

The Genetic Defence: The Impact of Genetics on the Concept of Criminal Responsibility

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I. Introduction

Although genetic determinism has been debated since long before the function of DNA was elucidated, the use of a “genetic defence” in the courtroom is a fairly new phenomenon. Two recent cases have made the defence a reality for the criminal justice system in the United States, and it is only a matter of time before the defence is put forward in Canadian courts.

Early attempts to employ a genetic defence in the United States failed. Many of these cases concerned the XYY syndrome — a genetic abnormality in which men have a second Y chromosome. This syndrome was thought to be a likely target because the extra Y chromosome suggested that these men were more “male” and therefore more aggressive. However, “critiques of the methodologically questionable XYY studies raised serious doubts that XYY individuals were significantly predisposed to aggression or violence.”¹

Although the XYY syndrome is no longer a plausible defence, defendants in the United States continue to use a familial history of violence and crime to argue for reduced sentences, and more specifically to avoid the death penalty. Both Stephen Mobley in Atlanta and Landon May in Pennsylvania² sit on death row awaiting re-hearings in which their lawyers will claim that “bad blood” should be a mitigating factor in their sentencing. Both of these men argue that their genes predisposed them to commit violent acts and that, although no “violence gene” has been proven to exist, this genetic predisposition can be inferred from the behaviour

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¹ D.W. Denno, “Legal implications of genetics and crime research” in G.R. Bock and J.A. Goode, eds., *Genetics of Criminal and Antisocial Behaviour* (Toronto: John Wiley & Sons, 1996) 248 at 249.

² During the penalty phase of the trial, May’s attorney wanted to introduce evidence of May’s family history of violence to advance the argument that he was genetically predisposed to violence. The judge refused to allow the evidence and he was sentenced to death. See D.B. Caruso, “Killer cites ‘bad blood’ defense to save life” *The Grand Rapids Press* (20 July 2003) A13.

of blood relatives. This argument fundamentally undermines the criminal justice system's assumption of free will.³

Stephen Mobley's attorney, for example, attempted to present evidence and obtain financing for neurological testing to show that Mobley's crime could have been attributable to his genetic make-up⁴. This evidence was not to be presented as evidence of a defence, but only as a possible mitigating factor to be introduced during the sentencing phase. The court refused both requests explaining that "[t]he theory of genetic connection...is not at a level of scientific acceptance that would justify its admission."⁵ He was sentenced to death and appealed. On the day of his execution a stay was granted, although no reasons were given.⁶

In this paper, we will explore the ways in which views adopted from contemporary biology may change our understanding of the concept of criminal responsibility. In addition, we will demonstrate how established criminal defences cannot cope with the diminished capacity caused by certain classes of behavioural abnormalities. Moreover, we will explore how a new genetic defence might be structured, and whether it belongs at the guilt or sentencing stage. Finally, we will argue that genetic predisposition may in certain circumstances be viewed not as mitigating or negating criminal responsibility, but rather as creating an additional duty to take care.

II. Criminal Law Theory: Assumptions

Criminal law theorists differ significantly in their approaches to the concept of blameworthiness and to the criminal justice system as a whole. In this section, we lay out our theoretical assumptions about the criminal law. Although we recognise that all of these assumptions are contentious, we will not be defending them fully here, as the goal of this paper is to apply a particular criminal theory framework to potential genetic defences.

First, human beings are autonomous agents and are therefore capable of directing their actions. Though they must act within a spectrum circumscribed by their physical reality — for example humans simply cannot fly independently — for the most part they are free to follow their will. We do however recognise some element of constitutive luck⁷, which may limit one particular individual's spectrum

³In effect, all scientific theories imply determinism in some form: scientific progress is predicated upon evidence that one variable *causes* change in another variable. The meaning and implications of determinism are elaborated on in section III.

⁴Mobley's attorney wanted to have Mobley tested for a MAOA mutation. This mutation will be the subject of a case study below at page 48.

⁵*Supra* note 1 at 251-252. As we shall argue in section III, this stance is an ideological one, as a "genetic connection" of some kind is a requisite condition for all behaviour.

⁶C. Abraham, "The Bad Seed" *The Globe and Mail* (1 March 2003) F1.

⁷See e.g., T. Nagel, "Moral Luck" in Thomas Nagel, *Moral Questions* (Cambridge: Cambridge University Press, 1979) at 24.

of choices more than another's. This notion of constitutive luck is crucial to any discussion of genetic causes of diversity since such diversity is the result of chance rather than being caused or created by an agent.

Second, the criminal law should be concerned with the *choices* that individuals make as expressed through action, and not simply with an individual's actions or character. To make a choice, an individual must intend to act. If an individual acts without intention, then the criminal law should not hold him responsible for his actions. An extreme example of action without intention would be a case in which an individual acts while in a state of automatism.

There are two types of standard of mens rea to which the criminal law holds accused: objective and subjective. The most serious criminal offences — such as murder — require proof of subjective mens rea; that is, they require guilty knowledge in relation to the circumstances or consequences specified in the offence. These offences therefore require the trier of fact to make a finding about what the accused actually knew or intended.

Although objective standards reduce the criminal law's ability to tailor punishment to an actor's level of blameworthiness, they have been accepted by the Supreme Court of Canada.⁸ These offences still encompass a certain degree of fault, that being a "marked departure" from the standard of the reasonable person.

Fault is not only measured by the level of mens rea exhibited by an accused; the element of moral voluntariness, which relates to the actus reus, is also required. In *R. v. Ruzic*, Justice LeBel, writing for the Court, affirmed a requirement not only for a guilty mind or moral blameworthiness, but also for voluntariness when deciding whether an accused was guilty. He stated:

Even before the advent of the Charter, it became a basic concern of the criminal law that criminal responsibility be ascribed only to acts that resulted from the choice of a conscious mind and an autonomous will. In other words, only those persons acting in the knowledge of what they were doing, with the freedom to choose, would bear the burden and stigma of criminal responsibility.⁹

Thus those acting in a morally involuntary fashion, even if they can be said to have mens rea, should be excused from their guilty act.

Once a framework for criminal responsibility is established, the goals of the penal system must be laid out. Many critics have expressed worry that advances in

⁸ See *Reference Re Section 94(2) of the B.C. Motor Vehicle Act* (1985), 23 C.C.C. (3d) 289 (S.C.C.) [*B.C. Motor Vehicle Act Reference*]; *R. v. Creighton* (1993), 83 C.C.C. (3d) 346 (S.C.C.) [*Creighton*]; and *R. v. Hundal*, [1993] 1 S.C.R. 867.

⁹ *R. v. Ruzic*, [2001] 1 S.C.R. 687 at para. 34.

science will slowly erode the scope of the criminal law by explaining the “antecedent conditions” to a person’s actions.¹⁰ In response to this worry, the British criminologist, Lady Barbara Wootton, suggested replacing the concept of blameworthiness with a predictive system based on experts’ determinations of future criminal behaviour, as well as a prescription for whatever therapy was necessary to “cure” or “treat” the crime-causing condition.¹¹

However, the criminal law includes at least some element of retribution. A system based solely on deterrence, with no notion of proportionality between punishment and crime would eventually undermine itself. As Packer has stated: “Punishment of the morally innocent does not reinforce one’s sense of identification as a law-abider, but rather undermines it. . . . If we are to be held liable for what we cannot help doing, there is little incentive to avoid what we can help doing.”¹²

The importance of fault in the finding of criminal liability has been the subject of comment by the Supreme Court of Canada on a number of occasions. In *R. v. C.A.M.*, the Court stated:

It is a well-established tenet of our criminal law that the quantum of sentence imposed should be broadly commensurate with the gravity of the offence committed and the moral blameworthiness of the offender . . . the principle of proportionality in punishment is fundamentally connected to the general principle of criminal liability which holds that the criminal sanction may only be imposed on those actors who possess a morally culpable state of mind.¹³

In addition, in the *B.C. Motor Vehicle Act Reference* Justice Wilson stated that “[i]t is basic to any theory of punishment that the sentence imposed bear some relationship to the offence; it must be a ‘fit’ sentence proportionate to the seriousness of the offence.”¹⁴ Confirming this position more recently in *R. v. Latimer* the Court noted that “second degree murder is an offence accompanied by an extremely high degree of criminal culpability. In this case, therefore, the gravest possible consequences resulted from an act of the most serious and morally blameworthy intentionality.”¹⁵

An ideal system must therefore be based on a synthesis of the two rationales: deterrence and retribution. Such a synthesis allows us both to look back at what an

¹⁰ James Wilson & Richard Herrnstein, *Crime and Human Nature* (New York: Simon and Schuster, 1985) at 504.

¹¹ Barbara Wootton, *Social Science and Social Pathology* (New York: McMillan, 1959).

¹² Herbert Packer, *The Limits of the Criminal Sanction* (Stanford: Stanford University Press, 1968) at 65.

¹³ *R. v. C.A.M.* (1996), 105 C.C.C. (3d) 327 (S.C.C.) at 348.

¹⁴ *B.C. Motor Vehicle Act Reference*, *supra* note 8 at 325.

¹⁵ *R. v. Latimer*, [2001] 1 S.C.R. 3 at para. 84.

offender did do and forward at what an offender will do, and permits us to balance justice and effectiveness.¹⁶ In attempting this synthesis, Hart has argued:

Even if we regard the overall purpose of punishment as that of protecting society by deterring persons from committing crimes and insist that the penalties we inflict be adapted to this end, we can in perfect consistency and with good reason insist that these punishments be applied only to those who have broken a law and to whom no excusing conditions apply.¹⁷

In addition, although excusing conditions may act in opposition to the law's goal of deterrence, they are necessary as an expression of the criminal justice system's respect for the individual as a choosing being. Thus, the existence of excuses permits the system to apportion punishment in accordance with choice, and therefore to protect the individual from "the claims of society for the highest measure of protection from crime that can be obtained from a system of threats."¹⁸ Excuses can also be seen as an expression of societal compassion for the situation in which an accused has found herself.¹⁹

In this manner, excuses necessarily take an accused's personal characteristics and circumstances into consideration. Yet, the Supreme Court of Canada has taken the position that the criminal law need not concern itself with all of an accused's idiosyncrasies. Justice McLachlin (as she then was) stated for the majority in *R. v. Creighton*:

I can find no support in criminal theory for the conclusion that protection of the morally innocent requires a general consideration of individual excusing conditions. The principle comes into play only at the point where the person is shown to lack the capacity to appreciate the nature and quality or consequences of his or her acts. Apart from this, we are all, rich or poor, wise or naïve, held to the minimum standards of conduct prescribed by the criminal law.²⁰

However, McLachlin J. did assert that factors such as a lack of education and psychological disposition could be addressed at the time of sentencing.

Moreover, the Supreme Court has recognised that a modified objective standard is appropriate for a number of defences including provocation²¹, self-de-

¹⁶ *Supra* note 10 at 497.

