

The Racialization of Genomic Knowledge

Lisa C. Ikemoto*

I. INTRODUCTION

*Maps create a visualization of traversable space which is pragmatically linked to the anticipated exigencies of unaccustomed, uncharted, or unfriendly movement. To historians, anthropologists, and even some cartographers, maps also offer a visual encyclopedia of the myths, values, and political assumptions of a particular culture at a particular time.*¹

The Human Genome Project is a vehicle that contains most of the hopes and fears that we, as a society, have ever attached to the gene. The possibilities of cures, controls, and atrocities are part of the genetic knowledge that we have and that we seek. The scientific efforts that result in genetic information also reproduce these hopes and fears. Discursively, then, there is no such thing as pure, content neutral genetic data. There is genetic knowledge that has social content.

I have been thinking about the ways in which our patterned social knowledge is forming and has been formed by genetic knowledge. Patricia Hill Collins has referred to these social patterns as the matrix of domination.² The matrices or ways of knowing each other are not static; they are dynamic, shifting, realigning in response to resistances, and shaped to specific times and places. Gender, race, class, and sexual orientation, for example, operate as interlocking systems.³ I am particularly interested in how genetic information is being reproduced as knowledge

* Professor of Law, Loyola Law School, Los Angeles, California. I am thankful to my research assistants: Karen Cox and Mai Bui Phuong. Also, thanks to Kathleen Boozang and the others who organized the conference, and to Rocco Luisi and fellow Seton Hall Law Review members for their help.

¹ Jody Berland, *Mapping Space: Imaging Technologies and the Planetary Body*, in *TECHNOSCIENCE AND CYBERCULTURE* 123, 125 (Stanley Aronowitz et al. eds., 1996).

² See PATRICIA HILL COLLINS, *BLACK FEMINIST THOUGHT: KNOWLEDGE, CONSCIOUSNESS, AND THE POLITICS OF EMPOWERMENT* 222-29 (1990).

³ See MAXINE BACA ZINN & BONNIE THORNTON DILL, *THEORIZING DIFFERENCE FROM MULTIRACIAL FEMINISM* 321, 326-37 (Maxine Baca Zinn & Bonnie Thornton Dill eds., 1996).

that reinforces and recreates racial subordination. This is the racialization of genomic knowledge.

I focus on public discussion about the genome project. Not only scientists and government officials, but also the media, health care providers, legal analysts and lawmakers, and the general public participate in interpreting and producing genomic knowledge. I use a cultural studies approach. By starting from a point that takes symbol and myth seriously and that recognizes them as both manipulable and concrete, I hope to explore the less obvious, more invidious ways that racism shapes our law and policy.

II. THE NEW MANIFEST DESTINY

The Human Genome Project is huge. In the simplest of terms, the human genome consists of an estimated 100,000 to 300,000 genes, which are collectively composed of approximately three billion base pairs.⁴ The United States government's plan is to spend 200 million dollars per year for fifteen years to map the genome.⁵ This expenditure alone calls for the question: What is it that we seek? I ask the question here because how we set the goals shapes the results and how we use them.

One metaphor used to describe the goals of the genome project is that of a quest into unknown territory. The human genome project has been called the grail,⁶ the genetic frontier,⁷ and the most astonishing scientific adventure of our time.⁸ The quest imagery simultaneously justi-

⁴ See Walter Gilbert, *A Vision of the Grail*, in *THE CODE OF CODES: SCIENTIFIC AND SOCIAL ISSUES IN THE HUMAN GENOME PROJECT* 83, 83 (Daniel J. Kevles & Leroy Hood eds., 1992) [hereinafter *THE CODE OF CODES*].

⁵ See *Major Events in the Human Genome Project*, 7 *HUMAN GENOME NEWS* 3-4 (Sept.-Dec. 1995),

<<http://www.ornl.gov/TechResources/H...ome/publicat/hgn/v7n3/04timeli.html>>. For a brief and simple explanation of "mapping," see Gilbert, *supra* note 4, at 83-92 and Robert Mullan Cook-Deegan, *Mapping the Human Genome*, 65 *S. CAL. L. REV.* 579 (1991).

