

**DNA Detectives:
A Look at DNA in Four Prime Time Television Crime Dramas**

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ABSTRACT

DNA Detectives:

A Look at DNA in Four Prime Time Television Crime Dramas

Sarah Jane Mathieu

This thesis examines the ways that DNA is represented within the content of fictional prime-time law enforcement dramas, relating to issues of surveillance, identity, technology, expertise and risk. By analysing and coding the dialogue of four fictional law enforcement dramas (CSI, CSI Miami, Law and Order, Law and Order SVU) this study was able to distinguish ten different categories of DNA representation. Further analysis reveals that out of the four series studied, both the CSI and CSI Miami series have higher episode proportions that refer to DNA; the more popular categories of DNA representation present DNA as the truth, as an indicator of guilt or innocence and the utilisation of genetics as a method of interrogation and identity. Across all four shows, DNA was most commonly represented as an identity and revealing one's guilt and innocence.

The manner in which DNA is represented to a mass media viewing public in such a mainstream method of entertainment exposes society to such advances in technology and promotes a system of law enforcement that is based on methods of surveillance and risk theory. In a society that has become aware of a growing risk mentality surrounding surveillance and technological applications, a study such as this sheds light on the popular culture that assists in presenting these surveillant techniques to a population that may become increasingly comfortable with its invasiveness.

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INTRODUCTION

INTRODUCTION

In a back yard in Las Vegas, Nevada, forensic scientists at the scene of the crime analyse a trace of saliva cautiously retrieved from the skin of a corpse. A discussion ensues on how the sample will yield the DNA profile of their killer. In a laboratory in Miami, Florida, a DNA technician analyses blood evidence retrieved a few hours ago and hands the results over to a detective who is now able to reconstruct the crime as it happened. In New York City, detectives investigating a sexual assault ask a suspect to provide a DNA sample in order to prove his innocence.

These scenes are just small examples of the hundreds that play across our television screens every night as we watch fictional law enforcement dramas. In the span of one week, the average television viewer with access to cable television can view up to a dozen fictional law enforcement dramas. Filled with plot twists and turns, these popular representations of law enforcement have evolved to include the forensic laboratory. Interrogation rooms and jail cells are also joined by laboratories and test tubes and overworked detectives are partnered up with scientists.

The first purpose of this thesis is to provide the viewer with a current portrait of how messages about DNA and DNA analysis is being portrayed in various episodes of four television prime-time crime dramas. This is achieved by analysing how DNA is presented in the dialogue and content of 4 specific prime-time crime television dramas; Law and Order (on the NBC network), Law and Order SVU (NBC), CSI (CBS) and CSI Miami (CBS). This thesis will paint a

portrait of four popular crime-fiction dramas that promote a hegemonic viewpoint of DNA analysis, building the image of an efficient, logical, technologically supreme ideological standpoint that creates an arena of acceptance and promotion of such technology.

The second purpose is to demonstrate to the viewer the tension that exists in these television shows between two ideological standpoints, the humanistic platform that focuses on the human and emotional element of investigations and a scientific one that places the spotlight on the science and the technology behind crime solving. As well as the tension that exists, I hope to illustrate how one ideological standpoint, the scientific one, is often favoured over the more humanistic plot lines in the script dialogue that surrounds particular scenes.

I wish to demonstrate how many of the messages in the television shows parallel some theoretical arguments about the promotion of perfect knowledge (the ability to share knowledge that is irrefutable, correct and devoid of criticism) as well as the reliability of expertise, the benefit of surveillant practices and the worship of science and the truth. As well, one of the concepts that will be discussed is that of 'geneticization', described by Lippman (1991) as "an ongoing process by which differences between individuals are reduced to their DNA codes, with most disorders, behaviours and physiological variations defined, at least in part, as genetic in origin" (P. 19). The geneticization of the individual is pertinent as these shows support a growing enthusiasm for such reductionist thinking, focusing on the genetic material that routinely represents everything from motive to identity in these shows.

I would argue that the messages being shown to the viewer on a nightly basis eliminates the use for the traditional, complex, often flawed human detective as it becomes the newer, improved DNA-detective. The geneticization of law enforcement and the social culture of data and trace elements are being transcribed not only through academic papers and scientific conferences, but rather through mainstream popular culture.

This thesis will also provide the reader with information about DNA technology, starting with the discovery of DNA by James Watson and Francis Crick. I will also take the reader through the procedures and technology behind DNA analysis as well as introduce the reader to biometrics, the measurement of biological material or body parts for the sake of surveillance (Lyon 2001:72).

The idea of uniqueness is a key contribution and benefit of DNA technology since the genetic material that can be recovered from skin, blood, semen or other biological samples is unique to the individual to whom it belongs. What genetically sets you apart from the rest of the population can condemn or exonerate you in the criminal justice system.

In order to examine the messages behind the role of DNA in these television shows, I will utilise both a content analysis and discourse analysis. The content analysis of Law and Order, Law and Order SVU, CSI and CSI Miami will aim to give the reader an idea of the varying representations of DNA within the episodes. This is achieved by coding the dialogue of every episode under the same television season for each of the shows. The coded dialogue will specifically concentrate on the mention of DNA and DNA analysis, but rather

than focusing solely on the number of times DNA is mentioned it will be able to offer a deeper look at the messages behind these particular scenes.

In parallel to the content analysis of the television shows, the discourse analysis incorporates various theoretical issues that address law enforcement, surveillance, identity, truth, expertise and the idea of perfect knowledge. Instead of focusing on how these television shows influence the viewer, I will look at the tension that is displayed between the different theoretical schools of law enforcement described by Castel (1992) who distinguishes between the humanistic and science-based or 'scientific' operation of law enforcement. The episodes are further considered in relation to society's argued trust and faith in expertise and systems of technology regardless of our technological training (Giddens 1990 and Fuller 2000).

Other points will be raised concerning science, surveillance and the messages concerning how we perceive the individual in reaction to the growing popularity of categorisation and the collection of data (Lyon 2001, 2000). The classification and categorisation of information is a common theme for theorists such as Poster (1996) who provides different characteristics of the 'database', as well as Bennet (1996) who introduces the reader to the concept of 'dataveillance': the practice of incorporating the classifications of information, such as DNA, into a surveillant practice. While more traditional methods of surveillance like cameras are not addressed in this study, issues of governmentality are discussed (Foucault 1977), as well as the panopticon

(Bentham 1995) and the methods through which our government utilises surveillance in order to help plan for the future in a more risk-aware society.

The message being presented to the viewer is just as important as the medium through which it is presented. This is why I will address some of my arguments towards how television programming and exposure to law enforcement dramas influence the opinions of the viewing audience (Surette 1984, 1990). Entertainment media can be accessed by a variety of social classes, regardless of education or job profile. Those who enjoy law enforcement dramas today are able to observe the different ways DNA is used in law enforcement. I intend to demonstrate how DNA is presented in a manner that increases familiarity within the viewing audience by extensively looking at the way DNA is discussed and represented on the small screen. Whether or not the different DNA representations influence the viewing audience in their views on the justice system and technology remains, at best, a future possibility to expand this present research.

As well as circumventing the issue of viewer influence, the scope of this thesis is limited to the popular culture medium. The interest of this thesis does not lie within the ethical debate surrounding the use of DNA databases or the current government initiatives to catalogue DNA profiles. There is no doubt that an important dialogue exists today over the use and applications of DNA databases, however I intend to shed more light on how those who are not involved in the ethical debates can be exposed to messages and representations of DNA and its applications within theories of surveillance along with humanistic

and scientific stand-points. By focusing on the tension that some of these scenes display between the humanistic and scientific ideological standpoints, this study will also demonstrate the changing views that popular culture demonstrates towards law enforcement and the role of the individual.

As viewers tune in weekly to catch an episode of their favourite fictional prime-time crime drama, they have widespread access to the messages and content of these shows regardless of their income or their profession. The interest here lies in the messages that we, as a viewing audience, are being exposed to on a daily basis. If anything, I hope to promote discussion around the possible impact of such messages, hopefully opening the door to further analysis and dialogue.

The following chapters will explain how the television episodes were coded and how the DNA references were categorised. By taking a look at particular episode scenes and their demonstrations of some major principles of surveillance, risk and science, a discussion section will join the theory and the coding sections in order to provide a portrait for the reader that allows them to not only understand the arguments of DNA representations, but further raises questions to think about the next time they sit down to enjoy their favourite fictional prime time law enforcement drama.

CHAPTER 1
LITERATURE REVIEW

LITERATURE REVIEW

As a recent milestone for the scientific community, DNA analysis is a valuable contribution to the justice system. Instances of its use within criminal investigations has often been mentioned on the news and portrayed within popular television dramas. With the popularity of fictional law enforcement dramas, the different representations of DNA can be accessible to the many viewers that enjoy the fast paced story-lines and dramatic investigations.

Much of the content surrounding social research on television programming concerns television's portrayal of the criminal justice world, more specifically focusing on the misrepresentation of the justice system and the overemphasis on the more serious and violent types of crime (Lichter and Lichter 1983). Other theorists have centred their research on the portrayal of the rogue or flawed detective (Jane 2001).

Those who view law enforcement dramas are introduced to the fictional law enforcement world as they witness pre-trial hearings, interrogations and forensic processes. While entertaining, some theorists have suggested that the content and methods of portraying the inner-workings of the justice system can be influential to those who watch it.

Ray Surette (1984) is such a theorist; discussing the influences of television on a viewing audience that is unfamiliar with the world represented on the screen. Focusing on both the viewing audience's exposure to the news media and the manner in which it portrays the criminal justice system, he also leaves room for fictional entertainment television and its dramatisations of law

enforcement. He argues that fictional television programming that is viewed by a mass audience interacts with and influences the public attitudes allowing the viewer to be at crime scenes, witness arrests, trials and other parts of our justice system (Surette 1984: 4). Instead of simply watching the events unfold, the viewer becomes part of the process.

With television's unrelenting role as a major source of entertainment, the law enforcement genre of television programming becomes one of the foremost informational sources concerning justice issues, regardless of whether or not it is a true representation or a fictional re-enactment. Surette (1984) also argues that the information provided to the viewer by an ever-present media is further compounded by the suggestion that "a relatively small percentage of people deal directly with the justice system and therefore the general public's knowledge of justice is drawn significantly from the media" (Surette 1984: 5). The lack of a real-life reference point leaves the viewer open to interpretation of what is seen on the screen. The dramatic nature of some television shows, combined with the informative content can be overwhelming and instructive to an inexperienced audience.

As well, some theorists have claimed that the portrayal of the justice system on television can produce distortions: "Television does not depict merely law enforcement, but a glamorised, fast-paced image of law enforcement or its civilian counterpart, the private detective" (Bortner 1984: 18). In the four television shows studied, liberties are often taken with the portrayal of law enforcement officials, as well as with the portrayed accuracy of individual and

procedural rights. Bortner (1984) claims that the emphasis on a glamorous story-line and the over-representation of a fast-paced justice system affects audiences and their ability to comprehend more complex, realistic portraits of the justice system (1984: 19). In short, the possibility exists that a viewing audience used to such representations of the justice system could quickly become disillusioned when introduced to the reality of how the system actually functions.

Apart from the dramatic and often unrealistic portrayal of the justice system, Bortner (1984) also details how some television shows that portray the justice system (whether fictitious or not) often overlook the concept of teamwork focusing instead on individual 'stars' and 'heroes' who arrive at a solution to the puzzle. The concept of *hegemony* is introduced here to suggest that a dominant view or ideology can be expressed to an entire population through television programming, in this case the population being the viewing audience:

" a belief system (ideology) which supports the dominant class within society becomes diffused throughout the entire population to the extent that even those individuals who are not in a privileged position within society accept and share the very value system that legitimates the unequal, hierarchical social structure that victimises them". (Bortner 1984: 19)

It is important to understand the differences between the type of story-lines and overall presentation of the shows that were coded for this study. Castel (1992) classifies the justice system into two distinct schools of practice and ideology. In what Castel terms the **humanistic** version of the criminal justice

system, police officers and investigators relied on hunches, interrogation tricks and years of experience to help them build cases and arrest suspects. In the courts, the more humanistic side concerns itself with eye witnesses, motive and opportunity to commit the crime as well as demeanour and testimony. The humanistic side of the justice system does not claim to be completely devoid of technological influence. It utilises handcuffs, jail cells and fingerprinting, however the focus does not centre on the scientific parts of the justice system (Castel 1992: 281).

Technological advances have become more available within the judicial system. Castel's (1992) science-based criminal justice system provides investigators with more advanced, precise investigation tools. Fingerprinting has gone digital, surveillance cameras are the norm, computerised databases are routinely accessed and genetic mapping has provided efficient, accurate ways of identifying suspects from biological material such as hair, semen and blood left at a crime scene. The laboratory is now a principal part of the investigative procedure (Castel 1992: 281). For the purposes of this study, this style of law enforcement will be referred to as a **scientific** viewpoint.

Castel (1992) argues that this science-based approach to crime solving is a reflection of the risk-oriented mind frame that has enveloped the criminal justice system. Not only has technological and scientific progress made investigations more efficient and accurate for detectives, Castel also argues that science has the potential to provide the justice system with the ability to manage and control

those who fall under their suspicion or have been deemed dangerous or risky. Castel's science based justice maintains a watchful digital 'eye' on individuals.

Contrary to the science-based approach of criminal investigations, a more humanistic approach considers social causes of criminal behaviour, reinforcing social controls in order to deter re-offenders or first time criminals. Risk theory asserts that the criminal justice system must deal with those who seem unaffected by social deterrence. Gerlach (2004) points to a growing modern society that has replaced dangers with categories of risk. Instead of focusing on the characteristics of a suspect's personality or the social conditions that may have participated in their criminality, Castel (1992) puts forth that risk theory promotes the concentration on factors that lead to a suspect's identification and classification. The abstract nature of such a theory dehumanises the criminal and reduces him to an identified degree of risk (Castel, 1992: 281).

As the criminal justice system becomes more science-based, it relies more and more on experts and personnel to operate and understand these scientific procedures and systems. Anthony Giddens' (1990) theory of abstract systems reflects on the trust that society has in expertise and expert systems. Instead of focusing on economics or physical strength, society's power becomes re-distributed among the amount of knowledge and scientific expertise we possess (Giddens 1990: 89).

Nonetheless, Giddens (1990) is quick to point out that this respect for science and technology generates a feeling of ambivalence at its core, fostered by a society that accepts the 'top-down' delivery of information because of their

own lack of advanced instruction in the scientific arena (stemming typically from formal educational institutions). Essentially, Giddens (1990) suggests that we trust the technological world we live in because we defer to those who possess more advanced training and expertise. An example of this can be seen in our use of computer technology. While we may know the basics on how our computers operate, most of us do not have any advanced computer training to understand the more complicated parts of it. Therefore, if our computer should fail to operate properly, we are quite comfortable contacting an 'expert' in order to help us remedy the situation.

A society that looks toward others to explain complex systems can become very trusting of such experts, as "trust is only demanded where there is ignorance" (Giddens 1990:89). Day-to-day exposure of such technology enforces the trust that society holds towards abstract systems of information, supported by updating our limited knowledge through multi-media sources (Giddens 1990: 90-91).

A well-known system that is used nowadays is the DNA database. While genetic mapping can provide methods of identifying and treating diseases and defects, one of the more recent uses for genetic mapping is to determine one's identity and to exclude the presence of suspects at crime scenes. The creation of DNA databases used by law enforcement classifies the abstract information of genetic identity into an information 'system'. Such trust in abstract systems of technology generate feelings of what Giddens (1990) refers to as 'ontological security', referring to the emotional confidence that people have when it comes to

their self-identity and the stability and continuation of that self identity (Giddens 1990:92). Our DNA has been heralded as the unique biological property that sets an individual apart from another. Once it is placed in a database, we are therefore secure in knowing that DNA is a stable indicator of our identity and can continuously be referenced.

Not only relegated to Canada and its use of the NDDB (National DNA Data Bank), other countries like the United States and England utilise DNA databases. Not only for justice purposes, pharmaceutical companies have purchased the genetic codes of individuals in order to further use the data in the processes of the manufacturing of medication (Gerlach 2004).

In Canada, Bill C-104 details the procedural guidelines of DNA collection from criminal suspects (Gerlach 2004:72). The bill outlines the grounds available for use and which procedures are to be utilised (swabbing the interior of the cheek instead of drawing blood). Bill C-104 allows for a DNA sample to be collected for the purposes of identification. Under this Bill, a judge can issue a warrant for DNA collection on four grounds; the discovery of a bodily substance at a crime scene (like blood or semen), the agreement by the judge that the offence is designated as worthy of DNA analysis (such as a sexual or violent offence), to determine if an individual was witness to a crime or was at the scene of a crime and to determine if an individual was specifically involved with the crime (Gerlach 2004: 73).

Bill C-104 restricts the collection of DNA and its analysis within the scope of a criminal investigation. The gathering of a DNA sample must be done by a

health professional and can be done through the collection of a hair follicle with the root attached, drawing blood and swabbing the interior of an individual's mouth. More importantly, the privacy of the individual who is subject to the DNA collection must be maintained, and his DNA evidence cannot be used outside of the criminal investigation (Gerlach 2004: 73). It must be remembered that the conditions listed above are independent of the consent of the individual in question, regardless of the recognised invasion of the human body.

Geared towards the respect of individual rights to privacy, Bill C-104 led the way to the establishment of a national DNA database called the NDDDB that was officially launched in 2000 (Gerlach 2004:76-78). Under the jurisdiction of the RCMP, the NDDDB holds potential information in two major groupings: DNA profiles found at a crime scene or on an individual and an index of DNA profiles composed of convicted offenders (Gerlach 2004: 77). Accessed by law enforcement only, it allows for the sharing of information among different and international law enforcement systems, such as CODIS, the Combined DNA Identification System, operated by the FBI in the United States (Garfinkel: 2000) which has been operational since 1994.

