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Theoretical Criminology 2000; 4; 5
DOI: 10.1177/1362480600004001001

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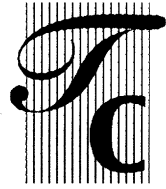
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Theoretical Criminology
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 London, Thousand Oaks
 and New Delhi.
 1362-4806(200002)4:1
 Vol. 4(1): 5-34; 011253.



The biology of culpability: *Pathological identity and crime control in a biological culture*

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Abstract

This article considers the impact of the new biological criminology on control strategies. Biocriminology does not purport to have a general explanation for crime, but draws upon contemporary human genetics and neurobiology to account for what is represented as a growing social problem of violent and anti-social conduct. Jurisprudential notions of free will and responsibility are not being displaced by genetic essentialism in the courtroom, where the tendency is for an increased emphasis upon moral responsibility of all offenders for their actions. However, in other areas of the criminal justice system, we are seeing the emergence of new conceptions of the individual 'genetically at risk' of offending, and the development of crime prevention strategies based upon a rationale of public health. This is not a new eugenics, but a control strategy that aims to identify, treat and control individuals predisposed to impulsive or aggressive conduct. The implications of the new biological criminology may be seen in the form of genetic discrimination, genetic screening in risk assessments and the use of quasi-consensual 'treatment' for supposed biological tendencies, as conditions for a non-custodial sentence, loss of employment or denial of insurance or other benefits. The search for biological dispositions may also play a part in the increased use of preventive detention and other pre-emptive interventions for 'the protection of the public' against those whose conduct seems to show wanton disregard for the moral constraints on the conduct of free individuals in a liberal society.

Key Words

biocriminology • eugenics • genetics • responsibility • risk

The fable of intelligible freedom. The history of those feelings by virtue of which we consider a person responsible, the so-called moral feelings, is divided into the following main phases. At first we call particular acts good or evil without any consideration of their motives, but simply on the basis of their beneficial or harmful consequences. Soon, however, we forget the origin of these terms and imagine that the quality 'good' or 'evil' is inherent in the actions themselves, without consideration of the consequences; this is the same error language makes when calling the stone itself hard, the tree itself green—that is, we take the effect to be the cause. Then we assign the goodness or evil to the motives, and regard the acts themselves as morally ambiguous. We even go further and cease to give the particular motive the predicate good or evil, but give it rather to the whole nature of the man; the motive grows out of him as a plant grows out of the earth. So we make man responsible in turn for the effects of his actions, then for his actions, then for his motives and finally for his nature. Ultimately we discover that his nature cannot be responsible either, in that it is itself an inevitable consequence, an outgrowth of the elements and influences of past and present things; that is, man cannot be made responsible for anything, neither for his nature, nor his motives, nor his actions, nor the effects of his actions. And thus we come to understand that the history of moral feelings is the history of an error, an error called 'responsibility,' which in turn rests on an error called 'freedom of the will'.

(F. Nietzsche, [1878] 1944, *Human, All too Human*, Aphorism 39)

Introduction

We live, inescapably, in a biologized culture. Not merely the sicknesses of human beings, but also their personalities, capacities, passions and the forces that mobilize them—their 'identities' themselves—appear at least potentially to be explicable in biological terms, and increasingly in terms of their genetic make-up. In this article I want to consider one key site for the biologization of human existence—that of crime. In the closing decades of the 20th century, a new biological criminology began to take shape. While newspaper reports, television documentaries, films and novels have popularized this view in a simplified form, most new biological criminologists rejected earlier claims either that the criminal was a particular, defective, biological type or that there was a 'gene for crime'. They focused not on 'crime' in general, but on violent, aggressive and anti-social behaviour, and suggested that they were able to account for such behaviour through the explanatory regimes of molecular genetics, neurochemistry and neurobiology, supported by evidence from family histories or twin studies, and by direct indicators of abnormality from EEGs, CAT scans, PET Scans, MRI—perhaps, in the future, by DNA screening.

Sociological and cultural critics have often regarded these suggestions with alarm. They speak of the rise of genetic essentialism or neurogenetic

determinism. Nelkin and Lindee, for example, on the basis of analysis of popular accounts of the relations of genetics and crime, claim that they manifest a ‘belief in genetics destiny [which] implies that flaws and failings are inscribed in an unchangeable text—the DNA—that will persist in creating criminals even under the most ideal social circumstances’ and suggest that this deflects attention from the need for social reform, education and rehabilitation in tackling the violence of American society in favour of biological techniques for the control of criminal behaviour (Nelkin and Lindee, 1995: 96; see S. Rose, 1995). In this article, I examine arguments about the biological bases of violent crime, as they operate in the courts and in the criminal justice system, and as they have been developed by biological criminologists themselves. I suggest that some important changes are taking place in control strategies, but these cannot be understood either in terms of the jurisprudential binary of free will versus determinism or the sociological binary of biological reductionism versus social causation.

Far from biological explanations of conduct mitigating responsibility in the criminal justice system—or elsewhere—the resurgence of such explanations has gone hand in hand with a renewed emphasis upon the moral culpability of all offenders, irrespective of biological, psychological or social dispositions—a renewed moralism that is linked with some rather general shifts in the government of conduct in ‘advanced’ liberal societies.¹ Rather than seeing the reactivation of the eugenic strategies of the first half of the 20th century that sought to eliminate members of sub-populations whose tainted constitutions pose a threat to the purity of the race or the stock, these new biological conceptions of the origins of pathological conduct focus on individuals, and are bound up with a new ‘public health’ conception of crime control. In these strategies, socio-political interventions are legitimated not in the language of law and rights, but in terms of the priority of protecting ‘normal people’ against risks that threaten their security and contentment. Biological factors are merely one set of factors among others predisposing individuals to anti-social conduct, and they call for therapy as much as for control. This requires the pre-emptive identification and management of ‘risky individuals’, and risk-generating environments. It also demands interventions upon individual actual or potential offenders to reduce their riskiness where possible, and, where not, their indefinite containment in the name of public safety.

A new eugenics?

The criminological enterprise that flowered throughout Europe and North America in the last decades of the 19th century was founded upon the belief that the criminal was a certain type of person, that the propensity for crime was inscribed in the identity of the individual in the form of a specific and identifiable aberration or abnormality which could be identified by

physical signs: the visible marks of criminality.² The idea that criminality was written in the body in the form of an inherited, unalterable, degenerate physical and moral constitution, threatening the character of the race and demanding control by sequestration, sterilization or elimination, was one element—though not a key one—in the strategies of eugenics that proliferated across Europe, the Nordic countries and the US in the first four decades of the 20th century. In eugenics, the criminal was linked with the feeble-minded, the insane, the tubercular, the alcoholic, the prostitute, the habitual gambler into a single degenerate and heritable identity, and in many countries the powers of the state and law were used to control these threats in the name of racial health.³

These brief reminders of history are relevant here, because critics of the new biological criminology tend to suggest that it is part of a new eugenics (e.g. Duster, 1992; Horgan, 1993) or, at the very least, shows a renewed conviction that defective identities are indelibly inscribed within the corporeal body and implacably override cultural, social or psychological forces. Such critics suggest that this new determinism operates at the level of the genome itself—an inherited pathological identity that can be *made visible* by tests for genetic abnormality in foetuses, by gene sequencing, brain scanning, investigations of brain biochemistry and the like.⁴ Thus Dreyfuss and Nelkin argue that ‘genetic essentialism’ is on the rise in the criminal justice system, challenging key legal precepts, altering the perception of the person by positing that ‘personal traits are predictable and permanent, determined at conception, “hard wired” into the human constitution . . . [and, if known, would] largely explain past performance and could predict future behavior’ (1992: 320–1).

