were successful in their campaign to have the samples retained, arguing that they served as

⁵² This is not the case in the UK, where once the digital profiles are created the bodily samples are destroyed. This seems to suggest that there is some controversy over how best to maintain the 'custodial chain'.

safeguards during investigations and they were necessary because genetic technology was (is) developing rapidly and they may be able to test old samples with newer, more powerful technologies. The strength and validity of the DNA data bank was seen to be improved by keeping these 'body bits', as material corporeal connections of the offenders and victims (part of keeping the 'chain of custody' in tact).

It could also be suggested that the NDDDB is reflecting the move beyond a corporealized body towards a 'data double'. Once the samples have been collected and analyzed they largely sit in storage and it is the digital profile (purely data) developed from these samples that is constantly downloaded and searched. So in a way, the actual biological samples serve as insurance for the largely digital system. The digitized profiles are part of a larger series of information flows; they are linked to other electronic information, such as criminal record, photographs, fingerprints etc. The virtual identity which is linked to the DNA profile is designed to be searchable by many users. This fits well with Haggerty and Ericson's observation, that while a 'data double' may refer to a particular individual, rather than constituting an accurate representation of an individual, they are more practically designed to help institutions make distinctions between populations (Haggerty & Ericson 7). The digitized DNA profiles allow the operators of the NDDDB to search the entire population of the data bank for individual matches between the two indices (the Convicted Offender Index or the Crime Scene Index) or for matches with profiles from suspects.

So on the one hand DNA data banking operates on a 'cyborg' body, yet on the other hand

it seems to be searchable (useable) only through the data double, the digitized DNA profile. To harness the powers of the system as a whole requires the digitized DNA profiles. Codifying and digitizing the DNA profiles is what makes the system work, enabling comparison of samples. Van der Ploeg suggests that the body is not disappearing in this process but rather, it is being actively re-defined by surveillance technology. Van der Ploeg questions the assumption that there is a self-evident or 'unproblematic' distinction between 'the body itself' and 'information about' or 'digital representations of' that body (van der Ploeg 2002: 2). She suggests that "the body is implicated in a process of co-evolution with technology" (van der Ploeg 2002: 5).

Simulation and the DNA data bank

In Chapter one, a number of theorists that have explored the relationship between genetics and language argued that DNA has from its inception been viewed as a code. The components of DNA are represented as letters. Stevens has argued that language itself is material to genetic research, explaining that "to see how genes, like language, are malleable and subject to political organization - we need to recognize that the codes of DNA are no more or less metaphorical than the codes outside DNA" (Stevens 112). This is in line with van der Ploeg's problematization of the presumption that there exists a clear boundary between the body and its representations. The body of the offender in the DNA data bank is able to be searched and compared without having to actually see the offender. The profiles in the Convicted Offender Index are not just digital representations of the offenders; they can be seen as 'data doubles' in the way that Poster, Haggerty and Ericson have described.

Similar to fingerprints, DNA retains its legitimacy as a source of objective forensic identification when it is constructed as an 'empty signifier' (Cole 100) and significant efforts have been made to create a profile which is made up of genetic material which has yet to be associated with any information about health, ethnicity, etc. The profile generated from this so called genetic 'junk',⁵³ is packaged for the DNA data bank as an objective means to distinguish between individuals. In Chapter One it is discussed that traces of an individual that are left unconsciously have been emerging as the premium source material for the development of identification technologies (Joseph & Winter 1997). This notion that DNA is continuously and involuntarily shed as we go about our daily lives fits well with the growing trend in the Nineteenth Century towards the valuing of the small (seemingly invisible) and 'unconscious' residues of human bodies as a potent and largely infallible source of identification (Joseph & Winter 1997).

This power is intertwined with the image of DNA as a text of one's past, present and future. Nelkin and Lindee have for example shown that the relationship between people and their DNA and genes has been popularly presented by scientists who note that:

People are "readouts," of their genes. If scientists can decipher and decode the text, classify the markers on the map, and read the instructions so the argument goes, they will be able to reconstruct the essence of human beings... (Nelkin & Lindee 1995: 6).

