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Reinventing Lombroso in the Era of Genetic Revolution: Whether Criminal Justice System Actually Imparts Justice or is Based on 'Convenience of Assumption'?

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Abstract

In the last century there has been growing appreciation for the role that genes play not only in the development of certain physical characteristics and diseases, but also in human behaviour. The recent advancements in the field of genetics show that genes do play a role in criminal behaviour, which has further shaken the free-will foundation upon which the criminal justice system is based. Does this mean that we are reinventing Lombroso and his theory of 'atavism' in the era of genetic revolution? This paper provides a critical analysis of India's judiciary's position on 'criminal genes' explanations as acceptable arguments that can be used by defence lawyers in criminal cases. We have found that 'criminal genes' arguments do not yet constitute a complete defence given the low level of accomplishment in this regard in the field of genetics. However, genetic arguments can be used as a reliable defence for mitigating the sentence.

Introduction

"[W]e used to think that our fate was in the stars. Now we know, in large measure, our fate is in our genes."[3]

Consider a world where an analysis of your genetic material at birth creates a 'genetic resume', which determines your station in life. In this world diseases are identified and cured before becoming symptomatic and antisocial behaviour is treated prior to resulting in violence.[4] Currently scientists are identifying genes that indicate characteristics such as antisocial behaviour, aggression and social orientation.[5] Advances in genetic technology have opened doors never before imagined. Doctors are diagnosing diseases before a person becomes symptomatic and customize treatments to the patient's genetic makeup. Law enforcement officers are compiling physical profiles of criminal suspects from

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[3] James Watson as quoted by Dan W. Brock & Allen E. Buchanan. (1999). The Genetics of Behaviour and Concepts of Free Will and determinism. In Jeffrey R. Botkin, Willaim M. McMahon & Leslie Pickering Francis (ED.), *Genetics and Criminality: The Potential Misuse of Scientific Information in Court* (pp. 67-75). Washington DC: American Psychological Association.

[4] Lisa Schriner Lewis. (2005). The Role Genetic Information Plays in the Criminal Justice System. *Arizona Law Review*, 47, 519-550. p.519.

[5] Mark A. Rothstein. (1999). The Impact of Behavioural Genetics on the Law and the Courts. Judicature, 83(3). Retrieved from http://www.ornl.gov/sci/techresources/Human_Genome/publicat/judicature/article5.html (visited on 26th August 2010).

DNA evidence left at a crime scene. And behaviourists will use biology to explain certain behaviours in an individual.

In the last century there has been growing appreciation for the role that genes play not only in the development of certain physical characteristics and diseases, but also in human behaviour,[6] because of the increase in chronic recidivism and the development of criminal career. If only a few offenders become persistent repeaters, what sets them apart from the rest of the criminal population may be an abnormal biochemical makeup, brain structure or some other human trait and all these mostly depend upon the genetic composition of the individual. Even if crime is a choice, the fact that some people make that choice repeatedly could be linked to their physical and mental makeup.[7] Therefore, an understanding of the role that genetics play in affecting behaviour may help us to answer the age old question: why do we do the things we do?[8]

Recent studies[9] have concluded that human behaviour has a genetic component. Does this mean that genes leading to physical and mental attribute of a person affect human behaviour? Does this mean that we are reinventing Lombroso in the era of genetic revolution? Henceforth, it becomes all the more imperative to study Cesare Lombroso and his theory of 'atavism'.

Cesare Lombroso: A Momentary Look

Cesare Lombroso, the father of modern criminology was born in the year 1835[10] in Verona, Italy of Italian-Jewish parents. He received the degree in Medicine in 1858 from the University of Pavia and in Surgery in 1859 from the University of Genoe.[11] He was a physician who became a specialist in psychiatry and his principal career was as a professor of legal medicine at the University of Turin.[12] His earliest researches were concerned with cetinism and pellagra, particularly rampant at that time in Italy. After becoming an Army physician, he carried out the anthropometric measurement of 3000 soldiers. This was followed by work in mental hospitals and then in 1874 he became a lecturer in legal medicine and public hygiene at the University of Turin, where he later became a professor of psychiatry and of criminal anthropology.[13] Philosophically, he was influenced as Wolfgang writes, 'by the French positivits, the German materialists and the English evolutionists'.[14] Lombroso was greatly impressed by the thinking of nineteenth century biologist Charles Darwin. Darwin proposed that human beings as well as other

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6 *Supra* note 2 at p. 536.

