

GENOMIC POLITICS AND EQUALITY

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Professor Jennifer Hochschild's *Genomic Politics: How the Revolution in Genomic Science Is Shaping Society* is a must-read for anyone interested in where our politics about genetics in America has been and where it is going. It is also an exemplar of how to do mixed-methods social science work: Hochschild combines theory with database searches and coding of congressional acts and social science journal articles, open-ended interviews with authors of leading peer-reviewed articles and other experts (semi-structured with genomic experts),¹ and two sets of relatively lengthy online surveys (one administered in 2011 and one in 2017, nicely allowing some opportunity to detect change) to arrive at a much more complete picture than I have seen anywhere in the extensive literature.

Part I summarizes the book and highlights its main contributions. Part II engages with three questions on which the book has something to say, but where I think a longer conversation is warranted: (1) What explains the lack of partisan politicization on these topics? (2) How should equality theorists think about obligations of justice that stem from genetic bad luck and the possibility of redistribution? (3) What would it mean to take seriously the critiques of race as a genetic category and what would that mean for equality discourse?

I. A SUMMARY OF THE BOOK AND ITS MAIN CONTRIBUTION

The book begins with some reflections on how salient genetics has become in the twentieth and twenty-first century, eschewing any attempt to offer a comprehensive account,

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1 Full disclosure, I was one of them, though to be honest my memory of exactly what I said during the interview is fuzzy at best, so I am not sure if any of my thoughts made it into the final manuscript.

and then jumps right into its motivating and recurring examples: the 2005 FDA approval of BiDil, the first time an approved indication was limited to a particular racial group, as a “drug for the treatment of heart failure in self-identified black patients”;² the use of direct-to-consumer DNA testing for ancestry purposes, most notably those of [Ancestry.com](#) and 23andMe;³ the building and use of forensic biobanks and the public attention, especially in the wake of the notorious “Grim Sleeper” arrest, to their use for matching DNA from crime scenes through lower-stringency tests that allow police to identify relatives of those whose DNA was left at the crime scene;⁴ the use of prenatal testing for genetic markers of Down syndrome (often followed by selective abortion), among other developmental conditions; and finally human gene editing, in particular human germline gene editing (though there is some discussion of somatic editing as well).⁵

She also introduces the theoretical framework all of the book seeks to support: that we can divide the views of U.S. respondents (the book is explicitly about those in the United States but of course may extend further) into four quadrants based on two dimensions. One “focuses on one’s knowledge of or belief about the impact of genetics on behaviors, traits, or physical conditions” ranging from “the assertion that ‘genetics is really important’ to the assertion that ‘genetics is relatively unimportant or not relevant at all.’”⁶ The other “focuses on a person’s judgment or preferences about risk-taking to genetics (and other) technologies” ranging from “the sense that ‘overall, new technologies are beneficial, although we must beware possible harms’ to ‘new technologies risk serious harms, even if they also carry some benefits.’”⁷

This generates her four quadrants of stances toward genomic technologies: Enthusiasm (genetics is really important for explaining human behavior and they are optimistic about its benefits), Skepticism (genetics is really important but they are fearful about its risks), Hope (genetics has little importance in explaining human behavior but these individuals are optimistic about the benefits of technology), and Rejection (genetics has little

2 JENNIFER HOCHSCHILD, *GENOMIC POLITICS: HOW THE REVOLUTION IN GENOMIC SCIENCE IS SHAPING AMERICAN SOCIETY* 7 (2021). See generally JONATHAN KAHN, *RACE IN A BOTTLE: THE STORY OF BiDIL AND RACIALIZED MEDICINE IN A POST-GENOMIC AGE* (2013).

3 See, e.g., *CONSUMER GENETIC TECHNOLOGIES: ETHICAL AND LEGAL CONSIDERATIONS* (I. Glenn Cohen, Nita A. Farahany, Henry T. Greely & Carmel Shachar eds., 2021).

4 See, e.g., Erin Murphy, *Relative Doubt: Familial Searches of DNA Databases*, 109 MICH. L. REV. 291 (2010); Natalie Ram, *Genetic Privacy After Carpenter*, 105 VA. L. REV. 1357, 1359 (2019).

5 For more on this, see, for example, NUFFIELD COUNCIL ON BIOETHICS, *GENOME EDITING AND HUMAN REPRODUCTION: SOCIAL AND ETHICAL ISSUES* (2018), <https://www.nuffieldbioethics.org/publications/genome-editing-and-human-reproduction>; NAT’L ACAD. OF SCIS., *HERITABLE HUMAN GENOME EDITING* (2020); I. Glenn Cohen & Eli Y. Adashi, *Legal and Ethical Issues in the Report Heritable Human Genome Editing*, 51 HASTINGS CTR. REP. 8 (2021).

6 HOCHSCHILD, *supra* note 2, at 5.

7 *Id.*

importance in explaining human behavior but these individuals are worried about its impacts on society).⁸

Chapter 2 seeks to further explain her four quadrants and refine the project scope (and in my view defang some early misunderstandings). She begins with airing but not resolving the utility of looking at genomics as a single, stable topic for investigation (more on this below). She then fleshes out her two scales, including by using views about the tendency (and pushback) against treating race (and to a lesser extent gender) as genetically determined. She reviews data on U.S. adults' views of the "causes of problems with a person's health" and explains that her survey results show they are surprisingly nuanced, that is: "Americans accept environmental factors *and* family or social influences *and* economic factors *and* individual choice *and* medical conditions *and* God's will *and* genetics as explanations for health outcomes."⁹ She then examines what causes individuals and institutions to be technological optimists or pessimists, and some general policy approaches in biotechnology regulation toward setting default rules about whether the "new" has to be proven safe first as opposed to requiring that it be shown to be unsafe.

The title of chapter 3 perfectly captures its claim: "Disputes over Genomic Science Are *Not* Partisan." Using debates over various COVID-19 pandemic policies as a perfect foil, Hochschild shows that there are not large Republican-Democrat divides along the subject areas that are her focus in the book. The point is made most strikingly as to forensic DNA databases, which Hochschild reports stir up very divergent responses; they "are 'Jim Crow's database' or a response to the perennial concern for maintaining social order. They are a lever to pry open prison doors for the falsely convicted or a hammer coming down on poor men of color and their families."¹⁰ Yet she finds that as "[i]ntense as they are, these positions are not aligned with political parties or conventional political ideology. . . . [E]very public official who has taken a public stance on the subject has endorsed the creation and use of DNA databases in the criminal justice system."¹¹

Beyond her claims about officials' public statements, she surveys a set of federal and state laws over the last few decades relevant to her project and finds a similar non-effect of Republican versus Democratic lawmakers. The Genetic Information Nondiscrimination Act¹² (GINA) was passed with bipartisan support, and states that have extended its protections have not had a discernible partisan pattern. A mix of conservative and liberal states have required health insurers to provide at least some coverage of genetic testing results. There are no discernible Republican versus Democrat divisions in terms of who supports forensic DNA biobanks at the federal level and which states have restrictions

8 *Id.* at 5–6.

9 *Id.* at 30.

10 *Id.* at 66.

11 *Id.*

12 42 U.S.C. § 2000ff.

reining them in. Using the example of a California proposition from 2004 on the issue, she makes the point that it is not that these things are not *political*—there is definitely political contestation—it is just that they are not *partisan*. Turning to partisanship in the courts, she makes the point that when it comes to Fourth Amendment issues with the collection and use of genetic materials, there has either been permissive consensus or disagreement involving mixed conservative and liberal jurists.

Chapters 4 and 5 delve deeper into the Enthusiastic versus Skeptical and the Hope versus Rejecting quadrants, respectively.

Chapter 4 describes enthusiasm over the human genome project and further mappings of the genome, reduced cost of genotyping, and emerging gene therapies. She also locates pockets of enthusiasm for the use of forensic DNA databases. The discussion is wide-ranging and includes attempts to estimate the likelihood of successful matching if unanalyzed sexual assault kits were run against these databases, attempts to estimate the deterrence effect of these databases, and robust support for exonerating the wrongly convicted using these technologies. The chapter then moves on to enthusiasm for “biogeographical ancestry” and discusses the immense (at least initial) market success of 23andMe and other genetic tests. Hochschild locates three very different sources of enthusiasm in these tests—providing “a person’s ancestry, a racial designation; . . . adjustments to medical diagnoses and medications”; and the linking of the three¹³—and highlights some of the key battles over the association of race and genetics in the decades since the human genome project, a topic I will return to below.

Turning to skeptics, when it comes to genetic testing and gene editing, the chapter suggests two very different kinds of skeptics: those who “are disillusioned by genomic science’s failure to live up to its early promises”¹⁴ and those who are concerned about “genomics’ excessive power.”¹⁵ The latter group she divides between those like Professor Michael Sandel who are concerned about these discoveries disfiguring the parent-child relationship and seeking to make the “case against perfection,”¹⁶ those with religious beliefs that counsel against (to use that hoary phrase) “playing G-d,” those concerned with slippery slopes toward a breakdown of social solidarity, and those who are concerned that access to genetic alterations will exacerbate existing wealth gaps, among others. As a long-time reader (and sometimes writer)¹⁷ in these areas, I felt the book tried to cover too much too quickly, and I very much wanted to understand how the polity breaks down amongst these different flavors of opposition.

13 HOCHSCHILD, *supra* note 2, at 93.

14 *Id.* at 100.

15 *Id.* at 101.

16 MICHAEL J. SANDEL, *THE CASE AGAINST PERFECTION: ETHICS IN THE AGE OF GENETIC ENGINEERING* (2007).

17 *E.g.*, I. Glenn Cohen, Symposium, *What (If Anything) Is Wrong with Human Enhancement? What (If Anything) Is Right with It?*, 49 *TULSA L. REV.* 645 (2014).

Turning to skeptics about criminal justice uses of genetics, she again tries to demarcate different strands of concern (many well represented in the legal literature): that forensic DNA usage is becoming increasingly common but is rife with database errors, human errors, and poor training on using the relevant technologies; the use of familial searches in particular and its disproportionate impact on certain racial or ethnic groups for whom encounters with the police may already be more fraught; and general privacy concerns that “we are close to the tipping point where no one can opt out of genetically driven identification.”¹⁸ Skeptics of 23andMe and other tests express the concern that the ancestry results being returned are junk, or trivial at best; the concern that there are major risks in “associating conventionally understood racial or ethnic groups with the purported science of genetic inheritance risks”;¹⁹ and particular concerns about the use of these test results as a criterion for tribal membership of Native groups.

Chapter 5 turns to the “Hope” and “Rejection” quadrants; members of both agree that genetic influence is minimal but have technologically optimistic versus pessimistic views about how the science around that influence will play out. In the medical and scientific research space, Hochschild identifies three primary forms that the Hopeful take: the adoption of “both/and” strategies that acknowledge the value of learning more about genetic contributions to health but always alongside the cultural, behavioral, institutional, and socioeconomic contributors; research on epigenetic processes, which she defines as “the process by which behaviors or the environment (within or outside the body) affect expression or silencing of particular genes, perhaps even across generations”;²⁰ and a view that “genetics does not influence most phenotypes—something else is the causal driver.”²¹ Here the book does a great job of briefly exploring how hope attitudes manifest differently on the left and right. She then applies the same three variations to the role of genetics in criminal justice, while acknowledging that this is one of the most contested spaces with those who are hopeful, noting that some “Hopefuls perceive any analysis that includes genetic influence in explaining unlawful behavior—even if it is part of a list and especially if it suggests intervention—to fall somewhere between discriminatory and purely evil.”²² In the biogeographical ancestry context, she notes that the “clearest manifestation of Hope in this arena is the goal of turning DNA ancestry testing into a lever for destroying the whole idea of fixed racial categories.”²³

Turning to the rejection quadrant, Hochschild finds those who deem genomic uses wasteful, risky, or normatively repugnant. In the biomedical research and science space,

18 HOCHSCHILD, *supra* note 2, at 108.

19 *Id.*

20 *Id.* at 36.

