Freewill, Determinism, Penology, and the Human Genome: Where's A New Leibniz When We Really Need Him?

Richard Lowell Nygaard
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I am a part of all that I have met¹
-Alfred Lord Tennyson
Ulysses

Approximately forty years ago, Francis Crick and James Watson deciphered the DNA molecule’s structure and forever changed the way human beings look at themselves, each other, and humanity generally. The discovery of how DNA replicates itself has given the world a new prism through which to see the spectrum of its “self.” As a consequence, we will never be the same again.

Indeed, today it is a rare newspaper or magazine that contains nothing about the human genome. Genetics is both big news and big business. Molecular biology is eclipsing many other fields of science. In so doing, however, genetics holds forth the possibility of overwhelming us socially, legally, and ethically. If our traditional codes and laws will not control, comfort, and protect our values and cannot guide us through the “third wave,”² we must

¹Richard Lowell Nygaard is a judge for the United States Court of Appeals for the Third Circuit. Judge Nygaard wishes to express his gratitude to Dr. Thomas Upton, Professor of Philosophy and Medical Ethics, and Dr. Edward Pierce, Dean of the College of Sciences, Engineering and Health Sciences at Gannon University; Dr. Robert Rhodes of the Political Science Department at Edinboro University of Pennsylvania and Fr. John “Tex” Hilbert, for their critical reading and thoughtful suggestions; and his law clerk, Steven Ted Kern, for editorial assistance.

²Alvin Toffler, The Third Wave 381-459 (William Morrow 1980) (discussing mankind’s “psychological breakdown” in the wake of technological changes and social upheaval and concluding that the responsibility for reconstruction lies within each of us as human beings).
evolve a new moral response to meet this new science's challenges to the values and rights we wish to preserve.

Nonetheless, I confess to a rather limited professional interest in the Human Genome Project specifically and genetic research generally. I recognize, of course, the smorgasbord of moral, ethical, and legal issues that genetics research is creating. These issues, in turn, will provide philosophers, ethicists, and academicians from many fields with an intellectual and professional banquet. As a theorist, I do not retreat from a need to sound the tocsin because, if resolved unwisely, these issues will only produce more exceedingly difficult questions for society to answer for years to come. For example:

1. Is a removed gene, or a combination or recombination of genes, human life? If so, what form of human life is it, what are "its" rights, and who shall protect them?

2. Should human life, whether created in a laboratory, cloned or sustained, be marketed for research?

3. After cells are taken from an individual for research, to what extent should the donor be able to exercise control over those cells? To what extent may science use the cells? What regulation or oversight is necessary to protect both the research scientist and the donor?

4. Should a physician or other health care professional be liable for failing to perform tests that could have discovered genetically inheritable diseases, such as Tay-Sachs, sickle-cell, Huntington's, or beta-thalassanemia? What tests should be required of newborns? What may (or must) be done with the genetic information from those tests? How can privacy be assured for the socially sensitive genetic information derived from such tests?

5. Once an individual is discovered to be genetically at risk for a disease, are relatives who are also at risk entitled to this information?

6. If every cell after the first split following conception contains all the genetic information needed to identify the person, what are the implications for the legal or moral argument that life begins with some later event?

7. If persons with a certain genetic makeup seldom live beyond a certain age, should a prospective life insurer be entitled to discover that fact about an individual? Should laws prohibit discrimination in insurance coverage based on genetic information?

8. If an individual carries a gene that predisposes that person to a disease, should a prospective health insurance carrier be entitled to that information? And, if so, what should the carrier then be entitled to do with it?

9. Should new or altered life forms be patentable? If so, in what manner and to what extent?

10. How will behavioral genetic data change our notions concerning the criminal justice system? Will information about predispositions...
to antisocial behavior that leads to crime compel us to reconceptualize our theories of criminology and penology? While these issues are already legion, the more we analyze them, the more challenging issues we then discover.

I am delighted that discoveries in biomedicine may prolong our lives. I, for one, have so much left to do. I am also pleased that gene therapy may some day give my life a better quality, whatever its tenure, because I love life.

That said, my deep, but quite narrow, academic interest is in criminology, penology, and sentencing criminal law offenders. Indeed, my not-so-modest criminological and penological agenda is to completely transform the criminal justice delivery system to encourage it to respond to Cicero's axiom, salus populi suprema lex esto. As a result, and as we approach the twenty-first century, I look to research from all the allied sciences, including genetic research, with hope mingled with some anxiety. My hope is that this research might provide another variable in the total equation by which criminologists may determine the causes of and practical remedies for violent criminal behavior. This narrow interest, however, plunges me into the most ethically challenging field of genetics—human behavior.

Even though science convincingly demonstrates that genes produce traits that comprise the individual, my intuition as one outside the physical sciences is that no "magic bullet," no lone violence gene, exists which we can manipulate and, thereby, control all violent crime. From all I have read of the research literature, I am presently unwilling to say that a gene alone can dictate that one individual will behave violently toward another. Since genetic expressions depend upon the entire individual human ecology in which genes exist, I am not so naive as to think that gene therapy alone will stop crime.

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3. "[T]he safety of the people shall be their highest law." Cicero, De Legibus III iii 8, 466-67 (William Heinemann 1928) (Clinton Walker Keyes, trans).

4. I use the term "violent criminal behavior" because some violent behavior that is genetic in origin is not criminal. For example, one suffering from Lesch-Nyhan Syndrome engages in self-mutilative behavior that is not criminal.

5. Dr. David Comings, a medical geneticist at the City of Hope Medical Center in Duarte, California, shares this opinion. He states: "My feeling is there is certainly no "gene" for criminal behavior. There are [only] genes which predispose people to an increased frequency of impulsive-compulsive behaviors and that put them at greater risk of being involved in criminal behavior." Natalie Angier, Disputed Meeting To Ask if Crime Has Genetic Roots, NY Times C1, C6 (Sept 19, 1995) (quoting Dr. David Comings). See also, generally, Chi Chi Sileo, Violent Offenders Get High on Crime, Insight 12 (May 2, 1994) (reporting that criminal behavior is not purely a result of genetic makeup).

6. Dr. Evan S. Balaban of the Neurosciences Institute in San Diego notes, "I have a strong opinion that biology doesn't have anything to contribute to public policy discussions about crime in society." Angier, NY Times at C6 (cited in note 5) (quoting Dr. Evan S. Balaban). See also Sileo, Insight at 12 (cited in note 5).