As well as a growing dependence on expertise and a trust in abstract systems, it has been suggested that there exists a growing obsession with truth and perfect knowledge. Some of this obsession has translated into a proliferation of digital information on the individual. Lyon (2001) is concerned with the growing disappearance of the concept of the individual within a technologically advanced society. The database, for instance, is characterised

by raw data listed in ways that are accessible to the outside world. As an increasing number of individuals become classified into various databases, there arises a multiplication of the streams of data that are continuously used as a representation of the individual. The data in these databases become our identity; we become a social insurance number, a credit card number or a genetic profile. This transformation of the individual into raw data and the growing reliance on databases increases the disembodiment of the individual.

The tendency for the progression of scientific technology to lean towards classification is what Lyon (2002) refers to as the 'phenetic fix': a desire to classify all things that are surveyed, to provide a 'place' for information to be stored in order to facilitate retrieval for later use.

Expanding on Deleuze's theory of 'societies of control' Lyon (2001) examines a growing emphasis on "biometrics", the monitoring and measuring of biological data. Lyon argues that biometrics take away from the sense of the individual as a sum of its parts by compartmentalising the body and reducing it into bits of data instead of taking into account other details that are more complex, such as socio-economic status, family life and education.

Lyon (2001) also suggests that our society tends to rely on traces rather than tradition; focusing on digital data and perfect knowledge through biometric information that cannot be questioned. Instead of interrogating an individual person, one can simply refer to the database that contains accurate information. (Lyon 2001:19).

The appeal of biometrics is with its measurability and accuracy. No one can argue with facts or data, they are what they are. Their interpretation does not deviate far from what they represent. The imperviousness of raw data to argument or influence adds to its value as perfect knowledge.

Fuller's (2000) 'Big Science', is another theme that is current through this study as science becomes larger than life in its attempts to reveal the truth (Fuller 2000: 148). Paralleling Giddens (1990) arguments towards trust in abstract systems and expertise, Fuller (2000) also makes a point to discuss how science has become mainstream, promoting generations that keep becoming more technologically literate. This technological acceleration is identified by Fuller as a catalyst to the growing divide between those who are not as technologically advanced and those that are classified as scientific experts.

A reliance on science and the promotion of the pursuit of truth can foster a public arena of discourse. Like Giddens' (1990) views on the trust relayed into science and expertise, Fuller (2000) also argues that most of the general public, while accepting of scientific theory, does not have the education or training to comprehend the more advanced theories. Furthermore, Fuller argues that scientific 'experts' are in the privileged position of being able to publicise their scientific theories to the mass public. This access to publicity is contrasted with his additional observation that experts are able to retreat within their elite circles and remain behind their advanced theories and practices without really having to defend themselves to the mass public that does not hold court in their environment. This aversion to public accountability can cause an obstacle to

discourse and debate, leaving society to become more complacent and accepting when introduced to new breakthroughs in technology.

Fuller (2000) also points to an accelerated use of computerised systems in order to display expertise, suggesting that:

“Computerised expert systems, the products of the ‘knowledge engineering’ business, are slowly but surely absorbing the work of medical diagnosis, chemical analysis and engineering design – to name just a few tasks that have traditionally required scientifically trained personnel.”(p.123)

There is significant social weight that is attributed to expertise, whether computerised or human; as “Scientific judgement appears expert only against a certain social background, a major part of which includes a public that allows the scientists virtually complete discretion over how and when they account for their activities” (Fuller 2000: 124).

The 21st century surveillance that we have become accustomed to is based in routine as it fulfils “our preference of a private existence” that is authenticated in a faceless public world (Lyon 2002: 2). Lyon goes on to further argue that whenever we are identified by number or data, we are identified without interacting directly with these systems. We remain passive subjects to surveillance around us, maintaining what we believe is a private existence, even though our identities become available for public use.

The irony of the desire for privacy in a system of surveillance that robs us of that privacy is apparent. Privacy and surveillance exist in relation to each other and co-exist as they follow 'flows' of information. As people physically enter and exit a location, flows of information follow suit. Those who enter and exit the area have their physical features recorded by surveillance cameras, their PIN (personal identification numbers) are entered into bank machines they utilise. All of this 'watching' is indicative of society's need to record, identify and classify those around us in case they become worthy of our attention.

Using Foucault's theory of discourse, Poster (1996) suggests that there exists a relation between the computerised database and the constitution of the subject. He argues that databases are discourse, using symbols or symbolic traces to attain its objective of classification and identification. In the computerised database, binary code is transcribed onto the screen into information we can read and understand (Poster 1996: 182). These symbols become our social insurance numbers, credit card numbers, as well as our DNA profile.

Another characteristic of the database is its ability to be transferable in space when it is in an electronic or digital form, having the potential to exist anywhere and for an unlimited amount of time until it is actively dismantled. Its potential for infinite storage means it has the ability to last forever. As well as a vague sense of its 'home', the electronic or digital database also has no singular authority or owner but instead can be generated and owned (as property) by the

institutions that utilise it and benefit from its operation (i.e.: insurance companies or the military) (Poster 1996: 182-183).

Foucault's (1969) 'grids of specification' define the database, where "the systems according to which the different kinds of the object in question are divided, contrasted, related, regrouped, classified, derived from one another as objects of discourse" (Foucault 1969: 42 in Poster 1996:185). The database is a grid in every sense, it consists of variables of calculation and what Poster (1996) refers to as fields and records in order to provide pinpoint accuracy of identification. The accuracy of the database is more reliable than other methods of classification and identification like psychology or sociology which deal with variables that are more open to interpretation.

In the criminal justice system, various databases are utilised in order to identify suspects and victims. Whether it is CODIS (Combined DNA Index System), NDIS (National DNA Index System) or IAFIS (Integrated Automated Fingerprint Identification System), these databases are similar in the manner of how data is entered (www.fbi.gov). Since it is biological in nature, the raw data that is entered into such a grid of specification originates from a person. Once the data is classified as the identity of the person, it exists in absentia from the subject, subject to manipulation and interpretation.

As the database becomes a well-placed part of the surveillant world, we can see how Foucault's theory of governmentality is relevant. As surveillance has the ability to offer widespread social control, it is removed from the individual overseer and relies more on the social subject's awareness of the tools needed and

utilised in order to govern (Foucault 1991:98 in Miller, Gordon and Burchell eds. 2001). The use and establishment of power, in a systemic, scientific manner allows for the decentralisation of the surveillance of the justice system by the omniscient presence of the database.

Poster (1996) incorporates theories of 'bio-power' and 'governmentality' to further examine the role of the database. Governmentality allows for a ruling power (i.e.: the state) to establish a system of economics, wealth, power, order and justice in order to oversee and control those that inhabit within the system. This method of control translates into the surveillance of the masses by an authoritative presence. Colin Gordon (1991) further advances Foucault's arguments about 'Governmentality' by addressing its need to plan for the unforeseeable. By creating efficient methods of dataveillance and databases, the state has the means to create and survey countless types of information allowing them to create a controlled reality that can be monitored (Gordon 1991: 10).

Like the head of a household that oversees the members of their family, Poster connects the theory of 'governmentality' to the concept of the database, where a state is allowed to keep 'tabs' on those who live within the society that supports its operation (Poster 1996: 189).

Because this study addresses a popular culture medium such as television, it is necessary to include those who have examined surveillance within these mediums. Gary Marx (1995) attempts a socio-cultural look at surveillance through popular culture by addressing the methods and angles in which popular

media depict new technologies. Arguing that culture both shapes and is simultaneously shaped by technology, Marx (1995) addresses the artistic representations of surveillance by suggesting that these methods of representation can help us see and understand the newest trends in surveillance. What was microscopic material and electronic and chemical information is transcribed and showcased in a more artistic form for a viewing audience's pleasure (Marx 1995:136).

Much of the surveillance and control that surrounds one's identifying information can be grouped under what Colin Bennet (1996) refers to as 'dataveillance'. Deviating from surveillance which typically implies monitoring behaviour either directly or electronically, dataveillance is used to describe the collection and storage of large amounts of data and its utilisation to categorise and put information in order (Bennet 1996:237).

However, there are distinctions within the term dataveillance. One of the categories of dataveillance is called 'personal dataveillance', defined as the analysis of personal records belonging to one whose identity is already known or identified as a person of interest (i.e.: looking through the criminal records of a suspect). Mass dataveillance is utilised for mass screening in order to find those who deserve specific attention and is based on suspicion with the goal to deter behaviour (i.e.: placing an offender's DNA profile into a database in order to deter future criminal behaviour) (Bennett 1996: 238-239).

Bennet (1996) also places distinctions between 'internal' and 'external' dataveillance. 'Internal dataveillance' occurs during the process of comparing

different internal databases within one organisation or agency (i.e.: matching a student's identification number with their student-health plan within their school's database). 'External dataveillance' has an individual relying on the comparison of personal records and databases which are maintained by separate, unrelated agencies (i.e.: comparing bank records to a social insurance number). This type of cross-referencing is becoming more and more common as agencies step past boundaries and take advantage of the various databases that exist. (Bennett 1996: 239)

Bennett (1996) also suggests that dataveillance is distinguishable by its timing. Instead of trying to apprehend a criminal, dataveillance can be applied in anticipation of a service that one might receive with the goal of preventing mistakes rather than detecting criminal activity. For example, when one applies for a student loan, their eligibility must be approved therefore various types of information must be recorded. In the case where databases and dataveillance are utilised for the detection of criminal activity, the term 'ex-post facto' dataveillance is applied, where details and various criteria are scrutinised in order to provide a profile of a subject (Bennett 1996: 240-241).

As surveillance has become high tech with computerised databases, one must not forget that the roots of surveillance are still as important. One of the better known theories surrounding surveillance is the analysis of the 'panopticon'; a novel design for incarcerated inmates; placing them in individual cells with a tower in the centre so that they were unaware as to when they were being actively surveyed (Bentham 1995). This method maximised the visibility of the

detainees, while promoting their awareness of their own actions and hopefully, over longer periods of time, promoting the self- modification of their deviant behaviour.

Foucault's (1977) analysis of the panopticon raised the issue of how surveillance can be a clear show of power over others, especially a deviant class. Surveillance therefore becomes a passive method for the justice system to flex its muscles, reminding criminals about the power of supervision and control without resorting to physical violence and exploitation. Foucault (1977) draws attention to how this show of strength and control can help us develop ourselves as we become accountable to those who supervise us.

Haggerty and Ericson (2000) look beyond Foucault's analysis of the panopticon to provide room for the more technologically advanced methods of surveillance and control. They recognise the growing desire to: "...combine practices and technologies and integrate them into a larger whole" (Haggerty, Ericson 2000: 610)

As the individual is often the prime subject of surveillance, Haggerty and Ericson (2000) point out how what they term the 'surveillant assemblage' with all its various components, standardises the human body, reducing it to bits of data that can be more easily compared from person to person. This standardisation of the body enables surveillance to move into what they term as 'centres of calculations'; such as military headquarters and statistical centres (Haggerty, Ericson 2000: 613). As our body becomes standardised and abstracted, the information that is entered into the assemblage becomes a duplicate copy of our

information, in essence a 'data double'. Once our data double is entered into a computerised database, the potential for the amount of information law enforcement officials can access is immense. (Haggerty, Ericson 2000: 613)

Because of our growing understanding and exposure to surveillance practices we become increasingly included into the 'surveillant assemblage'. This further contributes to the abstraction of the human body, reducing the individual with their territorial surroundings and personalities into a cyber rendition of their selves.

As the data double is produced, the identity of the individual is segmented and recreated as it is placed into a multitude of databases. These databases produce countless different streams of information, to which our identities and bodies become integrated. Such a metamorphosis transforms the individual into a techno-identified hybrid of information and identity. We become what Hier (2003) refers to as a 'functional hybrids':

"...whose unity is found solely in temporal moments of interdependence resulting in surveillance simulations that bring together a seemingly limitless range of information to formulate categorical images or risk data profiles which render otherwise opaque flows of information comprehensible." (2003: 400)

These theorists contribute arguments and hypotheses that all intertwine to provide the complex relationship between social theory, surveillance, identity and expertise. The modern age we live in and our exposure to popular culture are

reflected in these theories that discuss recent advances in technology and science and its involvement with the individuals that live within its confines.

While surveillance and technology are important central key issues in this study, it is important to concentrate for a moment on the specific type of technology that is the core of this study, DNA technology.

Neil Gerlach (2004) discusses the role of DNA and genetic theory in our society through what he coins the 'genetic imaginary'. By discussion the various facets of biogovernance, he illustrates the uses of DNA within the Canadian justice system. His introduction to DNA technology and its applications in our justice system are reflected in our academic debates, our ethical exchanges but as well through our popular culture. Gerlach (2004) discusses the use and creation of DNA databases, providing information as to how the laws and procedures are conducted for DNA testing and collecting. His look at how genetic technology is applied within governmental, scientific, academic and media spheres allows for the reader to understand the widespread appeal of such recent scientific breakthroughs. His focus is within the justice system as his idea about the genetic imaginary and biogovernance of our modern social fabric provide opportunities for the human individual interaction to be pushed aside for more efficient coding strategies.

Because this thesis addresses the content of television prime-time crime dramas, it is imperative to get an understanding of the role and influence of this popular culture medium. The detective drama is not a recent arrival to television programming. The well known crime-drama formula filled with car chases, shoot

outs and trials alongside dramatic twists and turns, provide entertainment for the viewing audience and are a strong competitor in the ratings war. While fictional roles like the coroner or the medical examiner have been popular parts of crime dramas, the prime-time fictional crime dramas have begun to display a significant amount of scientific content, frequently focusing on the laboratory and the benefits and uses of forensic science during an investigation. More specifically, many of the episodes address the uses of DNA in the world of criminal investigations. It is in this vein that this chapter explains DNA to the reader, in order to provide a basis of knowledge to further understand this study.

Forensic science is the scientific analysis of evidence in the course of an investigation. The foundations of forensic science consist of Emile Locard's 'Exchange principle'. Locard, a French criminal scientist, believed that whenever a person comes into contact with a person or an object, they leave behind a trace of themselves. This transfer of physical evidence, no matter how minute, can then be catalogued and analysed, linking the donor of such trace evidence to a person, location or action (Chisum and Turvey: 2000).

The principles of Locard's theory can be specifically applied to DNA samples retrieved from crime scenes. Since DNA is found in any biological matter containing cells, it means that it can be left behind through our many physical actions and encounters. We leave traces of ourselves in the skin that is shed as we come into contact with clothing objects and other people. As we spit our gum out, skin cells in our saliva stay in the gum. Our blood cells and genetic information from semen also contain our biological identifiers. From blowing our

nose to shedding dandruff, little bits of us are left behind during our daily activities (Wickenhausen 2002). For more serious acts such as murder or sexual assault, Locard's theory suggests that there is a good chance that bodily fluids like blood or semen can be left behind by the guilty party.

Because this thesis discusses DNA, it is important for the reader to understand the basic scientific information surrounding our genetics and genetic analysis. The next chapter provides just this; the ability for the reader to obtain a complete understanding of not only the theoretical background of the issues that surround its applications, but as well as the basic explanations of how it is identified.

CHAPTER 2
DNA AND ITS USES

DNA AND ITS USES

Although DNA may seem like a recent innovation for an ever-growing technological society, it has been an element of the scientific world since James Watson and Francis Crick announced their discovery of the molecular structure of DNA in 1953 (Curran 1997: 3). Although the discovery of DNA was groundbreaking, both scientists could not have foreseen the great advances their discovery has created among the sciences, law enforcement and ultimately, popular culture.

Over the years since their discovery, other researchers have mapped the genome and brought forth the 'DNA fingerprint', the idea that our genetic profile is unique unto ourselves. This has revolutionised the world of criminal investigations by allowing a method of determining one's identity and potentially, one's culpability. As well, DNA has left the forum of scientific conferences and laboratories and has entered into the average household, being discussed on television. No longer confined to the intellectual elite composed of researchers and geneticists, DNA is now a household term.

DNA stands for Deoxyribonucleic Acid. Our bodies are composed of millions of cells which contain chromosomes in their nuclei (or centre) that house this DNA (Curran 1997:3). Each of our cells containing nuclei has 23 pairs of chromosomes. These chromosomes contain 'genes', which is the name given to the microscopic cellular bits of information that we inherit from our biological parents. Although invisible to the naked eye and most microscopes, these

chromosomes are estimated to contain anywhere from 50,000 to 100,000 genes in DNA (Curran 1997:3).

DNA has a distinct structure, shaped in the form of a double helix, looking like a ladder that has been twisted vertically. Each rung of the ladder consists of a pair of molecules called nucleotides. In DNA, there are 4 types of nucleotides: Adenine, Thymine, Guanine, and Cytosine. Regardless of the role of the cell or the person it belongs to, only the Adenine nucleotide can be paired with Thymine, and Cytosine can only be paired with Guanine. Therefore, the 'ladder' is composed of different sequences of these paired rungs. It is important to realise the genetic capacity of DNA as there are an estimated 3 billion paired nucleotides located within the 23 pairs of chromosomes (Curran 1997: 3).

The concept of the enormous amount of genetic information found in our DNA can be overwhelming, however the large volume of information is what is necessary for the analysis of DNA during the applications of forensic science. It is estimated that we only have a specific use for less than 5 % of the genetic information in our DNA. The remaining 95 % of our DNA is unused and referred to as 'Junk DNA', containing specific sequences of nucleotide pairs that are inherited directly from our biological parents. The sequencing of these nucleotides is called 'Variable Number Tandem Repeats' or a VNTR.

Because of the genetic inheritance that is unique to each individual, the VNTR has become the foundation for the 'DNA fingerprint' that is commonly referred to in forensic science and the determination of paternity (Curran 1997: 4). By comparing the sequencing patterns between subjects, the forensic

scientist can determine if the samples are identical or at least from the same family.