⁶ See, e.g., Gilbert, *supra* note 4, at 83 (entitled, "A Vision of the Grail"); Daniel J. Kevles, *Out of Eugenics: The Historical Politics of the Human Genome*, in *THE CODE OF CODES*, *supra* note 4, at 3 ("The scientific search for the 'Holy Grail' of biology"); see also DOROTHY NELKIN & M. SUSAN LINDER, *THE DNA MYSTIQUE: THE GENE AS CULTURAL ICON* 39 (1995) ("In the 1990s geneticists, describing the genome as the 'Bible,' 'the Book of Man,' and the 'Holy Grail,' convey an image of this molecular structure not only as a powerful biological entity but also as a sacred text that can explain the natural and moral order.").

⁷ See generally *THE GENETIC FRONTIER: ETHICS, LAW, AND POLICY* (Mark S. Frankel & Albert Teich eds., 1994).

⁸ See generally JERRY E. BISHOP & MICHAEL WALDHOLZ, *GENOME: THE STORY OF THE MOST ASTONISHING SCIENTIFIC ADVENTURE OF OUR TIME—THE ATTEMPT TO MAP ALL THE GENES IN THE HUMAN BODY* (1990).

fies and valorizes the project.⁹ The quest casts the scientists as heroes, adventurers, and pathbreakers acting in the spirit of pioneer independence.¹⁰ Because the pioneer figure is part of the nation's origin myth, it naturalizes the genome project as a continuation of rightful nation-building efforts. Moreover, the figure sanctifies the project's goals as something bigger than politics.

In many respects, the push to map the genome echoes other super projects that were explained as efforts to cross new frontiers. Consider the race to the moon and the artificial heart program. Both programs seemed to turn science fiction into reality. Each program required the extensive commitment of national resources over a period of time; each used technology to signal progress. In accepting each project, we have equated technological change not just with increasingly sophisticated means of controlling our environment, but also with social progress. More specifically, we have expressed the faith that when we get to the goal, we will have a better understanding of human potential.

The space program and the genome project have been portrayed domestically as evidence of the United States' leadership abroad. In fact, President Kennedy's vow to land a man on the moon was largely a Cold War declaration about beating the Soviets.¹¹ It may be that the race to map the genome is largely about maintaining the claim of American superiority in the post-industrial age. The possibility that the gain is largely political rather than practical is real. The race to the moon, the artificial heart, and the human genome project have all been criticized for disregarding utility in favor of flash.¹² Perhaps as a result of prioritizing

⁹ The use of military metaphors has similar effects. See, e.g., Shari Roan, *From Blueprint to Battle Plan*, L.A. TIMES, Dec. 12, 1996, at B2 (discussing the hope that the human genome project will lead to cancer treatments).

¹⁰ Some have deployed the same imagery to criticize the genome project. Art Caplan and Jon Merz for example compare the identification of disease genes to the land rush. The basic tools utilized in the multi-million dollar laboratories that identify genes, they point out, are used in high school biology classrooms. While the scientists who used these tools in their rush to find breast cancer are entitled to claim their discovery of a gene, Caplan and Merz contend that discovering Nebraska is not the same thing as owning it. See Glenn McGee, *It's Not Nice to Sell Mother Nature?*, 2 CENTER FOR BIOETHICS NEWSLETTER 3 (Fall 1996) (explaining arguments against the patenting of genes).

¹¹ See Ray Richmond, *Cronkite Ranks Moon Landing at the Top*, DENV. POST, July 20, 1994, at F1 (describing the excitement of the first moon landing, television journalist Walter Cronkite commented, "There was also the exultation of knowing we had beaten the Soviets and gotten there first.").

¹² See, e.g., Dorothy Nelkin, *The Social Power of Genetic Information*, in THE CODE OF CODES, *supra* note 4, at 178 ("As has often been the case in the history of medical invention, diagnostic techniques are far ahead of therapeutic possibilities."); Eugene Emery, Jr., *Man on the Moon: Milestone or Headstone?*, PROVIDENCE JOURNAL, July 23, 1989, at A12 ("Although the moon landing was a very important and lasting symbol of progress at a time when progress was very much in question, Apollo was a dead end,

symbolic value, in each case, there has been a gap between the concreteness and clarity of our expectations and the reality behind those expectations.¹³

It seems as if the genome project has already been declared a giant step for humankind. Perhaps it will be. If you think about it, the giant steps of the past are those we equate not simply with entering the unknown, but also with using technology to conquer and declare control over what was unclaimed territory, or territory claimed by those we deemed inferior. But given the overlay of nationalism on the assumption that control is the goal, it seems to me that the genome project, as did the race to the moon and the artificial heart program, owes its sense of right and fitness in our minds to the legacy of Manifest Destiny. While history books now criticize that late nineteenth century political doctrine as mere rationalization for American imperialism, the idea of righteous prerogative, indeed imperative, to take what is there lives still in thought, technology development, and health policy.