This scientific concept of genes as texts or maps that can be read to unlock our common

⁵³ Rabinow writes, "it is currently held, not without a certain uneasiness, that 90 percent of human DNA is "junk". The renowned Cambridge molecular biologist, Sydney Brenner, makes a helpful distinction between "junk" and "garbage". Garbage is something used up and worthless, which one throws away; junk, though is something one stores for some unspecified future use. It seems highly unlikely that 90 percent of our DNA is evolutionary irrelevant – but what its precise relevance could be remain unknown" (Rabinow 1992: 237).

history and our individual self is picked up on by the media and has become part of the popular 'genetic imaginary' (Gerlach 2004) surrounding DNA data banking:

Our DNA provides a history book of where we come from and how we evolved. It is a family Bible that connect us all; every human being on the planet is 99.9% the same. On the other hand, we are learning that each letter in that text can spell the difference between blond and brunet, tall and short, life and death" (Gibbs 2003: 28).

The cartographic conception of the 'gene' which emerged in the 1990s (associated with the Human Genome Project) has become a prevalent way of thinking about genes (Dijck 1998).

DNA, like the gene, is seen as both highly individual and universal, making it difficult to separate the individual from the collective without creating an artificial picture of both. The population and the individual in it blend together. Not only are the concepts fused, but they also construct and change each other. This idea was expressed by Rabinow more than a decade ago, in a way foreseeing the centrality of Foucault's concept of 'biopower' to understand late modernity. Rabinow argued that:

the human genome – will be known in such a way that it can be changed. This dimension is thoroughly modern; one could even say that it instantiates the definition of modern rationality. Representing and intervening, knowledge and power, understanding and reform, are built in, from the start, as simultaneous goals and means" (236).

Simulation, DNA and DNA Data Banking

Baudrillard argues that: "Today abstraction is no longer that of the map, the double, the mirror or the concept. Simulation is no longer that of a territory, a referential being or a substance. It is the generation by models of a real without origin or reality: a hyperreal"

(Baudrillard 2). Unlike dissimulation, which masks the presence of something, simulation seeks to mask an absence of something (the real) (Baudrillard 1983: 5). Simulation for Baudrillard, involves an erasure of the difference between our basic categories for making sense of the world. By confusing the 'reality principle', the notion that there exists a basic objective, natural 'reality', exterior to ourselves but of which we are part, simulation marks a radical departure from other orders of appearance. To simulate an illness involves manifesting some of the symptoms of that illness, while if one dissimulates an illness, one is merely pretending to be sick (Baudrillard 5). "Thus, feigning or dissimulating leaves the reality principle intact: the difference is always clear, it is only masked; whereas simulation threatens the difference between "true" and "false", between "real" and "imaginary". Since the simulator produces "true" symptoms is he [sic] ill or not?" (Baudrillard 5). According to Baudrillard, "illusion is no longer possible, because the real is no longer possible" (38).

The 'real' in our current 'order of appearance' (simulation) is controlled by the code (Baudrillard 83). Baudrillard suggest that the genetic code is currently a particularly advanced 'simulacra' (those images created through simulation). The genetic code stakes out its territory and claims the body as its 'real'. In this way, the genetic code offers a new and improved version of the 'real'; it is hyperreal. In the age of simulation, the 'real' is put into orbit; it is the reference for all simulations and yet it remains inaccessible. Any attempt to come close to the 'real' is thwarted by the gravitational field of the hyperreal, since its existence is dependent on its orbital distance from the 'real'. There are no decomposing fragments of the human body draped across the model of

DNA. Only the notion or ideal of a human body, exterior to simulation, exists. The model is confused with the 'real'. Although Rabinow does not directly allude to this, he seems to be working through similar issues when analysing the Human Genome Project.

Rabinow has suggested that:

In the future, the new genetics will cease to be a biological metaphor for modern society and will become instead a circulation network of identity terms and restriction loci, around which and through which a truly new type of autoproduction will emerge, which I call "biosociality" (Rabinow 241).

It seems that Rabinow, like Baudrillard recognizes the growing power of the 'real' and the sociality of artificiality.