'DNA fingerprinting' is a term that was first coined by Alec Jeffreys, a British geneticist who in 1985 published findings of VNTR which allowed the identification of individual members of a family (Watson 2003: 263). The core of the theory behind DNA fingerprinting is the uniqueness of such information; that similar to defining characteristics of the fingerprint, each individual holds a specific genetic code comprised of VNTR's that cannot be replicated in another biologically unrelated human (with the exception of identical twins).

Before the discovery and use of DNA, the world of criminal science depended on other physical or biological traits such as fingerprint analysis and blood typing to aid in their investigations. While technologically sound, providing a blood type of biological material at a crime scene only provides evidence of exclusion, meaning that an individual could only be ruled out in issues of crime or paternity. Unlike DNA fingerprinting which points to a specific match, blood typing material does not provide an irrefutable piece of evidence (Micklos 1990:164).

When DNA is analysed, the process is rather time consuming and somewhat complex. As Curran (1997) explains, DNA is exposed to what is termed as a 'restriction enzyme' (RE); an enzyme that slices the DNA horizontally like a chainsaw slicing across a ladder. The separations at various points along the 'ladder' result in sub-sections that can vary in length from 3 to 6 nucleotide pairs or 'rungs' at a time (1997: 4). The variability of the areas of separation, as well as the lengths of the resulting segments of paired nucleotides

affected by the RE is of interest to forensic scientists, as they are unique for every individual. If DNA fingerprint analysis is conducted on a piece of biological evidence left at a crime scene, the forensic scientist must look at multiple segments of the DNA when trying to compare VNTR on another sample. If one can identify multiple identical segments in a sample, the argument proposes that the segments are from the same individual (Watson 2003: 271).

The value of DNA for law enforcement is two-fold; the uniqueness of the DNA profile to the individual and its properties that link it to physical evidence. DNA can be extracted from white blood cells in blood samples (as red blood cells do not contain DNA), cell swabs of the inside of a suspect's cheek, semen or skin fragments that are left behind at a crime scene. DNA is also found in any other bodily material that contains nucleised cells such as hair with the roots attached, bone marrow or the inside of a tooth (Curran 1997: 6).

Advances in DNA technology have made it possible for smaller and smaller amounts of physical evidence to be analysed, which can possibly lead to a time in the future where: "a criminal will not be able to afford to leave even a single cell at a crime scene" (Micklos 1990: 164). Such a claim solidifies the scientific faith in DNA fingerprinting as the wave of the future in criminal investigations.

There are two general methods of analysing DNA samples; 'RFLP analysis and PCR analysis.

RFLP Analysis

RFLP stands for Restriction Fragment Length Polymorphisms, which is the name for the actual segments of DNA that are created after the application of a Restriction Enzyme. RFLP analysis requires at least 20 nanograms of DNA in good condition, a sizeable amount that is not always feasible given the possibility that crime scenes can be contaminated (Halfon 1998: 807).

When RFLP analysis is utilised by law enforcement, DNA is first subjected to an RE which divides the DNA 'ladder' into segments. Then the segments are separated by a process called 'Gel Electrophoresis' where a solution containing the segments is introduced to a tray filled with a gel solution (think of an ice cube tray) the tray is separated into 'lanes'. As Halfon (1998) explains, these lanes of gel are:

"loaded with the different samples (knowns, unknowns, a sizing ladder and sometimes a control) and subjected to an electric current, which causes the fragments to migrate along the lane. The smallest fragments move the fastest, thus creating, in theory, a clean physical separation between the variously-sized strands. Once marked with a radioactive 'probe' (which binds to particular sites on particular fragments) and exposed to photographic film, these separated bunches of DNA fragments appear as 'bands' on the resulting autoradiograph." (Halfon 1998: 807)

Gel Electrophoresis, the process of carrying genetic material by electricity, works well with DNA because DNA itself is negatively charged. Once the DNA sample is placed in an electric field, the segments migrate towards their opposite, positively charged pole (Micklos 1990: 48). The gel in the tray is porous, allowing a process of filtration where the smaller molecules or segments of DNA can literally sink down the path. Exposure to radiation reveals columns of different sized black squares sitting atop one another, the larger bands at the top and smaller fragments at the bottom.

By viewing the resulting picture, the forensic scientist then has the ability to visually compare the x-ray bands with a control sample that was processed in the same manner. If the sizes and distribution of the samples segments are identical, it is declared a match. If not identical, the presence of similar characteristics could mean that samples are biologically related (as we find in cases of paternity).

Technological advances in RFLP analysis through Gel Electrophoresis have made DNA detection easier; radioactivity has been replaced by Ethidium Bromide, a stain that illuminates DNA segments. The utilisation of different gel mixtures have resulted in the ability to filter segments of DNA that are as small as 100 nucleotides (Micklos 1990: 49). However, RFLP analysis is labour intensive, and since comparison between DNA samples is often made visually, a lot of room is left to the subjectivity of the criminologist. Other practices associated with RFLP analysis have also been open to scrutiny:

“Improper preparation of the gel; mixing up samples; tainted DNA resulting in bands shift; variation of the current across the gel; application of the current for too long or too short a period of time; fragments which are too large or too small to run properly; and the presence of too much or too little DNA for the fragments to form clear bands...” (Halfon 1998: 807)

Halfon’s comments address issues of reliability, but also points to flaws in a system that requires a large deal of ‘hands – on’ processing; subject to human error and interpretation. With RFLP analysis, another issue creates controversy among forensic sciences; the requirement of a sizeable amount of DNA (as discussed earlier) in samples retrieved from a crime scene. We already know that RFLP analysis relies on pristine samples of DNA, untouched by contaminants and of a substantial size (20 nanograms). Most crime scenes are chaotic and high-traffic areas and evidence is often affected by the elements and outside sources. Because of this, a forensic scientist may have difficulty isolating a DNA sample that is large enough and free of contaminants as required by RFLP analysis.

PCR Analysis

A relatively recent advance in forensics has introduced a new method of analysis that allows for smaller samples sizes to be utilised for DNA fingerprinting. The premise is simple: why not take a small sample that could not be originally analysed with the RFLP method of analysis, and find a method to

amplify it or 'grow it' until it becomes a size that is large enough to be used for genetic identification? The method used to 'grow' a small DNA sample is a Polymerase Chain Reaction (PCR). Because a DNA fingerprint can be successfully obtained from a small sample with PCR, it is "the modern forensic scientist's method of choice" (Watson 2003: 272). PCR analysis, using a new form of genetic markers called Short Tandem Repeats (STR) replaces RFLP analysis in most laboratories today (Watson 2003: 269). When utilising PCR analysis, the sample of biological material (whether blood, semen or skin) is exposed to a process of boiling and centrifugation which omits any non-essential cell debris. PCR reagents are introduced into the extract of cell material, and after a designated number of cycles where the DNA material repeats itself or 'grows' in size, the amplified DNA is run through Gel Electrophoresis and then stained with dye (Micklos 1990: 166).

While revolutionary, there is one major area of concern when discussing the process behind PCR analysis; that of contamination. If by chance the sample that can now be grown with PCR analysis has been contaminated with some foreign DNA or some other material, that 'bad' DNA is then amplified in the process as well. If one sneezes in the presence of a blood stain, and that bloodstain just happens to pick up a fraction of the sneezer's DNA, then the 'sneeze DNA' also becomes amplified to testable proportions thus altering the DNA sample. The danger of contamination is why scientists and law enforcement officials must follow the strictest guidelines when treating evidence.

Such guidelines become the 'backbone' of forensic science, especially when dealing with DNA fingerprinting. Without strict adherence to such rules concerning collection and processing, forensic science and DNA analysis would have little validity or judicial weight in our court systems. Regulated collection techniques upholding a strict chain of custody greatly diminishes the possibility that the evidence has been altered or tampered with. DNA analysis depends on scientific theory that promotes the identification of individuals beyond reasonable doubt. To be considered unique, the sequence match of two samples must have a probability of occurring less than once in 3 billion nucleotides (Micklos 1990: 67). It is thus ironic to consider that those who utilise DNA because of these properties can contribute to its downfall by not following proper procedure.

However susceptible to procedural error and contamination, DNA analysis is widely used during trials, offering a dramatic flair to any investigation and providing what many may consider a guilty verdict on its production alone:

"With figures like "1 in 50 million" bandied about to establish the guilt or innocence of the accused, little wonder some questioned the value of lawyers, judges, juries, and expensive trials when a geneticist wrapped in the authority of science could settle a case." (Watson 2003: 267)

DNA is especially coveted in criminal cases when compared to eye witness testimony. Now often considered unreliable, eye witness testimony can be affected by time, influence and memory (Watson 2003: 274). Even after reading about the structure and function of DNA, one can consider DNA to be a

revolutionary concept within itself; the ability to isolate your identity from the remaining population with the power of science. When weighing one's guilt or innocence, scientific testimony trumps the memory of eye witnesses.

The Database

This reliance on science and DNA technology for crime solving has also been the driving force behind the implementation of databases accessed by law enforcement agencies. Like a dictionary which acts as a tool for looking up the spelling of a word, a DNA database acts as a reference point for an unknown DNA sample. Imagine the scenario of an unknown DNA sample taken from a hair left at a crime scene. In this scenario, law enforcement officials have no way of knowing to whom the DNA sample belongs. After comparing the sample to the victim and yielding no match, they have no further avenues of investigation. By entering the DNA sample into a nation-wide DNA database of genetic profiles that have been taken from people convicted of various crimes, they increase their chances of obtaining a 'hit' or a match. If they do obtain a match, they have a good avenue to establish criteria for search and arrest warrants.

One of the most well-known DNA databases is the Combined DNA Index System (CODIS) established by the FBI in 1990 (Watson 2003: 273). By June 2002, over 1 million DNA fingerprints were logged into CODIS, with 96.5% of the DNA profiles belonging to convicted offenders and 3.5% belonging to samples from unsolved cases (Watson 2003:273). The appeal of having access to a database also tantalisingly offers law enforcement officials an opportunity to analyse samples from unsolved cases from years ago in order to run 'cold hits'.

Any discovery of connections with past crimes also gives investigators leverage when interrogating suspects (Watson 2003: 273).

It should be noted that one's DNA at a crime scene does not necessarily mean they committed the crime, but it does indicate that they had a particular amount of contact with either a victim or crime scene. Even with this distinction, the CODIS database is utilised when possible; at the time of writing, this particular database has been used to make 4,500 identifications that would not have been possible without it (Watson 2003: 273).

Such faith in science and the power of DNA can also be seen in popular culture. While crime related shows have been on the air for many years, there has been a recent influx of science-based crime shows. Watson (2003) recognises the recent popularity of forensic science: "DNA fingerprinting has come a long way since its first forensic applications. It is now a staple of our popular culture, a consumer good for the genealogically curious; a mousetrap in the ongoing spectacle of 'gotcha' we play" (Watson 2003: 287).

Watson may have a point. The increasing role that DNA plays in real life is filtering through to popular culture. Elevated to the status of 'coup de grace' DNA fingerprinting on fictional prime time crime dramas is presented as an efficient, failsafe method of catching the culprit. Further examination of the prime time crime drama in its newer, more scientific format will be addressed in the following sections, focusing on the relationship between the viewer and television programming as well as popular culture and its present involvement with this new culture of traces.

CHAPTER 3
METHODOLOGY

METHODOLOGY

In order to provide a clearer picture of the methods and messages behind DNA representation, this study utilises both a content and discourse analysis. The content analysis, a recording and coding of the textual information of these shows, provides the analysis of four fictional American, prime-time television crime dramas: Law and Order (NBC), Law and Order: SVU (NBC), CSI: Crime scene investigation (CBS), and CSI Miami (CBS).

By applying a classification system of 10 different DNA representations, the content analysis intends to examine large amounts of script information of these shows by systematically identifying the properties and characteristics that render it eligible for the different coding categories identified below. By recognizing the particular properties that link it to a particular coding category, the aim is to locate consistent themes and messages by focusing on the repetition of DNA representations that are found among the episodes of these four television shows.

The discourse analysis provides further analysis by discussing the theoretical framework that also surrounds much of these themes and examining the recent arguments that exist surrounding the use of genetics within the justice system.

These shows were chosen for three major reasons. First and foremost, all four shows follow the same storyline structure: the episode begins with the discovery of a crime, and the rest of the episode is devoted to trying to solve it. The finale of the episode features the usual climactic event of the arrest or

confession of guilt. Even though there are differences between the humanistic shows and the scientific shows, the narrative arc remains similar. The second reason these specific four shows were chosen have to do with their popularity. These shows have high viewing ratings and are seen by millions worldwide. Their commercial and ratings success means that they are easily recognisable by most readers. The third reason for the selection of these shows is that they all address crime solving and the content of the episodes focuses primarily on these tasks. Other issues like the characters' personal lives or side-stories rarely make an appearance so as to devote as much screen time as possible to the investigation at hand. This explains why this thesis did not address shows like Crossing Jordan (NBC) which also has major side stories about the main characters personal life.

Each of the detective dramas chosen for this study contains fictional story-lines, however Law and Order and Law and Order SVU occasionally base the episode's storyline on a real crime case that has received media attention.

In order to conduct a content analysis of the four chosen television series, the 2003-2004 seasons were purchased from their respected networks. The same seasons are used for each show in order to eliminate any differences or creative demands that producers and writers might adapt to from year to year.

At the time that this season aired, Law and Order was in its 14th season, while its sister show, Law and Order SVU, was in its 5th. The two series under the CBS network are more recent. By 2004, CSI was newer on the scene, having been running for 4 years while CSI Miami had been entertaining the viewing

public for only two years. When the viewing season started in 2003, North America was obsessed with the United States' Iraq invasion as it monopolised much media time and debate. As well, the medical community was hoping against a repeat of the SARS epidemic that plagued Toronto, Canada the year before. More importantly, breakthroughs in the Human Genome project were present by 2003, as most of the data collecting made the way for more research and sharing of information with the private sector.

Each television series analysed has approximately the same number of episodes, each with a similar length of duration without the presence of commercials. The 2003-2004 season of Law and Order (NBC) consists of 24, 45 minute-long episodes which aired between 24/09/2003 and 19/05/2004. Its sister series, Law and order SVU (NBC) has 25 episodes in its 2003-2004 season; each also is 45 minutes in length and aired between 23/09/2003 and 18/05/2004. The CSI: Crime Scene Investigation (CBS) 2003-2004 season began on 25/09/2003 and ended on 20/05/2004 consisting of 23, 45 minute-long episodes. Its sister show CSI Miami (CBS) aired its 24 episodes between 22/09/2003 and 24/05/2004. Like its predecessor, each episode from this series is approximately 45 minutes long without the interruption of commercial time.

In order to provide a content analysis of these television shows, the same procedure was utilised for each series. First, the script from each episode is analysed in order to identify and classify scenes in which the script refers to DNA. For that task, the same coding system was utilised for each episode viewed: any dialogue or visual reference to DNA and DNA analysis is recorded

while noting the time where it takes place in the episode and the setting in which the scene occurs. The segment of dialogue or the visual reference is then transcribed under one of the ten code categories (listed below) that have been established for content analysis of the thesis.

Each individual scene that refers to DNA in cannot be classified under more than one category of DNA representation. This system warrants that the same particular scene in one 45 minute episode is not counted twice, therefore ensuring that the reader is not introduced to misleading data. It should also be noted that the dialogue that is recorded and coded does not have to specifically mention DNA. The script from the coded scenes can also include references to DNA related subjects, such as ethics, reliability, paternity and other biological material that contains genetic information such as hair, blood or semen. Also included are the visual representations of DNA such as a images of a DNA band or an X-Ray display of a genetic match.

The various categories of the coded data are important because they show the reader how multi-faceted the representation of DNA can be. No longer just a piece of genetic material to be analysed, the categories demonstrate how many different purposes and identities are attributed to the analysis and applications of the DNA fingerprint.

The code categories for this thesis were determined by watching episodes from all four series and noting the themes that keep recurring as well as considering some of the social theory behind DNA and surveillance. Ten categories of DNA representation were created and therefore applied for

classification purposes. There are no segments of dialogue or visual references that fall under another category not included in this study. The characteristics of each category are selected in order to divide the scenes in a consistent manner. The following details for the reader the characteristics that were considered in order to place segments of dialogue and imagery in their respective categories:

1) DNA as the truth

For this classification category, the emphasis is on DNA's ability to reveal the absolute truth by either contradicting or confirming a suspect's statement. A characteristic that is unique to this category is the finality with which the statement is produced. There is no debating the information, as DNA in this case represents the irrefutable. Also included are statements from detectives and suspects that verbally refer to DNA as the truth.

This type of depiction of DNA appears in many of the different episodes, but in different manners. Some of the scenes allowed under this category demonstrate how investigators determine lies by utilising genetic biological evidence to confront their previous statements. An example of this type of representation can be seen in an episode of CSI called 'Fur and Loathing' (Episode 406, air date: 30/10/2003) where the criminal investigators, or criminalists as they refer to themselves in the show, try to uncover the truth behind the murder of a man in a racoon suit. Their investigation leads them to a witness who is being evasive about his involvement. The dialogue transcribed below is an example of how DNA does not have to be specifically mentioned in order to confront an individual on the truth of their statements:

CSI – Fur and Loathing (26:20)

Brass: Okay Bud, I'm going to get right to it... Bob Pitt's semen was found all over your kitty costume

Catherine: You lied to us; you were doing a little more than grooming...

Other scenes that are considered under this classification refer to DNA as the truth in a more indirect manner. This way, the audience sees how detectives or criminalists do not even wait for truth to be revealed by the suspect, opting to head straight for the DNA evidence that provides them with the true facts of the case. In a scene from CSI called 'Bloodlines' (Episode 423, air date:20/05/2004), investigators attempt to find the attacker who raped a casino worker. In one of the early scenes of this episode the viewer can see an example of the faith in DNA as a truth-telling tool as investigators approach a suspect. Instead of waiting for an answer to their inquiries they opt instead to go straight to a DNA sample that was provided:

CSI-Bloodlines (31:45)

Detective: So... you were home last night? (*Suspect doesn't answer*) okay... Well, it doesn't really matter...your DNA will do the talking

From time to time, viewers are exposed to dialogue that offers a verbal affirmation of the power that DNA has to tell the truth. An example of this can be seen in an episode of Law and Order SVU entitled 'Serendipity' (Episode E4408, air date: 21/10/2003) where detectives are investigating the death of a new-born baby. Throughout the episode, the issue of the baby's paternity remains at the forefront of the investigation. In one of the scenes, their prime suspect is informed of his genetic match to the baby despite his protests:

Law and Order SVU – Serendipity (19:27)

Suspect: There must be some mistake

Benson: DNA doesn't lie...

