FORCE OF NATURE

Can Kathryn Paige Harden convince the left that genes matter—and the right that they're not everything?

BY GIDEON LEWIS-KRAUS

Until she was thirty-three, Kathryn Paige Harden, a professor of psychology at the University of Texas at Austin, had enjoyed a vocational ascent so steady that it seemed guided by the hand of predestination. When she first went on the job market, at twenty-six, her graduate-school mentor, Eric Turkheimer, a professor at the University of Virginia, recommended her with an almost mystified alacrity. "More than anyone else who has come through my lab, I find myself answering questions by saying, 'We should check with Paige,'" he wrote. "I am absolutely confident she will be a successful addition to any faculty, and she brings a significant chance of being a superstar." Her early scholarship was singled out for prestigious awards and grants, and she was offered tenure at thirty-two. In 2016, she began co-hosting an Introduction to Psychology class from a soundstage, in the style of a morning show—she and her colleague drank coffee from matching mugs—that was live-streamed each semester to more than a thousand students. She couldn't cross campus without being stopped for selfies.

Harden works in the field of behavior genetics, which investigates the influence of genes on character traits (neuroticism, agreeableness) and life outcomes (educational attainment, income, criminality). Such research has historically relied upon "twin studies," which compare identical twins with fraternal ones to differentiate genetic from environmental effects. As a new professor, she co-founded the Texas Twin Project, the first registry engineered to maximize representation of low-income families from ethnically diverse backgrounds. In a recent paper, Harden asked, "You only have one life to live, but if you rewound the tape and started anew from the exact same genetic and environmental starting point, how differently could your life go?" She continued, "Overall, twin research suggests that, in your alternate life, you might not have gotten divorced, you might have made more money, you might be more extraverted or organized—but you are unlikely to be substantially different in your cognitive ability, education, or mental disease." In the past few years, Harden noted, new molecular techniques have begun to shore up the basic finding that our personal trajectories owe a considerable debt to our genes.

On sabbatical for the 2015-16 academic year, Harden and Elliot Tucker-Drob, a colleague to whom she was married at the time, were invited to New York City with their two young children—a three-year-old boy and a nine-month-old girl—as visiting scholars-in-residence at the Russell Sage Foundation. Russell Sage, which occupies a handsome Philip Johnson building in Manhattan, primarily supports sociologists, journalists, and economists, but it had recently launched an initiative to integrate the biological sciences. Harden felt almost immediately unwelcome at the regular fellows' lunches. Many of the left-leaning social scientists seemed certain that behavior-genetics research, no matter how well intentioned, was likely to lead us down the garden path to eugenics. The world would be better, Harden was told, if she quit. When their cohort went to see "Hamilton," the others professed surprise that Harden and Tucker-Drob had enjoyed it, as if their work could be done only by people uncomfortable with an inclusive vision of American history.

Harden assumed that such leeriness was the vestige of a bygone era, when genes were described as the "hardwiring" of individual fate, and that her critics might be reassured by updated information. Two weeks before her family was due to return to Texas, she e-mailed the fellows a new study, in *Psychological Science*, led by Daniel Belsky, at Duke. The paper drew upon a major international collaboration that had identified sites on the genome that evinced a statistically significant correlation with educational attainment; Belsky and his colleagues used that data to compile a "polygenic score"—a weighted sum of an individual's relevant genetic variants—that could partly explain population variance in reading ability and years of schooling. His study sampled New Zealanders of northern-European descent and was carefully controlled for childhood socioeconomic status. "Hope that you find this interesting food for thought," she wrote.