I say “individual” because I am certain that no race, nationality, or ethnic group is “pure” enough or physically isolated enough to contain seeds of behavioral traits that the balance of the population does not. Only the rankest of racists would likely choose to espouse such nonsense. Each individual’s genetic menu is different, regardless of one’s racial or ethnic ancestry. Genetic research is not premised on social class or racial matter, but can only examine the individual’s genetic makeup. Nonetheless, it seems equally apparent that we cannot look myopically to sociocultural and socioeconomic models for all the answers. Biology accounts for something. As individuals, we share gene sequences in common with other individuals that may predispose us to certain behavioral traits when coupled with other environmental, physical, and social factors.

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8. I also find it preposterous that any statistician would consider skin pigmentation as creating a genetically-based, statistically definable population for behavioral studies. Professor C. Ray Jeffery posits that the “so-called ‘black population’ of the United States is so genetically mixed that conclusions based on group data cannot be applied to individual cases.” C. Ray Jeffery, Genetics, Crime and the Cancelled Conference, 18 The Criminologist 1, 6-8 (Jan-Feb 1993). Professor Jeffery maintains that “[t]he concept of ‘black’ is a social and not biological concept.” C. Ray Jeffery, The Genetics and Crime Conference Revisited 2 (1995) (unpublished manuscript on file with the author).

Who, for example, is “black”? How “black” must one be to be included in the group? 100% African-American ancestry? 50%? 10%? Should groups of racially-mixed individuals create separate cohorts? I am delighted that many folks find their ethnic origins to be a source of pride and identity. So do I. I am proud that my ancestors were Norwegian. I doubt, nonetheless, that the slight difference between one who has greater skin pigmentation or whose skin is freckled like mine or whose hair is red, blond, straight, or nappy or, for that matter, who is tall, short, fat, or thin, means anything in isolation. Indeed, I am willing to speculate that discoveries in the field of biomedicine and genetics will place race-based populations for behavioral statistics into the category of junk statistics.

9. Dr. Gregory Carey, a behavioral geneticist at the University of Colorado, believes that, “[g]enes do not fate behavior, they do not determine our behavior or make us act in a certain way. . . . They have a probabilistic effect that makes us more likely to act one way or another, but that action is always done in conjunction with the environment.” Angier, NY Times at C6 (cited in note 5) (quoting Dr. Gregory Carey). I recognize, nonetheless, that certain diseases are now identified with specific ethnic populations. For example, sickle-cell anemia is found with greater frequency among African-Americans and Tay-Sachs disease among Ashkenazi Jews. Hence, one cannot completely discount the possibility that such ethno-specific identifications someday may be made with respect to other genes as well or that some genetic trait may be found with greater frequency in some ethnic statistical groupings than in others.

10. “‘I think we are going to have an explosion of understanding,’ says David Valle,
If this is the case, then what we learn about one individual offender may help us in treating other offenders who share the same characteristics and determiners, instead of simply punishing all offenders. Additionally, isolating the genetic factors from the environmental factors may help us in our quest for a rational sentencing scheme in developing preventive techniques. We may be able to determine whom to punish, whom to treat, and what our treatment methods should be. Therefore, criminology and penology must not shy away from boldly seeking the truth, from testing all hypotheses, and from being honestly attentive to answers. A scientific search for truth often threatens social mores and cultural icons. Despite this reality, the libertarian notions that penology now follows are simply outmoded, unfair, and ineffectual. We can, and I think that we must, do something more. To assist us in doing more, I am hopeful that biomedical science will provide social scientists with some answers, but therein also lies my anxiety.

I feel a political anxiety because we Americans increasingly feel that we are losing control of the forces that govern our lives. Thus, the notion that genetic actuators may also have a directional role in the quality and duration of our lives is disturbing. This fear requires that we reach a new equilibrium between ourselves, each other, and our environs.

I feel a socio-legal anxiety as well. As science provides answers, we legal philosophers, ethicists, and sociologists must struggle mightily with the moral, legal, and social implications of the answers and with the best uses of and responses to the answers. At the same time, we must attempt to maintain and rebuild human dignity and respect for each other and struggle to protect the new minorities that genetic science could create. This may be difficult. Moreover, the responses we identify must find their way quickly into the fabric of our civil and criminal protections. Such timely integration may prove to be especially difficult.

Common law is jurisprudentially bound by precedent, which extends behind us like a giant sea anchor on the end of an ever-lengthening line. Statutory law is changeable only by legislatures who seemingly sail with the winds of popular opinion. As a consequence, in many areas, the rigidity of law places it in great conflict with science, which yields constantly to new discoveries. This conflict is most marked in the unreality of American criminal
law. Our criminal law’s philosophy must presume that individuals have a
totally free will because our penology is motivated by revenge and the desire
to punish offenders. Indeed, Americans are so preoccupied with punishment
that we pay almost no attention to, and consequently receive little guidance
from, either the social or physical sciences. We seem to shun any evidence that
might help us explore the genesis of crime for fear that the evidence will
indicate that our philosophical bases for criminal sentencing and our penal
modes themselves have fundamental shortcomings. Even worse, we fear being
perceived as “soft” on crime. As a result, we rely upon an unscientific,
underdeveloped theory of responsibility and blameworthiness.

Ostensibly, we want to avoid inflicting punishment upon a fellow citizen,
unless he is truly responsible for his acts. For example, we do not want to
execute or punish the mentally impaired. Our focus on responsibility has
nothing to do with whether the accused actually performed the illegal act or
is dangerous; indeed, both may be true. We simply draw the line at killing or
punishing an individual who draws sympathy from us for having a mental
deficiency, and so we say he lacks the requisite degree of legal responsibility
for his acts. However, we degrade this reality and create a myth of punishment
by crudely drawing the line so as to include nearly the entire population of
offenders within the “responsible” category, regardless of why one committed
the crime or what may actually be necessary to prevent a reoccurrence. To
accurately gauge moral accountability, we must presume that each person
possesses some level of responsibility and accountability for his actions. Then,
we should methodically explore what I refer to as the full “ecology” of the
crime and the offender. There is a reason, or more likely reasons, why some

by the scientific community and substantiated by colleagues and critics who replicate
the original studies. See generally Thomas S. Kuhn, The Structure of Scientific Revolutions
(Chicago 1970). In contrast, within the legal system and more specifically the criminal
justice system, the law posits and defines the norm and, hence, the deviations. Hypotheses
need not be accurate, only popular. Indeed, under the case law method, a decision reached
by a court in one case is law and likely to control many others until determined by the
court, a reviewing court, or the legislature to be wrong.