Those working in the field take a different view. They suggest that such simplistic assertions are not part of the discourse of science itself: they are generated by an unholy interaction between sensationalist popular media and paranoid politically motivated groups, although naïve researchers sometimes play into their hands. For example, a recent editorial in *Psychiatric Genetics* (1995), after reporting a range of steady advances in the searches for the genetic bases of schizophrenia, bipolar illness, Alzheimer’s, panic disorder, Tourette’s, alcoholism and autism, and advances in identifying the complex molecular mechanisms involved, expressed its worries thus:

In the world of scientific politics, our field continues to struggle against demons within and without. At times we in psychiatric genetics may have been guilty of optimistic reports based on preliminary findings: unfortunately this has provided fuel for our detractors. Any premature consideration of complex social issues in reductionist terms is also seized upon by the media. Our statements are then held up for public ridicule by scientists and media polemicists who are intrinsically opposed to human behavioral genetics in any form . . . Psychiatric genetics and behavioral genetics are pigeonholed with eugenics and are vilified as bad science and bad policy. It

is asserted that we are naively mechanistic in our view of human behavior. Assumptions that genes influence behavior and behavioral disorders are viewed as absurd. We must work hard in this climate to give a balanced view of our science.

(*Psychiatric Genetics*, 1995: 4)

The writer was particularly concerned about an article in *Scientific American* in 1993 entitled 'Eugenics Revisited' (Horgan, 1993). This reviewed the arguments advanced by behavioural geneticists in relation to homosexuality, intelligence, alcoholism, schizophrenia, manic depression and crime. It found severe flaws in all the major studies: the much publicized claims by Thomas J. Bouchard and his group in Minnesota that their studies of identical twins reared apart had discovered a high genetic component in 'traits' ranging from intelligence to taste in clothes; Robert Plomin's 'fishing expeditions' to catch the specific genes that differentiate schoolchildren on tests of intelligence; claims by Kenneth Blum and his group at the University of Texas Health Science Center to have discovered a genetic marker for alcoholism (reported on the front page of the *New York Times* in 1990); and by Dean Hamer and others to have discovered the genetic basis of homosexuality (Blum et al., 1990; Bouchard et al., 1990; Hamer et al., 1993; Plomin, 1993; Hamer and Copeland, 1994). Janice Egeland's group (1987; Kelsoe et al., 1989) at the University of Miami School of Medicine had withdrawn their well-publicized claim to have linked manic depression in an Amish population to a genetic marker on gene 11.⁵ Miron Baron et al. (1987, 1989) and his group at Columbia University had withdrawn their claim to have linked a marker on the X chromosome to manic depression in three Israeli families. Even the enthusiastic Hugh Gurling at University College London Medical School had admitted that his claim to have found linkage in Icelandic and British families between genetic markers on chromosome 5 and schizophrenia was probably based on a false positive since subsequent studies showed a much reduced linkage (Sherrington et al., 1988; Gurling, 1990). Glenn Walters' (1992) reanalysis of 38 studies of families, twins and adoptees from the 1930s to the present found that statistical evidence for their claims to have demonstrated a genetic component to crime was very weak: the better the study, the smaller the relationship. Horgan concluded that most such research was scientifically worthless: even if it was possible to identify a genetic component in some behaviour, this would produce only a slightly elevated risk of the disorder or conduct in question, and the discovery would be more likely to lead to discrimination than to therapeutic benefits.

In the US, these disputes came to a head over a National Institute of Health (NIH) funded conference entitled 'Genetic Factors and Crime' planned to take place at the University of Maryland in 1992.⁶ NIH withdrew the grant after much controversy, on the basis that the prospectus gave 'the distinct impression that there is a genetic basis for criminal

behavior, a theory that has never been scientifically validated' (quoted in Marshall, 1993: 23). The grant was eventually reinstated, and the conference took place in September 1995 accompanied by protests and placards reading 'Jobs not Prozac' and 'This Conference Predisposes Me to Disruptive Behavior Disorder'. One of the principal accusations was that African Americans were overrepresented among those convicted of crime, and that any attempt to explore genetic factors in criminal conduct was therefore 'inherently racist'.

The cases

These themes in the public discourse of science and culture are significant in their own right. But to understand the micropolitics of contemporary control practices, we need to examine the ways in which these new biological games of truth and identity are being played out. One key site for such an investigation is the courtroom.⁷ Over the 20th century, despite the ambitions of psychology, psychiatry and criminology, programmes of criminological positivism made few inroads into the courtroom and the trial process. Criteria for attributing criminal responsibility are diverse and complex, and vary from jurisdiction to jurisdiction and in relation to the conceptions of personhood ascribed to different kinds of legal subject. Thus, juvenile offenders were comprehensively psychologized across the English-speaking world and in most European countries in the first seven decades of the 20th century; female offenders in this period have tended to be seen as the more or less passive victims of psychological or other forces sweeping them into pathological conduct.⁸ But, in the main, the criminal courts have remained generally hostile to psychological and psychiatric assaults on the doctrines of free will, rationality and responsibility when determining guilt. Only after the trial and verdict, in the determination of the sentence, in the interventions of probation officers, social workers and psychiatrists, in the psychological technologies of reformation utilized in the prisons, has the focus shifted from 'what have you done?' to 'who are you and why do you act as you do?'. What, then, has been the impact of the new biological criminology? Let us consider a few cases.

First, there were the XYY cases in the late 1960s and the 1970s (see Denno, 1988, 1996). These were cases where gross chromosomal abnormalities—the possession of an extra Y chromosome (the sex chromosome whose presence together with one X chromosome determines male-ness)—were used in the defence of individuals charged with violent crime. Research findings in the 1960s claimed that there was a disproportionate number of XYY males in maximum security institutions in the US and other countries, and that such individuals showed immaturity, defective development or inadequate control of aggressive instincts and emotional responses. By the mid-1970s, the XYY defence had been mounted in five cases in the American courts. But in no case did it succeed: the reasoning

usually being that an insanity defence should only be possible if an aetiological relationship can be established between the defendant's mental capacity and the genetic syndrome, which has 'so affected the thought processes as to interfere substantially with the defendant's cognitive capacity or with his ability to understand or appreciate the basic moral code of his society' and that 'presently available medical evidence is unable to establish a reasonably certain causal connection between the XYY defect and criminal conduct' (quoted in Denno, 1996: 21). And XYY defences ceased after later research revealed major flaws in the studies they relied upon.⁹

