

“MY GENES MADE ME DO IT”: AN ANALYSIS OF A GENETIC PROPENSITY FOR CRIMINAL CONDUCT ARGUMENT IN CRIMINAL CASES AND ITS IMPLICATIONS FOR GENETIC DETERMINISM

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1 INTRODUCTION

Genetic determinism encompasses the idea that genes are solely responsible for a person’s traits and characteristics. A person who carries a particular gene is predestined to act in a particular manner, and cannot choose to act differently. The idea of genetic determinism and the related theory that these genes are heritable¹ formed the basis of the Eugenics Movement in the early 20th Century, and resulted in a significant number of sterilisations being involuntarily performed to prevent undesirable genes being passed on to the next generation. While it is now generally accepted that it is a combination of genes and environmental factors that influence a person’s behaviour,² the idea of genetic determinism is still present in modern society.

This paper examines the use of a genetic determinism argument in criminal cases, either to negate criminal liability entirely, or in mitigation for sentencing purposes. It then considers the scientific basis for a “criminal gene” and finally highlights some of the wider implications of such an argument being accepted.

The focus of this paper is on cases decided in the US over the last 20 years, due to the fact that elements of the US legal system appear open to a consideration of less traditional arguments. The US States that have retained the death penalty permit a very broad range of factors to be raised in mitigation, which allows for a genetic determinism argument to be considered. In addition, it is permitted in the US to appeal a conviction on the basis of ineffectual counsel, one basis for this being that prior counsel ought to have raised additional arguments in defence or mitigation. This would allow for the argument that genetics ought to have been raised to explain the accused’s conduct. Once a genetic determinism argument was considered not to be completely lacking in merit in these two scenarios, subsequent US cases show the appearance of this argument in non-death penalty cases.

It is suggested that once this argument gains some level of judicial and public support in the US, that it might logically also begin to appear in criminal trials in other jurisdictions including Australia and New Zealand, and the implications of such an argument are therefore worth considering.

2 THE EUGENICS MOVEMENT AND EARLY SUPPORT FOR THE “GENES AS DETERMINANTS OF BEHAVIOUR” THEORY

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¹A term which means that they can be passed on from parent to child.

²This is commonly referred to as nature and nurture.

The idea that certain traits could be inherited appeared early in recorded history. Philosophers like Plato described how '[w]e must, if we are to be consistent and if we are to have a real pedigree herd, mate the best of our men with the best of our women as often as possible...'³ Following the experiments of Gregor Mendel in the 1860s, demonstrating that certain characteristics in pea plants were passed down from generation to generation in a predictable manner,⁴ and the contemporary writings of Charles Darwin and Francis Galton on natural selection and its potential application to humans,⁵ the idea that certain traits were heritable became popular in what was known as the Eugenics Movement.

These ideas were used to justify the sterilisation of over 36,000 women from the 1920s to the 1940s⁶ who were considered to be "feeble-minded"⁷ on the basis that this was a heritable trait. There was also evidence of a similar approach being taken to people demonstrating a propensity to commit crime. Although the practice of sterilising criminals was not as widespread, this was not due to a lack of support for the idea that a propensity to commit crime was heritable, but was the result of two external factors: the laws permitting sterilisation could be struck down for being unconstitutional;⁸ and the sterilisation of criminals only became popular in the few years prior to the end of the Eugenics Movement.

Eugenics declined in the 1930s due to a lack of scientific support for its ideas,⁹ and by the end of World War II, with the full potential of eugenic practices being revealed through Nazi social policies,¹⁰ "eugenics" became a tainted word and was no longer openly practiced.

3 A POTENTIAL REVIVAL OF THE "GENES AS DETERMINANTS OF BEHAVIOUR THEORY"

In the last few decades, scientific understanding of genetics has increased dramatically. In particular, certain traits and characteristics, most notably diseases, are now scientifically accepted as being heritable.¹¹ These scientific advances have reignited the debates that led to the early popularity of the Eugenics Movement. If genes causing some diseases can be identified and accepted as heritable, then it becomes easier to accept that genes can also cause other traits, including a propensity for

³ Plato *Republic* (Paul Shorey trans 1935) 149.