Thinking about the genome project as a legacy of Manifest Destiny explains the confluence of nationalism, racism, and the naturalization of the mapping project from a political to a moral quest. The earlier version of Manifest Destiny justified imperialism as a means of improving the uncivilized societies by introducing democracy. The genome project is often touted as a means of improving the uncivilized within U.S. society by eliminating problems such as addiction, violence, and mental illness.¹⁴ The old Manifest Destiny operated from a position of racist imperialism, which was expressed in the choice of populations subject to "democratization." In effect, it reinforced national identity as white and native. The new Manifest Destiny tends to target conditions and behaviors deemed social problems, including those linked with race. In doing so, it reinforces internal borders in a way that conflates whiteness with a medicalized understanding of good citizenry.

III. DISEASE WITH IDENTITY

While the broadest statements about the Human Genome Project are about its potential to increase our understanding of what it means to be human, the most common description of the genome project's direct goals

technologically."). See generally Michael Strauss, *The Political History of the Artificial Heart*, 310 NEW. ENG. J. MED. 332 (1984).

¹³ See R.C. LEWONTIN, *BIOLOGY AS IDEOLOGY: THE DOCTRINE OF DNA* 51 (1992) ("The second problem of the human genome sequencing project is that it also claims that in knowing the molecular configuration of our genes, we know everything that is worth knowing about us.").

¹⁴ See *id.* at 72.

are about preventing, treating, and curing disease.¹⁵ The points I want to make about this start from the premise that disease and health, like genetic knowledge, are constructs that are socially and historically located, informed by the matrices of domination. Concern about genetic disease is not simply a humanitarian concern, but also an ideology.

A. *The Genetic Presumption*

The ideological framework for genetic disease operates at two levels. Its macrostructure is the bifurcating nature versus nurture question. This question tends to frame the answers as mutually exclusive. For example, scientists have said that some diseases are attributable solely to genetic factors, and other diseases occur from a combination of genetic and environmental factors.¹⁶ In public discourse, the causal link between genes and disease has been well-accepted, but often in disregard of the interactive nature of causes.¹⁷ The nature/nurture question simplifies our understanding of genetic disease by filtering out possible complexities and non-linear causal links. This makes genetic disease seem comprehensible, which in turn makes it seem controllable.

The microstructure is a reductionist and particulate or molecular view of health and disease. In other words, we take for granted that the primary approach to understanding health and disease is through molecular biology.¹⁸ In many contexts, molecular biology seems impossibly complex to most of us. But in the context of genetic disease, the assumption of a straightline causal link between gene and disease makes the basic operation of molecular biology seem comprehensible. This empowers us to make claims about what is and is not genetic. Because the molecular view is one that reveals quantities of detail, the view seems complete. We take genetics as the full explanation of health and disease. The social power of molecular biology holds our gaze on the parts, rather than on the whole. As a result, our understanding of genetic disease is being flattened by detail and removed from any apparent links to the social world. In effect, the molecular view in public discourse reinforces the concept of human as an operating system made up of millions of replaceable parts that do add up to the whole. Hence, it is possible to see

¹⁵ See, e.g., Philip Boyle, Public Priorities for Genetic Services, Hastings Center Report, Special Supplement S1, S1 (May-June 1995).

¹⁶ See, e.g., Executive Summary, ASSESSING GENETIC RISKS: IMPLICATIONS FOR HEALTH AND SOCIAL POLICY 1 (Lori B. Andrews et al. eds., 1994).

¹⁷ See Rochelle Cooper Dreyfuss & Dorothy Nelkin, *The Jurisprudence of Genetics*, 45 VAND. L. REV. 313, 320 (1992).

¹⁸ See Evelyn Fox Keller, *Nature, Nurture, and the Human Genome Project*, in THE CODE OF CODES, *supra* note 4, at 293.

genetic disease as a bad component that can be isolated and removed. This view assigns agency to genes.¹⁹ This does not deny human agency, but decenters it.

