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THE GENETICALLY DEFECTIVE OFFENDER

DAVID SKEEN†

The criminal defendant who suffers from an XYY, XXY, or XXYY chromosome abnormality seldom has been successful in asserting the defenses of insanity or diminished responsibility. Mr. Skeen convincingly argues that the lack of success is attributable to past inadequate medical knowledge, inadequate trial preparation, or using the evidence to prove the characteristic of aggression rather than retardation. Mr. Skeen provides a thorough analysis of the research on these genetic abnormalities, a history of the insanity defense, a review of the cases involving genetically defective offenders, and an analysis of the tactical strengths and weaknesses of using evidence of genetic abnormality. As a result, this Article is a practical primer for the successful use of genetic abnormality evidence to gain acquittal or a reduced sentence for the afflicted defendant.

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Ever since our ancestral common law emerged out of the darkness of its early barbaric days, it has been a postulate of Western civilization that the taking of life by the hand of an insane person is not murder. But the nature and operation of the mind are so elusive to the grasp of the understanding that the basis for formu-

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lating standards of criminal responsibility and the means for determining whether those standards are satisfied in a particular case have greatly troubled law and medicine for more than a century.

Frankfurter, Felix, in *United States ex rel Smith v. Baldi*, 344 U.S. 561, 570 (1953) (dissenting opinion).

I. INTRODUCTION

There is no legal proceeding in our society which generates more excitement and interest than the insanity trial. Unfortunately, the stimulation provided is rarely accompanied by any real humanistic accomplishment.

The legal rules which guide the psychiatrist and the court in assessing the criminal responsibility of the defendant were created to find means of relating the complex field of mental illness to the philosophical concept of legal responsibility. There is a legal presumption that in each case mental illness is definable; however, psychiatrists themselves differ regarding the causes of mental illness and often have great difficulty in relating medical opinions to legal definitions.

Insanity tests have been developed over a span of centuries through the evolution of English and American law. These tests were formulated to distinguish between the sane criminal seeking to avoid criminal responsibility for his unlawful actions, and the mentally incompetent defendant whose understanding of right and wrong was so impaired that he should not be held legally responsible for his conduct.

This Article will examine a specific area of interface between mental illness and criminality: the potential use of genetics in the insanity defense. Specifically, I address whether a criminal defendant, who is involuntarily rendered retarded or mentally deficient from the effects of a genetic abnormality, can effectively assert a defense based on traditional insanity tests or alternatively use a defense of diminished capacity.

II. GENETICS

One of the most intriguing aspects involving the study of genetic abnormalities has been their alleged connection with criminal behavior.¹ Since 1961, the development of knowledge gained from

1. For a general discussion of genetics relative to the issues discussed in this paper, see G. VALENTINE, *THE CHROMOSOME DISORDERS: AN INTRODUCTION FOR CLINICIANS*

research on the genetically abnormal XYY male has passed through two distinct phases and is now in its third phase.² The discovery of a XYY case in 1961 initiated the first phase. This phase was characterized by the discovery of other cases where the XYY condition was ascertained from the examination of males with some physical abnormality, often in conjunction with a degree of mental retardation.³

The second phase began in 1965 with a classic study in a special security institution.⁴ This study identified a high percentage of XYY males among the institution population as compared to the percentage of such males in the general population.⁵ This was the first indication of a possible explanation for the criminal behavior of these individuals, for if their numbers in the security institution

3-7, 34-39 (3rd ed. 1975); Montague, *Chromosomes and Crime*, Psychology Today, Oct. 1968, at 42, 46-47; and generally W. KEETON, BIOLOGICAL SCIENCE (3rd ed. 1980) for a discussion of genetic definitions.

The basic structure of the human body is the cell. Contained within each cell are chromosomes. Each chromosome is a long strand of deoxyribonucleic acid (DNA) and contains the genetic blueprint of the entire body. In each human cell there are 46 chromosomes divided into 23 pairs. Of these pairs, 22 are identical and are concerned with bodily functions common in both males and females. These are called autosomal chromosomes or autosomes. The remaining pair of chromosomes, the sex chromosomes, are different in male and female. The normal male has an XY sex chromosome constitution, while a normal female has an XX chromosome constitution.

For the conception of a new human with 46 chromosomes, the number of chromosomes in the sperm and ovum must be halved. This reduction or division is meiosis. Unfortunately, not all individuals possess a normal sex chromosome constitution and some may possess extra Y or X chromosomes. Although this phenomenon is not completely understood, we know that during meiosis the sex chromosomes occasionally fail to divide properly and a condition called nondisjunction results.

There are two divisions during meiosis. If nondisjunction occurs during the first division, this leads to two kinds of sperm cells: those with both X and Y chromosomes (XY) and those with no sex chromosomes (OO). If an XY sperm fertilizes a normal (X) female ovum, an XXY individual will result. If nondisjunction occurs during the second division, three types of sperm are produced: XX, YY and those containing no sex chromosomes. Offspring resulting from fertilization with a normal female ovum will be, respectively: XXX, XYY and XO.

An XYY individual could also be produced if the sex chromosomes fail to separate normally in the early stages of cell division (mitosis) of a normal, fertilized XY ovum. Individuals with such a failure may also be more likely to have a condition called mosaicism, which refers to the existence of a different number of sex chromosomes in different tissues or parts of the body.

2. Brown, *Males With an XYY Sex Chromosome Complement*, 5 J. MED. GENETICS 341 (1968).

3. *Id.*

4. Jacobs, Brunton, Melville, Brittain & McClellmont, *Aggressive Behavior, Mental Subnormality and the XYY Male*, 208 NATURE 1351 (1965) [hereinafter cited as Jacobs, *Aggressive Behavior*].

5. *Id.*

were greater than the percentage of such individuals in the general population, it seemed plausible to assume the extra Y chromosome might be responsible.

Although the characteristics of this abnormality were identified, the study could not positively link the increased frequency of the XYY males in the security institution to aggressive behavior, mental deficiency, or a combination of these factors.⁶ Another study that examined tall men at three English security hospitals confirmed the results of the first study. There were unusually high numbers of XYY males in English maximum security hospitals.⁷ A third study produced evidence which strongly supported the theory that the behavioral disturbances of XYY males were primarily determined by their genetic abnormality.⁸

By 1967, the early studies had provided sufficient information about the XYY male to allow more sophisticated studies to be pursued. In the present third phase, the XYY male and other forms of genetic abnormality (XXY and XXYY males) are being studied in great depth.⁹

Although this paper is concentrating on the area of mental retardation resulting from a genetic abnormality, it is appropriate to briefly discuss the previously mentioned connection between aggression and genetic abnormality. It has been hypothesized that a positive link exists between antisocial behavior, aggression, and a genetic abnormality in certain males. A review of the literature does not reveal a sufficiently complete basis for agreeing or disagreeing with this hypothesis. Studies differ with respect to whether genetically abnormal males are more or less violent or antisocial than genetically normal males.

A follow-up study of the 1961 English security institution report

6. *Id.* at 1351-52. The research team reviewed previous studies which led to the inquiry of whether an extra Y chromosome predisposes its carriers to unusually aggressive behavior. The study reported findings in a survey of mentally subnormal male patients with dangerous, violent, or criminal propensities. Tests were conducted on 197 subjects. Twelve had a chromosome abnormality; seven had 47 chromosomes and an XYY sex chromosome constitution, one had 48 chromosomes and an XXYY chromosome constitution, and one was an XY/XXY mosaic. The remaining three had structural abnormalities. The most important findings were that eight subjects had an extra Y chromosome, representing 3-5% of the subject population. This represented a marked increase in frequency by comparison with the frequency of XYY males at birth in the general population. The study noted the XYY males were unusually tall, with a mean height of 73 inches.

7. Brown, *supra* note 2, at 341-42.

8. *Id.* at 342.

9. *Id.*

attempted to clarify the early findings. The second study found that although most XYY males had previously been aggressive and violent, the crimes committed by the XYY individuals were not different from those of other patients at the institution.¹⁰

Another study at the same institution one year later determined that the XYY male committed fewer violent crimes; their disturbed behavior showed itself at an earlier age than genetically normal XY males; and the incidence of crime among siblings in the families of the XYY males was significantly less than in those of the genetically normal XY control group.¹¹

In 1976, a review by the president of the American Society of Human Genetics of previous research studies concluded that "data are now available which indicate psychological differences between young noninstitutionalized adult XYY males when compared to XY controls. These differences indicated that XYY males were less able to control the normal male aggressive drive in frustrating or provocative situations and were more impulsive and immature than XY controls."¹²

A study on the relationship between genetic abnormality in males and aggression also published in 1976, however, concluded

10. Price, Strong, Whatmore & McClemon, *Criminal Patients with XYY Sex-Chromosome Complement*, 1 LANCET 565 (1966) [hereinafter cited as Price, et al., *Criminal Patients*]. The study reported the clinical findings of the seven inmates identified with the XYY chromosome constitution in Jacobs, *Aggressive Behavior*, *supra* note 4, and for two other inmates subsequently identified at the same institution. Of the nine XYY males, eight were classified as high grade mental defectives or below average in intelligence, and one had schizophrenia. All had criminal records. None had abnormal physical features, but six of the nine were over six feet in height.

11. Price & Whatmore, *Behaviour Disorders and Pattern of Crime Among XYY Males Identified at a Maximum Security Hospital*, 1 BRIT. MED. J. 533 (1967) (A brief summary of the study was published as Price & Whatmore, *Criminal Behavior and the XYY Male*, 213 NATURE 815 (1967)) [hereinafter cited as Price & Whatmore]. The study reports three of the nine XYY males had been convicted before 10 years of age, whereas none of the control group had any convictions before that age. The mean age of conviction for XYY males was 13.1 years, and the mean age of the control group was 18 years. Of the nine XYY males, only four had committed crimes against the person, whereas 17 out of 18 of the control group had committed such crimes. Only 1 of the 31 siblings had a criminal record for the XYY males, but 7 of 18 had criminal records for the control group. No other members of the XYY male families had a history of mental illness. *Id.* at 534-36.

All nine of the XYY males suffered from a severe degree of personality disorder, although there was no evidence of brain damage, epilepsy, or psychosis. Seven of the nine were mentally subnormal with IQ's ranging between 60 and 80, and six of the nine had been committed by courts to institutions for the mentally subnormal. *Id.* at 534-35. See also Money, Gaskin & Hull, *Impulse, Aggression and Sexuality in the XYY Syndrome*, 44 ST. JOHN'S L. REV. 220, 229 (1969) (discussing mental deficiency).

12. Hamerton, *Human Population Cytogenetics: Dilemmas and Problems*, 28 AM. J. HUM. GENETICS 107, 117 (1976).

that XYY males are not more likely to commit crimes of violence than genetically normal XY males.¹³ In addition, an analysis of the criminal penalties imposed on XYY males indicated they were not comparatively severe.¹⁴ The same conclusions may also be stated for the XXY male.¹⁵

To further evidence the disagreement in this area, in a recent follow-up study of Danish patients with an XXY chromosome constitution, it was discovered that at age twenty-six the XXY males had violated the penal code at a rate of 26% of their sample group and 38% had engaged in criminal behavior. In the XY control group, only 6% of the sample group had violated the penal code or engaged in criminal behavior.¹⁶ Ten years later, of the same XXY males 29% had violated the penal code and 41% had exhibited criminal behavior, whereas of the XY male control group 6% had violated the penal code and 13% had exhibited criminal behavior.¹⁷ Notably, a recent study of XXYY males also indicates that aggressive behavior is a post-pubertal feature of all such afflicted males.¹⁸

Thus, research in the area of antisocial behavior and aggression of the genetically abnormal male represents a confusing picture. There is evidence that genetically abnormal males commit antisocial acts and can be aggressive, but the research is unclear whether there is an increased frequency of such behavior when compared with genetically normal males.¹⁹ Apparently, aggression currently cannot be proven as a symptom of genetic abnormality and thereby provide the basis for an insanity or diminished capacity defense.

13. Witkin, Mednick, Schulsinger, Bakkeström, Christiansen, Goodenough, Hirschhorn, Lundsteen, Owen, Philip, Rubin & Stocking, *Criminality in XYY and XXY Men*, 193 SCI. 547, 550 (1976) [hereinafter cited as *Criminality in XYY and XXY Men*].

14. *Id.*

15. *Id.*

16. Nielsen, Johnsen & Sørensen, *Follow-up 10 years Later of 35 Klinefelter Males with Karyotype 47,XXY and 16 Hypogonadal Males with Karyotype 46,XY*, 10 PSYCHOLOGICAL MED. 345, 349 (1980).

17. *Id.*

18. Garry, *Two Cases of 48,XXYY: With Discussion on the Behaviour of Prepubertal and Postpubertal Patients*, 92 N.Z. MED. J. 49, 50 (1980).

19. For further background on this area, see Brown, Price & Jacobs, *Further Information on the Identity of 47,XXY Males*, BRIT. MED. J. 325 (1968); Casey, Blank, Street, Segall, McDougall, McGrath & Skinner, *XY Chromosomes and Antisocial Behaviour*, 2 LANCET 859 (1966) [hereinafter cited as Casey, et al., *Antisocial Behaviour*;] Clark, Telfer, Baker & Rosen, *Sex Chromosomes, Crime, and Psychosis*, 126 AM. J. PSYCHIATRY 1659 (1970); and Wiener, Sutherland, Bartholomew & Hudson, *XYY Males in a Melbourne Prison*, 1 LANCET 150 (1968).

Another identifiable trait of genetic abnormalities caused by extra Y or X chromosomes is tallness. Although both XYY and XXY males tend to be taller than normal XY males, this is not a factor in the increased prevalence of XYY males in security settings.²⁰ Research indicates that the XYY male does not stay longer in security settings than a genetically normal XY male, and that white males in security settings are about three times more likely to have such a genetic abnormality than black males.²¹

The principal condition of a *genetic abnormality* to be discussed in this paper, however, is *mental retardation or mentally subnormal intelligence*. Through the three phases of research previously discussed, these conditions have been the most frequently observed results of a genetic abnormality.