⁴ Gregor Mendel, 'Experiments on Plant Hybrids' (1865) 4 *Proceedings of the Natural History Society of Brunn* 3.

⁵ Charles Darwin, *On The Origin Of The Species* (1859), Francis Galton, *Hereditary Genius* (1869).

⁶ Michael Stehney, 'Legacy Of The American Eugenics Movement: Implications For Primary Health Care' (2004) 31 *Primary Care Clinical Office Practice* 525, 525.

⁷ A term used to refer to people who were poor and uneducated.

⁸ This was on the grounds that they exempted crimes that were considered "white collar". See *Skinner v State of Oklahoma, Ex Rel Williamson* 316 US 535 (1942).

⁹ See Robert Cynkar, 'Buck v Bell: "Felt Necessities" v Fundamental Values' (1981) *Columbia Law Review* 1418, 1455.

¹⁰ *Ibid* 1456.

¹¹ The Human Genome Project, which undertook the goal of mapping the location of all of the genes in the human body, was instrumental in furthering these discoveries and identifying some of these genes.

criminal conduct. If such a gene can be identified, this raises the issue of whether its presence could be a relevant argument in criminal cases.

4 GENETIC DETERMINISM AS A DEFENCE OR MITIGATING FACTOR IN CRIMINAL CASES

In establishing liability, the majority of crimes require proof of both an actus reus and a mens rea. The law assumes that every person has a similar capacity to choose whether to commit a crime, and to understand what it is they are doing.¹² In some circumstances where this assumption is not plausible, the law takes this into account in determining guilt or appropriate sentence.¹³

If a person carries a gene that is known to result in a propensity for criminal conduct, giving him for example a 70% higher chance of committing a criminal act than a person without this gene, it could be argued that he does not have the same ability to choose whether to commit that crime.¹⁴ To rephrase, it could be asked whether this person ought reasonably to be held accountable for crimes that require intention if it can be argued that the criminal behaviour he displayed was so encoded into his genetic makeup so as to give him no ability to choose not to commit the crime. An argument along these lines was suggested in two US cases, *Mobley v State*, and *State v Landrigan*.

A *Mobley v State*

Stephen Mobley was convicted of murder after confessing to the shooting of the manager of a Domino's Pizza store during an armed robbery in 1991. His lawyers, realising that there were few mitigating factors,¹⁵ argued that Mobley's history of behavioural disorders might be the result of a genetic condition beyond his control and requested funding to explore this possibility. The Georgia Supreme Court rejected the claim,¹⁶ accepting the statement of the trial judge that 'the theory of genetic connection... is not at a level of scientific acceptance that would justify its admission'¹⁷ and that it could not be shown that such a stage would ever be reached.

The issue was raised again in 1995, as part of a claim by Mobley's new attorney that trial counsel had been inadequate, particularly for attempting the 'unorthodox mitigating defence'¹⁸ of genetics. The habeas corpus court accepted this argument and

¹² Amanda Evansburg ' "But Your Honour, It's In His Genes": The Case For Genetic Impairments As Grounds For A Downward Departure Under The Federal Sentencing Guidelines' (2001) 38 *American Criminal Law Review* 1565, 1565.

¹³ For example, if the defendant has diminished capacity.

¹⁴ Matthew Jones, 'Overcoming The Myth Of Free Will In Criminal Law: The True Impact Of The Genetic Revolution' (2002-2003) 52 *Duke Law Journal* 1031, 1042.

¹⁵ Mobley was white and privileged, the son of a multimillionaire. See commentary by trial counsel, Daniel Summer 'Human Genome Research In Criminal Defence And Mitigation Of Punishment In Genetics And Criminality' in Jeffrey Botkin et al eds, *The Potential Misuse Of Scientific Information In Court* 182, 189.

¹⁶ *Mobley v State* 455 SE 2d 61, 65 (Ga 1995).

