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GENETICALLY-INFLUENCED ANTISOCIAL CONDUCT AND THE CRIMINAL JUSTICE SYSTEM

LAWRENCE E. TAYLOR*

[I]f, in the course of further development in genetic science and technology, the law—either judicial decision making or the legislative process—is invoked, it will very likely reflect contemporary mores. What concerns some people, myself included, is the good possibility that because the rate of discovery of new scientific knowledge exceeds the rate of adaptability of this knowledge on the part of our social and legal institutions, we are today running the risk that, as with nuclear fission, we shall have the knowledge of the means of radically changing the traditional nature of man or his institutions without a concomitant development of our social sciences and of our competence to control the use of this new knowledge for humane purposes.¹

I. INTRODUCTION

IN THE LATTER PART OF THE NINETEENTH CENTURY, the Italian physician Cesare Lombroso developed a theory that a “criminal type” could be identified by such physical characteristics as excessive hair, long earlobes, large jaw and slanting forehead.² These characteristics indicated a biological reversion in the individual to primitive stages of human evolution, and were attended by primitive levels of response to the environment. Thus, according to Lombroso’s theory, such an inferior “throwback” would have a biological predisposition to commit criminal acts.

A half-century later, in the late 1930’s, the American anthropologist E.A. Hooton conducted extensive studies involving 14,000 men incarcerated in state prisons.³ After taking numerous measurements and comparing them to those he had taken of 3,000 men without criminal records, he also concluded that the primary cause of crime was “biological inferiority.”

Today, of course, such attitudes of absolute genetic determinism have been widely rejected and even ridiculed by both the scientific and legal communities.⁴ The reaction in recent years to such attitudes toward genetic determination and the undemocratic concept of biological in-

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¹ Krever, *Some Legal Implications of Advances in Human Genetics*, 17 CAN. J. GENET. CYTOL. 283 (1975).

² G. LOMBROSO-FERRERO, *CRIMINAL MAN ACCORDING TO THE CLASSIFICATION OF CESARE LOMBROSO* (1911).

³ E. HOOTON, *THE AMERICAN CRIMINAL: AN ANTHROPOLOGICAL STUDY* (1939).

⁴ See, e.g., H. BARNES & N. TEETER, *NEW HORIZONS IN CRIMINOLOGY* (3d ed. 1959).

feriority—with the inevitably attendant shadow of racism always present—has caused a violent and anti-biological bias among both scientists and those in the criminal justice system. Partly because of the obvious excesses of Lombroso, Hooton and others, medical and social scientists have swung to the other extreme of the spectrum, almost universally adopting a strict environmental theory of crime: Criminal conduct is purely the result of the totality of social factors operating on an individual from early childhood on into the adult stages. The prevalent contemporary view among scientists, criminologists, politicians and members of the legal community is that criminal conduct has little or no basis in biology, but is almost exclusively the result of environmental factors; the criminal is simply the product of his society. As a noted commentator expressed the prevailing view, “[t]here is not the slightest evidence to believe that anyone ever inherits a tendency to commit criminal acts; crime is a social condition, not a biological condition.”⁵

Relatively recent developments in the field of genetics, however, are beginning to indicate that this all-or-nothing attitude may be incorrect; behavior may be the result of a roughly equal combination of heredity and environment. Extensive empirical studies of identical twins separated at birth and raised under diverse conditions, for example, reveal startlingly parallel behavioral patterns in later life, to the point of such remote characteristics as having identical tastes in clothing and cars, identical political views, and even giving their children identical names.

Perhaps the most interesting genetically-oriented studies involve the so-called “XYY syndrome,” wherein chromosomal aberrations have been theorized as effecting behavioral patterns to the point of contributing to, or even determining, criminal conduct. The XYY studies test for variations in the number and/or sexual characteristics of the chromosomes. Every person normally carries forty-six chromosomes in every cell of his body, arranged in twenty-three pairs. Of these twenty-three pairs, twenty-two are “autosomes,” or genes, which contain most of the individual’s biological characteristics (*e.g.*, color of hair, height, nose shape, etc.). The remaining pair of genes are “gonosomes” which determine such remaining traits as primary sexual characteristics. In women, these paired sex chromosomes are called “X” chromosomes; in men, the gonosomes are represented by one of the X chromosomes paired with a much smaller “Y” chromosome. These are referred to by geneticists as the XX and the XY gonosomes respectively, and their presence in a fetus determines, among other things, whether the child will be a male or a female.