Prior to a discussion of research studies in this area, it is necessary to present some background information on retardation. Retardation, regardless of the origin, is defined by the American Psychiatric Association as "(1) significantly subaverage general intellectual functioning, (2) resulting in, or associated with, deficits or impairments in adaptive behavior, (3) with the onset before the age of 18."²² Significantly subaverage intellectual functioning is defined as an IQ of 70 or below on an individually administered IQ test.²³ Adaptive behavior refers to the effectiveness with which an individual meets the standards of personal independence and social responsibility expected of his or her age and cultural group.²⁴ The subtypes of mental retardation are classified as mild (IQ level of 50-70); moderate (IQ level of 35-49); severe (IQ level of 20-34); and profound (IQ level below 20).²⁵

When the clinical picture of retardation develops for the first time after the age of 18, the syndrome is then called "dementia" rather than mental retardation.²⁶ Dementia is classified as an or-

20. Hamerton, *supra* note 12, at 115. See also Philip, Lundstein, Owen & Hirschhorn, *The Frequency of Chromosome Aberrations in Tall Men with Special Reference to 47,XYY and 47,XXY*, 28 AM. J. HUM. GENETICS 404, 410 (1976) (conducted study of 4,591 Danish men born during 1944-47, concluding that XYY and XXY men are taller than genetically normal XY males).

21. Hamerton, *supra* note 12, at 114-115.

22. AMERICAN PSYCHIATRIC ASSOCIATION, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS 36 (3rd ed. 1980) [hereinafter cited as DSM-III]. For an overview of the retarded individual in the criminal justice system, see THE RETARDED OFFENDER (M. Santamour & P. Watson eds. 1982).

23. DSM-III, *supra* note 22, at 36.

24. *Id.* at 37.

25. *Id.* at 39.

26. *Id.* at 107.

ganic mental disorder, whose essential feature is loss of intellectual abilities of sufficient severity to interfere with social or occupational functioning. The deficit is multifaceted and involves memory, judgment, abstract thought, and a variety of other higher cortical (cerebral) functions.²⁷

Important to the discussion to follow, is that several of the genetically abnormal males identified in research studies had IQ levels within the retardation classification standard. This fact again supports the argument for association of mental retardation and genetic abnormalities for some criminals.

In the previously discussed 1965 English security institution study, although the patients were mentally subnormal XYY males with dangerous, violent, or criminal propensities, no definite conclusions could be drawn regarding the cause of their criminality.²⁸ A follow-up study that included two more XYY patients subsequently discovered in the institution population, produced additional information. Eight of the patients studied were classified as high-grade mental defectives, or as below average in intelligence, with the ninth patient being of average intelligence but having a mental illness.²⁹ While institutionalized, these patients had come under observation because of a combination of their criminal behavior and diminished responsibility due to mental subnormality or mental illness.³⁰

A third study of these individuals in 1967 produced a more detailed assessment of the behavioral characteristics. All XYY patients were suffering from a severe degree of personality disorder, but no known conditions accounted for such problems.³¹ Seven of the nine XYY males were mentally subnormal with IQ's ranging between 60 and 80.³² Six of the nine XYY patients had been committed by courts to institutions for the mentally subnormal, compared with only three of the eighteen genetically normal XY control patients.³³ Most social classes were represented by the families of the XYY patients, none of the parents had a criminal

27. *Id.*

28. Jacobs, *Aggressive Behavior*, *supra* note 4, at 1351. See also Casey, et al., *Antisocial Behaviour*, *supra* note 19; MacLean, Mitchell, Harnden, Williams, Jacobs, Buckton, Baikie, Brown, McBride, Strong, Close & Jones, *A Survey of Sex-Chromosome Abnormalities Among 4,514 Mental Defectives*, 1 LANCET 293 (1962).

29. Price, et al., *Criminal Patients*, *supra* note 10, at 565.

30. *Id.* at 566.

31. Price & Whatmore, *supra* note 11, at 534.

32. *Id.*

33. *Id.* at 535.

record or a history of mental illness, and no other members of the immediate families were known to have a history of mental illness.³⁴ The study concluded:

It is clear that each one of the XYY patients had suffered from a severe disturbance of his whole personality and also that in none was intellectual function, at any level, sufficiently adequate to suppress the disordered drives leading to criminal behavior. . . . All the data we have obtained from the examination of XYY males at the State Hospital at Carstairs lead us to believe that the extra Y chromosome has resulted in a severely disordered personality, and that this disorder has led these men into conflict with the law.³⁵

This introductory work in the area of intelligence measurement on genetically abnormal males formed the second phase of research in the areas of mental retardation and subnormal intelligence for the genetically abnormal offender.

In the third phase of research on genetic abnormalities, there have been several important works in the area of subnormal intelligence resulting from genetic abnormalities. A 1973 study suggests that the behavioral manifestation of the XYY abnormality tends to interfere with the acquisition of a measurably normal intelligence, or alternatively, the same events that resulted in deviant behavior in XYY males also influenced their intelligence.³⁶ This theory is supported by the finding that XYY white males are *eighteen* times more likely to be found in mental-penal settings than genetically normal XY white males.³⁷

The same study also suggests that physiological (organic) factors may be operative in XYY males, but only for those who already have a predisposition to deviant behavior.³⁸ There is no evidence contradictory to this theory; other hypotheses fail to explain the association XYY males have with deviance. XYY males do not appear, however, to be among the most dangerous, violent, and physically aggressive inmates, and their offenses are equally or less serious than normal XY males.³⁹

Many of the research findings for XYY males are also valid for XXY males, a genetic abnormality also known as Klinefelter's syn-

34. *Id.* at 536.

35. *Id.*

36. Hook, *Behavioral Implications of the Human XYY Genotype*, 179 *SCI.* 139, 145 (1973).

37. *Id.* at 146.

38. *Id.* at 145.

39. *Id.* at 146.

drome. Height is increased for XXY males but not to the extent of XYY males.⁴⁰ The newborn rate is 1 in 900 for XXY white males, compared with 1 in 1,000 for XYY white males.⁴¹ The XXY male is also likely to be found in greater numbers in settings for high-grade retards than either XYY males or genetically normal XY males, but are not as likely as XYY males to be in mental-penal settings.⁴²

The XXYY males also have the characteristics of Klinefelter's syndrome. They are taller than the average XYY male, have a newborn rate of about 1 in 25,000, and their retardation rate in security settings appears to be a *fifty-fold* increase over normal XY males.⁴³ There is also evidence of increased mental retardation and deviant behavior in XXYY males in comparison to XYY males, which provides additional evidence for the significance of extra Y or X chromosomes.⁴⁴

A 1976 study compared the criminal rates of XYY and XXY males with genetically normal XY males, each having equivalent levels of intellectual functioning.⁴⁵ The study concluded that the XYY males had an appreciably lower mean score on a standard army selection intelligence test than did the XY males, and the XYY males had a substantially lower mean on the related index of educational level attained.⁴⁶ The XXY males had results similar to the XYY males on their test scores.⁴⁷

Also in 1976, a report concluded that the XYY chromosome abnormality was a genuine medical issue and not merely a myth. The author reported research studies stating the incidence of XYY males in newborn populations to be approximately 1 per 1,000 male births and the prevalence among older, randomly-selected males to be similar.⁴⁸ But most importantly, the report indicates there is a 4 to 20-fold increase in the frequency of XYY males in

40. *Id.*

41. *Id.* The author believes the newborn rate of XXY individuals among whites in North America and Europe is unlikely to be greater than 1 in 250 and probably is about 1 in 900. See also Hamerton, *supra* note 12, at 113 (suggesting the newborn rate for XYY individuals is 1 in 1,000).

42. Hook, *supra* note 36, at 146-47.

43. *Id.* at 147.

44. *Id.* For some additional information on the XXYY genetic abnormality, see Garry, *supra* note 18.

45. *Criminality in XYY and XXY Men*, *supra* note 13, at 551.

46. *Id.* at 553.

47. *Id.* at 554.

48. Hamerton, *supra* note 12, at 112-113. In comparison, the incidence of an extra X chromosome in women is also 1.0 per 1,000, and such women are more likely to have

security settings compared to the general newborn population and unselected older male populations.⁴⁹ To a lesser degree, the same disproportion applies to XXY males, who show a 2 to 10-fold increase in security settings while the XXYY males show a 40 to 100-fold increase in mental and mental-penal settings.⁵⁰ There is also evidence of behavior problems and learning disabilities among XYY children.⁵¹

These studies reflect the consensus among research scientists on the relationship of genetic abnormalities and resulting conditions such as mental retardation and mental subnormality, and suggest an alarming picture of the effects on white males.⁵² The significant increase of XYY, XXY, and XXYY males in security and mental-penal institutions is evidence that certain genetic abnormalities may result in the afflicted individual's having a significantly greater chance to be involved in criminal behavior. It also seems evident that researchers have established a presumptive relationship between extra Y and X chromosomes and mental retardation or subnormal intelligence in white males. With the disproportionate numbers of XYY, XXY, and XXYY males in security and mental-penal institutions, the question necessarily focuses on whether these individuals are legally responsible for their criminal acts, or whether they satisfy some test of insanity or diminished capacity which would excuse all or part of their criminal conduct.

mental diseases than genetically normal XX females. See Bartholomew, *Psychopathy, Sex Chromosome Abnormalities, and the Law*, 4 ADEL. L. REV. 273, 277-78 (1972).

49. Hamerton, *supra* note 12, at 114.

50. *Id.*

51. *Id.* at 117. The author believes that some XYY males do show psychological differences when compared to genetically normal XY males, and such differences may be recognizable by detailed psychological testing.

For a discussion of the ethical considerations in chromosome screening of parents and newborn infants to detect potential genetic disorders, see Hamerton, *Ethical Considerations in Newborn Chromosome Screening Programs*, in XV BIRTH DEFECTS: ORIGINAL ARTICLE SERIES, No. 1, at 267-69 (1979). Another recent study has called for a serious interdisciplinary program of research into early detection and prevention of chronic criminal behavior. See San Diego Union, Jan. 8, 1982, at 1, col. 2, which reports a study predicting that biological and sociological testing will one day be able to predict the likelihood of whether a child will commit a crime years later.

52. For additional background information, see Close, Goonetilleke, Jacobs & Price, *The Incidence of Sex Chromosomal Abnormalities in Mentally Subnormal Males*, 7 CYTOGENETICS 277 (1968), confirming the essential features of the XYY male; and Telfer, Baker, Clark & Richardson, *Incidence of Gross Chromosomal Errors Among Tall Criminal American Males*, 159 Sci. 1249 (1968).

III. REVIEW OF THE INSANITY DEFENSE

A. English Law

History records that civilized man has acknowledged the existence of insanity as far back in history as the seventh century.⁵³ Beginning in the fourteenth century, insanity became a recognized ground for the granting of a royal pardon, but only after the accused was tried and convicted of a crime.⁵⁴ Not until the sixteenth century was insanity established as a valid defense to a conviction for a criminal act.⁵⁵

In 1724, in *Rex v. Arnold*,⁵⁶ the charge to the jury by Justice Tracy established a new standard for common law insanity referred to as the "wilde beast" test.⁵⁷ In the nineteenth century, Hawkins formulated a test for legal responsibility, marking the beginning of the good and evil concept.⁵⁸ Sir Matthew Hale divided

53. Crotty, *The History of Insanity as a Defense to Crime in English Criminal Law*, 12 CALIF. L. REV. 105, 110 (1924) (citing 2 B. THORPE, *ANCIENT LAWS* 65 (1840)).

54. Note, *Mens Rea*, 45 HARV. L. REV. 974, 1005 n.125 (1932) (citing I. Rot. Par. 443b, 3 Edw. II (1310), where "the king promises that he will pardon felony only in cases where pardon was anciently granted, 'if a man kill another through misadventure or in self-defense or in madness.'"); see also Gray, *The Insanity Defense: Historical Development and Contemporary Relevance*, 10 AM. CRIM. L. REV. 559, 562 n.13 (1972). See generally I M. HALE, *PLEAS OF THE CROWN* 29-36 (1689) (1st Am. ed. 1847), for Sir Matthew Hale's treatment of "dementia" as a defense to criminal responsibility.

55. Gray, *supra* note 54, at 562; see also Note, *supra* note 54, at 1005 n.128 (citing Y.B. Mich. 21 Hen. VII, pl. 16 (1505)). "A man was arraigned for the murder of an infant. And it was found that at the time of the murder the felon was of unsound memory (*de non saine memoire*)." See also A. FITZHERBERT, *THE NEW NATURA BREVIVM* (9th ed. London 1974), describing the insane man as "[h]e who is of unsound memory, hath not any manner of discretion; for if he kill a man it shall not be felony, or murder . . . because it appeareth that he hath not discretion; for if he had discretion he should be hanged for the same." *Id.* at 202.

56. 16 How. St. Tr. 695 (1724), discussed in Crotty, *supra* note 53, at 114; see also Gray, *supra* note 54, at 562 n.15; Note, *supra* note 54, at 1006 n.133.

57. Crotty, *supra* note 53, at 114.

"[I]t is not every kind of frantic humour or something unaccountable in a man's actions, that points him out to be such a madman as is to be exempted from punishment; it must be a man that is totally deprived of his understanding and memory, and doth not know what he is doing, no more than an infant, than a brute, or a wild beast, such a one is never object of punishment."

Id. (quoting *Rex v. Arnold*, 16 How. St. Tr. 695, 764 (1724)).

58. I W. HAWKINS, *PLEAS OF THE CROWN* 1-3 (8th ed. John Curwood ed. 1824). His test provided:

Sect. 1. As to the First Point, it is to be observed, that those who are under a natural disability of distinguishing between good and evil, as (2) infants under the age of discretion, idiots and lunatics (3), are not punishable by any criminal prosecution whatsoever.

(2) Infancy, as is above understood, is a defect of the will or understanding. Infants under the age of discretion ought not to be punished by any criminal

mental incapacity into three groups for his test of legal responsibility or lack of it.⁵⁹

The classic English opinion in *M'Naghten's Case*⁶⁰ is important not only for its test of insanity, but equally for the allowance of testimony by expert medical witnesses. M'Naghten was charged in 1843 with killing Edward Drummond, secretary to Sir Robert Peel, and the prominence of the parties created a good deal of public interest in the case. At the conclusion of the trial, Lord Chief Justice Tindal tendered a jury instruction which is essentially the right and wrong test,⁶¹ and which was to furnish much of the basis for later criticism of the case.