¹⁷ *Mobley v State* 426 SE 2d 150 (Ga 1993).

¹⁸ *Turpin v Mobley* 502 SE 2d 428, 463 (Ga 1998).

vacated the sentence,¹⁹ although it was reinstated in 1997 by the Georgia Supreme Court, which considered that counsel had been adequate.²⁰ Although the court did not allow genetic evidence in this case, the decision does leave open the possibility of such an argument, should the science behind it develop further.

B State v Landrigan

Jeffrey Landrigan was sentenced to death after being found guilty of murder, committed following an escape from prison where he was already serving time for another murder.²¹ Landrigan appealed against this sentence on the basis of failure of counsel to present mitigating evidence of a potential genetic link to crime.²² The three judge appellant panel rejected this for several reasons, relevantly that a genetic link was considered a 'rather exotic' claim. Landrigan successfully petitioned for a rehearing en banc,²³ and the court remanded the case for an evidentiary hearing.²⁴

The appellant panel warned that genetic evidence, if accepted as accurate, could not only be used to benefit Landrigan but could also be applied to his detriment: 'although the evidence could be called mitigating in some slight sense, it would also show the court that it could anticipate that he would continue to be violent.'²⁵ More strongly, it stated:²⁶

[i]t is highly doubtful that the sentencing court would have been moved by the information that Landrigan was a remorseless violent killer because he was genetically programmed to be violent, as shown by the fact that he comes from a family of violent people, who are killers also.

Denno has criticised these comments on the basis that 'it takes on a double-edged sword rationale that wrongly presumes a genetic attribute is static.'²⁷ While this is arguably accurate criticism, it should be kept in mind that the approach by the court reflects the argument made by Landrigan, that his actions were the result of a genetic trait and not free will.

C Other Examples

¹⁹ Ibid 461.

²⁰ Ibid 467.

²¹ *State v Landrigan* 859 P 2d 111 (Ariz 1993).

²² *Brief of Petitioner-Appellant, Landrigan II* 272 F 3d 1221 (No 00-99011) (2001) 45. The genetic link to crime was evidenced by the fact that his biological grandfather was killed in a shootout with the police, his biological father raped his mother, and at the time of Landrigan's imprisonment was also on death row: Owen Jones, 'Behavioural Genetics And Crime, In Context' (2006) 69-SPG *Law And Contemporary Problems* 81, 82.

²³ *Petition For Panel Rehearing And Rehearing En Banc, Landrigan III* 397 F 3d 1235 (No. 00-99011) (2005).

²⁴ *Landrigan v Schriro* 441 F 3d 638 (9th cir 2006) (en banc).

²⁵ *Landrigan v Stewart, Landrigan II* 272 F 3d 1221, 1228-1229.

²⁶ Ibid.

²⁷ Deborah Denno, 'Revisiting The Link Between Genetics And Crime' (2006) 69-SPG *Law and Contemporary Problems* 209, 231.

Mobley was not the first to attempt to use a genetic argument in the US courts,²⁸ but there is a clear increase in use following this case. The majority of cases raise the argument as evidence of a mitigating factor for sentencing purposes.²⁹ While there are cases where the genetics argument has been successful³⁰ and others in which failure of counsel to present genetic evidence in mitigation has been considered unreasonable and prejudicial,³¹ the courts overall appear to treat this evidence with some caution. Where evidence is challenged by another expert witness, judges are likely to disregard it,³² and even when it is accepted as relevant, it appears to be given no more weight than any other psychiatric evidence.³³ Despite these limitations, however, judges do not appear comfortable with an outright rejection of a genetic defence. The decision is often worded carefully enough to indicate that the judge is not stating that a genetic defence will never be available, but only that it is not available until a sufficient scientific basis can be established.³⁴

In those cases where genetic evidence has been accepted, judges have demonstrated an understanding that genetics is only one factor, and that environmental conditions are also relevant in influencing behaviour.³⁵ In *State v Spivey* the judge considered that while a genetic condition put the defendant at risk of committing criminal acts, it did not directly cause them.³⁶ In other cases, the fact that either the defendant put himself in a particular position (for example choosing to drink knowing of a genetic link to alcoholism)³⁷ or can be shown to have planned the crime in advance³⁸ will be sufficient to negate the defence.