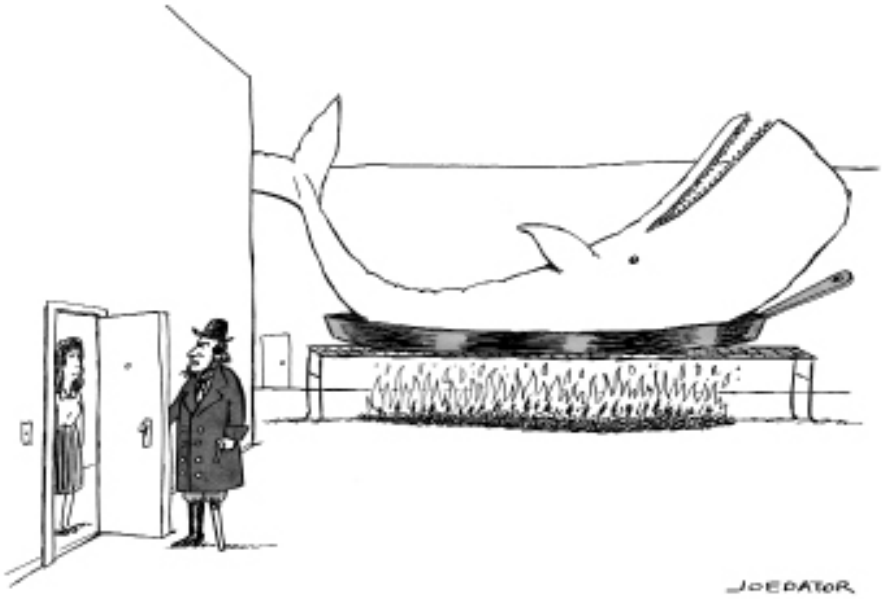
William Darity, a professor of public policy at Duke and perhaps the country's leading scholar on the economics of racial inequality, answered curtly, starting a long chain of replies. Given the difficulties of distinguishing between genetic and environmental effects on social outcomes, he wrote, such investigations were at best futile: "There will be no reason to pursue these types of research programs at all, and they can be rendered to the same location as Holocaust denial research." By the time he wrote again, several hours later, one of Harden's few supporters among the fellows had changed the thread's subject line from "new genetics paper" to "Seriously? Holocaust deniers?" Darity responded, "I feel just as strongly that we should not keep the notions that the world is 6000 years old or that climate change is a fabrication under consideration."

Harden remarked that being called a climate skeptic was marginally preferable to being called a Holocaust denier. She offered to host a lunch to discuss the uncontroversial basics of genetics research for anyone interested. Darity was reluctant to let the matter go: "One final comment from me, and then I will withdraw into my pique." In 1994, he wrote, the political scientist Charles Murray and the late psychologist Richard



"Building a commitment to egalitarianism on our genetic uniformity is building a house on sand," Harden writes.

PHOTOGRAPH BY DAN WINTERS



"What smell?"

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Herrnstein "published a bestseller that achieved great notoriety, The Bell Curve. Apart from its claims about a genetic basis for a 'racial' hierarchy in intelligence, the book claimed that social outcomes like poverty and inequality in earnings had a genetic foundation. Personally, I thought the book was outrageous and a saddening resuscitation of ideas that had increasingly been dismissed as 'pseudoscience.' Belsky's work strikes me as an extension of the Murray-Herrnstein view of the world." He concluded, "At some point, I think we need to say enough is enough." (Darity told me, of his e-mails, "I stand by all that.")

An admirer of Darity's work—especially on reparations for slavery—Harden was surprised that she'd elicited such rancor from someone with whom she was otherwise in near-total political agreement. In the wake of the exchange, some of the other fellows stopped speaking to Harden, and the e-mail chain was forwarded to members of the foundation's board. The next year, after winning the American Psychological Association's Distinguished Scientific Award for an Early Career Contribution to Psychology, Harden applied for a grant from Russell Sage's biosciences initiative, which had supported similar research in the past. She received enthusiastic peer reviews from its scientific advisers, and was given to understand that the grant's disbursal was a fait accompli. During a contentious meeting, however, the full board voted to overturn the scientific panel's recommendation. Over the next year, a biosciences working group revised the program's funding guidelines, stipulating in the final draft that it would not support any research into the first-order effects of genes on behavior or social outcomes. In the end, the board chose to disband the initiative entirely. (A spokesperson for Russell Sage told me by e-mail that the decision was based on the "consideration of numerous factors, including RSF's relative lack of expertise in this area.")

Harden has spent the last five years thinking about Darity's objections. As she put it to me recently, "When I reread his e-mails, it all struck me as very Chekhovian. Like, here are all the guns that are going to go off in Act V." Harden understands why the left, with which she identifies, has nurtured an aversion to genetics. She went to graduate school in Charlottesville, the birthplace of Carrie Buck, a "feeble-minded" woman who was sterilized against her will, in 1927, under a state eugenics program sanctioned by the Supreme Court. But she does not believe that a recognition of this horrifying history ought to entail the peremptory rejection of the current scientific consensus. The left's decision to withdraw from conversations about genetics and social outcomes leaves a vacuum that the right has gaily filled. The situation has been exploited as a "red pill" to expose liberal hypocrisy. Today, Harden is at the forefront of an inchoate movement, sometimes referred to as the "hereditarian left," dedicated to the development of a new moral framework for talking about genetics.