12. Bruce Ledewitz and Scott Staples, No Punishment Without Cruelty, 4 Geo Mason
U Civ Rts L J 41, 54-57 (Winter 1993). Some penologists labor greatly to distinguish
“revenge” (as personal reprisal operating outside the law) from “retribution” (as the law’s
appropriate and somehow proportionate response). Samuel H. Pillsbury, Emotional Justice:
They fail. Retribution comes from the same place in the heart as revenge and also from
the same place etymologically (re = back; tribuere = to pay). William Allan Neilson, ed,
Webster’s New International Dictionary 2129 (Merriam 2d ed 1954). Retribution and
revenge are like Humpty and Dumpty because when they fall philosophically, they will
shatter identically.

13. I have used the masculine when referring to criminal law offenders because the
gender-neutral just does not mirror reality. Over 90% of those convicted of violent crimes
are male. Deborah W. Denno, Gender, Crime, and the Criminal Law Defenses, 85 J Crim
L & Criminology 80, 86, 86 nn 21-22 (Summer 1994) (finding males comprised approxi-
mately 95% of new court commitments for violent offenses in 1991).
people obey the law and some do not. We must question why this is so and honestly seek answers to our penological problems because the penal myths we currently rely on are clearly failing us.

None of us can escape the fact that our lives, in significant measure, have been shaped by antecedent causes such as other people, external events, developmental milieu, and, as we are discovering, our genes. Unfortunately, we are not, as Immanuel Kant contended, free and rational sovereigns in the “kingdom of ends.”

Indeed, few philosophers continue to believe that. We now acknowledge that a mind-boggling array of factors and agents may influence an individual’s behavior including prenatal, perinatal, and neonatal effects; fetal derangements; parents’ marital status; siblings and one’s station among them; home environment; the neighborhood in which one was raised; church; school; nutrition; injuries; health; and economic and cultural status. This list of agents also grows commensurate with the time we spend thinking about it.

Indeed, behavioral influences are legion. Moreover, the discoveries in the exploding science of behavioral genetics point with ever-increasing frequency towards including inheritable or genetic factors in the equation for an offender’s behavior and in the causes of crime. New knowledge of the human gene may soon be used to develop clinical tests to determine if some individuals have genetic characteristics that predispose them to violent behavior towards others.

Human behavior may be influenced, shaped, or even determined by antecedent events and factors outside the will—or it may not be. This is the eternal debate over free will and determinism with recent modifications based on scientific discoveries about one’s physical, environmental, and mental makeup.

Determinism, one of the oldest philosophies, teaches that all human events proceed from other eventual causes and that whatever happens to us is connected in some fashion to other, past and future, events. In an early expression of the doctrine, Spinoza asserted that “all things are determined by the necessity of divine nature for existing and working in a certain way.”

Spinoza’s “God’s will” sort of determinism contended that nothing happens without being caused by God and that everything happens as it was caused. Many others joined Spinoza, modifying his theories somewhat, but nonetheless holding to the belief that we are somehow under God’s minute control. Still others, René Descartes and later Immanuel Kant among them, rejected this view in favor of a belief that we each are in control of our futures and must fully account for our actions both to God and to our cultures.

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15. Indeed, some geneticists say we can now do this. See notes 5, 6, 10, 39, and 41.
Finally, I prefer Leibniz's more liberating approach. For Leibniz, free will did not mean totally unimpeded volition or the true power of choice. Instead, he believed that the will is hobbled, varying with the individual, to behave in accordance with one's internal nature and original purpose. He contended that one's individual volition is limited by the parameters of one's determiners. One had freedom just sufficient to make adjustments within what one was otherwise semi-destined to become. Leibniz attempted to forge a compromise, to reconcile the deterministic view of man's nature with the notion of a free will. While I am not so sure that he succeeded, with the assistance of modern science, perhaps he could have.

I believe that each of us has a capacity for free choice. I believe we have a free will, but that it is limited to a degree that depends upon each person's genetic, physical, mental, and emotional makeup, the sum of one's life experiences, and the environment and circumstances in which the will is being exercised. I believe that none of us has a wholly unfettered free will. At the same time, I believe that no one's actions are totally determined by either God or nature. This view, however, places me at odds with contemporary trial procedure, which aims simply to determine if the accused is guilty, and contemporary penal philosophy, which aims simply to punish the guilty.

The determinist says simply that what will be, will be, because one's behavior is shaped entirely by non-willed events or by God. On the other hand, the indeterminist believes there is room for some autonomy because all events are a consequence of an exercise of free will. Today, however, few philosophers are comfortable at either polar extreme. Nonetheless, few will deny that a person's present status is at least in some part the consequence of his environs, of the past actions either of himself or of others, of the decisions made both by himself and others, and of the genes he inherited. Consequently, most theorists believe that one's future state will result, at least in some part, from non-willed external and physical determiners.

Today, the real philosophical debate is not over absolute, bipolar choices, but shades in between. Instead of debating nature or nurture or whether "free will" or "determinism" control, contemporary philosophers debate the extent to which "free will" and "determinism" shape one's destiny. Free will and

17. Gottfried Wilhelm von Leibniz was born in 1646 in Leipzig. He studied law, philosophy, and mathematics and he received his doctorate of law at the age of 20. He served as a court counselor and librarian at Hanover until his death in 1716. Leibniz was one of the leaders of German thought in the 17th century. He believed that the essential characteristics of the bodies in the universe were forces. He broke substance into an infinite number of units of force, which he called "monads." Leibniz's universe was not mechanical—it was dynamic and alive, with each monad in harmony with the others. By means of his theory, Leibniz felt that he had reconciled contemporary science with the moral values of his day. See id at 263-71.
18. Id at 258.
19. At the furthest philosophical extreme is the doctrine that chance totally rules destiny and that life is just a roll of the dice.
determinism are now considered just the opposite ends of a continuum upon which each of us lie. In other words, we each occupy a flexible position somewhere along a free will-determinist continuum. Each of us occupy a different position depending upon all the agents, vectors, and factors, symbiotically and antagonistically, at work in our lives.\textsuperscript{21} Psychologically and physically each of us dwells in a life-state in which no one is wholly free, nor is anyone's fate wholly determined. We are equals in at least one respect—the theoretical freedom to make our own decisions. We are unequal in at least one respect—practically, each of us has a different psychological and physical inheritance, and environmental and external forces impinge upon our free will in different degrees. Thus, theoretically or conditionally, we are equals; circumstantially, we are not.