⁵ Ashley-Montague, *A Biologist Looks at Crime*, 217 ANNALS 46 (1941).

⁶ P. MOODY, GENETICS OF MAN (1967).

On a rare occasion, however, the process of fertilization by the male sperm of the female ovum misfunctions and a fetus is created which contains chromosomal abnormalities. If an extra twenty-first chromosome is present, for example, a mental and physical defect known as Down's Syndrome (Mongolism) results. Similarly, if the gonosomes or "sex chromosomes" are altered in number or in their characteristics, certain fairly predictable results will take place. Thus, where an extra "X" chromosome is added to a female XX pair, the result is the XXX or so-called "super female" syndrome; such women will appear physically normal, but will be mentally retarded.

The studies relevant to this discussion involve aberrations in the male XY gonosomes. These abnormalities can occur in a number of ways. If an extra X chromosome occurs, an XXY male is created; this has been dubbed the Klinefelter Syndrome. Such an individual will be mildly retarded, have some breast enlargement and will be sterile. The Klinefelter Syndrome occurs approximately once in every 400 male births, and there are indications that besides the obvious defects there also may be present such antisocial behavioral patterns as alcoholism and homosexuality.⁷

Similarly, if the male gonosomes receive an additional Y chromosome (i.e., an extra "male" chromosome) the XYY or so-called "super male" is created. Such individuals apparently tend to be much taller than average, and often have an acne condition of the skin. Statistically, it is believed that a "super male" occurs approximately once in every 1000 male births.⁸ Recent studies seem to indicate that such individuals tend to be more aggressive than most, and an unusually high percentage of criminal conduct has been observed. Perhaps the most well-known modern carrier of the XYY deviation was Richard Speck, convicted of murdering eight nurses in Chicago in 1966.⁹

Just exactly how often antisocial conduct occurs in the XYY male has been the subject of numerous genetic studies. These studies and their conclusions have stirred up more than a little controversy and heated debate among physical and social scientists. If there is a correlation between the XYY defect and criminal conduct then the prevailing theories of environmentalism are wrong, and antisocial conduct may be genetically determined or at least influenced. If that is true, entire premises which lay at the foundation of the criminal justice system may be faulty.

The "super male" phenomenon was apparently first reported, and the controversy first arose, in Scotland in 1966. Scientists there conducted a study of all 342 inmates at the maximum security state hospital at

⁷ Brown, *Sex Chromosomes and the Law*, 2 LANCET 508 (1962).

⁸ Brown, *Chromosomes and Crime*, 40 NEW SCIENTIST 235 (Oct. 1968).

⁹ Telfer, *Are Some Criminals Born That Way?*, 34 THINK 24, 26 (Nov.-Dec. 1968) [hereinafter cited as Telfer].

Carstairs.¹⁰ Of these 342 inmates, 249 had been committed by the court system; all but ten of the 342 had criminal records involving violent conduct. Assuming the XYY incidence rate of .1% (1 in 1,000), the researchers could expect to find none or possible one in the entire inmate population. Instead, they found nine carriers of the XYY defect—an incidence rate of approximately 3%, or thirty times what could statistically be expected.

In the following year, another group of researchers conducted a study of similar maximum security institutions at Rampton and Moss Side in England.¹¹ In this study of mentally subnormal men, detained because of antisocial behavior, only inmates over six feet tall were "karyotyped" or checked for genetic aberration. Fifty such men were found. Amazingly, twelve of these men were discovered to be so-called "super males"—an incidence rate of 24%, or 240 times greater than would statistically be expected.

The next significant study took place in 1968 in the United States.¹² Again, scientists studied inmates at four criminal institutions, this time karyotyping only those males over five feet, eleven inches in height. The results continued to indicate that an unusually high proportion of such individuals had histories of violent behavior. At one of the institutions, a mental hospital for the criminally insane, four of the fifty inmates examined had the XYY deviation (Klinefelter Syndrome), and two had the XYY ("super male")—an overall incidence of one in eight.