7 Larry J. Siegel. (2008). *Criminology: The Core*. Belmont CA: Thomson Learning Inc. p. 94.

8 Richard C. Boldt. (1992). The Construction of Responsibility in the Criminal Law. *University of Pennsylvania Law Review*, 140, 2245-2332.

9 A series of research studies now suggest a genetic link to Attention Deficit Hyperactivity Disorder (ADHA) in children and this in turn leads to the onset and sustenance of delinquent career, see Bill McCarty. (1995). Not Just 'For the Thrill of It': An Instrumentalist Elaboration of Katz's Explanation of Sneaky Thrill Property Crime. *Criminology*, 33, 519-539; Patricia Brantingham, Paul Brantingham & Wendy Taylor. (2005). Situational Crime Prevention as a Key Component in Embedded Crime Prevention. *Canadian Journal of Criminology and Criminal Justice*, 47, 271-292; Twin Studies, *Infra* note 45; Adoption Studies *Infra* note 46 have shown the importance of genetics rather than solely the environment in influencing human behaviour.

10 There is difference of opinion as to the year of birth of Lombroso. Lombroso's daughter, Gina Lombroso-Ferro along with George B. Vold, Thomas J. Bernard, Jeffrey B. Sipes, Katherine S. Williams, Robert W. Winslow, Frank Schmallenger, Sheldon X. Zhang, Hermann Mannheim Maggi Lee, Paul Iganski, Plummer, Nigel South and Eamonn Cerrabine state 1835 as the birth year of Lombroso whereas some like Curt R. Bartol and Anne M. Bartol state 1836 as his birth year. The first date is likely to be right.

11 Robert W. Winslow and Sheldon X. Zhang. (2008). *Criminology: A Global Perspective*. New Jersey: Pearson Prentice Hall. p. 86.

12 George B. Vold, Thomas J. Bernard & Jeffrey B. Snipes. (2002). *Theoretical Criminology*. New York : Oxford University Press. p. 26.

13 Hermann Mannheim. (1980). *Comparative Criminology*. London: Routledge & Kegan Paul. p. 214.

14 Ibid.

comtemporary living organisms were the end products of a long evolutionary process governed by rules such as natural selection, survival of the fittest and so on.[15] He proposed the idea that primitive traits survived in present day human populations, when he wrote "With mankind some of the worst dispositions which occasionally without any assignable cause make their appearance in families, may perhaps be reversions to a savage state, from which we are not removed by very many generations".[16]

Lombroso especially impressed by the notion of Charles Darwin that some men are genetically closer to their primitive ancestry than others[17]gave the concept of 'born criminal'. Cesare Lombroso was the first to give scientific backing instead of philosophical to the study of crime. He gave impetus to the movement towards secular, rational-scientific thinking and experimentation as opposed to the 'pure reason' of the Age of Enlightenment. He was the one to shatter the notion of 'Free Will'[18] as propounded by the Classical School. His theory raised the question that if the person's actions are not motivated by oneself but by hereditary factors, then how can criminal justice presume that he acted out of 'Free Will'? Lombroso was also the first person to raise the idea that the punishment meted out to criminals should be decided according to the individual biological makeup and not by the nature of the crime.[19]

Lombroso's original and basic premise, published in 'L'Uomo Delinquente (The Criminal Man) in 1876 was that some people are born with strong, innate predisposition to behave antisocially. The criminal, Lombroso believed, represented a separate species that had not yet evolved sufficiently towards the more 'advanced' homo sapiens; this species was genetically somewhere between modern humans and their primitive origins in physical and pshchological makeup. He called this evolutionarily retarded species homo delinquens and considered those individual mutations or natural accidents living among civilised humans.[20] Lombroso developed an interest in biological infuences on criminal behaviour while he was serving as an army physician between 1859 and 1863. During this period Lombroso conducted autopsies on 66 executed offenders, including a well known criminal named Vilella[21]. While examining brain, Lombroso found features that he identified as similar to those found in lower primates. His findings were supported by the study of another offender named Misdea. Lombroso also examined 832 living prison inmates and compared body part measurements with those of 390 soldiers.[22] From this research, Lombroso identified body features (including the skull, brain and other body parts) that he considered to be atavist. In other words, the criminal's physical characteristics reflected our lower and more ape-like ancestors. According to him, a criminal is supposed to be a throwback in the evolutionary chain, a more primitive being who was both mentally and physically inferior.[23] The physical characteristics measured by him included sloping foreheads; ears of unusual size; excessively long arms; receeding chins;

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15 Frank Schmalleger. (1996). *Criminology Today*. New Jersey: Prentice Hall. p. 166-171.