21 *Id.* at 116.

22 *Id.* at 120–21.

23 *Id.* at 122.

these rejecters have quite different concerns—harm to animals in experiments that will not yield much, producing self-fulfilling prophecies hampering recovery for those with some mental illnesses, and that “problems caused by social hierarchy are interpreted as evidence of a race, sex, or social class’s genetic weakness or distinctiveness.”²⁴ In the criminal justice sphere, the concerns mix left- and right-leaning objections, such as reducing the role of personal responsibility, stereotyping traits or behaviors, genetic profiling and increased surveillance, and some worrisome aspects of treating crime control as a public health strategy. On biogeographical ancestry, she summarizes the rejecter position as “Rejecters have a simple view of DNA ancestry testing: the tests mislead customers because there is little to no genetic influence on ‘race.’”²⁵ Taking chapters 4 and 5 as a whole, they represent the only place where I found the organization of the book a bit confusing and in some ways undermining the value of the contributions by smushing too much together.²⁶

Chapter 6, a truly outstanding piece of work, attempts to characterize where “experts” fall in Hochschild’s four-quadrant framework using data from three separate sources: “a coded database of almost 2,000 genomics-related articles by legal scholars and social scientists in thirteen disciplines; two online, open-ended surveys of several hundred social science experts who responded to questions organized around the basic framework; and almost sixty in-person, open-ended interviews with genomics experts, many in positions of public authority.”²⁷ She offers a rich interrogation of the data while appropriately noting limits. To me the most interesting (albeit perhaps navel-gazing) part of the analysis was her attempt to map social science disciplines by quadrant. Biological anthropology, psychology, criminology, economics, and political science fall clearly in the Enthusiast quadrant (with STS leaning that way, though in a more complex way); no discipline falls in the Hope quadrant; cultural anthropology is the only discipline firmly in the Skeptic quadrant (though she writes that “[e]thics, sociology, and history or philosophy of science are too internally split to categorize safely, though each discipline shows strains of Skepticism”)²⁸; while ethnic and racial studies, cultural studies, and “perhaps law” end up in the Rejection quadrant.²⁹

In trying to explain the pattern, she surfaces some interesting hypotheses. “The most methodologically individualist disciplines” embody Enthusiasm, she notes, while “[t]he disciplines most oriented toward collective activity . . . evince the greatest skepticism about the value of genetics.”³⁰ Despite chapter 3’s assertion of nonpartisanship in electoral

24 *Id.* at 125.

25 *Id.* at 126.

26 It might have been cleaner but perhaps less economic to orient each of the two chapters around one of the two scales rather than having each chapter looking at two quadrants apiece.

27 *Id.* at 130.

28 *Id.* at 138.

29 *Id.* at 137.

30 *Id.* at 138.

politics and public opinion, Hochschild identifies that among academics, the quadrants of her framework assume a political valence: leftist and liberal disciplines house “Rejecters or at least Skeptics, . . . compared with disciplines whose members are more conservative, Republican, or uninvolved in left-wing causes. In short, although we do not see partisanship in laws, judicial rulings, NIH budgets, or public officials’ positions, we can begin to discern among academics an ideological or normative distinction with regard to the quadrants of the basic framework.”³¹

Her expert interview data set generates some very interesting quotes but perhaps less clarity in terms of take-homes; this seems more to reflect the views of the experts themselves, and one is reminded of Aristotle’s caution that one should “not look for the same degree of exactness in all areas, but the degree that fits the subject-matter in each area and is proper to the investigation.”³² Most of the experts interviewed seem to think that genomic politics was not one that obeyed more typical Republican-Democrat or even left-right dichotomies; that the important disagreements are *within* ideological camps; that this is not an area for purists;³³ and that genomics produced strange bedfellows politically. The experts thought the greatest value from genomic science would come in medical advances for certain disorders and an era of personalization of medicine by genetics; that it might, ironically, forefront the social determinants of health and behavioral factors; and that it has benefits for animal and plant biology, and some suggested it might increase tolerance and reduce bias. The experts were most concerned about premature translation of genomic science into the clinic, exploitation of enthusiasm by Big Pharma and the creation of a genetic underclass, and genetic discrimination.

Chapter 7, one of the most revelatory, turns from experts to the general public’s attitude, primarily by using survey data from surveys Hochschild fielded in 2011 and 2017. The first finding, which she acknowledges is unsurprising, is that in both surveys 70% of respondents “had heard or read ‘not very much’ or ‘nothing’ about ‘issues having to do with genes or genetics,’” with fewer than 10% having heard “a great deal” or “quite a lot.”³⁴ Looking at her examples of interest, in 2011 only 6% reported that they or a family member had taken a genetic test, and only 2% an ancestry test, and there was hardly any knowledge of medical or scientific biobanks, but “in both years, about half had at least heard of forensic databases (which the survey had defined).”³⁵ The surveys also had three

31 *Id.* at 139.

32 ARISTOTLE, *NICOMACHEAN ETHICS* 18 (Terence Irwin trans., Hackett Publ’g Co. 1985).

33 One quote that resonated with me was “the right should support genomic capitalism—but can’t publicly because of reproductive applications.” HOCHSCHILD, *supra* note 2, at 143.

34 *Id.* at 155.

35 *Id.* at 155–56. Interestingly, on this question, she notes that “[i]n 2011, Blacks were more likely than non-Blacks, people with less than a high school education were more likely than those with more education, and the poor were more likely than all other income groups to report ‘a lot’ of knowledge about forensic biobanks. I find similar results with regard to race, but not education or income, in 2017.” *Id.* at 155.

knowledge-testing questions about genetics itself, and while results improve somewhat between the two years, they vary a lot, and she characterizes the overall result as “broad but shallow knowledge.”³⁶ The surveys also sought to measure U.S. respondents’ views about genetic inheritance of eight phenotypes as compared to their having environmental or lifestyle causes. She finds:

Almost none perceive the flu, and few perceive aggression, to be primarily genetic. Conversely, substantial majorities (appropriately) agree that genetics is the main cause of sickle cell anemia, cystic fibrosis, and eye color. The sensitive issues of sexual orientation, intelligence, and heart disease comprise a third cluster, with about a fifth of respondents in each case focusing on genetics. Note that attributions to aggression, intelligence, and—oddly—heart disease are especially cautious, with three-fifths or more of respondents choosing the indeterminate “mixture.” These patterns change very little across the six years, except for a slight but uniform decrease in genetic attribution.³⁷

Attitudes are somewhat mediated by knowledge. Those who got all three of the knowledge questions incorrect make few distinctions as to the heritability of the eight traits. The most knowledgeable “were more likely than other respondents to choose a mix of genetic and nongenetic causes for heart disease, intelligence, and aggression, but less likely to choose a mixture of causes for cystic fibrosis, sickle cell disease, flu, and eye color.”³⁸ Interestingly, the most and least knowledgeable ended up choosing the middle ground on the heritability of being gay and lesbian.

She then considers attitudes of her respondents to her example uses by asking them if they involve more good than harm (which she characterizes as support/optimism), more harm than good (which she characterizes as oppose/pessimism), or equal amounts of each. In general, she finds U.S. respondents support more than oppose, but the degree differs by technology: there was ten times as much support as opposition for forensic DNA databases but only twice as much for germline gene editing—and everything else was in between. Overall, about half of respondents chose the “equal amounts” answers, though it is mediated by knowledge, in that “the more they know about genetics, the less likely they are to choose the middle ground between technology optimism and pessimism,” and the more they know, the “more likely they are to be technology optimists. . . . [F]or each question, there is a 25 to 45 percentage point difference in risk acceptance between those giving no correct answers on the genetics knowledge scale and those giving three correct answers.”³⁹ When she delves into this data, she helpfully puts it this way: “Although

36 *Id.* at 157.

37 *Id.* at 158.

38 *Id.* at 161.

39 *Id.* at 164.

knowledge is not necessary in order to be in the Enthusiasm quadrant (half of those who would have scored a 0 on the genetics knowledge test are Enthusiasts), it is close to sufficient (nine-tenths of those who would have aced the test are in that quadrant).⁴⁰ This was, of course, not designed as a causal test, but it does suggest that for those seeking to promote acceptance, more education of the public is key.

Hochschild then maps respondents onto her four quadrants. She finds that “genetic influence and optimism are linked: the more traits or diseases that a respondent sees as genetically caused, the more likely he or she is to be optimistic about genomics’ societal benefits.”⁴¹ Americans are overall very optimistic about these technologies: In 2011, 64% of respondents were Enthusiasts, 25% Hopeful, 6% Skeptics, and 5% Rejecters. In 2017, 56% were Enthusiasts, 30% Hopeful, 6% Skeptics, and 8% Rejecters. She is cautious about how to interpret the change from 2011 to 2017, saying only that rejecters “may be growing” but notes that their “small numbers belie their analytic and political importance.”⁴² While she does find some correlation between attitudes and demographic characteristics, it is fairly “weak tea,” and instead her major takeaway is “that demographic characteristics do *not* sharply differentiate among the quadrants,” and in particular whatever “is nudging people into one or another stance toward genomics, it is not their partisan identity” (i.e., party affiliation).⁴³ She contrasts her results with Dan Kahan’s on climate change,⁴⁴ saying that “the higher their scientific intelligence score, the further apart liberal Democrats and conservative Republicans move in beliefs about climate change’s causes”⁴⁵ and finding that Democrats and Republicans track one another in all four quadrants as their genetic knowledge increases.

Her analysis of the role of race is worth quoting at greater length since it is something I come back to below:

[R]ace matters about as little as partisan identification does—another surprising feature of genomic politics. It is not quite irrelevant: in 2017 (though not in 2011), Blacks are a bit less likely than Whites and Hispanics to be Enthusiasts and a bit more likely to be Skeptics at every level of genetics knowledge. There may be a trend here—knowledgeable Blacks are slightly less Enthusiastic in 2017 than their counterparts were six years earlier.⁴⁶

40 *Id.* at 173.

41 *Id.* at 164–65.

42 *Id.* at 166.

43 *Id.* at 170.

44 Dan M. Kahan, *Climate-Science Communication and the Measurement Problem*, 36 *ADVANCES POL. PSYCH.* 1 (2015); Dan Kahan, *On the Sources of Ordinary Science Knowledge and Extraordinary Science Ignorance*, in *THE OXFORD HANDBOOK ON THE SCIENCE OF SCIENCE COMMUNICATION* 35 (Kathleen Hall Jamieson et al. eds., 2017).

45 HOCHSCHILD, *supra* note 2, at 173.

46 *Id.* at 171–72.