In the same year, researchers in Australia conducted a study of thirty-four inmates at a Melbourne prison.¹³ Four of these persons were found to be XYY deviants, giving an incidence rate approximately 125 times what would normally be expected. Interestingly, of the four deviants, one was a convicted murderer, one had been charged with murder but found unfit to enter a plea, one was convicted of attempted murder, and only the fourth—a thief—had been convicted of an offense not involving at least the attempt to commit murder.

Scientists in Denmark were the next to test this strange phenomenon.¹⁴ Researchers there karyotyped inmates over 180 centimeters (approximately five feet, eleven inches) in height at a state hospital over a period of one-and-a-half years. Of twenty-three inmates who were studied, three were discovered to be carrying the XYY deviation, representing an incidence rate of 13% for men over 180 cen-

¹⁰ Jacobs, *Aggressive Behavior, Mental Subnormality and the XYY Male*, 208 NATURE 1351 (1965).

¹¹ Casy, *YY Chromosomes and Antisocial Behavior*, 2 LANCET 859 (1966).

¹² Telfer, *Incidence of Gross Chromosomal Errors Among Tall Criminal American Males*, 159 SCIENCE 1249 (1968).

¹³ Wiener, *XYY Males in a Melbourne Prison*, 1 LANCET 150 (1968).

¹⁴ Neilson, *The XYY Syndrome in a Mental Hospital*, 8 BRIT. J. CRIMINOLOGY 186 (1970).

timeters and of .25% of the entire population of the hospital surveyed during the year-and-a-half (1180 patients); even the .25% figure is two-and-a-half times higher than should be expected. Of the three XYY men, all had criminal records and all displayed aggressive character traits. Interestingly, none of the three had any history of criminality in their families; all had been raised in normal households.

In 1970, scientists in Australia conducted a karyotypic survey of inmates at a maximum security ward for mentally ill males.¹⁵ Of fifty-five in the ward, three had gonosomal aberrations—again indicating an incidence rate vastly higher than should occur by chance alone. Likewise, in 1977, researchers surveyed eighteen hospitals for the mentally handicapped in England for chromosomal aberration.¹⁶ They found that the highest incidence (1.3%) was found in the hospital which had the highest proportion of patients with behavioral disorders. After studying the XYY men, the English researchers concluded that these men were considered the “black sheep” of their families relatively early in their lives, that they showed little forethought, acted impulsively and exhibited a marked tendency to engage in “abnormal or unusual” behavior beginning in the teenage years or earlier.

Additional studies have been conducted, some reenforcing the mentioned findings, others—predominantly American—tending to discount the phenomenon or interpret the results in nonhereditary terms. Can the findings be explained in a way acceptable to the environmentalist? This was attempted in the original study of the Scottish inmates (the so-called “Carstairs study”). Batteries of psychological tests were given the XYY aberrants, but surprisingly there appeared to be no significant differences between that group and a control group of randomly selected inmates. No significant physical differences were noted, other than the obvious high incidence of height among XYY males. A number of findings, however, tended to directly refute the environmentalists’ argument that family or social factors were the basis for the antisocial conduct of the XYY aberrants. First, unlike the general institutional population, the XYY inmates were found to have no significant family history of mental illness or crime; of nine XYY subjects investigated, only one had an immediate family member who had been convicted, and that member had been convicted only once. By contrast, of eighteen control subjects at Carstairs, there were 139 convictions recorded in the immediate families. Second, the XYY inmates had histories of crime much earlier in their lives than did the control group. Three of the nine XYY men had been convicted before reaching ten years of age, and the

¹⁵ Sutherland & Bartholomew, *Chromosome Survey in a Security Ward: Total Ascertainment*, 3 AUST. & N.Z. J. CRIMINOLOGY 99 (1970).

¹⁶ Hunter, *XYY Males: Some Clinical and Psychiatric Aspects Deriving from a Survey of 1811 Males in Hospitals for the Mentally Handicapped*, 131 BRIT. J. PSYCHIATRY 468 (1977).

group's mean age for the first conviction was 13.1. None of the randomly selected control group had been convicted before ten years of age, and their mean age for first conviction was eighteen. Third, it appeared from comparative studies that the XYY inmates were considerably more resistant to rehabilitation than were other inmates.