16 Charles Darwin. (1874). *Descent of Man: And Selection in Relation to Sex*. Revised Edition. London: John Murray. p. 137.

17 Curt R. Bartol & Anne M. Bartol. (1986). *Criminal Behaviour: A Psychosocial Approach*. New Jersey: Prentice Hall. p. 22.

18 Free will theory contends that human behaviour, when faced with a given situation, is the result of individual choices made by autonomous actors. The theory assumes that individuals are unique actors— they have an inherent ability to choose or "choose not" when confronted with specific environmental stimuli. It thus follows that, with this choice, individuals can be held personally responsible for their choices, and thus should face the consequences for their decisions.

19 Meghna Rajadhyaksha. (2006). Condemned by Birth: The Implications of Genetics for the theories of Crime and Punishment. *Socio-Legal Review*, 2, 85-103, p. 87.

20 Curt R. Bartol & Anne M. Bartol. (1986). *Criminal Behaviour: A Psychosocial Approach*. New Jersey: Prentice Hall. p. 22.

21 Italian Jack the Ripper, who by atrocious crimes had spread terror in the province of Lombardy. See Gina Lombroso-Ferroro, The Criminal Man: According to the Classification of Cesare Lombroso, Retrieved from http://www.gutenberg.org/files/29895/29895-h/29895-h.htm (visited on 8th September 2010).

22 Frank Schmalleger. (2002). *Criminology Today: An Integrative Approach*. New Jersey: Prentice Hall. p. 143.

23 Katherine S. Williams. (2001). *Textbook on Criminology*. New York: Oxford University Press. p. 142.

excessive cheek bones; twisted noses; fleshy swollen and protruding lips; premature and abundant wrinkling of the skin; inability to blush; extra fingers, toes or nipples; ambidexterity; nose upturned or flattened (indicative of thieves) or acquiline or beak-like (indicative of murderes); enlarged jaw and cheekbones, peculiar size or shape of head; abnormal teeth; abundance of hair which is often black and frizzled, sparse beard in men but abundance of facial hair in women; bushy and prominent eyebrows; facial asymmetry and dark skin.[24] In addition to these physical stigmata, he noted a lack of moral sense; vanity; cruelty; idleness; the use of a criminal argot; a specific nervous insensibility to pain with contempt of death and suffering, and finally an inclination for tattooing as characteristics of criminal.[25]

From time to time the list was changed, but it was always made up of similar types of physical anomaly. Lombroso reckoned that if an individual portrayed five or more of these atavisms or anomalies, then the individual was a born criminal.[26] He stated that these traits could be observed in the 'savages' or aborigines of Africa and the Americans. He also said 'many of the charactierisitcs presented by savage races are very often found among born criminals'.[27] Though Lombroso in his first edition of 'The Criminal Man' in 1876 while explaining his theory of evolutionary atavism held that all the criminals are 'born criminals' but twenty years later in his fifth edition of 'The Criminal Man' and in his last book, 'Crime, Its Causes and Remedies', he himself ractified his theory and included many environmental factors too other than physical or anthropological.[28] He developed an expanded typology of criminals that include a) the born criminals; b) the insane – those who were criminals because of insanity and epilepsy; c) the passionate – criminals of passion; and d) occasional criminals.[29] Occasional criminals included three sub types, i) psuedo criminals who are forced to commit crime in self-defence or to defend family honour; ii) criminaloids, who are enticed into crime by environmental circumstances or opportunities; and iii) habitual criminals, who have encountered poor socialisation in schools and by parents.[30] Lombroso ultimately revised his first estimate of atavists down from two thirds to one third of the criminal population. Yet he remained committed to his original thesis that criminal behaviour has biological roots.[31]

Judicial Approach Towards Lombroso: A Critical Perspective

After the enthusiasm reception by admireres all over the world his opponents very soon gained strength. The inverterate adversaries of criminal anthropology joined hands with anthropologists themselves who rejected Lombroso's unscientific and uncritical methods and his perpetually changing formulations.[32] Adolf Baer, the Berlin prison surgeon in several essays, tried to disprove Lombroso's statement. In 1913

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[24] Ronald L. Akers and Christine S. Sellers. (2004). *Criminological Theories: Introduction, Evaluation and Application*. Los Angeles: Roxbury. p. 46; Daniel J. Curran and Claire M. Renzetti. (2001). *Theories of Crime*. Massachusetts: Allyn & Bacon. p. 30; Katherine S. Williams. (2001). *Textbook on Criminology*. New York: Oxford University Press. p. 142; Hermann Mannheim. (1980). *Comparative Criminology*. London: Routledge & Kegan Paul. p. 215; Robert W. Winslow and Sheldon X. Zhang. (2008). *Criminology: A Global Perspective*. New Jersey: Pearson Prentice Hall. p. 86; Eamonn Carrabine, Paul Iganski, Maggi Lee, Ken Plummer and Nigel South. (2006). *Criminology: A Sociological Introduction*. London: Routledge. p. 36.