¹⁷ H.L.A. Hart, "Legal Responsibility and Excuses" in M.L. Corrado, ed., *Justification and Excuse in the Criminal Law: A Collection of Essays*, (New York: Garland, 1994) at 31.

¹⁸ *Ibid.* at 47.

¹⁹ G.P. Fletcher, "The Individualization of Excusing Conditions" in M.L. Corrado, ed., *Justification and Excuse in the Criminal Law: A Collection of Essays* (New York: Garland, 1994) 53 at 54.

²⁰ *Creighton*, *supra* note 8 at 385.

²¹ *R. v. Thibert*, [1996] 1 S.C.R. 37 at paras. 18-19.

fence²², and duress²³. While describing the “ordinary person” in the context of the defence of provocation, a majority of the Court stated: “certain characteristics will have to be assigned to the ‘ordinary person’ in assessing the objective element. The ‘ordinary person’ must be of the same age, and sex, and share with the accused such other factors as would give the act or insult in question a special significance, and have experienced the same series of acts or insults as those experienced by the accused.”²⁴ In *Hibbert*, the Court noted that this modified objective standard was relevant to other defences:

The defences of self-defence, duress and necessity are essentially similar, so much so that consistency demands that each defence’s ‘reasonableness’ requirement be assessed on the same basis. ... [T]he appropriate objective standard to be employed is one that takes into account the particular circumstances and human frailties of the accused.²⁵

Therefore, the Supreme Court is “more willing to factor in characteristics of the particular accused when applying objective standards to defences than to offences.”²⁶ The question, in a genetic context, is whether a person’s genetic constitution is one of those characteristics that can modify the objective standard. Another possibility which will be explored is whether the standard of the reasonable person — modified or not — can apply to individuals with certain genetic conditions.

As the above discussion demonstrates, our notions of retribution, deterrence and criminal responsibility inevitably become conflated. To deter, the system defines a standard of conduct, but this standard is unattainable by some accused and so — to avoid injustice — they are excused. As Daly and Wilson have expressed it:

That which is deterrable by the threat of punishment is therefore under no compulsion, hence is a free act of will, hence blameworthy if wrongful. ... We punish (hold responsible) those whom we believe corrigible (manipulable). We simply restrain without moralistic rhetoric those whom we know not how to reach.²⁷

This kind of reasoning, as Daly and Wilson recognise, is faulty. The fact that someone was not deterred does not necessarily mean that she will not be deterred in future. A person might not have had the capacity to control her actions and should therefore be excused for her wrongful actions, but may still be corrigible.

²² *R. v. Lavallee*, [1990] 1 S.C.R. 852 at para. 39ff.

²³ *R. v. Hibbert*, [1995] 2 S.C.R. 973 at paras. 60-62.

²⁴ *Supra* note 21 at para. 18.

²⁵ *Supra* note 23 at paras. 60.

²⁶ K. Roach, *Criminal Law*, 2nd ed. (Toronto: Irwin Law, 2000), online: QL(ROA2) at Chapter 8(A)(3).

²⁷ M. Daly & M. Wilson, *Homicide* (New York: Aldine de Gruyter, 1988) at 269.

Based on the above, we start from the position that criminal punishment must be proportionate to blameworthiness and that blameworthiness must be evaluated from actions based on choice. Therefore an involuntary or compelled action is not worthy of blame.

III. Genes and Human Behaviour

A. Biological Approaches to Human Behaviour

There have been a number of advances in the biology of human behaviour since 1993, when the court refused Mobley's request to introduce evidence of "bad blood". These advances have the possibility of revolutionising our methods of understanding and predicting human behaviour. Psychologists are beginning to understand that genes affect behaviour in the same way that such other biological factors as head trauma, prenatal exposure to drugs or alcohol, or brain disorders do.

Unlike the types of psychological evidence that are routinely raised in court, reliable genetic evidence poses less evidentiary problems than "rotten social background"²⁸ evidence or evidence of mental illness with no recognised biological basis. Genes create more certainty: genes don't lie and may back up the claims of an accused with solid scientific evidence. Although a person's environment always remains relevant in determining whether a gene can be considered partly responsible for a behaviour, under the right circumstances, a genetic defence could provide credible corroboration to an accused's assertion of "bad blood". The shift from psychiatric to genetic evidence is critical because the majority of psychiatric disorders are not considered medical disorders until their physiological bases are discovered.

There have been a number of critics of the medicalisation of criminal behaviour. For example, Alper has argued that neither the genetic nor the biochemical approach provides convincing evidence that criminal behaviour can be understood in terms of genetics or biochemistry, and that policy-makers should not be too hasty in using these studies to effect changes to the justice system.²⁹ Although we agree that caution is warranted in our interpretation of the growing body of evidence in this area, it would benefit courts and policy-makers to begin to get a grasp on these issues now, before defendants begin pleading a genetic defence.

There are two non-exclusive schools of thought that approach biological influences on behaviour differently: behavioural genetics and evolutionary psychology. These will be briefly explained below and their common ground will be discussed.

²⁸ See e.g., R. Delgado, "'Rotten Social Background': Should the Criminal Law Recognize a Defense of Severe Environmental Deprivation?" (1985) 3 *Law and Inequality* 571.

²⁹ J.S. Alper, "Biological influences on criminal behaviour: how good is the evidence?" (1995) 310 *British Medical Journal* 272.

i. Behavioural genetics

Behavioural genetics is concerned with the extent to which differences between individuals for a given behavioural trait are explained by variation in genetic makeup and in environment. This approach is particularly concerned with identifying genes that influence specific behavioural traits such as impulsivity. Therefore, to be the subject of a behavioural genetics study, a trait must be measurable. Usually personality tests are used to measure a trait in an individual. When these kinds of data are collected from related individuals, estimates of the heritability of a trait can be obtained. Heritability is a measure of the amount of variance in a trait between individuals that can be attributed to variation in genetic makeup, and it is a populational measure, not an individual one.³⁰ This last point is among the most misunderstood aspects of modern biological thought, and so will be considered at some length here.

In the current age of cloning technologies and genetically engineered organisms, it has become fashionable to perpetuate two intertwined myths — those of genetic determinism and the “nature/nurture” dichotomy — that ought to be dispelled if scientific knowledge is to be properly integrated into policy discourse. In scientific terms, to say that variable A “determines” outcome B is merely stating that, in a statistical sense, A reliably leads to B under a particular set of conditions. As noted above, all scientific theories rely on this notion of determinism, and so it seems strange that biology should be held uniquely responsible for committing this “sin”. Perhaps the reason for this bias is the belief that genetic effects are immutable, whereas environmental effects are not.³¹ This belief is also a myth, as any reader wearing glasses can attest to. Myopia (“nearsightedness”) is highly heritable³²; however, the use of corrective lenses effectively neutralises the problem, even though it is clearly genetically determined.

Moreover, heritability can only be measured when at least two different outcome states exist (in reality or in theory), that is, when there can be said to be variability among traits in the population. Heritability, then, is implicitly a comparative concept, and cannot be reduced to inferences at the individual level. For instance, the example above regarding myopia is sensible only because an alternative (“amyopia”, or 20/20 vision) exists in the population that can serve as the basis for comparison. This is precisely where employment of the nature/nurture dichot-

³⁰ Thus a heritability coefficient does not express the probability that an individual will inherit a trait, but rather, expresses the percentage of individual differences in a particular trait accounted for by genetic variation among members of a population.

³¹ R. Dawkins, *The Extended Phenotype* (New York: Oxford University Press, 1999) at 13. On the same page, Dawkins calls this sort of reasoning “pernicious rubbish on an almost astrological scale” and notes that “there is no general reason for expecting genetic influences to be any more irreversible than environmental ones.”

³² K.A. Rose *et al.*, “High heritability of myopia does not preclude rapid changes in prevalence” (2002) 30 *Clinical & Experimental Ophthalmology* 168.

omy is misleading. An elaboration of the developmental process should suffice to clarify this point.

Richard Dawkins, a leading figure in zoology and evolutionary biology, has sharply criticised the “blueprint” model of development, favouring a colourful “cake” analogy instead. The former analogy “implies a one-to-one mapping between bits of body and bits of genome ... [b]ut this is utterly alien to everything we now understand about the way development works.”³³ Rather, development resembles the “translation” process of converting a recipe into a cake: “it is an irreversible process. You cannot dissect a cake and thereby reconstruct the original recipe. There is no one-to-one, reversible mapping from words of recipe to crumbs of cake.”³⁴ On this view, it is sensible to discuss the relative contributions of genes, environments³⁵, and their interactions when evaluating differences among individuals; however, the outcome state of any particular individual can only be the consequence of a complete interaction between genes and environments, and thus cannot be the subject of a heritability estimate. To sum up before returning to our central topic: biological determinism differs in no way from any other form of determinism; “determined” is not synonymous with “immutable” or “fixed”; and while heritability estimates can assay genetic and environmental contributions on a populational level, “nature” is not divorceable from “nurture” in an individual’s development.

In her review of behavioural genetics studies Fishbein states that “[a]ccording to heritability studies, the extent of genetic influence is surprisingly high for behavioral traits, particularly alcoholism, impulsivity, and various other dimensions of antisocial behavior.”³⁶ In addition, the extent of the influence is similar for the heritability of cognitive defects and conduct disorders, which are useful in predicting substance abuse and aggression.³⁷

Heritability studies can also provide clues about the kind of genetic processes that are contributing to a particular trait by elucidating a pattern of inheritance. Molecular genetics studies can build on these behavioural genetics studies to

³³ *Supra* note 31 at 175.

³⁴ *Ibid.* For the sceptical reader, Dawkins continues: “This is not to say that a skilled cook could not achieve a passable reversal, by taking a cake presented to him and matching its taste and properties against his own past experience of cakes and recipes, and then reconstructing the recipe. But that would be a kind of mental selection procedure, and would in no sense be a *translation* from cake to recipe”. There is no analogue in the evolutionary process to a “skilled cook”. Evolutionary theory requires no conscious designer, and in fact explicitly assumes the *absence* of any such guiding consciousness; differential reproduction of “types” in a population is wholly sufficient.

³⁵ We use the plural form of “environment” to underscore the point that an environment may take many forms beyond the conventional ones (e.g., social context), including the womb environment and *other genes* in the same genome. There is no meaningful distinction between these environments.

³⁶ Diana Fishbein, *Biobehavioral Perspectives in Criminology* (Toronto: Wadsworth/Thomson Learning, 2001) at 28.