In the 'pre-menstrual syndrome' (PMS) cases in the UK in the 1980s, the legal reasoning was similar (see Allen, 1984). A successful defence of PMS required more than general arguments about the correlation of PMS with mood disorders and so forth. There had to be convincing evidence that there was a clear causal link between the mental condition of this particular individual in the pre-menstrual period and the act in question. In two well-publicized cases, evidence was presented, and accepted, that the crimes had been committed while the defendants were suffering from severe symptoms of pre-menstrual tension. The courts heard arguments made by Dr Katharina Dalton that this biomedical condition was causally responsible for the criminal behaviour of the young women involved. Ms English killed her lover by running him down with a car; she was found not guilty of murder but guilty of manslaughter due to diminished responsibility and was conditionally discharged without punishment. Ms Smith was found guilty and sentenced to probation for threatening to kill someone, one year after a previous diminished responsibility conviction for having stabbed a colleague to death at work. She appealed against her conviction for the second offence on the grounds that she should not have been found guilty because there was no moral fault. The appeal judges rejected the appeal, and also rejected the idea of a 'special defence' of pre-menstrual tension that would absolve women from criminal responsibility. But they commended the trial judge, who had instructed the jury that Ms Smith was 'morally guiltless' and that they 'should proceed on the assumption that her behaviour was attributable to the fact that she had insufficient of this hormone . . . she knew what she was doing but she could not control herself . . . she had lost her moral safeguards' (quoted in Allen, 1984: 26–7). While this seemed to open the door to a limited biologization of pathological identity, the PMS defence is now used rarely if ever. The argument has followed a different path, one that is instructive: it is to emphasize the need for the early detection and treatment of those suffering from PMS before any criminal behaviour has resulted (e.g. Fishbein, 1992).

Biological defences have been pursued in other ways. Perhaps most significant have been the cases in the US where evidence from computerized axial tomography (CAT) scans has been introduced into court in order to support a defence of biological impairment.¹⁰ In the John Hinckley case,

where the defendant had attempted to assassinate the US President, the defence claimed that CAT scans of the brain provided organic evidence that Hinckley was schizophrenic.¹¹ Hinckley's acquittal on the grounds of 'Not Guilty By Reason of Insanity' (NGRI) gave added impetus to the US campaign to reform the insanity and diminished capacity defences.¹² These were severely limited in some 39 states, transformed into Guilty But Mentally Ill in eight others (a verdict which allows any sentence up to and including death) and abolished entirely in Illinois and Idaho (Moran, 1991). Nonetheless, evidence from the new technologies for visualizing the brain found its way into the American courts in the 1980s. In particular, the results of positron emission tomography (PET) were thought to be relevant to sentencing decisions, on the presumption that biological evidence might be relevant to the most appropriate disposal (see Anderson, 1992). By 1992, for the first time in the US, a court allowed an expert to draw upon evidence from a PET scan in determining the defendant's sanity, although in the end the matter was resolved by lowering the charge from murder to manslaughter and avoiding a trial.¹³

Most recently, family history has been used to support a claim that an inherited predisposition mitigates culpability. The most notorious case is that of Stephen Mobley (see Denno, 1996). At the latest information, Mobley was still being held on death row in Georgia pending his appeal before the Georgia Supreme Court, convicted of shooting to death the manager of a Domino's Pizza store in the back of the neck, in February 1991. Mobley, who was 25 at the time of the offence, had a lengthy history of treatment for 'inability to control his impulses or to internalise any kind of value system'. However, in the trial his attorneys did not try to introduce genetic evidence as a defence, but as possible mitigation in relation to the sentence. The genetic evidence was based on a family history which was claimed to show four generations of violence, aggression and behaviour disorder in uncles, aunts and grandparents. The lawyers argued that this was relevant because of a study by Han Brunner (Brunner et al., 1993) of a family history of violence in the Netherlands. This study seemed to identify a syndrome in which borderline mental retardation was linked to abnormal behaviour, including violence and aggression: genetic linkage studies showed this syndrome to be associated with a point mutation in a gene regulating the production of an enzyme—monoamine oxidase A (MAOA)—linked to changes in levels of various neurotransmitters.¹⁴ The Superior Court of Hall County denied the request, arguing that Mobley could not be compared with the Netherlands family because he was not borderline mentally retarded, and noting that Brunner and his colleagues had acknowledged that the inhibition of MAOA had not been reported to cause aggressive behaviour in adult humans. A jury found Mobley guilty in February 1994 and he was sentenced to death.

Present evidence thus suggests that biological and genetic defences have largely failed to displace operative conceptions of responsibility within the practice of the criminal law in any jurisdiction.¹⁵ There has been rather

more success in pleas for mitigation of sentence, but this has long been an aspect of the trial process more open to psychological, psychiatric and social expertise. Biological arguments seem to enter the courtroom not because legal personhood has become biological, but because defence lawyers, especially in the US, utilize anything they can to defend their clients. Indeed legal philosophers who have considered the claims of contemporary biological criminology find no good reasons why neuro-genetic discoveries in relation to criminality *should* alter prevailing legal conceptions of freedom, responsibility or desert. Genetic accounts of the relation between ‘criminogenic genes’ and conduct are no more ‘determinist’ than those that point to the effects of background, environment or biography. The argument from genetics is that the ability to control oneself or act differently was reduced by an inherited genotype. The argument from psychology and sociology is that the capacity for self-control was reduced by one’s upbringing or environment. Judges and juries are likely to be as resistant to the exculpatory claims of the former as they have been to the latter.

It might be thought that the objectivity and demonstrability of biological accounts could give them a greater impact. Arguments of psychologists, psychiatrists and social workers usually fail to satisfy the courts, and are often demolished by lawyers and ridiculed in the media. The courtroom display of a physical inscription—a PET scan or a DNA profile—has a greater rhetorical force. But as US cases involving DNA fingerprinting evidence show, the effects of the trial process are to expose the messy complexity that lies behind such sanguine assertions of truth (Alldridge, 1992, 1994). Opposing teams of lawyers hire biological experts to attack each other’s truth claims, with consequences that would delight contemporary sociologists of scientific knowledge: the most robust scientific claims are shown to be contestable products of dubious technical procedures, questionable leaps of causality and loosely controlled discretionary judgement. There is no reason to suppose that brain imaging, neurochemical and genetic arguments will not be subjected to the same destabilization if they begin to enter the accusatory trial process on a regular basis.

When the judiciary defend the non-genetic, non-psychiatric fictions of free will, autonomy of choice and personal responsibility, this is not because legal discourse considers this a scientific account of the determinants of human conduct. Rather, legal discourse deems it necessary to proceed as if it were, for reasons to do with prevailing notions of moral and political order. Indeed, the trend of legal thought seems to be increasingly the emphasis on the inescapability of moral responsibility and culpability. No appeal to biology, biography or society or even subsequent remorse and reformation will weaken moral responsibility for the act, let alone the requirement that the offender be subject to control and/or punishment. In this context, the argument from biology is likely to have its most significant impact, not through the manoeuvrings of defence lawyers but in the determination of the sentence. For if anti-social conduct is indelibly

inscribed in the body of the offender, it seems that it is not mitigation of punishment that is required but the long-term pacification of the irredeemable individual in the name of public protection, even if this means the rejection of many rule of law considerations, such as those concerning the proportionality of crime and punishment.