[25] Hermann Mannheim. (1980). *Comparative Criminology*. London: Routledge & Kegan Paul. p. 216.

[26] Katherine S. Williams. (2001). *Textbook on Criminology*. New York: Oxford University Press. p. 142

[27] Frank P. Williams Lii & Marilyn D. Mcshane. (1998). *Criminology Theory: Selected Classic Readings*. Cincinnati: Anderson Publishing Company. p.41.

[28] George B. Vold, Thomas J. Bernard & Jeffrey B. Snipes. (2002). *Theoretical Criminology*. New York: Oxford University Press. p. 27.

[29] Robert W. Winslow and Sheldon X. Zhang. (2008). *Criminology: A Global Perspective*. New Jersey: Pearson Prentice Hall. p. 87.

[30] *Ibid.*

[31] Daniel J. Curran and Claire M. Renzetti. (1994). *Theories of Crime*. Massachusetts: Allyn & Bacon. p. 43.

[32] Herman Mannheim. (1955). *Group Problems in Crime and Punishment and other Studies in Criminology and Criminal Law*. London: Routledge & Kegan Paul Ltd. p. 69-70.

these works were followed by Charles Goring's English Convict[33] the most comprehensive and painstaking of all existing refutation for the conception of the born criminal. Relying on these researches criminologists of the early twentieth century became accustomed to disregard Lombroso's theories.[34]

Though Lombroso's theory found impetus in various eugenic sterilization laws and judgments[35] passed in United States but it was to be reversed in the year 1942.[36] In 1968, American scientists discovered the 'XYY Syndrome'.[37] But the court exhibited extreme reluctance to accept this syndrome as genetic excuse and held that insanity defence based on chromosomal 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 so as to interfere substantially with the defendant's cognitive capacity or with the ability to understand and appreciate the basic moral code of his society. The court further held that due to absence of sound medical support and not being based on proven and accepted research, it could not allow the defence of XYY Syndrome.[38]Even scientifically, the 'XYY Syndrome' was subsequently discredited because of the unnaturally small sample size and unreliable statistical dependence.[39] Hence, judiciary refused to accept Lombroso's ideas in the criminal justice system. However, the core of American Criminal Justice strikes directly that if an individual's genetic composition is such that, when stimulated by certain environmental factors, she becomes more likely to exhibit aggressive behaviour, it becomes difficult to define her behaviour as being completely "free."

So, ' If we ask how the Lombroso question stands today; writes Hans Gross, 'we may say that it is finished', and 'the dream of the "Born Criminal", "the natural delinquent" as a special human type has been dreamed to a finish.[40] In view of such statements, it may perhaps seem rather superflous to waste even a single line on Lombroso. But are they correct, and how far can they be reconciled with the fact that even in modern crininology scarcely any other is the subject of so many heated discussions and disputes as Lombroso? If his ideas are really dead, why not leave him in peace?[41]

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[33] Charles Goring rejected explanations based upon physical characteristics. He argued that criminalistic tendencies are basically inherited. He argued that important factor is not the physical features but the contents of the genetic material passed on from the parents. If the parents were criminal, they would pass the tendency on to their children exactly as they might pass on any other trait. But still he too advocated genes to be the influencing factor in criminality, see Charles Buchman Goring (1913). The English Convict: A Statistical Study. London: Her Majesty's Stationary Office (HMSO). p. 365-367.

[34] Hermann Mannheim. (1980). *Comparative Criminology*. London: Routledge & Kegan Paul. p. 70.

[35] *Buck V. Bell*, 274 US 200 (1927) in which Justice Holmes upheld the Virginia Legislation that provided for compulsory eugenic sterilization and ordered the sterilization of Carrie Buck who was considered to be the daughter of a feeble minded woman and the mother of a feeble minded child. The reason was that she would only produce socially unfit offspring and hence harm the race. Justice Holmes went on to say "three generations of imbeciles are enough".

[36] In *Skinner v. Oklahoma*, 316 US 535 (1942), the US Supreme Court noted that there was no scientific proof or common knowledge that proved that certain criminal tendencies are inheritable. Therefore the Court struck down the statute passed by the State of Oklahoma, which provided for the sterilization of 'habitual criminals'.