The chapter then does a deep dive into free-text comments by participants in the survey. I cannot do this part of the book justice, so instead I will just pick out a few interesting results. First, she finds that the optimism/pessimism-about-technology scale “divide[s] respondents much more sharply than whether they perceive genetic influence to be a primary, secondary, or nonexistent explanation for human traits and behaviors.”⁴⁷ When it comes to medical biobanks, Enthusiasts and Hopefuls both root their support for medical biobanks in the desire to help others. Skeptics emphasize privacy and mistrust of government or other organizations in their reasoning. Interestingly, “Rejecters evince no strong concern about privacy or mistrust in 2011, and are only moderately concerned in 2017; their distinguishing characteristic is a global, terse, indeterminate refusal to engage.”⁴⁸ Regarding forensic DNA databases, Enthusiasts focus on “justice” generally, exonerating themselves in the future, exonerating the innocent, and showing some general optimism about genetics’ value untethered to criminal justice. Hopefuls are very similar. Skeptics have responses similar to those about medical biobanks and “express mistrust and concerns about privacy, corruption, and governmental overreach.”⁴⁹ She characterizes Rejecters, as in the medical biobank area, as using “vague, terse, or summary statements about their unwillingness to contribute to a forensic DNA database” and notes that half of their answers were “some version of ‘no,’ ‘not my job,’ ‘not interested,’ ‘no time,’ or ‘I’ve told you I have better things to do.’”⁵⁰ Partisan positions are again largely absent, in that in “12,000 opportunities to present views of biobanking in Americans’ own words, the terms ‘Democrat,’ ‘Democratic,’ ‘Republican,’ and ‘conservative’ are completely absent.”⁵¹ Finally, to connect it to what I discuss below, it is worth quoting more fully the role of race in the comments:

Nor do GKAP [survey] respondents echo advocates’ and experts’ concerns about the invidious impact of genomics on particular racial groups or sexes. Across the 12,000 opportunities for comment, “Black” appears six times, “African” ten times, and any variant on “Latin,” “Asian,” or “Mexican” once each. A few refer to their race to justify refusal to contribute, but most of these (few) references point in the opposite direction—to possible benefits of DNA research for people of different races, or as a counter to racial discrimination in the criminal justice arena. Variants of “race” or “racism” appear about thirty times in the 12,000 responses, mainly for the same two optimistic reasons. A few would condition their contribution on an assurance that a

47 *Id.* at 175.

48 *Id.* at 181.

49 *Id.* at 183.

50 *Id.* at 184.

51 *Id.* The word “liberal” appears only once, in a comment on gun control.

forensic DNA database would not be used in any racially biased way, a few praise the use of DNA for exoneration and hint at a racial inflection, and a few condemn racism outright. One seems to suggest that DNA testing will show that blacks commit more crimes. Several people use “White,” but always to describe themselves as possibly useful controls for data analyses in the medical arena. About twenty people seek to help “the human race.”⁵²

Hochschild wisely notes that this “mismatch between the public’s lack of focus on group identity (at least as expressed in a survey) and the apprehensions or commitments of experts and advocates does not, of course, mean that the apprehensions are wrong,” but it does drive home her “point that genomics, although deeply contentious, is not (yet?) politicized in the United States along predictable lines, unlike so many scientific arenas.”⁵³

Chapter 8, entitled “Who Should Govern?,” examines the opinion of experts and members of the public on governance in Hochschild’s example areas. She does a good job of summarizing the takeaway at the beginning of the chapter:

To preview my findings about Americans’ views on who should govern: the most accurate answer at this point is “no one”—or possibly “everyone” or doctors. That is, social science experts, interviewees in the policy arena, and the general public collectively offer nothing remotely resembling a consensus in response to [the] query about who should ultimately decide. Political partisanship and race are associated with some differences in views, but residence in the four quadrants continues to show much stronger variation. The most deeply rooted societal uses of genomics, in particular forensic DNA databases, enjoy the strongest support, while the newest possibilities—somatic and especially prenatal gene editing—engender widely varying reactions. But I see no emerging central driving principle; governance may turn out to be as difficult as it is important.⁵⁴

The snippets of expert interviews will often ring familiar to anyone who has sat through workshops (academic or governmental) on genomics with social science and legal experts. Indeed, the way in which Hochschild organizes their comments by subtopic with sample pro

52 *Id.* at 184–85. “‘Sex’ appears once, in a comment that DNA evidence can help to solve sex crimes; ‘gender’ appears once and ‘female’ not at all. ‘Male’ appears three times—once in reference to male pattern baldness, and twice as a reason for a Black man not to contribute to a forensic DNA database. There is one reference to religion.” *Id.* at 185.

53 *Id.*

54 *Id.* at 187.

and con statements by experts will remind legal academics of Llewellyn's famous dueling canons⁵⁵ or perhaps Duncan Kennedy's notion of "argument bites."⁵⁶ Some of the experts, to me quite sensibly, suggest what I would characterize as distributed governance, wherein governance powers are spread among several different actors of very different institutional type,⁵⁷ but there is nothing that approaches consensus on what that would look like.

Returning to a comparison the book frequently makes to nuclear power when it emerged, Hochschild notes that genomics does not face the additional challenge that "the institutions for creating and managing the technology emerging from the science had to be invented at the same time that the power was discovered and deployed."⁵⁸ Fair enough, but the flip side is that there are now, with genomics, many more well-funded and well-organized stakeholders and institutions vying for a piece of the governance pie, and this has dimmed the hopes of fundamental governmental action; in most of the domains Hochschild covers (gene editing being a notable exception), this has defaulted us into more *laissez-faire* governance by markets.

Her interviews with non-social science experts (this group is pretty heterogenous, including among other things Hill staffers with some genetics training) show that they too are "frequently at a loss about who should govern," but she does find one point of consensus: in "contrast to the social science experts, everyone whom I interviewed—except physicians themselves—argues that doctors should not be responsible for managing genomics."⁵⁹ Politicians also seem to be viewed particularly unfavorably: "Interviewees are usually sympathetic or at least polite regarding physicians' genetic incompetence. Not so for elected officials—not even the political actors or staff members whom I interviewed have anything good to say about government leaders' management of genomics."⁶⁰ These two sections are fun reads for an academic in the area, but I do wonder whether the *shrug* result would have generated some clearer trend lines had Hochschild done more to break out the questions of governance *by* her example areas. That is, I suspect that on some of these issues (e.g., forensic DNA databanks), there may have been more consensus on governance choices than on the broader landscape of genomic science.

Toward the end of this chapter, Hochschild does a deeper dive into splitting her survey data on race and political party bases. The headline finding of little difference remains, but

55 Karl N. Llewellyn, *Remarks on the Theory of Appellate Decision and the Rules or Canons About How Statutes Are to Be Construed*, 3 VAND. L. REV. 395 (1950).

56 Duncan Kennedy, *A Semiotics of Legal Argument*, 42 SYRACUSE L. REV. 75 (1991).

57 E.g., Scott Burris et al., *Changes in Governance: A Cross-Disciplinary Review of Current Scholarship*, 41 AKRON L. REV. 1, 12–13 (2008).

58 HOCHSCHILD, *supra* note 2, at 195.

59 *Id.* at 198.

60 *Id.*

she does note that between her 2011 and 2017 survey data, “Whites’ support for funding and regulation, and trust in scientists and government officials, all increase a little from 2011 to 2017, while Black support and trust decrease a little” while also noting that given these small-magnitude changes, a “substantial racial divide, if it develops, is for the future,” not the present.⁶¹ I return to these racial differences in part II.

The chapter closes with a more direct discussion of germline and somatic gene editing, a topic that feels a bit neglected overall in the book, in depth of treatment, than the rest of her examples, likely in part because the infamous He Jiankui germline editing experiments revelation in November 2018 and the attention it has since drawn is something she could not capture in her earlier rounds of surveys and interviews.⁶² Her second survey does address both forms of gene editing directly, and she finds that “optimism about somatic gene therapy is greater than for germline therapy; concern about risks of the latter is substantial, and only one question [that as to germline editing we should ‘[d]o all possible to prevent diseases from being passed down’] receives majority support.”⁶³ Turning to somatic gene therapy specifically, she finds that “[b]etween one-fifth and three-fifths of GKAP 2 [survey] respondents endorse somatic gene therapy, depending on what considerations are brought to their attention,” with the important nuance that “the more general the question about somatic therapy, the more support it receives,” and “in the face of particular concerns (for example, about informed consent or impact on people with disabilities), optimism plummets.”⁶⁴

We do see some small indications of partisan and racial divides here:

Democrats are slightly but consistently more favorable or less opposed to both forms of gene editing than are Republicans. . . . Perhaps paradoxically given that they are disproportionately Democratic, African Americans are more likely to see dangers from gene editing than are Whites, and are less likely to agree that good overrides harm in somatic gene therapy. Once again, differences (small so far) between African Americans and Democrats intimate moral and political cross-currents that could, if gene editing becomes a salient societal debate, complicate the Democratic Party’s decades-long coalition. To put the point a different way, we see a hint of an unusual agreement around managing genomic technologies between African Americans and Republicans.⁶⁵

61 *Id.* at 205.

62 *E.g.*, HENRY T. GREELY, *CRISPR PEOPLE* (2021).

63 HOCHSCHILD, *supra* note 2, at 209 tbl.8.1.

64 *Id.* at 209.

65 *Id.*

Surprisingly, given what we hear in the media and among some academics regarding concerns about “playing G-d” in these areas, religion or religiosity plays almost no role in attitudes toward gene editing or any of the technological case studies in the book.

For germline gene editing, the current rule in the United States and indeed in most of the world is prohibitory.⁶⁶ Hochschild’s book shows that it will be very hard to build a coalition to change this. While there is the usual drop-off in support for each case study from Enthusiasm to Hope to Skepticism to Rejection, with gene editing, “differences in endorsement across the quadrants get smaller and eventually disappear as even Enthusiasts come to focus on issues of environmental causation, disability, health risk, consent, and economic inequality.”⁶⁷ Moreover, “up to two-fifths of Skeptics and Rejecters ‘strongly’ oppose gene therapy, especially in the germline.”⁶⁸ When survey respondents were asked whom they trust to make governance decisions as to gene editing, the answer is largely none of the above:

[B]arely a seventh of respondents fully trust even medical professionals, or patients and their families, to make policy decisions about somatic gene therapy. Full trust declines from there across all other actors and both types of therapy, to the vanishing point of 1 percent for public officials and community forums. Over half of respondents have no faith in policymakers regarding germline gene therapy; two-fifths say the same regarding the more imminent somatic therapy.⁶⁹

Where is all this going? The chapter ends with Hochschild sketching the possibilities but (appropriately for a very careful social scientist) suggesting the data cannot answer the question. First, familiarity with the technology (she suggests IVF and, amusingly, coffee as comparators) and time will pave the way to acceptance. Second, the technology may gain

66 *E.g.*, JUDITH DAAR, I. GLENN COHEN, SEEMA MOHAPATRA & SONIA SUTER, *REPRODUCTIVE TECHNOLOGIES AND THE LAW* 1022–28 (3rd ed. 2022).

67 HOCHSCHILD, *supra* note 2, at 213.

68 *Id.*

69 *Id.* at 214. As she quips, “we might not be surprised that at least three-quarters express little or no confidence in health sector businesses or entrepreneurs [including pharma]—but even spiritual or religious leaders and (especially) fellow members of the community receive almost the same rebuff. Democracy, capitalism, and faith—none receives anything close to a vote of confidence.” *Id.* at 215. Indeed, the stepwise pattern between the quadrants that is so familiar in the rest of the book seems to largely disappear in gene editing. The stepwise “configuration holds only for medical professionals and perhaps for patients (or individuals) and their families. Beyond that, the pattern disintegrates; neither Enthusiasts nor the Hopeful express much support for any of the other four proposed policymakers for gene editing. In rebuffing all plausible governing entities, they have finally joined Skeptics and Rejecters.” *Id.* at 216.

institutional support only after significant public support or support by officials, which suggests that “some genomics technologies (personalized genomic therapies) will become widely established, others (prenatal gene testing and therapy) will remain objects of contention along lines of race, religion, or degrees of risk acceptance, and still others (BiDiI) will disappear.”⁷⁰ Third, it is possible that a technological development will lead to both institutionalized and public support (rather than one flowing to the other); she suggests that the technical developments in forensic DNA databases and the perceptions of “wins” in exoneration and solving cold cases may have had this effect.