I have already mentioned the trend of many states to reform their insanity and homicide laws to allow persons suffering from mental disorder to face all the penalties the law allows for the sane.¹⁶ In Texas, for example, an article of the Code of Criminal Procedure required juries assessing the appropriateness of the death penalty, to consider, among other things 'whether there is a probability that the defendant would commit criminal acts of violence that would constitute a continuing threat to society': mitigating evidence such as genetic predisposition is thus a two-edged sword, which may diminish blameworthiness for the crime at the same time as it indicates the probability that the criminal may be dangerous in the future and is beyond redemption, hence justifying the death penalty.¹⁷ To this one can add the rise of demands for preventive detention for 'psychopaths', 'paedophiles' and other 'monstrous individuals' thought to be constitutionally incorrigible and a permanent threat to 'the public'.¹⁸ Ours is an age where political rationalities increasingly stress the moral obligations of individuals for their own action and their own welfare, and their obligations to their families and communities. In this political and moral context, it is not surprising that courts and legislatures, faced with what is perceived as a threatening epidemic of violent crime and by repeated panics about such monstrous individuals as serial killers, psychopaths and sexual predators, increasingly insist that moral culpability, especially in relation to violent or anti-social conduct, should not be mitigated by any social, familial, medical or biological factors. We may, as Nietzsche predicted in 1878, have come to recognize that 'freedom of the will is an error', but we cannot, it seems, abandon the idea of responsibility. On the contrary, within the criminal justice systems of our contemporary cultures of individual accountability, we reconceptualize offenders as creatures inescapably required to bear full responsibility for the outcomes of their actions, and deem these actions to be moral choices whatever their material causes.

The experts

The popular press—and even such popular journals as *Science* and *Nature*—regularly report the discovery of 'the gene for' anything from aggression to breast cancer. And it is certainly true that a few tendentious enthusiasts make wild claims about the implications of the new biology of conduct and some draw eugenicist and racist conclusions.¹⁹ But in the scientific discourse of biological criminology, the links among biology, identity, free will and responsibility take a different form.

Consider a recent article in the *Journal of Forensic Psychiatry*. The piece was written by Heikki Vartiainen (1995), the leader of a Finnish team of researchers studying different aspects of the neurochemistry of aggression. It was entitled 'Free Will and 5-hydroxytryptamine'. 5-hydroxytryptamine (known as 5-HT) is the neurotransmitter serotonin, and the article reports abnormalities in serotonin levels in the cerebrospinal fluid (CSF) of people who have taken their own lives and in offenders who have carried out violent crimes, some of whom show excessive sensitivity to alcohol. It links this to reports of a hereditary factor in some alcoholic and violent offenders, to brain scans showing abnormalities in individuals with neuropsychometric deficit and to arguments that impulsive aggressive individuals have decreases in certain aspects of the serotonin uptake mechanism in the medial prefrontal cortex. Not all biological factors are hereditary, but nonetheless: 'The relationship between a low serotonin turnover and impulsive, aggressive behaviour seems to be obvious . . . A display of uncontrolled and uncharacteristic anger following minimal provocation can be biologically explained—a decrease in brain 5-HT manifesting itself as aggressive behaviour' (Vartiainen, 1995: 7).

Neurogenetic determinism? Perhaps. Yet on the basis of his findings, Vartiainen does not propose a defence of automatism or diminished responsibility. He argues that: 'Since all behaviour is biologically based, attributing causation to a given type of conduct as biological and calling it therefore an illness, tells us nothing about the social, moral, or legal implications which that behaviour ought to have' (1995: 8). He argues that sentencers should not be concerned with whether a biological condition weakened legal responsibility, but with the protection of society and the reduction of the likelihood of recurrence of violent acts. In arguing in this way, he is typical of contemporary biocriminology. Biological accounts of propensities to anti-social behaviour deploy conceptions of moral responsibility and individual culpability that are unmitigated by evidence of biological causation, and in which social classifications such as illness have no legitimate relevance (Dinwiddie, 1996). The jurisprudence that is called for is one of public health. Offenders should be held morally accountable for the consequences of their conduct irrespective of heredity, neurophysiology or neurochemistry; thus they should be liable for whatever is the most appropriate sentence in the light of the need for public protection.²⁰ Tests may help us identify people vulnerable to biologically based diseases and their consequences; where we can help them, therapy might be appropriate, but when past conduct shows incorrigibility or expert evidence suggests untreatability, then the need for public protection should determine the appropriate disposal.

I will return to these themes later in this article. But let me stick with the researchers for a bit longer. Biological criminologists these days hedge their analyses with qualifications. They are quick to acknowledge that crime as such does not exist; that lawbreaking acts are heterogeneous; that crime is culturally and historically variable; that infraction of law is common; that

those arrested, charged and convicted are not representative of those who break the law but a skewed sample produced through all sorts of social processes.²¹ In this new positivism, conduct is never simply 'caused' by biology and significant biological malfunctions may themselves be the result of environmental assaults, etc. As far as genetics is concerned, as David Wasserman has pointed out:

No mainstream researchers believe that there are single genes that cause violent or anti-social conduct; all regard behavioral phenotypes like criminal behavior as arising from a complex interaction of many genes and environmental factors. None believe that genetic influence makes criminal behavior less mutable, and many suspect that the most effective ways of countering genetic influence will involve social and economic reforms. Finally, few of these researchers advocate, or believe their findings would support, mandatory screening, involuntary medication, or harsher sentences.

(Wasserman, 1995: 15)

For example, Brunner (1996) insists that his study, cited in the Mobley case, gives no support for the notion of an 'aggression gene', despite having been interpreted in this way by the popular press:

the notion of an 'aggression gene' does not make sense, because it belies the fact that behaviour should and does arise at the highest level of cortical organization, where individual genes are only distantly reflected in the anatomical structure, as well as in the various neurophysiological and biochemical functions of the brain . . . although a multitude of genes must be involved in shaping brain function, none of these genes by itself encodes behaviour.

Brunner (1996: 116)

While Adrian Raine's studies demonstrating brain abnormalities in individuals accused of murder and pleading NGRI have been cited by defence lawyers seeking to mitigate the responsibility of their clients, his own view is close to that of Brunner.²² He argues that:

the neural processes underlying violence are complex and cannot be simplistically reduced to single brain mechanisms causing violence in a direct causal fashion. Instead, violent behavior probably involves disruption of a network of multiply interacting brain mechanisms that predispose to violence in the presence of other social, environmental, and psychological predispositions.

(Raine et al., 1997: 503).

Raine and his team stress that the findings cannot be generalized to other violent offenders, and assert that:

these data do not demonstrate that murderers pleading NGRI are not responsible for their actions, nor do they demonstrate that PET can be used as a diagnostic technique [and] our findings cannot speak to the issue of the

cause (genetic or environmental) of the brain dysfunction, nor do they establish causal direction.

(Raine et al., 1997: 505)

Evan Balaban, a neurobiologist, reflecting on the presentations at the Maryland Conference, concluded that such qualifications were inadequate: the repeated demand for more research on the significance of 'genes' and 'biology' in the origins of violent crime itself contributes to the illusion that a potential 'magic bullet' may be discovered that will make the streets safe (Balaban, 1996). Carey and Gottesman, in the same symposium, disagree. They assert that 'it ain't all genetic and it never was all genetic' and that: 'Phrases like "nature versus nurture," "the aggression gene," and "my genes made me do it," belong to the history of science, science fiction and social satire, not to serious behavioral genetics' (Carey and Gottesman, 1996: 89). But they are confident that the current generation of molecular genetic research will find polymorphisms associated with various aspects of anti-social behaviour—not a 'crime gene' but a number of loci of small effect that together influence temperament, motivation and cognition and which influence the probability that, in certain environmental and biographical conditions, an individual will engage in an anti-social act. Diane Fishbein, of the US Department of Justice, is even more hopeful about the implications of a biologization of criminal identity. After outlining a programme of research tasks to assess the relevance and significance of genetic findings for crime and violence prevention, she concludes that: 'Studies suggest that a subgroup of our population suffers from genetic vulnerabilities that overwhelm most environments' (Fishbein, 1996: 93). But this is a cause for optimism for:

genetic traits are not immutable, they are alterable in a social environment . . . Not only do these individuals stand to benefit greatly from the research, but the public may eventually give way to more tolerance of behavioral aberrations, understanding that behavior is not entirely volitional at all times in all individuals . . . there is little evidence that present tactics are effective; thus we need to move forward into an era of early intervention and compassionate treatment that genetic research may advance.

