

Legal Conceptions of Equality in the Genomic Age

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Theodosius Dobzhansky was one of the leading population geneticists of the twentieth century. Born in 1900 in a small town in the Ukraine,¹ he came to the United States in 1927 on a fellowship to study with Thomas Hunt Morgan at Columbia University—another giant in genetics who is best known for his work with *Drosophila melanogaster* (fruit flies).² Dobzhansky remained in the United States the rest of his life, researching, teaching, and writing about genetics. Dobzhansky's greatest, enduring contribution to genetics is his work (along with such luminaries as R.A. Fisher, J.B.S. Haldane, Julian Huxley, Ernst Mayr, and Sewall Wright) in formulating the Modern Synthesis of Evolutionary Theory.³ The Modern Synthesis integrated Darwinian principles of natural selection with Mendelian principles of inheritance to establish the evolutionary foundations of modern genetics.⁴

Dobzhansky is notable today as much for his social commentary as for his technical scientific writings. Four of the themes in Dobzhansky's writing on genetics and equality are especially relevant to this Article. They provide a way to assess the implications for notions of equality when genetic technologies are used in tort, employment discrimination, and occupational

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1. Francisco J. Ayala & Walter M. Fitch, *Genetics and the Origin of Species: An Introduction*, 94 PROC. NAT'L ACAD. SCI. 7691, 7692 (1997).

2. *See id.* at 7692–93.

3. *See* STEPHEN JAY GOULD, *THE STRUCTURE OF EVOLUTIONARY THEORY* 503–28 (2002); MARK RIDLEY, *EVOLUTION* 13–17 (2d ed. 1996). *See* THEODOSIUS DOBZHANSKY, *GENETICS AND THE ORIGIN OF SPECIES* (1937).

4. *See* GOULD, *supra* note 3, at 503.

health law. The three illustrative areas reflect common law, statutory, and regulatory approaches to individual differences. Dobzhansky's writings also suggest a way of considering societal notions of equality more generally.

This Article proposes a new approach to analyzing the effects of individual genetic variation on conceptions of equality.⁵ It ultimately finds the current public policy approach of ignoring individual genetic variation increasingly untenable from a theoretical, scientific, and practical standpoint. A new approach to equality based on the recognition of individual genetic variation is better calculated to achieve respect, dignity, and equality of opportunity for all individuals.

I. Dobzhansky's Insights

During the 1920s and 1930s, eugenics⁶ was a dominant and widely-supported political application of what was then considered the sound genetic principle of improving the nation's gene pool.⁷ In the United States, concerns about "diluting" the population stock with "genetically inferior" immigrants led to enactment of the Johnson-Lodge Immigration Restriction Act of 1924,⁸ which greatly reduced the number of lawful immigrants and virtually excluded additional immigration from Southern and Eastern

5. Genetics is the scientific study of heredity. Because of technological limitations, scientists tended to determine the locus and function of one gene at a time. See MAXWELL J. MEHLMAN & JEFFREY R. BOTKIN, ACCESS TO THE GENOME: THE CHALLENGE TO EQUALITY 9–19 (1998). By contrast, the new field of genomics uses genome-wide analytical tools to study the effect of multiple genes, proteins, and other gene products on biological processes. *Id.* Genomics deals with a larger set of information. *Id.* This Article uses both terms because genomics is expanding the amount and nature of available genetic information.

6. In the early twentieth century, eugenics, a term coined by Francis Galton in the late 1800s meaning "well born," became a social movement of individuals committed to betterment of humankind by "encouraging" those with superior physical and mental endowments to reproduce and "discouraging" those with inferior endowments to refrain from reproducing. See DANIEL J. KEVLES, IN THE NAME OF EUGENICS: GENETICS AND THE USES OF HUMAN HEREDITY iv (1985). These two strategies are termed "positive" and "negative" eugenics. *Id.* at 85. As governments became involved in establishing eugenics as state policies, the degree of compulsion in eugenics programs increased, eventually leading to breeding programs, compulsory sterilization of "unfit" individuals, and genocide. There is a vast literature on eugenics. See *generally id.*; BENNO MÜLLER-HILL, MURDEROUS SCIENCE: ELIMINATION BY SCIENTIFIC SELECTION OF JEWS, GYPSIES, AND OTHERS, GERMANY 1933-1945 (George R. Fraser, trans.) (1988); ROBERT N. PROCTOR, RACIAL HYGIENE: MEDICINE UNDER THE NAZIS (1988).

7. See ALLAN CHASE, THE LEGACY OF MALTHUS: THE SOCIAL COSTS OF THE NEW SCIENTIFIC RACISM 15–17 (1975).

8. 43 Stat. 153 (1924) (repealed 1952).

Europe.⁹

In order to improve the nation's gene pool, state governments engaged in compulsory sterilization of individuals considered genetically "defective."¹⁰ The Supreme Court upheld the constitutionality of state eugenic sterilization laws in 1927 in the infamous case of *Buck v. Bell*.¹¹ Between 1912 and 1931, twenty-eight states enacted eugenic sterilization laws, ultimately resulting in the forced sterilization of an estimated 60,000 people in the United States.¹² In Europe, every country except England also passed eugenic sterilization laws. By the 1930s, Nazi Germany had started down the insidious path of positive and negative eugenics that would culminate in the Holocaust.¹³

Many of the scientists engaged in genetics research in the first half of the twentieth century were astonishingly oblivious to or silent about the potential for extraordinarily destructive applications of unproven and politically-inspired genetic theories.¹⁴ One prominent exception was Dobzhansky.¹⁵ Beginning in the 1940s and continuing until his death in 1975,¹⁶ Dobzhansky wrote passionately about the social implications of genetics, particularly with regard to the effect of genetics on conceptions of equality.¹⁷

9. The Act's stated purpose was "to limit the immigration of aliens into the United States." *Id.*

10. See Philip R. Reilly, *Eugenics, Ethics, Sterilization Laws*, 1 *ENCYCLOPEDIA OF ETHICAL, LEGAL AND POLICY ISSUES IN BIOTECHNOLOGY* 204, 204–08 (Thomas H. Murray & Maxwell J. Mehlman eds. 2000).

11. 274 U.S. 200 (1927).

12. J. DAVID SMITH, *THE EUGENIC ASSAULT ON AMERICA* 6 (1993); see Paul A. Lombardo, *Taking Eugenics Seriously: Three Generations of ??? Are Enough*, 30 *FLA. ST. U. L. REV.* 191, 202 (2003); Paul A. Lombardo, *Three Generations, No Imbeciles: New Light on Buck v. Bell*, 60 *N.Y.U. L. REV.* 30, 31 (1985).

13. See generally *THE WELLBORN SCIENCE: EUGENICS IN GERMANY, FRANCE, BRAZIL, & RUSSIA* (Mark B. Adams ed., 1990).

14. See CHASE, *supra* note 7.

15. Another leading scientist who advocated for the fundamental equality of all humans, although not specifically in the context of genetics, was Ashley Montagu, a leading anthropologist and Dobzhansky's friend and Columbia University colleague. See, e.g., M.F. ASHLEY MONTAGU, *MAN'S MOST DANGEROUS MYTH: THE FALLACY OF RACE* (1942). Among other collaborations, they coauthored the following article: Theodosius Dobzhansky & M.F. Ashley Montagu, *Natural Selection and the Mental Capacities of Mankind*, 105 *SCIENCE* 587 (1947). The author and social commentator Gilbert Keith (G.K.) Chesterton presented a powerful and prescient critique of eugenics as early as 1922 in G.K. CHESTERTON, *EUGENICS AND OTHER EVILS: AN ARGUMENT AGAINST THE SCIENTIFICALLY ORGANIZED SOCIETY* (1922).

16. Costas B. Krimbus, *Dobzhansky's Worldview*, in *THE EVOLUTION OF THEODOSIUS DOBZHANSKY* 179, 186 (Mark B. Adams ed., 1994).

17. See, e.g., Theodosius Dobzhansky, *Genetics and Equality*, 137 *SCIENCE* 112 (1962).

Four of the themes in the work of Dobzhansky are applicable to modern legal conceptions of equality. First, Dobzhansky emphasized that inequality of opportunity is a waste of human capital.¹⁸

The cultural flowering of ancient Greece may have been impossible without slave labor, and the social graces of baroque Europe may have been impossible without the toil of its peasants and artisans. But to waste human resources is inexcusable in a world of technology able to produce enough and to spare.¹⁹

Thus, Dobzhansky opposed the notion that genetics operates to select social classes.²⁰ Even though he rejected genetic determinism, Dobzhansky recognized that, ultimately, decisions about societal conceptions of equality are political decisions.²¹

Second, Dobzhansky criticized the opposing assumptions about the role of genetics and equality.²² On the one hand, many who believe in genetic "predestination," whom Dobzhansky called "conservatives," asserted that differences in genetic endowments made "some of us . . . inept, some clever and others stupid, some hard-working and others lazy."²³ According to this account, because social and economic status reflects "intrinsic ability," the status quo of differential opportunity could be defended on genetic grounds.²⁴ On the other hand, some "liberals," concerned that genetic diversity necessarily equates with differences in social status, were forced to argue in favor of what Dobzhansky called "the tabula rasa myth"²⁵ of equality, essentially ignoring the scientific evidence that humans differ to some degree in their innate abilities and attributes.

Dobzhansky rejected both of these approaches on social and genetic grounds. He agreed that there is a genetic component to certain abilities and therefore one's "achieved role, status, and

18. *See id.* at 115.

19. *Id.*

20. Genetic manipulations of future generations to fill predetermined social roles was a central theme of one of the leading futuristic satires of the day. *See* ALDOUS HUXLEY, *BRAVE NEW WORLD* (1932).

21. Dobzhansky, *supra* note 17, at 115.

22. *Id.*

23. *Id.* at 112.

24. *Id.* In essence, this was a key theme of the highly controversial book, *The Bell Curve*. The other central theme was the asserted correlation of "race" with intelligence. *See* RICHARD J. HERRNSTEIN & CHARLES MURRAY, *THE BELL CURVE: INTELLIGENCE AND CLASS STRUCTURE IN AMERICAN LIFE* 269 (1994).