This fall, Princeton University Press will publish Harden's book, "The Genetic Lottery: Why DNA Matters for Social Equality," which attempts to reconcile the findings of her field with her commitments to social justice. As she writes, "Yes, the genetic differences between any two people are tiny when compared to the long stretches of DNA coiled in every human cell. But these differences loom large when trying to understand why, for example, one child has autism and another doesn't; why one is deaf and another hearing; and—as I will describe in this book—why one child will struggle with school and another will not. Genetic differences between us matter for our lives. They *cause* differences in things we care about. Building a commitment to egalitarianism on our genetic uniformity is building a house on sand."

Harden understands herself to be waging a two-front campaign. On her left are those inclined to insist that genes don't really matter; on her right are those who suspect that genes are, in fact, the only things that matter. The history of behavior genetics is the story of each generation's attempt to chart a middle course. When the discipline first began to coalesce, in the early nineteen-sixties, the memory of Nazi atrocities rendered the eugenics threat distinctly untheoretical. The reigning model of human development, which seemed to accord with postwar liberal principles, was behaviorism, with its hope that environmental manipulation could produce any desired outcome. It did not take much, however, to notice that there is considerable variance in the distribution of human abilities. The early behavior geneticists started with the premise that our nature is neither perfectly fixed nor perfectly plastic, and that this was a good thing. They conscripted as their intel-

lectual patriarch the Russian émigré Theodosius Dobzhansky, an evolutionary biologist who was committed to anti-racism and to the conviction that "genetic diversity is mankind's most precious resource, not a regrettable deviation from an ideal state of monotonous sameness."

The field's modern pioneers were keen to establish that their interest lay in academic questions, and they prioritized the comparatively clement study of animals. In 1965, John Paul Scott and John L. Fuller reported that, despite the discernible genetic differences among dog breeds, there did not seem to be categorical distinctions that might allow one to conclude that, say, German shepherds were smarter than Labradors. The most important variations occurred on an individual level, and environmental conditions were as important as innate qualities, if not more so.

This era of comity did not last long. In 1969, Arthur Jensen, a respected psychologist at Berkeley, published an article called "How Much Can We Boost IQ and Scholastic Achievement?" in the *Harvard Educational Review*. Jensen coolly argued that there was an I.Q. gap between the races in America; that the reason for this gap was at least partly genetic, and thus, unfortunately, immutable; and that policy interventions were unlikely to thwart the natural hierarchy. The Jensen affair, which extended for more than a decade, prefigured the publication of "The Bell Curve": endless public debate, student protests, burned effigies, death threats, accusations of intellectual totalitarianism. As Aaron Panofsky writes in "Misbehaving Science," a history of the discipline, "Controversies wax and wane, sometimes they emerge explosively, but they never really resolve and always threaten to reappear."

The problem was that most of Jensen's colleagues agreed with some of his basic claims: it did seem that there was something akin to "general intelligence" in humans, that it could be meaningfully measured with I.Q. tests, and that genetic inheritance has a good deal to do with it. Critics quickly pointed out that the convoluted social pathways that led from genes to complex traits rendered any simple notion of genetic "causation" silly. In 1972, Christopher Jencks, a sociologist at Harvard, proposed the thought experiment of a country in which red-haired children were prevented from going to school. One might anticipate that such children would demonstrate a weaker reading ability, which, because red hair is genetic in origin, would be conspicuously linked to their genes—and would, in some bizarre sense, be "caused" by them.

Richard Lewontin, a geneticist and a staunch egalitarian, developed a different analogy. Imagine a bag of seed corn. If you plant one handful in nutrient-poor soil, and another in rich loam, there will be a stark difference in their average stalk height, irrespective of any genetic predisposition. (There will also be greater "inequality" among the well-provisioned plants; perhaps counterintuitively, the more uniformly beneficial the climate, the more pronounced the effects of genetic difference.) Jensen's racial comparison was thus unwarranted and invidious: it was absurd to think, in the America of 1969, that different races enjoyed equally bountiful circumstances.

Behavior geneticists emphasized that their own studies showed that poorer children adopted by wealthy families saw substantial gains in average I.Q. This finding, it later emerged, obtained on a societal basis as well. The scholar James Flynn found that, for reasons that are not entirely understood, the average I.Q. of a population increases significantly over time: most people living a hundred years ago, were they given contemporary I.Q. tests, would easily have qualified as what early psychometricians called, with putative technical precision, "morons" or "imbeciles." Such tests might be measuring something real, but whatever it is cannot be considered "purely" biological or inflexible.