2) DNA as Science

Parts of the script are classified under this category when the viewer is provided with a seemingly technological or scientific explanation of DNA and/or the procedures utilised in DNA analysis. In this category, the script can address everything from the genetic make-up of DNA, the methods and equipment used to match samples, as well as the scientific theory behind DNA or the technology behind DNA analysis. More explanatory than suggestive, the scenes may act as a guide for a viewer who has little experience with DNA. This is one of two categories that include visual representations of DNA analysis, including but not restricted to scenes with no dialogue that demonstrate or attempt to represent the procedures of DNA analysis and matching.

The dialogue that is classified under this category of DNA representation addresses everything from the molecular structure of DNA to the collection procedure. A unique characteristic of this category is that the viewer is exposed to very little emotion or opinion. Instead, all the dialogue surrounding DNA in this context is highly technical.

DNA is presented in a scientific manner in a variety of ways. Occasionally, the dialogue in these series explains DNA in relation to unique disorders or diseases; information that is not common knowledge to most viewers. This is seen in an episode of CSI entitled 'Bloodlines' (Episode 423, air date: 20/05/2004) where investigators are stumped when DNA samples from a suspect does not match those found on the victim. The solution to this mystery lies within a rare genetic disorder called 'Chimerism' that results in two types of DNA in one

person. This condition is created, as the viewer learns, from an underdeveloped twin inside the subject's body. The scene acts as a learning tool when Grissom discusses the disorder with his colleagues:

CSI-Bloodlines (40:00)

Grissom: Sometimes fraternal twins, two separately fertilised eggs develop in only one person. In effect, one twin dies in embryo, but its DNA survives in the other. That's why its DNA from his buccal swab matched his hair but not his semen.

Catherine: So he had two strands of DNA in his body.

Grissom: Yeah, and the DNA from his semen was evidently the DNA from his dead twin brother.

Also considered in this category of DNA representation are explanations related to paternity. In an episode of Law and Order SVU entitled 'Families' (Episode E4419, air date: 10/02/2004), detectives and the medical examiner discover a genetic link between the victim and a number of unrelated suspects. What seems at first to be a bizarre DNA relation becomes a twisted case of incest and murder. In this scene, the expertise of the medical examiner becomes useful in explaining a complex issue of paternity:

Law and Order SVU – Families (23:35)

M.E.: We call it a genotype. We know that Shannon's foetus should have had half of its genes from Shannon and half from the father. I re-tested the DNA; just in case the samples were contaminated... I still got the same results. The foetus (*she starts drawing a tree on a chalkboard*) has 62 % of Shannon's genes.

Benson: So it was incest.

M.E.: Yes. But her brother Ryan isn't a match, and we know that Shannon's father Barry was gone for more than 8 weeks so it couldn't have been him..... there's only one other option. The foetus has a double grandparent.

Stabler: What the hell does that mean?

M.E.: The DNA confirms it. Shannon and the guy who impregnated her have the same father.

Characteristics that allow for the dialogue to be coded under this category also include information about the biology of DNA. As we have already learned,

human DNA is found in any biological tissue containing cells, such as blood, semen, bone or skin (Curran 1997). These sources of DNA provide an endless supply of information at crime scenes where a suspect may have left behind a biological trace of themselves. In an episode of CSI Miami called 'Extreme' (Episode 210, air date: 15/12/2003), a simple comment between investigators informs the viewer of the presence of DNA in our teeth:

CSI Miami – Extreme (18:30)
Speedle: Is that a tooth?
Caine: That my friend, will have DNA....

Other scenes that are coded under this category include references that refer to DNA in a scientific manner involving explanations or descriptions from experts about the different procedures utilised to analyse DNA. The tone of the information and the manner in which it is presented allows for a seemingly educated rendering of some very advanced scientific theory. In an episode of Law and Order entitled 'Hands Free' (Episode E4316 – air date: 03/03/2004) an example of this type of dialogue can be found, when an expert witness mentions a few different processes for DNA analysis during his testimony:

Law and Order – Hands Free (19:21)
Lawyer: Specifically doctor, what analytic method did your lab use?
Expert: Polymerase chain reaction
Lawyer: That's it?
Expert: Yes:
Lawyer: Didn't use SNIPS? Single Nucleotide Polymorphism Analysis
Expert: No
Lawyer: Or Short Repeat Tandem Technology
Expert: No
Lawyer: Can I ask why?
Expert: PCR analysis is accurate and sufficient. I didn't think it was necessary to verify further with additional modalities.

Occasionally, DNA is represented as science without dialogue. These scenes are also included in this coding category. In these particular instances,

the viewer can see images of DNA as a double helix (in its molecular form) or specific procedures demonstrating DNA analysis, such as electrophoresis or a DNA x-ray made from gel trays that have been stained. This type of visual representation can be seen in a myriad of episodes, where investigators peruse DNA stain charts in the Law and Order series or the digitised, animated double helixes of the CSI series.

3) DNA as Inferior

The dialogue that is classified under this category refers to DNA in the capacity of its limitations and weaknesses. This may include the mention of variables that can affect the reliability of DNA evidence, such as the weather, human error and biological contamination. The dialogue here can be just as technical as in the preceding category; however the theme surrounds DNA's specific limitations as evidence and its possible limited ability to help investigators solve crimes.

Factors affecting the reliability of DNA evidence, such as contamination, mismanagement of evidence or incompetence are mentioned or explained to the audience. Aside from natural elements, scenes that address the threat to genetic material from human manipulation that can lead to misrepresentation or contamination are also coded. From collection to analysis, the reputation of the experts who interact with DNA evidence and the efficiency and standards of operation of the equipment is open to scrutiny. Should any of these factors fall short of acceptable standards, the reliability and validity of the DNA analysis can be called into question (Watson, Berry 2003).

Certain attorneys such as Barry Scheck and Peter Neufeld have made careers out of exonerating their previously convicted clients by questioning the standards and procedural guidelines during investigations (Watson, Berry 2003: 265). An example of a scene that concerns the viewer with the human error and technological tampering of DNA samples can be seen in an episode of Law and Order SVU titled 'Escape' (Episode E4415, air date: 02/12/2004). In this episode, detectives are hunting for an escaped prisoner who had been previously convicted of molesting his stepson. During their investigation Detective Benson uncovers some problems with the DNA evidence used in the original case, as it may be tainted because the reputation of the examiner is called into question:

Law and Order SVU – Escape (35:25)

Benson: That's just what I was looking at (*rifling through papers*). Did you know that the Virginia crime lab that tested the DNA in Baxter's case is under investigation?

Cragen: Let me see that.

Benson: The guy who heads it up, his name is Paul Whitgow, he was indicted for lying about his qualifications, he personally handled Baxter's case

Cragen: Just because he faked his resume doesn't mean that he fabricated evidence.

Benson: No harm in making sure...

Cragen: Alright, call Warner, see if she knows anyone in that lab that can retest the sample, but if the DNA doesn't exonerate Baxter, it's over.

Another limitation that is considered under this coding category is the inability for genetic material to provide a motive or a timeline for when the crime occurred. Such a limitation is seen in an episode of Law and Order Called 'Evil Breeds' (Episode E4326, air date: 24/03/04) where a producer of a racist neo-Nazi music band and a suspected Nazi war criminal are on trial for the murder of a concentration camp survivor. The entire case rests on DNA evidence found at

the crime scene, however, the viewer gets a sense of DNA's limitations during a cross examination where a criminal scientist is questioned:

Law and Order – Evil Breeds (33:28)

Lawyer: Did you find traces of my client anywhere inside Mrs. Glaser's apartment?
Tech: No.
Lawyer: So your analysis puts my client at her door, but not inside her apartment.
Tech: Yes.
Lawyer: Scientifically, you can't determine whether the DNA sample and the various prints were left at the same time can you?
Tech: No.
Lawyer: So for all you know, my client, Stephan Anders was there one day outside the apartment door, and Mr Millers on another day entirely outside and inside the apartment?
Tech: Yes.

Most of the scenes that are classified in this category tend to deal with DNA sample contamination, giving the impression that DNA is as strong as its weakest link. Scenes that mention chemical or bacterial interference with a DNA sample are included in this category. An example of this type of scene can be seen in an episode of CSI entitled 'Butterflied' (Episode 412, air date:15/01/04) where the investigative team is trying to solve the murder of a nurse. One of the investigators is excited to find a hair in the bathtub drain. Upon further inspection, her hopes are dashed as she realises the hair has been exposed to bleach:

CSI – Butterflied (16:47)

Greg: Blanched... *(Looking at a pale hair found in drain)*
Sarah: The killer poured bleach down all the drains
Greg: Talk about sucking the life out of all the DNA.
Sarah: If there's anything left it's probably been natured *(Viewer gets a microscopic view of DNA molecules being obliterated by the introduction of bleach)*

Another type of scene that is included in this coding category demonstrates the criminal mind's knowledge of DNA and its uses. Anyone with

remote knowledge about forensic science and DNA can manipulate crime scenes and alter DNA evidence in order to avoid detection as seen in an episode of Law and Order SVU entitled 'Criminal' (Episode E4425, air date: 20/04/2004) where a dead body found in Central park leaves detectives scrambling to find a suspect because the murderer took great pains to eliminate all DNA evidence:

Law and Order SVU- Criminal (01:29)

Benson: No woman I know cuts her nails to the quick after a manicure

Stabler: She scratched him; he cut her fingernails to get rid of the DNA underneath....uses crime scene tape, he knows his forensics

4) DNA as Superior

Scene dialogue that is included under this category refers to the power and superiority of DNA, especially within the confines of law enforcement. In this category, dialogue can range from informing the viewer of the benefits of DNA technology to the superiority of DNA analysis over other older investigative tools such as eye witness testimony or fingerprint technology.

DNA can be interpreted as superior in moments in the dialogue that criticise other methods of investigation. Such an example of this can be seen in an episode of 'CSI' called 'Bloodlines' (Episode 423, air date: 20/05/2004) where the victim of a sexual assault identifies a man who is exonerated by his DNA sample. Despite the victim's protests that she accurately identified her attacker, detectives are doubtful when an alibi presents itself. They therefore rely on DNA evidence to provide the accurate story:

CSI- Bloodlines (23:41)

Brass: She identified the wrong man!

Grissom: As soon as DNA comes back we'll know which brother it is.

In another episode of CSI entitled 'All for our country' (Episode 402, air date: 10/02/2003), the viewing audience gets the impression of DNA's superiority over eye witness testimony but in a more indirect manner. In this episode, investigators are trying to solve a double homicide. Their only witness is a young boy who lives across the street from the location of the crime. Although there is no direct reference to DNA in this scene, there isn't much faith placed in the boy's testimony. Further along in the episode, the focus turns towards DNA evidence as being a solid lead much to the relief of investigators:

CSI- All for our country (21:13)

Grissom: There was an eye witness who saw a uniform at the front door

Brass: Oh come on, a 10 year old insomniac kid, hopped up on sugar, going blind from X-Box, who knows what he saw?

Grissom: So now you're discrediting your own witness?

Occasionally, the viewer comes across a particular type of scene which can be included under this category, demonstrating DNA as a replacement for testimony when a victim is unable to speak. In a scene from CSI titled 'Homebodies' (Episode 403, air date: 09/10/2003) the viewer sees a CSI technician prepare to perform a rape kit in order to collect DNA samples from a comatose victim. The inference given by the scene is that testimony is unnecessary because of DNA technology:

CSI- Homebodies (16: 30)

Sarah: We'll need a full kit and photographs. If she can't talk, the kit will have to do it for her

Another type of scene that is included in this category shares the character's express relief or joy over having DNA evidence to work with. An example of such enthusiasm for DNA evidence can be seen in an episode of CSI Miami entitled 'MIA/NYC Non Stop' (Episode 223, air date:17/05/2004) where

investigators are trying to solve the murder of an entire family. A spotless house is being processed by two technicians who discuss what they have retrieved from a crime scene:

CSI Miami- MIA/NYC Non stop (3:53)

Eric: Well I didn't get anything...what's that you got there?

Callie: I'm not exactly sure, but I think someone gobbled up (pointing to a gob of spit on the floor)

Eric: You got spit? That's great! You hit the jackpot!

5) DNA as an Indicator of Guilt or Innocence

The scene dialogue that is classified in this coding category specifically refers to DNA as being the indicator of a suspect's guilt or the absolution of an involved party. This can include investigators demanding that suspects provide DNA samples to prove their innocence, or expressing suspicion when an individual refuses to donate such a sample. Most of the scenes that are included in this category show law enforcement officials, whether they are detectives or criminalists, challenging suspects to provide their DNA sample in order to prove their innocence. This particular situation can be seen in an episode of CSI Miami entitled 'Complications' (Episode 211, air date: 05/01/2004). While investigators are trying to solve a murder, one of the investigators informs a suspect about how they can take themselves off the suspect list:

CSI Miami – Complications (11:35)

Horatio: Well, if you want to eliminate yourself as a suspect, I would suggest that you give us a DNA sample.

In other scenes, suspects that have already been determined innocent by regular investigative standards are submitted to DNA profiling in order to be sure of their innocence, as can be seen in an episode of Law and Order SVU called 'Ritual' (Episode E4406, air date: 03/02/2004) where investigators are trying to

solve the murder of a child in a park. The search turns towards parents of missing children who are scrutinised in order to link them to the murdered child:

Law and order SVU – Ritual (3:44)

Benson: The national centre for missing and exploited children lists four kids with the right age and race, none with abdominal scars...

Cragen: A kid killed for religious reasons, probably related to the murderer. Get DNA from those four kids' parents, just to make sure....

Occasionally, a DNA profile results in the exoneration of a suspect, as can be seen in an episode of Law and Order SVU called 'Low Down' (Episode E4425, air date: 06/04/2004) where detectives dismiss a male prostitute as a suspect because his DNA does not match anything found at the crime scene, regardless of what some would already determine as the immoral conduct of the individual:

Law and Order SVU – Lowdown (12:40)

Casey: What about the tranny prostitute angle?

Cragen: Keisha Brown's DNA didn't match the sample from the condom. no other "he- she's" work that stroll.

Other scenes that are included in this category inform the viewer of DNA's pivotal role in the justice system when deciding whether a suspect is innocent or guilty. In an episode of CSI entitled 'Assume Nothing' (Episode 401, air date: 25/09/2003), we see this phenomenon, as investigators and a judge discuss absolute accuracy with which they believe DNA can classify someone as guilty:

CSI- Assume Nothing (37:07)

Judge: This affidavit lacks probable cause... prints on quarters (*he reads off of the application*) an odd mixture of DNA...

Grissom: DNA, if given a warrant will clear or convict.

6) DNA as Necessary

Under this theme, the DNA is presented in a manner that suggests that an investigation is more valuable, efficient and effective when genetics are

analysed. Frustration may be expressed in the inability to proceed with an investigation due to the lack of DNA evidence, or desire for DNA evidence may be expressed in order to make their case easier to solve.

The use of DNA in the story-lines of law enforcement series provides a viewer with an insider look at police work, regardless of its fictional content. On television, viewers see laboratory technicians process DNA with precision and ease and within the hour-long scope of the episode results are provided rapidly and accurately.

This type of DNA representation is shown in a variety of fashions, but essentially conveys a similar message; without DNA evidence, the investigation is increasingly difficult and undesirable. DNA is portrayed as a quick dramatic fix; with the push of a button and the collection of biological material; investigations are plagued with little doubt on the veracity of their conclusion.

In a CSI episode entitled 'Homebodies' (Episode 403 air date: 09/10/2003), the viewer can witness the frustration that investigators experience when their DNA evidence cannot be matched to a suspect they had in mind, even if other elements of the crime, like motive or opportunity have already been established:

CSI- Homebodies (26:50)

Sara: Hey guys we're screwed

Greg: The semen in the rape kit doesn't belong to Steve Jenson... We got no hits off of CODIS either... *(Sarah throws her hands up in frustration while Greg holds his head in his hands)*

DNA is also represented as a necessity in the course of sleuthing when an entire investigation hinges on a single piece of DNA evidence. An example of

this can be seen in an episode of CSI Miami called 'Stalkerazzi' (Episode 215, air date: 16/02/2004):

CSI Miami – Stalkerazzi (27:20)

Tech: That hat was worn a lot....perspiration on the band

Eric: Our victim was smothered with his own hat

Tech: No different donor on the band, amelogenin says it's male (audience sees a computer screen with an x and y indication, along with spikes on a chart) and nothing yet on CODIS...

Eric: Alright, let me know if you get a hit, this may be the only way to crack this case.

7) DNA as an Interrogation Tool

One of the main tools of an investigation is the interrogation of suspects or witnesses during an investigation. By using specific methods of questioning, they can determine alibis, eye witness testimony, and even generate confessions. In this category of DNA representation, dialogue that refers to DNA in the process of an interrogation is identified and recorded. The importance lies in the timing of the reference to DNA as the viewer may observe DNA evidence being presented in an interrogation of a suspect, or the threat of DNA analysis in order to get a suspect to co-operate.