25. Theodosius Dobzhansky, *Is Genetic Diversity Compatible with Human Equality?*, 20 *SOCIAL BIOLOGY* 280, 281 (1973).

economic level" each have a genetic element.²⁶ Yet, the strong effect of the environment precludes most genetic advantages from being determinative.²⁷ In Dobzhansky's view, the distinctive quality of humans is their "adaptability," "developmental plasticity," and "educability."²⁸ On the other hand, he dismissed the idea that any application of intrinsic abilities in a meritocracy will inevitably result in a "genetic elite."²⁹ Referring to the perpetuation of occupations based on inherited factors, he wrote:

Human populations, and in fact those of most sexual and outbreeding species, are genetically far too heterogeneous for such homozygosis. In every aptitude aggregation and in every generation, the Mendelian recombination will therefore keep producing individuals with genotypes that favor occupations other than those of their parents.³⁰

Dobzhansky concluded that "[t]he myths of tabula rasa and of genetic predestination are both equally deceptive; the truth is found in-between."³¹ Consequently, "genetic diversity [is] compatible with equality of opportunity."³²

Third, Dobzhansky believed that a political system affording equality of opportunity is the best way for a society to deal with extensive genetic diversity:

[B]ecause in that system people are allowed to, and are more likely to, assume a role in society for which they are fitted by virtue of their genetically and environmentally determined abilities; in an aristocracy, by contrast, people would not be so likely to find their way into the occupation or social role for which their genes especially fitted them.³³

Fourth, Dobzhansky believed that society must use genetic information to promote beneficence. In a frequently quoted passage, he said: "[I]f we enable the weak and the deformed to live and propagate their kind, we face the prospect of a genetic twilight; but if we let them die or suffer when we can save them, we face the certainty of a moral twilight."³⁴ Dobzhansky's words

26. *Id.* at 285.

27. *Id.* at 286.

28. *Id.* at 287.

29. *Id.* at 285.

30. *Id.*

31. *Id.* at 287.

32. *Id.*

33. John Beatty, *Dobzhansky and the Biology of Democracy: The Moral and Political Significance of Genetic Variation*, in *THE EVOLUTION OF THEODOSIUS DOBZHANSKY*, *supra* note 16, at 209 (references omitted); *see generally* THEODOSIUS DOBZHANSKY, *THE BIOLOGICAL BASIS OF HUMAN FREEDOM* (1954).

34. Theodosius Dobzhansky, *Man and Natural Selection*, 49 *AM. SCIENTIST* 285, 296 (1961).

can be applied more broadly than merely to eugenics. They speak to a moral imperative for society to use genetic variation for the benefit of all rather than to enable the adverse treatment or oppression of the most vulnerable.

In light of new findings in genetics and genomics, do Dobzhansky's writings on equality have continued relevance? In recent years, ever-expanding research has led to a body of scientific knowledge that surely would astound Dobzhansky, not to mention Gregor Mendel and Thomas Hunt Morgan. In 2001, the Human Genome Project was completed with publication of the draft sequence of the human genome, establishing a reference of the 3.2 billion nucleotide base pairs of human DNA.³⁵ The results of the Human Genome Project have confirmed that all humans are 99.9% alike in terms of their genetic makeup, and that there is more variation between members of any particular racial or ethnic group than between members of different groups.³⁶ As a relatively young species, humans show less genetic variation than other species of mammals, including our closest biological relatives, chimpanzees, bonobos (pygmy chimpanzees), and gorillas.³⁷

New scientific evidence also has established the genetic basis of human variation. Each human differs from another, on average, at about 3.2 million base pairs (one in one thousand base pairs),³⁸ and these differences may be expressed in numerous ways, including physical traits (e.g., height, eye color, hair color), disease or predisposition to disease,³⁹ and elements of behavior (including the genetic contribution to intelligence and personality).⁴⁰ Genetic technologies also permit the accurate assessment of parentage, more distant lineage, and even ancestral patterns of population migration.⁴¹

35. International Human Genome Sequencing Consortium, *Initial Sequencing and Analysis of the Human Genome*, 409 NATURE 860, 875 (2001).

36. Troy Duster & Pilar Ossorio, *Race and Genetics: Controversies in Biomedical, Behavioral, and Forensic Sciences*, 60 AM. PSYCHOLOGIST 115, 117 (2005).

37. Henrik Kaessman et al., *Great Ape DNA Sequences Reveal a Reduced Diversity and an Expansion in Humans*, 27 NATURE GENETICS 155, 155 (2001).

38. See MAXWELL J. MEHLMAN, *WONDERGENES: GENETIC ENHANCEMENT AND THE FUTURE OF SOCIETY* 11–12 (2003).

39. This includes diseases caused by a single gene (monogenic), a combination of genes (polygenic), and one or more genes and one or more environmental factors (multi-factorial). See *id.* at 15.

40. See generally BEHAVIORAL GENETICS IN THE POSTGENOMIC ERA (Robert Plomin et al. eds., 2003).

41. See Aravinda Chakravarti, *Population Genetics—Making Sense Out of Sequence*, 21 NATURE GENETICS 56, 58–59 (1999).

Modern genetics creates a paradox with regard to human biological sameness and difference. Genetics confirms the close kinship and common origins of all humans and definitively establishes that race is a social, and not a biological, construct.⁴² At the same time, genetics provides a detailed array of information about individual variation at an exquisitely refined, molecular level. Genetics helps explain, among other things, why particular individuals differ in response to pharmaceutical products, have certain allergies, or should avoid certain exposures.⁴³ Genetic information may even permit predictions about the future course of individual health and development.⁴⁴

The scientific ability to draw fine distinctions among people based on genetic variation raises profound ethical, legal, and social questions about how all this biological variation relates to the broader concepts of equality and inequality. To further complicate matters, the science is progressing from the ability to make detailed assessments of variation to actually playing a part in increasing the degree of genetic variation among humans. For example, new reproductive technologies (including preimplantation genetic diagnosis) may give *some* parents greater control over the genotype of their offspring;⁴⁵ gene therapy and pharmacogenomic-based therapies may give *some* individuals access to more advanced therapeutics;⁴⁶ and genetic enhancement techniques may give *some* individuals the ability to bolster favored human traits (e.g., cognition, strength).⁴⁷ These and other areas of genetics raise questions about the morality of such undertakings as well as the distributive ethics in affording access to the technology.⁴⁸

Every American is familiar with the passage in the

42. See Francis S. Collins, *Shattuck Lecture—Medical and Societal Consequences of the Human Genome Project*, 341 NEW ENG. J. MED. 28, 34 (1999).

43. See Gilbert S. Omenn & Arno G. Motulsky, *Integration of Pharmacogenomics into Medical Practice*, in PHARMACOGENOMICS: SOCIAL, ETHICAL, AND CLINICAL DIMENSIONS 137 (Mark A. Rothstein ed., 2003).

44. See, e.g., Collins, *supra* note 42, at 30–31.

45. See D.S. King, *Preimplantation Genetic Diagnosis and the “New” Eugenics*, 25 J. MED. ETHICS 176, 178 (1999); John A. Robertson, *Extending Preimplantation Genetic Diagnosis: The Ethical Debate*, 18 HUMAN REPRO. 465, 465 (2003).

46. See generally FROM CHANCE TO CHOICE: GENETICS AND JUSTICE 108 (Allen Buchanan et al. eds., 2000); MAXWELL J. MEHLMAN & JEFFREY R. BOTKIN, ACCESS TO THE GENOME: THE CHALLENGE TO EQUALITY 8 (1998).

47. See MEHLMAN, *supra* note 38, at 2; Michael H. Shapiro, *The Impact of Genetic Enhancement on Equality*, 34 WAKE FOREST L. REV. 561, 563 (1999).

48. See Colin Farrelly, *Distributive Justice and Genetics*, in NATURE ENCYCLOPEDIA OF THE HUMAN GENOME 42 (2003).

Declaration of Independence proclaiming that “all men are created equal.” Of course, “all men” excluded “all women” and further meant free, white, men owning property.⁴⁹ Also, “created equal” was not an assessment of biological sameness, but a natural law assessment of equality with regard to political and legal rights. This interpretation is confirmed in the next clause that proclaims “that they are endowed by their Creator with certain unalienable rights”⁵⁰

Despite its centrality to the founding of the nation, political equality remains an unfulfilled promise along many dimensions. Yet, in addition to political, social, and economic inequality, the nation will soon have to confront how to deal with increased information about genetic variation. Some of the questions raised include: How will increased knowledge of individual variation affect the moral and political underpinnings of society?⁵¹ What challenges are presented by introducing increased information about genetic diversity into a society increasingly unequal in income distribution and other ways? Aside from health care settings, when is it appropriate to consider individual genetic variability in allocating social goods, and when should such differences be ignored on the basis of privacy or other public policies? Does this greater knowledge of subtle and profound genetic differences support or detract from the Rawlsian notion of society owing greater moral obligations to those who have received a less favorable distribution of natural assets?⁵²

II. Common Law: Torts

A. Legal Overview⁵³

The law of negligence sets boundaries on the conduct of

49. See Charles J. Ogletree, Jr., *The Burdens and Benefits of Race in America*, 25 HASTINGS CONST. L.Q. 219, 221–24 (1998).

50. THE DECLARATION OF INDEPENDENCE para. 2 (U.S. 1776).

51. See Celeste Michelle Condit et al., *Human Equality, Affirmative Action, and Genetic Models of Human Variation*, 4 RHETORIC & PUB. AFFAIRS 85 (2001); John Harris & John Sulston, *Genetic Equity*, 5 NATURE REV. GENETICS 796 (2004).

52. See JOHN RAWLS, *A THEORY OF JUSTICE* 106–107 (1971); see also LESLEY A. JACOBS, *PURSUING EQUAL OPPORTUNITIES: THE THEORY AND PRACTICE OF EGALITARIAN JUSTICE* (2004).