Simulations are an increasingly important part of formal social control in the present period, as Western societies make the transition from, "social control by the end ... for a social control by anticipation, simulation and programming, and indeterminate mutation directed by the codes" (Baudrillard 83). It can be argued that the DNA data bank, with its reliance on the genetic code and the realness of the human body, seems to constitute a part of this transition towards social control by simulation. The technological demands of the DNA data banking system are driving the penal project. It can be seen that the system imperatives start to be a means in and of themselves. In the absence of a single overarching project for the criminal justice system, the DNA data bank seems to be the answer to security in late modernity.

The Simulation of Safety

Williams and Johnson suggest that DNA data basing dreams of closing the gap between

the archival information (criminal records etc.) and criminal identification (Williams & Johnson 2004). The fantasy is that once all the 'criminals' are entered into the DNA data bank, there will be a perfectly closed system for criminal identification and solving all crimes. The ultimate fantasy from this perspective is to have everyone in the data bank. When applying simulation theory it can be shown that the DNA data bank keeps the 'reality' of the criminal alive because it suggests that the 'real criminals are out there and we just need to get them into our system to deal with crime. Not only does the DNA data bank produce the 'criminal' but by default it also produces the 'responsible citizen' – those whose profiles are not in the data bank. If what is desired in disciplinary society is the individual (specifically the responsible citizen etc), then how is that attained without a means to distinguish between the 'successful citizens' and the 'criminals'?

3. Beyond Simulation and Discipline

In an attempt to bring together these divergent views on power, this thesis picks up on the somewhat mysterious and under-developed concept of 'Biopower' which Foucault suggested is now the reigning scheme of power, that treats the body as something which is also taken for granted as something 'autonomous'. Foucault's concept of 'biopower' is continuous with the movement towards disciplinary power which sought to find new ways of making the exercise of power more efficient, as the old economy of sovereign power was breaking down. The growing sense that the state could best govern by knowing the individual who commits a crime rather than by punishing the body of the person who offended the body of the sovereign, led the shift to the use of disciplinary

power.

Foucault was interested in the relationship between power and the body. He articulates this in the History of Sexuality Volume One, when he sums the aim of his study in the following way:

...the purpose of the present study is to show how deployments of power are directly connected to the body - to bodies, functions, physiological processes, sensations, and pleasures; far from the body having to be effaced, what is needed is to make it visible through an analysis in which the biological and the historical are not consecutive to one another, as in the evolutionism of the first sociologists, but are bound together in an increasingly complex fashion in accordance with the development of modern technologies of power that take life as their object (Foucault 1990: 151-152).

Foucault sought to map out the way in which the relationship between the body and power was being shaped by new technologies. While Foucault did not address DNA or DNA data banking into his research, his work is useful for understanding the technologies of identification that are now widely used by private and public institutions. Foucault is not alone among the social studies of science theorists in suggesting that the biological concept of the body is shaped by the historical, social and political context in which they are developed. Cole, Winter and Joseph among others have focused on the relationship between power and the body by studying the various ways in which the traces of the body itself have been used to know the individual. Both Foucault and the these theorists identify biology as the latest organizing theory for life, replacing the old creation stories (the elements, the planets, the earth, the soul) and thereby opening up the body to power in a new way. Now the greatest mystery of all seems to be the body.

Foucault has argued that:

Now it is over life, throughout its unfolding, that power establishes its dominion; death is power's limit, the moment that escapes it; death becomes the most secret aspect of existence, the most private (Foucault 1990: 138).

Since the classical age a new form of power has been developing; one which is based not on the ancient sovereign right to 'take life or let live' but on: "the power to foster life or disallow it to the point of death" (Foucault 1990: 138). In the Seventeenth Century this 'power over life' developed in two ways, centering around two poles of development one that centred on the body as a machine to be disciplined and tuned, what Foucault calls an "anatomy-politics of the human body", and one that focused on the "species body" as the source of life and basis of the biological processes addressing this body and its complications, constituted the "biopolitics" (Foucault 1990: 139). These two 'poles' are not opposites for they are "linked together by a whole intermediary cluster of relations" (Foucault 1990: 139). In the History of Sexuality Volume I, Foucault explored the political significance of sex in the context of bio-power. He argues that sex is the "pivot of the two axes along which developed the entire political technology of life" (Foucault 1990: 145-146):