After the verdict of not guilty by reason of insanity, the House of Lords was asked to clarify the decision. This led to the famous test of insanity set forth by Lord Tindal.⁶² This new test of insanity substantially changed the common law notion of insanity by placing the emphasis on a disease of the mind, an illness resulting from

prosecution. What the age of discretion is, is matter of variety in different nations.

- (3) Ideots, lunatics during their lunacy, and madmen are all incapable of committing crime, as falling within the accident defect of the will included by Lord Hale under the term *dementia*, or insanity.

Sect. 3. And it seems agreed at this day, that if one who has committed a capital offence become *non compos* before conviction, he shall not be arraigned; and if after conviction, that he shall not be executed.

Id.

59. I M. HALE, *supra* note 55, at 29-36. The first category was *idiocy*, which included natural defects such as mental retardation. The second category was *dementia accidentalis vel adventitia*, which was insanity resulting from an injury to the brain, a disease, or a concussion. Hale further divided this second category into two classes: partial and total insanity. The third category was *dementia affectata*, commonly known as drunkenness. See Crotty, *supra* note 53, at 115-116 (discussion of cases which used the partial insanity concept of criminal liability); see also Gray, *supra* note 54, at 564 (cases on "insane delusions" as a defense to criminal responsibility). See generally H. WEIHOFFEN, *MENTAL DISORDER AS A CRIMINAL DEFENSE* (1954) (discusses evolution of insanity as a defense to criminal responsibility).

60. 8 Eng. Rep. 718 (1843).

61. See *id.* "The question to be determined is, whether, at the time the act in question was committed, the prisoner had or had not the use of his understanding, so as to know that he was doing a wrong or wicked act." *Id.* at 719-20. See generally Note, *supra* note 54, at 1006.

62. Lord Tindal's test was:

[T]o establish a defence 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.

M'Naghten's Case, 8 Eng. Rep. 718, 722 (1843). See generally Crotty, *supra* note 53, at 117-19.

a biological disorder of the brain. In the past, insanity tests had seemed preoccupied with behavioral or nonbiological conditions of the defendant, and this shift of emphasis was undoubtedly a result of the courts' changing attitude about the use of expert medical testimony at trial.

In the first systematic attempt to categorize criminal defenses, Hale made it clear that mental incapacity was to be a question of fact to be determined by the jury. Having preceded *M'Naghten* by many years, his writings indicated a bias against medical testimony and urged that it be given no greater weight than lay testimony.⁶³ Not until *M'Naghten* was the testimony of medical doctors, as experts in the field of mental disease and deficiency, accorded special status. For the first time physicians could offer an opinion concerning an event which they had not actually witnessed, but which they might reconstruct using newly developed medical techniques. Although physicians still could not determine the fact of insanity, they were permitted to testify whether the accused had been suffering from a disabling disease at the time of the alleged offense and to state whether the criminal act was a product of the disease.⁶⁴

B. American Law

The rule pronounced in *M'Naghten* became the foundation of American law on insanity, although some jurisdictions supplemented it with the irresistible impulse test.⁶⁵ In the twentieth century, as our knowledge of science and medicine advanced, so did our understanding of psychological and psychiatric disorders. These advances resulted in a vigorous debate on the continued usefulness of the *M'Naghten* test in a modern era, due to the test's limitations.⁶⁶

Several arguments have been advanced in support of retaining *M'Naghten* as a test of legal irresponsibility. One theory argues

63. See Gray, *supra* note 54, at 565-66.

64. *Id.* at 566.

65. See H. WEIHOFFEN, *supra* note 59, at 68-81; see also Platt & Diamond, *The Origins of the "Right and Wrong" Test of Criminal Responsibility and Its Subsequent Development in the United States: An Historical Survey*, 54 CALIF. L. REV. 1227 (1966); Note, *The Guilty but Mentally Ill Alternative*, 8 WM. MITCHELL L. REV. 223 (1982). But see S. GLUECK, *MENTAL DISORDER AND THE CRIMINAL LAW*, 254-55 (1925) (discussing *State v. Jones*, 50 N.H. 369 (1871)).

66. S. GLUECK, *supra* note 65, at 161-86; C. TORCIA, *WHARTON'S CRIMINAL LAW* § 100 (14th ed. 1978) [hereinafter cited as *WHARTON'S*]; H. WEIHOFFEN, *supra* note 59, at 63-67.

that the goal of general deterrence in the criminal law is best served by declaring irresponsible only those persons who clearly could not have been deterred from their criminal acts because they could not have employed sufficient reason to restrain their conduct.⁶⁷ Fundamental to this view is the proposition that the threat of punishment must be maintained as long as any opportunity exists to prevent criminal activity. If the offender is not deterrable because of a disease of the mind and, therefore, is unable to distinguish between right and wrong, then no harm exists to society to exempt such persons from criminal responsibility for their criminal acts.⁶⁸

Other theories suggest deterrability is not the foundation of responsibility, but rather that responsibility rests on moral blameworthiness as determined by society as a whole rather than by the individual offender.⁶⁹ Society identifies those individuals who are without moral blame for their criminal conduct, independent from a consideration of the offender's ability to conform his conduct to the requirements of the law.⁷⁰

It has been argued that *M'Naghten* asks the questions which psychiatrists and psychologists cannot answer. Experts are not being asked whether an offender acted according to generally accepted standards of morality, but rather whether the offender had sufficient intellect at the time of the commission of the criminal conduct to know what the generally accepted standards were.⁷¹ In essence, was the offender able to make moral and ethical judgments at the time of the commission of the criminal act? A related criticism, that *M'Naghten* restricts expert testimony from reaching the jury on these issues, has been disproven by one study.⁷²

For all the apparent dissatisfaction with *M'Naghten*, there are equally valid reasons for retaining it as one of the standards of legal irresponsibility. Nevertheless, the dissatisfaction with the *M'Naghten* test has resulted in alternate standards being developed. *M'Naghten* has been replaced in a majority of jurisdictions by the ALI-Model Penal Code test.⁷³

67. W. LAFAVE & A. SCOTT, HANDBOOK ON CRIMINAL LAW 281 (1972).

68. *Id.*

69. *Id.* at 281-82.

70. *Id.* at 282.

71. *Id.*

72. *Id.*

73. See Favole, *Mental Disability in the American Criminal Process: A Four Issue Survey*, in MENTALLY DISORDERED OFFENDERS: PERSPECTIVES FROM LAW AND SOCIAL SCIENCE

The *M'Naghten* test focuses on whether the accused was afflicted with a disease of the mind so as not to know the nature and quality of his act, or if he did know, that he did not know what he was doing was wrong. *Query*: Does this standard of insanity affect an accused who has a genetic defect?

Some commentators have focused on the aggressive behavior allegedly associated with genetically defective offenders in analyzing whether *M'Naghten* would relieve criminal responsibility.⁷⁴ Although there may be some evidence of aggression, it may be but one symptom of the retardation. The underlying cause of the criminal behavior seems to be associated more closely with retardation.

Retardation is a "mental disease" that fits the *M'Naghten* test. Similarly, depending on the level of retardation, an accused who has a genetic defect may not have known the nature and quality of his acts or that his actions were wrong. The most important factor of the XYY chromosome defect is not whether a "criminal" gene or chromosome "compels" the accused to commit criminal acts, but whether the mental impairment caused by retardation is attributable to the extra "Y" chromosome.

It is essential to consider the effects of retardation associated with a genetic defect in each case to determine whether an accused can satisfy the requirements of the *M'Naghten* test. If an accused is to prevail he must prove the retardation is severe enough to preclude his knowing the nature and quality of his act, or that he did not know his actions were wrong. An accused with severe or profound mental retardation should qualify for this defense, and a moderately retarded accused may qualify depending on his individual adaptive behavior.

The irresistible impulse or control test focuses on whether the accused could have prevented himself from committing the criminal act even though he knew the nature and quality of his act and that the act was wrong.⁷⁵ This test is sometimes a supplement to

247 (J. Jonahan & H. Steadman, eds. 1983); Note, *supra* note 65, at 233; see also WHARTON'S, *supra* note 66, at § 100. Minnesota follows the *M'Naghten* rule. See MINN. STAT. § 611.026 (1982).

74. Wallach & Rubin, *The Premenstrual Syndrome and Criminal Responsibility*, 19 U.C.L.A. L. REV. 210, 240 n.131 (1971); Comment, *Law, Responsibility, and the XYY Syndrome*, 7 HOUS. L. REV. 355, 375-76 (1970); Note, *The XYY Chromosome Defense*, 57 GEO. L.J. 892, 905-07 (1970). See generally W. LAFAVE & A. SCOTT, *supra* note 67, at 334.

75. WHARTON'S, *supra* note 66, § 101, at 10-17. Irresistible impulse as it relates to insanity was defined in *Davis v. United States*, 165 U.S. 373 (1897) to mean:

Such a perverted and deranged condition of the mental and moral faculties as to

M'Naghten; it is not the sole test of insanity in any American jurisdiction.⁷⁶ Unless the evidence indicates that at all times, including the time of the criminal act, the genetically abnormal offender found it impossible to control his behavior, it is unlikely that this standard would provide a sufficient defense. The significance of this test depends on which party has the burden of proof to establish insanity or sanity.

The initial burden of rebutting the presumption of sanity is on the defendant.⁷⁷ The prevailing rule is that the evidence must raise a reasonable doubt regarding the defendant's mental responsibility for his criminal act. A few jurisdictions, however, appear to require a lesser standard of proof, sometimes stated as "some evidence" or a "scientilla of evidence."⁷⁸

Once the defendant has met this burden, it must be determined which party has the burden of persuasion. In about half of the states and in the federal system, the prosecution must prove sanity beyond a reasonable doubt. In other jurisdictions, the defendant must prove his insanity by a preponderance of the evidence.⁷⁹

The important factor affecting the genetically abnormal offender's ability to control his behavior is the possibility of retardation and its resulting symptoms. This would only become relevant to the irresistible impulse defense if the retardation was sufficient to prevent the accused from controlling his actions. Retardation becomes important in this defense because of its causation. Genetically caused retardation is an involuntary condition, an important factor of the irresistible impulse defense.⁸⁰

More recent insanity tests have attempted to incorporate advances in scientific knowledge and theory. In *Durham v. United*

render a person incapable of distinguishing between right and wrong, or unconscious at the time of the nature of the act he is committing, or where, though conscious of it and able to distinguish between right and wrong and know that the act is wrong, yet his will, by which I mean the governing power of his mind, has been otherwise than voluntarily so completely destroyed that his actions are not subject to it, but are beyond his control.

Id. at 378. This definition of insanity was affirmed in *Matheson v. United States*, 227 U.S. 540 (1913).

76. See Favole, *supra* note 73; Note, *supra* note 65, at 229-30; see also Note, *Constitutional Limitations on Allocating the Burden of Proof of Insanity to the Defendant in Murder Cases*, 56 B.U.L. REV. 499 (1976).

77. See W. LAFAVE & A. SCOTT, *supra* note 67, at 312.

78. *Id.* at 313.

79. *Id.*; see, e.g., *State v. Bott*, 310 Minn. 331, 334-35, 246 N.W.2d 48, 51-52 (1976).

80. See *Davis v. United States*, 164 U.S. 373, 378 (1897) (defining irresistible impulse as it relates to insanity).

States,⁸¹ the District of Columbia Court of Appeals specifically rejected the *M'Naghten* and irresistible impulse tests and attempted to interject medicine and psychology into the legal process by formulating a new definition of insanity.⁸² The new definition focused on the medical aspects of the offender's actions, providing that no criminal responsibility existed if the accused was suffering from a mental disease or defect and his criminal actions were the product of the disease or defect.⁸³ This test is not concerned with moral or ethical standards, like *M'Naghten*, and contains no legal standard of criminal responsibility.

The *Durham* test is of historical interest only because no jurisdiction currently uses it, including the District of Columbia.⁸⁴ New

81. 214 F.2d 862 (D.C. Cir. 1954) (Bazelon, J.).

[A]n accused is not criminally responsible if his unlawful act was the product of mental disease or defect. We use "disease" in the sense of a condition which is considered capable of either improving or deteriorating. We use "defect" in the sense of a condition which is not considered capable of either improving or deteriorating and which may be either congenital, or the result of an injury, or the residual effect of a physical or mental disease.

Id. at 874-75. The court in effect adopted the "product" test first announced in *State v. Pike*, 49 N.H. 399, 402 (1869).

82. See *Durham v. United States*, 214 F.2d 862 (D.C. Cir. 1954). In rejecting the *M'Naghten* test the court stated:

We find that as an exclusive criterion the right-wrong test is inadequate in that (a) it does not take sufficient account of psychic realities and scientific knowledge, and (b) it is based upon one symptom and so cannot validly be applied in all circumstances. We find that the "irresistible impulse" test is also inadequate in that it gives no recognition to mental illness characterized by brooding and reflection and so relegates acts caused by such illness to the application of the inadequate right-wrong test.

Id. at 874. For a discussion of the intent and subsequent failure of *Durham*, see Bazelon, *The Perils of Wizardry*, 131 AM. J. PSYCHIATRY 1317 (1974); Douglas, *The Durham Rule: A Meeting Ground for Lawyers and Psychiatrists*, 41 IOWA L. REV. 485 (1956); and *Insanity and the Criminal Law--A Critique of Durham v. United States*, 22 U. CHI. L. REV. 317 (1955).

83. In *McDonald v. United States*, 312 F.2d 847 (D.C. Cir. 1962), the term mental disease or defect was defined as "any abnormal condition of the mind which substantially affects mental or emotional processes and substantially impairs behavior controls." *Id.* at 851.

84. Favole, *supra* note 73. In *United States v. Brawner*, 471 F.2d 969, 981-83 (D.C. Cir. 1972) the court formally rejected *Durham* by holding a "principal reason" for its decision to depart from the *Durham* test was the undesirable and undue dominance over the jury by expert witnesses. *Id.* at 981-83. Hale, expressing a similar concern, argued that expert testimony should be given only the same weight as lay testimony. See Gray, *supra* note 54. For a discussion of *Brawner*, see *Symposium on United States v. Brawner*, 1973 WASH. U.L.Q. 17. Interestingly, it appears the District of Columbia is the only jurisdiction in which the insanity defense is widely used. See Note, *The Right and Responsibility of a Court to Impose the Insanity Defense over the Defendant's Objection*, 65 MINN. L. REV. 927, 928 n.5 (1981).