However, while we philosophically recognize the degrees to which one's will is both free and determined by many factors, the philosophical basis of American penology, is still Cartesian and Kantian. As a result, our penology experiences grave difficulties with any degree of determinism, whether environmental or biological. Like Descartes, Americans believe that "since my will is free, since antecedent causes do not necessitate my actions, I am responsible for my actions."\textsuperscript{22} Similarly, we are content with Kant's morality which also rejected any notions of determinism as incompatible with the full accountability of all persons. In the Kantian and Cartesian models of punishment, since one was morally autonomous, always free to act or refrain from acting, one could be punished for transgressing a rule without that punishment violating any humanitarian notions of justice. Both Descartes and Kant believed that a just God could only punish us for committing a sin if we were morally free to refrain from sinning. Accordingly, the law, as God's mortal agent, was only empowered to do the same thing. That is, penology assumes that punishment is just because man, possessing a free will, is the author of his acts, and can thereby be held responsible for them through punishment for bad acts.

As a consequence, the dominant bases of contemporary notions of sentencing, retribution, and punishment, require that, with limited exceptions, we reject any notion of determinism. In fact, we adhere to a view of free will that presumes that each individual has an equal moral obligation and capability which makes all individuals equally responsible and equally accountable for their actions. These presumptions enable us to justify moral and penal condemnation of the offending individual. Thus, our penology is based upon the fundamental premise that each person, regardless of whether a resident of the inner city, a tree-shaded suburb, or the family farm, is equally free to choose between right and wrong, free to do acts that are legal or illegal, free to abide

\textsuperscript{21} Lady Barbara Wootton, a noted British criminologist and Magistrate, contends that "everyone knows human beings respond to a variety of stimuli; and that the responses vary both as between one individual and another and in the same individual in different circumstances." Barbara Wootton, \textit{Crime and the Criminal Law: Reflections of a Magistrate and Social Scientist} 114 (Steven and Sons 2d ed 1981).

\textsuperscript{22} T.Z. Lavine, \textit{From Socrates to Sartre: The Philosophic Quest} 125 (Bantam 1984).
by the law or disregard it, and hence, free to change. Aside from the myth of “responsibility” we continue to embrace, the law largely ignores why one becomes an offender and presumes that, no matter how enmeshed or enculturated into the criminal society one is, one can choose somehow to escape one’s society, break bonds with one’s past and present, and “go straight.” The law assumes that this reversal can be achieved with no compulsion except punishment for exposed error, without institutionalized, positive incentives and assistance, and without reward for obedience. This theory, however, is almost totally antithetical to any form of realistic, scientifically-based sentencing because all too few of us are in fact Kantian equally free and rational sovereigns in the kingdom of ends. Even though some of us appear to operate within the established parameters of this mythical, legal responsibility, and some of us do, others simply have been unable to substitute our rational choices for our immediate impulses.

Although social scientists no longer seriously contend that human behavior is unaffected by non-willed factors, American penology, in its preoccupation with justifying our punitive response to crime, chooses to ignore both the antecedent and immediate factors leading to crime and the whole ecology of the criminal offense and the offender.23 Penologically, we are libertarian and maintain that the only circumstantial equality to which all offenders are entitled is the equality of opportunity. Equality of opportunity in our social republic, however, is insufficient to provide a stable economy, a stable work force, and a stable political equilibrium. As a result, in these areas, we employ a whole panoply of equalizing statutes. Equality of opportunity is a similarly inadequate basis to determine the appropriate treatment for criminals. Indeed, equality of opportunity itself may be a myth, for most of us realize that “the legal roads to approved social goals are still far from equally open to all.”24

The biological, environmental, and psychological equipment of all humans is unique, and their behavioral expressions of this uniqueness are likewise different. Nonetheless, we deem all offenders the same and, concerned only with what they have done, not with what may be needed to prevent a reoccurrence, we punish them.

Punishment, however, has the potential to modify one’s behavior only to the extent of the lesser of one’s actual capacity to change and the extent of one’s perceived freedom to change. The fact is that the freer one is or the freer one perceives one’s self to be, the more effective punishment will be as a deterrent. The more one’s acts are determined or perceived to be determined by forces external and/or exclusive of one’s will, the less effective punishment or coercion will be. Moreover, if one perceives one’s acts to be determined by forces other than one’s will, any sentencing scheme other than a correction-

23. I use the term “ecology” to refer to all the factors that impinge upon or have an effect on our behavior. Thus, in order to truly understand crime and the criminal offender, I believe that we must consider and analyze all the factors that contribute to crime and criminal behavior—the full “ecology” of crime.

based, remedial sentencing structure based upon reasons why an act was performed is useless to effect change. Time changes our environs, changes us, and must change our philosophy. As Toffler points out, changing the structure of society also changes its peoples' character: “Behavior is not a matter of conscious decision as to whether or not to follow the social pattern, but one of wanting to act as they have to act.”

“Must” some persons act in countercultural ways, commit antisocial acts, and thereby become offenders? If so, should we not desire to root out the negative compelling factors and think of something besides punishment to correct them? If not, should we not identify those offenders who are free to choose and deal with them accordingly, perhaps by a measure of punishment? Let us recognize that some citizens are not free to choose at all and some are free in varying degrees. Then, in response to their bad acts, we should employ a combined response that includes, in addition to punishment, therapeutic methods of treatment and, better yet, active elimination of the reasons for the crime whatever they may be, thereby preventing offenses.

Unfortunately, however, our jurisprudence does not recognize the benefit of a response calibrated to the criminal and fails to differentiate in its standards between culpability, where determinism is properly rejected, and corrections, where I suggest determinism must be explored as a legitimate source of an offender’s actions and a basis for determining an appropriate remedy. If we merely wish to punish without regard for either the fairness or the pragmatic results of our measures, Kant and Descartes offer as good a theoretical foundation as any philosophers. If we wish to correct behavior to the best of our ability, we must discover the true reasons why one performs an act and respond to those reasons. That is to say, whether a factor is an excuse for one’s act is a question for the culpability portion of a trial. Whether a factor is a reason for one’s act is a question for sentencing, for tailoring a remedy, and certainly, should we decide to pursue it earnestly, for preventive intervention and correction. If we wish to correct bad behavior, we can no longer rely on Kant and Descartes and the notion of an absolute free will. We need a new Leibniz armed with the discoveries of contemporary science.