This [his discussion of bio-power 135-145] is the background that enables us to understand the importance assumed by sex as a political issue. It was the pivot of the two axes along which developed the entire political technology of life. On the one hand it was tied to the disciplines of the body; harnessing, intensification, and distribution of forces, the adjustment and economy of energies. On the other hand, it was applied to the regulation of populations, through all the far reaching effects of its activity. It fitted in both categories at once, giving rise to infinitesimal surveillances, permanent controls, extremely meticulous ordering of space, indeterminate medical or psychological examinations, to an entire micro-power concerned with the body. But it also gave rise as well to comprehensive measures, statistical assessments, and interventions aimed at the entire social body

or at groups taken as a whole. Sex was a means of access both to the life of the body and the life of the species (Foucault 1990: 145-146).

Foucault's discussion of sex and bio-power could help to provide a way of looking at DNA and its relationship to bio-power. It not clear at this time, however, whether the DNA data bank might contribute to this relationship given the emerging research suggesting that "DNA profiling and data basing enable the construction of a 'closed circuit' of surveillance of a defined population" (Williams & Johnson: 1).

Simulation theory contends that the 'real' is exclusively produced through simulation and only the hyperreal remains, it has been suggested that we are now working with 'hyperpanoptics' (Bogard 1996), 'superpanoptics' (Poster 1990). One question that could emerge, is whether the poles of bio-power are dissolving, hence blurring the relationship between 'anatomy-politics' and 'biopolitics'. New technologies have emerged which blur the tensions between these two politics: the biological and the anatomical, disciplines and regulatory controls, bodies and populations. If we accept the notion that DNA is a simulacra of 'us', does it problematize the separateness of the two poles around which bio-power is said to revolve? Foucault has challenged the notion that there exists a 'body' outside of our historical, social and political understandings of it. He has written that: "The body is the inscribed surface of events (traced by language and dissolved by ideas)..." (Foucault 1984: 83). Foucault has suggested that analysis is needed to makes the body visible by acknowledging the increasingly interrelatedness of history and biology in the era of bio-power (Foucault 1990: 151-152). It seems that Foucault's conception of the body is thoroughly imbued with history and the 'social' – this is in a

way like Baudrillard's idea that the biological itself, and particularly the genetic code, are entirely simulated and there is no 'nature', no deep dark body with its secrets, but rather, and increasingly, only the social:

Thus we find once more in history that delirious illusion of uniting the world under the aegis of a single principle – that of a homogenous substance with the Jesuits of the Counter Reformation; that of the genetic code with the technocrats of biological science (but also linguistic as well), with Leibniz and his binary divinity as precursor. For the program here aimed at has nothing genetic about it, it is a social and historical program. That which is hypostatized in biochemistry is the ideal of social order ruled by a sort of genetic code of macromolecular calculation ... irradiating the social body with its operational circuits (Baudrillard 109-110).

DNA

DNA is our personal database that stays with us for life and our genetic heritage that is passed on to the next generation (Dr. Ron Fourny National DNA Data Bank Annual Report 2002-2003: 26).

For the law enforcement and justice communities, DNA has revolutionized criminal investigation and prosecution. It serves as the silent but credible witness, convicting the guilty while protecting and exonerating the innocent (Dr. Ron Fourny, officer-in-charge, National DNA Data Bank of Canada Annual Report 2002-2003: 26).

There may be a new form of power emerging, which can be understood when Foucault's idea of biopower is combined with that of Baudrillard's notion of simulation. For lack of more descriptive term, it has the potential to be called a super bio-power. Bio-power in the age of simulation becomes super-biopower, that is, it becomes simulated and hyperreal. There are three properties of DNA which suggest that it may be a technology of super bio-power: it is invisible and material, it is quantifiable and 'databaseable', and it is 'essentializable'.