The idea of a genetic causal link is becoming so pervasive that we read every condition as potentially attributable to genetics. A “genetic presumption” is emerging that is formed not only from the assumption that genetics are the ultimate explanation, but also from the assumptions of a genetically-based human core and from biological determinism. We presume that any harmful condition, disease, or trait might be genetic. Based on the molecular view, we further presume that a person is defined by the content of her genes. And because we presume that the genetic link has determinative power, we conclude that the person is inevitably defective.

B. *The Emperor's New Clothes*

Evelyn Fox Keller notes that the stated genome project goal—discovering what it means to be human—suggests that there is an “‘essential underlying definition’ of the human being.”²⁰ In other words, if you stripped each of us down to our genome and then some, you would find a common genetic core that makes us human. The universality of that core is apparently identity-neutral. But like the emperor in his new clothes, the core is revealed to be ordinary, simply normal, and yet in a position of privilege. That is what the notion of a genetic human core does—it makes the core normal and, in doing so, makes normalcy the position of privilege.²¹ While the emperor was not as magnificent as he thought he was, he was still the emperor, and according to the storybook I read, he was white and male.

To most of us, like the emperor's subjects, it is the normalcy and not the privilege that is first apparent. This is possible because we are used to noticing only obvious, concrete, fixed signs of majesty. The slipperiness of racialization makes it subtle. It would be obvious if the racial content of the core concept were named as white. But that never happens. The racial privilege in the concept of the core might be apparent if nature/nurture were consistently imaged as white/black and rarely as black/white. But both sides of the nature/nurture question are racialized so that in some contexts, nature is implicitly nonwhite, which in turn makes nurture implicitly white. In other contexts, nurture is implicitly

¹⁹ See EVELYN FOX KELLER, REFIGURING LIFE 21-35 (1995) (tracing the rhetoric of gene action); LEWONTIN, *supra* note 13, at 13.

²⁰ See Keller, *supra* note 18, at 281, 292; see also LEWONTIN, *supra* note 13, at 87-89.

²¹ See Keller, *supra* note 18, at 294-95.

non-white and nature is implicitly white.²² Because the racial content of nature/nurture is not fixed in other contexts, the racial specificity of nature is not apparent in genomic knowledge. Yet, genetic discourse is premised on the primacy of nature, and that primacy is maintained by claiming nature as the basis for humanness. In our society, that claim can only have effect if the normative core is white.

Even as nature acquires a consistent racial link, the specifics of race remain shifting, dynamic, and fluid. The risk is that the concept of the genetic human core will capture some part of the racial and other social constructs by which we read and form identity and describe them as fixed, predictable, and normal.²³ Thus, the essentialism inherent in biological race is reinforced.

C. Policing the Borders

In fact, the genetic presumption has already given rise to definitions of disease and defect that police normalcy along racially subordinating lines.²⁴ The sickle cell trait was defined by law in a way that represented the sickle trait as evidence of African American racial inferiority. Exclusion from the Air Force, commercial flying positions, health insurance access, and the enactment and implementation of the National Sickle Cell Anemia Control Act²⁵ specifically targeted African Americans who have the highest, but not the sole incidence of the trait. The inaccurate use of sickle cell "disease" rather than sickle cell "trait" to describe the incidence,²⁶ to justify the exclusions,²⁷ and to explain testing results,²⁸ exag-

²² For an interesting discussion of the racialization of mother nature in the context of the early 20th century eugenics movement, see LAURA BOYLE, BORDERING ON THE BODY: THE RACIAL MATRIX OF MODERN FICTION AND CULTURE 10-34 (1996).

²³ Rochelle Cooper Dreyfuss and Dorothy Nelkin have defined "genetic essentialism" as a concept that "posits that personal traits are predictable and permanent, determined at conception, 'hard-wired' into the human constitution." Dreyfuss & Nelkin, *supra* note 17, at 320-21.

²⁴ My thinking on normative borders has been informed by the work of Robert Chang. See ROBERT S. CHANG, A MEDITATION ON BORDERS, IMMIGRANTS OUT! THE NEW NATIVISM AND THE ANTI-IMMIGRANT IMPULSE IN THE UNITED STATES 244-53 (Juan F. Perea ed., 1997).

²⁵ See DANIEL J. KEVLES, IN THE NAME OF EUGENICS: GENETICS AND THE USES OF HUMAN HEREDITY 278 (1995).