Our ability to remediate genetic differences was thus a separate moral question. In 1979, the economist Arthur Goldberger published a mordant rejoinder to social conservatives who argued that genetic differences rendered the welfare apparatus supererogatory. "In the same vein, if it were shown that a large proportion of the variance in eyesight were due to genetic causes, then the Royal Commission on the Distribution of Eyeglasses might well pack up," he wrote. Just because outcomes might be partly genetic didn't mean that they were inevitable.

As twin studies proliferated throughout the nineteen-eighties, their results contributed to substantial changes in our moral intuitions. When schizophrenia and autism, for example, turned out to be largely heritable, we no longer blamed these disorders on cold or inept mothers. But, for such freighted traits as intelligence, liberals remained understandably anxious and continued to insist that differences—not just on a group level but on an individual one—were merely artifacts of an unequal environment. Conservatives pointed out that an à-la-carte approach to scientific findings was intellectually incoherent.

In 1997, Turkheimer, perhaps the preëminent behavior geneticist of his generation, published a short political meditation called "The Search for a Psychometric Left," in which he called upon his fellow-liberals to accept that they had nothing to fear from genes. He proposed that "a psychometric left would recognize that human ability, individual differences in human ability, measures of human ability, and genetic influences on human ability are all real but profoundly complex, too complex for the imposition of biogenetic or political schemata. It would assert that the most important difference between the races is racism, with its origins in the horrific institution of slavery only a very few generations ago. Opposition to determinism, reductionism and racism, in their extreme or moderate forms, need not depend on blanket rejection of undeniable if easily misinterpreted facts like heritability." He concluded, "Indeed it had better not, because if it does the eventual victory of the psychometric right is assured."

Having endured the summer of 2020 trapped indoors in the oppressive Austin heat, Harden was grateful for an invitation to spend this past June at Montana State University, in Bozeman. A

recent influx of out-of-town wealth had accelerated during the pandemic, and the town's industrial fixtures had been ruthlessly spruced up to suit the needs of remote knowledge workers. Harden, who has moss-colored eyes, a wry smile, and an earnest nonchalance, met me at a coffee shop that looked as though it had been airlifted that morning from San Francisco. She wore a soft flannel shirt, faded stone-washed jeans, and dark Ray-Ban sunglasses. The air was hot and dry, but Harden is the sort of person who seems accompanied by a perpetual breeze. " 'The Bell Curve' came out when I was twelve years old, and somehow that's still what people are talking about," she said. "There's a new white dude in every generation who gets famous talking about this." Virtually every time Harden gives a presentation, someone asks about "Gattaca," the 1997 movie about a dystopia structured by genetic caste. Harden responds that the life of a behavior geneticist resembles a different nineties classic: "Groundhog Day."

Harden was raised in a conservative environment, and though she later rejected much of her upbringing, she has maintained a convert's distrust of orthodoxy. Her father's family were farmers and pipeline workers in Texas, and her grandparents—Pentecostalists who embraced faith healing and speaking in tongues—were lifted out of extreme poverty by the military. "It was the classic tale of the government's deliberate creation of a white middle class," she said. Her father served as a Navy pilot, then took a job flying for FedEx, and Harden and her brother grew up in an exurb of Memphis. Harden scandalized her Christian high school when, at fifteen, she wrote a term paper about "The Bell Jar." She has not recapitulated the arc of her parents' lives. "They're still very religious—very suspicious of the mainstream media, secular universities, secular anything, which has accelerated in the Trump years."

Harden's parents insisted that she stay in the South for college, and Furman University, a formerly Baptist college in South Carolina, gave her a full scholarship based on her near-perfect SAT scores. She received paid summer fellowships in rodent genetics, and found that she preferred the grunt work of the lab bench to the difficult multitasking required by the jobs in waitressing and retail to which she was accustomed. She only later realized that the point of the program was to draw students from underrepresented backgrounds into science. At twenty, she applied to graduate school in clinical psychology. Her father's only comment was "I was afraid you were going to say that." She was rejected almost everywhere, but Turkheimer, noting her lab experience and her exceptionally high quantitative G.R.E. scores, invited her for an interview. She wore a new Ann Taylor suit and he wore Tevas. Turkheimer's e-mail avatar is the Greek letter psi, for "psychology," set against the Grateful Dead logo; he offered her admission on the condition that she stop calling him "sir."