[37] Most women are born with two X chromosomes and men with an X and a Y chromosome. However, some individuals are born with XYY chromosomes abnormality. As they have an extra Y chromosome so they were called "Super Males". Early studies found that there was correlation between violent behavior and the frequency of XYY chromosomes.

[38] *State v. Roberts*, 544 P. 2d 754 (1976).

[39] Deborah W. Denno. (1988). Human Biology and Criminal Responsibility: Free Will or Free Ride? *University of Pennsyylvania Law Review*, 137, 615-671, p. 622.

[40] Herman Mannheim. (1955). *Group Problems in Crime and Punishment and other Studies in Criminology and Criminal Law*. London: Routledge & Kegan Paul Ltd. p. 70.

[41] *Ibid.*

Recognising Lombroso

But, he was never left in peace. After all the criticisms, his work again was made the base of further studies. Lombroso's work has often been referred to as the beginning of somatotyping.[42] Another early researcher in this area was Erenst Kretschmere.[43] But the first modern systematic linking of body traits with delinquency came with William Sheldon.[44] The Gleucks in the year 1950 went on to conclude that delinquency was related to biological factors but there is combination of biological, environmental and psychological factors which leads to delinquency. This too, was the broad finding of the more sophisticated study carried out by Cortes and Gatti in 1972.

New advances in genetics have taken the science beyond physiology and have begun providing links between human behaviour and attitude and hereditary factors.[45] As Cantor states, "The Belief in the born criminal appears in a somewhat different guise. The search for the born criminal is not surrendered. Instead of insisting upon a morphologically predetermined type – however the search now proceeds for the nature and character of psychic or structural dispositions, temperaments, tendencies which in the socio-economic setting are apt to lead to criminal behaviour."[46]

The twin studies[47] and adoption studies,[48] too conclude that one should not ignore a genetic link when studying reasons for criminality. Genetics does play a role in combination with environmental and

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[42] Somatotyping means the diagnosing of the Individual's Constitution and behavior by the shape of their body.

[43] Though Lombrosian theory of criminality was criticised and advocated to be naïve for quite some time but it saw its resurrection again in the year 1921 in the work of *E. Kretschmere*, a German psychiatrist. He attempted to show a relationship between body shape and types of mental illness. He divided people into three body types, referred to as somatotypes and claimed that the tendency towards different kinds of mental illness varied between these body types. But his theory suffered from various lacunas.

[44] William Sheldon in the year 1949 described three basic types of physique and suggested the types of temperament which correspond with them. Though he too gave three basic types of physiques but his types were different from E. Kretschmere. Still his somatotypes had certain similarities with somatotypes of E. Kretschmere. Sheldon's three somatotypes were: i) *Endomorphic:* generally soft rounded and fat and characterized by extroversion and love of comfort. They tend to be friendly and sociable; ii) *Mesomorphic:* hard, muscular and athletic, with a strongly developed skeleton. Their personality is strong and assertive, with a tendency to be aggressive and occasionally to be explosive; iii) *Ectomorphic:* thin, weak and generally frail, with small skeleton and weak muscles. They tend to be introverted, hypersensitive, shy, cold and unsociable. Sheldon asserted that each individual falls in one of these three categories but the degree may vary from person to person. Few people are b 'pure' mesomorphs, ectomorpic or mesomorphic but the more a person approached the mesomorphic type, then the more he is likely to be delinquent. He claimed that after his study, he is convinced that the convicted offenders are more mesomorphic on average than the rest of the population.

[45] Meghna Rajadhyaksha. (2006). Condemned by Birth: The Implications of Genetics for the theories of Crime and Punishment. *Socio-Legal Review*, 2, 85-103, p. 86.

[46] Nathaniel Cantor. (June 1936) Recent Tendencies in Criminological Reseach in Germany. *American Sociological Review* as quoted in Harry Elmer Barnes and Negley K. Teeters. (1952). *New Horizons in Criminology*. New York: Prentice-Hall. p. 145.