The final chapter, “Governing Genomics,” is quite short and serves mostly as an epilogue. Hochschild predicts that “as genomics moves further into shaping American society, contestation will become more visible, politically volatile, and morally urgent.”⁷¹ In some ways, that prediction is in tension with the rest of the book, which shows a surprisingly uncontested space, politically speaking.

She discusses four possible forms this contestation might take. The first is rational deliberation, exemplified by the processes of the National Academy of Science and the UK’s Nuffield Council on Bioethics as well as the famous 1975 Asilomar Conference on recombinant DNA, with a “mix of expert self-governance and public-private regulatory cooperation.”⁷² A second pathway is disaggregated and multi-site governance, where patient advocacy promotes particular kinds of research, the Innocence Project presses forward on forensic DNA databanks, and so forth. What will matter are “policy entrepreneurs who devote great energy and skill to seeking or creating windows of opportunity to attain their goal for genomics technology.”⁷³ Third, some unforeseen and dramatic event will set off a highly symbolic, very value-laden controversy that leads to a decisive politicization of an area of genomics. She draws an analogy to the politicization of death and dying issues around the case of Terry Schiavo.⁷⁴ One puzzle for this pathway is why the aforementioned He Jiankui gene editing experiment revelations have *not* played this role, on her account. The final pathway she characterizes as “none of the above”; that is, a “very light, even inconsistent governance touch is what many scientists and individuals prefer” and, she argues, has characterized much of the U.S. approach at the moment.⁷⁵ She draws the contrast between the relatively unregulated status of in vitro fertilization (IVF) in the

70 *Id.* at 217.

71 *Id.* at 222.

72 *Id.* at 223.

73 *Id.*

74 See, e.g., I. Glenn Cohen, *Negotiating Death: ADR and End of Life Decision-Making*, 9 HARV. NEGOT. L. REV. 253, 254 (2004) (discussing the case *in media res*).

75 HOCHSCHILD, *supra* note 2, at 225.

United States and its status in many parts of Europe⁷⁶ and suggests that this could be the future for genomic technologies more generally.

The closing parts of the book offer some last thoughts on a variety of threads: Is it right to treat genomics, in the political sphere, as a single unitary thing? Hochschild muses that between her major examples there is a “paradox” in “that the relatively ignorant public may sense a broader unity of transformative innovation than do informed advocates, policymakers, or private sector actors,” but she sides with the public.⁷⁷ She reflects that the technological optimist-pessimist dichotomy is much more of a zero-sum conflict (and more important to attitudes) than the dimension that looks at the importance of genetic influence, where those who disagree can more easily cooperate.

She offers some tentative mappings of quadrants to governance preferences: Enthusiasts prefer “permissionless innovation,” self-governance by scientists, and engagement but not decision-making by the public, advocacy organizations, and even governmental officials.⁷⁸ By contrast, “Hope is most closely aligned with the sideways strategy of advocacy and organizational entrepreneurialism; the rationalist top-down strategy will seem too elitist, confining, and scientistic” and the Hopeful prefer to let “a hundred flowers bloom.”⁷⁹ Skeptics are drawn to non-maleficence as a guiding principle (do no harm) and want governance to restrain or slow down well-meaning scientists pushing innovation; they like precautionary strategies and want to empower more local decision-making by community members (she mentions gene drives as a good example of this strategy at play). Rejecters cry “a pox on all your houses,” do not have much in the way of “positive goals for or preferred strategies of governance; they will mainly seek to protect privacy, autonomy, rights, and freedom of action,” and in many instances “will simply check out.”⁸⁰

In the book’s last pages, Hochschild reflects on where, at the end of this decade-long study, she finds herself in these quadrants: still an Enthusiast, but more reflective about what would push her to become a Skeptic (she cannot see herself moving to Hope or Rejection), and concluding that it is primarily the risk that “genomics becomes or is perceived to be a tool for deepening racial or class disparity,” with her worries most pronounced as to forensic DNA databases.⁸¹

76 For more on what is distinctive, comparatively speaking, about the United States in these areas and the legal structure that supports it, see I. Glenn Cohen, *The Right(s) to Procreate and Assisted Reproductive Technologies in the United States*, in *THE OXFORD HANDBOOK OF COMPARATIVE HEALTH LAW* 1009 (Tamara K. Hervey & David Orentlicher eds., 2021).

77 HOCHSCHILD, *supra* note 2, at 229.

78 *Id.* at 232.

79 *Id.*

80 *Id.*

81 *Id.* at 234.

II. THREE IMPORTANT FURTHER CONVERSATIONS

This is an outstanding book, and in this part, I seek to take three conversations that I see implicit in the book a bit further.

A. Do we need an “error theory” for lack of politicization?

This is a book that in some sense begs for an error theory. In meta-ethics, the idea of an “error theory” is most associated with J.L. Mackie, who argued that while “most people in making moral judgments implicitly claim . . . to be pointing to something objectively prescriptive, these claims are all false.”⁸² Such “Error Theories are familiar in many areas of philosophical inquiry, from ethics to the philosophy of mathematics,” and in “all cases, they are motivated by the need to reconcile some part of our thinking and discourse with what we take to be well-established theories about what there is.”⁸³ I am using the term more loosely here. The top-level findings of the book—that there are no strong political or even racial differences in attitudes toward genomic politics, but most people intuitively *believe* there are—raise the question of: why the error?

Here are some possibilities. The first has to do with the major examples Hochschild has chosen to stand in for genomic politics in general. If she had only looked at other examples, the argument goes, she would have found the partisan political differences we all know are there. There is something to this. In particular, her construction of genomics in the book seems to largely keep abortion and the politics of abortion at arm’s length.⁸⁴ We might look at the personhood bills we have repeatedly seen in several U.S. states,⁸⁵ the back-and-forth between administrations of different parties on funding of science involving stem cell derivation,⁸⁶ and the attempt to alter the current appropriations

82 J.L. MACKIE, *ETHICS: INVENTING RIGHT AND WRONG* 35 (1977).

83 Brian Leiter, *Explaining Theoretical Disagreement*, 76 U. CHI. L. REV. 1215, 1225 (2009).

84 Abortion gets a single entry in the index referring to a discussion in the book’s opening pages about prenatal testing, abortion, Down syndrome, and “severe abnormalities.” HOCHSCHILD, *supra* note 2, at 15–16. She briefly returns to the issue in a paragraph later in the book discussing her interviewee comments:

On the left, prenatal testing with its implied possibility of pregnancy termination is fraught: “Pro-choice groups see any effort to control the choice to abort as ultimately about controlling abortion. Any distinction feels like a loss. But the wave of sex selection is nervous-making. [This is a] hard issue for feminists—sex selection is troubling, but government restrictions on abortion are also troubling.” Complicating matters further, “professional societies don’t want [legislation] to close the door on gender selection because they want to leave the door open for [freedom of choice regarding] X-linked diseases.

Id. at 196–97.

85 See, e.g., Jonathan F. Will, I. Glenn Cohen & Eli Y. Adashi, *Personhood Seeking New Life with Republican Control*, 93 IND. L.J. 499, 500 (2018).

86 E.g., *Sherley v. Sebelius*, 644 F.3d 388, 391–92 (D.C. Cir. 2011) (discussing changes from Bush to Obama policy).

rider that prevents the FDA from considering mitochondrial replacement techniques (also sometimes referred to by the misnomer “three-parent IVF”),⁸⁷ as examples where questions of abortion and embryo destruction are intertwined with genomics and very much battle-fronts of political contestation.⁸⁸ While Hochschild at some points does touch on the fears of disability rights groups regarding the use of genetic testing that might eliminate their communities in the future, we might point to the recent U.S. Supreme Court opinions regarding the constitutionality of bans on sex-selective and disability-selective abortion (so-called reason bans) and the states that passed them as, again, examples of deep political contestation.⁸⁹

To be fair, Hochschild is very explicit at the beginning and end of the book that the borders of what counts as genomics for the book’s purpose are contestable, so I think of it more as a friendly amendment to her thesis to add the clarification that **results may vary when one approaches abortion*. Even here, one might think it noteworthy that the politics of abortion have *not* crept further into these domains. In the case of gene editing, though, I do wonder whether this is in part because many of the same forces that would raise objections to embryo destruction en masse instead have a different but still culturally consistent line of attack through the “playing G-d” objection;⁹⁰ this is one they can deploy without alienating those who do not want to restrict women’s abortion choices. Even with these abortion-adjacent examples excluded, her core finding, a lack of partisan politicization, remains powerful, especially as to forensic DNA databases, where one might expect the usual left-right divides on policing and police powers to be more prominent.

A second response to the “error theory” pushback is that no, her data tell us we ought to see politically exactly what we *do* see. Political actors respond not just to viewpoints but to the intensity of those preferences, which translates into political activation. While her survey is not designed in particular to zero in on preference intensity, it does not suggest

87 See I. Glenn Cohen et al., *The Regulation of Mitochondrial Replacement Techniques Around the World*, 21 ANN. REV. GENOMICS & HUM. GENETICS 565, 569 (2020).

88 In 2018, with Adashi and Spivak, I tried to collect and categorize all the moratoria we had seen passed or attempted to be passed by the federal and local governments in the reproductive science sphere. See generally Russell A. Spivak, Glenn Cohen, Eli Y. Adashi, *Moratoria and Innovation in the Reproductive Sciences: Of Pretext, Permanence, Transparency, and Timelimits*, 14 J. HEALTH & BIOMEDICAL L. 5, 7 (2018).

89 See *Box v. Planned Parenthood of Ind. & Ky., Inc.*, 139 S. Ct. 1780, 1792 (2019) (Thomas, J., concurring). Justice Thomas connected abortion to the history of eugenics movements, a connection that has been criticized, to be sure. See, e.g., Melissa Murray, *Race-ing Roe: Reproductive Justice, Racial Justice, and the Battle for Roe v. Wade*, 134 HARV. L. REV. 2025 (2021).

90 The embryo destruction, what I have previously called “embryo farming,” is even more pronounced in next-generation technologies on the horizon such as in vitro gametogenesis, where sperm or eggs can be derived from adult cells, giving reproducers a potentially biologically unlimited number of embryos to choose from. See, e.g., I. Glenn Cohen et al., *Disruptive Reproductive Technologies*, 9 SCI. TRANSLATIONAL MED. eaag2959 (2017); HENRY T. GREELY, *THE END OF SEX AND THE FUTURE OF HUMAN REPRODUCTION* (2018).

strong support or intensity for action by politicians in her areas of interest. As discussed above, in chapter 7 she finds that in both 2011 and 2017, her survey respondents as to all technologies have many more Enthusiasts and Hopefuls than Skeptics and Rejecters (the quadrants break down in 2011 in that order to 64%–25%–6%–5% and in 2017 to 56%–30%–6%–8%).⁹¹ What is more, she finds that demographic characteristics do not really differentiate these quadrants, and party affiliation is not doing the sorting.⁹² When a politician considers whether to make restricting a genetic technology one of their signature issues, why would they choose to spend their energy on it if at best 14% of their constituency is opposed to it? Moreover, as she suggests, many of the comments by the Rejecters suggest they have little in the way of programmatic goals and “will simply check out,”⁹³ so they are hardly a constituency to cater to in building one’s political future.