The Third Circuit, in rejecting *Durham*, stated an important rationale for its demise: [*Durham*] omits the most important step in deciding the issue of criminal respon-

Hampshire still uses a version of the "product" rule, but has never adopted the *Durham* rule.⁸⁵

The formulation of the ALI-Model Penal Code of insanity marks the last stage of the American insanity test evolution.⁸⁶ This standard requires that the accused have a mental disease or defect *and* lack substantial (but not total or complete) capacity to appreciate the criminality, or in the alternative, wrongfulness, of his action or conform his conduct to the requirements of the law. A majority of American jurisdictions now use the ALI-Model Penal Code test.⁸⁷

An accused suffering from a genetically caused abnormality may be most fortunate to be tried in Model Code jurisdictions because the ALI test does not require total incapacity. If retardation is present as the result of a genetic abnormality, the accused has the possibility of proving that the retardation precluded him from *substantially* (but not totally or completely) conforming his conduct to the law or from appreciating the criminality of his act.

C. *Mens Rea*

The evolution of the insanity defense reflects a growing recognition by society that some defendants, because of their mental or physical conditions, do not possess the requisite *mens rea* to commit a criminal act. Generally, some form of *mens rea* (guilty mind) is necessary for an offense which is *malum in se*, or wrong in itself,⁸⁸ but where the criminal offense is *malum prohibitum*, wrong because society so defines, *mens rea* is not a necessary element of the crime

sibility, namely that of determining the total mental condition of the defendant at the time he committed the act, and providing the jury with a standard by means of which an ultimate social and moral judgment can be rendered.

United States v. Currens, 290 F.2d 751, 774 (3rd Cir. 1961).

85. Favole, *supra* note 73.

86. MODEL PENAL CODE § 4.01 (Proposed Official Draft 1962). This test provides:

(1) 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 conform his conduct to the requirements of the law.

(2) As used in this Article, the terms "mental disease or defect" do not include an abnormality manifested only by repeated criminal or otherwise anti-social conduct.

87. Favole, *supra* note 73; Note, *supra* note 65, at 233.

88. See R. PERKINS, CRIMINAL LAW 785 (2nd ed. 1969). BLACK'S LAW DICTIONARY (rev. 5th ed. 1979) defines *malum in se* as "[a] wrong in itself; an act or case involving illegality from the very nature of the transaction, upon principles of natural, moral and public law." *Id.* at 865.

unless expressly made so by statute.⁸⁹ The fact that an offense is *malum prohibitum* should not, however, prevent the accused from invoking the insanity defense.

To comprehend the nature of the genetic insanity defense, it is necessary to discuss the concept of criminal intent. One author has suggested that the joint operation of the guilty act (*actus reus*) and the guilty mind (*mens rea*) is a suitable definition of a crime.⁹⁰ Other authors have discovered a variety of confusing terms which are indiscriminately used by courts to describe culpable mental states,⁹¹ or have defined *mens rea* in terms of what consequences the defendant foresaw by his actions.⁹² The ALI-Model Penal Code has defined the minimum requirements of *mens rea* or criminal culpability in the terms of four distinct mental states: purposely, knowingly, recklessly, and negligently.⁹³

A defendant whose criminal intent is affected by a mental defect

89. BLACK'S LAW DICTIONARY, *supra* note 88, defines *malum prohibitum* as "[a] wrong prohibited; a thing which is wrong because prohibited; an act which is not inherently immoral, but becomes so because its commission is expressly forbidden by positive law; an act involving an illegality resulting from positive law." *Id.* at 865 (emphasis in original).

90. Perkins, *Rationale of Mens Rea*, 52 HARV. L. REV. 905 (1939). Perkins defines *actual* intent, as distinguished from *criminal* intent, as follows: "If one acts for the purpose of causing a certain result, he intends that result whether it is likely to happen or not. As to consequences not included in his purpose, he intends those, and only those, which he realizes are substantially certain to be produced!" *Id.* at 911 (quoting RESTATEMENT OF TORTS § 13 comment a (1934)).

91. WHARTON'S, *supra* note 66, § 27, at 136, describes the use of terms such as intentionally, purposely, designedly, knowingly, maliciously, wilfully, wantonly, general intent, specific intent, scienter, fraudulently, corruptly, recklessly, negligently, gross negligence, culpable negligence, and criminal negligence.

92. Cook, *Act, Intention, and Motive*, 26 YALE L.J. 645 (1917). The author states: [A]n actor *intends* a particular consequence when either (1) he wishes or desires it to happen as the result of the act which he does for the purpose of bringing about the result in question; or (2) when at the time he does the act he adverts to the consequences in question as one which will necessarily result from the act, and this even if he would be glad to have this particular consequence not happen if he could avoid it and still bring about the consequence which he has primarily in view.
Id. at 657-58.

93. MODEL PENAL CODE § 2.02 (Proposed Official Draft 1962), defines these four terms as follows:

(2) *Kinds of Culpability Defined.*

(a) *Purposely.*

A person acts purposely with respect to a material element of an offense when:

(i) if the element involves the nature of his conduct or a result thereof, it is his conscious object to engage in conduct of that nature or to cause such a result; and

(ii) if the element involves the attendant circumstances, he is aware of the existence of such circumstances or he believes or hopes that they exist.

might not have any of the mental states set forth above. A criminal act committed under such circumstances may be characterized as an involuntary compulsion (automatism), which occurs when an individual can perform complex automatic or involuntary activity while in a state of impaired consciousness.⁹⁴ Similarly, if a genetic defect was the direct cause of an offender's mental condition which resulted in some criminal act being performed, then the

(b) *Knowingly.*

A person acts knowingly with respect to a material element of an offense when:

(i) if the element involves the nature of his conduct or the attendant circumstances, he is aware that his conduct is of that nature or that such circumstances exist; and

(ii) if the element involves a result of his conduct, he is aware that it is practically certain that his conduct will cause such a result.

(c) *Recklessly.*

A person acts recklessly with respect to a material element of an offense when he consciously disregards a substantial and unjustifiable risk that the material element exists or will result from his conduct. The risk must be of such a nature and degree that, considering the nature and purpose of the actor's conduct and the circumstances known to him, its disregard involves a gross deviation from the standard of conduct that a law-abiding person would observe in the actor's situation.

(d) *Negligently.*

A person acts negligently with respect to a material element of an offense when he should be aware of a substantial and unjustifiable risk that the material element exists or will result from his conduct. The risk must be of such a nature and degree that the actor's failure to perceive it, considering the nature and purpose of his conduct and the circumstances known to him, involves a gross deviation from the standard of care that a reasonable person would observe in the actor's situation.

For general background, see Hitchler, *The Physical Element of Crime*, 39 DICK. L. REV. 95 (1934). For excellent discussions of the English definition of knowledge, see 2 J. STEPHAN, *A HISTORY OF THE CRIMINAL LAW OF ENGLAND* 114-18 (1883); Turner, *The Mental Element in Crimes at Common Law*, 6 CAMBRIDGE L.J. 31 (1936). See generally Erlinder, *Mens Rea, Due Process, and the Supreme Court: Toward a Constitutional Doctrine of Substantive Criminal Law*, 9 AM. J. CRIM. L. 163 (1981).

94. For a discussion of the automatism defense, see *Rex v. Charlson*, 1 All E. R. 859 (1955); Ard, *Automatism and Insanity*, 4 SYDNEY L. REV. 36 (1962); Beck, *Voluntary Conduct: Automatism, Insanity and Drunkenness*, 9 CRIM. L.Q. 315 (1967); Rose, *Criminal Responsibility and Competency as Influenced by Organic Disease*, 35 MO. L. REV. 326, 342-45 (1970). The thrust of the automatism defense is the consciousness of the defendant. Unconscious criminal actions normally excuse the defendant from criminal responsibility; therefore, consciousness is considered a *sine qua non* to criminal liability. See Fox, *Physical Disorder Consciousness and Criminal Liability*, 63 COLUM. L. REV. 645, 651-52 (1963). MODEL PENAL CODE § 2.01(2) (Proposed Official Draft 1962) takes a similar position:

Section 2.01. *Requirement of Voluntary Act;
Omission as Basis of Liability;
Possession as an Act.*

(1) A person is not guilty of an offense unless his liability is based on conduct which includes a voluntary act or the omission to perform an act of which he is physically capable.

(2) The following are not voluntary acts within the meaning of this Section:

possibility exists that no true *mens rea* was formed by the offender and, therefore, no culpability for the criminal act would arise.⁹⁵ It is more probable, however, that a genetic defect merely causes a diminished degree of responsibility or knowledge for the criminal act, manifested as severe retardation in the offender.

To assert that a genetic defect negates *mens rea* by its mere presence and "compels" an individual to commit criminal acts is simply not justifiable based on current scientific research. Sufficient research has been completed, however, to conclude that retardation is a common symptom of the XYY, XXY, and XXYY criminal.⁹⁶ Retardation itself would not absolve an accused from criminal culpability based on lack of *mens rea*, unless the accused was so retarded as to be unable to function. The level of retardation found in genetically defective criminals would subject each accused to a trial where the extent and effect of the retardation would be judged by the trier of fact.

D. Diminished Capacity

Diminished capacity is closely related to and often difficult to distinguish from *mens rea*. *Mens rea* is concerned with the "guilty mind" or conscious knowledge of the accused, whereas diminished capacity is concerned with whether there is "evidence of an abnormal mental condition tending to prove either that the accused could not or did not entertain the specific intent or state of mind essential to the offense."⁹⁷

Traditionally, diminished capacity has been asserted as a defense to negate a required mental state, such as specific intent (premeditation) in a first degree murder charge,⁹⁸ and to determine whether a defendant was entitled to a sentence of imprisonment

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- (a) a reflex or convulsion;
 - (b) a bodily movement during unconsciousness or sleep;
 - (c) conduct during hypnosis or resulting from hypnotic suggestion;
 - (d) a bodily movement that otherwise is not a product of the effort or determination of the actor, either conscious or habitual.

95. One article has suggested a genetic disorder, such as premenstrual syndrome, can result in complete intellectual derangement and in effect cause the criminal behavior during the menstrual cycle. See Wallach & Rubin, *supra* note 74, at 241. But see Horney, *Menstrual Cycles and Criminal Responsibility*, 2 LAW & HUM. BEHAV. 25 (1978) (suggests the premenstrual syndrome defense is premature until further research is completed).

96. See generally *supra* notes 1-52 accompanying text (discussion on genetics).

97. 21 AM. JUR. 2D, *Criminal Law* § 41, at 160 (1981).

98. Arenella, *The Diminished Capacity and Diminished Responsibility Defense*, 77 COLUM. L. REV. 827, 828 (1977)

rather than death.⁹⁹ Diminished capacity is not a substitute for legal insanity,¹⁰⁰ but has been recognized in several jurisdictions as a separate defense not amounting to legal insanity.¹⁰¹ It is essentially a defense of psychiatric and psychological evidence on the sole issue of intent. The Model Penal Code provides that "[e]vidence that the defendant suffered from a mental disease or defect shall be admissible whenever it is relevant to prove that the defendant did or did not have a state of mind which is an element of the offense."¹⁰²

The only valid measure of the genetically defective offender's criminal culpability must reflect the effect of the defect on his mental capacity to form the requisite intent to commit the criminal act. It follows that the concepts of *mens rea* and diminished capacity are logical vehicles for accurately measuring the offender's criminal responsibility.

When the criminal justice system is confronted with an accused suffering from a genetic defect, it should not judge his criminal conduct against a legal standard that does not examine the cause of the problem that subjected the accused to criminal sanctions. If a genetically defective offender is so retarded that he was unable to conform his conduct to the law, or was unable to rationally conclude that his conduct was unlawful, no criminal culpability should arise. If we look to the cause of the criminal act (retardation, for example), we must conclude that the act occurred through no fault of the accused.¹⁰³ In the more traditional diminished capacity cases the accused often caused the diminished capacity by his own actions, such as the voluntary use of alcohol or drugs. The distinction between the accused whose diminished ability to control his behavior results from voluntary action, and the accused who suffers from an involuntary genetic defect, is fundamental to fairly appropriating criminal culpability under the concept of diminished capacity.¹⁰⁴

99. See WHARTON'S, *supra* note 66, § 104, at 33.

100. See Arenella, *supra* note 98.

101. See Annot., 22 A.L.R.3d 1228 (1968 & Supp. 1983).

102. MODEL PENAL CODE § 4.02(1) (Proposed Official Draft 1962).

103. See Annot., 44 A.L.R. 584 (1926).

104. Fingarette, *Diminished Mental Capacity as a Criminal Law Defence*, 37 MOD. L. REV. 264, 264-65 (1974). Fingarette asserts that diminished capacity should be separated into two distinct areas of culpability. One area occurs where the accused was culpable for the origin of his condition, and the other occurs where the accused was irrational through no fault of his own. The first offender should not escape responsibility or culpability for his criminal conduct, and the specific degree of culpability would depend on the way in

From the available information on the effects of genetic defects, it seems irrational to determine criminal culpability using the traditional "all or nothing" legal insanity tests. Use of the diminished capacity doctrine to assess criminal culpability according to the degree of impairment better reflects the public policy of assigning blame to persons responsible for the criminal act. Judicial recognition of this argument is hypothetical, since no genetically defective offender has asserted this defense. It may be helpful, however, to examine how courts have applied the diminished capacity defense.