53. Much of this section has been adapted from Mark A. Rothstein, *Behavioral Genetic Determinism: Its Effects on Culture and Law*, in *BEHAVIORAL GENETICS: THE CLASH OF CULTURE AND BIOLOGY* (Ronald A. Carson & Mark A. Rothstein eds., 1999).

individuals in their everyday lives.⁵⁴ In determining what conduct exceeds legal bounds, it was essential for the common law to develop a flexible, easily understandable, and readily applicable standard for an individual's legal duty.⁵⁵ The reasonable person standard, originally expressed as the "reasonable man" standard, was first applied to negligence law in England in the middle of the nineteenth century.⁵⁶ The concept was soon adopted in the United States.⁵⁷ By the beginning of the twentieth century, the gender-neutral "reasonable person" standard came into use and is now used in every state.⁵⁸ The reasonable person standard is often expressed as the reasonably prudent person, or some similar terminology.⁵⁹ The hypothetical reasonable person standard is not the average person or the average juror, it is the personification of a community ideal of reasonable behavior.⁶⁰ It is an objective and largely unitary standard.⁶¹

Although the law does not consider minor variations in the character and abilities of the individual in establishing the standard for evaluating conduct, there are some exceptions.⁶² Children are held to the standard of a reasonable child of the same age.⁶³ An individual's special talents or training are also considered.⁶⁴ For example, in medical malpractice cases, the standard of care is that of a reasonably prudent physician in good standing in the profession, or if the physician is a specialist, it is the reasonably prudent physician in a certain specialty.⁶⁵ If the individual has a physical impairment, the standard is the reasonably prudent person with the same impairment, such as the reasonably prudent person with blindness.⁶⁶ The reasonably

54. See W. PAGE KEETON ET AL., PROSSER AND KEETON ON TORTS 162-64 (5th ed. 1984).

55. *Id.* at 173-74.

56. *Blyth v. Birmingham Waterworks Co.*, 156 Eng. Rep. 1047 (1856); *Vaughan v. Menlove*, 132 Eng. Rep. 490, 492-93 (1837).

57. OLIVER WENDELL HOLMES, JR., *THE COMMON LAW* 108 (1881).

58. R.T. Austin, *Better Off with the Reasonable Man Dead or the Reasonable Man Did the Darndest Things*, 1992 B.Y.U. L. REV. 479, 482 (1992).

59. KEETON ET AL., *supra* note 54, at 174.

60. *Id.*

61. *Id.* at 173-74.

62. See *id.* at 175-93.

63. *Id.* at 179.

64. See *id.* at 187.

65. *Id.*

66. *Id.* at 175-176. For example, a reasonably prudent person with blindness would not attempt to cross a busy, unfamiliar street without the aid of a guide dog, cane, or any assistive device. See *id.*

prudent person standard, however, generally has not been adjusted for mental impairments or behavioral shortcomings.⁶⁷ These matters historically were assumed to be impossible to assess accurately.⁶⁸ Moreover, excusing the conduct of people because of their asserted inability to conform to the reasonable person standard was seen by the courts as an invitation to fraud.⁶⁹

There are three main rationales for the reasonable person standard. First, the required conduct of the individual and the outcomes of the cases were considered to be more predictable.⁷⁰ Second, having a unitary, objective standard allowed individuals to have reasonable expectations about the behavior of others.⁷¹ Third, the reasonably prudent person standard was deemed easier for juries to apply, it could adapt over time, and it did not need detailed codification.⁷²

B. Conceptions of Equality

The purposes of tort law are compensation, cost allocation, and deterrence.⁷³ Equality of opportunity or other broad social goals may be advanced indirectly by torts, but concerns about equality have not been a part of the doctrinal development of the field.⁷⁴ The preceding brief review of tort law suggests the following three important points relative to equality.

First, the reasonably prudent "man" standard of negligence law reflects a pre-industrial, agrarian view that all men had a basic skill set that included the ability to build and repair their homes and equipment, tend to the needs of domesticated animals, and deal with external threats ranging from wild animals to intruders. Thus, there was assumed to be a narrow range of social variability among individuals. This assumption, of course, is no longer true.

67. KEETON ET AL., *supra* note 54, at 176-177. James W. Ellis, *Tort Responsibility of Mentally Disabled Persons*, 6 LAW & SOC. INQUIRY 1079, 1087-88 (1981).

68. KEETON ET AL., *supra* note 54, at 177.

69. See, e.g., *McIntre v. Sholty*, 13 N.E. 239, 240 (Ill. 1887).

70. See John V. Jacobi, *Fakers, Nuts, and Federalism: Common Law in the Shadow of the ADA*, 33 U.C. DAVIS L. REV. 95, 115 (1999).

71. Donald E. Seidelson, *Reasonable Expectations and Subjective Standards in Negligence Law: The Minor, the Mentally Impaired, and the Mentally Incompetent*, 50 GEO. WASH. L. REV. 17, 19 (1981).

72. See Paul T. Hayden, *Cultural Norms as Law: Tort Law's "Reasonable Person" Standard of Care*, 15 J. AM. CULTURE No. 1, 45 (1992).

73. KEETON ET AL., *supra* note 54, at 174.

74. See Leslie Bender, *Tort Law's Role as a Tool for Social Justice Struggle*, 37 WASHBURN L.J. 249 (1998).

Second, beginning in the twentieth century, many of the duties imposed upon individuals changed from common law duties to statutorily imposed duties.⁷⁵ In the nineteenth century it would be unreasonable for an individual to ride a horse through town at an excessive rate of speed—the standard being the speed at which a reasonable person would ride through town under the circumstances.⁷⁶ Today, automotive speed limits are set by statute, and the speed limit is generally admissible in a negligence action as evidence of the standard of care required under the circumstances.⁷⁷

Third, the reasonably prudent person standard implicitly recognizes that all humans are not equal, but it uses individualized standards only when the differences are obvious, such as youth, infirmity, or possession of special skills. It is in this area of negligence law that more individualized assessments of genetically-influenced abilities and disabilities are likely to be urged upon the courts. Whether courts will mandate or permit increasingly detailed assessments of variation and thereby develop a more individualized standard of care is likely to be based as much on public policy as the state of the science.

Fourth, more formulaic or individualized standards of care may undermine the social utility of the reasonably prudent person analysis by juries:

Eliminating the negligence standard and the jury's role in applying it would sacrifice something of political and social importance: the opportunity for popular, collective judgments about how each citizen should conduct herself or himself when the pursuit of her or his own objectives creates the risk of injuring somebody else.⁷⁸

C. Implications

It is unlikely that the reasonably prudent person standard in negligence law will be modified based on new genetic discoveries. The use of a hypothetical, objective standard is deeply ingrained in common law and a more individualized application of duty would be extremely difficult to apply because the standard of care would be different for each person and increasingly would be based on

75. See generally GUIDO CALABRESI, *A COMMON LAW FOR THE AGE OF STATUTES* (1982).

76. See *Butterfield v. Forrester*, 11 East 59, 103 Eng. Rep. 926 (K.B. 1809).

77. See, e.g., *Huston v. Chicago Transit Authority*, 342 N.E.2d 190 (1976) (admitting evidence of speed limit in a wrongful death negligence action).

78. Heidi Li Feldman, *Prudence, Benevolence, and Negligence: Virtue Ethics and Tort Law*, 74 CHI.-KENT L. REV. 1431, 1435 (2000).

scientific evidence rather than the common experience of the community.⁷⁹ Furthermore, the application of genetic variation in negligence cases could lead to genetic evidence of capacity to enter into contracts, genetic assessment of the duty owed by bailees and other actors in property transactions, and in many other common law situations. Genetic information is more likely to be used in other tort contexts besides determining the standard of care, such as in proving causation⁸⁰ and predicting life expectancy for calculating damages.⁸¹

III. Statutes: Employment Discrimination Laws

A. Legal Overview

One of the singular achievements of the presidency of Lyndon Johnson was enactment of the Civil Rights Act of 1964.⁸² Among other things, the Act prohibits discrimination in public accommodations⁸³ and government services.⁸⁴ Title VII of the Act was the first comprehensive federal legislation prohibiting employment discrimination by employers in the private sector.⁸⁵ In pertinent part, Title VII makes it unlawful for an employer "to fail or refuse to hire or to discharge any individual, or otherwise to discriminate against any individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex, or national origin"⁸⁶

The legislative history of Title VII makes it clear that the purpose of the statute was to redress the substantially skewed employment rates and income of African Americans caused by

79. A more subjective standard of capacity and duty are much more likely to be applied in the criminal law. See generally Lori B. Andrews, *Predicting and Punishing Antisocial Acts: How the Criminal Justice System Might Use Behavioral Genetics*, in BEHAVIORAL GENETICS: THE CLASH OF CULTURE AND BIOLOGY, *supra* note 53, at 116; Mark A. Rothstein, *Applications of Behavioural Genetics: Outpacing the Science?*, 6 NATURE REV. GENETICS 793 (2005).

80. See generally Gary E. Marchant, *Genetics and Toxic Torts*, 31 SETON HALL L. REV. 949 (2001); Gary E. Marchant, *Genetic Susceptibility and Biomarkers in Toxic Injury Litigation*, 41 JURIMETRICS J. 67 (2000).

81. See generally Mark A. Rothstein, *Preventing the Discovery of Plaintiff Genetic Profiles by Defendants Seeking to Limit Damages in Personal Injury Litigation*, 71 IND. L.J. 877 (1996).

82. John Robert Lewis, *The King Legacy*, 30 VT. L. REV. 349, 355 (2006).

83. 42 U.S.C. § 2000b (2004).

84. 42 U.S.C. § 2000d (2004).

85. 42 U.S.C. § 2000e (2004).

86. 42 U.S.C. §2000e-2(a)(1).

discrimination in the workplace.⁸⁷ Title VII was a key component of a larger strategy: “[T]he ultimate goal of antidiscrimination law is to eliminate not merely racial inequality but racism itself.”⁸⁸

In addition to race, Title VII also prohibits discrimination based on the other “immutable characteristics” of color, national origin and sex as well as on the basis of religion.⁸⁹ It is significant that Congress did not prohibit all unreasonable employer actions or all employment discrimination, but only discrimination based on certain factors. Furthermore, the factors chosen represented a congressional determination that these criteria were the most pervasive, irrational, invidious, hurtful, and politically untenable forms of discrimination.⁹⁰

In terms of “equality,” it is important to note that not all of the bases of discrimination are products of the same legislative history and they are not treated identically in the statute. When Title VII was first introduced in Congress it did not include protection against gender-based discrimination.⁹¹ Representative Howard W. Smith of Virginia, the conservative chairman of the House Rules Committee, was a staunch opponent of the proposed legislation.⁹² Late in the legislative process, he introduced an amendment to add sex to the categories of prohibited discrimination, believing that doing so would ensure the bill’s defeat.⁹³ Nevertheless, to Smith’s apparent surprise, the bill, as amended, was passed by Congress and signed into law.⁹⁴

Several provisions of Title VII indicate different congressional treatment of the five categories of proscribed discrimination.⁹⁵ For example, section 704(e) provides that it is not

87. See U.S.C.A.N. 2513–2517, 88th Cong., 2d Sess. (1964); Owen M. Fiss, *A Theory of Fair Employment Laws*, 38 U. CHI. L. REV. 235 (1971).