One might find further confirmation that the politics is working just as it ought to in her discussion of germline gene editing: the example that has the least support, most opposition, and clearest (if not all that impressive) partisan and racial divisions is also the one where we have an FDA appropriations rider that essentially prohibits germline gene editing in the United States.⁹⁴ Furthermore, this is the place where the interventions of the experts (such as the U.S. National Academies of Sciences and Medicine) to suggest that a limited regulatory pathway be considered for a very narrow form of heritable gene editing⁹⁵ has thus far produced no major legislative or executive changes. On this interpretation, we are getting a political system that is responsive in an exemplary way to the opinions of Americans on these issues.

But to use Kenneth Koch’s lyrical phrase, “one train may hide another.”⁹⁶ It is true that the political landscape reflects public opinion. But why is public opinion so “chill” about these technologies, whereas the experts, as Hochschild notes, are much more worried? In particular, given the myriad of ways in which genomic politics intersects with the equality of citizens, why does a political system that elsewhere has so many leaders focused on equality nonetheless remain fairly silent on genomic politics? Where are the Bernie Sanderses, Elizabeth Warrens, and Alexandria Ocasio-Cortezes of genomics? As I suggest in the next section, genomics may be more complicated than taxation or wealth in this respect.

B. Genomics, equality, and distribution

Hochschild’s book centers on two scales that generate her four quadrants. In thinking about the relationship between genomic technologies and equality, I believe it is useful to

91 HOCHSCHILD, *supra* note 2, at 166.

92 *Id.* at 170.

93 *Id.* at 232.

94 *E.g.*, Cohen et al., *supra* note 87, at 659.

95 *See generally* NAT’L ACAD. OF SCIS., *supra* note 5.

96 KENNETH KOCH, *One Train May Hide Another*, in *ONE TRAIN* 3, 3–4 (1994).

Table 1. Mapping Genomics and Equality Effect

	Equality-Promoting	Equality-Reducing
In Genetics		
In Social Structure		

introduce a different two-by-two, as illustrated in Table 1. One is directional: a technology could either promote or reduce equality.⁹⁷ The other is the source of the inequality—the inequality that could be furthered or reduced could be in people’s genetics themselves or in a social structure upon which the genomic technology will have some effect.⁹⁸ To be sure, the latter is a bit more “yes, and” than “yes, but,” and we should think of it as more of a center of gravity than exclusionary.

This way of structuring things lets us see something new about Hochschild’s examples. When people debate whether forensic DNA databases promote or reduce equality, they are primarily debating the effects of a technology that uses genomics on the social structure. Compare the following statements one might hear in a good-faith debate about the building

97 Equality is itself, of course, a tricky concept. While I will speak about “equality” in this section since that is the way Hochschild frames it, as do most participants in this debate, it is useful to recall the distinction between egalitarians and prioritarians in ethics. Prioritarians do “not give equal weight to equal benefits, whoever receives them,” but instead give more weight to “benefits to the worse off.” Derek Parfit, *Lindley Lecture at the University of Kansas: Equality or Priority?* (Nov. 21, 1999), reprinted in 10 *RATIO* 202, 213 (Dec. 1997). Rawls’s difference principle is a good example, in that it holds that inequalities in “primary goods” should be allowed to persist only if they work to the greatest benefit of the least-advantaged group. See JOHN RAWLS, *A THEORY OF JUSTICE* § 46, at 300–01; § 11, at 60–61 (1971); JOHN RAWLS, *JUSTICE AS FAIRNESS: A RESTATEMENT* § 51.5, at 172 (2001). Societies can become *more* unequal and yet be preferred by prioritarians because the lives of the worst-off rise more. By contrast, for egalitarians, equality is desirable for its own sake even if it does not make the worst-off better, and in some instances they will prefer distributions that become more equal by leveling down. See, e.g., Roger Crisp, *Equality, Priority, and Compassion*, 113 *ETHICS* 745, 756–63 (2003); Harry G. Frankfurt, *Equality as a Moral Ideal*, 98 *ETHICS* 21, 21–25 (1987). I suspect that when Hochschild and others speak about equality in the genomics context, they are actually intending in many instances to focus on prioritarian and not egalitarian principles, but sometimes they may be shifting from one to the other in subtle ways.

98 One can see an echo in this formulation of the division between the medical and social model of disability in disability studies. The medical model “views a disabled person’s limitations as inherent, naturally and properly excluding her from participating in mainstream culture”; that is, “people with disabilities are believed incapable of performing social functions because of medical conditions that impair various major life activities.” Michael Ashley Stein, *Disability Human Rights*, 95 *CAL. L. REV.* 75, 86 (2007). By contrast, in the social model it is the “socially engineered environment and the attitudes reflected in its construction [that] play a central role in creating ‘disability’”; that is, “collectively mandated decisions determine what conditions comprise the bodily norm in any given society” and “factors external to a disabled person’s limitations are really what determine that individual’s ability to function.” *Id.*

of forensic DNA databases: “Since women are the primary victims of sexual assault in the United States, building these databases will help deter offenders and promote women’s freedom.” “Because people of color are disproportionately represented in arrests and convictions in the U.S. carceral system, and those are the sources of DNA for forensic databases, families of people of color will be those most hassled by the police in partial-matching investigation techniques.” These two (imagined) speakers disagree on whether the technology will be equality-promoting or equality-reducing, but they agree that the situs of where equality will be furthered or stymied by this intervention is *the underlying social structure*: the structure in which women are the primary victims of sexual assault and rape cases often are never resolved, the structure of American criminal law where arrests and convictions follow predictable racial patterns. They also disagree about the injustice of those social structures.

Contrast this with the following statements one might hear in a good-faith debate about germline gene editing: “Gene editing allows couples where the children would otherwise inherit serious monogenic diseases to have their own genetic children the same way everyone else does.” “Gene editing will create genetic haves and have-nots and lead to a disfavored genetic underclass as in films like *GATTACA*.” Again, these imagined speakers disagree on whether the technology promotes or reduces equality, but their disagreement is *primarily* focused on the effects of the technology on equality/inequality stemming *from our genetics*. I say “primarily” to emphasize, as mentioned above, that social structures and normative views about those structures are, unsurprisingly, always in the background; for example, the value of having children to whom we are genetically related *vel non* and the level of support given by a society to the genetically worse off.

While some of Hochschild’s examples might evince more of a mixture, I still think this two-by-two is helpful for at least two reasons: first, it may lead us to adjust our priors about what we would have expected Hochschild to find in a subtle way. Many Americans may have strong views about the current level of equality/inequality in the social structure and to what extent programs that force redistribution or require restrictions on liberty are justified in the name of reducing inequality. This is, in some sense, the bread and butter of much of our current political discourse. But one might expect that Americans have not thought out nearly as much whether genetic inequalities are *themselves* the kinds of things we ought to try to reduce, and at what cost. This might be one of the reasons she finds “equal amounts of good and harm,” the ambivalent answer, to be the most pronounced in “germline gene therapy” and the least pronounced in “forensic biobank.”⁹⁹ This ambivalence may not be (or just be) a function of uncertainty about the *effects* of this technology on equality but rather whether *the kind of equality* it promotes is one that matters to us, politically speaking.

Second, and jumping off this last point, this puts front and center the question of whether more equality *in genetics* is something desirable or, more pointedly, a fit subject

99 HOCHSCHILD, *supra* note 2, at 163.

for state policies aimed at promoting equality.¹⁰⁰ We all have differences in our genes that will, most often in interaction with our environment, affect how our lives go. Some are quite immediate and serious, meaning they produce lives that are quite short and full of pain;¹⁰¹ others, like the genetic determinants of my height (just over five foot nine) and its effect on my likelihood of playing professional basketball, create real ceilings on particular opportunities but tend not to be viewed as an injustice or a fit subject for political theories of redistribution.¹⁰² Much of the literature on genetics and equality tends to focus on the ways in which these technologies may promote inequality stemming from the social structure or potentially reduce it, but the two-by-two usefully reminds us that these technologies could also promote equality *in our genetics*.

There is moral luck in the question of whether we have inherited a large trust fund from our parents or financial obligations to support aging relatives. There is moral luck in what we have inherited, genetically speaking, as well, and some of us have inherited genes that provide advantages, while others have not. What is striking is that the most

100 Of course, putting the question this way presses on exactly what it would mean to have “equality in genetics.” It is hard to think that differences in genetic endowment without phenotypic expression are what matter for equality theorists—they do not make our lives go better or worse. Beyond that, though, there are some hard questions. What about genetic differences that lead to higher risks/susceptibilities of disease that may or may not actually manifest? Even more interesting, what about instances where the same outcome is arrived at but the underlying genetic inequality remains? Imagine that A is at higher genetic risk for heart disease than B, but we are able to make their lifetime risk of heart attack indistinguishable by way of a statin that (hypothetically) is costless and carries no corresponding risks or side effects. Does the underlying genetic inequality matter in this case? What if the difference were in facial bone structure that advantages the person to a certain standard of beauty in a society, but the person with the genetically less “advantageous” (scare quotes intended) composition is able to undergo cosmetic surgery to achieve the same outcomes (again imagine, counterfactually, costless and without risk)? Among the many questions one would face is whether in claims for justice there is a difference between possessing the desired trait/state “naturally” through one’s genetics versus the “assisted” or “augmented” version—which echoes debates on human enhancement where some scholars have made appeals to the natural that others have critiqued. See, e.g., Cohen, *supra* note 17, at 662–65.

101 Tay-Sachs disease is a prime example; it has its onset in infancy and leads to “hypotonia [deficiencies in muscle tone], progressive loss of vision, loss of interest in surroundings, and loss of attained milestones, with death occurring at about the age of 4.” 5 ATTORNEYS’ TEXTBOOK OF MEDICINE § 17.21(3) (Roscoe N. Gray & Louise J. Gordy eds., 3d ed. 2000).

102 I say *my* height because it falls in the range of species-typical normal functioning, which for many (Professor Norman Daniels most prominently) has become the dividing line for treatment versus enhancement and where the state has an obligation of justice to try to remedy. See NORMAN DANIELS, *JUST HEALTH: MEETING HEALTH NEEDS FAIRLY* 149 (2008). There are some heights that fall outside the species-typical normal functioning line; indeed, at one point FDA drew the line at “the bottom 1.2 percent, which the FDA ruled was when human growth hormone was approved to correct short stature that did not have an understood cause.” Einer Elhauge, *I’m Not Quite Dead Yet—and Other Health Care Observations*, 49 TULSA L. REV. 607, 617 (2014). I do know of at least one author who has argued that discrimination against those of shorter stature who are nonetheless still within the species-typical normal functioning range is prevalent, normatively problematic, and something anti-discrimination has wrongfully ignored. Omer Kimhi, *Falling Short: On Implicit Biases and the Discrimination of Short Individuals*, 52 CONN. L. REV. 719, 724 (2020).

prominent theories of distributive justice have not embraced extending the approach to genes that they do to other forms of social advantage. Professor Eric Rakowski did a nice job of summarizing a good swath of the terrain:

Thomas Nagel, for example, contends that, unlike inequalities that are social in origin, naturally occurring inequalities in people's prospects lie outside the scope of justice. Their amelioration, in his view, is entirely a matter of private charity. Thus, people who are unhealthy or lack intelligence through no fault of anyone must look to their own resources or the generosity of others to overcome their natural deficits, whereas children born into poor or dysfunctional families are entitled, in justice, to assistance from those who are better off. . . .