There is also evidence of genetics being used against the defendant, as warned of in *Landrigan*. In *State v Creech*, the trial judge found that the defendant had a

²⁸ The earliest was Clarence Darrow, who saved his clients Nathan Leopold and Richard Loeb from the death penalty by arguing that they were “products of heredity”: Clarence Darrow, ‘The Crime Of Compulsion, Address Of Case Summation Before John R Caverly, Chief Justice Of The Criminal Court Of Cook County’ August 22 1924, in Erica Beecher-Monas and Edgar Garcia-Rill, ‘Genetic Predictions Of Future Dangerousness: Is There A Genetic Blueprint for Violence?’ (2006) 69-SPG *Law And Contemporary Problems* 301, 304.

²⁹ Deborah Denno, ‘Revisiting The Link Between Genetics And Crime’ (2006) 69-SPG *Law and Contemporary Problems* 209, 220 cites 27 cases between 1994-2004, most pointing to a family history of mental illness or alcoholism.

³⁰ *Baker v State Bar Of California* 781 P 2d 1344 (Cal 1989).

³¹ *Hendricks v Calderon* 864 F Supp 929 (ND Cal 1994) aff’d 70 F 3d 1032, 1036 (9th Cir 1995), cf *Cauthern v State* 145 SW 3d 571 (Tenn Crim App 2004).

³² *Hall v State* 160 SW 3d 24 (Tex Crim App 2004), *State v DeAngelo* No CR 970108665, 2000 WL 973104 (Conn Super Ct June 20 2000), *People v Hammerli* 662 NE 2d 452 (Ill App Ct 1996).

³³ *Billiot v State* 655 So 2d 1 (Miss 1995).

³⁴ *Mobley v State* 426 SE 2d 150 (Ga 1993).

³⁵ Cf *Von Dohlen v State* 602 SE 2d 738 (SC 2004) where it was considered that a mental condition arising from genetic disposition may render the act of committing homicide the product of a disease rather than a voluntary act.

³⁶ 692 NE 2d 151 (Ohio 1998).

³⁷ Applying the same test as for non-genetic alcoholism. But see *Baker v State Bar of California* 781 P 2d 1344 (Cal 1989) where the defendant was not previously aware of genetic alcoholism and was not disbarred as a result.

³⁸ See *People v Bobo* 3 Cal Rptr 2d 747 (Cal App 1990).

‘propensity to commit murder’ and was a ‘willing predisposed killer.’³⁹ This was used as an aggravating factor in sentencing.⁴⁰

There is a clear distinction between judges accepting genetic evidence for mitigation of sentence and for proof of lack of mens rea.⁴¹ The standard for evidence admissible in mitigation is lower than that required for a defence. According to the US Supreme Court:⁴²

[a] sentencer must not be precluded from considering, as a mitigating factor, any aspect of a defendant’s character or record, or any of the circumstances of the offence that the defendant proffers as a basis for a sentence less than death.

This would clearly allow for genetic evidence, either as an aspect of character or a circumstance of the offence. For genetic evidence to be introduced to negate mens rea however, the standard is higher. In *Mobley* the standard was the ‘scientific stage of verifiable certainty normally required for the introduction of scientific evidence’. At the time of the *Mobley* decision, and also at the present time, this test cannot be established in relation to genetic evidence. Since *Mobley*, however, the standard has been altered by the Supreme Court. The requirement is now that the evidence be relevant and reliable,⁴³ requiring it to be firstly, based on conditions that existed when the cause of action arose, and second, of assistance to the trier of fact in understanding or determining a fact in issue. If *Mobley* had wanted to argue the presence of a criminal gene under this new criteria, it would appear to be sufficient to show that the gene was active at the time of the murder, and that the presence of the gene was relevant to whether he had the intention to commit murder. It is strongly arguable that both requirements could be established in cases arguing genetic determinism and that therefore the use of genetic arguments in the future might increase as a result.