The inference of these studies are, of course, disturbing. That there appears to be a genetic "type" which is inherently disposed to criminal conduct appears to be a distinct possibility. In 1964, before the XYY studies, the well-known and controversial English psychologist H.J. Eysenck had gone so far as to argue that Lombroso was not wrong after all, and that there may be individuals who are truly "born criminals" due to the existence of a gene, chromosome, or other structure causing physiological or neurological differences between the criminal and non-criminal individual.¹⁷ Later, after conducting her own studies, Dr. Mary Telfer of the Elwyn Institute in Philadelphia concluded that the results were sufficiently definite to define an "XYY syndrome," with the symptoms described as "extremely tall stature, long limbs, with strikingly long arm span, facial acne, mild mental retardation, severe mental illness (including psychosis) and aggressive, antisocial behavior involving a long history of arrests, frequently beginning at an early age."¹⁸

The arguments between the geneticists and the sociologists will continue. It does appear that there is strong and continually emerging evidence that genetic factors are at least influential in determining an individual's conduct throughout his life. As science is able to dig even deeper into the mysterious mini-universe of DNA, further disturbing discoveries as to genetically-influenced behavior will inevitably emerge.

It would appear that the results of continuing genetic research are increasingly pointing to a disturbing conclusion: Much of our conduct is determined to varying degrees by genetic factors. Much to the delight of the philosophical "determinists," our lives are programmed to a considerable extent long before we are even brought into this world. As unsettling as these scientific discoveries are, however, the issues posed to our system of criminal justice are even more ominous. Once the concept of genetic determination is accepted and applied to antisocial conduct, a number of questions present themselves to our system of criminal justice for resolution—questions which cannot be ignored. First, how should society deal with the offender whose crime was at least genetically influenced? Second, what steps can or should society take to protect itself from genetically identifiable *potential* offenders?

II. GENETICS AS A NEW DEFENSE

Assuming future acceptance by the legal system of the concept that

¹⁷ See H.J. EYSENCK, *CRIME AND PERSONALITY* (1964).

¹⁸ Telfer, *supra* note 9, at 24.

antisocial conduct in certain individuals is at least strongly influenced by genetic considerations, the question remains of how to deal with the phenomenon. This question involves two further issues: Whether genetic "aberration" is to be considered in mitigation of, or a defense to, a criminal charge, and what type of punishment, if any, should be administered.

Addressing first the issue of genetic aberration as a complete defense, the clearest application is to the defense of insanity. Society has decided that no individual should be held accountable for acts performed by him when he is mentally incapacitated. The application of the concept of genetic defect to that of legal insanity, however, would appear to depend upon the standard of insanity employed. The one applied in some form today by the majority of jurisdictions is the *M'Naghten* rule:

[T]o establish a defense on the ground of insanity, it must be clearly proved that, at the time of the committing of the act, the party accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing; or, if he did know it, that he did not know he was doing what was wrong.¹⁹

The word "disease" has been widely interpreted to include congenital defects,²⁰ and can thus be applied to such genetic abnormalities as the XYY syndrome.

A second standard which has been recognized by a number of jurisdictions is that of the Model Penal Code, also known as the "substantial capacity" rule:

A person is not responsible for criminal conduct if at the time of such conduct as a result of mental disease or defect he lacks substantial capacity either to appreciate the criminality (wrongfulness) of his conduct or to conform his conduct to the requirements of law.²¹

The third standard is the Durham, or "product" rule, which states "simply that an accused is not criminally responsible if his unlawful act was the product of mental disease or mental defect."²²

The *M'Naghten* test clearly takes the position that insanity is a cognitive rather than a behavioral disorder. The concern of the criminal justice system is not with the defendant's ability to control his conduct, but rather with his ability to appreciate its significance. Since having a genetic aberration such as XYY syndrome does not seem to affect the ability to appreciate the "nature and quality" of criminal conduct, or to

¹⁹ *M'Naghten's Case*, 10 Clark & F. 200, 210, 8 Eng. Rep. 718, 722 (1843).

²⁰ R. PERKINS, CRIMINAL LAW 859 (2d ed. 1969).

²¹ MODEL PENAL CODE § 4.01 (Proposed Official Draft 1962).

²² *Durham v. United States*, 214 F.2d 862, 874-75 (D.C. Cir. 1954).

understand whether the conduct is right or wrong, it would appear that the possession of an extra Y chromosome would constitute no ground for an insanity defense.