[47] One of the better known twin studies was conducted as early as 1930 by *Lange*. In his study he found that in 77 percent cases of identical twins, the other twin brother too had been imprisoned but in fraternal twins' case, only in 12 percent cases, the other twin had a prison record. In another study, *Newman* (1937), analysed that there was criminal concordance (similarity) between 93 percent of the identical twins whereas only 20 percent in faternal twins. Later *Christiansen* (1968 and 1974) conducted the study on twins in Denmark and came to the conclusion that in case of identical males there was 35.8 percent concordance rate and in faternal males there was 12.3 percent concordance rate. In case of females difference was even more marked i.e. 21.4 percent of identical twins but only 4.3 percent for faternal twins. Again in the year 1976, *Dalgard and Kringlen* studied 139 pairs of Norwegian male twins and discovered a 25.8 percent concordance rate in identical twins as compared to only 14.9 percent in faternal twins. But Dalgaard and Kringlen suggested that this might be explained by the close similarities in upbringing in the case of identical twins. As also stated by Christiansen, who himself recognized that no study had yet provided conclusive evidence of the complete dominance of either genetics or environment. He recognized that none of his results could be interpreted as indicating that

sociological elements in contributing to delinquency and criminal activity. Behavioural characteristics that are influenced by genes are inherited. A person's underlying biology can provide a predisposition to behave according to a pattern.[49]

However, with the passage of time, genetic sciences have moved from a vague notion of heredity to specific diagnoses that pinpoint particular enzymes, which affect and promote criminal behaviour. Genetic research indicates that society should re-examine some of its philosophical assumptions about its criminal justice system as criminal law has remained largely silent to these developments, taking refuge in the nascence of the science.

Impact of Lombrosian Theory on Criminal Justice System: An Indian Perspective

Lombroso's theory of atavistic criminal has profound impact on India too. In india, some 126 tribes/castes were designated criminal tribes under the Criminal Tribes and Castes Act of 1871. The police, during their training were instructed to treat these tribes and castes as 'born criminals'. The application of the born criminal theory, largely a by product of Lombroso's work, turned out to be a very potent tool for

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heredity played a predominant part in the causation of crime, but stated that it is an a priori hypothesis that heredity and environment always interact in a dynamic fashion to bring about and shape criminal behaviour. But later *Cloninger and Gottesman* in the year 1987 taking the same figures of Daalgard and Kriglen claimed that the figures do portray a possible connection between inheritance and criminality.Again in the year 1990, *Rowe and Rodgers* conducted the Ohio twin study where they collected information form self-report questionnaires from 308 set of twins. They concluded that genetic influences partly determine the similarity of behaviour of same-sex and identical twins. They recognized that interaction between siblings could cause initially discordant siblings to become concordant in their levels of delinquency. Therefore, genetics can explain some for the concordance but sibling and twin interaction also play a large part in shaping behavioural patterns. Rowe and Rodgers gave a different version. They argued that an individual chooses the peer group and environment which will reflect and reinforce his or her genetically based personality inclinations, suggesting that these groupings- and so the environment influences on an individual-are partly dictated by the genetics.

[48] A study conducted by *Crowe* in the year 1972, whereby he studied 52 adopted children whose natural mothers had criminal records, established that among the 52 children of criminal mothers, eight had been arrested (some of them more than once), and seven of them had been convicted. Only two of the control group had been arrested (each on one occasion) and only one had been convicted. Crowe reported the impression that there was some similarity in the types of crimes committed by the biological mother and the adoptee. *Hutchings and Mednick* (1977) conducted the study and discovered that boys with criminal biological fathers were more likely to be criminal than those with law-abiding fathers. Further, they found that those with criminal adoptive fathers were also more likely to be criminal than those with law-abiding adoptive fathers, but that the effects of a criminal biological father were more noticeable than a criminal adoptive father. This finding suggested that genes were in this respect more important than environment. Lastly, they found the most significant effects when both the biological fathers and the adoptive fathers were criminal. In these cases, the effect upon the rate of criminality of the adoptee was quite marked at 36 percent. Later they widened their research to include both the parents in the study rather than just fathers and again they came up with the same result that biological parents had more impact (20 percent in case of criminal adoptee children and their biological parents and 15 percent in case of adoptee children and their adoptive parents) and where both biological and adoptive parents were criminal, the criminal impact on the behaviour of the adoptive child was much more (25 percent). Hence, Hutchings, Mednick stated that a number of potentially confounding variables were considered none of these proved sufficient to explain the genetic relation. They concluded that some factor is transmitted by convicted parents that increase the likelihood that their children will be convicted for criminal law offences. This is especially true of chronic offenders. Because the transmitted factor must be biological, he implies that biological factors are involved in the etiology of at least some criminal behaviour.

[49] Lisa Schriner Lewis. (2005). The role Genetic Information Plays in the Criminal Justice System. *Arizona Law Review*, 47, 519-549, p. 537.