5 GENETIC DETERMINISM IN SCIENTIFIC STUDIES

The cases discussed above, particularly *Mobley* and *Landrigan*, argued a genetic propensity for crime on the basis of evidence of a trend of criminal conduct by family members dating back several generations, and not on the basis of any scientific evidence of a genetic link to the criminal conduct. In *Mobley*, a request for funding for scientific research was rejected, as the judge considered that anecdotal evidence would place the same information before the court.⁴⁴

One issue that needs to be considered is whether, if scientific evidence had been introduced, it would have supported *Mobley*’s argument that his actions were the

³⁹ 966 P 2d 1, 11.

⁴⁰ According to Nita Farahany and James Coleman Jr, ‘Genetics And Responsibility: To Know The Criminal From The Crime’ (2006) 69-SPG *Law and Contemporary Problems* 115, 131-2 the appellate court affirmed this statement, without appearing to recognise its use as an aggravating factor.

⁴¹ Amanda Evansburg, ‘“But Your Honour, Its In His Genes”’: The Case For Genetic Impairments As Grounds For A Downward Departure Under The Federal Sentencing Guideline (2001) 38 *American Criminal Law Review* 1565, particularly 1576-80, but cf Carol Gaudet, ‘Linking Genes With Behaviour: The Social And Legal Implications Of Using Genetic Evidence In Criminal Trials’ (1997) 24 *Fordham Urban Law Journal* 597.

⁴² *Lockett v Ohio* 438 US 586 (1978).

⁴³ *Daubert v Merrell Dow Pharmaceuticals Inc* 509 US 579 (1993).

⁴⁴ *Mobley v State* 455 SE 2d 61, 66 (Ga 1995).

result of the presence of a criminal gene. This requires an analysis of two factors: first, whether genes are determinant of a person's behaviour; and second whether there is an identifiable gene that codes for criminal conduct.

6 GENES AS A DETERMINANT OF BEHAVIOUR

While current scientific understanding of genetics is that there is a link between a person's genes and their behaviour, this link is considered indirect, and subject to other factors, particularly the person's environment.

A gene is a sequence of DNA nucleotides that contain a code, or blueprint, for the manufacture of proteins. These proteins then create cells, which have specialised functions, becoming for example, skin or hair cells. Some cells will form part of the nervous system, and it is these cells that might have an influence on behaviour.

The mere existence of a particular gene does not necessarily result in it producing protein. Genes must first be activated, and scientists have yet to determine which factors lead to activation occurring, except to theorise that it might be related to the outside environment or the particular gene's interaction with other genes around it.⁴⁵ Even if the gene is activated, the type of protein it produces can vary, depending on how the various parts of code (known as exons) in the gene are spliced together in the production process.

If it was accepted that one gene was responsible for a particular behaviour, the mere presence of that gene will not therefore necessarily result in that behaviour occurring. This will depend on whether the gene is activated, and whether it then produces one particular protein. In reality, behavioural traits are complex, and result from the interaction of many different genes. For one behaviour to manifest, therefore, all of these relevant genes must each be activated, each must produce a specific protein and must then interact with both the other genes around it and the physical environment of the person in a particular manner.

Although scientists talk about the heritability of genes, they are referring to the extent to which related individuals resemble each other more than they resemble unrelated individuals, not 'the extent to which genes are involved in the development of a particular trait'.⁴⁶ The presence of the same gene in parent and child is thought only to increase the likelihood of the same behaviour being present in the child as the parent, not as a means of determining how the child will act.