The defense, however, could at least arguably be available under other legal definitions of insanity. Applying the Model Penal Code, a genetic deviant would satisfy the description of an accused who "lacks substantial capacity . . . to conform his conduct to the requirements of law." This is similar to the "irresistible impulse" test, which is usually defined as an impulse which the individual is unable to resist due to mental disease or defect. Under either test, the person carrying a defective gene which can be shown to strongly inhibit his capacity to control his antisocial acts would seem to have a complete defense.

Similarly, a genetic aberrant could be found legally "insane" by using the *Durham* rule. Applying that standard, scientific evidence could be produced to indicate that the genetically-influenced defendant's criminal conduct was "the product of . . . mental defect."

Of course, much time can be spent in argument over the exact interpretation of each of these standards and their relative merits. For the purposes of this discussion, it can readily be recognized that society's position can be viewed as a willingness to exculpate an individual for his antisocial conduct where, as a result of mental defect, he could not understand the nature of his acts or of their wrongfulness, or understanding them, could still not control himself. In other words, we are unwilling to punish a person for conduct which was largely the result of a defect over which the person has little or no control.

The parallel is clear, and the policy behind the insanity defense would seem to apply with equal validity to genetic aberration. Mental aberration caused by congenital defects is universally recognized to be within the scope of the insanity defense. Is it a great step to include genetic aberration within the scope assuming that such aberration resulted in the individual being unable to appreciate the wrongfulness of his acts or to conform his conduct to avoid that wrongfulness? In fact, is it *any* step at all? Do we even need to create another category of "genetic determination" to rest alongside insanity as a complete defense? The causes and effects of such genetic aberrations fit well within the definitions given for insanity. The following variation of the Model Penal Code would encompass both the genetic aberrant's conduct and the insanity standard: A person is not responsible for criminal conduct if as a result of genetic defect he lacks substantial capacity either to appreciate the criminality (wrongfulness) of his conduct or to conform his conduct to the requirements of the law.

Again, in assessing the suitability of an insanity-type defense to a genetically-influenced crime, the reasons behind society providing that defense must be analyzed and measured to fit. Quite simply, a policy decision has been made that no individual should suffer for conduct that is the result of a severe defect in reason or will. Assuming scientific

evidence that aberrations in genetic structure can cause such a defect in an individual's ability to perceive or control himself, it appears that the very same policy considerations apply.

III. GENETICS AS MITIGATION

An alternative method of dealing with criminal conduct determined or influenced by genetic factors is to consider such matters in mitigation of the offense charged or proven. Most jurisdictions today recognize some variation of the concept of "diminished capacity" or, as it is sometimes known, "partial insanity." In those jurisdictions the law requires that there be a mental disorder of such a nature as to lessen the degree of guilt without altogether establishing innocence for mitigation to be considered. The usual example is homicide, in which the existence of such a mental disorder can negate elements necessary to establish the offense of murder in the first or second degrees. If, for example, the mentally disordered individual is deemed unable to formulate willfulness, deliberation or premeditation, the offense of first-degree murder will be reduced to second-degree. If such an individual is not capable of freely formulating malice, the charge may be reduced to voluntary manslaughter.

There is no reason why this approach could not be applied to the genetic aberration case. The reasoning behind the "diminished capacity" doctrine is simply an awareness that mental disease or defect is not an all-or-nothing proposition. There is no clear separation between those who are deemed not criminally responsible due to mental defect and those whose defects are not quite sufficient to avoid responsibility. In other words, there is a recognition that an individual may not be completely incapacitated by his mental problem, yet still may suffer an impairment sufficient to warrant some limitation on accountability. For this individual, society may decide to adopt a doctrine of partial responsibility. This would constitute a compromise representing discomfort with the notion of complete exoneration, yet would also evince a realization that mental impairment should somehow lessen the harshness of punishment.

For those who are uncomfortable with the idea of effectively granting a license to commit crimes to those who have genetic aberrations, the diminished capacity approach is desirable. Science may not be able to say for some time, if ever, that a given criminal act was actually *determined* by the individual's genetic structure rather than merely *influenced* by it, and if influenced, to what *degree* the conduct was influenced by "genetic disposition." Again, we find ourselves getting into the uncomfortable gray areas of mental defect that have caused many courts and legislatures to embrace the diminished capacity compromise.