³⁷ *Ibid.*

investigate the mechanisms behind the heritability of a trait.³⁸ Before such evidence can have a practical application, a number of prerequisites must be met. The researcher must:

1. Estimate the incidence of biological disorders among antisocial populations.
2. Identify etiologic or causal mechanisms.
3. Assess the dynamic interaction among biological and socio-environmental factors.
4. Determine whether improvements in behavior follow large-scale therapeutic manipulations.³⁹

The fourth prerequisite is important for rehabilitation, but is not necessary when using genetic evidence to question the assumption of criminal responsibility. However, the first three are critical. The third, in particular, has and will create the most difficulties for lawyers and scientists alike.

ii. Evolutionary psychology

Evolutionary psychology is also concerned with explaining and predicting behaviour, but its theoretical approach is quite different from that of behavioural genetics. In *Homicide*, Daly and Wilson, two of the leading academics in this field, explain the goal of the approach in the following manner:

to use Darwin's discovery that the properties of organisms have been shaped by a history of selection as an heuristic for the generation of models and hypotheses about the sorts of psychological mechanisms than an animal like *Homo sapiens* might be expected to have evolved. We then use these psychological models and hypotheses to predict and explain patterned variation in [human behaviour].⁴⁰

This approach can be used to explain patterned variation in all manner of behavioural traits. The basic premise of evolutionary psychology is that "the evolved motivational mechanisms of all creatures, including ourselves, have been designed to expend the organism's very life in the pursuit of genetic posterity."⁴¹ Of course, this is not to say that our behaviour in present environments is adaptive, nor that our personal motivations are self-serving. On the contrary, a neo-Darwinian

³⁸In addition, a trait could have 0 heritability (e.g., number of fingers), yet molecular genetics studies could be used to determine how it develops.

³⁹*Supra* note 36 at 98.

⁴⁰*Supra* note 27 at 6. More specifically, Daly and Wilson investigate the risk of interpersonal conflict and homicide.

⁴¹*Ibid.* at 5.

process of adaptation and selection that is inherently self-serving at the genetic level has led to traits that are clearly other-regarding at higher levels, such as altruistic behaviour.⁴²

In contrast to the behavioural geneticist, the evolutionary psychologist is generally more interested with explaining species-typical behaviour than individual idiosyncrasies. Or more accurately, evolutionary psychologists are interested in the functional aspects of psychological adaptations, and those conditions of the environment that elicit them, rather than those aspects caused by individual differences in genetic makeup. However, a number of evolutionary psychologists have applied a combination of both frameworks to explain how “abnormal” conditions such as sociopathy⁴³ can be seen as adaptive and therefore a product of natural selection.⁴⁴

B. Common Ground Between the Two Approaches

Behavioural genetics is likely to be the approach most compatible with the criminal law as its goal is to explain individual differences in human behaviour, while evolutionary psychology tends to focus on explaining species-typical behaviour, though individual variation can reflect species-typical adaptations as well. Although these two approaches to human behaviour differ fundamentally, for our purposes, it is sufficient to expose their shared underlying principles.

First, genes predispose rather than predetermine; no person is predestined to act in a certain way.⁴⁵ In the same way that mutations in certain genes will predispose certain women to breast cancer, mutations in other genes might predispose individuals to be aggressive or impulsive. Under certain circumstances these predispositions will be expressed and the individuals will develop cancer or act in an aggressive or impulsive way.

Second, the impact of genes on behaviour is complex and multi-factorial. As Hamer has stated:

The results [of the second century of behavioural genetics] have been disappointing and inconsistent. Large and well-funded linkage studies of the major psychiatric disorders including schizophrenia, alcoholism,

⁴²For a technical introduction, see the foundational work on the evolution of sociality: W.D. Hamilton, “The genetical evolution of social behaviour (I and II)” (1964) 7 *Journal of Theoretical Biology* 1. For a lay description of the theory, the classic text is: R. Dawkins, *The Selfish Gene* (New York: Oxford University Press, 1976).

⁴³See e.g., L. Mealey, “The sociobiology of sociopathy: An integrated evolutionary model” (1995) 18 *Behavioral and Brain Sciences* 523.

⁴⁴Even non- or maladaptive traits can be a product of natural selection in the same way that a fine-tuned design might include a compromise or flaw on one element of the design, or in the way that a mechanism might break down when used in inappropriate (e.g., novel) circumstances.

⁴⁵*Supra* note 36 at 33.

Tourette syndrome, and bipolar disorder have come up empty-handed; not a single new gene has been conclusively identified. ... The real culprit is the assumption that the rich complexity of human thought and emotion can be reduced to a simple, linear relation between individual genes and behaviors.⁴⁶

Antisocial behaviour, too, is a complex syndrome that must be influenced by a vast number of genes, each having a small effect.⁴⁷ Even physical traits that seem simple like eye colour are determined by a great number of genes acting together. The genetic variants that are usually associated with behavioural disorders include neurotransmitters and their receptors in the brain, as well as certain enzymes that are involved in their metabolism.⁴⁸ In essence, the complex and ever-changing nature of brain chemistry eludes single gene explanations.

Finally, both genes and environments are inherited⁴⁹ and they interact to produce human behaviour. For example, while researchers have found antisociality to be a heritable trait, these same studies have demonstrated that genes only play a part in explaining the variance in criminality within a population of individuals.⁵⁰ Rowe explains it succinctly:

Given the strong genetic control of brain function and structure, it is therefore understandable that much variation in behavior can ultimately be traced to genetic variation. ... This logic, however, does not mean that genetic differences at birth are the sole cause of behavioral differences. The final expression of these genetic differences may depend on the range of available environments during development, and they may be expressed more strongly in one environment than in another.⁵¹

⁴⁶D. Hamer, "Rethinking Behavior Genetics" (2002) 298 *Science* 71 at 71.

⁴⁷Nuffield Council on Bioethics, *Genetics and Human Behaviour: The Ethical Context* (London: Nuffield Council on Bioethics, 2002), online: Nuffield Council on Bioethics Homepage <http://www.nuffieldbioethics.org/go/ourwork/behaviouralgenetics/publication_311.html> (last modified: 12 August 2004) at 95.

⁴⁸*Supra* note 36 at 30.

⁴⁹At first glance, it may strike the reader as odd that environments can be "inherited". There are two distinct meanings of this term — universal and heritable — and both are interesting to the evolutionary biologist. Natural selection can operate only when there is some regularity in the environment across generations; however, consistency in environmental variability (a form of regularity) may also affect evolution by favouring some genotypes over others. *Universality* implies that there are fundamental characteristics ubiquitously present in past human environments, including: the general biochemistry of the womb environment; immune-relevant agents in breast milk; the presence of at least one parent, typically the biological mother, to rear the children; and linguistic and "vocational" instruction. *Heritability* of environments is a corollary of the concept of heritability explained above, in that variability in behaviour may be accounted for by variability of environments that can be passed on through successive generations, such as poverty, diet and social status.

⁵⁰D.C. Rowe, "Inherited Dispositions Toward Learning Delinquent and Criminal Behavior: New Evidence" in L. Ellis & H. Hoffman, eds., *Crime in Biological, Social, and Moral Contexts* (New York: Praeger Publishers, 1990) 121 at 125.

⁵¹*Ibid.* at 123.

Therefore, in many cases, a gene or gene mutation will not be expressed in the same way if the relevant environmental factors change. The MAOA case study described below is a good example of how genes and environments interact significantly in practice.

C. Case Studies

Instead of discussing the impact of genetic knowledge in an abstract way, we will present two case studies, which will be used to demonstrate how current defences and a possible genetic defence might grapple with particular genetic conditions.

i. Alcoholism

Alcoholism is an interesting case study because it is a well-known condition, and intoxication is a defence that has been altered fairly recently by the Supreme Court of Canada and Parliament. Thus, the purpose of including this study is to consider whether genetic knowledge can or will add anything to the intoxication defence.

Current research suggests that there are two types of alcoholics: those with a genetic predisposition to their alcoholism and those without. Thus, as Cloninger has proposed, Type 1 alcoholism is largely “learned” while Type 2 alcoholism is largely “inherited”.⁵² A number of other studies have investigated the genetic transmission of alcoholism as well as its links to violent behaviour.⁵³ Such studies seem to demonstrate that Type 2 alcoholics are prone to violence during intoxication and some investigators postulate that Type 2 alcoholism and antisocial personality disorder may share the same genetic aetiology.⁵⁴

A genetic predisposition to alcoholism may strengthen the argument that some alcoholics become intoxicated involuntarily and that any violent behaviour is therefore also involuntary. This possibility is further explored below in the discussion of the intoxication defence.

⁵² C.R. Cloninger, “Neurogenetic adaptive mechanisms in alcoholism” (1987) 236 *Science* 410.

⁵³ G. Carey, “Simulated twin data on substance abuse” (1992) 22(2) *Behavioral Genetics* 193; D. Goldman, “Recent developments in alcoholism: Genetic transmission” (1993) 11 *Recent Developments in Alcoholism* 231; A.J. Reiss & J.A. Roth, eds., *Understanding and preventing violence* (Washington, D.C.: National Academy Press, 1993); B. Bergman & B. Brismar, “Hormone levels and personality traits in abusive and suicidal male alcoholics” (1994) 18(2) *Alcoholism Clinical and Experimental Research* 311; L. Linnoila *et al.*, “Serotonin, violent behavior and alcohol” (1994) 71 *EXS* 155; A. Roy *et al.*, “Reduced central serotonin turnover in a subgroup of alcoholics.” (1987) 11 *Progress in Neuropharmacology Biological Psychiatry* 173; M. Virkkunen & M. Linnoila, “Serotonin in early onset, male alcoholics with violent behaviour” (1990) 22 *Annals of Medicine* 327.

⁵⁴ See M. Virkkunen, D. Goldman & M. Linnoila, “Serotonin in alcoholic violent offenders” in G.R. Bock & J.A. Goode, eds., *Genetics of Criminal and Antisocial Behaviour* (Toronto: John Wiley & Sons, 1996) 168 at 170.

ii. MAOA defect

Monoamine oxidase (MAO) is an enzyme that is critically involved in brain function, specifically in the regulation of the concentrations of neurotransmitters in the brain. Low MAO activity creates excessive levels of the neurotransmitters dopamine and norepinephrine, which are believed to contribute to aggression and low self-control, and is therefore linked to violent behaviour, psychopathy and aggression.⁵⁵

There are two types of MAO: MAOA and MAOB. MAOA has been the focus of the majority of studies linking MAO and antisocial behaviour and a number of studies have been done to elucidate how MAOA mutations affect behaviour.⁵⁶ These studies provide initial evidence that a combination of malfunctioning MAOA and early childhood maltreatment drastically increases the chances that the individual will develop antisocial behaviour.⁵⁷ Thus, the MAOA case study is a prime example of how the interaction of genes and environment can produce effects which neither produces on its own.