In *United States v. Brawner*,¹⁰⁵ the Court of Appeals for the District of Columbia not only repudiated the *Durham* test by adopting the ALI-Model Penal Code test, but also discussed the concept of diminished capacity for *specific* intent crimes.¹⁰⁶ The court adopted a rule which "permits the introduction of expert testimony as to abnormal condition if it is relevant to negate, or establish, the specific mental condition that is an element of the crime."¹⁰⁷

An interesting aspect of this decision is the apparent judicial sanction of expert testimony presented by the prosecution to prove specific intent. In a criminal insanity trial, expert psychiatric and psychological testimony presented by the prosecution is most often used to rebut the defense claim of insanity. Here, the court says such evidence may be introduced in the prosecution's case in chief to prove an element of the offense charged, i.e., specific intent. The burden of rebutting the inference of specific intent then falls

which the originating culpability was related to the impaired state of mind. The latter offender would not be responsible for his conduct. In effect, the author advocates a complete defense, based on diminished capacity, for any mental condition (including retardation) not the fault of the accused. *Id.*

105. 471 F.2d 969 (D.C. Cir. 1972).

106. *Id.* at 999.

107. *Id.* at 1002 n.75. The footnote sets forth the procedure for the jury consideration of diminished capacity evidence (called abnormal mental condition in this case) by stating:

Assuming the introduction of evidence showing "abnormal mental condition," the judge will consider an appropriate instruction making it clear to the jury that even though defendant did not have an abnormal mental condition that absolves him of criminal responsibility, *e.g.*, if he had substantial capacity to appreciate the wrongfulness of his act or to control his behavior he may have had a condition that negates the specific mental state required for a higher degree of crime, *e.g.*, if the abnormal mental condition existing at the time of the homicide deprived him of the capacity for the premeditation required for first degree murder.

Id.

on the defense. This procedure is logical since the burden should be on the prosecution to prove all elements of the offense including intent.

Two recent Minnesota cases have considered whether diminished responsibility may be asserted as a defense at trial. In *State v. Bouwman*¹⁰⁸ the Minnesota Supreme Court was faced with a certified question from the trial court essentially asking whether the issue of specific intent could be tried separately from the issue of sanity. The defendant apparently intended to argue that he lacked the capacity to form the requisite specific intent to commit first degree murder by offering evidence of diminished responsibility.

The court rejected the defense of diminished responsibility, deciding that intent as a factual issue is different from the issue of mental capacity of the defendant. At the stage of the trial which determines intent, the jury alone has the responsibility of determining the existence of specific intent. The defendant may offer evidence to rebut the "physical facts upon which the inference of the fact of intent is sought to be established by the prosecution."¹⁰⁹ Psychiatric evidence of the defendant's mental capacity to form the requisite intent to commit the criminal act was held to be of no probative value at the intent stage of the trial. Such evidence was relegated to the capacity, or second stage of trial.

The defense of diminished responsibility was rejected by the court¹¹⁰ citing *Bethea v. United States*.¹¹¹ Interestingly, the court felt compelled to distinguish the defense of intoxication from the concept of diminished responsibility finding "significant evidentiary distinctions between 'partial or relative insanity' and conditions such as intoxication, medication, epilepsy, infancy, or senility."¹¹² The court also stated that these latter conditions are "susceptible to quantification and lay understanding."¹¹³ This language by the court implies that mental retardation would be accepted as a defense to specific intent based upon the characteristics of retardation rather than being introduced through the concept of diminished responsibility.

The holding of the court is an obvious attempt to prohibit ex-

108. 328 N.W.2d 703 (Minn. 1982).

109. *Id.* at 705.

110. *Id.* at 706.

111. 365 A.2d 64 (D.C. 1976).

112. *See State v. Bouwman*, 328 N.W.2d 703, 706 (Minn. 1982).

113. *Id.*

pert medical testimony on the issue of intent and confine such expert medical testimony to the capacity stage of trial. The court apparently does not want the intent stage of trial to become a battleground of medical and psychological experts on the issue of the defendant's ability to form the requisite intent for the criminal act charged.¹¹⁴

In a companion case, *State v. Hoffman*,¹¹⁵ the Minnesota Supreme Court held for the first time that a defendant has a due process right, as guaranteed by the Fourteenth Amendment to the United States Constitution and Article I, section 7 of the Minnesota State Constitution, to assert the defense of mental illness.¹¹⁶ This right does not extend, however, to the concept of diminished responsibility at the intent stage of trial.

If the defense elects a unitary rather than a bifurcated trial, the court set forth a procedure which requires that the jury "first determine if the state has proved all elements of the offense charged beyond a reasonable doubt before proceeding to the defense of mental illness."¹¹⁷ Presumably, this procedure is accomplished by a preliminary instruction given to the jury prior to the time testimony is received in the case. The procedure also requires that the state present its evidence on factual and intent issues, then rest temporarily. The defense then presents its rebuttal evidence on these issues. Psychological evidence relating to the defendant's capacity is not admissible during the rebuttal. The state then offers rebuttal evidence on the factual and intent issues and the trial continues until both sides have rested on this portion of the trial. Only then may evidence be offered of the defendant's mental illness at the unitary trial.¹¹⁸

In apparent contradiction to its announced rejection of the diminished responsibility of defense, the court held that although it was exclusively a jury function to determine the defendant's mental capacity to formulate the requisite mental intent, it "will

114. But see the dissenting opinion of Justice Wahl who forcibly argues that the majority opinion is inconsistent with the general American rule on diminished responsibility. *Id.* at 707 (Wahl, J., dissenting). Justice Wahl correctly separates the issue of the defendant's ability to form the requisite mental intent to commit the charged criminal offense from the defense of insanity under MINN. STAT. § 611.026 (1982). The majority opinion neglects or refuses to recognize the importance of this distinction, especially for the mentally retarded offender.

115. *See* *State v. Bouwman*, 328 N.W.2d 703, 709 (Minn. 1982).

116. *Id.* at 715.

117. *Id.* at 716.

118. *Id.* at 716-17.

permit qualified experts to answer this ultimate question so long as an appropriate instruction is given to the jury emphasizing that it is their function to make this determination and any opinions on these questions are not binding upon them."¹¹⁹ Arguably, this reasoning opens the door to the diminished responsibility defense in Minnesota. If the defense may offer evidence on the issue of whether the defendant had the capacity to form the requisite specific intent for the offense charged, the defense of diminished responsibility has for all purposes been allowed.

In contrast, California has adopted the diminished capacity defense to negate a specific mental state if caused by intoxication, trauma, or disease, but does not permit the prosecution to present expert testimony to prove specific intent.¹²⁰ Diminished capacity may be considered to rebut malice aforethought and intent to kill,¹²¹ to reduce first degree murder to voluntary or involuntary manslaughter,¹²² and in conjunction with an insanity defense. Evidence of insanity is also admissible to prove diminished capacity.¹²³

The English experience is similar to the American. English law specifically includes language that recognizes retardation as an abnormality of the mind which results in diminished capacity.¹²⁴

In most cases criminal culpability is not merely "all or nothing," especially where disorders like retardation are involved. As one commentator states, "Modern psychoanalytic knowledge does not

119. *Id.* at 717.

120. *See* *People v. Wells*, 33 Cal. 2d 330, 350-51, 202 P.2d 53, 65-66 (1949); Young, *Rethinking the Specific-General Intent Doctrine in California Criminal Law*, 63 CALIF. L. REV. 1352, 1364-66 (1975).

121. *See* *People v. Gorshen*, 51 Cal. 2d 716, 732-33, 336 P.2d 492, 502-03 (1959); *see also* *People v. Wolff*, 61 Cal. 2d 795, 822-23, 394 P.2d 959, 976-77, 40 Cal. Rptr. 271, 288-89 (1964).

122. *See* *People v. Conley*, 64 Cal. 2d 310, 318, 411 P.2d 911, 916, 49 Cal. Rptr. 815, 820 (1966); *People v. Mosher*, 1 Cal. 3d 379, 391, 461 P.2d 659, 666, 82 Cal. Rptr. 379, 386 (1969); *see also* Note, *Diminished Capacity: Its Potential Effect in California*, 3 LOY. L.A.L. REV. 153 (1970).

123. *See* *People v. Wetmore*, 22 Cal. 3d 318, 327, 583 P.2d 1308, 1314, 149 Cal. Rptr. 265, 271 (1978). But *see* Act of Sept. 10, 1981, ch. 404, 1981 Cal. Stat. 1591, which purports to abolish diminished capacity as a defense yet allows evidence to show whether the defendant actually formed intent.

124. *See* Homicide Act, 1957, 8 Halsbury's Stat., § 2, at 459 (1969) (present version at 11 HALSBURY'S L. ENG. § 1165, at 621 (1976)).

2. Persons suffering from diminished responsibility

(1) Where a person kills or is a party to the killing of another, he shall not be convicted of murder if he was suffering from such abnormality of mind (whether arising from a condition of arrested or retarded development of mind or any inherent causes or induced by disease or injury) as substantially impaired

support the legal fiction of an absolute dichotomous distinction between the responsible and the irresponsible."¹²⁵ The judiciary, appreciating this flaw in legal insanity tests, has embarked on a quiet search for a method to permit the trier of fact to understand the particular mental state of the accused at the time of the commission of the criminal act without necessarily resorting to the "all or nothing" traditional tests of insanity. This fact is best evidenced by the decisions in *Durham* and *Browner*, but is also evidenced by the decisions on diminished capacity in jurisdictions such as California.

At least for specific intent crimes,¹²⁶ the diminished capacity concept may serve to place the full burden of establishing intent as an element of the offense on the prosecution, and make the duty of the accused to rebut clearer. The traditional legal insanity defense focuses on the mental condition of the accused after an implied or actual admission of guilt, and ignores his capacity to specifically intend the commission of the criminal act. Use of diminished capacity may, therefore, be more desirable in any criminal trial where the intent of the accused is at issue. Specifically, the diminished capacity defense asks the question, "Did the defendant have the capacity to form the intent necessary to commit the act charged?"

If the jury answers "yes," the the defendant is guilty and evidence of mental incapacity would be relevant for the sentencing decision. If the accused did not possess the requisite intent, then he is not guilty and is subject to hospitalization for treatment until his disorder is sufficiently treated or controlled to allow his return to society.

his mental responsibility for his acts and omissions in doing or being a party to the killing.

(2) On a charge of murder, it shall be for the defence to prove that the person charged is by virtue of this section not liable to be convicted of murder.

(3) A person who but for this section would be liable, whether as principal or as accessory, to be convicted of murder shall be liable instead to be convicted of manslaughter.

(4) The fact that one party to a killing is by virtue of this section not liable to be convicted of murder shall not affect the question of whether the killing amounted to murder in the case of any other party to it.

Following the statute is the "General Note" discussion of diminished capacity, which contains a summary of the defense in England. *See also* Bartholomew, *supra* note 48, at 288-90.

125. Diamond, *Criminal Responsibility of the Mentally Ill*, 14 STAN. L. REV. 59, 73 (1961). Diamond suggests that it is not logical or necessary for the law to have evolved into the "all or nothing" attitude toward the *mens rea* of the mentally ill offender. *Id.* at 72.

126. *See* W. LAFAYE & A. SCOTT, *supra* note 67, at 196.

The distinction between specific and general intent, however, may no longer be important.¹²⁷ For example, if the defendant is charged with an unlawful killing, it would be an easy task to apportion criminal culpability according to his capacity to understand the various degrees of murder. A fully responsible defendant would be found guilty of first degree murder, where a severely impaired defendant might be found guilty of voluntary manslaughter or even acquitted. The jury as trier of fact could be given special verdict instructions describing the various forms of murder and manslaughter, and choose the offense which it believes properly satisfies the degree of the defendant's criminal culpability.¹²⁸

For the genetically defective offender, this type of procedure may be the only equitable method for his disorder to be fairly judged. To require the genetically defective offender to be tried according to the traditional "all or nothing" legal insanity defense ignores the reality of his disorder and may result in a hopelessly unfair trial. Different disorders need and require flexible standards to accurately judge their effect on the individual.

IV. THE GENETIC DEFENSE

A. *Evidentiary Considerations*

In order to establish a legitimate defense of legal insanity or diminished capacity, evidence on the effects of the genetic abnormality must be admissible as scientific evidence. The standard for admissibility of scientific evidence in virtually all jurisdictions is the *Frye* test.¹²⁹ Decided over fifty years ago, the rule announced by the *Frye* court provides:

Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have

127. See Diamond, *supra* note 125, at 83, where the author argues that in California the next step after the *Gorshen* decision is to expand the principle of limited or diminished capacity to all definitions of crime.

128. See Dix, *Psychological Abnormality as a Factor in Grading Criminal Liability: Diminished Capacity, Diminished Responsibility, and the Like*, 62 J. CRIM. L. CRIMINOLOGY & POLICE SCI. 313, 313-14 (1971), discussing the system of grading criminal offenses based on the degree of psychological abnormality of the offender.

129. *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923).

gained general acceptance in the particular field in which it belongs.¹³⁰

One legal scholar has repudiated the *Frye* test and suggests that "any relevant conclusions which are supported by a qualified expert witness should be received unless there are other reasons for exclusion."¹³¹ This new standard of admissibility is referred to as the scientific reliability theory.¹³² But whether a court uses the general acceptance or scientific reliability standard, the question remains, will evidence of a genetic defect and its resulting effects be admissible as scientific evidence?

The preliminary evidentiary issue to be decided focuses on whether genetic defects can be linked to disorders that are generally accepted by a speciality within a *general field of science*.¹³³ As I have suggested, such a disorder may include retardation. Thus, the preliminary inquiry is whether a field of science generally agrees that genetic defects can cause retardation.

Genetic research studies provide ample evidence to conclude that retardation is a condition commonly associated with an extra "Y" chromosome, and some other genetic variations.¹³⁴ There is not total agreement that retardation and genetic defects are related, but neither the *Frye* nor the scientific reliability standards require absolute acceptance by every researcher in the field. To require absolute acceptance would exclude all scientific evidence, for there will always be a dissenting voice.

Given the relation of chromosome defects to retardation and low intelligence, expert genetic and psychological testimony would be able to satisfy the *Frye* test for this condition. The research studies provide less support for the proposition that the genetic defect caused by an extra Y or X chromosome results in an aggressive or violent personality, and in fact, may not support that hy-

130. *Id.* at 1014. See also FED. R. EVID. 104(e), on weight of the evidence proposed. A lack of consensus in the medical profession regarding the underlying principles of a scientific principle goes to the weight of the evidence rather than to its admissibility. J. RICHARDSON, MODERN SCIENTIFIC EVIDENCE § 6.16, at 159 n.54 (2d ed. 1974).