Somewhat related to the question of mitigation of degree is that of whether an individual has the ability to form a requisite specific intent. To summarize briefly, our law requires of certain criminal offenses that

a specific intent be shown before criminal liability attaches. Thus, for example, the crime of burglary generally requires proof not just that the defendant entered a structure without permission, but that he did so with the specific intention of stealing something or committing a felony once within that structure. An individual may be in such a mental condition that he is capable of knowingly entering the structure, yet is incapable of forming the plan or intent of stealing, burning, etc., necessary to establish the *corpus* of burglary. It is similarly arguable that a genetic deviant may be capable of controlling his decision to enter a building without permission, but be incapable of controlling a continuing urge to set fire to that building once inside. In such a case, evidence of the accused's genetic structure should be relevant to the question of whether he was guilty of burglary (entry with intent to commit arson) or of mere trespass.

IV. PUNISHMENT OF THE GENETIC ABERRANT

To a certain degree, word games are played in discussing what type of crime is involved and in what degree. These games are important only in that they lead to a given punishment or range of punishments. What then does the criminal justice system do with an individual who has been convicted of an offense and who has a genetic impairment?

In answering this, an initial analysis of the primary theories behind punishment is necessary. It is generally recognized that there are four purposes for punishing someone who has committed an antisocial act. The first of these is simply retribution or revenge, based upon the ancient concept of "an eye for an eye." While there is perhaps some value to granting the victim of the antisocial conduct a degree of satisfaction in seeing the offender punished, there are very few legal scholars or penal experts who would accept revenge as a valid consideration in determining the punishment to be meted out. In any event, to apply the revenge theory to the genetic aberrant makes little sense. Why exact retribution from a man because of his birth defect?

The second recognized basis for punishment is deterrence. Under this theory we punish an offender not so much for the effect it has on him as for the effect it will have upon others. Nothing can be done to correct the harm that has been done by this person, but we can set an example by punishing him and thus inhibit others from committing similar acts. While this is generally a valid theory, the flaw when applied to the genetic deviant is obvious: How does one deter an individual who has little or no control over his conduct? If an individual commits an antisocial act because of a complex interplay of biological factors beyond his understanding or control, how would the threat of punishment have any effect? Once we accept scientific evidence that conduct can be determined or at least strongly influenced by a person's genetic "programming," deterrence as a factor in punishment ceases to exist. Of course, the *extent* to which an individual's conduct is influenced may well be relevant

to the question of deterrence assuming such extent can ever be scientifically or medically determined.

The third premise of punishment is rehabilitation, which is currently the most fashionable among penal experts and sociologists. This theory takes the approach that the offender should not be punished *per se*, or at least that punishment should not be the primary objective in dealing with the criminal offender. Rather, both society and the offender will receive greater benefit if he is rehabilitated through counseling or education into a more productive and cooperative member of society. While this is a commendable goal, its application to the individual carrying abnormal genes is probably pointless. Assuming that a person convicted of a crime committed that crime because of genetic programming, how can he be rehabilitated? Rehabilitation proceeds on the assumption that conduct is environmentally caused, and that attitudes and behavior patterns which lead to criminal conduct can be modified. When the conduct is *biologically* caused, however, the theory behind rehabilitation fails. There is, of course, the possibility that rehabilitation can expand to include biological rehabilitation. Science may some day learn to alter genetic structure or body chemistry in a manner sufficient to neutralize a person's congenital genetic defects. However, this opens whole new worlds—dark worlds—reminiscent of involuntary sterilization, prefrontal lobotomies and electrical and chemical shock therapy.

The fourth and final reason behind punishment is simply one of isolation. The primary concern here is not for the offender, but rather for the protection of members of society by removal of the offender from that society either by imprisonment or by some other process such as deportation. Imprisoning or deporting an individual because of a birth defect goes against the grain of our sense of justice, and it would be difficult to justify such action. Yet, the interests of society in being safe from the future criminal acts of a genetically aberrant convicted offender must be weighed against that offender's rights and our sense of justice. Among the four penal theories, isolation may be the only realistic method of dealing with the genetic deviant.