In addition, this case study is illustrative of a class of genetic metabolic abnormalities. MAOA deficiency is not the first or only abnormality to be linked to abnormal behaviour. As Brunner explains:

What these conditions have in common is a very general disturbance of brain metabolism, which must affect a broad range of physiological function. These examples indicate that even rather specific and reproducible behavioural abnormalities arise from an extremely complex interplay between many functional units or circuits in the brain, rather

⁵⁵ *Supra* note 36 at 40-41.

⁵⁶ See e.g. L. Ellis, "Monoamine oxidase and criminality: Identifying an apparent biological marker for antisocial behavior" (1992) 28 *J. Research on Crime and Delinquency* 227; Y-P. Hsu *et al.*, "Molecular genetics of the monoamine oxidases" (1989) 53 *J. Neurochemistry* 12; L. Lidberg *et al.*, "Platelet monoamine oxidase activity and psychopathy" (1985) 16 *Psychiatry Research* 339; Z.S. Dolinski *et al.*, "Basic aspects of blood platelet monoamine oxidase activity in hospitalized men alcoholics" (1985) 46 *J. Studies on Alcohol* 81; D. Schalling *et al.*, "Markers for vulnerability to psychopathology: Temperament traits associated with platelet MAO activity" (1987) 76(2) *Acta psychiatrica Scandinavica* 172; H.G. Brunner *et al.*, "Abnormal behavior associated with a point mutation in the structural gene for monoamine oxidase A" (1993) 262 *Science* 578; H.G. Brunner *et al.*, "X-linked borderline mental retardation with prominent behavioral disturbance: Phenotype, genetic localization, and evidence for disturbed monoamine metabolism" (1993) 52 *American Journal of Human Genetics* 1032.

⁵⁷ A. Caspi *et al.*, "Role of Genotype in the Cycle of Violence in Maltreated Children" (2002) 297 *Science* 851 at 853: "[A]lthough individuals having the combination of low-activity MAOA genotype and maltreatment were only 12% of the male birth cohort, they accounted for 44% of the cohort's violent convictions, yielding an attributable risk fraction (11%) comparable to that of the major risk factors associated with cardiovascular disease. Moreover, 85% of cohort males having a low-activity MAOA genotype who were severely maltreated developed some form of antisocial behavior. Both attributable risk and predictive sensitivity indicate that these findings could inform the development of future pharmacological treatments."

than from dysfunction of a single functional brain unit that is uniquely responsible for this type of behaviour.⁵⁸

Unlike single-gene disorders such as Huntington's disease, most abnormalities affecting behaviour appear to be multi-factorial.

IV. Applying Criminal Defences to Behavioural Abnormalities

A. Criminal Responsibility Revisited

As should be obvious from the discussion of genetic research into human behaviour, there are no easy answers. Even for those who accept that genes play an important role in a person's behaviour, the defence "my genes made me do it" is a gross overstatement. Thus, except in the most extreme cases — for example, where a person's genotype renders them an automaton — genetics will only reduce blameworthiness rather than eliminate it. Put another way, and following logically from the above discussion, genes do not take away "free will", but they may reduce the degree of free will commanded by an individual by reducing the spectrum of choice that an individual may have at any given moment.

The narrowing of a spectrum of choice cannot be equated with either physical involuntariness or moral blamelessness. Just as a person under duress has both physical and mental control over her actions, a person with a genetic condition does as well. Rather, genetic conditions could be seen to render an accused's actions morally involuntary. In *Ruzic*, the Supreme Court provided a useful illustration to explain moral involuntariness:

Suppose someone puts a knife in the accused's hand and forces it into the victim's chest. The accused's body is literally overpowered, as is her will. Consider next the situation of someone who gives the accused a knife and orders her to stab the victim or else be killed herself. Unlike the first scenario, moral voluntariness is not a matter of physical dimension. The accused here retains conscious control over her bodily movements. Yet, like the first actor, her will is overborne, this time by the threats of another. Her conduct is not, in a realistic way, freely chosen.⁵⁹

While a person under duress is forced into action by an external force, a person with a genetic condition predisposing her to violence is, in a sense, forced into, or pushed towards, her action by an internal force. In addition, both the accused

⁵⁸H.G. Brunner, "MAOA deficiency and abnormal behaviour: Perspectives on an association" in G.R. Bock and J.A. Goode, eds., *Genetics of Criminal and Antisocial Behaviour* (Toronto: John Wiley & Sons, 1996) 155 at 160-161.

⁵⁹*Supra* note 9 at para. 44.

under duress and the accused under the influence of a genetic condition do have a choice, but cannot be said to effectively choose. However, while the accused under duress is compelled — as that term is understood in the criminal law — the actions of an accused with a genetic condition cannot be properly characterised in that way. The reason that the analogy breaks down at this point is because of the important distinction made within the criminal law between an abnormal accused and abnormal circumstances.

While the defences of self-defence, duress and necessity are in place to reduce the harshness of the criminal law in the face of abnormal circumstances, the mental disorder defence and the defence of diminished responsibility are aimed at abnormal defendants. This distinction is important because the objective standard that an accused is required to meet within the defence of duress, for example, presupposes that the accused was capable of reacting to the threat she faced in a reasonable manner. Although, as we have seen earlier, this objective standard is individuated by taking the circumstances of the accused into consideration, it should not be collapsed into a subjective standard. Thus, as a genetic condition renders an accused “abnormal”, it should not be a factor taken into consideration in the modified, individuated objective standard. Rather, genetic conditions are likely to be better dealt with using the kind of analysis employed within the mental disorder and diminished responsibility defences, which employ subjective standards.

One of the worries of taking a biological approach to criminal responsibility is that it will demonstrate the innate abnormality of all criminal accused, and therefore will always act to exculpate or mitigate. Biological advances are challenging the presumption within the criminal justice system that an accused is a mentally normal person.⁶⁰ Especially in the case of violent crimes, the actions of the accused cast doubt on his “normalcy”, even if the accused clearly does not fall within the scope of the mental disorder defence. Elliott has expressed this problem by stating: “It is probably safe to say that neither moral philosophy nor the law has found a satisfactory way, of dealing with the volitionally disordered offender [the offender whose desires are abnormal]. Frequently, philosophical discussions of the problem become mired in irresolvable debates about psychological determinism or weakness of will.”⁶¹ Though an accused cannot be held responsible for “psychological determinism”, he can be held responsible for his “weakness of will”.

Although the criminal justice system embraces exclusive categories and bright lines, the best approach to genetic knowledge is likely to be a sliding scale of responsibility. In *Chaulk*, Chief Justice Lamer (as he then was) compared the

⁶⁰The terms “normal” and “abnormal” are also mired in controversy, but we use them here to try to illustrate how the concepts are dealt with within the criminal law. More specifically, normalcy in the criminal law appears to simply be a function of frequencies. Thus common behavioural traits are “normal” while uncommon behavioural traits are “abnormal”. The question then becomes whether a specific abnormality renders a person deserving of mitigation.

⁶¹C. Elliott, *The Rules of Insanity: Moral Responsibility and the Mentally Ill Offender* (Albany: State University of New York Press, 1996) at 40.

continuum of criminal capacity inherent to the insanity defence to that found in the common law with respect to the criminal capacity of children. “What these two situations have in common is that they both indicate that the individual in question does not accord with some basic assumptions of our criminal law model.”⁶² Those basic assumptions include the capacity to make choices and act voluntarily on those choices.

A person’s genetic makeup, in interaction with his upbringing and other environmental influences, may limit his spectrum of choice relative to others. Glover has argued that “the relevant question to ask about the genetic predisposition is really a variant of the traditional question: was the genetic predisposition so strong that I could not resist it?”⁶³ We offer a slightly more flexible question: was an individual’s spectrum of choice so constrained that she cannot be held responsible, or cannot be held fully responsible, for her actions? In a sense, a genetic defence would be the practical expression of Nagel’s notion of constitutive luck.⁶⁴

Before discussing whether any current defences would apply to the case studies described above, we should pause and ask ourselves whether, intuitively, individuals with “genetic” alcoholism or with an MAOA mutation deserve a defence. The discussion of excuses above points to choice as the touchstone of criminal responsibility. Thus, if we believe that a particular genetic difference impairs or alters an individual’s capacity to make choices, then that difference may warrant a partial or full excuse. Different criminal defences deal with the notion of choice in different ways. The next section will explore whether any of these ways can deal effectively with genetic abnormalities.

B. Current Applicable Defences

Two defences were chosen on the basis that they are likely to deal best with the two case studies: mental disorder, primarily for the MAOA case study and intoxication, solely for the alcoholism case study. Diminished responsibility, which is a third possibility not currently available in Canada, is discussed below as a possible model for a genetic defence.

i. Mental disorder

Buchanan has argued that to provide a defence, a psychiatric condition must impair an individual’s ability to choose, and that such impairment can occur in a number of ways:

⁶² *R. v. Chaulk*, [1990] 3 S.C.R. 1303 at para. 21.

⁶³ J. Glover, “The implications for responsibility of possible genetic factors in the explanation of violence” in G.R. Bock & J.A. Goode, eds., *Genetics of Criminal and Antisocial Behaviour* (Toronto: John Wiley & Sons, 1996) 237 at 240.

⁶⁴ *Supra* note 7 at 24.

Consciousness may be impaired, so that the subject is unaware of the circumstances in which he finds himself, or of the likely consequences of what he is doing. His emotional state may be altered, so that he wishes things that he would not otherwise wish or views things in a way that he would not normally view them. He may find himself driven to act in ways which he would not when healthy.... His perception may be distorted so that he sees and hears things differently. His ability to think clearly may be impaired and the content of his thoughts may be altered by such conditions as manic-depression and schizophrenia.⁶⁵

In addition, according to Elliott, there are at least five categories of disorders that are relevant in the discussion of the capacity for criminal responsibility: "disorders of volition, disorders affecting beliefs, the personality disorders, the psychopathic personality, and those very severe disorders of various types which place a person outside our scheme of responsibility altogether."⁶⁶ However, it is unclear whether the mental disorder defence adequately recognises this wide range of impairments.

The Canadian mental disorder defence finds its origins in the English common law⁶⁷, and has been codified in the *Criminal Code*:

No person is criminally responsible for an act committed or an omission made while suffering from a mental disorder that rendered the person incapable of appreciating the nature and quality of the act or omission or of knowing that it was wrong.⁶⁸

The defence can be viewed in two ways: (1) as negating a condition precedent to criminal liability, or (2) as negating a necessary element of the offence (*mens rea* or *actus reus*). In *R. v. Chaulk*, the leading case on the nature of the mental disorder defence, the majority of the Supreme Court of Canada took the view that the defence is: "as an exemption to criminal liability which is based on an incapacity for criminal intent. ... [T]his basic claim for an exemption will usually be manifested under s. 16 either as a denial of *mens rea* in the particular case or as an excuse for what would otherwise be a criminal offence."⁶⁹ The majority endorsed the first view of the defence, while highlighting the inherent link between the two views; that is, proving an incapacity for criminal intent generally requires showing that an element of the offence has been negated by the mental disorder. In her dissent, Justice McLachlin (as she then was) expanded on the notion of the capacity for criminal responsibility: "criminal responsibility is appropriate only where the actor

⁶⁵ A. Buchanan, *Psychiatric Aspects of Justification, Excuse and Mitigation in Anglo-American Criminal Law* (Philadelphia: Jessica Kingsley Publishers, 2000) at 80.