English colonial domination in India.[50] During the nineteenth century, British developed a criminal justice system devoted to rooting out the 'criminal tribes', particularly those who practiced thuggery. The notion of genetically inferior criminal tribes, promulgated by the British was compatible witht the ruling Hindu concept of caste.[51] Sir William Henry Sleeman (1788-1856) was a British soldier and adminstrator in India who was known for his suppression of the thugs or religious murderes in India. Sleeman implemented the 'born criminal theory' by incarcerating both husband and wives separately to prevent additional offsprings.[52]

The existing criminal justice system has evolved over a long period of time. It primarily reflects common-sense metaphysical and moral judgments about human nature and free will. Principles of criminal responsibility and punishment assume that human beings for the most part are capable of controlling their behaviour. Criminal liability rules presuppose that the ordinary person has a reasonable opportunity to conform to legal standards delineating permissible conduct. According to this vision of human behaviour, it is morally fair for society to impose restrictions and burden on the individual who chooses not to comply with these standards.[53] In other words, Indian criminal jurisprudence is firmly rooted in the concept of individual 'Free Will'. Indian Criminal Justice System is laid on the foundation that there are two constituent elements of crime – Actus Reus and Mens Rea. Actus Reus connotes an overt act, the physical result of human conduct. Act means a conscious or willed movement. It is a conduct, which results from the operation of the will. The second essential element on which the entire field of criminal law is based is mens rea. Mens is the state of mind indicating culpability. It is commonly taken to mean some blameworthy mental condition, whether constituted by intention or knowledge or otherwise, the absence of which on any particular occasion negatives the intention of a crime. Though mens rea in not defined in the Indian Penal Code, 1860 but different terms and words such as 'voluntarily', 'malignantly', 'criminal knowledge or intention', 'fraudulently', 'maliciously' etc. indicate the blame worthy mental condition required at the time of the commission of the offence, in order to constitute an offence.[54]

Lord Kenyon in Fowler v. Padget[55] states that the intent and the act must both concur to constitute the crime. No act is per se criminal; the act becomes criminal when it is done with a guilty mind.[56] According to Austin, any movement of the body, which is not in consequence of the determination of the Will, is not a voluntary act. It is only an act done voluntarily that amounts to an offence.[57] A long standing criminal law rule holds that punishment is morally appropriate solely for the persons who voluntarily commit criminal acts. According to this rule, it is unfair to punish someone who lacked the ability to refrain from the harmful conduct. Existing legal doctrines recognize certain instances n which accused persons ought not to be held responsible and, accordingly, ought not to be punished for committing a criminal offence.[58]The Indian Penal Code, 1860 incorporates a full chapter on 'General Exceptions'[59]

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50 Robert W. Winslow and Sheldon X. Zhang. (2008). *Criminology: A Global Perspective*. New Jersey: Pearson Prentice Hall. p. 87.

51 *Ibid.*

52 Encyclopedia Britannica, 1911 as quoted in Robert W. Winslow and Sheldon X. Zhang. (2008). *Criminology: A Global Perspective*. New Jersey: Pearson Prentice Hall. p. 87.

53 Rebecca Dresser. (1999). Criminal Responsibility and the "Genetics Defense". In Jeffrey R. Botkin, Willaim M. McMahon & Leslie Pickering Francis (ED.), *Genetics and Criminality: The Potential Misuse of Scientific Information in Court* (pp. 163-173). Washington DC: American Psychological Association.

54 Dr. KI Vibhute. (2008). *PSA Pillai's Criminal Law*. New Delhi: Lexis Nexis Butterworths. P. 57.

55 (1798)7 TLR 509.

56 Prof. K.N. Chandrasekharan Pillai & Shabistan Aquil. (2005). *Essays on the Indian Penal Code*. New Delhi: Universal Law Publishing Co. Pvt. Ltd. p. 68.

57 Dr. KI Vibhute. (2008). *PSA Pillai's Criminal Law*. New Delhi: Lexis Nexis Butterworths. P. 36.

58 Rebecca Dresser. (1999). Criminal Responsibility and the "Genetics Defense". In Jeffrey R. Botkin, Willaim M. McMahon & Leslie Pickering Francis (ED.), *Genetics and Criminality: The Potential Misuse of Scientific Information in Court* (pp. 163-173). Washington DC: American Psychological Association.