What is done with individuals found not guilty by reason of insanity? They certainly are not returned to the streets to commit other anti-social acts. Rather, they are committed to mental institutions for treatment until they are cured. If they cannot be cured they may be institutionalized for the rest of their lives. While this type of commitment may realistically vary little from imprisonment in a penal institution, the process is easier on society's sense of justice. Assuming that the incurably insane will, in effect, be imprisoned for the rest of their lives because of a medical condition not their "fault," the interests of society in being safe from them outweighs the personal injustice.

Perhaps the foregoing is also true of the genetically impaired individual. If such a person has committed an antisocial act as a direct result of that impairment, it would prove fruitless to seek retribution against

him, attempt to rehabilitate him or offer him as a warning to other genetically impaired members of the community. However, society can protect itself by committing that individual to a facility should it appear likely that antisocial conduct will recur.

V. PROPHYLACTIC ISOLATION OF GENETIC ABERRANTS

It has been suggested by some medical authorities that science will someday enable us to analyze an individual's DNA or other genetic structure and predict with considerable accuracy the likelihood of violent or otherwise antisocial conduct in the future. We may, for example, be able to take a blood sample from a three-year-old child and, after analyzing it, determine that based upon extensive data from millions of other children, there is a 92% chance of that child growing up to become a habitual thief, a 78% chance that he will become a compulsive rapist, or a 61% chance that he will eventually take at least one human life violently and without justification. What then should society do to protect itself from this three-year-old child?

This is not quite so improbable as might be initially believed. Certainly, the trend of genetic research clearly points in that direction. Aided by computerization, our increasingly efficient information-gathering methods and statistical analysis, relatively accurate predictions of probable future criminal conduct seem not to be so farfetched.

Not so extreme is the idea of identifying and isolating individuals who statistically can be shown to be potential threats to society, regardless of the fact that those individuals never before committed an antisocial act. Consider, for example, a suggestion by Professor Hyman Gross of New York University's Law School and former Arthur Goodheart Professor of Legal Science at Cambridge:

[T]he possibility of a radically different system deserves consideration, for we might abandon much of criminal justice as we know it now and might instead adopt procedures designed to identify, sequester, and correct criminally dangerous persons. Just as the automotive industry calls back for correction models found to be defective and a danger on the road, we might require persons who have shown signs of being a threat to social safety to submit first to diagnostic examination and then to a regime of corrective therapy if the existence of dangerous tendencies is confirmed.

In such a system, rules of conduct in the law would be replaced by specifications of suspicious behavior indicating possible dangerous tendencies There would no longer be room for excuses and other claims to avoid blame that would leave dangerous persons at large simply because they could establish that under the circumstances it would be unjust to condemn them.²³

²³ H. GROSS, A THEORY OF CRIMINAL JUSTICE 41-42 (1979).

Professor Gross was not referring to genetic aberrations in this discussion, but rather to individuals who could be identified by other means. When compared to the potential certainty of genetic determination, these means appear relatively imprecise. The concept, however, is there: identification of probable criminals through the application of statistical analysis to observable data:

Though examination of personal traits will generally prove disappointing, there is other information that is much more promising as a way of predicting crime and making its prevention possible. Social statistics make it clear that often there is a heavy concentration of crime among the part of the population that can be identified by reference to such things as education, race, occupational history, sex, economic status, and age. If a target group is defined with sufficient statistical precision, an astoundingly high proportion of its members can be expected to commit crimes, and often just the types of crimes that concern other members of the community most urgently.²⁴

Of course, this all has the ominous ring of an Orwellian age and creates a dark discomfort within most individuals. Yet, the scientific data on genetics *will* be available in the near future. Once this data is available the criminal justice system will have to deal with the problems posed. The problem will not simply be how to deal with a defendant who committed an offense because of his genetic makeup, but will also be whether to seek out those with "dangerous" genes and forcefully isolate those individuals from society. It will be difficult to ignore the fact that society now has the ability to identify many of those who will kill, maim or rape. Faced with the prospect of saving innocent future victims, how heavily will the "rights" of a genetic aberrant weigh?