Invisible and Material

DNA is everywhere and nowhere. Unlike the fingerprint, we cannot see it without a microscope or some other viewing technology yet it is all around us, shed off constantly as we go about our daily lives. The invisibility of DNA makes detailed knowledge about it accessible only to those who have the proper training and equipment to view and interpret it. Scientists, police and lawyers are the ones who make the connections (keep the 'custodial chain' going) between the invisible trace of our DNA and the person who left it behind. DNA is not scarce, so the problem of using it to identify individuals is a problem of deciding what it means if DNA is found in a certain place (either a body or a place). Making the invisible visible involves a complex process of construction. Scientists, police and lawyers do not always agree on the meaning of the DNA in or on a certain place or person. Controversy exists over the way in which the 'custodial chain' as it has been constructed by one group or the other. Forensic scientists and the police present DNA as stable/durable:

The DNA molecule is very stable. This means that useable DNA can often be found on evidence that is decades old. The stability of the molecule, combined with the discriminating features of each individual's DNA and the accuracy of current DNA analysis techniques, makes DNA evidence and extremely reliable forensic tool" (National DNA Data Bank Annual Report 2000-2001: 3).

DNA is presented as the ideal material for forensic identification because it is seen as permanent. Not only is it represented as something which lasts a long time outside of our bodies, it is also presented as something which stays with us. While someone could alter their fingerprints or retinas, so the argument goes, one's DNA is unalterable.

Quantifiable and ‘Databaseable’

The second quality of DNA that suggests it may be a technology of super bio-power is its ability to be coded numerically and stored in a computer data bank. The amount of genetic information in an individual’s genome is enormous. Reducing this complexity requires a technology which can simplify and codify this mass of information. DNA typing is the technology which makes this possible by producing a ‘profile’ (or snapshot) of an individual’s genetic information by highlighting and grouping together certain spots on the DNA sequence. When DNA is reduced to a numeric code, it becomes possible to store it easily in a computer database. By standardizing the representational form that DNA takes, databases facilitate comparisons, searching and analysis. Computer data bases can in turn make it possible to store, sort and retrieve genetic information quickly and efficiently.

‘Essentializable’

DNA claims to contain both our universal and our personal individual identities. This is a powerfully appealing idea. This has been elaborated on in chapter two and earlier in this chapter. DNA is blurring the boundaries between ‘the body’ and ‘the population’. In genetics, the individual and the population are co-produced and mutually dependent. Population genetics, which is the major branch of genetic science associated with DNA comparison, uses a constructed population to calculate match probabilities between

samples. Unlike fingerprints that claim to be individually unique (though Cole has shown that this is a problematic and increasingly challenged claim), DNA is always presented in probabilistic terms, even though these odds may be spectacularly huge.

‘Criminal’ DNA data banking and Super Bio-power

Foucault maintained that disciplinary technologies remained relatively hidden while they spread. The different theories or rationales driving these disciplinary technologies could coexist in different settings of power simultaneously: in factories, universities, schools, and state administration (Dreyfus & Rabinow 1983: 135). Foucault argues that the political rationalities in these different settings were important, as their interconnection and indeed competition “masked the fact that radically new practices of the time, those of bio-power, were gaining widespread acceptance” (Dreyfus & Rabinow 135). Given that DNA data banking is more clearly connected to the ‘get tough’, punitive crime control approach which re-asserts the ‘myth of the sovereign’ and sees the offender as “other” (not like the self), it is difficult to see its relationship to the ‘responsibilization strategy’. However, this does not necessarily mean that DNA data banking as a practice is not part of establishing the legitimacy of DNA and data banking which may be moving us further into bio-power and possibly towards a super-biopower. There are some small signs that suggest that we are moving beyond disciplinary power and biopower, for instance, extended incidences of data basing DNA, such as DNA sweeps which involve active mobilizations of communities in the name of social responsibility to give their DNA samples to police when they are requested. Refusing to give DNA is to become suspect,

and to appear to be an irresponsible community member. What also suggests that we may be moving towards super bio-power is the emergence of a new kind of body (and consequently, of a new type of individual), one which is hard to distinguish from the “population” and which is mostly reduced to information. The distinction between the “anatomo-politics”, or the machine body, and the “biopolitics”, or species body, may be disappearing.