The statement made by Dawkins,⁴⁷ 'we, and all other animals, are machines created by our genes' is therefore to be regarded as incorrect. Behaviour is more correctly to be understood as resulting from a mixture of genes and the environment the person

⁴⁵ Nuffield Bioethics Council, 'Genetics and Human Behaviour'

<http://www.nuffieldbioethics.org/fileLibrary/pdf/nuffieldgeneticsrep.pdf>

⁴⁶ Jonathan Kaplan, 'Misinformation, Misrepresentation And Misuse Of Human Behavioural Genetics Research' (2006) 69-SPG *Law And Contemporary Problems* 47, 56.

⁴⁷ *The Selfish Gene* (1976) quoted in Erica Beecher-Monas, Edgar Garcia-Rill, 'Genetic Predictions Of Future Dangerousness: Is There A Blueprint For Violence?' (2006) 69-SPG *Law and Contemporary Problems* 301, 332.

was raised in. As Plato described: '[N]o man is voluntarily bad; but the bad becomes bad by reason of an ill disposition of the body *and bad education*.'⁴⁸

In summary, while the idea that genes determine character ought to be regarded as too simplistic, it can be seen from the above discussion that genes can influence some forms of behaviour, even if the extent of this influence is difficult to determine. The next issue to be considered is whether a propensity for criminal conduct is one such behaviour.

7 IS THERE A CRIMINAL GENE?

One of the first scientific studies to consider the existence of a criminal gene occurred in the 1960s.⁴⁹ Research showed that the presence of XYY syndrome⁵⁰ among violent criminals held in maximum security prisons was disproportionately high, and suggested that there was a link between this condition and criminal conduct. The validity of this study was later challenged by further studies that produced inconsistent results, and is now generally considered incorrect.⁵¹

More recent studies have shown that there is a link between genes and antisocial behaviour, which has the potential to lead to criminal conduct. One such gene is the serotonin gene, which encodes the production of serotonin, or 5 hydroxytryptamine. A person with low levels of serotonin is more likely to exhibit impulsive-aggressive or other excessive behaviour than a person with high levels. Another is the gene that encodes dopamine. Studies have shown that recidivist violent criminals have a lower dopamine level than non-recidivists.⁵²

Monoamine oxidase (MAO) A and B are two enzymes that prevent both serotonin and dopamine from breaking down. Studies have shown that a mutation in the gene encoding MAO, which leads to low levels being produced, will consequently result in low levels of serotonin and dopamine, potentially leading to various behavioural disorders, particularly aggressive behaviour.⁵³ The significance of this was identified in an investigation in the 1990s into a Dutch family which contained a significant number of male members who exhibited violent behaviour.⁵⁴ The study found that all of these males had a mutation of the gene encoding MAO-A. Those male members of the family that did not exhibit aggressive behaviour were found to have genes free of this mutation. This particular mutation resulted in a complete MAO-A deficiency and it was originally thought that the study had identified what was commonly referred to

⁴⁸ Plato *Timaeus* (Bejamin Jowett trans) (revised edition 1998) 46 (emphasis added).

⁴⁹ Patricia Jacobs, Muriel Brunton et al, 'Aggressive Behaviour, Mental Subnormality And The XYY Male' (1965) 208 *Nature* 1351.

⁵⁰ A condition where a male has an additional Y chromosome.

⁵¹ Matthew Jones, 'Overcoming The Myth Of Free Will In Criminal Law: The True Impact Of The Genetic Revolution' (2002-2003) 52 *Duke Law Journal* 1031. See also Deborah Denno 'Human Biology And Criminal Responsibility: Free Will Or Free Ride?' (1988) 137 *University of Pennsylvania Law Review* 615.

⁵² See Laura Baker, Serena Bezdjian and Adrian Raine, 'Behavioural Genetics: The Science Of Anti-Social Behaviour' (2006) 69-SPG *Law and Contemporary Problems* 7.

⁵³ *Ibid* 37.