There are many methods of this type of DNA representation in the episodes studied. In some scenes, suspects are informed about the power of DNA during the investigation, therefore giving them a chance to confess or provide information before contributing their DNA sample. An example of this can be found in an episode of CSI called 'Coming of Rage' (Episode 410, air date: 18/12/2003) where investigators try to solve the violent death of a teenager. One of the end scenes shows the interrogation of one of their suspects, offering

him a chance to confess before running the DNA evidence that may be found on his hand:

CSI – Coming of Rage (38:50)

Warrick: Ain't braces a bitch? See that cut on your lip, is that where Brian hit you? They do make for a good impression though (*shows a picture of wound on hand*) see all these grooves right here? It's perfect for storing DNA, that would be your DNA...(*the boy looks scared*) look Jared, I'm not a cop, but if you tell me what happened, I'll put in a good word for you.

Other scenes that demonstrate DNA in this context introduce DNA as the final piece of the puzzle that solidifies the case, meaning that the viewer is introduced to other evidence that may point to a suspect's guilt but DNA is introduced to further emphasise how there is no way out apart from a confession. Such circumstances can be seen in an episode of CSI called 'Early Rollout' (Episode 415, air date:19/02/2004/2004). In this episode, the murder-for-hire of a successful couple leave investigators stumped, until the DNA from evidence left at the scene helps illicit a confession from their suspect:

CSI - Early rollout (41:10)

Suspect: I didn't kill him.... Or his wife

Brass: I'm not saying you did, but your 20,000 dollar incentive was enough to pull the trigger... and you know what? You won't believe this. A paper cut gave you away... yeah we did a DNA test on the cigarette butt you left at the arcade... plain view, right counsel? And we matched it to the blood we found on the money... (*the suspect puts his head in his hands and confesses*)

8) DNA as Identity

This coding category includes moments in the script where DNA is used to reveal the identity of a character, whether victim or suspect. Also included are statistics that emphasise DNA's uniqueness and the use of databases like

CODIS (Combined DNA Identification System) that contain thousands of DNA profiles in its computerised reference system.

In the four series analysed, the dialogue that is coded and classified into this particular category varies in its presentation. The selected scene will seldom indicate (either through the dialogue or a visual reference) the probability of an exact DNA match. In order to consider a DNA sample to be unique to the individual who provided it, the DNA profile has to occur less than once in 3 billion nucleotides (Micklos and Freyer 1990: 67). In an episode of CSI entitled 'Assume Nothing' (Episode 401, air date: 25/09/03), investigators discuss the results of a DNA match conducted from blood evidence collected at the scene of the crime. Although it is not mentioned verbally, a close up shot of a piece of paper allows the viewer to see the confirmation of an absolute match to the suspect, emphasising the unique properties of DNA. :

CSI – Assume Nothing (30:30)

Nick: Is there a mixture of more than one stain?

Greg: One blood came back the vic's, another came back unknown (*Greg smiles and hands him a paper with a chart that shows a composite of numbers to indicate a genetic profile. On the sheet of paper it indicates: "match found 1 in 600 billion"*)

Scenes that refer to DNA in the scope of identification can also include the identification of a victim instead of a suspect. In a scene from Law and Order entitled 'Floater' (Episode E4307 – air date: 12/11/2003), the body of a missing woman is found floating in a river. While many theories revolve around her disappearance, blood evidence from a possible crime scene is processed and reveals the match to their missing victim:

Law and Order – Floater (15:13)

Briscoe: Dirt in the wheel well ties the car to the area where we found the locket

Greene: DNA is conclusive too; the blood in the car was Ariana Marchetti's, no doubt.

Also included in this category are references to the databases utilised to match DNA profiles. One of the more known databases is CODIS (Combined DNA Index System). Established in the United States as a pilot project in 1990, it was fully implemented in 1998 through the National DNA Index System (NDIS) (U.S Department of Justice 2005).

CODIS is predominantly known for its uses of identification by cross referencing DNA profiles in its database. In an episode of CSI Miami entitled 'Wannabe' (Episode 218, air date: 22/03/2004), the only piece of evidence found at the scene of a stabbing is one single drop of blood from the assailant. Although there is a small amount of blood, investigators are still successful in obtaining the identity of their suspect by entering the DNA profile into CODIS:

CSI Miami - Wannabe (21:11)

Speedle: Epithelials inside the glove?

Tech: With a name, (*technician smiles and hands over a paper to Speedle*) courtesy of CODIS.... (*Viewer sees DNA results chart and picture of their suspect*)

Speedle: We got a hit off our glove. Fisher is our killer...

Also included in this category are scenes that demonstrate DNA being applied in cases where a body is too heavily damaged to provide identification. In an episode of CSI Miami entitled 'Slow Burn' (Episode 214, air date:09/02/2004), a heavily burned body is found after a brush fire has ripped through the Florida Everglades. Unable to ascertain a proper identification through fingerprinting or

facial recognition, investigators turn towards DNA and CODIS to help them determine the identity of their victim:

CSI Miami –Slow Burn (37:14)

Alex: We ran the DNA through CODIS she's been missing persons from three years ago

Horatio: Missing persons....missing persons... so someone cared enough to put her in the database

Other scenes that are placed in this category refer to 'cold cases' (crimes that remain unsolved due to the lack of any leads or evidence). Many of the storylines involve unsolved cases which occurred decades ago when law enforcement tools relied less on science. In this category, databases such as CODIS are used to cross-reference various crimes across a larger network to see if they share a common suspect. An example of this can be found in an episode of Law and Order SVU called 'Serendipity' (Episode E4408, air date: 21/10/2003). In this episode, detectives are trying to find a link between one of their prime suspects and the victim's baby. During the course of their investigation, Detective Munch runs the DNA profile through a database to reveal their suspects' involvement in an old case and breaks the news to his colleagues:

Law and Order SVU – Serendipity (18:50)

Munch: *(walks into the briefing room holding a piece of paper)* I've got good news and bad news.... He's not the father

D.A: What's the good news?

Munch: We just cleared a cold case

In an episode of CSI Miami entitled 'NYC/Miami Non-Stop' (Episode 223, air date:17/05/2004), investigators come to a conclusion about the motive of the crime once their DNA results come back from the laboratory. It is only with the arrival of DNA that they are offered a viable motive:

CSI Miami-MIA/NYC Non Stop (31:30)

Detective: We ran the DNA from the dancer's clothes... semen's not a match to Mr. Hanover (*audience sees a sheet of paper with a chart showing numbers and letters...*)

Horatio: But the alleles are a match... each of the 13 loci. Which means René slept with another male. Hanover. And there's only one of those (*looking in the hospital room window to their sleeping victim*) and he's right in there.

Detective: She's reason enough a guy would want dad out of the way.

Horatio: And that is motive in any state.

In other scenes that are coded under this category, the viewer sees how the simple mention of a DNA profile results in a complete explanation of how the crime was committed. Such a representation can be seen in CSI Miami's 'Blood Brothers' (Episode 201, air date: 22/09/2003) where the results from processing DNA evidence provide an instant re-creation of the crime:

CSI Miami – Blood Brothers (34:36)

Speedie: Guess what (*he throws a folder down on the table*) that glass has Ramon's blood on it... Just came from DNA (*he shows Callie a sheet with a chart containing sequences of numbers and the words "RAMON CRUZ" written at the end*)... he thought he could sweet talk her into forgetting about her friend, champagne, lots of cash.. (*viewer sees a replaying of the scene*), that confirms her suspicions, she gets agitated, he tries to subdue her, she starts to fight (*viewer sees girl smash bottle over his head and the instance where the DNA is left at the crime scene*), and she got free.

Callie: And she probably felt confident that she had gotten away, and didn't realise the crux brothers had a backup plan.

9) DNA as a Cause for Criminal Behaviour

Apart from its promoted use in the course of criminal investigations, DNA can also be considered by some to be a causal agent in one's deviant behaviour. The premise behind this theory suggests that certain genetic traits (like the inclusion of an extra chromosome or specific gene patterns) are found in many criminals and therefore can be linked to a cause of criminal behaviour. It is under this coding category that such references to DNA are placed. Viewers can

be exposed to past or current theories of genetic links to criminal behaviour or recent attempts to identify genetic markers that cause criminal behaviour.

Scenes that are included here are references to genetic determinism during debates between attorneys. An example of this is in an episode of Law and Order SVU entitled 'Hate' (Episode E4416, air date: 13/01/2004), where a suspect has been arrested after targeting and murdering members of the Arab community. As lawyers discuss the defence strategy, the viewing audience sees this type of reference to DNA:

Law and Order SVU - Hate (29:20)

D.A.: An insanity defence? You got no grounds!

Lawyer: Sure I do, it's genes. The motion will be filed tomorrow. Sean Webster is biologically and genetically predisposed to hatred and violence, he had no control over his actions.

Also included in this category are scenes showing the criticism of using DNA as a genetic cause of criminality. In the same episode of Law and Order SVU (Hate), a scene shows detectives sitting together at their precinct, debating the validity of a genetic defence:

Law and Order SVU - Hate (29:25)

D.A.: It'll never fly!

Cragen: Put a man's genes on trial, nobody will ever be responsible for anything!

Lawyer: It's the ultimate defence....

10) DNA as an Explanation of a Crime or Motive

Not only does a criminal investigation aim to identify a guilty party, it also attempts to establish the motive behind the crime. It is within this reference that certain parts of the dialogue are classified under this grouping. Viewers may experience dialogue about the motive behind a crime as DNA becomes the reason behind it all. Examples of this type of reference may include DNA links to

motives such as paternity, and may also include scenes that paint a re-enactment of the crime committed once the DNA analysis is conducted.

In an episode of Law and Order entitled 'Ill Conceived' (Episode E4306, air date: 12/03/2003), detectives are wary of the murder of a business owner as they believe that the victim's wife had a child with another man. Their belief that the murder was spawned from the jealous paternal father of the child comes to fruition as the detectives inform their captain of their reason behind a DNA test:

Law and Order - Ill Conceived (29:25)

- Green:** This dude gives a button stitcher 8 weeks of maternity leave. The department gives what, six?
- Captain:** Maybe he's one of the good guys
- Briscoe:** Nobody running a business is that good.
- Captain:** And you think what.
- Briscoe:** I think that Zachary had more of a rooting interest in little José.
- Captain:** As in he's the proud papa?
- Briscoe:** Hey I held the kid... Pale skin, blue eyes, what are the odds that both Miguel and Maria have the recessive gene?
- Greene:** You were with my woman... that's number one on the top ten motive list. *(The captain answers her phone)*
- Captain:** You guys send something to the DNA lab?
- Greene:** Yeah, that baby got up close and personal with Lenny's jacket.

As well as looking at the dialogue within these shows, the content analysis of the four series addresses other aspects of the shows as the overall aesthetics (such as set design and opening credits). The hope is to provide the reader with a more complete picture of the different television series.

The second part of the analysis concerns a discourse analysis of various arguments of messages and the ideology behind DNA analysis. This part will discuss the societal implications concerning area of surveillance, modernity, identity and the social roles of expertise as well as drawing reference from the television shows chosen for the study.

CHAPTER 4
DISCUSSION

DISCUSSION

By reviewing the different categories of DNA representation in these shows, we can see that regardless of the humanistic or scientific standpoint, they utilise the various DNA categories to provide a diverse representation of DNA for the viewer. The following will explore these different representations of DNA and their link to the theorists mentioned in the literature review section. As well, this section also looks at the aesthetic differences between the four series including the opening credits, the set design, the role of the expert, as well as the role of the evidence, surveillance and DNA technology.

Among the four television series that were coded, the results show differences between the networks that air them. Table 1.1 illustrates the proportions of shows that have at least one episode among the entire 2003-2004 season that has a reference to DNA, per coding theme. On the CBS network, we see that both CSI and CSI Miami have the highest proportion (56.5% and 70.8% respectively) of episodes that contain at least one scene that utilises DNA in an interrogation scene. For both of these television programs, the three most often viewed types of DNA representation are those of interrogation, the determination of guilt or innocence, and the determination of an individual's identity.

In the Law and Order SVU series, DNA is most often represented among the 2003-2004 season as a method of determining the guilt or innocence of an individual with 28% of its episodes containing at least one scene of this type. For the original Law and Order series, it is the revelation of identity through the use of

DNA analysis that is most often seen with 29.2% of the episodes among that has this representation in a scene.

Table 1.1
Proportion of Episodes containing at least one scene of DNA by theme for the 2003-2004 season of Law and Order, Law and Order SVU, CSI Miami, and CSI.

	CSI	CSI Miami	Law and Order	Law and Order SVU	All four shows
DNA Theme	%	%	%	%	%
Truth	30.4	20.8	12.5	16.0	19.8
Science	21.8	20.8	8.3	20.0	17.7
Fallible	17.4	16.7	8.3	12.0	13.5
Superiority	8.7	12.5	8.3	4.0	8.3
Guilt-Innocence	52.2	33.3	8.3	28.0	30.2
Necessary	13.0	8.2	-	20.0	10.4
Interrogation	56.5	70.8	12.5	24.0	56.5
Criminal behaviour	-	-	-	4.0	1.0
Identity	43.5	41.7	29.2	21.0	33.3
Motive	26	8.3	25	12.0	17.7

Table 1.1 demonstrates the unique characteristics and differences between the shows studied. Both CSI and CSI Miami have overall higher proportions of episodes that have at least one representation of DNA compared to the shows on the NBC network. The argument behind this difference can be provided by the core foundation of the television shows studied. Both CBS shows revolve around forensic science, whereas the two NBC shows concentrate on a broader whole of criminal investigations, which show more court room scenes and character interaction. This is why it is important to remember that this thesis does not revolve solely around the numbers associated with these DNA representations. Rather, table 1.1 illustrates the repetitiveness and sometimes continuous demonstrations of DNA among the entire season of episodes. If only one episode among any of these series shows a representation of DNA, it can be argued that the possible impact on the viewer is negligible

since a viewer can easily miss that particular episode. What is important to remember here is not only the appearance of a scene that utilises DNA, but also the message behind that particular scene and the variety of the methods of DNA representation that exist among these shows.

The differences between the two networks are not only in the proportion of episodes that deal with DNA. Differences also revolve around the story settings; CSI and CSI Miami orient themselves around the laboratory and place themselves in amore scientific setting. As for Law and Order and Law and Order SVU, their episode content is displayed through a more humanistic viewpoint, which involves the court systems and traditional investigative practices.

Differences between the humanistic and scientific shows can be immediately seen in the opening credits of each. For both NBC series (Law and Order and Law and Order SVU) the opening credits show photographs of court scenes, jail cells and street scenes that give an impression of the humanistic style of investigation that incorporates all levels of judicial process. In contrast, the CSI and CSI Miami shows have opening credits that tend to showcase a more scientific style of criminal investigations as the viewer sees images of forensic procedures and evidence collecting; chemical equations and bullet trajectories are super imposed over the characters faces as viewers are introduced to the show.

The contrast between the television shows can also be observed within the aesthetics and environment displayed within the scenes. Both series under

the Law and Order franchise operate under the same format; approximately half of each hour-long episode takes place on the streets of New York City and the precinct while the second half of the episodes devotes itself to the courtroom drama and the finality of a verdict. The main characters of these series, the overworked detectives, are overseen by their captain amid the hustle and bustle of their squad room. Cluttered desks and ringing telephones are central to the look of a grubby, lived-in precinct house. Street scenes are authentic and earthy, peppered with steaming manholes and traffic sounds as well as dirt and graffiti. Their lawyers in these episodes are often rushed, running from trial to interrogation, making deals among the historic hallways of courthouses.

While all four television series address crime solving, the two more recent shows under the CBS network place a new focus on the science behind the investigations as the main characters are scientists and not police officers. As the front line of an investigation, these forensic scientists (or criminalists as they are referred to in the shows) process crime scenes which are quiet and undisturbed, where the concentration of the viewer is directed to the evidence collected. The scenes tend to alternate strictly between crime scenes and the laboratory. Even in rare episodes where some scenes take the scientist into a courtroom, the rooms are sleek, modern, and technologically up-to-date with the latest tools to aid in their demonstrations. In most episodes under the two CSI series, the viewer does not get to the courtroom as the culmination of the evidence processing leads to the interrogation room where suspects face the overwhelming amount of evidence and confess.

In both CSI series, the cluttered desks from the more humanistic series' are replaced by sleek stainless steel countertops and meticulous work spaces. The overall impression is far removed from the more traditional of the detective dramas as evidence is scrutinized and magnified under powerful microscopes and black-lit hallways lead through impressively modern facilities filled with technological equipment. Transparency is a common theme as plexi-glass walls facilitate the supervision of characters as viewers get to see all happenings at once. The message here is technology, proficiency, efficiency and supervision.

Regardless of the differences, it should be noted that the Law and Order series make reference and utilise crime solving forensics in their storylines. Although detectives have a primary role, they move to the background once the scientist analyses a fingerprint or looks through a microscope. Consultations with ballistic experts or DNA technicians firmly establish their importance within the investigation. However, the look of the scenes remains true to the overworked law enforcement system that the creators of the Law and Order series want to display. Compared to the techno-file paradise of the scientific laboratories, the medical examiners work space in Law and Order and Law and Order SVU is in desperate need of an extreme makeover or budget improvement as it is often shown as over-crowded and as run-down as the police station.

Another key difference among these series is the ability of the camera to involve the viewer in the investigation. Instead of being the spectator for the medical examiners in Law and Order describing the procedures used for analysis, the viewer of a CSI or CSI Miami episode can actually see the

procedures up close. Both NBC series utilise wide “pan-out” shots of entire scenes which display more traditional methods of cinematography, while the two CBS series utilise a great deal of digital animation which allows the viewer to engage in views of bullet wounds, fractures and transfers of blood, skin, and hair. Through the magic of computer animation the viewer becomes the bullet, the blood cell or the segment of DNA.

The viewer is enabled by digital imagery to see firsthand the technology and science that is essential for this type of criminal investigation, understanding the visual and cultural representations of it and recognising the potential of forensics as positive contribution to law enforcement. An example of this positive contribution of science can be seen with the viewer's exposure to DNA analysis among all four television shows studied. The viewer can develop a growing familiarity with the technology they experience within the more science-based shows in comparison with more traditional detective dramas which do not provide the viewer with access to analysis procedures and whose closest visual representation of DNA comes in the form of the x-ray picture of the DNA bands that are used for comparative purposes. These cultural representations of DNA, from the animated double helix in DNA or the X-ray bands put up on a lit backboard in Law and Order become the closest the audience will ever get to the imagery associated with DNA.