⁶⁶ *Supra* note 61 at 4.

⁶⁷ The modern-day defence is based on the rules laid out in *M'Naghten's Case* (1843), 8 E.R. 718.

⁶⁸ *Criminal Code*, R.S.C. 1985, c. C-46, s. 16.

⁶⁹ *Supra* note 62 at para. 24.

is a discerning moral agent, capable of making choices between right and wrong.”⁷⁰ Therefore, the mental disorder defence is reflective of the assumption of free will made by the criminal justice system, and this assumption can be challenged by demonstrating that one of the elements of the offence — criminal intent or a voluntary wrongful action — is not present.

A series of Supreme Court of Canada judgements have helped to give substance to the statutory definition of the defence. These cases appear to make it difficult for a person suffering from a MAOA abnormality to plead the defence.

Section 16 requires a two step analysis: (1) does the individual suffer from a “mental disorder”, and (2) did this mental disorder impair the individual in such a way that he should not be held responsible for his actions? Section 2 of the *Criminal Code* defines “mental disorder” as a “disease of the mind”. In *R. v. Parks*, the court stated that “disease of the mind”⁷¹ is a legal concept with medical, legal and policy components.⁷² Though some psychiatrists have been irresolute about whether personality disorders should be classified as mental illnesses⁷³, the Supreme Court of Canada has stated that a personality disorder may be a disease of the mind.⁷⁴ Thus, if a MAOA defect can be characterised as causally linked to a personality disorder, then it may fall into the legal definition of mental disorder.

More contentious in the criminal justice system are volitional disorders — disorders characterised by impulses that are difficult or impossible to resist, such as those experienced by kleptomaniacs. The dilemma facing the law with respect to such disorders is the difficulty of distinguishing between irresistible impulses and those that are simply not resisted.⁷⁵ In an absolute sense, there may be no irresistible impulses — since a policeman at one’s elbow can always modify behaviour — however there may be effectively irresistible impulses. One interesting question, which will be addressed below, is whether those with notice of their volitional disorders (or other disorders) have a duty to seek help or take steps to avoid situations in which the impulse is triggered.

The mental disorder defence can also be linked to the defence of duress in the case of volitional disorders. While duress implies an external force, a volitional disorder can create an internal force pushing the individual to act in a way that he or she does not control. Those who oppose this analogy point to the fact that there is something fundamentally different in the case of a volitional disorder; “unlike ordinary cases of duress, with the volitionally disordered, the source of the duress

⁷⁰ *Ibid.* at para. 195.

⁷¹ “Mental disorder” is defined as a “disease of the mind” under s. 2 of the *Criminal Code*, supra note 68.

⁷² *R. v. Parks*, [1992] 2 S.C.R. 871 at para. 9 [*Parks*], citing *R. v. Rabey* (1977), 37 C.C.C. (2d) 461 (Ont. C.A.) [*Rabey*] with approval.

⁷³ R.E. Kendell, “The distinction between personality disorder and mental illness” (2002) 180 *British Journal of Psychiatry* 110 at 110.

⁷⁴ *Cooper v. R.* (1977), 15 C.R. (3d) 225 (S.C.C.).

⁷⁵ L. Reznak, *Evil or Ill? Justifying the insanity defence*, (New York: Routledge, 1997) at 162.

is, in some sense, part of the person. These aberrant desires are an expression of the personality, and therefore the person who has them is somehow responsible for their existence.”⁷⁶

Regardless of the classification of the mental disorder, evidence of the disorder is not sufficient to found the defence. An accused must also show that either she was incapable of appreciating the nature and quality of her act or of knowing that it was wrong. In *R. v. Chaulk*, Lamer C.J. stated that “s. 16 does not exempt all people with a disease of the mind from criminal liability. The insanity defence is defined in a particular way and only if an accused meets those criteria will his or her mental condition preclude a finding of guilt.”⁷⁷ The limits of the definition have been characteristic of the mental disorder defence since its creation, but genetic knowledge may seriously call into question the appropriateness of these limits.

The first branch of the defence is unlikely to apply to an accused with a MAOA defect since his condition will not prevent him from appreciating — through analysis of knowledge and experience — the physical consequences of his act.⁷⁸ Under the second branch, “wrong” means morally wrong rather than legally wrong, and therefore the defence is available to an accused “if he is incapable of understanding that the act is wrong according to the ordinary moral standards of reasonable members of society.”⁷⁹ There is no evidence that an individual with a MAOA defect does not appreciate the wrongfulness of his act. Rather, the individual is predisposed to antisocial behaviour, which can be triggered by childhood maltreatment, and therefore has a more difficult time restraining his actions. Thus, his capacity to bring his actions in line with society’s norms is reduced.

A similar problem arises in the case of accused who were “brainwashed” at the time of their offence. As described by Delgado, although these accused do not fit within the mental disorder defence, nor any other defences, they cannot be said to be fully responsible for their actions. They may seem to act freely, but in some manner, their intent is not their own. “The victim of thought reform typically commits criminal acts fully aware of their wrongfulness. He acts consciously, even enthusiastically, and without overt coercion. Yet, in an important sense, the guilty mind with which he acts is not his own.”⁸⁰ Overall, it appears that personality disorders, or more generally, genetic predispositions to violence cannot fulfil the requirements of the mental disorder defence.

Furthermore, alcoholism cannot found a mental disorder defence unless the intoxication caused a disease of the mind, for example in the form of toxic

⁷⁶ *Supra* note 61 at 52.

⁷⁷ *Supra* note 62 at para. 21.

⁷⁸ See *R. v. Landry* (1991), 2 C.R. (4th) 268 (S.C.C.); *R. v. Barnier* (1979), 13 C.R. (3d) 129 (S.C.C.).

⁷⁹ *Supra* note 62 at para. 101.

⁸⁰ R. Delgado, “Ascription of Criminal States of Mind: Toward a Defense Theory for the Coercively Persuaded (“Brainwashed”) Defendant” in M.L. Corrado, ed., *Justification and Excuse in the Criminal Law: A Collection of Essays* (New York: Garland, 1994) 467 at 471 [“Brainwashing”; footnotes omitted].

psychosis.⁸¹ In addition, according to *R. v. Rabey*, transient disturbances of conscience resulting from external factors — presumably, such as alcohol — do not fall within the concept of disease of the mind.⁸² It seems that even for a genetic alcoholic, whose condition is arguably caused by internal factors, the lack of appreciation or knowledge would be viewed as being caused by the intoxication rather than ultimately by the alcoholic condition. As such, the defence of intoxication may be a better fit.

ii. Intoxication

The intoxication defence is composed of the common law defence and of a statutory limit to the defence under s. 33.1 of the *Criminal Code*. The defence of intoxication at common law finds its origin in the House of Lords decision of *D.P.P. v. Beard*⁸³, in which the Court stated:

That evidence of drunkenness which renders the accused incapable of forming the specific intent essential to constitute the crime should be taken into consideration with the other facts proved in order to determine whether or not he had this intent [and that] evidence of drunkenness falling short of a proved incapacity in the accused to form the intent necessary to constitute the crime, and merely establishing that his mind was affected by drink so that he more readily gave way to some violent passion, does not rebut the presumption that a man intends the natural consequences of his acts.

Therefore, at common law, evidence of intoxication was admissible for specific intent offences, which required the accused to have an objective beyond the immediate act, but not for general intent offences, which required the accused to only have intent to perform the immediate act.⁸⁴

The application of the common law defence has been narrowed by s. 33.1 of the *Criminal Code*, which states:

(1) It is not a defence to [an offence that includes as an element an assault or any other interference or threat of interference by a person with the bodily integrity of another person] that the accused, by reason of self-induced intoxication, lacked the general intent or the voluntariness required to commit the offence, where the accused departed markedly from the standard of care as described in subsection (2).⁸⁵

⁸¹ *R. v. Hilton* (1977), 34 C.C.C. (2d) 206 (Ont. C.A.).

⁸² *Rabey*, *supra* note 72.

⁸³ [1920] A.C. 479 (H.L.) at 500-502.

⁸⁴ *Supra* note 26 at c.6.

⁸⁵ *Criminal Code*, *supra* note 68 at s. 33.1. Subsection (2) states: "For the purposes of this section, a person departs markedly from the standard of reasonable care generally recognized in Canadian society and is thereby criminally at fault where the person, while in a state of self-induced intoxication that renders the

As it currently stands, the defence can be used in the case of specific intent offences such as murder or theft, and non-violent general intent offences, but cannot be used in the case of violent general intent offences such as assault, sexual assault, or manslaughter. Essentially, s. 33.1 holds an accused responsible for a violent general intent offence, even when she lacks the capacity to consciously control her behaviour, if that lack of capacity is the result of a state of self-induced intoxication. Although the defence can be used in the case of specific intent offences, it does not act as a full defence in such cases because even if, for example, an accused cannot be said to have the specific intent necessary to commit murder, he will likely have the intent to commit manslaughter or assault, a lesser-included general intent offence.

This section effectively reversed the majority of the Supreme Court of Canada in *R. v. Daviault*, which had held that:

assuming that voluntary intoxication is reprehensible, it does not follow that its consequences in any given situation are either voluntary or predictable. ... Further, self-induced intoxication cannot supply the necessary link between the minimal mental element or mens rea required for the offence and the actus reus.⁸⁶

The holding in *Daviault* was controversial because it was premised on the notion that extreme intoxication might be a defence to a general intent offence.⁸⁷ However, an alternative view of intoxication emerged in the wake of *Daviault* and the *Criminal Code* amendment. In a comment on *Daviault*, Shaffer argued:

An alternative view is that it is morally blameworthy in itself to place oneself in a state in which one loses control of one's action, and that voluntarily entering this state is sufficiently blameworthy to found a conviction for any criminal act of general intent one happens to perform. ... On this view, a person who engages in a socially irresponsible course of conduct — such as excessive drinking — is morally responsible for the harms his or her behaviour causes.⁸⁸

Kirewskie echoes this perspective, stating that the limits to the free will model of human behaviour must be explored since “[a]bsolute freedom cannot exist within

person unaware of, or incapable of consciously controlling, their behaviour, voluntarily or involuntarily interferes or threatens to interfere with the bodily integrity of another person.”

⁸⁶ *R. v. Daviault*, [1994] 3 S.C.R. 63 at para. 45-46.