⁵⁴ Han Brunner, et al. 'Abnormal Behaviour Associated With A Point Mutation In The Structural Gene For Monoamine Oxidase' (1993) 262 *Science* 578-580.

as a “crime gene”. Further investigations, however, indicated that this complete deficiency was limited to this one family. Although hundreds of other violent criminals were subsequently tested, at most all that was discovered was a deficiency, and not a complete absence of MAO-A.⁵⁵

While it would appear to be a reasonable assumption that a partial MAO-A deficiency would result in some propensity for criminal or antisocial behaviour, a subsequent study of people with the MAO-A deficiency indicated that environment played an important role, and that those growing up in a negative environment⁵⁶ were more likely to exhibit criminal or antisocial traits than those growing up in a positive environment.

If there is a criminal gene, therefore, it has yet to be identified.⁵⁷ The most that can be said is that there are certain heritable traits that suggest a greater risk of behaviours that might lead to someone being involved in criminal conduct. The few studies that have been conducted produced inconsistent results, and the current understanding of genetics suggests that identifying one gene that will definitively result in criminal conduct is highly unlikely to occur.

8 A CONSIDERATION OF THE BASIS OF A CRIMINAL GENE ARGUMENT, AND ITS BROADER IMPLICATIONS

The above discussion suggests that a criminal gene argument will not at present survive scientific scrutiny. The motivation behind its use, and partial success, must therefore be something else. The early Eugenics Movement similarly had no scientific basis, but gained popular support among the educated as it helped explain the prevalence of certain antisocial behaviours in the lower classes. In addition, if it could be accepted that certain people were genetically predetermined to act in a particular manner, much of the social responsibility of the upper classes to help the less fortunate would be removed, on the basis that such assistance would not be of any useful effect. Genetics further allowed the upper classes a basis for the belief that marriage of two respectable, intelligent members of their own class would produce similar offspring. Even with our increased scientific knowledge, these are still arguments that could be seen as having some measure of support in society today.

The acceptance of a genetic determinism argument does have broader implications, both in the criminal law, and also in other areas of law. As the court hinted in *Mobley* this argument could harm the accused in the sentencing phase.⁵⁸ If it is inherently likely that a person will re-offend, the law permits a greater sentence to be imposed

⁵⁵ It has been concluded that the study is therefore ‘of limited import for a general understanding of genetic factors affecting violence.’: David Wasserman, ‘Is There Value In Identifying Genetic Predispositions To Violence?’ (2004) 32 *Journal of Law, Medicine and Ethics* 24, 26.

⁵⁶ Negative environments being those with the presence of abuse or neglect. See Avshalom Caspi et al, ‘Role Of Genotype In The Cycle Of Violence In Maltreated Children’ (2002) 297 *Science* 851, 852-3.

⁵⁷ David Wasserman, ‘Research Into Genetics And Crime: Consensus And Controversy’ (1996) 15 *Politics And The Life Sciences* 107, 107 states that ‘no serious researcher believes that there are genes for crime.’

⁵⁸ Carol Gaudet, ‘Linking Genes With Behaviour: The Social And Legal Implications Of Using Genetic Evidence In Criminal Trials’ (1997) *Fordham Urban Law Journal* 597, 616 suggests it could even be used for pre-offence interventions.

for the safety of the community. A genetic report could be required on this basis as part of a sentencing hearing⁵⁹ and people could find themselves given an excessive sentence as a result. An argument that this will not occur is not necessarily convincing. The criminal gene argument has grown in popularity since *Mobley's* case, and has moved from being argued in mitigation for sentencing purposes solely in death penalty cases to being argued in mitigation in other criminal cases. It has also been raised in the trial itself, in an attempt to negate mens rea.

Although at present the US judges are justifiably hesitant to give support to such an argument, it can be suggested that an increase in the use of this argument might lead to it being considered less 'unorthodox' or 'exotic', to borrow the phrases of the judges in *Mobley* and *Landrigan*. This gives rise to the possibility of such an argument being accepted by judges. Should this occur, it is only logical that prosecutors will also avail themselves of this argument, particularly for sentencing purposes. It is suggested that this is the aspect of the genetic determinism argument that will gain the quickest, and strongest, measure of public support, which might also have an impact on the judge's decisions. The consequences of such an argument being accepted needs to be carefully considered. It could result in an increase in a person's sentence on the basis of a possibility that he might re-offend, or even more extreme, preventative detention of a person not found guilty of committing a crime on the basis that his genes suggest he might one day do so.