²⁶ As it happened, the programs were often marred by technical confusion or ignorance. The preamble of the National Sickle Cell Anemia Control Act, for instance, opened with the blatantly erroneous statement that two million Americans suffered from sickle cell 'disease.' The fact was that two million carried the harmless sickle-cell trait; fewer than a hundred thousand had the disease. Kevles, *supra* note 6, at 278.

²⁷ The Air Force Academy banned African Americans with the sickle cell trait from flying until 1981. See Hannah Bradby, *Genetics and Racism*, in THE TROUBLED HELIX: SOCIAL AND PSYCHOLOGICAL IMPLICATIONS OF THE NEW HUMAN GENETICS 295, 299

gerated the medical risks and exacerbated the social harms. The screening goals were framed as means of protecting the general public, not members of the African American community. Sickle cell became a racial stigma and a sign that genetic fitness was racially specific.²⁹

More recently, a series of research projects reflect the hand of the genetic presumption. The key part of the presumption operating in this instance is biological determinism. Biological determinism posits that human behavior, as well as human nature, are preset by our genes.³⁰ Behavioral geneticists, in particular, take this claim very seriously.³¹ Their research often targets behaviors that have been deemed social problems. But the particular issues and the methods that some behavioral geneticists have chosen indicate an agenda premised on racism. The clearest example of this is the Federal Violence Initiative ("Initiative").³² This federal program, slated for the 1994 federal budget,³³ identified violence as the key social problem in the United States. Specifically, the Initiative targeted urban violence committed by youths living in the inner-cities. The theory behind the project was that there were inner-city children with biological and genetic defects that predisposed them to violence.³⁴ The Initiative explicitly framed the problem as one of individual disorder rather than systemic failure.³⁵ But the focus on urban violence and inner city youth reproduced negative images of black male violence so that the apparent need for the Initiative became inextricably intertwined with race.³⁶ In fact, a 1992 National Research Council publication

(Theresa Marteau & Martin Richards eds., 1996).

²⁸ Many who were identified as carriers of the sickle cell trait were given the impression that they had the disease. See Kevles, *supra* note 6, at 278.

²⁹ For a good assessment of the problems with the sickle cell program, see Bradby, *supra* note 27 at 304-05; Vernellia R. Randall, *Slavery, Segregation and Racism: Trusting the Health Care System Ain't Always Easy! An African American Perspective on Bioethics*, 15 ST. LOUIS U. PUB. L. REV. 191, 200-01 (1996).

³⁰ See R.C. LEWONTIN & STEVEN ROSE ET AL., NOT IN OUR GENES: BIOLOGY, IDEOLOGY, AND HUMAN NATURE 6 (1984). For a historical account of eugenics, see generally KEVLES, *supra* note 25.

³¹ See RUTH HUBBARD & ELIJAH WALD, EXPLODING THE GENE MYTH 93-107 (1993). For a study of the particular version of behavioral genetics known as sociobiology, see E.O. WILSON, SOCIOBIOLOGY: THE NEW SYNTHESIS (1975). For critiques of sociobiology, see DONNA HARAWAY, SIMIANS, CYBORGS, AND WOMEN: THE REINVENTION OF WOMEN 59-70 (1991); LEWONTIN & ROSE ET AL., *supra* note 30, at 233-64.

³² For a more complete account of the Federal Violence Initiative, see PETER R. BREGGIN & GINGER ROSS BREGGIN, THE WAR AGAINST CHILDREN (1994) and Randall, *supra* note 29, at 227-28.

³³ The plan was to spend \$400 million over five years. See Karen Schneider, *Study to Quell Violence is Racist, Critics Charge*, DETROIT FREE PRESS, Nov. 2, 1992, at A1.

³⁴ See BREGGIN & BREGGIN, *supra* note 32, at 7-9.

³⁵ See *id.* at 14-15.

³⁶ See Priscilla Feral & Betsy Swart, *When Science Becomes Social Control: A Dan-*

that described the Initiative without naming it listed as the first "Key Question:" "Do male and black persons have a higher potential for violence than others and, if so, why?"³⁷ In addition, the Initiative first came to light when Frederick Goodwin, the head of the project, publicly compared inner-city youth to "hyperaggressive monkeys who kill each other [and] are also hypersexual."³⁸ Despite Goodwin's protestations of innocence, his comparison of inner-city youth, understood to be black, with monkeys denigrated African Americans and confirmed the social assumptions underlying the Initiative.