The American philosopher Jacob Needleman says that American culture has “generally tended to solve its problems without experiencing its questions” and that we are unprepared for the shock of genuine questioning. I quite agree. While it is perhaps easier to live by closely guarded and historically

26. I do not want to give the impression that I believe I can look down my philosophical nose at such great thinkers as Kant and Descartes. It is just that American penology embraced their philosophy long ago and has failed to keep up with emerging ideas. American penology did not advance to the next generation of thinkers or the next, but instead stood still. I submit that we cannot, as either Descartes or Kant would have us do, simply separate the intelligible world from the world of sense or the mind from the body because the ship may indeed be inseparable from the pilot.
27. Jacob Needleman, The Heart of Philosophy 6-7 (Knopf 1982).
nurtured prejudices, we can no longer do so. Science teaches us (Needleman says Socratic philosophy teaches us\textsuperscript{28}) to penetrate behind the world of appearances for cause and effect and to understand and accept, not merely to manipulate, the answers we find. Human actions are probably about as predictable as any other natural event. But, to make our best attempt at predicting human behavior, we must pay close attention to external actuators, to cultural milieu, to character, and to genetics. The free will with which each is supposed to be endowed must be modified by our twenty-first century understanding of determinism and how it is changing our concept of the free will with which we are each presumptively endowed. Then, we can challenge Kant's reign over American penology and develop a new theory by which we can reconcile the free will/determinism dilemma.

First, we might ask how the newest notions of and discoveries about the human genome will affect our new penological theory. Given that there are external and non-willed actuators, do some predispose us to fall prey to our tempters? As we look for actuators, will we find help in our genes? Are we about to discover new answers to nagging questions about the freedom of the will? The twenty-first century may indeed offer a new therapeutic ray of hope. We are coming to the realization that the physical and psychological equipment we inherited through our genes may play a role in some behavior. Some of us may be better equipped physically and mentally than others to resist certain behavioral choices. Leibniz believed that individuals “behave in accordance with their original purpose which they received from the beginning through God's creation.”\textsuperscript{29} If God's human creation includes genes which predispose individuals to certain behaviors or which make some of us more susceptible to environmental and sensory stimuli, perhaps a Neo-Leibnizian theory is now appropriate for our penology.

Tangentially, we have recognized such a Neo-Leibnizian theory for generations.\textsuperscript{30} Genetic influence on animal behavior is beyond dispute.\textsuperscript{31} There is empirical evidence of the influence that genetic factors have on human behavior from the study of separated monozygotic twins.\textsuperscript{32} Case studies have also shown that criminal behavior in parents will increase the likelihood that their offspring will commit offenses.\textsuperscript{33} P.A. Brennan, S.A. Mednick, and J.

\textsuperscript{28} Id at 22-26.
\textsuperscript{29} Stumpf, Socrates to Sartre at 268 (cited in note 17).
\textsuperscript{30} Perhaps, intuitively as well. Who among us has not been displayed by a proud (or despairing) relative as having received some trait from one side of the family tree or the other? Neither myth nor lore is scientific in origin. Nonetheless, it usually has a measure of empirical data for support.
\textsuperscript{33} See generally James Q. Wilson and Joan Petersilia, eds, Crime: Twenty-eight leading
Volavka concluded that this "relationship is due, in part, to genetic transmission of criminogenic characteristics."\textsuperscript{34} Travis Hirschi similarly suggests that, at least in part, crime may be a family affair. He posits that the "criminal records of parents and siblings are among the best predictors of one's own trouble with the law."\textsuperscript{33} Nonetheless, I do not believe that we can accurately draw much from this data because the populations and cohorts used shared both genes and environment. Thus, we cannot definitively ascribe the traits to the family environment, the family genes, or some combination thereof. While scientists will become better able to isolate genetic from environmental factors, the incorporation of helpful scientific data into the law will not come easily.

The historical interrelationship between genetics and the law, as a combination or homogenized synthesis of socio-legal controls with science, has been almost universally negative. Until now, the genetic data we have used, or more accurately misused, has not helped criminology and penology advance convincingly. Moreover, for the first part of the twentieth century, human behavioral genetics was reviled, ridiculed, and sometimes feared.\textsuperscript{36} Even today, choosing to believe that all behavior has solely a willed etiology and an environmental embryology, many people condemn any suggestion that genes can help explain behavior. Others understandably fear that an emphasis upon the discoveries in biomedical science might detract from efforts to seek whole ecological explanations for crime and full explanations of cultural problems.\textsuperscript{37} Perhaps others cannot help but feel that they have heard it all before and fear that genetics will again be used as a basis for invidious discrimination.\textsuperscript{38} Quite frankly, I

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\textit{experts look at the most pressing problem of our time (ICS Press 1995).}\textsuperscript{34}
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\textit{Travis Hirschi, The Family, in James Q. Wilson and Joan Petersilia, eds, Crime: Twenty-eight leading experts look at the most pressing problem of our time 121 (ICS Press 1995).}\textsuperscript{35}
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\textit{Unfortunately, many still connect the term "genetic" with the term "engineering" and assume that therapy to correct genetic flaws necessarily involves the manipulation of genes themselves. It does not. It is at once simpler and more complicated. Diet, for example, may trigger abnormal behavior if a gene is malfunctioning. (Eliminating foods with a high tyramine content might help people with a defective MAOA, monoamine oxidase A, gene.) Drug therapy to block neurotransmitter activity is another potential therapy. (We already use beta-blockers to treat high blood pressure, a disease with a genetic component.) See Morell, 260 Science at 1722-3 (cited in note 6). See also Roger D. Masters, et al, Neurotoxicity and Violence (unpublished manuscript on file with author).}\textsuperscript{36}
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\textit{I do not. Even if genetic research concludes that genes have nothing at all to do with criminal behavior, this conclusion is helpful to the penologist and the criminologist because we can then confidently emphasize only environmental, instrumental, and social factors in crime prevention and treatment. See also Tabitha M. Powledge, Genetics and the Control of Crime, 46 BioScience 7 (Jan 1996).}\textsuperscript{37}
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\textit{See generally, for example, Dorothy Nelkin and M. Susan Lindee, "Genes Made Me Do It": The Appeal of Biological Explanations, 15 Politics & Life Sci 95 (Mar 1996); Robert L. Bonn and Alexander B. Smith, The Case Against Using Biological Indicators in}\textsuperscript{38}
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wrestle with some of the same concerns. As we approach the twenty-first century, researchers are increasingly turning to genetic information to help us understand the complexities of human behavior.\textsuperscript{3} Even if this scientific research is wholly objective (I am willing to grant that it is or will be), if we were to ignore the social and cultural variations among us, the discoveries could play into the hands of those who merely want to reinforce their racial and social stereotypes. The result would be a giant step backwards for mankind. It is natural to fear that knowledge of human genetics may be misused for base purposes and it likely \textit{will} be if we are not vigilant. I submit, however, that ignorance can also be used for illegitimate purposes and, I suggest, with more culturally destructive results.