(Fishbein, 1996: 93)

What we are seeing here is the emergence of a new problem and object for regulation: the person genetically 'at risk'. Genetically 'at risk' individuals are those thought to have a predisposition to a condition on the basis of DNA testing or family history; hence they may be treated as if they were certain to be affected in the severest fashion, even where they show no present signs of the problem in question, and even though the certainty, nature, timing, severity of any difficulty cannot be predicted (Gostin, 1991: 118).²³ In these claims to discover the person genetically at risk—at risk of being the perpetrator of aggression or violence—we are seeing the making of a new 'human kind'.²⁴

Crime prevention as public health

There is a control strategy here, but it is neither a new eugenics nor a genetic determinism, at least in the senses that such terms are generally understood: the belief that the nature and life-course of an individual is predetermined by a fixed and unalterable inherited constitution. Contemporary biocriminology does not suggest that biology is destiny. Nor does it concern itself with threats posed to the national gene pool through the rate of reproduction of defective stock. Its problem, rather, appears to be an 'epidemic' of anti-social, aggressive and violent conduct that is thought to arise from a diminution of self-control, reasonableness, maturity, judgement, tact and reasoning. To control these anti-citizens, who seem to lack all the self-governing capacities that are at the heart of civilized moral agency in an advanced liberal society, a two-pronged strategy is taking shape. On the one hand, one must understand the conditions that lead to such anti-social conduct in order to identify the individuals with these propensities, and to intervene upon them to reduce the risk that they pose to their families and communities. On the other hand, one must prioritize the protection of the public from the threats to physical and mental health which such individuals and their actions represent.²⁵ Within this problem space, a new research programme on the biology, neurology, neurochemistry and genetics of crime has taken shape, seeking to locate biological processes, genetic markers and risk factors for aggressive and anti-social conduct, and to develop techniques for identifying risky individuals. Through adoption studies, hormonal research, neurophysiological studies and studies of intellectual ability, attention deficit disorder and minimal brain dysfunction, researchers are searching for links between specific biological abnormalities and the propensity to commit violent crime, with a view to early identification, preventive intervention and effective treatment.

Of course, there is nothing new in the belief that research into the backgrounds and characteristics of current offenders will enable one to develop instruments that will objectively identify 'pre-symptomatic offenders' who are constitutionally 'predisposed' to crime or 'at risk' of offending, and hence can legitimately be the targets of preventive intervention (e.g. Glueck and Glueck, 1930, 1934, 1943). Sociological criminology was founded in a rejection of such beliefs, dating in its modern form, to Edwin Sutherland's (1931) attack on biological explanations of crime. From the end of the Second World War through to the late 1970s, such arguments were largely expelled from the truth discourse of criminology—they appeared inextricably associated with scientific racism. When Wilson and Herrnstein (1985) published *Crime and Human Nature*—arguing that human rationality was subject to biological constraints, including genetic predispositions to impulsivity, aggressiveness and low intelligence, and marshalled a range of empirical evidence to support their claim that these were associated with criminal conduct—their argument

was harshly criticized, associated with the work of other biological reductionists and dismissed as politically motivated (e.g. Gibbs, 1985; Cohen, 1987). But in the subsequent years, there were a multitude of proposals for 'integrated' approaches to criminal behaviour in which biological factors formed one key dimension. These arguments are still contested by most sociologists, who link them to sexism, racism and fascism. But they are achieving the status of truth, for example finding their way into introductory textbooks of criminology where explanations of violence involving biochemical, genetic and neurophysiological factors are increasingly presented as based on sound empirical evidence (Wright and Miller, 1998).

And such explanations are entering into strategies of control. In the early 1990s, the US National Institute of Mental Health (NIMH) launched its National Violence Initiative, under its director Frederick Goodwin. In this Initiative, psychiatrists would seek to identify children likely to develop criminal behaviour and to develop intervention strategies. The *Chicago Tribune* reported in 1993 that this programme raised the hope 'that violent behavior can eventually be curbed by manipulating the chemical and genetic keys to aggression . . . anti-violence medications conceivable could be given, perhaps forcibly, to people with abnormal levels' (cited in Citizens Commission on Human Rights, 1996). The official report from this initiative (Reiss and Roth, 1993–4) issued in four volumes called for more research on biological and genetic factors in violent crime and on new pharmaceuticals that reduce violent behaviour. The veteran campaigner against psychiatric violence, Peter Breggin, obtained leaked copies of many of the planning documents. He claimed that the proposal for the initiative pointed to an 'emerging scientific capacity to identify the individual determinants of behavior—at the biochemical, psychological and social/environmental levels' and that 'solutions must reflect increasing scientific and clinical capacities to target the individual determinants of violence' and linked these specifically to genetic and neurochemical risk factors. It proposed establishing research centres for 'the testing of a variety of interventions aimed at the individual, family and community' and the summary of the proposal stated that 'minority populations are disproportionately affected' (Breggin and Breggin, 1994; Breggin, 1995–6). In 1992, Breggin launched a media campaign to publicize and protest the initiative—a campaign aimed particularly at mobilizing African American activists. It was this campaign that enmeshed the Maryland Conference on Genetics and Crime, which Breggin saw as an elaboration of the rationale for the NIMH Violence Initiative. Certainly by 1992 the US federal government, in partnership with the MacArthur Foundation, was sponsoring a large-scale initiative entitled the 'Program on Human Development and Criminal Behavior' to the tune of some \$12 million per year. This was based on the view that 'advances in the fields of behavior genetics, neurobiology, and molecular biology are renewing the hope that the biological determinants of delinquent and criminal behavior may yet be discovered' (Earl, 1991,

quoted in Breggin, 1995–6). Hence the project aimed at screening children for biological, psychological and social factors that may play a role in criminal behaviour, and proposed to follow subjects over an eight-year period, with a view to ultimately identifying biological and biochemical markers for predicting criminality. While this umbrella programme was withdrawn as a result of the controversy surrounding the Violence Initiative, individual projects from the programme continue to be sponsored by the federal government.

Breggin sees this as a racist programme of surreptitious governmental social control. He certainly overstates his case. Franklin Zimring (1996), who served on the National Academy of Science Panel on the Understanding and Control of Violent Behavior:

doubt[s] that genetics will ever play a major role in violence prevention in the United States . . . The prediction of violence even in previously violent adults is an error-prone exercise. The selection of children at high risk for serious violence as adults is pure science fiction.