The Initiative has apparently been shelved.³⁹ But government-sponsored researchers remain interested and involved in projects searching for genetic links to violence, aggression, and crime.⁴⁰ The National Institutes of Health had promised \$78,000 in funding for a 1992 conference on genetic links to crime.⁴¹ In the wake of Goodwin's remarks and the ensuing controversy, the conference was canceled. The fact that it was rescheduled in 1995⁴² indicates that components of the Initiative are alive.⁴³ Even if the efforts to find a genetic link to crime or violence are not patently racist, racist assumptions from the Initiative, from history, from the racialized imagery deployed in general discourse about crime and violence may bleed into our understanding of these efforts.⁴⁴ While some may benefit from information gained by these efforts, others will be harmed, and race will determine the allocation of those benefits and harms.

The projects flowing from the genetic presumption fit into a related trend toward medicalizing deviance.⁴⁵ Medicalization describes the

gerous Federal "Violence Initiative" Targets Blacks, TRIAL LAW, Mar. 1993, at 30.

³⁷ BREGGIN & BREGGIN, *supra* note 32, at 25.

³⁸ *Id.* at 8.

³⁹ *See id.* at 43.

⁴⁰ *See id.* at 42-43.

⁴¹ *See* Alex Dominguez, *Scientists to Discuss Possible Links to Crime*, ASSOCIATED PRESS, Sept. 21, 1995 (wire service, page unavailable on-line).

⁴² *See id.*

⁴³ *See, e.g.*, Lori Montgomery, *Scientific Approach to Violence Prevention Stirs Furor*, BUFF. NEWS, Nov. 12, 1995, at F7. The article reported on a \$32 million dollar longitudinal study called the Project on Human Development in Chicago Neighborhoods. Like the Federal Violence Initiative, the Project focuses on inner-city youth, but does not assume that the cause is solely biological. The Project is generating similar concerns about the implications for racism.

⁴⁴ *See* Troy Duster, *Human Genetics, Evolutionary Theory, and Social Stratification*, in THE GENETIC FRONTIER: ETHICS, LAW, AND POLICY 146-49 (Mark S. Frankel et al., eds., 1994).

⁴⁵ For a more extensive discussion of this trend, see generally PETER CONRAD & JOSEPH W. SCHNEIDER, *DEVIANCE AND MEDICALIZATION: FROM BADNESS TO SICKNESS* (expanded ed. 1992).

problem in medical terms, as having medical causes or effects. The medicalization of crime, for example, shifts the authority over the subject to scientists and doctors, from the police, the lawyers and judges, and other participants in the criminal justice system, to scientists and doctors. The implication is that the current participants have failed to solve the problem, and that maybe science has the answer. Because science is purportedly neutral, descriptions and conclusions stated in medical terms are taken as hard fact. For example, in the past few years, well-respected medical journals have published articles addressing issues such as gang violence, drive-by shootings, and weapons-use by adolescents.⁴⁶ Whether or not the studies emphasize the racial identity of perpetrators and victims, the fact that these issues are linked with race in the broader discourse means that the link between race, crime, and violence will be read as scientific fact.

When cast back into the discursive space surrounding the genome project, biological determinism and medicalization of deviance reinforce the concept of a core genetically-based determinate normalcy. In other words, efforts based on biological determinism and efforts that medicalize deviance are measures to police the borders of normalcy. The focus on social problems suggests the need for these measures. Without them, social disorder would prevail. Biological determinism isolates the source of disorder within the individual. This relieves us from having to acknowledge the matrix of domination or to examine our social structures, our institutional arrangements, and ourselves. At the same time, the social nature of the problems locates the source of disorder in particular groups. It becomes apparent then that the borders of normalcy coincide with racial boundaries.

D. Post Hoc Colonialism

In the 1960s, sending a man to the moon signified that our potential in technology, human ability, and nation-building was limitless. Now in the 1990s, we are turning our gaze inward. Our genes, not the sky, are the limit. The race to the moon placed our eye on the best of the best—represented by the astronauts. The valorization of the space program and the heroic inscription of the astronauts sent a message that the future was