Genetics and gene research will not just go away because some of us do not like the concept or fear what its discoveries might tell us about our biological heritage. \textit{We will} have to cope with and \textit{must} decide how we will use the results of genetic research to better mankind. Genetics, gene research, and its discoveries are here to stay whether we like it or not. Yet, many questions remain unanswered. What are we going to do to prevent illegitimate uses of these discoveries? How are we going to protect persons who are “marked” by genetic research, either as possessors of a gene that indicates a predisposition to an illness or to violence? We must question not what will be discovered, for we are beyond that breakpoint, but what will we do with the discoveries once they are made.\textsuperscript{40} The genetic genie is out of the bottle and it will not go back.

What happens now that science can ascribe to genetics a role in behavior? Furthermore, what \textit{should} happen if it can ascribe to genetics a role in violent criminal behavior?\textsuperscript{41} How should American penology handle such information? This is where it gets scary. This is where searching for answers becomes a weighty moral and professional obligation. We must prepare ourselves for the “real shock” of where this questioning leads, for the answers will undoubtedly lead to new fundamental scientific, social, civil, and criminal laws. Our

\textit{Judicial Decision Making, 7 Crim Just Ethics 3 (1988); Dr. James Bowman, The Road to Eugenics, 3 U Chi L Sch Roundtable 491(1996).}


40. There is a point in the embryology of a proposition beyond which it can no longer be deterred and must be explored to its conclusion. This is what I call the “breakpoint” of an idea, theory, or proposition.

41. Brennan and Mednick would probably phrase the question as, “What should happen now that science \textit{can} ascribe such a role to genetics?” They contend that their survey of twin-studies “has demonstrated that genetic factors can and do influence certain types of criminal behavior, and recidivistic criminal behavior in particular.” They conclude that “biological factors must be added to the list of causes of crime.” Brennan and Mednick, 1993 Acta Psychiatr Scand at 25 (cited in note 6). I am not willing to go that far. It appears to me that the more we learn about genes, the more behavior must be correlated with environmental factors.
way of life is destined to change. Our challenge is morally and ethically to
guide that change.

Fortunately, we have learned from the lessons of history and the failures
of quasi- or pseudo-social science. The new penologist does not look for a
quick fix in utopia, but seeks long term solutions from dystopia. We look with
cautious optimism toward biomedicine, not for the solution, but for some help.
Behavioral genetics may have once been held to a lower scientific standard,
perhaps because of the sheer number of genes, generalized ignorance, and the
seemingly unlimited possibilities presented to us by human behavior, but this
is no longer true. Behavioral genetics is held to stringent scientific standards
and cannot be easily dismissed. Advances in genetics and biochemistry have
given behavioral researchers new scientific tools in their search for clues to
human behavior. Although the genetic answers may remain on the horizon for
now, both within view but out of reach, geneticists, biologists, and criminolo-
gists are beginning to believe that genetic science can help shed some light on
the perplexing enigma of violent criminal behavior and provide penologists
with a ray of hope for therapeutic remedies, where now only prison and
punishment exist.

Human behavioral genetics has been considered by some geneticists to be
the unwanted child of biomedical genetics research, which primarily seeks to
discover the genetic components of and therapies for diseases. Genetics as a
behavioral tool is difficult for many geneticists to accept and is downplayed by
others. Geneticists understandably fear being identified with the old eugenicists
who prostituted the science for their own biased agendas. Nonetheless, behav-
ioral genetics has inherited and will continue to inherit at least the residue
from biomedical research. This fallout from medical research combined with
behavioral researchers' use of sophisticated quantitative methods has given the
field new respectability. Now, some scientists believe that important discoveries
about the human genome, including the identification of genes that may
predispose towards violent behavior, are not far off. So, we must determine
what we going to do with these discoveries. Will we use the science or allow
it to use us? If we use our discoveries wisely, fairly, and humanely, not to
determine social policy, but to help inform us about reasons why one acts as
one does, I predict that behavioral genetics will one day achieve a measure of
acceptance. The positive impact of all this information, both biological and
environmental, upon crime prevention could be enormous, if we are cautious
and jealously guard our human dignity from compromise by those who just
look for the quick fix and who are not concerned with protecting our fellow
citizens from misuse.

42. We already know that there is a single, X-linked recessive gene for the Lesch-
Nyhan Syndrome. This defect in the purine mechanism causes mental retardation,
involuntary movements, and self-directed violence. There are other genes with a similar
behavioral component to them, such as those which result in mental retardation.
The Human Genome Project may well be the most significant organized research endeavor in the history of medicine. The Project's goal is not only to map human genes, but to learn their relationship to approximately four thousand diseases. If the Project's research, as intended, enables scientists to map and translate the one hundred thousand-plus genes which contain the extensive, but individual-specific, blueprints by which each human being is built, it will have a profound impact on our understanding of diseases and how to treat or prevent them. The legacy of the Human Genome Project may enable future biomedical research to provide us with detailed data about human DNA. The Project and its companion, neuroscience, will increasingly occupy the attention of biomedical research and will revolutionize the practice of medicine far into the next century.

The Project may be an important behavioral research endeavor as well. There is little doubt that the discoveries from this project will produce an increased awareness and understanding of the role that genetics and the heritability of certain human traits plays in human behavior. For example, it seems clear that certain traits associated with violence are influenced by genes. The National Institutes of Health ("NIH") has built a database relating deficiencies in neurotransmitters like serotonin, a chemical in the brain that facilitates transmission between neurons, to aggression and suicide. Now, the NIH is working on a project to identify genes that control the manufacture of serotonin and to study how they are related to factors that may predispose people toward aggressive behavior.

43. I believe that, not only in the physical sciences, but in philosophy, sociology, and theology, as well, the shock waves from the discoveries in biomedicine will be the greatest since those felt from the theories and conjectures of Charles Darwin. So, I am not surprised that the controversy, which will surely continue to surround this science, is of commensurate dimensions. Thus, we must ensure that the "social aspects" and the racism of Social Darwinism are excised from (and indeed, as I earlier explained, I believe it will be refuted by) this science. See Charles Darwin, On the Origin of the Species (Atheneum 2d ed 1972). See also Will Durant, The Story of Philosophy: The Lives and Opinions of the Greater Philosophers 267-68 (Simon and Schuster 1961).