Her experiences as an apprentice scientist were only part of the reason that she grew disillusioned with evangelicalism: "There was this incredible post-9/11 nationalism—flags on the altar next to crosses—that infected my church to a point that felt immoral and gross. Sometimes I feel like I sat through eleven years of Christian school and absorbed all the things they didn't intend for me to absorb. I thought we were following a social-justice ethos in which the meek shall inherit the earth, and I must've missed the track that was the run-up to the Iraq War." Turkheimer recommended a local psychoanalyst, who, Harden said, took her on as a "charity case."

It might have seemed peculiar that a behavior geneticist was recommending analytic treatment, but Turkheimer had long been known for his belief that biological explanations for behavior were unlikely ever to supplant cultural and psychological ones. Turkheimer's longtime rival, the prolific researcher Robert Plomin, believed otherwise, predicting that we would one day achieve molecular-level purchase on what makes people who they are. Turkheimer associated himself with what Plomin lamented as "the gloomy prospect"—the notion that the relevant processes were too messy and idiosyncratic to be fixed under glass. The prospect was gloomy, Turkheimer said, only from the perspective of a social scientist. As a person, he had a more sanguine view: "In the long run, the gloomy prospect always wins, and no one would want to live in a world where it did not."

This did not mean that behavior genetics was useless, only that it required a modest perspective on what could be achieved: twin studies might never explain how a given genotype made someone more likely to be depressed, but they could help avoid the kind of mistaken inference that blamed bad par-



enting. Harden's work in Turkheimer's lab remained squarely within this tradition. For example, the state of Texas spent a lot of money on school programs to promote sexual abstinence, on the basis of research that showed a correlation between adolescent sexuality and subsequent antisocial behavior. Harden used a twin study to demonstrate that a twin who began having sex early showed no greater likelihood of engaging in risky behavior than her twin who had abstained. In other words, both behaviors might be the expression of some underlying predisposition, but no causal arrow could be drawn. She did similar work to show that the idea of "peer pressure" as a driver of adolescent substance abuse was, at best, a radical oversimplification of an extremely complex transactional dynamic between genes and environment.

Harden's years in graduate school coincided with the arrival of actual geneticists in a field long dominated by psychologists. In 2003, scientists completed the first full map of the human genome, and it seemed as though Plomin's vision would be borne out. Some illnesses—Huntington's, for example—turned out to be the result of a mutation in a single gene, and there was a widespread assumption that complex personality traits might be as cleanly derived. A gene was purportedly identified for aggression, and one for depression, and one for homosexuality. But these studies couldn't be replicated, and the "candidate gene" era had to be written off as a gross misstep. It became clear that complex traits were governed by multiple genes, and that individual genes could pertain to a variety of attributes.

Around the time that Harden was finishing her dissertation, however, researchers began to wonder if it might be possible to identify hundreds or even thousands of places in the genome where differences in our DNA sequences could be correlated with a trait or an outcome. This research design was called a "genome-wide association study," or GWAS (pronounced ji-wass). Turkheimer was characteristically unimpressed with the initial results, which were weak. At the annual conference of the Behavior Genetics Association in 2013, he delivered a withering keynote address: trying to understand human behavior with a GWAS was like putting a CD under a microscope to figure out if a song was good. Harden, too, was sure that they would not learn anything from these contrived statistical exercises. "But we were wrong," she said.



"I'm not undermining your diet. I'm baking you a birthday cake."

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In the last five years, GWAS results have rapidly evolved. Polygenic scores can now account for a good deal of a population's variance in height and weight, and have been shown to predict cardiovascular disease and diabetes. "This is really a cause for celebration," Plomin told me. "Imagine the advent of predictive medicine—to be able to identify medical issues before they occur." Researchers have also found links with complex behavioral traits. "Significant hits have been reported for traits such as coffee and tea consumption, chronic sleep disturbances (insomnia), tiredness, and even whether an individual is a morning person or a night person," Plomin notes, in his 2018 book, "Blueprint: How DNA Makes Us Who We Are." The new research, he writes, "signals the start of the DNA revolution in psychology."

The largest GWAS for educational attainment to date found almost thirteen hundred sites on the genome that are correlated with success in school. Though each might have an infinitesimally small statistical relationship with the outcome, together they can be summed to produce a score that has predictive validity: those in the group with the highest scores were approximately five times more likely to graduate from college than those with the lowest scores—about as accurate a predictor as traditional social-science variables like parental income. Nobody knows quite what to do with these results, but, as one population geneticist put it to me, "the train has left the station—even if researchers don't fully understand what they're learning, this is how the genome is used now."