⁸⁷ In addition, the possibility that such a level of intoxication is possible has been disputed, as reflected by the preamble to Bill C-72, *An Act to amend the Criminal Code (self-induced intoxication)*, 1st Sess., 35th Parl., 1994-5: “Whereas the Parliament of Canada ... is aware of scientific evidence that many intoxicants, including alcohol, may not cause a person to act involuntarily.”

⁸⁸ M. Shaffer, “Criminal Responsibility and the Charter: The Case of *R. v. Daviault*” in J. Cameron, ed., *The Charter's Impact on the Criminal Justice System* (Scarborough: Thomson Canada, 1996) 313 at 316.

a civilized society. Responsibility is part of the price we pay for being political animals.”⁸⁹

Even if we take the view that an alcoholic has control over his drinking,

we might concede that his staying sober is less within his control than someone who is not addicted to alcohol, and that for this reason his intoxication is less voluntary and therefore that he has some excuse — he is not as blameworthy as someone not addicted to alcohol, or someone committing the same offence while sober.⁹⁰

This approach is similar to that often taken with volitional disorders. Though most critics are sceptical that irresistible impulses exist, they will concede that, for example, a kleptomaniac has a much harder time not stealing than would the average person. In a similar way, an alcoholic’s drinking is clearly less voluntary than a non-alcoholic’s drinking. The question then becomes one of threshold: at what point can we say that an action is sufficiently voluntary?

The *Criminal Code* amendment does not seem to address this question; neither does it make clear what is meant by “self-induced intoxication”. Until s. 33.1 was introduced, the distinction made at common law was between voluntary and involuntary intoxication.⁹¹ “Self-induced intoxication” seems to require less control over one’s actions than “voluntary intoxication”. As such, s. 33.1 seems to presuppose that a person can choose not to become intoxicated. If a person is an alcoholic they may not be able to choose not to become intoxicated under certain circumstances. Thus they may not be considered voluntarily intoxicated, but would likely be considered to have induced their intoxication.⁹²

Critics of this assertion argue that because some alcoholics successfully kick their habits, then their capacity for choice remains. There are two responses to this critique. First, one can hypothesise that those alcoholics who are able to stay sober are non-genetic alcoholics, or Type 1 alcoholics under the Cloninger classification. If they are, then there is an argument for treating genetic alcoholics differently within the criminal justice system. Second, if future studies show that even genetic alcoholics can kick their habits, then the relevant genetic abnormality will have to

⁸⁹C. Kirewskie, “Intoxication without Responsibility: Are There No Limits to the Defence?” (1996) 7 N.J.C.L. 110 at 126 [footnotes omitted].

⁹⁰*Supra* note 75 at 209.

⁹¹*Supra* note 86.

⁹²Although the Supreme Court of Canada has yet to consider s. 33.1, it has been considered by the Superior Court of British Columbia in *R. v. Vickberg*, [1998] B.C.J. No. 1034 (B.C.S.C.) at para. 68: “I am in agreement with the defence that ‘self-induced’ must mean something more than simply the accused himself ingesting the pills, as opposed to someone else administering them. I am satisfied that for intoxication to be self-induced, the accused must intend to become intoxicated, either by voluntarily ingesting a substance knowing or having reasonable grounds to know it might be dangerous, or by recklessly ingesting such a substance.” Should this become the accepted judicial position, then arguments based on an accused’s ability to choose will be more readily accepted.

be taken as simply predisposing individuals to alcoholism and its associated behaviours, such as violence. Rather than deserving a full excuse, such persons may deserve some kind of mitigation or partial excuse, which recognises their lessened capacity for choice. A first step might be to change the language of s. 33.1 so that it reinstates the notion of voluntary intoxication. A more complete solution would be to develop a partial excuse that might take the form of a diminished responsibility defence.

V. The Possibility of a Genetic Defence

The notion of a genetic defence was discussed by the Nuffield Council on Bioethics report on genetics and human behaviour. The Council outlined two ways in which a defence might be established. An accused might argue that

a genetic variant has either caused the behaviour in an immediate sense (in the same way as an electrical stimulus may produce a muscular reaction), or because the genetic variant has contributed to the development of a personality, or, in moral terms, a character (or set of dispositions) which are manifested in certain forms of action.⁹³

The case studies that have been explored in this paper are in line with the second form of the argument. Thus, if an accused cannot be held responsible for her genes then she cannot be held responsible for her dispositions and so must be held less responsible for the actions in which such dispositions have factored.

Mitigation can occur in two ways: (1) at the guilt stage in the form of an excuse such as diminished responsibility and (2) at the sentencing stage. Thus, mitigation can mean either that the accused is held only partially responsible (and lesser punishment follows), or that the accused is held fully responsible but given a lesser sentence because of the circumstances. Evansburg has argued that “[t]he choice is one between a strong version of determinism, which yields the conclusion that genes actually cause behavior, and a weaker version where causation is interdependent on genes and environment.”⁹⁴ However, the middle ground unmentioned by Evansburg is to provide a partial excuse such as diminished responsibility, which recognises that the accused is at least partially responsible for his actions. Ultimately, whether it is in the form of an excuse or sentence mitigation, a genetic defence will allow for the adjustment of blame.

In developing a genetic defence, a number of factors should be taken into consideration. First, the scientific knowledge and evidence available regarding the

⁹³ *Supra* note 47 at 163.

⁹⁴ A.R. Evansburg, “‘But Your Honor, it’s in his Genes’. The Case for Genetic Impairments as Grounds for a Downward Departure under the Federal Sentencing Guidelines” (2001) 38 Am. Crim. L.R. 1565 at 1575. This distinction may be misleading as she appears to be stating that in some cases the environment plays no part. The true distinction to be made is between a situation where environmental variability affects the behaviour (weak genetic determinism) and one where it does not (strong genetic determinism).

genetic condition and its manifestation in the offender should be ascertained. The benefit of a genetic defence over a mental disorder defence is that usually genetic evidence is more credible than testimony and can back up the claims of an accused with scientific evidence. Naturally, the less research and evidence that are available on a condition the more contentious will be a claim based on that condition. However, this factor has more to do with the practical application of the defence than with the impact of the condition on blameworthiness.

Second, the nature and severity of the genetic condition must be evaluated. Generally, genetic conditions will affect cognition, volition, or personality. If cognition is affected, then the individual's ability to understand what he is doing will be affected as in the case of Alzheimer's. A volitional disorder, such as kleptomania, on the other hand, will affect the individual's control over their actions. In addition, the condition may void a person's capacity to choose — by rendering him an automaton — or may simply impair his capacity to choose.

Third, the effect of the condition on effective choice may be important. That is, what does the condition predispose an individual to do and how closely does that predisposition match the offending behaviour? In the case of alcoholism, for example, the individual is predisposed to drink excessively which can lead to violent behaviour, though the individual is not predisposed to violence per se.

Finally, although an individual with a genetic defence may not be held completely responsible for his or her actions, he or she may still need to be treated or confined to reduce the risk of recidivism. Thus the ability to assess dangerousness is critical.

A. As a Mitigating Factor in Sentencing

Thus far, evidence of a genetic predisposition to violence has only been used at the sentencing stage of trial in the United States in an effort to avoid the death penalty. Attorneys in the two trials mentioned in the introduction — those of Stephen Mobley and Landon May — used this approach. Though this kind of evidence has yet to emerge in Canadian courts, it is likely to make its first appearance in a sentencing hearing rather than as a full-fledged excuse.

Amendments to the *Criminal Code* in 1996 introduced sentencing guidelines by defining the purposes and principles of sentencing.⁹⁵ Wide judicial discretion still remains as evidenced by s. 718.3, which confirms that, subject to mandatory minimums, the punishment to be imposed is “in the discretion of the court that convicts a person who commits an offence”. Of the purposes listed in s. 718, the most important in the case of a genetic mitigating factor are: “... (c) to separate offenders from society, where necessary; [and] (d) to assist in rehabilitating offenders.” In addition, the sentence should reflect “any relevant aggravating or

⁹⁵ *Supra* note 68, ss. 718-718.2.

mitigating circumstances relating to the offence or the offender.”⁹⁶ In terms of rehabilitation, “[i]n the case of antisocial behaviour ... [p]otential interventions might include cognitive therapy and programmes in self-control and anger management.”⁹⁷

Predisposition to violence could, under s. 718(c), also act as an aggravating factor. Should it be clear that an offender’s predisposition will make him re-offend, the safety of the public will trump other considerations. However, we have not delved into this possibility as our focus is on the possible uses of predisposition as a defence.

Allan Manson has discussed the mitigating factors commonly accepted by the court. An analogy can be drawn between genetic impairment and two of the factors he lists: impairment of judgement and a disadvantaged background.⁹⁸ Evidence of impairment is not restricted to situations of intoxication; rather emotional, physical and psychological impairment can also be taken into consideration. Thus apart from alcoholism, a genetic condition that impaired an accused’s judgement might also fit under this head.

Although a disadvantaged background might initially appear irrelevant because it lands on the wrong side of the nature-nurture debate, Glover has observed that it is “unclear that there is anything radically different about explanations where the causal story goes back to the genes and explanations where the causal story goes back to early environment.”⁹⁹ Yet, the two can also be viewed as being in direct opposition:

The idea that facts about an individual’s environment can affect the extent to which they should be punished for criminal acts contains an implicit assumption that individuals have essentially sound characters, but that unavoidable external influences they did not choose can have a negative effect on them. In contrast, if genetic information about an individual’s susceptibility to antisocial behaviour is accepted, it seems to imply that the individual has essentially an unsound, or at least, a less sound character.¹⁰⁰

As we have already seen, the Glover formulation is to be preferred. Both environmental and genetic factors act to shape an individual’s character. Thus, whether a mother sexually abuses her children because she was herself abused, or

⁹⁶ *Ibid.*, s. 718.2.

⁹⁷ *Supra* note 47 at 167.

⁹⁸ A. Manson, *The Law of Sentencing* (Toronto: Irwin, 2000) at 64-79; see also *R. v. Gilling*, [1998] O.J. No. 5863 (G.D.) and *R. v. Bunde*, [1995] O.J. No. 213 (G.D.) for impairment of judgment, and *R. v. George* (1998), 126 C.C.C. (3d) 384 (B.C.C.A.) and *R. v. Sackanay*, [2000] O.J. No. 885 (C.A.) for disadvantaged background.

⁹⁹ *Supra* note 63.

¹⁰⁰ *Supra* note 47 at 167.

because she has inherited an abuse gene (assuming one exists), the abusive trait is inherent to her character. Whether that makes her character unsound is immaterial. If this logic is accepted, a genetic predisposition should be treated in a similar manner to a disadvantaged background.