⁴⁶ See, e.g., *A.M.A.'s Violence Report Card: Nation Gets Poor Grades Again*, 39 AM. MED. NEWS 18 (June 17, 1996); Amelia M. Arria et al., *Prevalence of Carrying a Weapon and Related Behaviors in Urban Schoolchildren*, 149 ARCHIVES OF PED. & ADOL. MED. 1345 (Dec. 1, 1995); H. Range Hutson et al., *Adolescents and Children Injured or Killed in Drive-by Shootings in Los Angeles*, 330 NEW ENG. J. MED. 324 (Feb. 3, 1994); H. Range Hutson et al., *The Epidemic of Gang-Related Homicides in Los Angeles County from 1979 Through 1994*, 274 JAMA 1031 (Oct. 4, 1995).

about providing opportunities to challenge normalcy by exceeding it, even while the fact that the early astronauts were all white men shows that patriarchal and racist norms defined much of what was understood as "best." The genome project has become a search for disease, defect, and deviance. It implicitly valorizes the healthy, the normal, and the universal middle. Like the race to the moon, that message is in part about racial norms.

As a legacy of manifest destiny, the genome project also sets requirements for citizenship. Controversy over projects that seek to show genetic links to violence, crime, intelligence,⁴⁷ and sexual orientation⁴⁸ may be read as border disputes. The recent "Bell Curve" debate⁴⁹ and the claimed discovery of the "Gay Gene"⁵⁰ respectively posited a biological basis for the supposed low achievement of Latinos and African Americans and for the apparent deviant sexuality of gay men.⁵¹ In the context of conservative/liberal discourse about race, the explanatory power of biological determinism battled liberal constructs of choice constrained by social conditions. In the discourse about sexual orientation, biological determinism trapped conservatives into forgiving gay men and lesbians for their sexual orientation, and it trapped liberals into supporting a position on sexual identity that contradicted their position on racial identity.

Both disputes assume the abnormality of these identities and the need to provide explanation. The Bell Curve claim and the Gay Gene claim have had very different political and social consequences for the implicated communities and individuals. Yet, in both disputes, the use of biological determinism initially narrowed the possible ways of claiming

⁴⁷ For a historical analysis of research trying to link I.Q. and race, see KEVLES, *supra* note 25, at 269-72, 279-83.

⁴⁸ See CONRAD & SCHNEIDER, *supra* note 45 at 172-214 (tracing the social constructions of sexual orientation in history).

⁴⁹ See RICHARD J. HERNNSTEIN & CHARLES MURRAY, *THE BELL CURVE: INTELLIGENCE AND CLASS STRUCTURE IN AMERICAN LIFE* (1994); *The Bell Curve Debate: History, Documents, Opinions* (Russell Jacoby et al. eds., 1995).

⁵⁰ See generally CHANDLER BURR, *A SEPARATE CREATION: THE SEARCH FOR THE BIOLOGICAL ORIGINS OF SEXUAL ORIENTATION* (1996) (evaluating the science and the implications of the efforts to identify a biological basis for sexual orientation); DEAN HAMER & PETER COPELAND, *THE SCIENCE OF DESIRE: THE SEARCH FOR THE GAY GENE AND THE BIOLOGY OF BEHAVIOR* (1994) (recounting the discovery of the "gay gene" by the scientist who claims the discovery); VERA WHISMAN, *QUEER BY CHOICE: LESBIANS, GAY MEN, AND THE POLITICS OF IDENTITY* (1996) (providing a critical analysis that challenges essentializing accounts of sexual preference).

⁵¹ According to the lead scientist, the study actually supports the inference of a "Gay Gene," but did not actually locate one, and the study did not try to locate a gene that might control female sexual orientation. See HAMER & COPELAND, *supra* note 50, at 146-57.

identity and, in doing so, it constrained the response. Even if biological explanations seem to absolve racial and sexual "deviants" of fault, they have been made and will continue to be the object of border searches. Those held at the border may be the lucky recipients of normalization programs,⁵² but they will not become naturalized citizens. They fit the wrong profile.

IV. DELETING IDENTITY

Mapping is an effort to discover and record pre-existing formations. But mapping also imposes its own reality on that which is being mapped. Mapping reduces. It makes space and time traversable. Through mapping, we visualize what we cannot see and change how we know the world.⁵³ The genome mapping effort is taking us beyond human sight to a collection of information we could not otherwise see.⁵⁴ It is making body boundaries obsolete. At the same time, it is reinscribing other boundaries—those we call race, gender, and sexual orientation, for example—in a way that reclaims essentialism as socially useful information.