131. C. MCCORMICK, MCCORMICK'S HANDBOOK ON THE LAW OF EVIDENCE § 203, at 491 (2nd ed. 1972) (referring to *Coppolino v. State*, 223 So. 2d 68 (Fla. 1969)). Expert testimony in the federal courts is governed by FED. R. EVID. 702.

132. C. MCCORMICK, *supra* note 131.

133. FED. R. EVID. 104, sets forth the preliminary issues a judge must consider when the admissibility of evidence is in dispute. See also A. MOENSSENS & F. INBAU, SCIENTIFIC EVIDENCE IN CRIMINAL CASES 5-8 (2d ed. 1978).

134. See *supra* notes 22-57 and accompanying text.

pothesis.¹³⁵ Other traits of genetically defective males, such as tallness and acne, are essentially for identification purposes only and probably do not have direct relevance to criminal culpability.

B. Review of the Cases

The first reported case where an XYY chromosome defect may have been at issue in determining the defendant's criminal culpability was not decided on that issue, and evidence of the defendant's genetic defect was not discovered until several years after trial. It may well have been an important consideration, however, in deciding the defendant's criminal responsibility.

In *Regina v. Tait*,¹³⁶ the defendant was charged with the brutal murder of an old woman. He admitted his responsibility for the murder, but pleaded not guilty by reason of insanity and offered expert psychiatric testimony to corroborate his plea.¹³⁷ A psychiatrist testified the defendant was suffering from sexual psychopathy, a mental disorder or disease based on personality and character disorders which leads one to behave in a grossly antisocial fashion in sexual relations.¹³⁸ He further testified that an integral part of the problem was the need to inflict pain on the victim (sadism) or upon himself (masochism), and that these disorders were of an explosive nature with the tendency to have outbursts of an extremely antisocial and perverse sexual nature.¹³⁹ Interestingly, these symp-

135. A cautious approach is suggested in arguing that aggression is always found in genetically abnormal offenders, although there is some evidence for that theory. See Hamerton, *supra* note 12; Noël, Dupont, Revil, Dussuyer & Quack, *The XYY Syndrome: Reality or Myth?*, 5 CLINICAL GENETICS 387, 393 (1974). Some studies did not find aggressive behavior or could not positively link aggression to the genetically abnormal offender. See *Aggressive Behavior*, *supra* note 4; Price, et al., *Criminal Patients*, *supra* note 10; Price & Whatmore, *supra* note 11; Hook, *supra* note 36.

136. 1963 Vict. R. 520 (Austl.).

137. *Id.* at 521.

138. *Id.* at 525-26.

139. *Id.* at 526. The defense counsel had asked the psychiatrist several questions, attempting to conform the testimony to the requirements of the *M'Naghten* test. He asked:

Q. Whatever the reason, whether it is irresistible impulse or anything else I do not care, do you say that he probably could or could not make a moral judgment?

A. Well, I think over a short period he probably could not make a moral judgment—an adequate moral judgment.

* * * *

Q. When you say he could not make it, you mean he could not make any such judgment at all or that his moral judgment was influenced by other and perhaps immoral considerations?

A. Well, I see the difficulty and I have tried to put it the way I look at it. When a person is acting under a tremendously strong, although very abnormal force, instinct, urge, impulse, whatever you call it, which is only—of course, it is

toms parallel the research findings on aggression in genetically defective offenders.

The defendant was convicted. On appeal, the court interpreted the psychiatric testimony to mean that at some stage during the attack on the victim Tait was so overcome by sexual fury that he was unable in any proper legal sense to appreciate that his actions were morally or legally wrong. Further, the court held that Tait's conduct arose from a mental disease or disorder which made him legally not responsible for his acts due to insanity.¹⁴⁰ The appellate court weighed this testimony against the prosecution's expert psychiatric testimony that Tait remained capable of knowing the nature and quality of his acts, and that he knew he was doing wrong in murdering the victim.¹⁴¹

Several appeals followed,¹⁴² but each decision affirmed the death sentence. Only by action of the executive branch, which was apparently convinced that the defendant was mentally ill or intellectually defective, was the death sentence commuted to life imprisonment.¹⁴³ Five years after his conviction, Tait was identified as an XYY individual during a chromosome study at the institution in which he was being held.¹⁴⁴ His abnormal genetic composition, however, had not been an issue at his trial or on appeal.

The first case in which the XYY chromosome defect was an issue involved the trial of Daniel Hugon.¹⁴⁵ Hugon had fled Paris after murdering a prostitute, but returned and voluntarily surrendered to police and confessed to the crime. While awaiting trial in

at a conscious level, he certainly knew what he was doing—but the motivations, the mechanism behind this impulse, he certainly would not understand and they would be, to a considerable extent, subconscious or unconscious in his mind, but whatever it is, whatever combination of degrees of conscious appreciation and subconscious factors, at the time that a person of this kind is gripped by—I think I used the words “sexual fury”—I do not think that is an exaggeration—the mind is so—their whole being, their whole action is so intent on carrying out this act that any appreciation—any moral factors involved, are in abeyance at that time. That is my belief of the way this sort of human mind works on this sort of occasion.

Id. at 527.

140. *Id.* at 527.

141. *Id.*

142. *Re Tait*, 1963 Vict. R. 532 (Austl.); *Tait v. Regina*, 1963 Vict. 547 (Austl.); *see also note at 1963 Vict. R. 564* (Austl.); *Tait v. The Queen*, 36 Austl. L.J.R. 330 (1963).

143. *Tait v. The Queen*, 108 C.L.R. 620, 625 (1962).

144. Fox, *The XYY Offender: A Modern Myth?*, 62 J. CRIM. L. CRIMINOLOGY & POLICE SCI. 59 (1971).

145. *See* N.Y. Times, Apr. 21, 1968, at 1, col. 3.

jail, he unsuccessfully attempted suicide. The court immediately ordered a series of extensive mental and physical examinations, most of which would not otherwise have been undertaken. A karyotype analysis of Hugon's chromosomes was made and an extra Y chromosome was discovered. The court then named a committee composed of a psychiatrist, a geneticist, and a professor of medicine to advise on how best to handle the discovery and any implications the extra chromosome may have regarding the responsibility of the defendant for his actions.¹⁴⁶

The chairman of the committee reported those born with chromosome abnormalities have a 30% greater chance of becoming criminals than others in the general population. He further stated that everything in the defendant's life history indicated a "sick man" from birth, and that his hereditary affliction prevented him from exercising normal responsibility.¹⁴⁷

Hugon was convicted, but received a sentence of only seven years apparently due to the extenuating circumstances created by his abnormal chromosome defect.¹⁴⁸

The 1968 Australian case of *Regina v. Hannell*¹⁴⁹ involved a known XYY offender and the genetic defect defense. Hannell's chromosome defect was discovered prior to trial and the evidence regarding this abnormality was an issue at trial. The defendant was accused of murdering his landlady, and had confessed to his acts after a short period of flight to avoid arrest.¹⁵⁰ Upon examination, it was apparent Hannell was intellectually very dull, had a very low IQ, and possessed an XYY chromosome constitution.¹⁵¹

Initially the defendant was found unfit to stand trial based on psychiatric testimony that he was mentally defective due to his low IQ. Hannell was subsequently placed on trial, however, after both the prosecution and defense satisfied the trial judge of his mental fitness.¹⁵² The defense of insanity was raised and considerable psy-

146. *Id.*

147. *See* N.Y. Times, Oct. 15, 1968, at 5, col. 4.

148. *Id.*

149. *An English XYY Murder Trial*, 1 BRIT. MED. J. 201 (1969); *see* Bartholomew & Sutherland, *A Defence of Insanity and the Extra Y Chromosome: R. v. Hannell*, 1 AUSTL. & N.Z. J. CRIMINOLOGY 29 (1968).

150. Bartholomew & Sutherland, *supra* note 149, at 30.

151. *See id.* at 31. The defendant had a Verbal IQ of 65, Performance IQ of 83, Full Scale IQ of 71. The Full Scale score and quality of test responses was consistent overall with borderline defective intelligence.

152. *See id.* at 33. Initially, the Crown's counsel had asserted defendant's unfitnes to

chiatric evidence was presented.¹⁵³ During the trial, the defendant was re-examined and found unfit to continue. The case was then submitted to the jury upon the evidence heard to that point, and they were instructed on the insanity issue according to the *M'Naghten* rule.¹⁵⁴ The jury returned a verdict of not guilty by reason of insanity, and the defendant was ordered held indefinitely due to his condition.¹⁵⁵ To date, this is the only case resulting in a not guilty verdict where evidence of an XYY genetic defect has been raised.

In West Germany the same year, 1968, Ernest Dieter Beck was sentenced to life imprisonment for the murders of three women.¹⁵⁶ At trial, scientists informed the court that Beck had an extra Y chromosome and this made him unable to control his impulses to commit crimes ranging from house-breaking to murder.¹⁵⁷ The court, nevertheless, accepted the prosecution's argument that Beck was fully aware he was committing the murders even though he might not have been able to control his impulse to kill.¹⁵⁸ There is no capital punishment in West Germany. Thus, the fact Beck was given the maximum sentence leaves us to question the impression made by this defense.¹⁵⁹

The following year, John Farley was accused of a brutal rape and murder in New York.¹⁶⁰ No attempt was made to deny the defendant committed the murder. The defense concentrated instead on rebutting the presumption of sanity using an XYY genetic defense.¹⁶¹

plead and stand trial, and the defense counsel did not contest this position. No explanation is given for the change in position by either counsel.

153. *See id.* at 33-34.

154. *See id.* at 34-35.

155. *Abnormal Chromosome*, 4 BRIT. MED. J. 398 (1968).

156. *See Fox, supra* note 144, at 60.

157. *Id.*

158. *Id.*

159. *Id.*

160. Note, *The XYY Syndrome*, 16 N.Y.L.F. 232, 246 n.78 (1970). The evidence against the defendant was strong. His fingerprints were found on the victim's eyeglasses, stairway, and on two lights in the alley where the murder took place. *Id.* at 246 n.79.

161. *Id.* at 246. The defendant exhibited common traits of an XYY male, as he was unusually tall and had previously exhibited aggressive and antisocial behavior. The defense relied upon N.Y. PENAL LAW § 30.05 (McKinney 1983), which provides:

1. A person is not criminally responsible for conduct if at the time of such conduct, as a result of mental disease or defect, he lacks substantial capacity to know or appreciate either:

(a) The nature and consequence of such conduct; or
 (b) That such conduct was wrong.

Two expert witnesses testified for the defense, a cytogeneticist and a psychiatrist. The cytogeneticist testified as a teaching witness to inform the court and jury on the effects of an extra Y chromosome, and to explain the current research in this field.¹⁶² He testified that in his opinion, there was a connection between the defendant's antisocial behavior and his chromosome abnormality.¹⁶³ He also testified that the chromosome defect had a causory effect on the defendant's behavior pattern, stating that when an XYY male is intoxicated he can become very aggressive and mean, and can start fighting.¹⁶⁴ The psychiatrist described the defendant's emotional composition as schizophrenic with periods of psychosis,¹⁶⁵ but testified he did not know whether the extra Y chromosome had any significance in the defendant's behavior.¹⁶⁶ This testimony was criticized by the trial judge because no attempt was made by the witness to relate the defendant's emotional condition to his chromosome defect.¹⁶⁷

The prosecution's psychiatric expert indicated that the defendant was not suffering from a mental defect which would render him criminally irresponsible, and further, the mere presence of an extra Y chromosome did not predispose an individual to criminality.¹⁶⁸ Using the *M'Naghten* test, the jury found the defendant guilty. He was sentenced to twenty-five years to life in prison.¹⁶⁹ Again the genetic abnormality seemed to have little or no effect on the sentencing decision of the judge.

In *People v. Tanner*,¹⁷⁰ the defendant was originally charged with kidnapping, forcible rape, and assault with intent to commit mur-

2. In any prosecution for an offense, lack of criminal responsibility by reason of mental disease or defect, as defined in subdivision one of this section, is a defense.

Id.

162. Note, *supra* note 160, at 246.

163. Farrell, *The XYY Syndrome in Criminal Law: An Introduction*, 44 ST. JOHN'S L. REV. 217, 218 (1969).

164. Note, *supra* note 160, at 246 n.80.

165. *Id.* at 247. See also DSM-III, *supra* note 22, at 181 for the classification of schizophrenic disorders.

166. Farrell, *supra* note 163, at 218.

167. *Id.* at 218. But Judge Farrell, who was the trial judge, also states affirmatively, "Its [XYY] relevancy as part of an insanity defense should not be opened to serious dispute." *Id.* A properly prepared psychiatrist would have impressed the judge and may have helped obtain a favorable verdict or a more lenient sentence.

168. Note, *supra* note 160, at 247.

169. *Id.*; see also N.Y. Times, Apr. 30, 1969, at 93, col. 4.

170. 13 Cal. App. 3d 596, 91 Cal. Rptr. 656 (1970); see also Annot., 42 A.L.R.3d 1408 (1972).

der. After he plead guilty to the assault charge, the other charges were dismissed. Prior to sentencing, the court appointed two psychiatrists to examine Tanner to determine whether he might be a mentally disordered sex offender. Their report recommended further study and observation at a state hospital.¹⁷¹ During the next six months, Tanner was found to be a mentally disordered sex offender. The doctors at the state hospital determined further treatment or hospitalization would be useless since Tanner resisted treatment.¹⁷²

During this confinement at the state hospital Tanner was discovered to possess an extra Y chromosome. Since he had already pleaded guilty and had been sent to the hospital for evaluation, the defendant moved the court to withdraw his plea and substitute a plea of not guilty by reason of insanity. The court ordered an evidentiary hearing to consider the feasibility of an insanity plea based on an abnormal chromosome constitution.¹⁷³

The defense introduced two expert witnesses, both geneticists, who testified the defendant was in fact an XYY individual and comprehensively explained the procedures in identifying such individuals.¹⁷⁴ Both doctors told about recent research conducted in this field by themselves and other scientists, the results of which were reported in medical periodicals. They stated that these studies suggested XYY individuals exhibit aggressive behavior as a causal result of the chromosomal defect.¹⁷⁵

The court found that on the primary issue of the behavioral effects of the XYY syndrome, both defense experts had merely suggested aggressive behavior may be one manifestation of the syndrome and evidence produced by the cited studies did not suggest all XYY individuals were involuntarily aggressive.¹⁷⁶ Deciding that the testimony was inconclusive since so few studies of the XYY syndrome had been undertaken, the *Tanner* court concluded

171. *People v. Tanner*, 13 Cal. App. 3d 596, 598, 91 Cal. Rptr. 656, 657 (1970).