(Zimring, 1996: 106)

However, Diane Fishbein (1996: 91) argues that: ‘Once prevalence rates are known for genetically influenced forms of psychopathology in relevant populations, we can better determine how substantially a prevention strategy that incorporates genetic findings may influence the problem of anti-social conduct’. At a minimum, she believed, the evidence ‘suggests the need for early identification and intervention’ (Fishbein, 1996: 91). As David Wasserman (1996: 108) has pointed out, biological criminologists hope that neurogenetic research into anti-social behaviour, while it will not discover ‘causes’, might identify markers and genes associated with that behaviour. Programmes of screening could then be established to detect individuals carrying these markers; pre-emptive intervention might be planned to treat the condition or ameliorate the risk posed by the affected individual. Biological expertise could thus be the basis of risk prevention strategies by a variety of agencies of social control.

Understood in these terms, it is clear that these genetically and biologically inspired initiatives are only one element within a complex of programmes which address the issue of crime control in terms of risk management, located within strategies for the promotion of public health. Indeed, most Violence Prevention Initiatives being developed across the US are conceived in these terms. To combat the phenomenon of crime understood as a kind of ‘epidemic’, a whole variety of tactics is required. These include preventive intervention before criminal behaviour reaches a serious level and attempts to identify, treat or sequester risky individuals. But they also include attempts to strengthen ‘immunity’ and ‘resistance’ through support to communities and families, through the work of the churches and voluntary organizations, and through a range of more familiar schemes for moral and environmental regeneration.²⁶ As the 1995 NIMH Program Announcement for research on violence and traumatic stress put it, ‘the

effects of violence and trauma constitute a major public health problem for all Americans . . . interpersonal violence has in recent years come to be widely viewed as a serious public health problem'.²⁷ Within this conception of violence prevention as public health, biological factors are now thought of as one set of risk factors for perpetration of violence, interacting with intra-personal, familial, peer, community and cultural factors, and with other traumas or toxins such as experience of violence, alcohol or drugs. The early detection and treatment aspirations of biological criminology are only one of a range of tactics within this widespread reshaping of control mechanisms in which the work of many professionals, from genetic researchers through psychiatrists, police and social workers, has come to be understood in terms of the identification, assessment, communication and management of risk.²⁸ Tactics include: minimizing risk in populations as a whole; identifying and targeting high risk zones—which may be particular geographical spaces or particular groups, communities or sub-populations; seeking to identify the 'pre-symptomatic' individual at risk through the analysis of combinations of factors statistically and clinically linked to the problematic conduct or pathology in question. And, post hoc, risk is to be reduced by subjecting problematic or offending individuals to risk assessments, entering them on risk registers, deciding on their treatment in relation to risk levels, subjecting them through risk monitoring, reforming them through intervention programmes designed to build the capacities and competencies necessary for them to monitor and control their own risk or, if they are thought incorrigibly risky, incapacitating them by permanent incarceration as in the proposals for preventive detention or the 'three strikes' policies.

I have already referred to the way in which in the UK, the US and Australia, these arguments have come to focus upon the figure of the paedophile. Extraordinary moral panics have surrounded these 'evil' persons, apparently beyond any hope of reform and unwilling or incapable of restraining their perverse desires. They have led to widespread demands for preventive detention, beyond any 'rule of law' constraints of a determinate sentence for a particular criminal act, of those 'monstrous individuals' who are considered, not because of what they have done but of who they are, to represent a serious risk to others. Claims about the inherent biological propensity of some persons to anti-social behaviour not only support these specific proposals, they also imply that the web of preventive detention in the name of the protection of the public may need to be spread wider, in order to embrace all those persons whose very make-up renders them dangerous to others. A new branch must be added to the conventional apparatus of the criminal justice system, it seems, whose role will be the permanent sequestration of risky individuals who may not yet have committed a serious offence, or who may have served their time for the offences they have committed, but who do not and cannot qualify for freedom and the rights of citizenship because their biology places them permanently beyond the reach of treatment or reform.

The new biology of control

In the biology of control of the first half of this century, to explain individual human characteristics through inheritance was to claim, first, that they were the property of particular sub-populations and, second, that they were unalterable. The new biology of control differs on both these dimensions. There are, undoubtedly, behavioural geneticists who still think in terms of population groups, especially enthusiasts for evolutionary biology and evolutionary psychology—and even evolutionary sociology.²⁹ Latter-day eugenicists such as Charles Murray and Richard Herrnstein, not to mention the more outlandish characters funded by explicitly racist organizations, clearly fall into this camp. And it is certainly the case that some violence studies, especially in the US, have focused on racial groups, either as an explicit choice or as a consequence of selecting subjects whose family members were known to the criminal justice system—a practice which will overrepresent African Americans and Latinos in any American city, given the overrepresentation of such individuals in the prisons and on probation for reasons that have little to do with biology. But such practices are contested within the science itself, where most behavioural geneticists regard it as quite mistaken to seek group dispositions for anti-social conduct. Risk, here, is understood in clinical terms: while individuals in certain groups may carry an ‘elevated risk’ for specific conditions—as in the case of sickle cell anaemia—the practices that follow are not concerned with the control of such population groups en masse, but with the identification of specific individuals where a biological or familial predisposition may, in certain developmental or social circumstances, lead them to violent or anti-social conduct. The aim is either to restore such individuals to a condition where they can exercise adequate controls over their own will—by therapies which may be biological, psychological or even entail changing the environment that might excite or provoke expression of these predispositions—or else to sequester them. The calls for confinement may echo earlier demands for the segregation of those whose constitution and reproduction rendered them a threat to the health of the race, and the consequences of confinement may be equally unpalatable for the individuals concerned. But the rationale is very different. Actual or potential offenders are to be confined, not as members of a defective sub-population or a degenerate race whose reproduction is to be curtailed, but as intractable individuals unable to govern themselves according to the civilized norms of a liberal society of freedom.

In the earlier biology of control, the assessment of reproductive worth by experts on behalf of the state was part of a nationally organized and politically directed programme to improve the quality of the national stock and eliminate taints or weaknesses that might threaten it. Heredity inscribed an unalterable deficit or flaw in the constitution of certain

individuals, families, lineages and races: a flaw that a responsible state must address: negative means to curtail reproduction were thus justified in the name of the welfare or destiny of the population as a whole. Biological destiny was inescapable. The control strategy today is rather different. It is true, of course, that 'negative eugenics' of this state directed form did not die with the defeat of the Nazis. The most publicized case is that of Sweden. In that model welfare state, from 1935 to 1975, a total of 62,000 people were prevented from reproducing by a nationally organized system of sterilization. In the post-war years, the targets of this programme were largely women who were thought to be anti-social, sexually active and without good judgement—it was argued that the reproductive activities of such individuals must be controlled in order to hold down the costs of the enlarging welfare state.³⁰ There is good evidence for the disproportionate and not entirely voluntary use of long-term contraception or sterilization, for those thought to be mentally handicapped and, in the US, for women of colour (see Gordon, 1990; and, for a somewhat alarmist version, Horsburgh, 1996). But, as most contemporary critics agree, the eugenic manipulation of the gene pool in our present society is more likely to be enacted through reproductive consumerism than through negative eugenics: the demand, by individuals and families, for genetic counselling, genetic screening and selective abortion in their search for the perfect child.³¹