88. ANDREW KOPPELMAN, *ANTIDISCRIMINATION LAW AND SOCIAL EQUALITY* 9 (1996).

89. See 42 U.S.C. § 2000e–2(a)(1).

90. See Paul Brest, *Foreword: In Defense of the Antidiscrimination Principle*, 90 HARV. L. REV. 1 (1976).

91. Jo Freeman, *How “Sex” Got Into Title VII: Persistent Opportunism as a Maker of Public Policy*, 9 LAW & INEQ. 163, 163 (1991).

92. *Id.*

93. See CHARLES WHALEN & BARBARA WHALEN, *THE LONGEST DEBATE: A LEGISLATIVE HISTORY OF THE 1964 CIVIL RIGHTS ACT* 116 (1985); Freeman, *supra* note 91, at 163. *But cf.* Carl M. Brauer, *Women Activists, Southern Conservatives, and the Prohibition of Sex Discrimination in Title VII of the 1964 Civil Rights Act*, 49 J. SO. HIST. 37, 44–45 (1983) (suggesting that it is unclear whether Smith intended to scuttle Title VII or whether he truly supported the addition of sex discrimination).

94. Freeman, *supra* note 91, at 163.

95. See 42 U.S.C. § 2000e–2e (2004). It is sometimes said, incorrectly, that

unlawful for an employer to discriminate on the basis of "religion, sex, or national origin in those certain instances where religion, sex, or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of that particular business or enterprise."⁹⁶ Significantly, race cannot be used as a bona fide occupational qualification ("BFOQ").⁹⁷

Section 701(j) of Title VII provides that "[t]he term 'religion' includes all aspects of religious observance and practice, as well as belief, unless an employer demonstrates that he is unable to reasonably accommodate to an employee's or prospective employee's religious observance or practice without undue hardship on the conduct of the employer's business."⁹⁸ Although phrased as a defense, the provision imposes a duty of reasonable accommodation for religion when there is no similar duty for any of the other categories under Title VII. In practice, this duty has been construed quite narrowly.⁹⁹ The duty of reasonable accommodation is more rigorously applied and more frequently construed in the context of cases arising under the Americans with Disabilities Act ("ADA").¹⁰⁰

In 1978, Congress amended Title VII by adding the Pregnancy Discrimination Act ("PDA"),¹⁰¹ which provides in part:

The terms "because of sex" or "on the basis of sex" include, but are not limited to, because of or on the basis of pregnancy, childbirth, or related medical conditions; and women affected by pregnancy, childbirth, or related medical conditions shall be treated the same for all employment-related purposes, including receipt of benefits under fringe benefit programs, as other persons not so affected but similar in their ability to work¹⁰²

Title VII creates certain "protected classes," when Title VII actually creates proscribed criteria for employers to use in making personnel decisions. In fact, Title VII protects members of all races, religions, national origin, and religious groups and both sexes from discrimination.

96. 42 U.S.C. § 2000e-2(e). See, e.g., *Robino v. Iranon*, 145 F.3d 1109 (9th Cir. 1998) (upholding gender BFOQ for a correctional facility's female-only posts where the officers would be required to observe inmates in the shower and toilet areas).

97. 42 U.S.C. § 2000e-2(e).

98. 42 U.S.C. § 2000e(j).

99. See *Ansonia Bd. of Educ. v. Philbrook*, 479 U.S. 60, 70 (1986) (holding that Congress did not impose a duty on the employer to accommodate at all costs); *Trans World Airlines, Inc. v. Hardison*, 432 U.S. 63, 84 (1977) (limiting employer's duty of reasonable accommodation to minimal efforts).

100. 42 U.S.C. §§ 12101-12213 (2004); see generally 1 MARK A. ROTHSTEIN ET AL., *EMPLOYMENT LAW* § 3.8 (3d ed. 2004).

101. 42 U.S.C. § 2000e(k) (2004); see Reva B. Siegel, Note, *Employment Equality under the Pregnancy Discrimination Act of 1978*, 94 YALE L.J. 929, 929 (1985).

102. 42 U.S.C. § 2000e(k).

Congress enacted the law after the Supreme Court held that discrimination on the basis of pregnancy did not constitute sex discrimination in violation of Title VII.¹⁰³ PDA cases have usually involved leaves of absence and health benefits.¹⁰⁴

A final Title VII principle to mention is the disparate impact doctrine. *Griggs v. Duke Power Co.*¹⁰⁵ was a class action race discrimination suit alleging that the employer's hiring and promotion policies violated Title VII. Before the effective date of Title VII, African American employees at Duke Power were limited to the lowest paying "labor" department jobs.¹⁰⁶ After Title VII took effect, overt racial segregation of job categories was illegal, and Duke Power disbanded its race-based job assignment policy.¹⁰⁷ Nevertheless, to qualify for a job other than labor, new employees were required to have a high school diploma and to pass two aptitude tests.¹⁰⁸ Incumbent labor employees without a high school education could transfer by getting a passing score on the aptitude tests.¹⁰⁹ Neither of the tests measured specific abilities needed for the non-labor jobs.¹¹⁰ The use of these measures had a disparate impact on the African American employees and applicants, thereby perpetuating the status quo of largely segregated job categories on the basis of race.¹¹¹

The Supreme Court unanimously held that the employer violated Title VII, notwithstanding lower court holdings that there was insufficient evidence of intentional discrimination.¹¹² The Court added a judicial "disparate impact" theory onto the disparate treatment language of Title VII: "[G]ood intent or absence of discriminatory intent does not redeem employment procedures or testing mechanisms that operate as 'built-in headwinds' for minority groups and are unrelated to measuring job capability."¹¹³ If selection criteria generate disproportionate results along one of Title VII's proscribed dimensions, then the employer has the burden of demonstrating that the selection procedures are job-related and consistent with business necessity

103. *See* General Elec. Co. v. Gilbert, 429 U.S. 125 (1976).

104. *See, e.g.,* Cal. Fed. Sav. & Loan v. Guerra, 479 U.S. 272 (1987).

105. 401 U.S. 424 (1971).

106. *Id.* at 427.

107. *Id.*

108. *Id.* at 427–28.

109. *Id.* at 428.

110. *Id.*

111. *Id.* at 436.

112. *Id.* at 428–36.

113. *Id.* at 432.

—in other words, that they are essential to the business.¹¹⁴ *Griggs* is considered a landmark case in furthering equal employment opportunity, as any other result would have permitted the perpetuation of past discrimination.¹¹⁵

The other employment statute with clear relevance to equality is the ADA.¹¹⁶ Section 102(a) of the ADA provides that “[n]o covered entity shall discriminate against a qualified individual with a disability because of the disability of such individual in regard to job application procedures, the hiring, advancement, or discharge of employees, employee compensation, job training, and other terms, conditions, and privileges of employment.”¹¹⁷ The term disability is defined in the statute as “(A) a physical or mental impairment that substantially limits one or more of the [individual’s] major life activities . . . ; (B) a record of such an impairment; or (C) being regarded as having such an impairment.”¹¹⁸ Thus, the ADA does not prohibit all discrimination based on disability. It prohibits discrimination against a narrow subclass of individuals who have a disability that is severe enough to constitute a substantial limitation of a major life activity, but not so severe that the individual is prevented from performing the essential functions of the job, with or without reasonable accommodation.¹¹⁹

One of the unique elements of the ADA is the duty of

114. *Id.* The Supreme Court decision in *Wards Cove Packing Co. v. Atonio*, 490 U.S. 642 (1989), shifted much of the burden of proving disparate impact discrimination to the plaintiff. Congress responded by enacting the Civil Rights Act of 1991, Pub.L. 102-66, 105 Stat. 1071 (1991), a key provision of which amends Title VII to restore the burden of proof in disparate impact cases to the pre-*Wards Cove* allocation. Civil Rights Act of 1991 § 3(2). See also 42 U.S.C. § 2000e(k) (2004).

115. Some scholars, however, have argued that the disparate impact theory of *Griggs* was a clumsy way to bring about the preferred result. See, e.g., Michael Selmi, *Was the Disparate Impact Theory a Mistake?*, 53 UCLA L. REV. 701 (2006) (concluding that the disparate impact theory has a strikingly limited impact and is a difficult theory on which to succeed).

116. 42 U.S.C. § 1201-2213 (2004). This Article does not discuss the Age Discrimination in Employment Act, 29 U.S.C. §§ 621-634 (2004), or any of the myriad state and local anti-discrimination laws that prohibit discrimination based on genetic information, marital status, sexual orientation, or other factors. Many of the issues related to equality raised by these laws are similar to those raised by Title VII and the ADA.

117. 42 U.S.C. § 12112(a).

118. 42 U.S.C. § 12102(2).

119. Numerous commentators have criticized the statutory scheme and the narrow judicial interpretations that have further limited the ADA’s coverage. My analysis of the problem and proposed solution appear in Mark A. Rothstein et al., *Using Established Medical Criteria to Define Disability: A Proposal to Amend the Americans with Disabilities Act*, 80 WASH. U. L.Q. 243 (2002).

reasonable accommodation. If an individual is unable to perform the essential functions of the job because of disability, then the employer must determine whether reasonable accommodation would enable the individual to perform the essential functions.¹²⁰ Reasonable accommodation may include making facilities accessible, job restructuring, part-time or modified work schedules, reassignment to a vacant position, acquisition or modification of equipment or devices, appropriate adjustment or modifications of examinations, training materials, or policies, and the provision of qualified readers or interpreters.¹²¹ Reasonable accommodation is not required, however, if it results in "undue hardship" to the employer, defined as, "an action requiring significant difficulty or expense," in light of factors such as the nature and cost of the accommodation and the size and financial resources of the company.¹²² In keeping with the clear legislative history, the courts have construed the reasonable accommodation requirement in the ADA as mandating a much greater level of effort and expense on the part of employers than is required by the comparable language applicable to religious discrimination under Title VII.¹²³

B. Conceptions of Equality

Title VII, the ADA, and other employment discrimination laws are specifically designed to ensure equality of opportunity in the workplace and, more generally, to facilitate the complete integration into society of individuals who have been subject to overt or subtle forms of discrimination.¹²⁴ Thus, unlike torts and occupational health law, ensuring equality is the purpose of the law rather than an incidental consequence in attempting to advance other societal objectives.