172. *Id.* The CAL. WELF. & INST. CODE § 6300 (West 1980) (repealed 1981) provided:

As used in this article, "mentally disordered sex offender" means any person who by reason of mental defect, disease, or disorder, is predisposed to the commission of sexual offenses to such a degree that he is dangerous to the health and safety of others. Wherever the term "sexual psychopath" is used in any code, such term shall be construed to refer to and mean a "mentally disordered sex offender."

Id.

173. *People v. Tanner*, 13 Cal. App. 2d 596, 598, 91 Cal. Rptr. 656, 657 (1970).

174. *Id.* at 600, 91 Cal. Rptr. at 658-59.

175. *Id.*

176. *Id.* at 600-01, 91 Cal. Rptr. at 659.

the experts could not determine whether Tanner's aggressive behavior resulted from his extra Y chromosome.¹⁷⁷ The court specifically noted neither expert had testified that possession of an extra Y chromosome results in a mental disease which constitutes legal insanity under the California version of *M'Naghten*.¹⁷⁸ Therefore, the motion to withdraw the guilty plea was denied.¹⁷⁹

In *Millard v. State*,¹⁸⁰ the defendant was charged with robbery with a deadly weapon. He pled not guilty by reason of insanity, arguing that an extra Y chromosome in his brain and other cells of his body constituted a mental defect, which resulted in his substantial lack of capacity either to appreciate the criminality of his conduct or to conform his conduct to the requirements of the law.¹⁸¹ Maryland procedure required the defendant to establish insanity to the satisfaction of the court by sufficient competent proof before the issue could be presented to the jury as a defense.¹⁸² To meet this burden of proof, the defense called two witnesses.

A lieutenant from the county jail testified that while in confinement Millard was agitated, nervous, and upset and became so violent on occasions that he had to be handcuffed and shackled in leg irons. Additionally, Millard cut himself five or six times on his arm which resulted in severe bleeding. The lieutenant further testified that as a result of Millard's condition, he was sent to three different hospitals for treatment and evaluation.¹⁸³

The second defense witness, Dr. Jacobson, was a medical doctor and an expert in genetics. He testified that although he received formal training in psychiatry as a medical student, he was not a

177. *Id.* The court upheld the trial court's finding that the evidence produced by the defense experts was not clear and convincing, analogizing the situation to other types of inadmissible evidence such as voiceprints, Kell-Cellano blood grouping tests, hypnosis, truth serums, and the polygraph.

178. *Id.* at 601, 91 Cal. Rptr. at 659.

179. *Id.* at 602, 91 Cal. Rptr. at 660.

180. 8 Md. App. 419, 261 A.2d 227 (1970).

181. *Id.* at 228. MD. ANN. CODE, art. 59, § 25 (1967), provided:

(a) A defendant is not responsible for criminal conduct and shall be found insane at the time of the commission of the alleged crime if, at the time of such conduct as a result of mental disorder, he lacks substantial capacity either to appreciate the criminality of his conduct or to conform his conduct to the requirements of the law. As used in this section, the terms "mental disorder" do not include an abnormality manifested only by repeated criminal or otherwise antisocial conduct.

182. See *Riggleman v. State*, 33 Md. App. 344, 364 A.2d 1159 (1976); *Mahoney v. State*, 8 Md. App. 44, 257 A.2d 462 (1969); *Saul v. State*, 6 Md. App. 540, 252 A.2d 282 (1968); *McCracken v. State*, 2 Md. App. 716, 237 A.2d 87 (1967).

183. *Millard v. State*, 8 Md. App. 419, 421, 261 A.2d 227, 228 (1970).

psychiatrist and had no competence in the field of psychiatry beyond that possessed by the ordinary medical doctor.¹⁸⁴ This lack of specialized training in psychiatry ultimately adversely affected his credibility and the genetic defect defense presented in the case.

Dr. Jacobson testified that he had examined the defendant and found cells containing extra Y chromosomes. He stated that the presence of the extra chromosome constituted a basic defect in the genetic complement of the cells, which affected both the cells' growth and the body's growth.¹⁸⁵ He further testified that the extra Y chromosome caused marked physical and mental problems affecting the manner persons possessing this disorder react to certain stimuli.¹⁸⁶ Dr. Jacobson concluded that "if the definition of insanity has a mental defect, the answer is yes, he [Millard] has a mental defect based upon his abnormal [chromosome] test."¹⁸⁷ When asked if the defect could cause the defendant to lack substantial capacity either to appreciate the criminality of his conduct or to conform his conduct to the requirements of the law, he answered, "I cannot say that because I have not examined him as a psychiatrist. I have no competence in that area."¹⁸⁸ He did state that based upon the defendant's conduct, behavior, and *genetic defect*, he was insane and not competent to stand trial.¹⁸⁹

At the conclusion of the defense testimony, the trial judge believed the defense *had* presented sufficient evidence to rebut the presumption of sanity and the issue could go to the jury.¹⁹⁰ The prosecution argued the court should withhold its ruling until testimony of the state's expert witness had been heard. The state psychiatrist then testified that after an extensive *psychiatric* examination, he concluded Millard was not insane. He diagnosed the defendant's condition as an antisocial personality, with schizoid trends indicating the likelihood of psychotic episodes in the future.¹⁹¹

184. *Id.* at 422, 261 A.2d at 228-29.

185. *Id.* at 423, 261 A.2d at 229.

186. *Id.*

187. *Id.* at 423-24, 261 A.2d at 229.

188. *Id.* at 424, 261 A.2d at 229.

189. *Id.* at 425, 261 A.2d at 230. The definition of insanity used by Dr. Jacobsen was not a legal definition, but a medical diagnosis of the defendant's condition arrived at after considering the genetic defect studies and the defendant's history.

190. *Id.*

191. *Id.* The prosecution's psychiatrist did not examine the defendant pertaining to a genetic defect since he did not believe an extra Y chromosome was a "mental defect" according to § 9(a), but rather was a physical defect not affecting the mental functioning

At the conclusion of the state's testimony, the trial judge reversed his previous position and declined to submit the issue of Millard's sanity to the jury. He stated that Dr. Jacobson's testimony regarding the defendant's mental condition was not competent under Maryland law because it was not based on a reasonable medical certainty.¹⁹² The appellate court also faulted Dr. Jacobson's testimony for failing to relate the effect of an XYY disorder to the requirements of Maryland law; Even though Dr. Jacobson believed Millard was insane and incompetent to stand trial, this belief was based on a definition of insanity different from the one prescribed by state law.¹⁹³ There was concern by the court that Dr. Jacobson's definition of insanity was so general it would include a person who would attempt suicide. This conception of the law was incorrect.

In reviewing the evidence presented on the XYY syndrome at trial, the court stated:

[W]e do not intend to hold, as a matter of law, that a defense of insanity based upon the so-called XYY genetic defect is beyond the pale of proof under section 9(a). We only conclude that on the record before us the trial judge properly declined to permit the case to go to the jury. . . .¹⁹⁴

This statement is encouraging for the future assertion of this defense, because apparently if the defense had presented adequate testimony by a psychiatrist to corroborate Dr. Jacobson's testimony, the insanity issue would have gone to the jury.

In a New York case, *People v. Yukl*,¹⁹⁵ Charles Yukl was charged with the murder of a young woman in his apartment.¹⁹⁶ He had been previously convicted of a similar brutal killing and had been recently released from prison.¹⁹⁷ After conviction, the defendant appealed the denial of his request for the appointment of a cytogeneticist to perform a chromosome test which would have

of the brain. This position has been refuted by several studies cited previously in this paper. See, e.g., DSM-III, *supra* note 22, at 181.

192. *Id.* at 426, 261 A.2d at 230. The defendant was found guilty and sentenced to eighteen years in prison.

193. *Id.* at 426, 261 A.2d at 231.

194. *Id.* at 428, 261 A.2d at 231-32.

195. 83 Misc. 2d 364, 372 N.Y.S.2d 313 (1975).

196. *Id.* The evidence indicated the victim was found murdered on the roof of the apartment building where the defendant resided. The defendant's culpability for the crime was not in issue, only his insanity based on a genetic defect.

197. *Id.* at 365, 372 N.Y.S.2d at 315.

been offered at trial.¹⁹⁸

The court began its analysis by asking the necessary preliminary question of whether this type of evidence qualified for admission as scientific evidence. Noting a reluctance by other courts to admit evidence of genetic defects because of the inconclusive research studies on the XYY issue and a failure to meet reasonable medical certainty standards, the court affirmed the trial court's denial.¹⁹⁹ It did set forth, however, a rule for the future introduction of such evidence:

Thus, in New York an insanity defense based on chromosome abnormality should be possible only if one establishes with a high degree of medical certainty an etiological relationship between the defendant's *mental capacity and the genetic syndrome*. Further, the genetic imbalance must have 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.²⁰⁰

Using this standard, the mentally retarded offender suffering from the effects of a genetic defect could have a reasonable chance in New York of establishing the insanity defense based on an XYY chromosome constitution. The rule pronounced by the court merely requires the establishment of a causal link between the defendant's condition and the genetic defect. The defendant is not required to establish a general rule that all or most individuals with genetic defects are retarded.

Another interesting aspect of the *Yukl* rule is its departure or modification of the generally accepted *Frye* test.²⁰¹ The New York court suggests a specific standard for the admissibility of a particular type of scientific evidence. This suggestion resembles that in *Coppolino v. State*,²⁰² a Florida case wherein the court admitted evidence of a new scientific test based on a reasonable medical cer-

198. *Id.* at 368-72, 372 N.Y.S.2d at 317-20. The defendant also appealed from a denial of his request for a bifurcated trial. *Id.* at 365-68, 372 N.Y.S.2d at 315-17.

199. *Id.* at 372, 372 N.Y.S.2d at 320.

200. *Id.* at 370, 372 N.Y.S.2d at 319 (emphasis added).

201. But see *Survey of New York Law—Part One: Public Law (Criminal Procedure)*, 28 SYRACUSE L. REV. 13, 28 (1977), which states that the *Yukl* court adopted the *Frye* test by denying the motion for a cytogeneticist. But the mere denial of the motion is not in itself an adoption of *Frye*. Clearly, the rule adopted by the court is less strict than the general acceptance standard in *Frye*.

202. 223 So. 2d 68 (Fla. 1968). An expert witness had performed a generally unknown test for the detection of the poison, succinylcholine chloride, in a human cadaver. *Id.* at 69.

tainty. The test was generally believed to be impossible prior to trial and did not enjoy general acceptance in the scientific community.

In *State v. Roberts*,²⁰³ the defendant was charged and convicted of grand larceny of an automobile.²⁰⁴ On appeal, the defendant alleged the refusal of the trial court to grant a continuance for him to have an additional psychiatric examination to determine whether he was an XYY individual was an abuse of discretion.²⁰⁵

The Washington Court of Appeals found that "the behavioral impact of this chromosome defect had not been precisely determined"²⁰⁶ and that "presently available medical evidence is unable to establish a reasonably certain causal connection between the XYY defect and criminal conduct."²⁰⁷ The court denied reversal on this issue because in its opinion the studies on genetic defects did not support a genetic defect defense.²⁰⁸

What the court failed to recognize was that a specific link to criminal conduct is not necessary, but merely a connection to a condition which affects the capacity of the accused to form the mental capacity for the specific criminal act charged. Otherwise, the inquiry focuses on the "criminal gene" theory which is an incorrect characterization of a genetic abnormality.

With one exception, the genetic defense has not absolved a defendant of criminal culpability under the traditional tests of insanity. In some cases, the research studies may have been sufficient to convince the trier of fact of the defendant's insanity but the expert witnesses were unprepared or did not possess the necessary expertise to render reliable opinions. But none of these cases was tried with the research information now available. Several courts have pronounced encouraging standards of admissibility for genetic defect evidence, and with the use of the research studies discussed in section II of this Article, a proper case may be made in these jurisdictions.

C. Procedural and Ethical Considerations

An insanity defense based on a genetic defect poses two impor-

203. 14 Wash. App. 727, 544 P.2d 754 (1976).

204. *Id.* at 727, 544 P.2d at 755.

205. *Id.* at 733, 544 P.2d at 758.

206. *Id.*

207. *Id.* at 733-34, 544 P.2d at 758.

208. *Id.* at 734, 544 P.2d at 759.

tant issues for the defense counsel: trial strategy and ethical considerations.²⁰⁹ Trial strategy is a most difficult issue because the decision to assert an insanity defense alone is a virtual concession of the defendant's responsibility for the criminal act. Should there be a doubt in the jury's mind about the defendant's insanity, it could vote for conviction and the court could impose a long prison sentence. Even when the defense is successful, the defendant may face an indefinite term of detention in a state hospital until certified sane.

The decision to assert the insanity defense is especially difficult in cases where the criminal act is relatively minor and the maximum sentence is short. Although it is tempting to simply ignore the sanity issue, for defense counsel representing a client with a potential insanity defense to take no action raises equally difficult ethical and professional considerations which have a direct influence on trial strategy.

The proposed Rules of Professional Conduct²¹⁰ provide some guidance in resolving these ethical considerations. Generally a lawyer is expected to act with reasonable diligence and promptness in representing a client,²¹¹ and to keep the client reasonably informed about the status of the case while explaining the legal and practical aspects and alternative courses of action available.²¹² These general responsibilities may have to be qualified when the client is insane or lacks the ability to comprehend the nature of the proceedings.