John Rawls's "difference principle" []endorses (subject to limits) distributional rules that maximize the primary goods available to a representative member of the least advantaged class [but] Rawls himself declined to specify how a just society should treat unhealthy or disabled individuals (and, by inclusion, those whose prospects are hampered by their poor genes), and at whose expense.

[For] Norman Daniels . . . [g]enetically linked diseases or impairments can adversely affect a person's chances of living a normal life within any given society. Insofar as these disabilities represent departures from species-typical normal functioning within a particular society, Daniels maintains, justice demands their redress, unless more prominent social values take precedence in a certain case or past a certain point. Redress may take the form of genetic intervention, medical treatment, special opportunities, cash, or other types of accommodation. Whereas justice requires medical intervention or treatment to lessen disadvantage, however, it does not in Daniels's view command intervention to enhance the abilities of somebody who already falls within the normal range. Justice requires what he calls a "genetic decent minimum," insofar as that is humanly possible, but nothing beyond that baseline.¹⁰³

Rakowski wrote this in 2002, and of course there have been new entrants into political theory since then. But by and large I think his assessment remains correct: proponents of distributive justice who argue for redistribution to correct unfair differences stemming from the social structures in which individuals are born or live are (largely speaking) reluctant to push for the same redistribution when the differences stem from genetics.

The category of those who have disabilities represents an interesting liminal space. The category of who has a disability overlaps only partially in both directions with the category of who has genetic bad luck—there are disabilities that do not have genetic bases (consider disabilities

103 Eric Rakowski, *Who Should Pay for Bad Genes?*, 90 CAL. L. REV. 1345, 1352–56 (2002).

that result from accidents), and there are forms of genetic bad luck that do not meet our ordinary normative or legal conception of disability. But our views about redistribution on the basis of disability are a potential entryway to thinking about redistribution to the genetically unlucky.

Normatively speaking, insofar as we conceive of those with disabilities as *outside* the bounds of species-typical normal functioning, many theorists believe they have valid claims to redistribution to bring them to that level. Daniels connects the species-typical normal functioning to the larger Rawlsian goal of ensuring that all have access to the “normal opportunity range,” that is, “the array of life plans reasonable persons are likely to develop for themselves.”¹⁰⁴ For Martha Nussbaum, the species-typical line sets a threshold for human flourishing in the capabilities approach and thus locates our obligations of justice to those with disabilities.¹⁰⁵

Overall there is good political theoretical convergence on the idea that distributive justice owes something to those with disabilities as understood by the species-typical normal functioning line. While not completely parallel, we see echoes of this same approach in the way U.S. disability law determines who is eligible for its coverage. The Social Security Disability Program, which brings with it state financial support, is perhaps the best example. Its definition of disability defines its eligible population in this way:

(1) The term “disability” means—

(A) inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months . . .

(2) For purposes of paragraph (1)(A)—

(A) An individual shall be determined to be under a disability only if his physical or mental impairment or impairments are of such severity that he is not only unable to do his previous work but cannot, considering his age, education, and work experience, engage in any other kind of substantial gainful work which exists in the national economy, regardless of whether such work exists in the immediate area in which he lives, or whether a specific job vacancy exists for him, or whether he would be hired if he applied for work. For purposes of

104 See DANIELS, *supra* note 102, at 149.

105 Martha C. Nussbaum, *FRONTIERS OF JUSTICE: DISABILITY, NATIONALITY, SPECIES MEMBERSHIP* 116–18 (2006); *see also* Anita Silvers & Michael Ashley Stein, *Disability and the Social Contract*, 74 U. CHI. L. REV. 1615, 1622 (2007) (“The capabilities approach endorses allotting greater resources to disabled persons if relatively greater distributions are able to bring those individuals up to average baseline levels of capabilities, that is, to the thresholds for species-typical flourishing.”).

the preceding sentence (with respect to any individual), “work which exists in the national economy” means work which exists in significant numbers either in the region where such individual lives or in several regions of the country.¹⁰⁶

106 42 U.S.C. § 423(d). I omit separate provisions relating to those who are both blind and over age 55. *Id.* One might also look for a similar echo in the Americans with Disabilities Act (ADA), even though it is an anti-discrimination law that has redistributive effects rather than one squarely focused on redistribution. It reads in relevant part:

(1) Disability

The term “disability” means, with respect to an individual—

- (A) a physical or mental impairment that substantially limits one or more major life activities of such individual;
- (B) a record of such an impairment; or
- (C) being regarded as having such an impairment (as described in paragraph (3)).

(2) Major life activities

(A) In general

For purposes of paragraph (1), major life activities include, but are not limited to, caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, and working.

42 U.S.C.A. § 12102. Arguably, the ADA Amendments Act of 2008 pushes it a little further away from the species-typical definition in the way it clarifies that in interpreting the statute, courts should reject some prior restrictive U.S. Supreme Court decision. In particular, the amendments clarify that the ADA should be understood to “reject the requirement enunciated by the Supreme Court in *Sutton v. United Air Lines, Inc.*, 527 U.S. 471 (1999) and its companion cases that whether an impairment substantially limits a major life activity is to be determined with reference to the ameliorative effects of mitigating measures.” ADA Amendments Act of 2008, Pub. L. 110-325, 122 Stat. 3553 (2008), at § 2(b). The Amendments also clarify that the text should be read:

(4) to reject the standards enunciated by the Supreme Court in *Toyota Motor Manufacturing, Kentucky, Inc. v. Williams*, 534 U.S. 184 (2002), that the terms “substantially” and “major” in the definition of disability under the ADA “need to be interpreted strictly to create a demanding standard for qualifying as disabled,” and that to be substantially limited in performing a major life activity under the ADA “an individual must have an impairment that prevents or severely restricts the individual from doing activities that are of central importance to most people’s daily lives”;

(5) to convey congressional intent that the standard created by the Supreme Court in the case of *Toyota Motor Manufacturing, Kentucky, Inc. v. Williams*, 534 U.S. 184 (2002) for “substantially limits”, and applied by lower courts in numerous decisions, has created an inappropriately high level of limitation necessary to obtain coverage under the ADA, to convey that it is the intent of Congress that the primary object of attention in cases brought under the ADA should be whether entities covered under the ADA have complied with their obligations, and to convey that the question of whether an individual’s impairment is a disability under the ADA should not demand extensive analysis.

Id. One interesting question I raise here, but that is somewhat orthogonal to my discussion, is to what extent the ADA, which has a mix of redistributive and anti-subordinative and anti-stereotyping goals, should differ in its line setting from a program that sounds primarily in distributive justice.

So, political theory and political practice do extend distributive justice to the subset of those with genetic bad luck that causes disabilities,¹⁰⁷ but not beyond that to anyone whose genetic inheritance puts them in a disfavored position in terms of how well their lives go.¹⁰⁸ Why is that? When it comes to redistribution by income, even the U.S. tax system is to some extent continuous with graduated levels of taxation and tax credits/deductions by income. Even programs that do have income cliff cutoffs tend to try to smooth distribution below the ceiling. A good example is the Affordable Care Act's Exchange subsidies to help aid in the purchase of health insurance.¹⁰⁹

To put the point bluntly, why do the politics of equality not lead us to see pushes to redistribute to the genetically “poor”? Why don't we tax the genetically “rich”?¹¹⁰ One can begin to sketch answers: there are administrability concerns about detecting and quantifying genetic winners and losers; other programs (like income taxation, Medicaid, etc.) are already doing the work, etc. But such answers would seem to be more in the register of “good impulse, but here are the real-world reasons why we aren't doing *that*.” Instead, I think it is fairer to characterize the current conversation on the matter as largely silence. Within progressive communities, very few have expressed thoughts on such a project, and I suspect if pushed they would express puzzlement or ambivalence at best. Is this a lost opportunity or an appropriately taboo topic?

One interesting thing that placing Hochschild's examples onto my two-by-two suggests is that the tax analogy is only one way to deal with genetic unfairness. Redistribution

107 These programs and the political theory support, of course, also extend to those who meet its definition of disability whose disabilities are *not* the result of bad genetic luck.

108 There are, of course, complex questions of when having a disability *in fact* makes a life go worse—the mere-difference-versus-bad-difference debate, as it is sometimes called. The answer is likely to be different for various disabilities. It also depends heavily on how much a given social setting has done to reduce the badness of disability along the lines of the social model of disability. Along these lines, Elizabeth Barnes has offered a very thoughtful critique of the application of the normal-functioning model to deafness (in particular). See Elizabeth Barnes, *Disability, Health, and Normal Function*, in *DISABILITY, HEALTH, LAW, AND BIOETHICS* 5 (I. Glenn Cohen et al. eds., 2020).

109 26 U.S.C. § 36B.

110 Of course, dividing the world into the genetically “poor” and “rich” belies much of the biological reality. Very often we are talking about genetics as making one more or less susceptible to the effects of a particular environment, and it is the combination of the two that produces the condition faced by the individual. But perhaps this just makes the tendency of many theories of redistribution to fail to think seriously about genetics still more surprising: they do take the environmental parts (poverty, familial structure, neighborhoods) quite seriously, so why not take the genetic susceptibilities just as seriously for redistribution? It is almost as if they have internalized the eggshell-plaintiff rule of torts—“that a tortfeasor takes his victim as he finds him,” e.g., *Pierce v. S. Pac. Transp. Co.*, 823 F.2d 1366, 1372 (9th Cir. 1987)—and applied it to genomics as a political-theory matter.

to the genetically unlucky is a form of compensation. Why compensate for that bad luck instead of correcting it at its source? Gene editing offers a potential way to do so.¹¹¹ There are a lot of difficult questions raised by heritable germline gene editing that many bioethicists have noted for a long time, chief among them: is it fair to impose, for the sake of benefits, potential downstream harms of such editing on a future population from whom it is not possible to seek consent at the present time?¹¹² Somatic gene editing, by contrast, raises far fewer of these kinds of objections, and indeed objections in general—this is somewhat reflected in the more positive attitudes of Hochschild’s survey respondents to somatic over germline gene editing.

To use a tangible example, instead of providing compensation to those who are struggling with sickle cell disease, would it be better to provide them (but not coerce them to undergo) somatic gene editing paid for by the government?¹¹³ If we were to offer such “in-kind” opportunities for those who face genetic bad luck, should they be offered alongside compensatory programs or as alternatives? In discourse on enhancement, one frequently sees concern that the availability of enhancements will reduce solidarity for those who choose not to get them.¹¹⁴ How worried should we be about this as a descriptive prediction of political or public reaction? If in fact we felt less solidarity and social support for those who chose not to engage in gene editing to reduce the effects of their genetic bad

111 Genetic technologies might also be used to help such persons whose needs do *not* have a genetic origin (for example, still-science-fictional hypothetical uses of genomic technologies to build a replacement limb for someone who lost an arm in an accident or the use of somatic gene editing to improve the vision of someone whose blindness was the result of an accident). How important is it, as a political theory matter, in terms of what we owe those in need, that we use genomic technologies to improve the lives of those whose deficits are genetic as opposed to nongenetic in origin?

112 Of course, as Professor Seana Shiffrin has noted in a provocative essay, all forms of reproduction, including old-fashioned unassisted coital reproduction, involve bringing into existence individuals who “must endure the fairly substantial amount of pain, suffering, difficulty, significant disappointment, distress, and significant loss that occur within the typical life”—harms that are imposed without consent only to bestow a pure benefit (existence). Seana Valentine Shiffrin, *Wrongful Life, Procreative Responsibility, and the Significance of Harm*, 5 *LEGAL THEORY* 117, 137–39 (1999).