CONCLUSION:

This thesis has explored the emergence of DNA data banking as a technology of power. It has argued that the current popularity of DNA data banking as a crime control technology can be better understood when it is situated in relation to the wider social and political transformations that have been part of the transition from modernity to late modernity. The ontological insecurity, which accompanied the new social, economic and political arrangements of modernity, intensified as societies moved deeper into modernity towards a more sceptical (or reflexive) version of modernity. As Cole has argued, in modernity identity becomes a 'problem' for the first time. Finding new ways to keep track of increasingly mobile populations was proving to be a challenge for the state. The authority of the 'modern nation-state' was initially based on its claim to be able to provide security to its population through the exclusive use of violence within its borders (Garland 448). As the state began take more and more exclusive responsibility for governing all of 'social life', the success that it had been having earlier (in late nineteenth century) by combining its forces with those of institutions of civil society began to unravel (Garland 449). By the mid-twentieth century the 'myth of sovereign' power to punish was in full crisis; the state was seen as ineffectual at reducing the high crime rates that had become a 'normal' social fact of life in late modernity (Garland 449).

In this context, the state takes an ambivalent and dualistic approach to this predicament; on the one hand it continues to reassert its self through the use of 'get tough' political

discourse and policy and on the other hand it tries to adapt to the new situation by using what has been described as a 'responsibilization' approach. These approaches are driven by two primary sets of criminological theory, the criminology of the 'other' and the criminology of the 'self'. DNA data banking has emerged as a technology which operates on the conception of the criminal as 'other' and as 'self'. Consequently it seems to fit coherently with the associated discourses and policies of both criminologies. In public policy debate leading up to the creation of the NDDB there was a sense that DNA data banking could target both the 'permanently dangerous' (other) and the 'potentially dangerous' (a group who like 'ourselves' could rationally choose not to commit crimes if they were aware they had DNA in the data bank).

Identification technologies like DNA data banking have been widely politically and publicly popular as 'solutions' to reducing crime. Even though the NDDB was presented by government officials as part of their 'get tough' approach to crime, it was still embraced by many groups who have traditionally opposed purely punitive approaches to crime. DNA data banking tapped into the 'culture of the trace' which has been developing since the nineteenth century. Like earlier trace technologies DNA data banking promised to improve the criminal justice system and public safety in a number of ways. DNA data banking has been presented by police as a means to deal with the "borderless nature of crime" in late modernity. It has also been presented as a means to deal with the new threats of terrorism. The DNA data bank was also presented by its proponents, as a technology for managing risk. The NDDB was constructed as kind of insurance against the fallibility of an all too human criminal justice system (Gerlach

2004). It also claims that to reduce the risk of recidivism by using the NDDB as a tool of 'predetection' getting people into the system as early as possible so they can be taken out of circulation and possibly deterred from committing future offences. Not only does the NDDB promise to improve the criminal justice system by reducing risk of recidivism and judicial error, it also claims to be a much more efficient investigative tool, reducing the time and human labour of an investigation. However, the DNA data bank's efficiency has not so far, been held up to any outside standard of crime reduction. Its efficiency is a function of its system imperatives. The logic is the more samples in the NDDB the more successful the data bank.

Williams and Johnson capture some of the changing dynamic of surveillance in late modernity, and suggest that a new form of surveillance is emerging ('bio-surveillance') which works differently than Foucault's concept of surveillance. These theorists suggest that the old kind of panoptic surveillance is of limited use for understanding DNA data banking because bio-surveillance in the NDDB is a) not about correction and b) only aiming the panoptic gaze at a limited population, which dreams of perfecting surveillance through the creation of a 'closed system'. However, as more and more people are added to forensic DNA data banks (for non-violent crimes, such as breaking and entering) is the DNA data bank still just about the permanent surveillance of a defined group (a closed system)? As an increasing number of institutions (both public and private) begin to store DNA in data banks/bases there may be lessons to be learned from the way in which the NDDB is reconfiguring the relationship between identity and the body.