The social cost of such a decision would be great. As Professor Gross recognized concerning his own theory of preventive isolation/treatment,

[t]hough such a program for control of dangerous persons would be based on a rational assessment of dangerousness, it would shock the conscience of a society committed to egalitarian ideals and to rights of self-determination. Citizens would be deprived of their liberty because of their statistical misfortunes. And even though a person chooses, despite the disadvantages of his background and present circumstances, to live a life no less law-abiding than his statistically fortunate neighbor, under this program of crime control he would not be allowed the opportunities that normally attend such a choice.²⁵

Obviously, it is unjust to punish someone for being genetically different, just as it would be wrong to punish a person for being mentally

²⁴ *Id.* at 43.

²⁵ *Id.* at 43-44.

ill. But this is no answer, for we *do* "punish" the mentally ill. Furthermore we punish them long before they have committed any criminal acts. Our society has already weighed the countervailing considerations involved and determined that a person who is found to be dangerous because of a mental abnormality may be committed to an institution through noncriminal procedures. Most such cases in our society today involve persons who *have* committed antisocial or even dangerous acts, but the fact remains that we have already weighed the factors and made a collective decision that it is the dangerousness of the mental aberrant and not the existence of any criminality in his conduct that justifies taking away his freedom.

The concept has thus already been adopted; it only awaits application to the genetically impaired. The difficult decisions, however, do not end there. Once science has opened Pandora's box for the law, dilemmas abound. For example, just how far are we to go in identifying individuals with deviant genes? Certainly, science presently has the capability through the process of "karyotyping" for testing an individual and determining whether his genetic structure contains a flaw. Is everyone to submit to genetic testing, much as is now done in registering for the draft?

Obviously, there are difficult moral questions to be considered in facing such decisions. The Nuremburg Code, for example, specifically outlaws any genetic screening programs in the absence of the subject's informed consent. Yet what *is* ethical in this context? Ethics tend to be relative to the current needs of society:

It seems to us that the authority for ethical decisions comes from man himself, from his own choices, individually and in groups. The great numbers and heterogeneity of mankind make it likely that new possibilities will be tried out by some people, no matter now [sic] they stand with respect to civil, moral or sacred law. Submission to the test of public opinion and practice is sometimes a slow method of change. The touchstone of man's choices seems to be, "whether it is right and good for man?"²⁶

Of course, genetic screening as a concept is not new. Such procedures are currently used by the medical profession to detect carriers of such genetically-carried defects as Tay-Sachs disease and sickle cell anemia. Again, the concept itself has been embraced, only the application is in question.

Perhaps more serious problems than whether individuals should be genetically screened are posed when we try to decide *when* in an individual's life he or she is to be tested for genetic aberration. Should children be subjected to such tests? If a six-year-old child is found to

²⁶ Arnold & Moseley, *Ethical Issues Arising from Human Genetics*, 2 J. MEDICAL ETHICS 12 (1976).

carry a dangerous genetic characteristic, is he to be taken away immediately and committed? Or is the child to be permitted to stay with his parents until the age of, say, sixteen, always with the sword of Damocles hanging over the family's head? Do we go further back and test newborn babies, requiring by law that the infants not be permitted to live—much as is done in more primitive cultures with babies displaying such defects as Down's Syndrome or malformed limbs?

Will we go even further back and test the unborn fetus in every pregnancy? If the fetus is found to have "bad" genes, are we to require an abortion by law? Again, science has already thoughtfully provided us with the process of "amniocentesis" with which to perform this odious task. Of course, yet another balancing of the relative interests of society and the individual must be conducted. Amniocentesis involves a very definite risk to the embryo, and in the process of attempting to detect a defective embryo a perfectly normal one may be damaged or even killed. Or will we go all the way back—and order sterilization of all persons genetically capable of transmitting aberrant genes to offspring?

VI. CONCLUSION

The trend of current genetic research is clear. Assuming the legal system is eventually presented with the scientific capability of "reading" DNA and the statistical ability of predicting with substantial accuracy the probable future consequences of aberrant genetic structure, some very difficult questions will be posed. How should the criminal justice system deal with a criminal offender whose conduct was caused by a genetic aberration? Does society have the right to seek out such individuals before they cause harm and remove them from the community?

As always, it will be up to our legal system to attempt to integrate advances made possible by science at the least cost to human liberty. Society will simply not ignore the reality of being able to predict and thereby prevent harm to its innocent members. The decisions cannot, therefore, be avoided in the long run.