44. Dr. Edward Pierce, of Gannon University, calls this the "Last Frontier" of science. He predicts that, because of genetics discoveries, the practice of medicine will increasingly occupy itself with presymptom therapy for diseases and that genetic medicines and therapies will evolve the profession of medicine, with increasing velocity, towards therapeutic prevention, with disease treatment decreasing commensurately. Dr. Edward Pierce, Unpublished Letter to Author (on file with author).

45. See, for example, Raine, Psychopathology of Crime at 47-79 (cited in note 6); Gregory Carey and Irving I. Gottesman, Genetics and Antisocial Behavior: Substance versus Sound Bytes, 15 Politics & Life Sci 88, 88-90 (Mar 1996); Morell, 260 Science at 1722-23 (cited in note 6).

Nonetheless, human behavioral genetics is in its infancy. Behavioral genetics remains ambiguous, controversial, and may still be a distance from formulating a scientifically sure, biological component to use in equations through which we might discover the reasons for violent criminal behavior. Certainly, there are likely to be only a few antisocial human traits that are one hundred percent heritable. Regardless, by identifying biological reasons for doing some of what we do and becoming some of what we are and by pointing towards social and environmental factors where biological reasons do not exist, science does empower criminologists to isolate the role genes play in behavior and, with greater accuracy, to search out the actual reasons why one acts as one does. If we adopt an interdisciplinary approach, science permits penologists to be optimistic that new therapeutic help is not only on the visible horizon, but is attainable.47

Our genes cannot, however, be viewed as providing a myth-like, social scapegoat for deep-seated cultural problems. Complex social problems will require complex, and probably largely social, answers. Whatever may be the role of genes upon human behavior, I am sure that environmental feedback is a significant ecological overlay to the biological components of the will. Regardless of the genetic subtleties we each have been given, what our social world reverberates may well be the strongest determining signal in predicting an individual’s behavioral response to either a perceived peril or a potentially gratifying opportunity.

Similarly, one’s genetic inheritance cannot be expected to provide an excuse for what one does. We must not conflate decisions about criminal sentences and remedies for crime with determinations of culpability and guilt. There may be no excuse in law for what one does even if there is a reason. It is that reason we must focus upon, without regard for what we might discover about ourselves. It is that reason we must respond to in our penology, regardless of what comfortable myths of punishment we must cast aside in the process, or else we will not progress at all. To find that reason, penology must enlist the support of and accept assistance from the entire field of allied sciences.

Although many have tried, we in criminology have not yet discovered how we can, with any accuracy, distinguish the voluntary act from the compelled or compulsive act. Leibniz was right, however. Penology must recognize that both our fund of options and our ability to exercise them is limited. I am sure Leibniz would not suggest that we excuse offending behavior as the product of theological, biological, or uncontrollable determiners. Nor, indeed, would I. I would press graduated levels of moral and legal accountability upon all offenders, commensurate with the sum of all factors impinging upon their

47. As Dr. C. Ray Jeffery says, “[T]oday the neural sciences are totally changing our view of human behavior, as well as the treatment and prevention possibilities which are available from neurology, neuropsychiatry, brain chemistry, and neuropharmacology. That is why an interdisciplinary [approach] to [the] study [of] violence is so badly needed.” C. Ray Jeffery, Unpublished Letter to the Author (Nov 22, 1995) (on file with the author).
behavior. With equal emphasis, however, I think that a Neo-Leibnizian would conclude that punishment should not be considered the reason for the trial and, therefore, must not be considered the entire penal answer.48 Safety must be our product. As we approach the twenty-first century, we must view all the evidence and use all the sciences, both physical and social, to prevent crime and to either transform offenders into responsible citizens with a commitment to our culture's rule of law or contain them, as we do now, separated from our culture.

I doubt that genetics will ever become the answer to behavioral questions and must not be given such prominence. Indeed, "geneticists do not argue for a direct causal link between a given gene or genes and behavior, including criminal behavior."49 Even if genes influence either one's passive or aggressive tendencies, whether and how those character traits are expressed in overt behavior surely depends to a significant degree upon one's social and physical environment.50 Yet, despite the role of the environment, genes remain one of the factors we must examine for possible answers to the questions raised in the study of human character.

As explained above, one's character, including one's tendency toward or resolve in avoiding violence or other forms of antisocial behavior, is unquestionably molded by varying combinations of education, environment, training, experience, chance, genetics, and a host of other variables. This ecology of the crime and the offender remains to be fully explored. In penology, however, we can no longer cling to the irrational notion that all individuals are equally free and equally able to resist the temptation to disobey. Few of us fully understand why we act as we do, especially when it comes to making highly charged, emotional, or spur-of-the-moment decisions. Most human decisions simply are not made in a deliberate, Cartesian fashion. Our environment, subliminal and genetic influences, and the sum of life's vicissitudes may well be the real determiners at work in a number of antisocial and criminal acts. The exact role each factor plays must be isolated and studied for what it can contribute to our understanding of humanity and the proper role of legally sanctioned punishment.

The early twentieth century has been called "the decades of the physicist." Some of the brightest minds and greatest scientists were studying physics and the discoveries they made were new and exciting to the world.51 One par-

48. "Criminal punishment by government, although universally recognized as a necessity in limited areas of conduct, is an exercise of one of government's most awesome and dangerous powers. . . . To this end, at least in part, written laws came into being, marking the boundaries of conduct for which public agents could thereafter impose punishments upon people." Ginzburg v US, 383 US 463, 477 (1966) (emphasis added).
49. Jeffery, Genetics and Crime Revisited at 1 (cited in note 8).
51. For an excellent work on the scientific, political, and cultural milieu of this period and its discoveries, see Richard Rhodes, The Making of the Atomic Bomb (Simon and Schuster 1986).
ticular discovery from those decades changed the world forever—atomic fission. Physics and atomic science, unfortunately, were leagues ahead of any moral inquiry into the implications of their discoveries. We are still haunted by the specter of Armageddon that lapse created. We must not make the same mistake again. All of science, whether social or physical science, must be held to account for itself morally. Our culture must learn how to use science wisely and morally and to harness its power. Thus, we must be on guard because the period between the diagnostic and the therapeutic discoveries will leave a window of opportunity for the unscrupulous, which will cause trouble for the individual and for the science unless we anticipate both the misuses and the uses of new discoveries.