The brief review of legal principles underlying employment

120. 42 U.S.C. § 12112(b)(5).

121. 42 U.S.C. § 12111(9).

122. 42 U.S.C. § 12112(10).

123. *See generally* MARK A. ROTHSTEIN ET AL., 1 EMPLOYMENT LAW TREATISE § 3.8 (3d ed. 2004).

124. This Article does not consider whether anti-discrimination laws inappropriately violate the tenet of governmental neutrality advocated by libertarian philosophy. *See generally* RICHARD A. EPSTEIN, FORBIDDEN GROUNDS: THE CASE AGAINST EMPLOYMENT DISCRIMINATION LAWS (1992) (exploring the place and scope of the antidiscrimination principle); ROBERT NOZICK, ANARCHY STATE, AND UTOPIA (1974) (investigating the interplay between individual rights and the state, assuming that such legislative action is justified, and addressing the specifics of the conceptions of equality embodied in the laws and means for achieving the intended consequences).

discrimination laws indicates four important elements bearing on the issue of equality. First, not all differences among individuals are subject to protection. Congress focused only on certain forms of discrimination it considered pervasive, objectionable, and remediable.¹²⁵ The result was the creation of a categorical classification scheme of proscribed bases for differentiating among individuals in the workplace. In addition, of the areas subject to statutory protection, not all of the differences are treated the same by law.¹²⁶ There are different standards for reasonable accommodation, BFOQ, and other legal concepts to reflect the degree to which societal opprobrium attaches to discrimination based on certain criteria as well as the practicalities in distinguishing among individuals in the workplace.¹²⁷

Second, in effect, the law tells employers that they must overlook or ignore certain clear differences in the credentials of employees. For example, in *Griggs*, employers are told that they cannot require employees to be high school graduates because of the disparate impact of such a policy, unless it can prove that being a high school graduate is essential to a particular job.¹²⁸ Employers must bear the cost of “validating” their selection criteria and of foregoing a qualification credential that, arguably, improves the overall quality of their workforce.¹²⁹ Inefficiencies are thereby imposed on individual employers under the assumption that doing so is essential to redress a history of pervasive societal discrimination.¹³⁰

Third, employers are required to bear the economic costs (or pass them on to their customers) caused by the employment discrimination laws, and thus the laws are redistributive.¹³¹ For example, there is no question that it is more costly for an employer to hire a woman who is pregnant, knowing that she is likely to go

125. See Brest, *supra* note 90; Fiss, *supra* note 87, at 235.

126. *Id.*

127. See Larry Alexander, *What Makes Wrongful Discrimination Wrongful? Biases, Preferences, Stereotypes, and Proxies*, 141 U. PA. L. REV. 149 (1992).

128. *Griggs v. Duke Power Co.*, 401 U.S. 424, 432 (1971).

129. *Id.*

130. See Christine Jolls, *Antidiscrimination and Accommodation*, 115 HARV. L. REV. 642, 698 (2001).

131. See generally John J. Donohue III, *Employment Discrimination Laws in Perspective: Three Concepts of Equality*, 92 MICH. L. REV. 2583 (1994) (analyzing the transformations of employment law and the debate over its scope); Sharona Hoffman, *Corrective Justice and Title I of the ADA*, 52 AM. U. L. REV. 1213 (2003) (assessing the efficacy of the ADA, specifically its goal of distributive justice); Christine Jolls, *Accommodation Mandates and Anti-discrimination Law*, 53 STAN. L. REV. 223 (2000) (analyzing the distributive effects of accommodation mandates).

on maternity leave within a relatively short period of time, and then needing to replace the woman if she does not return to work after childbirth. These additional expenses are, implicitly, deemed to be a reasonable cost for making employment opportunities more widely available.¹³² Similarly, the cost of reasonable accommodation, up to the point of undue hardship, is deemed acceptable to facilitate the employment of individuals with disabilities.¹³³

Individuals with disabilities are considered to have the same right of equal employment opportunity as other individuals, and it is the nation's policy not to let myths, stereotypes, and prejudices operate to preclude their participation in the workforce.¹³⁴ In theory, if someone uses a wheelchair, widening doors and adding ramps will substantially redress the difference in mobility, thereby permitting individuals with mobility impairments to have equal employment opportunity. They can then compete with other workers for jobs based on job-related criteria, such as education, training, and experience. Even though the ADA uses a civil rights model to protect equality of opportunity, it is a different civil rights model than Title VII. Whereas Title VII is based on a "sameness" model,¹³⁵ the ADA uses a "difference" model¹³⁶ which requires an individualized determination of fitness¹³⁷ and an

132. See Mary Crossley, *Reasonable Accommodation as Part and Parcel of the Antidiscrimination Project*, 35 RUTGERS L.J. 861, 940-944 (2004) (examining disability theory to compare the ADA and antidiscrimination laws).

133. *Id.*

134. See *School Bd. v. Arline*, 480 U.S. 273, 277 (1987). See also Samuel R. Bagenstos, *Subordination, Stigma, and "Disability,"* 86 VA. L. REV. 397, 504-19 (2000) (analyzing case law on disability and arguing for a subordination-focused approach).

135. For example, Title VII, as amended by the PDA, prohibits discrimination in employment on the basis of pregnancy and related medical conditions. Nevertheless, employers are under no duty to make reasonable accommodations for pregnant employees (e.g., limiting exposures to toxins, shifting to light duty jobs). See *Armstrong v. Flowers Hosp., Inc.*, 33 F.3d 1308, 1317 (11th Cir. 1994). If pregnant employees cannot perform all aspects of their job, they may be lawfully discharged (if the employee elects not to take unpaid leave pursuant to the Family and Medical Leave Act). *Id.* See generally D'Andrea Millsap, *Reasonable Accommodation of Pregnancy in the Workplace: A Proposal to Amend the Pregnancy Discrimination Act*, 32 HOUS. L. REV. 1411, 1421 (1996).

136. See Stewart J. Schwab & Steven L. Willborn, *Reasonable Accommodation of Workplace Disabilities*, 44 WM. & MARY L. REV. 1197, 1200 (2003); see also James Leonard, *The Equality Trap: How Traditional Civil Rights Concepts Has Rendered Title I of the ADA Ineffective*, 56 CASE W. RES. L. REV. 1, 12 (2005) (arguing that the civil rights model is inconsistent with the ADA's reasonable accommodation model that requires employers to recognize and take actions based on differences).

137. See *Kapche v. City of San Antonio*, 176 F.3d 840, 844 (5th Cir. 1999); *Rascon v. US West Communications, Inc.*, 143 F.3d 1324, 1330-31 (7th Cir. 1998).

individualized interactive process to develop reasonable accommodation.¹³⁸

Fourth, Congress based the discrimination laws on the premise that benefits will not only accrue to the individuals who have been excluded from the workplace, but to society more generally.¹³⁹ In theory, if not in practice, employment discrimination laws help to ensure that individuals will not be employed in jobs below their qualifications, individuals will be taxpayers and consumers rather than recipients of public and private largess, and the fabric of American society will be strengthened through equal status interaction in the workplace.¹⁴⁰ The better utilization of individuals without regard to their differences is certainly in accord with Dobzhansky's exhortation not to waste human resources.

C. Implications

Employment discrimination law already has changed as a result of new advances in genetics. Two-thirds of the states have enacted laws prohibiting employers from requesting or requiring that applicants or employees undergo genetic testing as a condition of employment as well as using genetic information to discriminate in hiring, promotion, dismissal, wages, hours, or other terms and conditions of employment.¹⁴¹ Similar legislation has been pending in Congress since the mid-1990s.¹⁴² Unfortunately, these laws have limited value because they do not prohibit employers, after a conditional offer of employment, from requiring the signing of an authorization for release of an individual's complete health records, thereby gaining access to genetic information generated in the clinical setting.¹⁴³ So long as employers have the ability to access individual health records containing genetic information, many at-risk individuals who

138. See *U.S. Airways, Inc. v. Barnett*, 535 U.S. 391, 407 (2002) (Stevens, J., concurring).

139. See Cynthia L. Estlund, *Working Together: The Workplace, Civil Society, and the Law*, 89 GEO. L.J. 1, 4 (2000).

140. *Id.*

141. NATIONAL CONFERENCE OF STATE LEGISLATURES, STATE GENETIC DISCRIMINATION IN EMPLOYMENT LAWS, available at <http://www.ncsl.org/programs/health/genetics/ndiscrim.htm>.

142. The most recent bill is the Genetic Information and Nondiscrimination Act of 2007, S. 358 and H.R. 493, 110th Cong. (2007).

143. See NATIONAL CONFERENCE OF STATE LEGISLATURES, STATE GENETIC PRIVACY LAWS, available at <http://www.ncsl.org/programs/health/genetics/prt.htm>.

might benefit from genetic testing will decline to be tested.¹⁴⁴ Discouragement of appropriate genetic testing in the clinical setting, rather than adverse treatment by employers, is the major policy problem associated with genetics in the workplace, and it remains unaddressed by these legislative measures. About a dozen states also have enacted broader “genetic privacy” laws that, among other things, require written consent for the release of genetic information.¹⁴⁵ These laws attempt to protect privacy and prevent discrimination by barring any consideration of genetic information.

Employment discrimination represents the most aggressive use of the “genetics is irrelevant” approach to the law. At the same time, it is the area with the least social return for all of the legislative time and attention. There have been very few documented instances of employment discrimination based on predictive genetic information.¹⁴⁶ Avoiding the discouragement of clinical testing due to fear of employer access justifies establishing the public policy of nondiscrimination in employment based on genetic information. The legislation enacted thus far, however, does not prevent employer access to genetic information in clinical records, and it singles out genetic information for special attention, thereby reinforcing the stigma attached to genetics.¹⁴⁷ Consequently, the potentially salutary uses of genetic information in the workplace and elsewhere to provide risk assessments upon which health and lifestyle decisions might be based have been buried beneath a layer of fear and hollow legislative rhetoric.