113 Such therapies are beginning to show promise. See, e.g., Rob Stein, *First Sickle Cell Patient Treated with CRISPR Gene-Editing Still Thriving*, NPR (Dec. 31, 2021, 5:05 AM), <https://www.npr.org/sections/health-shots/2021/12/31/1067400512/first-sickle-cell-patient-treated-with-crispr-gene-editing-still-thriving>. Because the burden of sickle cell anemia falls heavily on the Black population, it also raises interesting questions of how to think about cases where bad genetic luck interfaces with more historical forms of disadvantage and maltreatment.

114 E.g., SANDEL, *supra* note 16, at 87–92.

luck, would that be so normatively bad that it should be part of a program of seeking to promote equality?¹¹⁵

I would love to see a social scientist of Hochschild's caliber use the resources marshalled in this book to examine more deeply what the public and experts think about genetic equality and about genetic redistribution and how it should inform these debates.

115 In prior work I offered the following thought experiment:

To use a dramatic example, suppose that by swallowing one pill without any untoward side effects you could become impervious to all pathogens and die peacefully of old age in excellent health at age 110. Such a pill would not only improve the welfare of those who take it but also would produce significant positive externalities (or, if you prefer, reduce significant negative externalities of the pre-pill baseline): my bad health imposes significant costs on others—family who must tend to my health, employers who face my loss of productivity, others to whom I transmit infection, etc. By taking the pill I have improved my welfare and the welfare of others around me. If we assume *arguendo* that this could only be accomplished by heaping scorn (e.g., by making them social pariahs) and/or reducing resources devoted to those “naturalists” who refused to take the pill, would that be an overwhelming reason to ban the pill or not pursue its development? To me it certainly seems not. Indeed, it may be possible to take some of the resources saved from the use of the pill and improve those people's health care, a form of growing the pie. Even if that were not the case, even if we concede that the “naturalists” would be worse off as compared to a world where the pill was unavailable, so what? That should only bother us if we think they have a rights claim not to take the pill. That rights claim seems to me to be predicated on what in the law we like to call a “baseline” problem. What is so special about the existing baseline of our lifespan and disease immunity as it stands now? It was quite different in 44 AD, 1776, and will be quite different again in 2081. What is the moral significance of our current state? To see why this rights claim seems problematically predicated on a baseline problem, let us turn the world upside down. Imagine that we all are currently immune from all diseases and die in good health at 110. A pill is developed, though, that will change our immune systems to resemble those currently enjoyed in the real world. Would you have a rights claim to take the pill in question? Perhaps if you believe in a right to suicide or to control one's body by ingesting whatever you please, even if the government makes it illegal. Would you have a rights claim to take the pill and avoid the heaping of scorn or reduction in access to resources? That seems quite doubtful to me. Would you have a rights claim to make everyone in your society take the pill because if they don't you will be disadvantaged in terms of the coercion versus competition dynamic discussed above. Certainly not. The baseline problem here seems to be the mistake of making an undefended appeal to nature, that what is natural is good. . . .

Such a claim is particularly hard in the health domain, because so many of the innovations we have developed already (antibiotics, for example) seek to forestall the natural.

Cohen, *supra* note 17, at 664. Somatic gene editing is far from taking a pill in terms of its current risks and prospects of success and our views about the extent it alters something of our personhood. But I do want to push back on the idea that any reduction in *other* solidaristic support that might stem from the state providing it for free is necessarily so problematic that it should defeat the claim that progressives should pursue somatic gene editing as a form of equality promotion.

C. How should the critiques of race as a genetic category play into equality discourse?

A final conversation the book stirred for me is: how should equality discourse deal with critiques of race as a genetic concept?

As a Caucasian man who grew up in Canada and whose scholarly expertise is outside race and the law, I am more aware than usual of the aphorism that “where you stand depends on where you sit.”¹¹⁶ I find the idea of geneticizing race particularly fraught because of what I know about the history of the topic, including the ways in which racial science has often been harnessed in the United States and abroad to establish racial hierarchies (including genocide) and the misuse of this science for eugenic purposes, which continues to this day.¹¹⁷ I want to be careful not to tread too far into sensitive and fraught territory. There is a way in which it feels as though the book has the same approach to the issue, which is occasionally frustrating: at several points it tees up but does not quite land a conversation on what the public and the political system think about race as a genetic concept and what it would mean to reject that concept.

Let me put the point in practical terms. Suppose you are a university seeking to adopt programs that will increase racial diversity in your applicant pool or admitted students. Or suppose you are a locality that is concerned about racial discrepancies in the rate of COVID-19 vaccine uptake. Or suppose you are a hospital system worried about whether a new algorithm you have introduced to reduce hospital readmissions is having a racially discordant effect. For the “system designers” charged with implementing such a program, there are lots of difficult political, ethical, and design questions. They might, perhaps naively, have thought that there was at least one easier part—determining the race of the individuals in the covered population—and that this was a purely descriptive, not normative, inquiry.

In fact, though, even *this* part is complex and quite normative. To illustrate, imagine you are in charge of one of the programs discussed above and, to simplify, let us imagine you are focused only on Black individuals. Which of the following should the program consider “Black” for the purposes of its activities?

- A child who appears to have the phenotypic features we associate with being Black who is conceived through coital reproduction by a man and woman who share those same phenotypic features, carried to term by the mother of that couple, and raised by that couple.
- A child who appears to have the phenotypic features we associate with being Black who is conceived through coital reproduction by a man and woman

116 The phrase is often (but not always) ascribed to Rufus Miles and indeed is sometimes referred to as “Miles’s Law.” Rufus Miles, *The Origin and Meaning of Miles’ Law*, 38 PUB. ADMIN. REV. 399, 399–402 (1978).

117 See, e.g., DOROTHY ROBERTS, *KILLING THE BLACK BODY* 59–70 (2d ed. 2017); Murray, *supra* note 89, at 2037–38; Cheryl I. Harris, *Whiteness as Property*, 106 HARV. L. REV. 1709, 1737–41 (1993); Fred D. Ledley, *Distinguishing Genetics and Eugenics on the Basis of Fairness*, 20 J. MED. ETHICS 157 (1994).

who share those same phenotypic features and carried to term by the mother of that couple but raised by adoptive parents who have the phenotypic features we associate with being Caucasian.

- A child who appears to have the phenotypic features we associate with being white who is conceived through coital reproduction by a man and woman who share those same phenotypic features and carried to term by the mother of that couple but raised by adoptive parents who have the phenotypic features we associate with being Black.
- A child who has phenotypic features that could be associated with being white or Black, who was told by her white Jewish rearing parents that her darker skin is the result of her descending from a Sicilian Jew, but who discovers in her late teens that in fact hers was a case of misattributed paternity and her white Jewish mother had had an affair with a Black man, her real genetic father.¹¹⁸

We can continue to introduce still more complex variations to each of these starting cases. The parents whose gametes produce the child each have a set of phenotypic features associated with a different race, and the child's phenotypic features more closely match those we associate with one race or the other. The parents whose gametes produce the child are themselves descendants of parents who each have a set of phenotypic features associated with a different race (i.e., the grandparents are each "mixed race" in the colloquial sense). A sperm or egg donor provides one of the gametes and that person has phenotypic features associated with a race that differs from that of the rearing parents. A surrogate is involved in carrying the child to term and her phenotypic features are associated with a race that differs from that of the rearing parents. We can also imagine cases that mix all these fact patterns.¹¹⁹

118 This is the story of my Harvard Law School classmate Lacey Schwartz, as told in her wonderful documentary, *LITTLE WHITE LIE* (2014).

119 For example, in one famous surrogacy case, two rearing parents acquired an embryo that was genetically unrelated to either of them and implanted it into a surrogate, so there were in fact five different individuals who could have made some claim on parenthood. *Buzzanca v. Buzzanca*, 72 Cal. Rptr. 2d 280, 282 (Cal. Ct. App. 1998). Imagine variations of this fact pattern where the various parties have different phenotypic appearances we associate with different races, and the question is what race is the child for the purposes of a program? "Biogeographical ancestry" testing also complicates this self-understanding, as Hochschild illustrates with an example from science writer Amy Harmon about a "Black Power activist who discovered that she had no African ancestry on her father's side" and wonders, "What does this mean; who am I, then? For me to have a whole half of my identity to come back and say, 'Sorry no African here,' it doesn't even matter what the other half says. It just negates it all. . . . It just doesn't fit, it doesn't feel right." HOCHSCHILD, *supra* note 2, at 127. Because the databases upon which many of these tests determine biogeographical ancestry are also changing over time, the results they provide may change too. One can imagine this activist asking, "Was I Black yesterday but not today?"

Once upon a time, there was an easier answer to cut through this complexity: we embraced (perhaps not exclusively, perhaps not very self-reflectively) a genetic concept of race, and when we said someone was “Black,” we understood ourselves to be saying they were “genetically Black.” I am careful to say this construct made things “easier” and not “easy” for these kinds of programs because even under this construct, one still had to determine when someone was *genetically* “Black enough” in the case of mixed-race children.¹²⁰ The concept could never do all the work that was asked of it because even if “genetic race” was a real thing, various programs and contexts of thinking about promoting racial equality were often trading on different concepts of race. But it was at least a helpful starter concept, if you will.

Like many fairy tales, this one depended on fantastic elements. The concept of genetic race has been widely assailed as a scientific matter.¹²¹ What is so interesting about the time period studied by Hochschild through her various methods of data collection is that it captures *both* (1) a time period when the weight of scientific evidence against genetic race became more prominent *and* (2) a time period when the public’s interest in genetic ancestry, and through it the concept of race as genetic, became more salient because of the increased marketing of direct-to-consumer genetic testing.¹²² Hochschild explores both of these phenomena and how they play out in her four quadrants in a recurring section she refers to as “[b]iogeographical ancestry.” But this is a place where an ordinary strength of the book—examining a recurring set of examples and how they are handled within her four quadrants—gets a little in the way. What I would have really liked is a stand-alone chapter, “The Genetic Concept of Race and Genomic Politics,” that pieced together Hochschild’s findings and a bit more theory aimed directly at this question.

120 One can hear in the framing of the question the terrible historical echo of the “one-drop rule” and attempts by the Census Bureau to distinguish various categories of people in the U.S. census by what “share” Black their parentage was. See, e.g., David A. Hollinger, *The One Drop Rule & the One Hate Rule*, 134 *DAEDALUS* 18, 18–20 (2005).

121 There has been a lot of legal ink spilled making this exact point. For some examples, see generally DOROTHY ROBERTS, *FATAL INVENTION: HOW SCIENCE, POLITICS, AND BIG BUSINESS RE-CREATE RACE IN THE TWENTY-FIRST CENTURY* (2011); Kahn, *supra* note 2; Trina Jones & Jessica L. Roberts, *Genetic Race? DNA Ancestry Tests, Racial Identity, and the Law*, 120 *COLUM. L. REV.* 1929 (2020).