Unlike the eugenics of the first half of the 20th century, to place something on the side of nature is no longer to place it on the side of the unalterable. Even in the hypothetical case of a gene being discovered which, in a particular form, did predispose to anti-social, violent or aggressive behaviour, this would not be taken as an unalterable mark of fate, justifying forcible sequestration, sterilization or euthanasia. In the current overstated rhetoric of molecular biology and neurogenetics, once one has identified the genetic basis for an undesirable characteristic, and once one has identified individuals genetically 'at risk', interventions to reduce that risk can then begin: psychopharmacology, gene therapy, environmental control, skills in life management, cognitive restructuring. Within conceptions of crime control as public health, new control possibilities open up for the utilization of such risk-minimization techniques in connection with biological conceptions of the bases of violent or anti-social behaviour. While full-scale screening of the inhabitants in the inner cities might be too controversial to contemplate in most jurisdictions, the example of Attention Deficit Hyperactivity Disorder, at least in the US, suggests the likelihood of proposals for genetic screening of disruptive schoolchildren, with pre-emptive treatment a condition of continuing schooling. Or one might imagine post-conviction screening of petty criminals, with genetic testing and compliance with treatment made a condition of probation or parole. Or one can envisage scenarios in which genetic screening is a condition for employment or insurance, or genetic therapy is offered to disruptive or

delinquent employees as an alternative to termination.³² There are suggestive precedents here. Many psychiatric medications, for example antabuse for alcoholism and lithium for manic depression, were introduced in this way. Unlike the negative eugenics of an earlier era, this contemporary biologization of risky identities in the name of public health offers biological criminologists a role as therapeutic professionals, therapeutic for individuals and for society itself.

Conclusion

Eugenics viewed criminality as merely one of many signs of a degenerate constitution whose propagation had to be prevented by sequestration, sterilization or elimination. It was part of a politics of race, blood and earth, aimed at the purification of the national population, and its targets were identifiable pathological sub-populations. Contemporary biological criminology gains its salience within a different problem space. This is the apparent 'epidemic' of crimes involving brutality, aggression, impulsivity, anti-social conduct or self-glorification through violence. These crimes are viewed in highly moral terms: they are acts that seem to show wanton disregard for the moral constraints on the conduct of free individuals in a liberal society. They are not pathologies of a population group, but of individuals who reject the bonds of moral community and who violate the norms of freedom and self-control that lie at the heart of the moral order of an 'advanced' liberal society. Biological criminology, here, is but one element in the more general rise of public health strategies of crime control, focusing on the identification of, and preventive intervention upon, aggressive, risky or monstrous anti-citizens. The strategic deployment of biology in crime control is most likely to take the form of genetic discrimination in relation to employment or insurance, the emergence of notions of genetic risk in the risk assessment techniques used with offenders, and the use of quasi-consensual 'treatment' for supposed biological tendencies, as a condition for a non-custodial sentence, loss of employment or denial of insurance or other benefits. Practices for the identification, calculation and management of biological risk factors will take their place among a whole host of others in an expanded role for criminal justice, in preventive interventions with those thought to be 'at risk of offending', in the new post-welfare strategies for control of urban environments by instrumentalizing the moralizing powers of families, churches, communities and space itself, in the assessment of offenders, in the development of regimes of preventive detention. The traditional dichotomies of sociological thought—free will versus determinism, society versus biology—are not very helpful in understanding the relationships of power, knowledge, ethics and subjectification that are taking shape within these new practices of control.

Notes

This is a revised version of a keynote address given to the 18th Annual Congress of the Australian and New Zealand Association of Psychiatry, Psychology and Law, in Melbourne, Victoria, Australia, 16–19 April 1998. Other versions have been given to the Department of Sociology at the University of Durham in March 1999, and to the Centre of Criminology at the University of Toronto and the Law and Society Association Annual Meeting in Chicago in May 1999. Thanks to Deborah Denno, Dorothy Nelkin and David Wasserman for help in finding material for this article and for very helpful comments on an earlier version, to anonymous reviewers for *Theoretical Criminology* for useful suggestions and to Pat O'Malley and Mariana Valverde, as ever, for sound advice. Responsibility for the argument is mine alone.

1. For a more detailed account of control practices in 'advanced' liberal societies, see Nikolas Rose (1999).
2. For an excellent account of these developments, focusing upon the US, see Rafter (1997). While attention was first to the external shape, proportions and surfaces of the body, later techniques sought to render visible the marks of uniqueness thought to have retreated to the invisible interior of the body; the issue of non-symptomatic 'carriers' was of particular concern (Paul, 1998). Note that, while it is possible to trace a line from Lombroso through Bertillon to DNA fingerprinting, each worked within a different set of questions concerning the individuation of the criminal.
3. In the US, sterilization of convicted criminals, male and female, began as early as 1898, and laws permitting sterilization of habitual or confirmed criminals or sex offenders were passed in 16 states by 1917: a *Fortune Magazine* poll in 1937 showed that 63 percent of Americans were in favour of compulsory sterilization of habitual criminals (Kevles, 1985: 114). The genetics of crime had been a speciality in 1920s Germany, flourishing after the Nazis came to power, and by 1939 examination of the genetics and genealogy of criminal suspects had become a routine part of criminal investigations (see Proctor, 1988). In England, the criminal was not a privileged object of eugenic discourse, which focused on the issue of the feeble-minded and hesitated about the uses of compulsory interventions into reproductive freedoms (see Rose, 1985; Garland, 1994). In the Nordic countries, which adopted eugenic sterilization for the mentally ill and the feeble-minded with various degrees of enthusiasm in the 1930s, eugenics took a kind of 'pastoral' or 'welfare' form: while sterilization did take place on the basis of 'anti-social' indicators, as far as criminal conduct was concerned it tended to focus upon the sex offender, no doubt because of confused reasons concerning castration and sexuality (Broberg and Roll-Hansen, 1996). For eugenics in France, see Carol (1995).
4. Lippman (1992) refers to this as 'geneticisation'. Spallone (1998) develops a more complex argument that I discovered too late to take account of

- here; she uses the term 'geneticism' which she draws from the earlier criticisms of misapplied genetics made by Medewar (e.g. 1984).
5. The claim was withdrawn after a number of individuals without the marker developed the disorder undermining the statistical significance of the association.
 6. The dispute is described in Wasserman (1996). Many thanks to David Wasserman for providing me with papers and information on this conference and the surrounding events. Note that similar, less controversial events, were held in Europe at around the same time (see Bock and Goode, 1996; Crusio, 1996).
 7. There are many national differences here and, in the US, differences among the various state and federal jurisdictions. While the legal outcomes differ from jurisdiction to jurisdiction, there are many similarities in the problems raised—it is the problems, rather than the specific outcomes, that interest me here. I make no claims to comprehensive coverage, but select some exemplary cases whether they arise in the US, England or Australia. Useful accounts of US cases are given by Denno (1988, 1996), Dreyfuss and Nelkin (1992) and Coffey (1993).
 8. For juveniles, see the excellent summary of the position up until then in Freeman (1981). For the complex position with regard to the agency and responsibility of criminal women, see Allen (1988).
 9. In many cases, the mere fact that an XYY male was an inmate in a mental hospital or penal institution was taken as evidence of a history of violence, and the researchers had not distinguished property crimes from violent crimes, or confinement for criminal offences from confinement for reasons of mental ill health. When better studies were undertaken, the only correlations between XYY status and criminality concerned conviction for petty property offences. The rise and fall of the defences is discussed by Saulitis (1979).
 10. Studies of electroencephalographs of delinquents and criminals from the 1940s onwards attempted to discover specific abnormalities in offenders as compared to the general population, and to develop such techniques for diagnostic and prescriptive purposes, with conflicting and disputable success. See the reviews in Pollock et al. (1983), Fishbein and Thatcher (1986) and Fishbein (1990).
 11. The Hinckley case and subsequent cases using brain scans are discussed in Denno (1988: 616–39).
 12. In fact, the implications of the Hinckley case are complicated because, as it was tried under US federal law, the prosecution had to prove beyond reasonable doubt that the defendant was *sane* at the time of the offence; in most individual states and other jurisdictions the defence must prove by the preponderance of evidence that the defendant is insane—a standard which would probably have led to a conviction for Hinckley.
 13. *People v. Weinstein*, 591 NYS.2d 715 (Sup. Ct. 1992). The court concluded that expert evidence and consideration of the results of a PET scan and other physiological tests—to indicate a cyst and metabolic imbalances