Our scientists have theories as varied as the sciences themselves. Among behavioral scientists, there are tangled threads of diverse and conflicting theories that have yet to be woven into a recognizable pattern. Some theories focus on genes, some on the brain, some on nutrition, some on pollution and toxins, and some on social and environmental factors. All such theories have some form of scientific data upon which to base their claims for legitimacy. Data in one area alone, however, is not enough. Our goal, after all, is not just to amass scientific data about a problem. We cannot rely solely upon answers from the physical sciences as panaceas to complex social problems. Crime is all about behavior and behavior is all about humans. Our goal, as contemporary penologists, criminologists, and legal philosophers, is the full integration of all disciplines to focus upon real wisdom and understanding of human weaknesses and strengths. We must rule science and not be ruled by it. In the final analysis, all we have in civilized culture is our humanness and we must foster that which feeds it.

The treatments for cancer, the vaccines for polio, and the cures for a myriad of diseases that once plagued us did not just appear. They came about because some of the best and brightest scientists, professionally and socially motivated and properly funded, applied themselves to the task. Unless America makes an identical or greater commitment to discovering the causes and cures of violent behavior, substance abuse, and other offensive, antisocial acts, crime

52. The Human Genome Project will be educating scientists, professionals, and the general public as it progresses. James D. Watson, Director of the Project, asked that five percent of its budget be dedicated to study the ethical, legal, and sociological impact of the Project's genetic discoveries. See, for example, Laurie Garrett, The Dots Are Almost Connected . . . Then What?, LA Times 22 (Mar 3, 1996); Gordon Dillow, Toward a More Perfect Human?, Orange Cty Register E1 (July 2, 1995).

53. Some states have already begun to collect DNA samples of convicted offenders for later uses. Other states are now developing DNA databases of their convicted offenders by requiring that they submit to DNA testing, raising a host of other legal and constitutional concerns. In addition to using this information as tracking data, it may also be the beginnings of a database to explore commonalities among crimes and offenders. Hence, although it may assist penologists in developing the whole ecology of crimes and offenders and help scientists identify areas ripe for genetic research, the legal ethicist must continue to ask what human cost this will impose.
will continue its negative impact on American culture and will continue to bleed our economy. The behavioral component of all studies and research projects performed in all the sciences must be allied and arrayed in pursuit of the causes of and cures for crime. I suppose there is a temptation in every scientist to treat other sciences as mere suffixes to one's own. The discoveries of contemporary science in all fields, however, show the fallacy of this benign (or sometimes malicious) ignorance. The integration of all disciplines is fundamental to understand the complex enigma that is human behavior. We can no longer afford either the human or the material cost of any ignorance about the reasons for, that is to say the full ecology of, crime.

Arnold Toynbee, a great historian, says that the history of a civilization is always a story of challenge and response. Our civilization now faces a great challenge because genetic research is on the very cusp of progress that may influence our civilization in an almost chain-reaction fashion. This is a defining challenge and, in the history of our civilization, will mark a historical demand for an appropriate moral and legal response. We cannot stem progress. We cannot frustrate change. Legal philosophers, ethicists, and legal academicians must have a specific vision of what our civilization ought to be and do have a professional obligation in the face of the challenge posed by genetic research to engage in "real questioning" of its results. Yes, we must challenge genetics ethically, but we must also determine if it can help us to live longer, to live healthier, and perhaps to live more peacefully with each other. The tragedy of American philosophy is that historically we have paid insufficient attention to it. As a result, we are bound to be intimidated by the great chasm between the ideal of what we want to be and the reality of what we really are. Dr. Martin Luther King, Jr., said that America has yet to "live out the true meaning of its creed" or "to be a great nation." We in penology can, however, rise to that challenge. Indeed, we must.

Plato was right. Our philosophers must become "kings" or, alternatively, our "kings" must become philosophers. Of course, America has no kings as such. We do, however, have leaders—religious, cultural, scientific, and governmental. We leaders must be the philosophers, must develop the wisdom to use

54. The costs of crime are enormous. In addition to the approximately $30 billion it takes to house America's prisoners, the billions more to detect, arrest, and try offenders, the cost of goods stolen, and the other "hidden" costs of crime, there is an entire "crimin-economy" which sells Americans billions of dollars worth of devices to prevent crimes or protect property. In addition to the police forces paid for by our taxes, most businesses and industries have private security forces to augment the public forces. Of course, we pay for these additional security efforts in the increased cost of goods sold. Crime is a big and costly business and the businesses supported by crime are also costly.

55. An examination of the myths and religions a civilization developed and drew strength from also reveals a story of how it responded spiritually and morally to its current crises of life and the challenges by which it felt threatened.

56. Martin Luther King, Jr., I Have a Dream in James Melvin Washington, ed, I Have a Dream: Writings and Speeches that Changed the World in 104, 105 (Harper 1986).

discoveries wisely, and must foster the proper moral response to protect the values these discoveries threaten. That would be Plato’s admonition and is the solemn challenge of leadership. Science must remain culture’s faithful servant, not its technocratic sovereign. We invite injustice by unguarded reliance upon science. For the cold hand of science cannot balm the aching soul, cure a moral malaise, correct social inequality, staunch the bloody flow of personal hatred, nor correct the criminal offender. For that, we need each other—each caring for the other.

It would be pleasant to believe that Kant and Descartes were right that you and I are fully in control of our rational choices and that thought, reason, and a free will are what make us human. However comforting these beliefs are, they defy what we, at the close of the twentieth century, now know about human nature and some of what we are discovering about human genetics. Penology must recognize this because it is both morally indefensible and penologically unproductive to simply punish those whose actions are determined, at least to the degree their actions are truly determined. It is equally immoral and penologically indefensible to fail to demand a full accounting for those whose actions are not determined. Our new understanding reminds us that the only long-term remedies for crime are prevention, diagnosis, and treatment. Alexis de Tocqueville said that Americans are Cartesians, but have never read Descartes. Tocqueville was right. Perhaps if we read Descartes, we would challenge his thinking on free will and adopt a theory closer to Leibniz’s.

I am not a biological determinist, nor am I an environmental, social, or theological determinist. Both genetics and human behavior are far too complex and interconnected with the environment in which each is expressed. So, I suppose I am a Neo-Leibnizian. I suggest that human free will is really just maneuvering room within the parameters created by the facts and factors of life. I believe that American penology must recognize this and carefully study mankind’s entire nature, including his intellectual, sensory/environmental, and biological nature. Whether a creation of God, of nature, or of both, the human genome contains answers to questions about our existence as yet unasked. But, the questions will be asked and the answers are forthcoming. Our challenge and our task is to be ready to respond to them.

58. See generally Jacob Needleman, Sin & Scientism: An Interview with Jacob Needleman (Robert Briggs 1985).