122 The infamous moment when my former colleague Senator Elizabeth Warren accepted President Trump’s challenge to take a DNA ancestry test and prove her native ancestry captures better than most the toxic mixing of politics, genetic conceptions of race and ancestry, and direct-to-consumer testing. See Masha Gessen, *Elizabeth Warren Falls for Trump’s Trap—and Promotes Insidious Ideas About Race and DNA*, *NEW YORKER* (Oct. 16, 2018), <https://www.newyorker.com/news/our-columnists/elizabeth-warren-falls-for-trumps-trap-and-promotes-insidious-ideas-about-race-and-dna>; Tucker Higgins, *Trump Said He Would Give \$1 Million to Charity If Elizabeth Warren Took a DNA Test. Now She Wants Him to Pay Up*, *CNBC* (Oct. 15, 2018, 10:38 AM), <https://www.cnn.com/2018/10/15/elizabeth-warren-dna-test-she-urges-trump-to-fulfill-1-million-charity-pledge.html>. The genetic concept of race, as Jonathan Kahn has noted, is also tied in a complex way to the funding and enthusiasm for precision medicine, including by the U.S. government. See generally Jonathan Kahn, *Precision Medicine and the Resurgence of Race in Genomic Medicine*, in *CONSUMER GENETIC TECHNOLOGIES* 186, *supra* note 3.

Some of this imagined chapter can be backfilled by what she does include in the book, but not perfectly. One general problem is that in her chapters, there is some sliding between the concept of ancestry and the concept of race as a genetic matter. The two are related but distinct. One could imagine a world where ancestry in the sense of a family tree was extremely salient but race's connection to that genetic inheritance was not—think of more phenotypically homogenous places, for example, where ancestry remains important even when individuals understand themselves to be part of the same race.

Part of what is tricky is that when she describes the views of the members of the four quadrants on “[b]iogeographical ancestry,” we see exactly this slipping between race and ancestry; within the quadrants you find a mix of people drawing the distinction, failing to draw the distinction, and viewing the failure to draw the distinction as a big part of the problem. For the Enthusiasts, we are told that “DNA ancestry testing is a democratizing force, enabling groups whose ancestry is lost to history—descendants of enslaved Africans, White indentured servants, Jews fleeing pogroms, Chinese contract railroad workers, exiled Native Americans—to access the kind of history previously available mainly to Daughters of the American Revolution or Sons of the Confederacy.”¹²³ We are introduced to a researcher who points to marked differences between racial and ethnic groups in response to asthma therapies and who maintains that “[r]acial/ethnic differences in drug response are partially explained by genetic differences.”¹²⁴ And we also have quotes from those who describe their own “research on racial differences in drug response as ‘a space holder till we can actually look at individuals.’”¹²⁵ In general, to this reader, it feels like even the Enthusiasts are more tempered in their excitement compared to other topics in the book.

The Skeptics, by contrast, have their knives very much out for this research:

Geneticists Robert Green and Adam Rutherford protest that companies such as 23andMe and African Ancestry are “asking people to pay for something that is at best trivial and at worst astrology,” since there is no “agreed-upon approach to pick the right number of markers and combine them mathematically. Everyone is sort of just making it up as they go along.” . . .

A deeper concern than misleading customers or relieving them of extra cash is that associating conventionally understood racial or ethnic groups with the purported science of genetic inheritance risks being a “backdoor to eugenics,” in the words of sociologist Troy Duster’s classic book. Ann Morning fears that DNA ancestry testing could revive the nineteenth century’s supposed racial science, since it is “a modern version of what early scientists were doing in terms of their studies of skulls or blood

123 HOCHSCHILD, *supra* note 2, at 93.

124 *Id.*

125 *Id.* at 94.

type. We have a long history of turning to whatever we think is the most authoritative sense of knowledge and expecting to find race proved or demonstrated there.” Especially among people who know little about genetics, DNA ancestry tests may “promote an essentialist view of race as fixed and determining innate abilities,” according to yet another sociologist, Wendy Roth, and her colleagues. . . .

Even if they do not extend as far as eugenics or phrenology, genetic ancestry tests reinforce contemporary group hierarchies, according to Skeptics. Self-identified White supremacists use DNA ancestry testing to prove, or if necessary invent, their racial (and non-Jewish) purity. Roth and her coauthor worry that genetic ancestry testing “reinforces their [test-takers’] White privilege” since it offers supposed proof of racial identity in a “symbolic, optional form, removed from structural inequalities.”¹²⁶

But it is the way that Hochschild characterizes the Hope quadrant on this issue that I think most convinces me that her usual four-quadrant approach may get in the way more than help. She writes:

The clearest manifestation of Hope in this arena is the goal of turning DNA ancestry testing into a lever for destroying the whole idea of fixed racial categories. In this view, the genuine phenomenon of ancestral heritage can be used to put an end to the false concept of race. Geneticist Charles Rotimi is carefully optimistic: “The potential exists to describe simultaneously our similarities and differences without reaffirming old prejudices.”¹²⁷

One way of characterizing this take is that we see a group that is hopeful about genetic *ancestry* but a Skeptic or perhaps a Rejecter of *race* as genetic. It would be helpful to see this idea more developed and the two different potential attitudes among the Hopeful more untangled.

Even among Hochschild’s characterization of Rejecters, it is the race element, and the connection of tests about ancestry to race, that seems to draw the most fire:

Rejecters have a simple view of DNA ancestry testing: the tests mislead customers because there is little to no genetic influence on “race.” Although direct-to-consumer testing companies never claim to be identifying a person’s race, that inference is easily drawn. At a collective level, the temptation of “defining identity in genetic terms,” as law professor Dorothy Roberts writes, “creates a biological essentialism that is antithetical to the shared political values that should form the basis for unity . . . [and that are] needed to fight racial oppression.” At an individual level, Duster and legal scholar Pilar

126 *Id.* at 109–11.

127 *Id.* at 122.

Ossorio warn that ancestry test results “at odds with a person’s self-identified or attributed race” can cause real pain. Science writer Amy Harmon describes the reaction of a former Black Power activist who discovered that she had no African ancestry on her father’s side: “What does this mean; who am I, then? For me to have a whole half of my identity to come back and say, ‘Sorry, no African here,’ it doesn’t even matter what the other half says. It just negates it all. . . . It doesn’t fit, it doesn’t feel right.”¹²⁸

When we get to the section of chapter 7 where Hochschild examines the attributions of Americans to genetic influence by trait, it is interesting that she and her colleagues did not seek to measure how much average Americans view race as “all or most to do with genes” versus “all or most to do with environment or lifestyle,” to use the scale she introduces for other traits.¹²⁹ My prior is that Americans would tilt heavily in the former category, whereas much of the work on race as a genetic concept discussed above seeks to disprove exactly this viewpoint. I would have loved the book to have had more of an opportunity to either substantiate, disprove, or complicate my prior on this issue and then examine what this discordance between what the public believes and what the scientists claim is true should mean. The latter half of chapter 7 considers the free-text explanations of her survey takers’ responses on the medical and forensic biobanks but not the direct-to-consumer testing or “[b]iogeographical ancestry” topic, so we do not get a real sense of where her respondents stand on these issues.

In chapter 8, Hochschild looks at comparisons between Republicans and Democrats and Blacks and whites on a series of topics as to their optimism. While she does examine to what extent Blacks¹³⁰ and whites differ on several genomic political issues, what is

128 *Id.* at 126–27.

129 *Id.* at 157–61. In their genetic knowledge tests, they do ask “how similar genes are between Black and White humans” and find that “[f]orty-four percent answered correctly that ‘more than half’ of a White person’s genes are identical to those of a Black person (alternative choices were ‘about half’ and ‘less than half’).” *Id.* at 156. This is some indirect evidence regarding what Americans think about the genetic-versus-nongenetic contribution to race. But there is a gap between asking someone to estimate how much genetic material two groups share and asking them whether the divergence between the two groups is responsible for perceived differences between the two groups; all the more so in an instance where most Americans are incorrect about the answer to the first question.

130 In this section of the book, Hochschild primarily uses “Blacks” as a noun rather than “African Americans,” and I follow her in this usage. The question is somewhat fraught, and there remains a lack of perfect consensus on when to use “Black” or “Blacks” as a noun versus adjective. *See, e.g.*, Dylan Byers, ‘An African American’, or ‘a Black’?, POLITICO (Apr. 3, 2013), <https://www.politico.com/blogs/media/2013/04/an-african-american-or-a-black-160773>; Throughline, *Nikole Hannah-Jones and the Country We Have*, NPR (Nov. 18, 2021, 12:01 EST) (transcript), <https://www.npr.org/transcripts/1056618320> (noting that in the 1619 project, “one of the things I did early on was I created a guide on language, so the language would be uniform. . . . We don’t use blacks as a noun.”). The issue is even more complicated given my point in this section of my review that there may be gaps between the phenotype that is perceived as Black and the “[b]iogeographical ancestry” of the person such that “African American” would exacerbate the problem. It may be that “Black people” would be better throughout, but I will track Hochschild’s language, which is primarily “Blacks.”

missing is an examination of to what extent the groups hold different views on whether race is a cogent genomic category or not. The closest we get to looking at race as a genetic concept is on her question for respondents whether medical genomics focused on “[r]acially-inflected genetic disease” provides “more harm than good,” meant to tie back to the BiDil example.¹³¹ She characterizes her results as showing few partisan differences overall on topics and finds relatively little difference between Blacks and whites on these topics, although more in 2017 than in 2011. Sight reading from her bar graphs, I see a more pronounced gap between whites and Blacks as to “[r]acially-inflected genetic disease” as opposed to “[i]ndividual genetic disease”—both groups become more supportive as to both from 2011 to 2017, but whites grow in their support much more than Blacks do as to the “[r]acially-inflected genetic disease” category.¹³² This is the kind of finding that caught my eye, but is hard to interpret: did Black respondents become more skeptical than white respondents of the association between race, genetics, and medicine in this time period? Did whites become more concerned about access to healthcare for Black Americans during this period? Is this finding just noise in the data? Is it reflecting something else entirely?

While the first half of the book does a nice job of explaining the major positions on race as a genetic concept, this thread gets overtaken in the latter half of the book by other topics. This is a shame, since it would be really useful to examine the role of race as a genetic concept for genomic politics as well as the pursuit of equality. I would love to see Hochschild use the same techniques she does in this book to answer questions like these: What does the American public think about the idea of race as a genetic concept? Are there big differences in attitudes between different racial groups as to this topic? Are there partisan differences? Age differences? What relationship is there between positions on this question and genetic knowledge? How much do attitudes toward the genetic nature of race correspond to attitudes on the BiDil case, forensic DNA databases, etc.?

For the non-social scientist, I think the most provocative question is this: what role does the genetic conception of race play in attempts to promote equality in the United States? If, as many believe, the concept of genetic race is scientific fool’s gold, does it represent a “noble lie” that leads to policies that promote equality or an “ignoble lie” that fails both in candor and in promoting equality? Is there a world where the question of whether the genetic concept of race is valid could itself become a political question? One interesting analogue is the way the politics around anti-discrimination law protecting lesbians and gays and even gay marriage has traded on claims around the genetic basis for homosexuality.¹³³

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131 *Id.* at 202–04.

132 *Id.* at 204.

133 For a good discussion of the intersecting conceptual, scientific, and political impulses here, see EDWARD STEIN, *THE MISMEASURE OF DESIRE: THE SCIENCE, THEORY, AND ETHICS OF SEXUAL ORIENTATION* (1999).

This is a terrific book. It is the kind of book where you think, “Wow, I have had so many conversations on this topic without stopping to think about what the data look like.” It is also a model of zeroing in on a question through many different social science methods. While her four quadrants are helpful, they rarely feel procrustean; Hochschild renders the world in all its complexity. For those most interested in law and inequality, there are definitely more questions, but this book lets us frame them and think about how a scholar of Hochschild’s caliber might pursue them.

133 For a good discussion of the intersecting conceptual, scientific, and political impulses here, see EDWARD STEIN, *THE MISMEASURE OF DESIRE: THE SCIENCE, THEORY, AND ETHICS OF SEXUAL ORIENTATION* (1999).