Poster has looked at data bases from a Foucauldian perspective. He has taken Foucault's concept of the panopticon and shown how data bases can be understood as new kinds of panopticons, "superpanopticons". Poster suggests that data bases produce 'data doubles', additional selves which can be acted upon without the 'real' selves ever knowing (Poster 98). Poster argues that in the postmodern mode of information, data bases (as superpanopticons) play an important role in disciplining the masses, much as the panopticon did before. He explains that: "the discourse/practice of the Panopticon was a condition for a new form of biopower, a means of controlling masses of people for the development of industrial processes. Similarly, the discourse of databases, the Superpanopticon, is a means of controlling the masses in the postmodern, postindustrial mode of information" (Poster 97). In a way, Poster's approach to data bases resonates with the work being done on the simulation of surveillance, in that the 'superness' of the panopticon is conceptually similar to the hyperreal in simulation theory. In the superpanopticon, data doubles are hyperreal versions of individuals which can potentially be more useful for surveillance purposes than actual people.

Bogard has argued that simulation is the "panoptic imaginary", it is the fantasy of power driving surveillance (Bogard 19). While surveillance has been looked at primarily as a technology of power, Bogard and others have suggested that it is also a fantasy of power. Bogard suggests that, "surveillance without limits is exactly what simulation is all about" (Bogard 15-16). Simulation takes the fantasy of surveillance, the idea of being able to see everything and see it in advance to its limit, simulated surveillance is a 'paradox of control' it is the idea of control without control (Bogard 22). In this way simulated

surveillance seems to fit with the way in which ‘telematic societies’ seek to resolve the problem of how to maintain perceptual control without necessarily having direct observation. The dream of the ‘closed system’ entirely based on simulation, which makes the operation of surveillance automatic, is part of the fantasy that drives the development of identification technologies, such as the DNA data bank. For Bogard, one of the problems of simulation is that it deludes us/itself into thinking that it can “reproduce the real without remainder, that it can collapse the difference between reality and appearance, the actual and the virtual, make those differences indiscernible” (Bogard 24).

The genetic code is seen by simulation theorists as a highly advanced simulacrum (Baudrillard 103-104). Baudrillard has suggested that the genetic code is in fact a mini version of the way in which control operates in the age of simulation, where control itself has become ‘cybernetic’ and governed by the code (Baudrillard 104). The genetic code, our own simulacrum, is “an erased record, unchangeable, of which we are no more than cells for reading” (Baudrillard 105). By putting an end to the myth of its own beginning the code (the genetic code) resolves its internal contradictions and also puts an end to the myth of its own end (Baudrillard 112). By grounding itself in the black box of the “biological” body, the genetic code is assured a permanent supply of the ‘real’ for simulation. As with ethnology and the Tasaday, genetic science sacrifices total knowledge of its object, always leaving part of it forever unknown to preserve its naturalness and its mystery. But this is only a simulated sacrifice, one aimed at saving the ‘reality principle’ of the human genome. In order to rely on DNA as the ‘ultimate’

marker of human identity (both collective and individual), a hyperreal version of us, the body must be confined, made off limits, and turned into a mystery which is only beginning to be understood through genetic science. DNA is presented as our 'true' identity, a more stable version of us that can be relied upon for individual identification.

The current perception that DNA holds the answer to the criminal justice system's search for ever better ways to identify 'criminals' is part of a centuries old dream of finding a fool proof means of identification based on the body. In the criminal justice system both the belief that there may exist a 'criminal type' and the realization that the legitimacy of the system required a means to eliminate sources of bias in the identification process fuelled the search for body based identification technologies.

Questions have been raised by social theorists about the notion that there exists a body apart from our understandings of it. Rabinow, has suggested that the genome is known in ways that alter it (Rabinow 1992). Van der Ploeg has also problematized the notion that there are clear boundaries between 'the body' and 'information about the body' in her work on biometric technologies (van der Ploeg 1999). DNA data banking raises questions about the way the body is being redefined by new identification technologies. DNA data banking approaches the body as information to be stored and compared. It creates DNA profiles which simplify our genetic information into a barcode which can be easily stored and searched. But in the case of the NDDB, the biological samples taken from the crime scene or offenders are also data banked, suggesting that these actual bits of bodies give further legitimacy to the DNA profiles. It could be suggested, that rather

than reducing the individual to a biological representation, DNA data banking produces more complex social identities. That is to say, it multiplies identities rather than reducing them to a single biological pattern. Beyond the 'data double' (which can be acted upon without our knowledge) there is the social double which also lets us go about our everyday lives, drawing on and constructing our social identities (sister, mother, teacher, friend) while our genetic 'junk' profiles are either stored or not. The DNA data bank can be seen as a tool for managing people who have not performed their social identities as they should and so in a sense their social identities are hardened by the fact that their genetic identity is considered 'problematic' or 'risky' by virtue of its existence in the DNA data bank. In this sense the DNA data bank can be seen as acting in accordance with Foucault's concept of power as productive. Rather than seek to reduce the body as it did under sovereign power, the current form of power, namely bio-power, seeks to multiply and harness the productive forces of the body.