Humanist vs Scientific

The differences discussed above display a distinct difference between the networks that are responsible for the creation of the series. Following Castel's

(1992) ideological divisions of law enforcement, it can be argued that Law and Order and Law and Order SVU follow a more humanistic plot line, focusing on motive, opportunity and the evidence at hand to weave together a case. As for CSI and CSI Miami, the overwhelming presence of forensic science in the episodes and the fact that most of the main characters of these two series are scientists support a more scientific classification.

However, it is interesting to note how the more recently created of the two Law and Order series (Law and Order SVU) has incorporated a more scientific viewpoint. The concentration on more specialised cases that concern rape and murder often means an increased amount of physical evidence. In this context, a greater focus is placed on DNA and physical traces left behind at crime scenes or on victims, but it still does not retain the similar overwhelming presence of forensic science that a viewer can examine in the two CSI shows.

While the differences between the networks are interesting, they do not make up the core of this study. Instead, the purpose is to illustrate how even the most remotely opposite styles of crime dramas, whether humanistic or scientific, display a certain tension between the two ideologies. We can get an idea of this tension by looking at how one forensic application, DNA profiling and analysis, is utilised and represented among the different episodes.

Before addressing the messages about DNA analysis in these television shows we must take a look at genetics and how they're utilised and represented among our social fabric today. The use of genetic technology has come a long way since the discovery of DNA. In today's modern world, genetics have

become a large part of the private world as much as the public. Our supermarkets contain genetically modified foods and our governments look towards genetically modified crops as a possible solution to world-wide poverty by making them resistant to disease, drought, and predators (Gerlach 2004). In the corporate pharmaceutical environment, genetic codes of entire villages or populations are a hot commodity, reflected in a decision by a Swedish town to sell the rights to their citizen's genetic codes in order to assist research into medication production (Gerlach 2004).

In today's society, the geneticization of disease is big business, where investment is placed in the identification of and heredity of genetic factors that cause disease in hopes of treating the disease through gene therapy. The geneticization of the individual, the reduction of the individual to their genetic information, becomes a feature of a growing technological society, where DNA analysis becomes the reassurance to a population as it is used by experts. The dependence on genetic analysis and the reduction of the individual to his or her genetic code generates a need among law enforcement and the rest of society by providing us with a ritual of DNA testing to follow, implying that knowledge about genetics is appropriate, and creating a method to process risk categories with certainty and efficiency (Lippman 1991).

Lippman (1991) also argues that the need for genetic research and the focus on DNA is reactionary to the beliefs and background of the experts that apply this kind of technology. In the context of today's justice system, the need for crime control and risk assessment becomes the background to the

applications of the DNA fingerprint in order to classify and identify offenders and victims. By focusing on the differences and classifications of the individual by their DNA, as well as the utilisation of DNA as the identifier of choice, the geneticization of the individual gives the illusion of control to those who rely on it and apply it in their everyday functions. The control in this case stems from the use of determined procedures and guidelines in order to utilise the technology adequately, but also the reinforcement of the inequality between individuals at the genetic level. This is especially pertinent in the television shows coded, as the geneticization of the individual can be seen in the treatment of suspects, victims, and evidence on the screen. Lippman's (1991, 1992) reference to geneticization is seen in the dependency on DNA material by both investigators and other characters in these shows as they verbalise their need to classify and test the genetic material of those they come in contact with. Ultimately, the geneticization of the individual is presented on the screen and gives reflection on the parallel nature of the avenue taken by a growing need for technological advancement in the word of genetics.

This can also be useful on a more global scale in a world that breeds anonymity from the tidal waves of individuals who cross borders of countries. The ability to biologically identify an individual becomes an attractive option as genetics provides the control of identification and classifying through the use of biometrics, the measuring of biological data in order to determine the individual has become an increasingly utilised process (Lyon 2001:72).

Gerlach (2004) describes how DNA analysis and matching DNA samples has become a popular practice in our trials and investigations. First utilised in Britain in 1986 in order to identify the culprit behind a rape and murder of a young girl, DNA matching has become well known in today's society (Gerlach 2004: 39). The introduction of DNA analysis and identification first arrived in North American courtrooms in 1987 and was heralded as a well-proven scientific theory regardless of its new arrival (Garfinkel 2000: 49). One of the most publicised cases involving DNA analysis, the O.J. Simpson trial, created a circus-like atmosphere that conducted the trial around the merits of the scientists and experts on each side. Since then, the genetic fingerprint has become a useful tool in the courtroom, along with the databases that have been created to store genetic information of individuals. The American national DNA database, CODIS (Combined DNA index system), has been operational since 1991 and is operated primarily by the FBI and shared with other law enforcement organisations (Garfinkel 2000: 54). In Canada, the DNA Identification Act was passed in 1998, which led the way to the creation of the National DNA Data Bank (NDDB) under the RCMP's jurisdiction. Officially launched in 1999, the NDDB separates the data collected into two distinct groupings: DNA retrieved from crime scenes, and DNA collected from offenders (Gerlach 2004: 77-78)

The methods that DNA is utilised in today's society, whether it is the geneticization of disease, or the reduction of an offender to his DNA profile demonstrates how our society has looked towards problems through a genetic looking glass.

The television shows that were coded for the purpose of this thesis allow for the same involvement of DNA technology. Not only shown as a tool to accurately and efficiently identify individuals, the episodes show how it serves as an impartial detective tool and as a replacement for the more humanistic detective. The next section of this study will discuss this tension inside these series including the implications of these series for how we view society, especially in terms of surveillance, expertise and the identity of the individual.

Expertise

Whether the undercurrent of the television series is humanistic or scientific, they all present DNA in a manner that is often saturated with technical jargon and expertise. While the cases are fictional, I would argue that DNA is explained and represented to the viewer in a manner that conveys authority, expertise and intellectual elitism, all the while making it accessible to the audience.

Across all four shows studied, expertise is determined through visual symbols such as the white lab coat. A symbol of doctors and scientists, the lab coat gives an impression of one who works within a scientific environment, becoming the uniform of one who has ascended the intellectual and academic elite, a symbol of Fuller's (2000) 'Big Science'.

Even in the CSI series, where characters often process crime scenes in their civilian clothes, their uniform changes once they enter the laboratory, donning laboratory coats while they analyse evidence. Both Fuller (2000) and Giddens (1990) discuss the isolation and elitism of the scientific class from the

common society classes. This can be seen among the shows studied. The two CSI programs create a totally new category of investigator: the expert witness that rarely interacts with the general police population. Even in the two Law and Order series, which tend to focus more on the cops and lawyers who interact to catch offenders, we can see the similar distinction (albeit less frequent appearance) between the regular police force and the scientific elite that assists their investigation. As well, we notice that the experts on these programs rarely interact with the general public; their only interaction occurs within specific isolated law enforcement circles. In CSI, the head scientist in the laboratory, Grissom, is socially awkward and discusses his cases among his fellow academics who understand the chemical equations and the terminology used. Never called upon to discuss with a reporter or give an explanation to an individual, he remains isolated among his perceived equals. Even in episodes among the Law and Order series, the medical examiner must often explain the procedures of analysis and knowledge she possesses in laymen's terms so that the detectives can understand what she is saying. The medical examiner in the Law and Order series suffers the same fate as Grissom as she is confined most often to the laboratory or morgue where she is only consulted by the officers who are involved in the case. In the rare moments where a medical examiner exits the laboratory (as seem in the Law and Order SVU episodes), it is usually within the context of late-breaking information that makes or breaks a case.

The experts in these shows do not disappoint as they demonstrate a remarkable ability to retain complex knowledge that explains away much of the

evidence found. In the coding, we have seen how scenes display technical information about DNA in order to instruct the characters and even the viewing audience. The highly technical (within limits for a less educated audience) vocabulary and information given on all four shows presents DNA in a manner that I would argue supports Giddens' (1990) argument about a growing dependence and respect that society has towards technology. The characters that wear the symbols of expertise and speak the highly technical language hold a captive viewing audience as they teach us about DNA evidence and analysis. The student-teacher relationship described by Giddens (1990) when discussing abstract systems of technology is created not only between the expert and the detectives on the television show, but can possibly be created for the viewers who watch the scene.

In the scenes where DNA is specifically mentioned during a program, the merits and scientific theory behind DNA analysis is readily accepted by the characters in the storyline. Along with the look and isolation of the expert comes their own language, through the vocabulary present in the episodes. Detectives rely on the explanations from specialists as they present everything from complex DNA patterns to characteristics of bullet trajectories. In the Law and Order and Law and Order SVU series, the DNA expert can be anyone from the medical examiner to a regular criminal scientist, however, both CSI series have a specific DNA expert as part of their cast, further emphasising the special category of expertise required for such strenuous complex analysis.

While it is well known that the content of these shows is fictional, the expertise can be very believable for a viewing audience that gets to see storylines that are claimed to be based on true stories. Hand in hand with the expertise comes realism, which accentuates the believability for a viewing audience that possibly has had little experience with the forensic science procedures. The CSI series in particular seem to make it a point to publicise their ability to accurately represent the complex technology that makes up the content of the show. This is achieved by adding extra tracks to the DVD set of the series that show the viewer the technology and the real experts that provide technical support. Those who are cannot view the series on collections of DVDs are still exposed to this type of publicity through other cultural or media outlets such as late-night talk shows, entertainment shows and magazine articles. An episode of Oprah in 2004 devoted its entire show to the actors and actual technical advisors to the CSI series allowing for the audience in the studio and at home to see the latest technology to analyse evidence. While a publicity stunt for CBS, that particular episode of the Oprah show allowed the audience to be informed and understand the reality of the investigation (www.oprah.com: show archives 07/01/2004).

The average viewer, while perhaps moderately scientifically literate, probably has no advanced knowledge of DNA analysis. Apart from the general enthusiasm relayed in the episodes and the main characteristics of DNA, it is the expert dialogue that stands out during the episodes, allowing the viewer to learn and be a part of the investigation.

Superiority and Fallibility

For all four shows, the expertise and attempt at realism that is relayed to the viewing audience is given in the same top-down quality that Giddens (1990) describes in his discussion of our trust in abstract systems. While the expertise displayed among the episodes of all four series indicates superiority among the less-educated characters, there is also a type of supremacy established for the DNA evidence when compared against other types of evidence collected, such as fingerprints or eye witness testimony.

Before DNA was ever utilised by law enforcement, eye witness testimony was considered a strong piece of evidence. However, recent studies have discovered that an eyewitness can be influenced by 'retroactive interference', where "events that occur following a learning episode can affect people's ability to recollect the original episode" (Bonto and Payne 1991: 117). Much of the coding analysis provides scenes where DNA evidence is considered superior when compared to eye witness testimony. In an episode of CSI entitled 'All for Country' (Episode 402, air date: 02/10/2003), we can see just how eye-witness testimony is considered, as Grissom and Brass (their lead detective and in-house voice of the humanistic side) debate over the reliability of the testimony from a small boy who claims to have witnessed the murder of his neighbours. As they walk down the street, they begin to argue over the boy's rendition of the crime, pointing out how easily his memory can be affected by outside circumstances. The confrontation shows how even both humanistic and scientific have doubts about the reliability of an eye witness. Grissom is trained and automatically relies

on the evidence he collects. As for Brass, he also remains critical, citing lack of sleep and exposure to videogames that may have influenced the small boy. One would assume that the more humanistic representative would be a champion for eyewitness testimony. Instead, Brass' criticism of this once revered type of evidence further solidifies DNA's superior position in investigations.

There is often a tension seen between the humanistic and scientific sides when debating the value and power of DNA evidence. In the CSI and CSI Miami shows, the scientists in the lab have a touch of humanism in the character of their lead detective that works alongside, and often behind the experts. In the Law and Order series, the humanist detectives run their investigation but rely more and more on the science behind the evidence collected. In terms of superiority, DNA seems to have the advantage of being labelled as the most efficient and concrete method of determining the truth, and such humanistic concepts as morality and criminality. These will be discussed later in this section.

Regardless of the clear advantage that DNA holds in most episodes, we do see moments among the scientific and humanistic series where the weaknesses or fallibility of DNA is discussed. The coding analysis has shown that these scenes rarely appear among the four shows analysed. Although these moments occur sporadically, they do illustrate some of the more serious issues concerning the reliability of DNA. Most often, the problems with DNA evidence comes with its exposure to outside contaminants. In episodes of Law and Order, the viewer often witnesses conversations between the experts and the detectives detailing how their DNA evidence is worthless because of exposure to water or

outside agents. In an episode of CSI called 'Butterflied' (Episode 412, air date: 15/01/2004), the idea behind applying bleach to a crime scene shows just how easily DNA can be obliterated thus creating obstacles for law enforcement.

Other weaknesses of DNA evidence are detailed, ironically, in the human interaction and handling of the analysis. In an episode of Law and Order SVU entitled 'Escape' (Episode 4415, air date: 02/12/2003), the conviction of a child molester becomes questionable once discrepancies are raised about the qualifications of the scientific expert who performed the original DNA analysis. In this particular episode, Detective Benson convinces her captain to re-test the original DNA evidence. Her challenge against the widely accepted expertise of the DNA technician pays off, as the re-testing proves that the expert in charge of the DNA analysis made errors in the interpretation of the results.

As we can see from Table 1.1, a very low proportion of episodes challenges or criticise DNA evidence. The criticism of DNA analysis has also taken place off the television screen when the qualifications of its handlers or the quality of the facility itself are substandard. In 2003, hundreds of cases out of Houston, Texas that were solved with DNA evidence had to be re-analysed once the Houston Police Department's DNA lab technicians were discredited because none possessed the proper formal training and only one technician had completed the necessary education required by a quality control board (Houston Chronicle 09/07/2003). By September of 2003, 49 cases out of the HPD were re-tested by private DNA laboratories and it was discovered that faulty matches accounted for 13 of those cases. By November 2003, it was discovered that

evidence for 21 of the cases out of the HPD had disappeared, rendering it impossible to re-test the evidence (Houston Chronicle 11/04/2003). While the problems of the Houston Police Department do not necessarily convey a widespread, pervasive problem the possibility of its occurrence suggests fragility within the system that law enforcement depends on.

Many theorists have put forth concerns about DNA's fragility with external factors such as manipulation and contamination (Halfon 1998, Micklos 1990, Watson 2003). Any incompetence in a scientific department can threaten the integrity of the justice system, revealing that indeed the system is fallible. While many of the episodes studied suggest that DNA is the pinnacle of scientific evidence, it is often through human influence that the fragility of DNA's reliability is exposed. While the data itself is presented as concrete and inarguable, the scientific experts that conduct the analysis remain the weaker link. They are morally fallible, can make mistakes and can use a great deal of subjective reasoning during the analysis. Once the competence of those who are involved in DNA analysis is called into question, then the DNA result is questionable.

The few scenes that refer to the weakness of DNA analysis are greatly outweighed by the over-representation of the scientific accuracy seen with the analysis of DNA. Even with the mishandling of DNA evidence, the viewer is reminded and reassured that it is not the scientific theory behind DNA analysis that is problematic, but rather the fallible, weak, humanistic side of the analysis. Ultimately though, and as seen in the ending episodes of the same episode 'Escape' (Episode 4415, air date: 02/12/2003), the re-analysis of DNA by an

impartial and competent scientist ends up pointing the finger to the real culprit and sparking a confession. In the end, DNA always gets its man.

Past research surrounding crime dramas have often suggested that the viewing public that has invested a great deal time viewing crime dramas develop a fear of crime proportionate to the volume of crime seen on TV (Gunter 1987, Lichter 1983, Lichter 1991, Surette 1998). I would instead argue that the manner in which DNA is presented to the audience of these episodes shows genetic analysis as part of a superior, scientific, ideological standpoint that can create an arena of reassurance for the viewer, putting the audience at ease by instructively teaching us to adopt the same faith in the technology that is shown on the screen. This top-down quality of the explanation of DNA in a forensic setting further parallels the arguments of Giddens concerning the trust in abstract systems that our society holds towards the scientific viewpoint. Even from a more humanistic plot-line, the experts who interpret the technology portray a united front in exuding confidence in a judicial system that relies on science and surveillance.

The amazing success rate of these fictitious investigations does provide for the viewer a possibly cathartic experience of being able to reveal the truth. With the discovery of a match, investigators in the episodes are able to shed light on a case or be directed towards a guilty party. This undercurrent of proving the truth about crimes and culprits becomes the center of much of the tension between scientist and humanist in these episodes as both sides use their own tools to come to the same conclusion.

Truth and Perfect Knowledge

Lyon (2001) has already provided much argument on society's growing obsession with perfect knowledge; the knowledge that is devoid of obfuscation, of influence or of contamination. In its purest form, it provides no room for debate and becomes the concrete. From the philosophical to the ethical, the truth has also become a key concept in the scientific communities, as Fuller (2000) has referred to 'big science' and its role in attempting to find the truth. DNA as part of the new trend of "big science" participates in this goal. In the episodes studied, DNA is presented time and again as an efficient, accurate and reliable method of revealing the truth. By applying the biometrics related to the investigative world of forensic science, investigators bypass traditional face-to-face investigative skills to determine 'speechless truth' (Lyon 2001: 82).

The episodes studied regularly use DNA technology either as a routine part of an investigation or as the key piece of evidence that solves a case. The 'truth' can be presented to the viewer within the context of identity, morality or the description of a crime. Symbolic of scientific progress, DNA's characteristics present an image of confidence in its abilities to provide concrete, truthful testimony. In the episodes coded, the truth is often incorporated into the scripted phrases of the dialogue. In an episode of Law and Order entitled 'Floater' (Episode 4307, air date: 12/11/2003), detectives are able to relay the truth about the murder of a young mother by analysing the DNA found in her husband's car. In this scene, the truth is specifically oriented around the presence of the victim in the car. As they confront the husband, they smugly explain how the DNA

evidence collected does not lie. Even in the more scientific shows like CSI and CSI Miami, the truth telling capacity of DNA becomes a mantra of the investigators, repeated point blank to whoever is listening.