The genome project is predicted to increase our understanding of what it means to be human. This assumes that what it means to be human is simply waiting to be uncovered. It is becoming clearer, however, that our understanding of the human is not achieved by a process of discovery. It is a process of creation, using old parts and new, based on both pre-existing patterns and on realignments. In the process of recreating the human, parts get deleted.

Consider the story of Henrietta Lacks. Henrietta Lacks was a black woman. She lived in Baltimore with her husband and children. In 1951, she died from a particularly virulent cervical cancer. She was thirty-one years old.⁵⁵ Since her death, Henrietta Lacks has achieved fame and immortality, of sorts, in the world of science. Eight months before her death, some of Henrietta Lacks's cancerous cells were cultivated into a cell line. Hers were the first human cells grown continuously in vitro. The biologist who cultured the cells named the cell line HeLa, after Henrietta Lacks. The HeLa cell line has been used in significant research

⁵² Examples of past normalization programs include forced eugenic sterilization, marriage restrictions, and immigration restrictions. See KEVLES, *supra* note 25, at 96-112, 164-69. Current and predicted normalization practices include prenatal genetic diagnosis and selective abortion, genetic testing and counseling, eugenic sperm banks, and gene therapy. See *id.* at 251-68.

⁵³ See Berland, *supra* note 1, at 123, 125.

⁵⁴ See *id.* at 127.

⁵⁵ See Rob Stepney, *Immortal, Divisible*, INDEPENDENT, Mar. 13, 1994, at 50.

breakthroughs, including the development of the polio vaccine.⁵⁶ As one writer stated, “[i]n weight, they now far surpass the person of their origin.”⁵⁷ As a matter of genetic knowledge, the statement is true both literally and figuratively. According to the accounts, Henrietta Lacks is significant only as the source of the cells used to create HeLa.⁵⁸ Occasionally, a story about the HeLa cell line mentions the dearth of information about Henrietta Lacks’s life,⁵⁹ which at least suggests that her life was significant. But no legal research or media story has questioned the implications of describing a Black woman as the source of a valuable product line.⁶⁰ HeLa as a figure overshadows that of Henrietta Lacks; it also configures her role in history in a way that echoes that of women held in slavery.

The deletions of person, agency, history, and community in the story of Henrietta Lacks are occurring at a more general level. For example, public fascination with computers and information networks⁶¹ is being expressed in descriptions of the human body as an information system. Like the HeLa cell, that descriptive model projects humans as sources. The merging of human with technology in that model also realigns the subject position of humans with respect to technology. We have tended to define technology as that created by humans. Now, in describing ourselves as technology, what happens to the human?

Consider the conflation of disease, behavior, and social problem discussed above. The emerging result is that human identities formed by race, gender, sexual orientation, and other matrices, are being described once again as biological traits that may be designated as deleterious and subject to deletion. This understanding of what it means to be human simultaneously assumes a fixed and stable genetically-based norm for the human and the manipulability of human “traits.” The risk is not that we

⁵⁶ See *id.*

⁵⁷ *Id.*

⁵⁸ In fact, there is a book about the cell line entitled, *A Conspiracy of Cells: One Woman's Immortal Legacy and the Medical Scandal It Caused*. The title refers to Henrietta Lacks, but the book is entirely about the research problems caused by the vigor of the cell line. See James Hicks, *A Conspiracy of Cells*, 6 *SCI.* 90 (1985) (book review); Harold M. Schmeck, Jr., *HeLa's Legacy*, *N.Y. TIMES*, June 15, 1986, at 18 (book review).

⁵⁹ See Stepney, *supra* note 55, at 50 (“Little is known about Henrietta Lacks.”).

⁶⁰ Compare the outrage expressed on behalf of John Moore whose spleen cells were cultured into the Mo cell line. In *Moore v. Regents of the University of California*, 793 P.2d 479 (Cal. 1990), the California Supreme Court recognized that John Moore had a cause of action for failure to obtain informed consent and breach of trust.

⁶¹ See, e.g., *Attitudes About Space Following 'Challenger' Disaster*, (National Public Radio broadcast, Jan. 28, 1996) (interview guest, Langdon Winter) (stating, “People are less interested in space these days than cyberspace.”).

will actually end up a physiologically homogeneous society. The risk is that the dominance-based disease model of humanity will convince us that we are a system of programmable behaviors, and that our heterogeneity is both undesirable and deletable. Ultimately, it will be the threat of deletion, not the actual deletion, that becomes the tool of social control.