whereby defence of acts not done voluntarily[60] can be taken to exonerate the accused of criminal liability. The evolution of modern insanity defence is another illustration of the law's reluctance to depart from the presumption that person's ordinarily exercise choice and control over their actions. The foundation for the law of insanity was laid down by the house of Lords in 1843, in what is popularly known as the M'Naughten case whereby it was held that to establish the defence of insanity, it must be clearly proved that at the time of committing the crime, the person was so insane as not to know the nature and quality of the act he was doing, or if he did know it, he did not know that what he was doing was wrong.[61] Here, the emphasis is on the individual's ability to comprehend the outcome of her conduct or appreciate its nature. As a result, the individual may be completely exonerated. In contrast, when the problem is genetic, the individual may know her conduct is wrong and forbidden and yet be unable to control his actions.[62]

Now the Question arises, can genetic composition or makeup of a person be pleaded as a defence when it is argued that the accused was compelled to commit a crime because of uncontrolled genetic influences?[63] What happens when a genetics expert testifies regarding a person's innate capabilities of committing an offense? Philosopher Dan Brock asked, "If a person's genetic structure is a principal cause of behaviour and that genetic structure is completely beyond the individual's control, can an individual justifiably be held responsible for the resultant behaviour?"[64]

Placing Lombroso in Present Criminal Justice System

Genetic composition can be taken as defence as the accused did not have mensrea to commit the crime as his genes compelled him to do so. While the above stated studies link genetic components to human behaviour, in reality human behaviour is highly complex and influenced by many different things, like environment and individual choice. Moreover, behaviourists till now have not been able to pinpoint accurately to the fact that genes alone can be the cause of criminality. Behavioural genetics does not determine who will commit a crime, only that a person has a predilection or increased likelihood of exhibiting anti-social behaviour when combined with multiple other factors like environment and upbringing.[65] Therefore, at this point of time, science has not been able to prove with some degree of accuracy that anti-social behaviour can be predicted. Researchers have been able to prove that genetics does play a role in human behaviour but it does not control human behaviour completely. There are many other factors which are to be considered along with genes in order to predict a person's likelihood of exhibiting anti-social behaviour.[66]

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59 The *Indian Penal Code*, 1860 incorporates the defence of Insanity, Infancy, Judicial Acts, Involuntary Intoxication, Consent and Compulsion, Mistake of Fact and Private Defence under the chapter titled 'General Exceptions'.

60 Section 39 of the *Indian Penal Code*, 1860 defines voluntarily as "A person is said to cause an effect 'voluntarily' when he causes it by means whereby be intended to cause it or by means which, at the time of employing thos emens he knew or had reason to believe to be likely to cause it."

61 Dr. KI Vibhute. (2008). *PSA Pillai's Criminal Law.* New Delhi: Lexis Nexis Butterworths. p. 137-138.

62 Meghna Rajadhyaksha. (2006). Condemned by Birth: The Implications of Genetics for the theories of Crime and Punishment. *Socio-Legal Review*, 2, 85-103, p. 93.

63 Massachusetts Mutual Life Insurance Co. v. Woodall, 304 F.Supp.2d 1364, 1377 n.7 (S.D.Ga. 2003).

64 Mark A. Rothstein. (1999). The Impact of Behavioural Genetics on the Law and the Courts. *Judicature*, 83(3), Retrieved from http://www.ornl.gov/sci/techresources/Human_Genome/publicat/judicature/article5.html (visited on 26th August 2010).

65 Lisa Schriner Lewis. (2005). The role Genetic Information Plays in the Criminal Justice System. *Arizona Law Review*, 47, 519-549, p. 541.

66 Mary Coombs. (1999). A Brave New Crime Free World? In Jeffrey R. Botkin, Willaim M. McMahon & Leslie Pickering Francis (ED.), *Genetics and Criminality: The Potential Misuse of Scientific Information in Court* (pp. 231-235). Washington DC: American Psychological Association.

The theory of Free Will hence, based on practicality, social order and most importantly convenience of assumption allows for easy administration of justice and solves any tension that might exist between deterministic science and normative criminal justice theory. Therefore, it is clear from the recent advancements in the field of genetics that the free will foundation upon which the criminal justice system is based is in serious jeopardy. Genetic discoveries will alter the vision of what it means to participate in criminal justice. As genetics becomes more predictive of individuals' behavioural patterns, this science would surely have an impact on the principles on which the criminal justice system is based.[67] Therefore, accepting genetics as a complete defence does not look like a tenable proposition because of the low level of accomplishment in the fields currently nevertheless it can be a good defence for mitigating the sentence as it has been proved that genes do control our will and the will is not always free.

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[67] Matthew Jones. (2003). Overcoming the Myth of Free Will in Criminal Law: The True Impact of The Genetic Revolution. *Duke Law Journal*, 52, 1031-1053, p. 1044,1053.

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