The Rules provide:

When a client's ability to make adequately considered decisions in connection with the representation is impaired, whether because of minority, *mental disability* or some other reason, the lawyer shall, as far as reasonably possible, maintain a normal client-lawyer relationship with the client.²¹³

For the defense counsel representing a client suffering from the effects of a genetic abnormality, this rule provides the foundation for properly representing the client. If the client is able to assist in making tactical decisions regarding the conduct of the defense, al-

209. See generally Shadoan, *Raising the Insanity Defense: The Practical Side*, 10 AM. CRIM. L. REV. 533 (1972).

210. MODEL RULES OF PROFESSIONAL CONDUCT (Final Draft 1982) [hereinafter cited as MODEL RULES].

211. *Id.* at § 1.3.

212. *Id.* at § 1.4(a) & (b).

213. *Id.* at § 1.14(a) (emphasis added) and Notes: Code Comparisons.

though impaired to some degree, the lawyer must abide by the client's decisions.²¹⁴ The lawyer must give an honest opinion to the client about the consequences likely to result from a decision,²¹⁵ but may not assist the client in criminal or fraudulent conduct.²¹⁶ If a genetically defective client desires not to raise an insanity or diminished capacity defense, then the decision by the client is binding on the defense lawyer.²¹⁷

An important corollary consideration is the duty of a defense counsel to advise the trial judge of a potential insanity defense which the defendant refuses to assert.²¹⁸ Is the failure to take such action by the defense counsel misleading or fraudulent? The answer is that the defense counsel has a duty to provide the client with effective representation of counsel and there would be no duty to advise the court during the trial. If the client is convicted, then at sentencing the lawyer would have a duty to inform the court of the defendant's condition and present a sentencing plan which stresses treatment. Using this format, the court is not misled regarding the defendant's condition when making the sentencing decision and the lawyer fulfills his obligation to the client. Nonetheless, the court may consider asserting the insanity defense independently and in opposition to the defendant's desires.²¹⁹ But, for the defense counsel to properly fulfill his obligation to the client, the procedure outlined above should be followed. It is not possible to fulfill obligations to the client and court simultaneously on this issue. Should the court believe the defendant is mentally incapacitated, procedural rules in most jurisdictions provide for a mental examination on the prosecution's or court's own motion²²⁰ and the expert medical witness appointed by the court would testify as a court's witness rather than for one of the parties.²²¹

For defense counsel, the more difficult case arises when the cli-

214. *Id.* at § 1.2(a) and Comment: Scope of Representation.

215. *Id.* at § 2.1.

216. *See id.* at § 3.3(a)(1) & (2).

217. *Id.* at § 1.2(a).

218. *Id.* at § 3.3(a). See also 18 U.S.C. § 4245 (1982), where if the Director of the Bureau of Prisons certifies to the Attorney General that a person convicted of an offense against the United States may have been mentally incompetent at the trial and his incompetency was not raised at trial, and if after a hearing the person is found to have been incompetent at trial, his conviction shall be vacated and he shall be granted a new trial.

219. *See* United States v. Robertson, 507 F.2d 1148 (D.C. Cir. 1974). *See generally* Note, *supra* note 84. It may also be necessary for defense counsel to seek appointment of a guardian. MODEL RULES, *supra* note 210, § 1.14(a) & (b); MINN. STAT. § 525.54 (1982).

220. *See, e.g.*, 18 U.S.C. § 4244 (1982).

221. *Id.* The medical expert would be used only to determine if the defendant could

ent is so mentally impaired or retarded that the lawyer must accept full responsibility for the decision to assert or reject a genetic insanity defense. Certainly a lawyer must not raise a defense which is not meritorious.²²² For the genetically defective offender suffering from retardation or unable to control his aggressive impulses, however, such a defense may be meritorious.

When a lawyer cannot communicate with his client, the Model Rules provide for the lawyer to seek the appointment of a guardian to make decisions for the defendant.²²³ In such cases, the lawyer should advise the guardian in the same manner he would advise the client and would be bound by the decision of the guardian. If no guardian is appointed, the lawyer must act to safeguard and advance the interests of the client.²²⁴ This duty would minimally require a psychiatric and cytogenetic examination to determine the validity of the client's genetic insanity defense.²²⁵ To do otherwise would be ineffective assistance of counsel.²²⁶

Once a legitimate genetic insanity defense is established, the lawyer must consider the effect upon the client of asserting it. The most logical approach is to weigh the probable criminal sentence against the effect and length of any civil commitment order resulting from a successful defense, and select not only the shortest period of potential incarceration but also a course of action which provides the client with any necessary medical treatment.

Should the lawyer be successful in asserting genetic insanity defense in a misdemeanor or minor felony case, the client will be forever "labeled" as mentally ill and possibly serve an indefinite period of confinement in a state mental hospital under civil commitment statutes rather than a short sentence in a jail.²²⁷ For felony cases with the potential of long prison sentences, the genetic insanity defense should always be considered when meritorious if only to educate the judge to the defendant's condition in anticipation of receiving a shorter sentence to a penal treatment facility.

CAVEAT: A defense attorney should be especially aware that a

understand the charges or assist in his own defense, and the medical findings would not be admitted in evidence on the issue of guilt.

222. MODEL RULES, *supra* note 210, § 3.1.

223. *Id.* at § 1.14(a) & (b) and Comment.

224. *Id.* at § 1.14(a) & (b) and Notes: Code Comparison.

225. *See* United States v. Edwards, 488 F.2d 1154, 1164-65 (5th Cir. 1974).

226. *Id.* at 1163-64.

227. For Minnesota commitment procedures, see MINN. STAT. chs. 253A, 253B, & appendix (1982).

successful insanity defense may result in the defendant's suffering significant penalties. For example, in California a defendant found not guilty by reason of insanity and whose sanity has not been established as restored at the time of the verdict, shall be confined in a state hospital or other appropriate public or private treatment facility until certified as sane.²²⁸ The maximum term of confinement shall be the longest term of imprisonment which could have been imposed for the offense committed.²²⁹ For certain offenses such as murder, a person may be committed *longer than* the possible maximum sentence by a procedure allowing for continued commitment in two-year intervals.²³⁰ Every defense counsel must become acquainted with the rules and decisions in his or her jurisdiction regarding this issue.²³¹

D. Disposition of Genetic Offenders

The tactical and ethical considerations in the defense of a genetically abnormal offender are closely related to those in the disposition of such individuals, whether the defense is successful or not.²³² The sentencing judge encounters a unique situation when confronted with such offenders.²³³ If traditional methods of treatment are inadequate, new methods must be explored to properly sentence and assist these offenders. Because it may be impossible to correct the genetic defect and its symptoms, the sentencing judge must marshal all available resources to ensure the offender will benefit from the sentencing conditions.²³⁴

Mentally disabled persons have a right to treatment under federal law.²³⁵ Important among federal statutes is the Developmen-

228. CAL. PENAL CODE, § 1026(a) (1982).

229. *Id.* at § 1026.5(a)(1).

230. *Id.* at § 1026.5(b)(1).

231. For the Minnesota rule, see MINN. STAT. § 253B.12(a) (1982).

232. See Fox, *supra* note 144, at 73.

233. Note, *Criminal Law: The XYY Chromosome Complement and Criminal Conduct*, 22 OKLA. L. REV. 287, 301 (1969). But see Bartholomew, *supra* note 48, at 292, who argues that the XYY offender should not receive any special consideration during sentencing, and that no person who provides evidence for the sentencing or parole decisions should comment on the offender's genetic defect.

234. Note, *supra* note 74, at 916, advocating that XYY offenders should *never* be incarcerated in penal institutions because rehabilitation of an XYY offender is not possible. Accord, Note, *supra* note 160, at 262.

235. See generally R. MACKLIN & W. GAYLIN, MENTAL RETARDATION AND STERILIZATION (1981); PRESIDENTIAL COMMITTEE ON MENTAL RETARDATION, MENTAL RETARDATION: CENTURY OF DECISION (1976).

tally Disabled Assistance and Bill of Rights Act,²³⁶ which provides assistance for individuals with developmental disabilities attributable to a mental or physical impairment or both.²³⁷ Congress has also made findings respecting the rights of developmentally disabled persons, providing for "treatment, services, and habilitation for such disabilities."²³⁸

States may receive funding to provide these services,²³⁹ on the condition that they place in effect a system to protect and advocate the rights of developmentally disabled persons.²⁴⁰ Whether private actions by mentally retarded individuals to enforce the provisions of the law guaranteeing treatment and habilitation are recognized by federal courts is unclear.²⁴¹

Certainly a sentencing judge has sufficient authority to adopt a meaningful program for the treatment and rehabilitation of a genetically abnormal offender suffering from the effects of retardation.²⁴² But the real issue focuses on what particular treatment is required and under what conditions should the treatment be administered?

From the very nature of their uncorrectable abnormality, genetically abnormal offenders, as well as all mentally disturbed offenders, need professional treatment before they can effectively participate in society. Although the current trend is for the treatment in the "least restrictive environment,"²⁴³ realistically a judge may be hesitant to risk the safety of citizens (or voter displeasure) in his community by allowing a genetically abnormal felon to return to the community without severe restrictions. Probation, without a period of evaluation and treatment in a medical facility to ensure the safety of the community, may be impractical.

The retarded offender requires assistance to learn the necessary skills for independent functioning or he will resort to further criminal behavior for support. The genetically abnormal offender should be evaluated for placement in a drug treatment program at

236. 42 U.S.C. §§ 6000-6081 (1976).

237. *Id.* at § 6000.

238. *Id.* at § 6010(1).

239. *Id.* at § 6000(b)(2)(C).

240. *Id.* at § 6012.

241. See generally Comment, *United States—Mental Health—The "Bill of Rights" of the Developmentally Disabled Assistance and Bill of Rights Act Did Not Create Substantive Rights for the Mentally Retarded to Appropriate Treatment in the Least Restrictive Environment*, 58 N.D.L. REV. 119 (1982).

242. See, e.g., MINN. STAT. § 609.135, & ch. 244, Appendix II(D) (1982).

243. Comment, *supra* note 241, at 129, 130-31.

a medical facility and receive intensive psychiatric and psychological counseling as a first step toward eventual return to society. One study has reported some success using a treatment of drugs and counseling with XYY males.²⁴⁴ Nine of the thirteen XYY males treated in this program were leading more socially acceptable lifestyles one year after completing the structured treatment program.²⁴⁵

In cases where the genetically abnormal offender is found not guilty by reason of insanity and faces civil commitment,²⁴⁶ the defense attorney has a responsibility to present a treatment plan that emphasizes the acquisition of skills that will enable the offender to function independently in society. The plan must stress the elements stated above for individuals convicted, but must additionally stress independence as the ultimate goal.

Following the trend of the "least restrictive setting" for rehabilitation, community-based outpatient treatment homes would serve to guide the retarded individual to self-independence.²⁴⁷ After an initial period of evaluation and treatment at a secure facility, the individual could be placed in one of the community-based homes. This home would serve as a base for the individual's continued treatment until independence could be achieved, since confinement or restriction to any structured facility should only be considered as temporary placement. Payment for the cost of this placement should come from state and federal sources designed to assist developmentally disabled persons through rehabilitation services.²⁴⁸

V. CONCLUSION

The history of the genetic defense is really a saga of overly enthusiastic defense attorneys who prematurely attempted to apply modern medical research, without fully comprehending the findings or adequately applying the research to their cases.

244. Wiedeking, Money & Walker, *Follow-up of 11 XYY Males with Impulsive and/or Sex-Offending Behavior*, 9 PSYCHOLOGICAL MED. 287 (1979).

245. *Id.* at 291-92.

246. See generally G. MORRIS, THE INSANITY DEFENSE: A BLUEPRINT FOR LEGISLATIVE REFORM 61-74; Note, *The XYY Chromosome Defense*, *supra* note 74, at 917-21. But see the provisions of 18 U.S.C. §§ 4241-4248 (1982), which make no mention of a federal civil commitment procedure after a finding of not guilty by reason of insanity and leaves any such commitment to the appropriate state authority. See also 18 U.S.C. § 4247 (1982) for the post-sentence commitment procedure.

247. Comment, *supra* note 241, at 121 n.10.

248. 29 U.S.C. § 701 (1982).

Medical science has provided the foundation for the identification, psychiatric classification, and treatment of individuals with XYY, XXY, and XXYY chromosome abnormalities. There appears to be a consensus among professionals in the field that retardation is a symptom of genetic abnormality. The assertion that aggression is also such a symptom does not yet have such acceptance. It should be emphasized that retardation based on a chromosome defect exists in very few individuals and would apply in only a small number of criminal cases. For those individuals, however, the research findings are significant and offer the promise of understanding and treatment rather than incarceration and punishment.

In addition to the advances made in medical research there have also been advances in judicial attitude toward the acceptance of this theory. Despite sometimes poorly prepared and presented genetic defenses, trial courts have seriously considered admitting the scientific data and expert testimony offered in support of the defense. And even after rejecting the genetic defense, several appellate courts have pronounced standards for the admissibility of such evidence in the future which promise the eventual acceptance of the defense. Both trial and appellate courts seem willing to allow evidence of a genetic defense using traditional insanity tests.

The adventuresome advocate may also consider asserting a diminished capacity defense based on a genetic abnormality even if no precedent exists in the jurisdiction. For those few offenders with genetic abnormalities, a jury instruction on diminished capacity may be the most logical, effective, and credible method of asserting a defense to criminal acts.

Moreover, future trial strategy may well focus on rebutting the defendant's ability to form the required mental intent to commit the criminal act charged using the genetic abnormality and its resulting conditions as a foundation for the attack. Using research data indicating that genetically abnormal offenders have below average intelligence or are retarded, and relating these studies to the defendant's condition, a successful attack on the issues of specific intent is possible. Although there is no logical reason why such strategy could not be applied to general intent crimes, as a practical matter the value of a successful defense for minor offenses may be outweighed by the consequences of possible long-term civil commitment.

The future of the genetic defense is not hopeless, but rather

seems to suffer from a lack of courage by defense attorneys to forge ahead after a period of limited and largely unsuccessful application. Given the recent assault on insanity defenses by state legislatures,²⁴⁹ new approaches for asserting a defendant's mental condition are necessary for the trier of fact to arrive at decisions about the defendant's mental condition. The genetic defense provides some hope of accomplishing that objective.

249. Clanon, Shawver & Kurdip, *Less Sanity in the Courts*, 68 A.B.A. J. 824 (1982).