144. See Paul Steven Miller, *Is There a Pink Slip in My Genes? Genetic Discrimination in the Workplace*, 3 J. HEALTH CARE L. & POL'Y 225 (2000); Karen Rothenberg et al., *Genetic Information and the Workplace: Legislative Approaches and Policy Challenges*, 275 SCIENCE 1755 (1997).

145. STATE GENETIC PRIVACY LAWS, *supra* note 143.

146. One of the only, and certainly the best known, reported cases involving genetic discrimination is *Norman-Bloodsaw v. Lawrence Berkeley Lab.*, 135 F.3d 1260 (9th Cir. 1998), where the Ninth Circuit held, among other things, that sickle cell trait testing of African American employees without their consent violated Title VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000e (2000).

147. See Deborah Hellman, *What Makes Genetic Discrimination Exceptional?*, 29 AM. J.L. & MED. 77 (2003); Sonia M. Suter, *The Allure and Perils of Genetics Exceptionalism*, 79 WASH. U.L.Q. 669 (2001).

IV. Regulation: Occupational Health

A. Legal Overview¹⁴⁸

Occupational health law is the third legal regime examined in this Article to illustrate new frontiers in equality. The promulgation and enforcement of occupational health standards involve neither a common law system, like torts, nor a statutory scheme, like employment discrimination, but a regulatory system. The Occupational Safety and Health Administration (“OSHA”), the agency of the United States Department of Labor responsible for workplace safety and health, relies on scientific evidence of human health risk to set standards for hazardous exposures under a statutory framework.¹⁴⁹ A similar analysis would apply to environmental health regulation by the Environmental Protection Agency or the regulation of pharmaceutical products by the Food and Drug Administration.

The Occupational Safety and Health Act (“OSH Act”)¹⁵⁰ is the primary federal law regulating workplace safety and health. Section 6(b)(5) of the OSH Act, which deals with the promulgation of standards for toxic substances or harmful physical agents, provides in part: “The Secretary shall set the standard which most adequately assures, to the extent feasible, . . . that no employee will suffer material impairment of health . . .”¹⁵¹ Despite the absolute “no employee” language, the Supreme Court has rejected the notion that the OSH Act requires regulation at the level of zero risk.¹⁵²

*Industrial Union Dep’t, AFL-CIO v. American Petroleum Institute (“The Benzene Case”)*¹⁵³ involved an industry challenge to rulemaking by OSHA that lowered the permissible exposure limit for benzene.¹⁵⁴ In striking down the standard, the plurality opinion of the Court stated “that the statute was not designed to require employers to provide absolutely risk-free workplaces

148. Some of the material in this section has been adapted from Mark A. Rothstein, *Occupational Health and Discrimination Issues Raised by Toxicogenomics in the Workplace in GENOMICS AND ENVIRONMENTAL REGULATION* (Gary E. Marchant et al. eds., forthcoming 2007).

149. 29 U.S.C. § 633(b)(5) (2000).

150. 29 U.S.C. §§ 651–678 (2000).

151. 29 U.S.C. § 655(b)(5).

152. See *Indust. Union Dep’t, AFL-CIO v. Am. Petroleum Inst. (The Benzene Case)*, 448 U.S. 607, 614–15 (1980).

153. *Id.* at 607.

154. *Id.*

whenever it is technologically feasible to do so . . . [but] was intended to require the elimination, as far as feasible, of significant risks of harm.”¹⁵⁵ Although the Supreme Court never explicitly stated whether the OSH Act requires employers to maintain exposure levels that would protect the most sensitive workers, *The Benzene Case* implicitly rejects this idea.

OSHA’s health standards generally have not been developed with an explicit concern for individual variability in response to toxic substances. Rather, OSHA bases the standards on the assumption that substantially all employees are at a similar risk.¹⁵⁶ Although OSHA designs standards to provide the maximum protection possible, OSHA recognizes that it may not be possible to protect workers with heightened sensitivity. For example, the preamble to the coke oven emissions standard provides:

Because of the variability of individual response to carcinogens and other factors, the concept of a “threshold level” may have little applicability on the basis of existing knowledge. Some individuals may be more susceptible than others. Thus, while a “threshold” exposure level, below which exposure does not cause cancer, may conceivably exist for an individual, susceptible individuals in the working population may have cancer induced by doses so low as to be effectively zero.¹⁵⁷

It is not clear what compliance measures employers must or could take to protect the health of employees for whom the relevant OSHA standard is insufficiently protective. In *The Benzene Case*, the Supreme Court arguably supported additional precautions when it upheld the principle of “action level” medical testing.¹⁵⁸ According to the Court, testing employees exposed at an action level below the permissible exposure level “could ensure that workers who were unusually susceptible . . . could be removed from exposure before they had suffered any permanent damage.”¹⁵⁹ The courts have not ruled on whether employers have a duty to supply additional personal protective equipment, implement shift rotation, or take other measures beyond what the standard mandates to facilitate the continued employment of an individual whose post-exposure medical monitoring identified the

155. *Id.* at 641.

156. *See id.* at 657 (agreeing with principle of “action level” medical surveillance to ensure that workers showing ill effects of exposure below the OSHA standard could be removed from further exposure).

157. 29 C.F.R. § 1910.1129 (2005).

158. *See The Benzene Case*, 448 U.S. at 645.

159. *Id.* at 657 (footnote omitted).

employee as “unusually susceptible.” The courts also have not determined whether the employer could use genetic or other predictive tests to exclude “sensitive” individuals before being hired or exposed.

Another law with relevance to workplace equality in the context of occupational health is Title VII. In *International Union, United Auto Workers v. Johnson Controls, Inc.*,¹⁶⁰ the employer was concerned about its possible liability if a pregnant female employee was occupationally exposed to lead and later gave birth to a child with congenital defects caused by the mother’s workplace exposure.¹⁶¹ Under the metabolic stress of pregnancy, lead stored in the mother’s bones may be released into her bloodstream and then into the fetus.¹⁶² Thus, female employees could transmit lead to a developing fetus even from preconception exposures. Furthermore, the fetus is most sensitive to lead exposure in the early stages of pregnancy.¹⁶³

With these exposure modes in mind, Johnson Controls adopted a “fetal protection policy” that barred all fertile women—regardless of their marital status, reproductive plans, or other considerations—from any job likely to elevate their blood lead above a certain level.¹⁶⁴ The Supreme Court held that the company’s “fetal protection policy” constituted sex discrimination in violation of Title VII.¹⁶⁵ The Court said that by excluding only women with childbearing capacity from lead-exposed jobs, the employer’s policy involved explicit, disparate treatment discrimination, which could be upheld only by applying a BFOQ defense.¹⁶⁶

The Court considered the statutory defense of BFOQ under Title VII as narrow.¹⁶⁷ It permits discrimination based on gender only in certain narrow circumstances where discrimination is “‘reasonably necessary’ to the ‘normal operation’ of the ‘particular

160. 499 U.S. 187 (1991).

161. *See id.* at 190.

162. Jacqueline M. Moline & Philip J. Landrigan, *Lead*, in TEXTBOOK OF CLINICAL OCCUPATIONAL AND ENVIRONMENTAL MEDICINE 971 (Linda Rosenstock et al. eds., 2004.) (reference omitted).

163. *See* Laura S. Welch, *Decisionmaking About Reproductive Hazards*, 1 SEM. OCCUP. MED. 97, tbl 1, 2 (1986) (Table 1 shows that fetuses are more sensitive to toxins in weeks 3 through 9 of pregnancy and Table 2 lists lead as a toxin that causes adverse pregnancy outcomes).

164. *Int’l Union, United Auto Workers v. Johnson Controls, Inc.*, 499 U.S. 187, 191-92 (1991).

165. *Id.* at 211.

166. *Id.* at 200.

167. *Id.* at 201.

business.”¹⁶⁸ Although safety concerns may establish a BFOQ, “the safety exception is limited to instances in which sex or pregnancy actually interferes with the employee’s ability to perform the job.”¹⁶⁹ In *Johnson Controls*, the Court concluded that the employer failed to establish the BFOQ defense.¹⁷⁰ Significantly, it said that concerns about the welfare of the next generation did not establish a BFOQ of female sterility: “Decisions about the welfare of future children must be left to the parents who conceive, bear, support, and raise them rather than to the employers who hire those parents.”¹⁷¹

B. Conceptions of Equality

The purpose of occupational health law is to safeguard the health of workers from the risks caused by dangerous exposures in the workplace. Although the principal legislation, the OSH Act, was not designed to promote equality, the comparison of individual workers to a hypothetical, average worker raises important ethical and legal challenges.

First, the pertinent statutory provision directs the Secretary of Labor to promulgate standards to protect all workers,¹⁷² but it may not be feasible to set standards so low as to protect the most sensitive individuals. To date the vast majority of sensitive workers cannot be identified prior to exposure.¹⁷³ A few OSHA standards, such as the lead standard, provide that employees whose blood lead levels after exposure exceed OSHA limits must be given “medical removal” with their job and pay rate protected until their blood lead returns to an acceptable level.¹⁷⁴ It is unknown to what extent, if at all, future OSHA health standards will be drafted to take into account the known genetic variability of workers.

Second, even with a uniform exposure limit, it is unclear whether employers have heightened duties to sensitive workers beyond compliance with the applicable OSHA standard. An issue of longstanding debate is whether employers can “protect” workers

168. *Id.*

169. *Id.* at 203.

170. *Id.* at 206.

171. *Id.*

172. 29 U.S.C. § 655(b)(5) (2000).

173. See Joseph V. Rodricks, *Evaluating Disease Causation in Humans Exposed to Toxic Substances*, 14 J. L. & POL’Y 39, 57 (2006).

174. See MARK A. ROTHSTEIN, OCCUPATIONAL SAFETY AND HEALTH LAW § 4:26, at 115 (2007).

by denying them employment opportunities.¹⁷⁵ With an increase in validated toxicogenomic¹⁷⁶ tests,¹⁷⁷ the number of identifiable at-risk individuals is likely to expand substantially, and individuals so identified will likely vary greatly in the magnitude of their risk, severity of consequences, latency, treatability, and other key factors.¹⁷⁸ Workers will also differ as to whether they want to assume the risk of working with toxic exposures.