Both sides of the criminalistic ideological standpoint search for the truth, and often the techniques they use are similar. In both the CSI and the Law and Order series, DNA analysis constantly reveals the truth about the involvement of a suspect. In the final dramatic moments of an interrogation, DNA proof is the incontrovertible evidence that prompts many a confession out of the guilty party. The coded scenes of Law and Order display an overwhelming use of DNA evidence during interrogation scenes, either to confront a suspect or intimidate them into cooperating. Often the threat of DNA analysis is enough to illicit full confessions from participants. In an episode of CSI, one of the investigators called Warrick actually invents a type of DNA test in order to scare a young boy into providing testimony. By playing to the ignorance of the father and son suspects, Warrick tells him he can get a DNA match from simply swabbing one of their shoes and then applying a special liquid to see the reaction. The father lets him do this 'DNA Test' while the viewer knows that the liquid applied to the swab is a simple blood indicator that confirms the presence of human blood. The bright pink reaction on the swab is the final stroke for the son who immediately tells the investigators the truth about his actions. The discovery and confirmation of guilt or innocence is stated time and again and explained in a manner that allows the reinforcement of DNA's contribution to the quest to obtain the truth.

Because these four television programs studied involve criminal investigations, an interest often becomes the morality of the individuals involved in a crime. Recent studies on genetics and criminality seem to support a growing interest in the link between the two. Moving away from eugenics which is a reductionist, outdated concern about a pure 'gene pool', more recent genetic theory considers a gene-environment interaction seriously as explained: 'the revolution cannot be completed without an appreciation of both genetic and environmental individuality; only then will individuals understand the meaning of their inheritance (Chakravati and Little, 2003: 412). Other theorists still place attention on a biological cause to criminality, which focus on the presence of certain genes that influence deviant behaviour. While some critics may argue that a biological criminology reduces the weight of social arguments to crime, the newer theories of geneticization point to a more complex understanding of the human genome and its interactions.

Theories supporting a biological link to criminality are not new. Aristotle was one of the first to theorise on the possibility that criminal behaviour could be caused by a biological agent (Buikhuisen, and Mednick 1986: 4). From Gall's phrenological study of skull formation to determine criminal tendencies to Lombroso's 'born criminal', most science and biology-based theories of criminality encompass the purest form of risk mentality. If these archaic methods of determining risk through biological markers alone were accurate, society could very well predict and act upon perceived threats of risk pertaining to developing offenders (Barnes and Teeters 1959: 123-125). Theories of this nature allow for

the tempting possibility to pre-emptively separate those who have 'risky' physiology or genetics away from the remaining population.

Theories of biological connections to deviant behaviour have moved away from simple indicators such as the shape of one's skull and have gone more technological, focusing more on the possible potential for genetic or chromosomal identifiers for deviant behaviour. Moreover, this offers the future prospect of genetic screening to pre-determine those who would fall into at-risk categories. The impact of such a theory is potentially significant; if we can screen for genetic markers that have been determined to be causative for future criminality, society could be protected by the accurate prediction and separation of such at-risk individuals from mainstream, law-abiding citizens. As Nelkin and Lindee (1995) put it: "The status of the gene, as a deterministic agent, a blue print, a basis for social relations and a source of good and evil promises a reassuring certainty order, predictability and control" (1995: 196)

As prevalent and recent some of the attention the geneticisation of crime has been, the television episodes coded do not reflect the same enthusiasm. Table 1.1 shows a small proportion of episodes that contain a scene that demonstrated the causality link to deviance. This argument arises only once in an episode of Law and Order SVU entitled 'Hate' (Episode E4416, air date: 13/01/2004). In this particular episode, genetics is touted as the reason behind a string of hate crimes, and more traditional theories of biological causality (such as body structure or brain composition) are replaced by DNA as a possible cause of immoral or deviant behaviour. The scene goes on to display the investigators

anger and apprehension about allowing this type of theory to be allowed in court, projecting anxiety about future excuse-manufacturing for our behaviour. It is interesting how these scenes over-react to such an argument. The message for the viewer of the dangers of relying on DNA as a causal link to deviance seems in contradiction to the reliance the characters place on DNA during their investigations. It is here that the viewer can observe how the place for DNA is as a tool or interactive part of an investigation, and not as explanation for the crime.

DNA's minimal presence as a cause of deviant behaviour in the episodes analysed is countered by a new method of determining guilt or innocence by utilising DNA as a tool and not a predictor. DNA becomes a compass for investigators as they challenge suspects to provide their DNA for exclusionary purposes. In Law and Order SVU and Law and Order, many interrogation scenes come to a close after the suspect admits to his or her guilt when faced with the DNA proof of their lies. In an episode of Law and Order SVU called 'Home' (Episode E4420, air date 17/02/2004), detectives try their best to convince a mother to release the DNA information about her own son. It is the challenge that a DNA sample could finally prove his innocence that finally wins her over. The choice offered to the suspects while they are being interrogated on these shows is clear: you are proving innocence by cooperating with your DNA and you are showing guilt if you refuse.

In both the humanistic and scientific crime dramas that were coded, DNA is still a favourable method to determine the truth of one's guilt or innocence. However, within the CSI and CSI Miami series, the information about motive is

often disregarded or appears as an afterthought. The personality of the person is never considered, rarely is background or socio-economic status an issue. Contrary to the two Law and Order series that reflect Castel's (1992) description of the humanistic law enforcement that places motive and morality together in most of the investigation, CSI and CSI Miami spend more time in the laboratory going over the evidence that is to be analysed.

I would argue that the enthusiasm used to display DNA as the truth in these series, whether as an indicator of guilt or as the narrator of the events of a crime, demonstrates a growing support for society's desire for perfect knowledge and the truth. The perfection in the knowledge is the illusion of irrefutability, efficiency and finality. Even with the previously discussed human fallibility of DNA analysis, the episodes studied show overwhelming use of this type of scientific technology in order to do their job to determine culpability or the truth about one's involvement. I would argue that the humanistic plot lines that showcase the detective's "gut feeling" is not enough anymore, and the more scientific shows such as CSI and CSI Miami ask the viewer to rely more on the DNA evidence at hand than the experience of an investigator. This substitution points to a worrisome future that shows the growing use of technology as a replacement for the human influence. No longer necessary, the investigator becomes obsolete, rendering their power to the DNA profile that can make or break a case.

We can especially see this tension between the detective's experience and the scientist's knowledge in an episode of CSI entitled 'Assume Nothing' (Episode 401, air date: 25/09/2003). In this episode, one of the scenes depicts a

confrontation of the humanistic and scientific ideologies as they try to determine the truth about a fellow officer's involvement in a grocery-store shoot-out. In this scene, Grissom and Brass face off over evidence collected at a crime scene and show a clear difference in their methods of analysis. Grissom wants to follow the evidence he has processed that he believes points to an off-duty police officer. Detective Brass, on the other hand, points to his knowledge of the individual and his experience as a police officer, determining that it is too early in the investigation to make assumptions. The conflict between these two characters is a good representation of the differences between the humanistic and scientific sides to crime solving. For the scientific point of view, the laboratory becomes the deciding factor in a criminal investigation. The face off between the two characters from either viewpoint reminds the viewer that the police detective or does not think or act along the same lines as the scientist, and that the feelings or insight of a police officer with experience comes second place to the accuracy and truth-telling powers of DNA.

Detectives as seen in the Law and Order and Law and Order SVU episodes are limited in their advancements in the investigation until the scientist contributes their expertise to reveal the truth. In Law and order SVU, Detective Stabler's character is highly sensitive to emotion and tends to lose control during investigations. His style of jumping to conclusions and following his hunches often leads them to dead ends and errors that wait for science to give them a clear path to follow. Time and again, viewers are presented with the idea that a

more efficient route utilises DNA analysis and other forensic sciences in order to come to an error-free conclusion.

As the detectives are often seen as emotional, clouded and manipulated, the human aspect of the investigation is often trumped in these scenes by the cold calculating truth revealing science. The police presence in the more scientific shows are reduced to the keepers of crime scenes and giving minimal if not flawed descriptions of the events that they observed. They are corrected, put in their place, and get placating smiles as the line is clearly drawn between the all-business scientists and the common police officer. Even in the more humanistic plotlines which have a more active humanistic investigation and interaction between lawyers and detectives, it often all rests on the medical examiner or technician who is able to provide expert testimony or information that pushes the final chapter of the investigation. The popularity of the detective as an efficient tool is often overshadowed by the accuracy and finality of the scientist. Viewers who have the chance to see confrontations between both sides are often faced with the scientist as the clear winner.

The power of DNA as a truth teller and its promotion of the scientific criminological viewpoint are further brought home by the current day popularity among the incarcerated population. Started by Barry Scheck and Peter Neufeld in 1992 at the Benjamin Cardozo School of Law in New York City, 'The Innocence Project' is a non-profit organisation that uses DNA to attempt to exonerate those who were convicted before the inception of DNA fingerprinting (www.innocenceproject.org). In these re-visited cases, DNA evidence can be a

welcome relief to those wrongfully incarcerated over mismanaged police line-ups and eye witness testimony.

Like the DNA used in the cases managed by the Innocence Project, the DNA shown in the cases on the television screen becomes a type of genetic witness, a superior method of telling the truth about the events of a crime or the morality of an individual. We have observed its role as the perfect witness where DNA trumps the first-hand account of an eyewitness or even a victim. The message here is one of reliability and superiority: that DNA evidence is the only evidence worth considering, especially in comparison to eyewitness testimony.

While DNA analysis is seen in all four television series analysed, it has a higher frequency of appearance in the three more recently created series (*Law and Order SVU*, *CSI*, and *CSI Miami*) even though the narrative arc of these shows is similar. The increase in frequency of DNA's screen time in these three shows can be explained by the scientific viewpoint they take on. As it was previously mentioned, *Law and Order SVU* concerns itself with sexually based crimes. This type of person-on-person crime involves the use of more biological evidence such as blood, skin and semen. As for *CSI* and *CSI Miami*, the two shows focus on the science behind the investigation. Such a focal point allows for a predominant presence of DNA analysis among the scenes. Time and again, investigators on the screen rely on genetic identification to make or break their case. DNA is a symbol of the truth, a method of revealing identity, a tool used by investigators to influence suspects into proving their innocence or an opportunity to unveil the truth surrounding the details of the crime. Its power is rarely

disputed and has surpassed the fingerprint as the most accurate and practically perfect method of determining the truth whether it is of motive, morality or identity.

Dataveillance and Surveillance

Advances in identity verification have introduced us to the world of biometrics; the use of biological signatures as a unique symbol of identity. The growing reliance on biometrics as a means of determining identity means that an ever-increasing amount of biological data is necessary to provide a full portrait of one's identity. With the utilisation of biometrics, the identity of the individual is reduced to the parts that are categorised, moving away from the whole and towards the compartmentalisation of the individual. As Lyon (2001) argues, there is a growing disappearance of the individual in society, replaced by the data that represents us. DNA fits this mould. The measuring of the biological data in DNA analysis replaces the individual and their social identity.

Across all four shows, the viewer is often faced with the reduction of the human into the parts of data that investigators use. By the analysis of minutiae, bits and pieces of data are compiled in order to provide the viewer with a complete data portrait. We can see this often in CSI Miami as the main criminalist, Horatio, asks for update reports from his colleagues. As they rattle off the scientific evidence gathered about a suspect or a victim, the viewer gets close up shots of the DNA double helix, the fingerprint, the chromosomal match. The compilation and exchange of data reduces the human individual into the sum of its parts. In contrast, the more humanistic shows such as Law and Order,

although they rely a great deal on scientific evidence, utilise more humanistic techniques such as psychological analysis and the gathering of personal information from family members that provide the viewer with a more humanistic outlook of a victim or suspect.

Any of the data and bits of evidence collected on the television screen is usually gathered from traces of ourselves that we leave behind. We have already learned that the traces or physical characteristics that are crucial for biometrics are the foundations of forensic science, originating from *Locard's Exchange Principle*, the use of scientific methods in order to identify perpetrators by analysing the physical traces they leave behind (Chisum and Turvey 2000). These physical traces can include anything from fibres, hairs, fingerprints and DNA. As we have already discussed, DNA provides a genetic identification 'fingerprint' that is widely revered by both scientific and judicial communities as incontrovertible proof of one's identity. Combined with other DNA fingerprints and entered under an accessible, extensive database, it allows for the monitoring of various populations and becomes a tool of widespread surveillance.

In a particular episode of CSI Miami called 'Witness to Murder' (Episode 212 , air date: 12/01/2004) , Horatio, the lead criminal scientist, goes to great lengths to explain how the simple traces left behind by people can lead to the identity of the suspect by conducting their investigation under the premises of Locard's Exchange Principle. While this type of dialogue is created in order to intimidate a suspect, the viewer still gets a crash course on the founding principles of criminal investigations led by science and sees just how the different

pieces of data and physical traces are collected to form a larger picture of the individual.

In the shows studied, the scientist, the detective and the viewer cannot retain any of the information without the aid of the technology in the laboratory. The viewer either gets a close up view, or hears of the machines that have done most of the legwork. In an episode of Law and Order called 'Married with Children', detectives use everything from a GPS locator to video surveillance to fingerprint and DNA databases in order to locate their suspect. In the episodes analysed, we see that many episodes utilise the DNA database for the determination of identity and involvement in crimes. The type of dataveillance that we see among these four television programs is referred to by Bennet (1996) as mass dataveillance because it utilises databases that are conceived in order to keep a virtual eye on, and perhaps even deter, a risky population from re-offending, seeing as how their trace is already registered and can be used to determine their involvement in another crime. Using a DNA database within the justice system is also an ex-post-facto condition according to Bennett (1996) as it is often used for the detection of criminal activity. This can especially be seen in an episode of Law and Order entitled 'Can I get a Witness', where DNA retrieved from a crime scene is used to determine if the perpetrator has committed a similar crime elsewhere.

The dataveillance that is referenced in these shows is usually orchestrated by computers. In the episodes that present a more scientific viewpoint, the computer is omnipresent and can be found in almost every scene. As well as the

database, the computers in CSI and CSI Miami are also responsible for the analysis of DNA and other forensic procedures. Compared to the humanistic shows, we see more use of the computer in CSI and CSI Miami. Apart from the medical examiner in all four shows who conducts the autopsies, the scientists and occasionally the detectives become attached to the computers for everything from chemical screening to DNA analysis. This reliance on the computer becomes what Fuller (2000) refers to as the 'knowledge engineering business' where the computer begins to take over much of the routine tasks that once required expert personnel (2000:123)

In the shows studied, Locard's principle has gone hi-tech. A myriad of different technologies are used to provide a surveillant grid to aid in their investigation. Even though computerised expert systems are more present in the scientific side of these four programs, it is ironic that the shows that hold the revered experts are using more and more technology that could ultimately replace them.

DNA is established in all four shows as a major contributor in a criminal investigation, with its utility as a detector of truth and morality and its ability to project perfect knowledge. DNA'S utilisation within these four television shows evolves from being a piece of biological material and scientific theory to becoming one of the characters in the show. This is suggested in the ability of DNA to quickly identify the guilt or innocence of an individual, the ability to place a witness of culprit at a scene, the power of its presence during an investigation or a trial and the necessity of its involvement as demonstrated in these

episodes. As much as DNA is the tool, it is also the reference as DNA databanks oversee the storage of and conduct the matching of these DNA samples in order to prove the identity of a suspect or victim. In the script dialogue of the television shows that were coded, DNA is discussed like the third person in the room, and as much as it is specified that the detectives or scientists use it, many scenes refer to asking for results from genetic analysis as if it was an individual itself. Examples previously cited in this thesis of an episode of Law and Order SVU entitled 'Serendipity' clearly informs us that DNA cannot lie as if it had an actual voice. The same tendency can be seen in a previously used episode of CSI entitled 'Bloodlines' where investigators claim that the DNA will do the talking. Even more of an example of alluding to DNA as being alive can be found in an already discussed episode of CSI entitled 'Butterflied' which makes reference to how DNA can get the 'life' sucked out of it with bleach. These are but a few examples of how DNA is referred to as an individual party within the investigation.

In CSI and CSI Miami, the team that works in the laboratory is composed of experts, but their job seems to be founded on collecting evidence and letting the machines do most of the work. The detectives on Law and Order and Law and Order SVU also rely on the technology to assist them in their investigation. In the case of DNA, their interpretation of the results is a statement of what is printed on the paper that comes out of the machine. In all four shows, the DNA evidence becomes the contributing factor and as the experts in these shows are reduced to collectors of evidence and processors of data, genetic material

becomes a 'DNA detective'; helping solve cases and creating a shift from its role as a key piece of evidence to becoming an agent of surveillance.

DNA's role as an agent of surveillance is further supported by the panoptic quality that arises during its use within the episodes. Bentham's (1995) panopticon model of surveillance operates on the premise that those who are being surveyed have no direct knowledge of when the surveillance is being applied and thus are in a perpetual state of concern that they are being supervised. I would argue that the same quality can be attributed to DNA databases like CODIS. In all four series studied, many of the plotlines revolve around sex offenders who already have their DNA profile placed on a database accessible by law enforcement. In a Law and Order SVU episode entitled 'Sick', the DNA database is crucial to the identification of a suspect that has kidnapped a young girl from a park. The DNA analysis itself as well as the maintenance of the database is external to the individual. Regardless of this external factor, those who have their DNA profile submitted to the database are aware that they can be verified and cross-referenced anytime law enforcement deems it pertinent.