Even if genetic conditions do not fall within one of the factors considered by the courts, the notion of diminished responsibility is explicitly recognised in the fundamental sentencing principle: “a sentence must be proportionate to the gravity of the offence and the degree of responsibility of the offender.”¹⁰¹ In discussing the impact of genetic impairments on sentencing in the context of the United States federal sentencing guidelines, Evansburg has argued that “[i]f one of the objectives of federal sentencing is to punish offenders according to the blameworthiness of their actions, then offenders with a substantially reduced capacity to control violent behavior [such as offenders with a genetic disorder that predisposes them to aggressive behavior] should receive lesser sentences than other offenders.”¹⁰²

Another sentencing option that may be used to deal with offenders who plead a genetic defence is the conditional sentence. Section 742.1 of the *Criminal Code* permits a judge to order that a sentence — of less than two years — be served in the community subject to conditions of the order. Obviously, if an accused is found guilty of an offence with a mandatory minimum sentence a conditional sentence will not be an option. Conditions can include reporting to a supervisor, abstaining from alcohol or non-prescription drugs, or attending a treatment program.¹⁰³

The interpretation and application of the conditional sentence regime was analysed by the Supreme Court of Canada in *R. v. Proulx*.¹⁰⁴ According to this analysis, a conditional sentence might be appropriate in the case of an offender with a genetic impairment as long as there was a course of treatment available and the risk to the community was low. Such a sentence would have the benefit of improving the offender’s chances at rehabilitation since treatment is more concurrent with rehabilitation than is incarceration.

Conditional sentences are preferable to a reduction in sentence since they can ensure that offenders obtain the help that they need to become rehabilitated.¹⁰⁵ Although a reduced sentence allows the punishment to be tailored to the offender’s degree of blameworthiness, it does not get at the root cause of the problem. One potential obstacle is that judges seem to be unwilling to order conditional sentences

¹⁰¹ *Ibid.*, s. 718.1.

¹⁰² *Supra* note 94 at 1567.

¹⁰³ Again, like treatment for myopic vision, treatment for “genetically-predisposed” offenders should be as feasible as treatment for “environmentally-predisposed” ones.

¹⁰⁴ *R. v. Proulx* (2000), 140 C.C.C. (3d) 449 (S.C.C.).

¹⁰⁵ It will be some time before geneticists have developed new treatment programs specifically for those with conditions such as an MAOA defect. For the time being, such individuals can be treated with available drugs and therapy.

in the case of violent crimes.¹⁰⁶ Such reluctance would be fatal to the use of conditional sentences in cases involving offenders with MAOA defects or similar genetic conditions, which predispose them to violence.

Finally, a last sentencing option would be to use probation as a further control mechanism. Probation orders provide another alternative to incarceration, which may be appropriate in the case of certain offenders with genetic impairments. A court can make a probation order after suspending a sentence, or in addition to a fine or imprisonment sentence of two years or less.¹⁰⁷ In making the order a court must have regard to the age and character of the offender and can impose “reasonable conditions” on the offender in order to protect society and facilitate the offender’s reintegration into society.¹⁰⁸ Possible conditions that would be relevant in this paper include attending treatment programs, abstaining from alcohol or drugs, and reporting to a probation officer. Should an offender fail to comply or refuse to comply with an order without a reasonable excuse, he can be found guilty of an offence.¹⁰⁹ In this manner, the court can “keep an eye” on an offender either after a conditional sentence or a period of incarceration to make sure that the potential negative effects of any genetic condition are being avoided or mitigated.

B. As an Excuse

Although the sentencing regime does provide the flexibility necessary to evaluate the variety of genetic impairments, the wide judicial discretion that permits this flexibility may not be ideal. As can be seen from the American context, novel scientific evidence is not always well received by the judiciary. Thus, an excuse, which recognises that certain predispositions may reduce the blameworthiness of the offender, may be preferable. There are two primary ways in which the criminal law might be modified to allow an excuse founded on a genetic impairment: (1) by enlarging the scope of the mental disorder defence, or (2) by modifying the diminished responsibility defence in light of genetic knowledge.

i. The mental disorder model

As the earlier discussion of mental disorder has demonstrated, the current formulation of the defence does not include irresistible impulses or, more generally, situations in which the accused was incapable of controlling himself. The defence could be expanded to include a third branch in this manner:

¹⁰⁶ Of the three sexual assault cases heard by the S.C.C. at the same time as *Proulx*, in two cases — *R. v. R.N.S.* (2000), 140 C.C.C. (3d) 553 (S.C.C.) and *R. v. R.A.R.* (2000), 140 C.C.C. (3d) 523 (S.C.C.) — the Supreme Court restored the prison sentences. The conditional sentence in the third case — *R. v. L.F.W.* (2000), 140 C.C.C. (3d) 539 (S.C.C.) — was upheld only because the Court split evenly. In addition, the accused in the third case had committed the offence 25 years earlier, and had since overcome an alcohol problem and had a good work record.

¹⁰⁷ *Supra* note 26 at c. 9(F)(3).

¹⁰⁸ *Supra* note 68 at ss. 731, 732.1.

¹⁰⁹ *Ibid.*, s. 733.1.

No person is criminally responsible for an act committed or an omission made while suffering from a mental disorder that rendered the person incapable of appreciating the nature and quality of the act or omission, or of knowing that it was wrong, or that rendered the person incapable of conforming his or her conduct to the requirements of the law.¹¹⁰

In effect, this would add a volitional test to the already existing cognitive tests of the defence. However, as was discussed earlier, this formulation would require an accused to be completely incapable of controlling her actions — a situation that is unlikely to occur unless she is rendered an automaton.

The mental disorder defence is already a complicated defence which judges and juries have difficulty applying. Trying to fit genetic conditions into “disease of the mind” may do more damage to the defence than we might predict. In addition, policy-makers may not want a genetic defence to apply to all offences, as does the mental disorder defence. Thus, these concerns coupled with the absolute nature of the defence indicate that the defence is ill-suited to deal with the grey shades evoked by genetic conditions.

ii. The diminished responsibility model — towards a genetic defence

The defence of diminished responsibility is not available in Canada, but has been enacted in a number of Commonwealth countries. In the Australian State of New South Wales the defence was reformed in 1997 to incorporate recommendations made by the Law Reform Commission¹¹¹ and now reads:

- (1) A person who would otherwise be guilty of murder is not to be convicted of murder if:
 - (a) at the time of the acts or omissions causing the death concerned, the person’s capacity to understand events, or to judge whether the person’s actions were right or wrong, or to control himself or herself, was substantially impaired by an abnormality of mind arising from an underlying condition¹¹², and
 - (b) the impairment was so substantial as to warrant liability for murder being reduced to manslaughter.
- (2) For the purposes of subsection (1)(b), evidence of an opinion that an impairment was so substantial as to warrant liability for murder being reduced to manslaughter is not admissible.¹¹³

¹¹⁰The underlined portion is adapted from the insanity test proposed by the American Law Institute in 1962, *supra* note 75 at 28.

¹¹¹S. Yeo, “Reformulating Diminished Responsibility: Learning from the New South Wales Experience” (1999) 20 *Sing. L. Rev.* 159 at 161.

¹¹²*Ibid.* at 167. “Underlying condition” is defined in s. 23A(8) as “a pre-existing mental or physiological condition, other than a condition of a transitory kind.” However, the condition does not need to be permanent, for example, a curable severe depressive illness will fall within the definition.

¹¹³*Crimes Act 1900* (New South Wales), s. 23A. Per s. 23A(3), the effects of self-induced intoxication

The concept of diminished responsibility reflects the notion that there are gradations of responsibility. As Elliott has argued:

from a moral standpoint, the 'diminished responsibility' standard is a sensible one. First, it conforms with our common sense notions of causation; there are often many causes to an event, of which the agent's action is only one. Thus, from this graded concept of causal responsibility seems to follow a graded concept of moral responsibility. Second, the borderline between mentally ill and mentally healthy is not always bright. A defense of diminished responsibility aligns more truly with a picture of mental capacity painted in shades of gray, rather than black and white.¹¹⁴

Similarly, the capacity of an individual to conform his actions to legal and social norms is a reflection of the spectrum of action available to that individual. The defence of diminished responsibility can be seen as applying when that spectrum has become too narrow, either because of internal factors such as genetics, external factors such as necessity, or both.

The main limitation of using the defence of diminished responsibility as an avenue for a genetic defence is that it is restricted to cases of murder. The defence of diminished responsibility is restricted to those "who would otherwise be guilty of murder". Therefore, the assumption is that the accused possessed the mens rea for the offence of murder, but that her mental abnormality should militate against this fact. The mens rea for murder is subjective foresight or knowledge that the bodily harm inflicted is likely to cause death¹¹⁵, while manslaughter requires objective foreseeability of the risk of bodily harm that is neither trivial nor transitory.¹¹⁶ Therefore, although an accused will have intended to cause bodily harm likely to cause death, this manifest intention is not a "true" intention because an abnormality of mind so restricts the accused's spectrum of choice, that the accused's agency is diminished.

Such a defence might be desirable to allow individuals accused of murder to argue that their genetic abnormalities should partially excuse their violent behaviour. Both the MAOA defect and alcoholism case studies may fit within the scope of the defence. Both conditions impair a person's capacity to control himself or herself and both can arguably be termed abnormalities of mind — for example, a personality disorder — arising from an underlying condition — the genetic abnormality. Whether the conditions would be considered to substantially impair the sufferer's capacity would have to be determined on a case-by-case basis.

are to be disregarded for the purposes of this section. We will be focussing on the New South Wales provision because of its improvement in clarity, though we will draw on English case law when exploring the justifications for the defence.

¹¹⁴ *Supra* note 61 at 18.

¹¹⁵ *Supra* note 68 at s. 229(a)(ii).

¹¹⁶ *Creighton, supra* note 8.

Countries that have enacted the defence have limited its application to murder charges. Thus the defence acts to reduce a murder conviction to a manslaughter conviction. We may want to recognise diminished responsibility in other situations such as theft or assault. Thus, a genetic defence could build on the diminished responsibility defence, but broaden its scope. The formulation of such a defence might be made through judge-made law or through a parliamentary enactment.

The automatism defence, for example, is judge-made law arising from the requirement of voluntariness within the actus reus. An accused could make the argument that the notion of voluntariness as expressed in the Supreme Court of Canada's s. 7 jurisprudence is sufficient to enable judges to take a genetic condition into consideration when determining guilt. However, the standard of voluntariness required by the criminal law is quite low and is bound to be fulfilled in the case of an accused who "knew" what she was doing. This conclusion is a result of the fact that an accused pleading a genetic defence will have a predisposition rather than a "predetermination". Arguably there is a difference between unconscious and involuntary actions, and the latter encompasses a wider set of actions than does the former. However, the courts have essentially equated involuntariness with automatism.¹¹⁷

In *Ruzic*, the Supreme Court of Canada did make clear that if it could not be fairly said that an accused made a choice to violate the law, then his conduct was morally involuntary and he could not be found criminally responsible.¹¹⁸ In theory therefore, courts could create a "genetic defence" based on moral involuntariness, as opposed to voluntariness. However, as stated above, genetic predisposition does not appear to deprive a person of choice, rather it limits that choice. It may therefore be difficult to characterise genetic predisposition as rendering a person's actions morally involuntary, even if those actions were due in part to the person's predisposition.