in the defendant's brain—was not unreasonable in making a diagnosis of insanity, but agreed to negotiate a reduced charge from murder to manslaughter, rather than going to trial. See Denno (1996: 253). In the trial of Michael Person, in New Haven, Connecticut, in early 1998, prosecutors contested the attempts of defence lawyers to present the jury with PET scans showing brain abnormalities, and the findings of Adrian Raine on the increased prevalence of abnormal brain scans in convicted murders in seeking to reduce the charge from murder to manslaughter. Raine's work is discussed later.

14. Brunner (1996) discusses the implications of his research in rather different terms, as we shall see later.
15. Other cases sometimes cited in support of the argument for genetic essentialism concern the effects of alcoholism on the free will of attorneys subject to disciplinary proceedings or disbarment. Nelkin (1992) supports their claim that genetic essentialism is on the rise by reference to two such cases in the late 1980s, in which Ewaniszyk, whose alcoholism led to embezzlement, was disbarred while Baker, whose conduct was similar but claimed a genetic predisposition was not. But the paradoxical status of 'alcoholism'—as both willed and unwilled, biological and voluntary—raises peculiar problems for the law: see the debate in the similar case of Kersey, 520 A. 2d 321 (D.C. App. 1987) and, more generally, Valverde (1998).
16. See, for example, the cases of Sean Sellars and Brent Ullery, reported by the Oklahoma Coalition to Abolish the Death penalty, available at <http://www.ocadp.org/>
17. For cases debating this issue, see *Lucas v. State*, 887 S. W.2d 315 (Tex. Crim. App. 1994), drawing on *Johnson v. Texas*, 125 L. Ed. 2d 290, 113 S. Ct. 2658 (1993) and *Penry v. Linaugh*, 492 U.S. 915 (1989).
18. This is an international phenomenon. In the UK, at the time of writing (March 1999) proposals are being debated for the detention of untreatable individuals thought to be predisposed to violence and to present a high risk to public safety. In Victoria, Australia, in April 1990, the *Community Protection Act* was passed in order to legitimate detention of one individual, Garry David, who was considered to be dangerous but did not fall under the ambit of either criminal or mental health law (Greig, 1997). In related quasi-psychiatric areas, notably 'paedophilia', issues of preventive detention are being discussed in many national contexts: it appears that the conventions of 'rule of law' must be waived for the protection of the community against a growing number of 'predators', who do not conform to either legalistic or psychiatric models of subjectivity (see Scheingold et al., 1994; Pratt, 1998; Simon, 1998).
19. Linus Pauling was an early enthusiast for the utopian possibilities of rational control of human capacities through molecular genetics as early as the 1950s (see Duster, 1990: 46). James Watson, Director of the Human Genome Initiative and Robert Sinsheimer of Caltech both provide quotable quotes illustrating the view that 'our fate is in our genes' (see Nelkin and

Lindee, 1995). For the racists, quotes are usually found from the late William Shockley, from the Pioneer Fund that has been associated with racist eugenics since its establishment in 1937, or from J. Phillippe Rushton, professor of psychology at the University of Western Ontario in Canada who has argued that behavioural differences among blacks, Asians and whites result from evolutionary variations in their reproductive strategies.

20. On the specific idea of 'therapeutic jurisprudence', which is one element within this more general strategy, see Carson (1995). In therapeutic jurisprudence, the law, and the criminal justice system more generally, are to be used in order to produce a therapeutic effect upon the actual or potential offender, where that therapeutic effect is largely understood in terms of a reintegration of the individual into the moral and behavioural norms of their community.
21. As Piers Beirne has pointed out, this was argued by Charles Goring as long ago as 1913 (Beirne, 1988).
22. NGRI = Not Guilty By Reason of Insanity. See, for example, the Person case cited earlier.
23. Gostin is discussing this in the context of the possibility of genetic discrimination by employers and insurers on the grounds of genetic predisposition to disease.
24. On 'world making by kind making', see Hacking (1992).
25. This strategy is not identical to the actuarial form of risk management suggested by Malcolm Feeley and Jonathon Simon (1992): the calculation of riskiness may be factorial, and may occasionally operate in terms of the search for particular sub-groups of the population where factors associated with high risk are concentrated, but the aim is still to identify and neutralize specific risky individuals.
26. To that extent, these Initiatives are entirely compatible with the new forms of communitarianism that are on the rise on the US and UK: see my discussion in Nikolas Rose (1999). I am grateful to David Wasserman for comments that clarified this point for me.
27. This programme followed up on the earlier research and the recommendations of the 1994 panel on NIMH Research on Anti-social, Aggressive, and Violence Related Behaviours and their Consequences. In view of the accusations of racism and sexism that were levelled at the earlier research programme, it is significant that it recommends that advisory committees for research projects contain community representatives, and that 'special attention should be directed towards the unique needs and special concerns of racial and ethnic minority group members, so that services and opportunities are appropriate and acceptable to these individuals'.
28. There is a growing literature on these issues. See in particular Castel (1981); Pratt (1995); Ericson and Haggerty (1997); and O'Malley (1998). I discuss these themes in relation to psychiatry in Nikolas Rose (1998). Of course one should avoid suggesting a misleading coherence—as Garland (1996) and O'Malley (1999) have pointed out, crime control tactics are

heterogeneous, mutually contradictory and fluctuate rapidly according to local political agendas. In particular, the risk prevention strategies that I have mentioned, which entail adjusting the punishment to the criminal, are accompanied by an apparently contradictory move towards determinate sentencing, where punishment is calculated solely in response to the nature of the offence.

29. To discuss the impact of the recent rise of evolutionary paradigms in psychology and sociology would require a separate article.
30. The research by Maija Runcis, was publicized by articles in the leading Swedish newspaper *Dagens Nyheter* in August 1997 and widely reported in the English-language newspapers (e.g. *The Guardian*, 6 March 1999: 15). It appears that most of the sterilization was involuntary or coerced.
31. Lippman (1991) has suggested that the practice of screening embodies a normativity about the desired child that may encourage women to abort those foetuses that geneticists and obstetricians deem unfit. But, as Paul (1994: 79) shows, the argument that there is a danger of wide-scale selective abortion of 'imperfect' foetuses is not compelling. Paul provides an excellent discussion of the similarities and differences between eugenics and contemporary human genetics (1998).
32. On genetic risk and the issues of discrimination raised by genetic screening in employment and insurance, although with reference to disease rather than to crime or behavioural disorder, see Gostin (1991).

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