Third, at least with regard to reproductive health hazards, the Supreme Court has given greater weight to equality of opportunity and employee autonomy than the employer's concern about possible liability and speculation about individual risks. It is unclear whether the principle of worker autonomy in risk acceptability from *Johnson Controls* will be extended to other types of hazards. It is also unclear whether reproductive hazards will be distinguished as involving a different statute (Title VII) and uniquely intimate health matters that should be outside the control of employers.¹⁷⁹

C. Implications

Genetic predisposition to occupational disease, and the analogous applications in environmental health and pharmaceutical regulation, raises difficult scientific, economic, and legal issues. In general, public policy should require the reduction of toxic exposures to the lowest feasible levels needed to ensure healthful workplaces for all workers. When scientific evidence indicates genetic variability in response to certain exposures,¹⁸⁰

175. See OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, GENETIC MONITORING AND SCREENING IN THE WORKPLACE chs. 7, 8 (1990).

176. Toxicogenomics is the "application of global gene expression profiling, including DNA microarray technologies and proteomics, to study the relationship between exposure and disease and to understand gene-environment interactions and their impact on human health." NATIONAL RESEARCH COUNCIL, COMMUNICATING TOXICOGENOMICS INFORMATION TO NONEXPERTS: A WORKSHOP SUMMARY 10 (2005) (quoting Dr. William Greenlee's definition of Toxicogenomics).

177. See Jamie A. Grodsky, *Genetics and Environmental Law: Redefining Public Health*, 93 CAL. L. REV. 171, 190 (2005).

178. See Gary E. Marchant, *Genetic Data in Toxic Tort Litigation*, 14 J. L. & POL'Y 7, 8 (2006).

179. See *Chevron U.S.A. Inc. v. Echazabal*, 536 U.S. 73, 80–87 (2002) (upholding validity of Equal Employment Opportunity Commission interpretation of ADA providing a defense to employers if employment of an individual would constitute a direct threat to self as well as others).

180. A leading example is differential sensitivity to beryllium. Researchers have identified an increased risk of chronic beryllium disease among workers with a particular genotype. See Erin C. McCanlies et al., *HLA-DPB1 and Chronic Beryllium Disease: A HuGE Review*, 157 AM. J. EPIDEMIOLOGY 388, 395 (2003).

applicants and employees should be offered optional genetic testing through independent physicians and laboratories, with the results disclosed only to the individuals.¹⁸¹ After appropriate counseling, if individuals elect to work with the exposure, employers should be required to provide medical monitoring, personal protective equipment, and other measures that the employee reasonably requests to increase the level of protection. Employers would be justified in denying employment to individuals based on genetic factors only when an individual's exposure would present a direct and immediate threat of serious harm to the individual, other workers, or the public.¹⁸²

V. Toward New Conceptions of Equality

Equality is a dominant theme in American law. "Equal justice under law" is emblazoned on the Supreme Court building. The Equal Protection Clause of the Fourteenth Amendment has been widely invoked in a range of constitutional cases to ensure equal treatment by the government. We rejoice in the renunciation of "separate but equal," and ponder the proper path to a more egalitarian society. Choosing examples to illustrate the centrality and varying treatment of equality by the law is easy. The difficult task is trying to discern how the law and society should respond as scientists perfect the ability to identify individual variations at the genetic level.

In light of the approaches to equality discussed in this Article and the thrust of enacted and proposed legislation on genetics, it is important to consider whether the current public policy in the United States has been well conceived and thoughtfully implemented. At least in the context of employment discrimination, the legislative approach has been to embrace the notion that information about genetic variation should be suppressed or ignored. In numerous contexts, however, both within and beyond the workplace, it may not be beneficial to ignore individual genetic variation or to pretend that individual differences have no meaning. It also will be increasingly difficult to keep genetic information private when third parties, such as employers and life insurers, can require a blanket authorization to release all of an individual's health records.¹⁸³

181. Mark A. Rothstein, *Genetics and the Work Force of the Next Hundred Years*, 2000 COLUM. BUS. L. REV. 371, 395 (2000).

182. *Id.* at 393-95.

183. See Mark A. Rothstein & Meghan Talbott, *Compelled Disclosure of Health Information: Protecting Against the Greatest Potential Threat to Privacy*, 295 JAMA

The primary public policy response to the increase in genetic information has been to enact “genetic nondiscrimination” and “genetic privacy” laws.¹⁸⁴ The National Human Genome Research Institute of the National Institutes of Health established the Ethical, Legal, and Social Implications (“ELSI”) Program, which funded research that greatly influenced the enactment of these laws.¹⁸⁵ The ELSI program was conceived by James Watson, co-discoverer of the structure of DNA and the first director of the Human Genome Project.¹⁸⁶ As Watson later explained about the ELSI Program:

In putting ethics so soon into the genome agenda, I was responding to my own personal fear that all too soon critics of the Genome Project would point out that I was a representative of the Cold Spring Harbor Laboratory that once housed the Eugenics Record Office. My not forming a genome ethics program might be falsely used as evidence that I was a closet eugenicist, having as my real long-term purpose the unambiguous identification of genes that lead to social and occupational stratification as well as genes justifying racial discrimination. So I saw the need to be proactive in making ELSI's major purpose clear from its start—to devise better ways to combat the social injustice that has at its roots bad draws [*sic*] of the genetic dice.¹⁸⁷

The genetic nondiscrimination and genetic privacy laws implicitly attempt to advance the vision of a “genome-blind” society. It is questionable, however, whether a genome-blind public policy necessarily will assuage public concerns about eugenics or whether such a strategy ever could be successful. It is even more doubtful whether such an approach ought to be pursued.

The civil rights model of “sameness” and the fiction that “all difference is irrelevant” are inappropriate legal models for genetic diversity. Moreover, ignoring differences is not the only way to protect privacy and prevent invidious discrimination based on genetic variation. What I have labeled as “genome-blind” policies are today's equivalent of the “tabula rasa myth” of genetics about which Dobzhansky wrote decades ago.

2882, 2884 (2006).

184. See *supra* notes 141 and 142.

185. See ROBERT COOK-DEEGAN, *THE GENE WARS: SCIENCE, POLITICS AND THE HUMAN GENOME* 23–41 (1994); Eric Juengst, *Self-Critical Federal Science? The Ethics Experiment Within the U.S. Human Genome Project*, 13 *SOCIAL PHIL. & POL'Y* 63 (1996).

186. See COOK-DEEGAN, *supra* note 185; Juengst, *supra* note 185.

187. JAMES WATSON, *A PASSION FOR DNA: GENES, GENOMES & SOCIETY* 202 (2000).

Debates about the genetic models of equality and difference have numerous historical and scholarly antecedents. For example, in the first half of the twentieth century W.E.B. Du Bois and Booker T. Washington famously debated whether integration or separation should be the goal of the civil rights movement.¹⁸⁸ More recently, many critical race scholars have rejected “color blind” approaches to racial equality because they believe that these approaches perpetuate the status quo.¹⁸⁹ Instead, some advocate the use of race-conscious measures to overcome historical patterns of discrimination.¹⁹⁰

Similarly, some feminist scholars have argued that adopting the “sameness” approach to civil rights means viewing the world through the lens of the dominant group—in the United States, white males.¹⁹¹ Gender equality, they assert, should not be grounded on regarding females “as if” they were males, but on recognizing the differences between males and females, demonstrating respect for all individuals, and supporting the special needs of both sexes.¹⁹² The “equality” versus “sameness” controversy in feminism mirrors the “normal” versus “queer” debate in the gay community. “As African-Americans split between integration and separatism, or women split between equality and difference feminism, gays are splitting between normalcy and queerness.”¹⁹³

During the 1980s, in response to lobbying by activists and public health officials, virtually every state enacted laws protecting the confidentiality of HIV test results.¹⁹⁴ These laws required express (often written) informed consent, authorized anonymous testing, and prohibited case reporting to, and contact

188. MERLE EUGENE CURTI, *THE SOCIAL IDEAS OF AMERICAN EDUCATORS* 288–309 (1935).

189. See generally LANI GUINIER, *THE TYRANNY OF THE MAJORITY: FUNDAMENTAL FAIRNESS IN REPRESENTATIVE DEMOCRACY* (1994); Charles R. Lawrence, *The Id, the Ego, and Equal Protection: Reckoning with Unconscious Racism*, 39 STAN. L. REV. 317 (1987).

190. *Id.*

191. See MARTHA MINOW, *MAKING ALL THE DIFFERENCE: INCLUSION, EXCLUSION, AND AMERICAN LAW* 56 (1990) (observing the problems of both the sameness and difference approaches).

192. See, e.g., Leslie Bender, *From Gender Difference to Feminist Solidarity: Using Carol Gilligan and an Ethic of Care in Law*, 15 VT. L. REV. 1, 10–17 (1990); Christine A. Littleton, *Reconstructing Sexual Equality*, 75 CAL. L. REV. 1279, 1284 (1987).

193. KENJI YOSHINO, *COVERING: THE HIDDEN ASSAULT ON OUR CIVIL RIGHTS* 78 (2006).

194. See Harold Edgar & Hazel Sandomire, *Medical Privacy Issues in the Age of AIDS: Legislative Options*, 16 AM. J. L. & MED. 155, 158 (1990).

tracing by, public health officials after a positive test result.¹⁹⁵ The theory behind these laws was that there was a substantial public health interest in identifying HIV-positive individuals so that they could take actions to prevent further transmission of the virus.¹⁹⁶ Public officials were concerned that fear of individual identification, with its intense stigma, discrimination, and potential loss of health care coverage, would “drive individuals underground” and dissuade voluntary testing.¹⁹⁷ Two decades later, with new treatments that substantially improve the prognosis for HIV/AIDS patients and a decrease in the intensity of the stigma attached to HIV infection, the rationale for such an approach has dissipated and many jurisdictions have revised their laws and policies to require names-based notification of public health agencies of positive test results.¹⁹⁸ In 2006, the Centers for Disease Control and Prevention recommended routine HIV testing of all individuals between ages 13 and 64 in the clinical setting.¹⁹⁹

Genetics and genomics are rapidly developing scientific fields. Public policies developed today must be crafted for an ever-changing landscape. If there ever was a justification for adopting the vision of a “genome-blind” society, it has faded or will certainly do so shortly. Unlike an HIV test, which is a single test with a single result, there are over 1,400 genetic tests commonly available,²⁰⁰ and they vary greatly in the type of information they reveal.²⁰¹ Only a few of the tests focus on rare, monogenic, Mendelian disorders with a high penetrance and dire prognosis as exemplified by Huntington’s disease.²⁰² Within a relatively short

195. *See id.*

196. *Id.* at 164.