Once a particular argument is accepted in one legal jurisdiction, it is easier for it to be argued and accepted in other jurisdictions. Should the trend in the US of arguing genetic determinism continue and gain support, it might be difficult for a judge in New Zealand or Australia to automatically dismiss such an argument. It is suggested that judges would, at the least, need to consider the argument in detail, and as this is a topic that will attract the public's attention this will likely lead to debates on the appropriateness of such an argument, and perhaps some measure of public support.

An acceptance of genetic determinism in criminal cases has implications for other areas of law, particularly insurance and employment.⁶⁰ In both areas the issue is whether people ought to be required to undergo full genetic testing and disclose the results before being granted insurance or being offered employment. The concern is that a person carrying a health-related gene might be denied insurance cover for this condition, or be discriminated against when applying for employment, on the grounds that they might take extended sick leave or make a claim on the employers' health benefits at some stage in the future.⁶¹ These issues are now being debated by US Federal legislatures, and the approach recommended in both cases appears to be that this is a form of genetic discrimination, and that it should not be permitted,⁶² accepting the scientific approach that both genes and environment determine behaviour or traits. In other jurisdictions, notably the UK, the legislature has not intervened. Whether a person can be required to undergo genetic testing before being

⁵⁹ Ibid.

⁶⁰ See Owen Jones, 'Behavioural Genetics And Crime, In Context' (2006) 69-SPG *Law and Contemporary Problems* 81, 86.

⁶¹ See Lori Andrews, 'Genetics, Reproduction And The Law' (1999) 35 *Trial* 20 for examples of this occurring.

⁶² Michael Stehney, 'The Legacy Of The American Eugenics Movement: Implications For Primary Health Care' (2004) 31 *Primary Care Clinical Office Practice* 525, 531.

offered employment is considered to be a matter of contract between the two parties.⁶³ In regard to insurance, the industry's Code of Practice prohibits the use of genetic testing in granting or refusing insurance, and this is seen by the Government as being sufficient to address the issue.⁶⁴

It is suggested that this perceived lack of need for governmental intervention is on the basis of a lack of public support for genetic determinism. If it gains a measure of support in criminal cases then this support will also cross over into other areas where genetics could be seen as relevant, particularly employment and insurance. This self-regulation might no longer be seen as sufficient and jurisdictions without genetic discrimination laws might find that they need to consider an appropriate legislative response.

9 CONCLUSION

If there is a particular gene that codes for criminal conduct, it has yet to be identified. There are genes that code for particular proteins that might have an influence on a person's behaviour, but it is recognised that this does not determine a person's behaviour, being at most one of several factors that influence behaviour. Despite this, a genetic determinism argument has appeared in US cases, initially in death penalty cases where the standard for admissibility of evidence is low, but more recently in the sentencing or trial phases of other criminal cases.

While scientific knowledge at present indicates genetic arguments should not be relied on, it should be recognised that these cases, particularly *Mobley* and *Landrigan*, received widespread publicity, and as a result gained a measure of support from the public, who did not have the benefit of scientific knowledge to balance out the sensationalised criminal gene debate.

Judges faced with a criminal gene argument ought therefore to recognise any public support as being subject to this limitation. If a court decides to accept a genetic determinism argument, it ought to include sufficient reasoning in their decision to clarify the basis for this in order to prevent the idea of genetic determinism gaining legal sanction.

The attempt to use a genetic determinism argument in the US should be watched closely for its potential impact on both the criminal law in other jurisdictions, and also in other areas of the law where genetic information might be seen as a potential indicator of future events.

⁶³ Nuffield Bioethics Council, 'Genetics and Human Behaviour' <http://www.nuffieldbioethics.org/fileLibrary/pdf/nuffieldgeneticsrep.pdf> para 15.5.

⁶⁴ *Ibid*, para 15.28.