Thus, since it is unlikely that the notion of voluntariness or of moral involuntariness can be used to establish a common law defence of diminished responsibility, the defence would therefore have to be enacted by Parliament.¹¹⁹ There is insufficient space in this paper to outline a complete framework for a statutory genetic defence, but some comments can be made about its possible formulation.

Such an enactment could be modelled on those found in the United Kingdom and Australia. Three elements are important in the articulation of the defence: (1) it must take into consideration an accused's capacity to control himself, (2) it must

¹¹⁷ See Bastarache J.'s discussion of the nature of automatism in *R. v. Stone*, [1999] 2 S.C.R. 290 at para 155-161.

¹¹⁸ *Supra* note 9 at paras. 34 and 47.

¹¹⁹ In addition, since an accused who was predisposed to violence would still have subjective foresight of harm or death, his mental condition would not be able to raise a reasonable doubt as to mens rea, and so this common law approach would also be insufficient to establish a genetic defence.

exclude minor impairments of capacity, and (3) it should require that the abnormality be a product of an underlying condition. The first requirement reflects the reason for the defence — the conditions in the case study affect an individual's capacity to control her behaviour — while the second provides the standard by which an offender's behaviour will be judged. The final requirement is important because it helps to ensure that the accused has lesser capacity for control rather than simply failing to exercise control. Evidence of a measurable condition substantiates an accused's call for a partial excuse.

A defence specifically aimed at genetic conditions would have to make explicit mention of genetic conditions or impairments within the definition of the "underlying condition" responsible for the diminished capacity. In addition, policy-makers would have to decide to which offences it could provide a defence, and how the defence would affect the accused's conviction.

As has been made clear, a genetic defence should not generally provide a complete excuse because some responsibility remains. The partial nature of the excuse can be dealt with more easily in the case of offences with lesser-included offences, such as murder. However, it is difficult to see how one would deal with an offence such as theft or assault. Likely the only way to give effect to a partial excuse in such cases would be to simply reduce the sentence. Although this possibility may appear to confound the guilt and sentencing stages of a trial, the statutory defence might create an obligation or a presumption of a lesser maximum sentence. In effect such a provision would create lesser-included offences specifically for the purpose of the defence.

There is a precedent in the Canadian criminal law for convicting an accused of a lesser offence when she cannot be considered completely responsible for her actions. Within the intoxication defence the law recognises two levels of moral blameworthiness: general intent and specific intent. While intoxication can be shown to negate specific intent — such as the intent to kill — only in the rarest of cases can it negate general intent — such as the intent to do harm.¹²⁰ Therefore, in a similar manner to the defence of diminished responsibility, the intoxication defence can result in an accused charged with murder being convicted of manslaughter. That is, an accused charged with a specific intent offence can be found guilty of a lesser-included offence that only requires general intent. Thus, the intoxication defence provides a good precedent for a mitigating genetic defence.

Finally, a statutory defence might make provisions for treatment orders in a similar manner to conditional sentences. If the criminal justice system is going to recognise impairing conditions, it should also be able to take steps to minimise the effect of those conditions on both the individual and society.

¹²⁰ Section 33.1 of the *Criminal Code*, however, prevents the defence from being used for violent general intent offences.

C. The Psychopath Problem

To the average person, psychopathic offenders appear to be the individuals who most clearly belong in prison. They seem to embody the evil at which our criminal justice system is directed. Yet research on psychopaths seems to show that they may be ill rather than evil,¹²¹ and that their capacity to choose is diminished. This paradox vividly demonstrates the unpopular outcome that might be caused by the creation of a genetic defence.

Commentators are at a loss to describe how the notion of moral responsibility plays out in the case of a psychopath. Elliott expresses the difficulties well by stating that:

even if the psychopath is incapable of as rich and vivid an understanding of morality as most of us, he obviously still understands quite a lot — not unlike, perhaps, the sort of understanding an anthropologist might have of an alien culture that she can observe but not fully participate in. Is this limited understanding sufficient for moral responsibility?¹²²

Psychopaths may have a heritable trait that predisposes them to violate social norms.¹²³ Some of the characteristics of psychopaths that contribute to this predisposition are their lack of empathy, anxiety, and guilt.¹²⁴ These human emotions can be seen to contribute to a person's ability to conform their behaviour to social and legal norms. Thus, the absence of such emotions might decrease a person's capacity to follow the law.

Psychopathy can be viewed as an extreme expression of antisociality. Interestingly, in *Chaulk*, both Lamer C.J. and McLachlin J. discussed the problem of psychopathy in the context of mental disorder. Their discussion exposes the difficulties associated with applying the notion of criminal responsibility in the context of certain classes of disorders, such as personality disorders.

Lamer C.J. argued that the term “wrong” in s. 16 of the *Criminal Code* should be interpreted as “morally wrong”, and stated that this interpretation would not “open the floodgates to amoral offenders or to offenders who relieve themselves of all moral considerations”¹²⁵. Psychopaths may understand the difference between the moral and the immoral, but moral considerations simply do not factor in their

¹²¹ Alternatively, there may be a third possibility. For a discussion of psychopathy as a “life-history strategy”, see M.L. Lalumière *et al.*, “Psychopathy and developmental instability” (2001) 22 *Evolution and Human Behavior* 75; and *supra* note 43.

¹²² *Supra* note 61 at 84.

¹²³ *Supra* note 43 at 526.

¹²⁴ R.D. Hare, “Comparison of Procedures for the Assessment of Psychopathy” (1985) 53 *J. Consulting and Clinical Psychology* 7.

¹²⁵ *Supra* note 62 at para. 101.

decision-making. Yet, it remains equivocal whether they can be said to relieve themselves of moral considerations, or whether they lack the capacity to integrate moral considerations when making choices. Since decision-making requires not only the acquisition of information, but also the interpretation and integration of this information (based on an inherited set of *de facto* decision rules) in order to generate a behavioural output, it is unclear at this stage whether psychopaths are better described as “ill” or, rather, predisposed to “evil”.

In her dissent in *Chaulk*, McLachlin J. expressed misgivings about Lamer C.J.’s interpretation and asked: “Why, if the moral mechanism breaks down because of disease of the mind, should it exempt the accused from criminal responsibility where he or she knows, or was capable of knowing, that the act was illegal and hence one which he or she ‘ought not to do’.”¹²⁶ If, as we have argued, a psychopath lacks the capacity to integrate moral considerations into their decision-making process, then we may argue that her moral mechanism has broken down. Whether we term the psychopath amoral or not, if this incapacity translates into an inability to conform her actions to the law, then the psychopath cannot be held fully responsible for his actions.

Though earlier studies suggested that psychopathy was untreatable, recent work by Skeem *et al.* has shown that intensive treatment of civil psychiatric psychopathic patients reduced the risk of violence.¹²⁷ The fact that psychopaths are treatable does not necessarily mean that we should assume them to be criminally responsible. As explained above, we may simply punish an offender whom we view as treatable because we conflate the ability to modify her behaviour through treatment or punishment, with her ability to choose her behaviour. However, as much as we may want to lock them up, if psychopaths are not choosing beings, they cannot be held fully responsible for their actions.¹²⁸

D. The Argument for Increased Responsibility

To counteract what we have termed the “psychopath problem” an argument for increased — rather than diminished — responsibility might be made in specific circumstances. If an individual knows that certain situations trigger her predisposition, then we may be able to argue that she has a duty to take reasonable care to avoid those situations. In the same way that an individual with a family history of skin cancer will avoid the sun, an individual with a predisposition to violence triggered by alcohol should avoid drinking. Alternatively, an individual may have the duty to seek help for his condition, if such help is available.

¹²⁶ *Ibid.* at para. 236.

¹²⁷ J.L. Skeem, J. Monahan & E.P. Mulvey, “Psychopathy, Treatment Involvement, and Subsequent Violence Among Civil Psychiatric Patients” (2002) 26(6) *Law and Human Behavior* 577 at 594.

¹²⁸ Of course, the psychopath can still be isolated from society through the mental health system. However, this fact does not alter the analysis of criminal responsibility at issue in this paper.

Obviously, this duty can only be imposed on individuals who can or should reasonably have insight into their condition, and who are capable of getting help or avoiding the triggering situations. Thus this duty might be more relevant once an individual has been convicted of an offence — the conviction acting as “notice”.

This duty to take reasonable precautions would be based on an assumption that the incapacity to control one’s self, which is the crux of the genetic defence, is not limited to the time of the offence. Rather, to found the defence, the incapacity would have to extend to an incapacity to avoid triggering situations or to seek help. Such a duty would therefore be highly contentious, but might help to create a compromise position acceptable to the public and policy-makers. Though psychopaths themselves may be unable to take the necessary precautions to prevent their criminal behaviour, they represent the extreme.

VI. Conclusion

We have only begun to understand how genetics can affect human behaviour. Yet, there are already indications that this knowledge will alter our notions of criminal responsibility, and perhaps, the penal system as a whole. Rather than playing catch-up, the criminal justice system should prepare now for these changes.

The primary shift necessary in our conceptual landscape is to move away from viewing criminal responsibility in black and white, to seeing the shades of grey. This shift is not without precedent. In other parts of the Commonwealth, the defence of diminished responsibility has been recognised and can provide a model for the development of a genetic defence. Furthermore, within the Canadian criminal justice system, different degrees of responsibility are already recognised, for example, by the distinction drawn between specific and general intent offences within the intoxication defence.

Like mental disorders, genetic conditions can alter the way that an individual behaves. Though an individual’s actions cannot be predetermined by his genes, he may, for example, be predisposed to violence. His spectrum of choice would then be reduced, and may in fact be so reduced that he can no longer be considered fully responsible for his actions. It is at this point that the criminal law must recognise some form of mitigation, be it at the guilt or sentencing stage of the process. As with many defences, a genetic defence would not excuse completely, but would recognise the “abnormality” affecting the accused and calling into question the criminal law’s assumption of the accused as a choosing being.

A genetic defence could be limited by imposing — on those predisposed to violence or other potentially criminal acts — a duty to take reasonable care to avoid “triggering” situations. The imposition of such a duty would only be appropriate if the individual in question has sufficient insight into his condition to know what situations trigger the undesirable behaviour, and sufficient control over his circumstances to effectively avoid them.

Ultimately, however, if an individual has a genetic condition that reduces his ability to make effective choices, and he is incapable of avoiding triggering situations, justice demands that the blame placed on him by society — in the form of a conviction and sentence — be reduced.