The characteristics of the DNA databases that have already been discussed such as its infinite capacity for storage and its widespread accessibility parallels many of the characteristics of surveillance (Poster 1996). As he details, surveillance operates best through a vast network of systems that allows the control and supervision of large populations; I would argue that the same can be said about DNA. DNA databases like CODIS are managed by law enforcement

agencies like the FBI but have no singular owner. And its widespread access within law enforcement as seen in the shows studied provides a false sense of accessibility within the justice system.

The popularity of DNA databases such as CODIS and the potential that DNA has as an agent of surveillance in these shows reflects a growing acceptance of surveillance of DNA. It is also interesting to notice how the ethical debate behind DNA analysis is lacking in these episodes. At no time in any of the episodes that were coded does an argument or debate arise over the rights of the individual over the seizure of his or her genetic material, nor do we see any discussion over the database and the implications for society and privacy. This lack of criticism is made more apparent by the flagrant over-use of such databases, the most important being DNA databases and fingerprint databases like AFIS. With a few clicks of a mouse, the characters in the scenes have immediate access to the DNA profile of an offender; this lack of debate, coupled with an increasingly hegemonic standpoint towards the benefits that DNA surveillance brings society, further supports the argument that there rests a certain acceptance and promotion of DNA technology among these shows.

The acceptance and promotion of the benefits of DNA technology within the shows analysed can also be interrelated to the growing risk awareness that is present in our society. Castel (1992) has argued that a more scientific mind-frame of law enforcement parallels a society that operates under an increasingly risk-oriented ideology. A justice system that is focused on risk promotes classifying individuals under groupings that not only advertise their level of risk

for society, but also makes it easier to monitor and control these individuals. There is no better example of this than the use of the DNA database in the episodes studied.

Since DNA databases are not presently utilised to classify the DNA profiles of the law-abiding public and because the subjects already included in the databases hold a threatening position in relation to the rest of society, viewers are constantly exposed to the benefits of using a database like CODIS to keep the public safe by segregating and identifying risky populations. Using DNA databases with a high accuracy rate in capturing those who are deemed risky can be reassuring for a society that may grow increasingly fearful of the world around them.

In the shows coded, DNA has an amazingly efficient success rate, even considering the few chance scenes that mention problems within DNA analysis. Its high frequency of use among these television programs suggests a common-day utilisation among the law enforcement population, which is not usually the case in reality. The high cost of equipment and the necessary expertise still needed to process the information creates problems for extended and frequent use in today's justice system. In these shows, for aesthetic purposes and for the flow of the scenes, we do not see some of the obstacles that many of the real-life DNA databases pose.

Functional Hybridity

In CSI and CSI Miami alone, identity shown by DNA is present in almost half of the episodes and almost one third of the episodes in the two Law and

Order series. As well as promoting its value to monitoring a risky population, I would argue that recurrent utilisation or mention of the DNA database supports Lyon's (2002) argument that our society is trying to appease a 'phenetic fix'; the trend to "capture personal data triggered by human bodies and to use these abstractions to place people in new social classes of income, attributes, habits, preferences, or offences, in order to influence, manage, or control them" (Lyon 2002: 3).

The data that is supplied by any database in the content of these episodes is complete in and of itself. It is only when combined with other data that it begins to form a collection which becomes unique to the subject, forming a data double of the individual. By cross-checking DNA profiles against offender lists and crime scene information, a DNA database such as CODIS falls under Foucault's 'grids of specification' where; "the subject is multiplied and de-centred in the database, acted on by remote computers each time a record is automatically verified or checked against another, without ever referring to the individual concerned" (Lyon, 2001: 115).

In the television shows coded, the viewer can appreciate how the different pieces of data which is collected at crime scenes combines together to form a complex web of information. The viewer can see in the episodes how this web of information is generated for every individual in the investigation. Their blood type, clothing, physical appearance, phone records, financial records and DNA profile all mix together to garner a complete picture of the individual. It is only with the addition of the DNA profile that the individual becomes unique.

The myriad amounts of data entered into databases and used for cross referencing is factual; and thus devoid of emotion or personality. With DNA analysis, the individual becomes an accumulation of symbols and traces that result in what Haggerty and Ericson (2000) argue is a cyber-rendition of the individual. With the use of the DNA fingerprint to identify an individual, that individual loses their personality and societal complexity and is therefore reduced to a simple genetic profile, a data symbol that can be measured within scientific parameters. As well, the DNA profile enters the widespread collection of surveillance practices that are an element of the surveillant assemblage, such as fingerprints and camera recordings. The use of DNA analysis and databases such as CODIS create what Hier (2003) calls the Functional Hybrid where the individual becomes a hybridised unit of technology (information) and identity. The DNA fingerprint converts the individual into a combination of technology and biology, foregoing other aspects such as their personality and upbringing to instead present a trace of information that best represents the individual within measurable criteria.

Cultural Representations of DNA

This study recognises that these shows are fictional and that many of the stylistic details in these shows are meant to entertain. However, the methods in which DNA is represented, the vocabulary utilised and the processes of DNA analysis are shown to the viewer in a highly technical manner that may come across as not only scientifically complex, but also scientifically realistic. Although millions of viewers watch the four shows analysed, it is possible to

assume that as Surette (1984) has argued, only a small proportion of the general public has actually personally dealt with the criminal justice system. This means that all of the aforementioned representations of DNA become first-hand information for the viewing audience. Taking from Surette's (1984) arguments about the populations who watch crime dramas, one can further argue that the average viewer may have even less experience with criminalists and forensic laboratories.

During the course of analysing the content of these episodes it is interesting to note that the scenes that show the DNA analysis behind criminal investigations are not simply applied, they are experienced through the close-up views of the procedures of DNA analysis. Like Lichter and Lichter's (1983) argument that there often lies a misrepresentation of the justice system within the content of this genre of television shows, I would argue that there is a distortion present in the way these 4 television shows demonstrate DNA analysis and retrieval. Paralleling Bortner's (1984) argument of how television tends to portray a glamorous, fast-paced image of our justice system, we can see these qualities within episodes that show DNA being collected at a crime scene. The aforementioned aesthetics of the shows discussed previously remind us that these shows provide entertainment. The scenes are glossy, the sleek lines and fashionable characters present us a fantasy world of criminalistics.

The DNA analysis provided in the scientific shows is based primarily on computer imaging and digital representations. Computer screens that show peaked lines that superimpose on each other and computer read outs help the

scientists demonstrate the matches. In the humanistic programs, the cultural representation of DNA is more lo-tech, in fact the only occasions that the viewer visually sees matches to DNA is when the medical examiner holds up the x-ray sheets showing the columns of bands and physically super-imposes them.

The representation of DNA analysis over all seems to be one of ease and efficiency. Biological contaminants are rarely an issue, blood samples are collected without difficulty, evidence is found easily, and in the space of the hour-long episode a DNA analysis is completed.

It is understandable that the rapidity of results and overall aesthetics of these shows are important in order to maintain viewer satisfaction. However, the manner in which the efficiency and accuracy of DNA is portrayed, coupled with the different representations of DNA contribute to a glamorised image of DNA analysis. Bortner (1984) claims that law enforcement drama tends to center around the rogue detective or conflicted lawyer. The more recent shows that have been coded parallel this idea by placing DNA in the star position, with its reverence within the justice system and its desired efficiency in catching the culprit. DNA is the ultimate detective; in its data form it cannot be bribed or influenced by any means. Its only perceivable flaw comes not from its scientific capability, but rather in the mishandling or human error that can affect its analysis. We have also seen how DNA is fragile and subject to human error and biological contaminants. Even though there are a few instances in which the viewer is exposed to this fragility, the undercurrent of much of the dialogue

remains centred on the superiority of DNA over other surveillant and investigative practices.

The rapidity of DNA analysis is quite evident in all of the shows studied; in many of the episodes DNA fingerprints are often determined within the same day the actual crime has taken place. The swift return rate of DNA analysis is more prevalent in the two CSI series and DNA results are often produced in a manner of minutes from their arrival in the laboratory. With a few clicks of a mouse and a great deal of computer technology, DNA samples are processed and results are produced faster than they would be in reality. What takes a few minutes on television can take much longer in North American laboratories given the overwhelming number of cases to be solved. In extremely high profile cases, DNA results can be put as a top priority and be available within a matter of days, but for other cases, DNA results can take much longer. A backlog of cases as well as the time-consuming process that is required for analysing genetic material would hinder the fast-paced action-packed investigations we grow accustomed to seeing represented on the television screen (Price 2001). Many law enforcement agencies rely more and more on DNA analysis in the course of their investigations. Such popularity has resulted in an increased workload for many laboratories, producing serious backlogs which place an ever growing strain on the finances of law enforcement as well as the efficiency of investigations (Bouchard and Martin: 2001).

On both CSI and CSI Miami, the time constraint is often non-existent, scientists use unidentified computer technology to provide print-outs detailing

genetic matches. Fuller (2000) maintains that computer technology is a large part of 'Big Science' as the expert systems become a 'product of the knowledge engineering business' (Fuller 2000: 123). Even though the role of the expert is blatantly important in all four television shows coded, there is a parallel contribution of computer technology. This technology can take shape in the databases that are referenced or the plethora of computer technology and machinery that used in the laboratory. It is not clear whether this computer technology completely absorbs the role of the expert, as Fuller (2000) claims, since the expert is needed to interpret the results and provide the teacher-student relationship that is enabled between the audience and the expert on the show.

This paper would argue that the scientific content of this type of cultural representation of DNA and its explanation by experts adds to the socially constructed world of the viewer of these television shows, possibly helping to form the viewers symbolic reality where the viewer is exposed to 'all the facts about the world you didn't personally collect but believe to be true, all the things you believe to exist but haven't seen' (Surette 1998: 6). The informative content can be beneficial in the eyes of viewing public as "research indicates that media sources will be more meaningful when direct experience is lacking" (Dowler 2003: 110). This is also pertinent when discussing the fictitious nature of these four shows. If the viewer wanted to see reality, they could easily change the channel to another network that has a camera crew follow detectives around while they solve their cases. It has been previously mentioned that while

fictitious, the method in which the DNA is presented and explained during the episodes sounds authentic. Explanations of DNA are filled with complex names of chemicals and procedures, and the viewer sees a confident application of the scientific theories that end with a positive result.

While we have seen how DNA interacts with societal ideologies of surveillance one may also make parallels between dataveillance and how its cultural representations through DNA collection contributes to arguments referring to governmentality and societies of control. This paper has previously discussed how the use of DNA databases converts the subject into a data symbol. What does that say about the world we live in? Foucault (2001:78 in Miller, Gordon and Burchell eds 2001) points to a shift in the government of a societal fabric that moves away from the individual, sovereign, surveillance of a population to a system-based, pervasive approach that relies more on the individual to oversee themselves. Many can argue that the role of the justice system is to maintain order and seek justice for all within society. By upholding laws and enforcing the state's regulations that lead to the categorisation of a population, there is an element of control that is placed over those who are determined as a threat to the peace and safety of society. In all four shows, whether scientific or humanistic, we can observe the same ideology through the use of our DNA as it provides a means to monitor and control a population through reference.

It is this replacement of the individual that results in Hier's (2003) functional hybrid; an individual that becomes a composite of data and biological

symbols. As the suspect's or victim's DNA is analysed, the 'DNA fingerprint' becomes part of a grouping of data that makes up the individual. This in itself points to a growing surveillant assemblage (Haggerty and Ericson 2000) that is expanding everyday. The surveillant assemblage is composed of a myriad of techniques and technologies that combine to form a complex flow of information to and from the state that is imposing surveillant practices on the society around them. The DNA fingerprint may be the star of the investigation, but it is often introduced during an episode that presents a lot of different methods of surveillance, such as cell phone tracking, video camera recording and fingerprint databases for everything from gun registries to driver's licenses. In any given episode studied, all of these surveillant practices combine to form the assemblage. I would argue that the assemblage becomes the norm in many of these episodes, and allows for the viewer to become comfortable with such a vast collection of surveillant practices. After all, the purpose of the assemblage has good intentions: to garner the most data possible about an individual in order to determine their risk categorisation and remove them from society before they can cause further hurt.

The four television programs center on criminal investigations that concerns itself with eliminating or catching the marginal populations that offend. This ideology of risk management can become common for the viewer, especially when considering that many of the episodes deal with the most feared offender, namely sexual predators. Most times that a DNA database is utilised are in reference to a child kidnapping case or a sex abuse case. The goal of the

DNA analysis and use of the database is to monitor and catch the risky populations that can re-offend. The placement of a DNA profile on a database is seen as a welcomed addition in these episodes; most times investigators are relieved to have the tool to utilise. DNA analysis has the potential to feed a need to control through a method of identification that plans for the future, such as arresting the guilty or identifying criminals who can re-offend (Gordon 1991). The individual as a thinking being is unpredictable. One's reasoning, attitude and motives are all subjective and risk mentality would assume that this unpredictability is a large threat to any society's safety. To deal with this uncertainty, the surveillant panopticon is not enough, for it demands constant supervision on an unsuspecting public. Instead, the grids of specification and classification are better suited for controlling a population since these applications are available for use and reference when needed and thus allows experts to focus their efforts on specific populations.

In the television shows studied, DNA becomes a reactive agent of surveillance, waiting for the hand of the investigator to utilise it to their advantage. It may not prevent the crime, but it can, without a shadow of a doubt provide a method of ascertaining the guilty party in reaction to the commission of a crime. The reactive nature of DNA's use in these shows allows the viewer to join in the solution in the fictional setting as they are present when the DNA is analysed, compared and discussed, giving an example of Lyon's (2002) phenetic fix.

As well as helping the viewer understand the technology behind the crime solving, the information about DNA from the 'experts' in these shows also promotes the desire for the truth and perfect knowledge. It does so by providing perfection to the viewer; the perfect genetic technology that can reveal the identity of the culprit and therefore arrive to the perfect court verdict. While there is always room for errors, they are few and far between in these television episodes. Instead, the viewer gets a backstage look at a new vision of how the criminal justice system should be, with dedicated experts who use technology and science to protect society from risky populations.

CONCLUSION

CONCLUSION

This thesis has explored the tension between the humanistic and scientific ideologies of law enforcement as is displayed on the television prime time crime dramas of Law and Order, Law and Order SVU, CSI and CSI Miami. As well as displaying the advantages that the scientific system has over the humanistic one, the television episodes have scenes that allow for DNA to come across as representations of risk, truth, surveillance and identity that plays out across television screens every week. These representations of DNA, in tandem with the popularity of these television shows, reflect an acceptance of perfect knowledge and the obsession for the truth. This culture of traces re-appears time and again and becomes the focal point of the scientific television series. From the smallest traces of biological material left behind at a crime scene such as semen, saliva or blood, scientific experts can apply genetic technology to identify one person by excluding an entire population from consideration. The power behind DNA analysis is what is so appealing to a society that is searching for a need to control by providing the ability to use the tiniest traces of the body to obtain an identity that cannot be refuted.

The identity of the person, once utilised to ensure trust and familiarity, has become embodied by the genetic fingerprint. This allows us to classify, categorise and analyse the trace in order to provide as much information as possible about an individual. For the humanistic ideological standpoint, the knowledge and skill of the investigator becomes obsolete in comparison to the technology and the science put forth during an episode. While it is true that DNA

does not provide information about the subjective, unquantifiable spirit or soul about the individual, it provides an illusion of control in the measurable amounts of bio-data it can categorise and classify to try and quantify the qualifiable, like the guilt or innocence of a suspect.

The four law enforcement prime time crime dramas that were analysed for the purposes of this study were originally created for entertainment, not education. Nevertheless, I hope to have illustrated that there is something else going on when a viewer turns on their favourite television show; that they are exposed to messages far more complex and subtle than we believe could exist in fictional television. The illustration of the different roles and applications of DNA in these scenes demonstrate discourse about expertise, technology, surveillance, risk, efficiency and control. Coupled with the predominant use of computer technology, the viewing audience has the opportunity to become more familiar with scientific material that is presented in an official sounding manner in an entertaining format. The familiarity with the vernacular and technology create a learning environment for the viewer who is repeatedly exposed to a DNA lesson.

This culture of traces that encompasses our social fabric is easier to accept when presented in an entertaining, glossy hour-long drama, for the viewer does not see the ethical dilemma behind DNA databases, the societal nervousness about the unknown and the need to control. Instead, they view a culture of traces that is efficient, helpful, and easy to understand. The viewing audience becomes a part of that investigation and sees DNA at its most useful,

as a method of protecting society from the unknown by making use of the traces we leave behind.

This thesis has painted a portrait of popular culture and its references to DNA concerning its efficiency, its ability to replace police services and provide the state with a newer and better method of risk surveillance and control. Also explored is the representation of DNA in both humanistic and scientific television shows. What we see is that the possible fear or anxiety that one may feel towards crime is overshadowed by the exposure the audience receives to the solid, indefatigable technology behind DNA. What has not been discussed however is whether or not the public is actually buying into the hegemonic representation. Various newspaper articles and media television outlets have discussed a phenomenon recognised among juries. Those experienced in the justice system have commented on a higher-albeit unrealistic- expectancy among jurors who tend to base their knowledge from the pop culture they are accustomed to viewing.

The repercussions of the 'CSI effect', the influence of the scientific content and unrealistic efficiency of these prime time shows, are important as the possibility of a misinformed jury can decide a case, especially if they demand the presence of DNA evidence. Working both ways, DNA, or the lack thereof, can make or break a case.

The growing concern about its implications within the justice system, coupled with the theoretical background of the paper, could yield further research to see if the CSI effect is a growing phenomenon by going past the content

analysis of the shows to examine and quantify the beliefs and opinions of actual viewers of these television shows.

Ultimately, viewers who watch these television shows, whether they are humanistic or scientific, are exposed to much more than a suspense-laden storyline and aesthetically pleasing sets. The great efforts placed into the realism of the sets and dialogue and the multi-faceted methods of DNA representation expand the viewer's knowledge on the applications of DNA analysis, promoting a respect and dependence on the science of genetic fingerprinting by promising a world of security, order and truth.

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