Foucault surmised that bio-power is the reigning scheme of power of our time. This form of power co-existed and emerged alongside older forms of disciplinary power. Competing rationalities of disciplinary technologies masked the emergence of this new type of power. But gradually bio-power has been establishing its usefulness and gaining strength with its emphasis on 'life' rather than death. Foucault writes:

For the first time in history, no doubt, biological existence was reflected in political existence; the fact of living was no longer an inaccessible substrate that only emerged from time to time, amid the randomness of death and its fatality; part of it passed into knowledge's field of control and power's sphere of intervention. Power would no longer be dealing simply with legal subjects over whom the ultimate dominion was death, but with living beings, and the mastery it would be able to exercise over them would have to be applied at the level of life

itself; it was the taking charge of life, more than the threat of death, that gave power its access even to the body (Foucault 1990: 142-143).

The emergence of a politics of life, a “bio-politics”, Foucault has suggested, may be understood as a “threshold of modernity” (Foucault 1990: 143). Although Foucault died in 1984 it is evident today how relevant his concept of bio-power is to the organization of contemporary societies. The speed at which bio-power has developed over the last half of the twentieth century is dramatic. New technologies (new biotechnologies) and fields of study (ie. bioethics, genomics) have been developing that are conducive to the spread of bio-power. For Foucault, bio-power designates “what brought life and its mechanisms into the realm of explicit calculations and made knowledge-power an agent of transformation of human life” (Foucault 1990: 143; Rabinow 1992: 234).

Rabinow’s work on the Human Genome Project draws on Foucault’s concept of bio-power suggesting that a new kind of knowledge-power is emerging around where knowledge itself is transformative, he argues that “...the human genome – will be known in such a way that it can be changed ... Representing and intervening, knowledge and power, understanding and reform, are built in, from the start, as simultaneous goals and means ” (Rabinow 236). Rabinow suggests that, “... the new genetics will prove to be an infinitely greater force for reshaping society and life than was the revolution in physics, because it will be embedded throughout the social fabric at the microlevel by medical practices and a variety of discourses” (Rabinow 241).

Rabinow’s study of bio-power and the new genetics is fruitful ground for questioning the

relationship between simulation and bio-power. His analysis of the Human Genome Project, suggests that new types of knowledge are emerging where knowledge and transformation are in a sense becoming indistinguishable from one another. Drawing on simulation theory which suggests that there is only the hyperreal, which generates the 'real' through the code, and where knowledge and transformation are embedded in the code, exposes the potential usefulness of simulation as a technology of bio-power. One question that emerges, is whether the poles of bio-power are dissolving, hence blurring the relationship between 'anatomy-politics' and 'biopolitics'. New technologies have emerged which seem to blur the tensions between these two politics: the biological and the anatomical, disciplines and regulatory controls, bodies and populations. If we accept the notion that DNA is a simulacra of 'us', does it problematize the separateness of the two poles around which bio-power is said to revolve? Is it too soon to know whether a new form of power may be co-existing and developing alongside older forms of bio-power? While overall, forensic DNA data banking seems to fit more clearly with Foucault's concept of disciplinary power and the anatomy-politics of the body, than with his concept of bio-power, when it is analyzed using the literature on surveillance and simulation new possibilities for understanding the relationship between identification technologies, like DNA data banking, and power emerge. Poster has suggested that data banking is a 'superpanopticon', a new technology of surveillance that serves bio-power. Might the application of a 'superpanoptic' framework to the sphere of 'life' suggest a technical move is occurring which is opening up space for the emergence of a new type of bio-power - a super bio-power?

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