197. *Id.* at 155.

198. *See* Dorothy Puzio, *An Overview of Public Health in the New Millenium: Individual Liberty vs. Public Safety*, 18 J.L. & HEALTH 173, 187 (2003/2004). *See generally* Sheedah Moavery, *National HIV Reporting: What’s in a Name?*, 8 VA. J. SOC. POL’Y & L. 439, 471–72 (2001).

199. Centers for Disease Control and Prevention, *Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health Care Settings*, 55 MORBIDITY & MORTALITY WEEKLY REP. RR-14 1, 8–9 (2006), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5514a1.htm> (last visited Oct. 16, 2006). *See* Lawrence O. Gostin, *HIV Screening in Health Care Settings: Public Health and Civil Liberties in Conflict?*, 296 JAMA 2023, 2023 (2006).

200. Genetic Testing, <http://www.nlm.nih.gov/medlineplus/genetictesting.html> (last accessed Mar. 28, 2007).

201. Descriptions of the various genetic tests appear at <http://www.genetests.org>.

202. Huntington’s disease is an autosomal dominant neurodegenerative disorder of late adult onset characterized by involuntary body movements, cognitive impairments, and progressively deteriorating symptoms leading to death. *See* NINDS Huntington’s Disease Information Page, <http://www.ninds.nih.gov/disorders/huntington/huntington.htm> (last visited Mar.

period of time it will become routine for pharmacogenomic testing to precede the prescription of a wide range of pharmaceuticals, and the results will be regularly recorded in the health records of millions of individuals.²⁰³ It is unrealistic and counterproductive to embrace a vision of equality that demands obscuring or ignoring such information.

Deciding on the most appropriate principle of genomic equality in any given situation is more than an academic exercise. Conceptions of equality directly affect health care finance, medical underwriting in various insurance products, occupational and environmental health regulation, criminal responsibility, and many other important areas.²⁰⁴ The significance of recognizing individual variation is illustrated by the federal Individuals with Disabilities Education Act ("IDEA"),²⁰⁵ which establishes that all children have a right to a "free, appropriate public education." Differences in ability and performance, part of which are based on genetic factors,²⁰⁶ determine what educational program is appropriate for each child.²⁰⁷ Individual assessment is essential, and it is understood that not all children have the same abilities and needs.²⁰⁸ Ignoring differences among children would mean the end of special education and gifted programs.²⁰⁹ Even though it is not required by law, the lack of an individual focus would undermine the educational ideal of developing child-specific educational strategies to maximize the potential of each child. IDEA codifies the principle that every child ought to receive an *appropriate* education, not the identical education.²¹⁰ In this context, equality of opportunity demands recognizing individual differences.

IDEA is generally, but not always, applied to children who exhibit phenotypic variation, or expressed differences in their

28, 2007).

203. See generally Allen D. Roses, *Pharmacogenetics and the Practice of Medicine*, 405 NATURE 857 (2000).

204. See Victor R. Fuchs, *Economics, Values, and Health Care Reform*, 86 AMER. ECON. REV. 1, 2-6 (1996).

205. 20 U.S.C. § 1400 *et seq.* (2004).

206. See Robert Plomin, *General Cognitive Ability*, in BEHAVIORAL GENETICS IN THE POSTGENOMIC ERA 6 (Robert Plomin et al. eds., 2003).

207. 20 U.S.C. § 1412(a)(4).

208. See generally Laura F. Rothstein, *Genetic Information in Schools*, in GENETIC SECRETS: PROTECTING PRIVACY AND CONFIDENTIALITY IN THE GENETIC ERA 317-20 (Mark A. Rothstein ed., 1997).

209. See LAURA ROTHSTEIN & JULIA ROTHSTEIN, *DISABILITIES AND THE LAW* § 2:12 (3d ed. 2006).

210. See 20 U.S.C. § 1400(d)(1)(A).

behavior or learning ability.²¹¹ Nevertheless, it serves as an example of why policymakers should not adopt blissful ignorance or denial of individual variation on any issue without a full consideration of the consequences and alternatives.

Purging genetic information from all aspects of public and private life will become an increasingly untenable and counter-productive policy. As I have argued elsewhere, it is seemingly easier for legislators to enact laws prohibiting access to genetic information or outlawing genetic discrimination than it is to address the more fundamental and contentious underlying issues.²¹² For example, genetic discrimination in health insurance is really about access to health care, distributive justice, and health care finance, all of which most policy makers would prefer to avoid tackling. At the same time, separate legislative treatment of genetic information is certain to increase the level of stigmatization of individuals at risk for genetic disorders.²¹³ Furthermore, protecting privacy and preventing discrimination are only two of the many public policies related to obtaining, using, and disclosing genetic information.

In the pre-genomic age, legal conceptions of equality were based on the political ideal of equality of rights, the social goal of equality of opportunity, and the biological fiction of population homogeneity. In the genomic age, the political foundations and social aspirations remain the same, but the likelihood of achieving them will be enhanced by recognizing the biological reality of individual variation and, in appropriate situations, taking variation into account in formulating or revising various legal doctrines. Recognizing genotypic and phenotypic diversity of individuals is perfectly consistent with respecting and valuing every individual. It is also consistent with improving individual and population health, protecting health privacy, ensuring equal access to health care and other social goods, and guaranteeing civil rights.

Many members of the public, no doubt influenced by the initial public pronouncements of the need to suppress genetic information, are likely to be suspicious of any effort to reconsider

211. See 20 U.S.C. § 1401(3)(A) (defining a child with a disability under IDEA).

212. See generally Mark A. Rothstein, *Genetic Privacy and Confidentiality: Why They Are So Hard to Protect*, 26 J.L. MED. & ETHICS 203 (1998).

213. See Thomas H. Murray, *Genetic Exceptionalism and "Future Diaries:" Is Genetic Information Different from Other Medical Information?*, in GENETIC SECRETS: PROTECTING PRIVACY AND CONFIDENTIALITY IN THE GENETIC ERA, *supra* note 208, at 62.

the current approach of attempting to limit the uses and disclosures of genetic information. Accordingly, the following principles should be core elements of any proposals for the law to consider individual genetic variation. First, with the exception of criminal law applications and court-ordered testing, individuals should have the option of choosing to be tested and learning their relevant genotypic information. This option, often expressed as “the right not to know,”²¹⁴ is illustrated by the earlier example of voluntary, preplacement genetic testing for susceptibility to hazardous substances in the workplace.

Second, information generated by a voluntary genetic test should be used only for the benefit of the individual. Nondiscrimination laws in various fields, including employment and health insurance, need to be broad enough to prohibit adverse treatment based on the inappropriate use of predictive health information, including predictive genetic information.

Third, comprehensive and vigorously enforced health privacy and confidentiality laws need to be enacted to prohibit the unauthorized access, use, or disclosure of any health information. It also should be illegal for any individual or entity to use genetic information obtained for determining individual variation for unauthorized commercial purposes, such as marketing.

Fourth, in contemplating a society in which there is more widespread genetic information in print and on broadcast advertisements, on product warning labels, on pharmaceutical package inserts, in occupational and environmental health warnings, and in numerous other settings, it is clear that there must be a greater focus on public education. A scientifically semi-literate population is not equipped to understand the biological significance of individual genetic variation or the principles of probability underlying risk assessment. Unsophisticated consumers of genetic services also are vulnerable to manipulation by unscrupulous entrepreneurs.

Fifth, the introduction of greater information about genetic variation will be more easily accepted by the public if society moves closer to realizing the political ideal of equality of rights and the social goal of equality of opportunity. Genetic information should not be used to further stratify a population at the same time that many millions of individuals have no access to health

214. See, e.g., Roberto Andorno, *The Right Not to Know: An Autonomy Based Approach*, 30 J. MED. ETHICS 435, 435 (2004).

care.²¹⁵ Ironically, improved health care outcomes is the primary goal of genomic research.²¹⁶

Finally, it is essential to remember the historical lesson that biological determinism and pseudo-scientific theories of individual and group variation have caused myriad harms. One defense of slavery in the United States was that slaves had an innate immunity to yellow fever, which plagued whites on plantations.²¹⁷ American xenophobia at the turn of the twentieth century and Nazi “racial hygiene” and eugenics programs were fueled by the belief that certain peoples were inherently different in ways that made them irredeemably stupid, evil, unhealthy, and dangerous.²¹⁸ Modern society must embrace scientific insights into human variation while maintaining its vigilance that new discoveries should be used humanely and sensitively for the benefit of all.

Conclusion

This Article proposes a new approach to dealing with the ever-increasing body of individual genomic information. It advocates replacing the “sameness” model of equality with a new conception of equality based on recognizing human genomic variation and respecting individual differences. In many areas, legal doctrines should be reconsidered and, where appropriate, revised to translate new conceptions of equality into public policy. It remains to be seen whether insights from genomic variation will influence the political debate about equality along numerous other dimensions such as race, ethnicity, gender, language, religion, disability, sexual orientation, and culture.

The Article began by mentioning the work of Theodosius Dobzhansky. One of his contemporaries, C.S. Lewis, wrote: “Man’s power over nature turns out to be a power exercised by some men over other men with nature as its instrument.”²¹⁹ The development of new methods of identifying individual genomic variation can either revolutionize societal conceptions of equality or add yet

215. See Health Insurance Coverage: Who are the insured?, <http://www.nchc.org/facts/coverage.shtml>.

216. See Francis S. Collins, et. Al., *A Vision for the Future of Genomics Research: A Blueprint for the Genomic Era*, 422 NATURE 835, 835–36 (2003).

217. MOLLY CALDWELL CROSBY, *THE AMERICAN PLAGUE: THE UNTOLD STORY OF YELLOW FEVER, THE EPIDEMIC THAT SHAPED OUR HISTORY* 79 (2006).

218. See generally ROBERT PROCTOR, *RACIAL HYGIENE: MEDICINE UNDER THE NAZIS* (1988).

219. C.S. LEWIS, *THE ABOLITION OF MAN* 35 (University of Durham Riddell Memorial Lectures 15th Series, The MacMillan Co. 1947).

another basis for perpetuating inequality.