Harden and her collaborators currently conduct their own GWAS efforts; most recently, they have investigated behaviors including adolescent aggression and risktaking, which are strongly predictive of life span and labor-market outcomes. She knows that she may never convince Turkheimer, who continues to argue that the light these studies generate is too faint to dispel his gloom. But she thinks that they represent an incremental step forward: "Eric says it's dangerous to talk about genes



"Now that I see him up here, I think we might not have needed the horse at all."

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if you don't know exactly how they're associated with the outcome, but we don't even really know how, exactly, poverty changes things—why is it good to be adopted into a rich family?" She added, "It's impossible for me not to care about how what people start with shapes their lives."

Harden was joined in Bozeman by her younger brother, Micah, who was visiting from Memphis. We sat together on the covered patio of the airy house Harden had rented with her boyfriend, an architectural designer named Travis Avery. It was the longest spell she had ever spent away from her children, who were on a road trip with Tucker-Drob. (The couple got divorced in 2018.) Micah had not yet read his sister's book but had grudgingly agreed to be genotyped for it. "We have the same brown hair, same green eyes, same tendency to do what our stepmother refers to as the 'Harden slow-blink,' closing our eyes for a few seconds when we are annoyed at someone," she writes. "Despite these similarities, our lives have turned out differently." Micah still lives near their childhood home, has not left the church, and can run up and down a soccer field "without gasping for oxygen." Her broader point, she told me, was that siblings, who share only about half their DNA, are as unalike as they are similar. She said, "On our thirteenth chromosome we're basically two strangers."

Micah had come with his wife, Steffi, and their ten-month-old, Hadley, a bright, sly child with an endearingly defiant stare. As the adults sat around talking, Hadley plotted to make off with the ramekins of almonds and glasses of wine. Each time she evaded adult supervision and vaulted onto the coffee table, Micah took the opportunity to troll his sister, saying delightedly, "Looks like Hadley won the genetic lottery!" Harden rolled her eyes and reminded him that this was the opposite of what she'd meant. Micah, as it turned out, knew precisely what she meant; he had already described the book to Steffi as "telling the right that they didn't bootstrap and telling the left that interventions are more complicated than they want to believe," which Harden conceded was not a terrible précis. Micah and Steffi had met playing soccer, and Harden teased them that Hadley might forsake the pitch for musical theatre. She thinks that all the books about the minor decisions of parenting—whether to introduce carrots or broccoli first, say—are "an attempt to psychologically defend ourselves from how little control we have in the world, about ourselves and our children."

The episode at Russell Sage had prompted Harden to think about what her research really meant: "The experience was a pivot point for me, away from a career that was almost entirely about the production of empirical research and toward doing more metascience." "The Genetic Lottery" reflects her years spent wandering in the desert. The book does not shy away from technical details, but it wears its learning lightly; alongside Harden's frequent Biblical allusions are references to the movies "Clueless" and "Sliding Doors."

Harden described her book to me as "fundamentally defensive in a lot of ways," and before she makes any claims for what we can learn from GWAS results she goes into great detail about their limitations. GWAS simply provides a picture of how genes are correlated with success, or mental health, or criminality, for particular populations in a particular society at a particular time: it wouldn't make sense to compare findings for educational attainment for women in America today with women who came of age before sex-based discrimination was outlawed in higher education. And GWAS results are not "portable": a study conducted on white Britons tells you little about people in Estonia or Nigeria. Polygenic scores remain poor predictors of individual outcomes—there are plenty of people on the low end of the spectrum for educational attainment who go on to graduate studies, and plenty of people on the high end who never secure a high-school diploma.

GWAS results can accidentally reveal as much about culture or geography as they do about genes. A study of chopstick use in San Francisco would find that proficiency is genetically correlated with East Asian ancestry, which is a far cry from the discovery of an inborn dexterity with a particular utensil. One way to sidestep this pitfall is by comparing GWAS results within families, where they have been shown to reliably account for differences in life outcomes among siblings. But even this measure does not solve Christopher Jencks's redhead problem. "A person might go far in education because they are smart and curious and hard-working, or because they are conforming and risk-averse and obsessive, or because they have features (pretty, tall, skinny, light-colored) that privilege

them in an intractably biased society," Harden writes. "A study of what is correlated with succeeding in an education system doesn't tell you whether that system is good, or fair, or just."

At some point, Harden has to set aside her caveats and assert that sheer genetic luck plays a causal role in outcomes that matter: "If people are born with different genes, if the genetic Powerball lands on a different polygenic combination, then they differ not just in their height but also in their wealth." For her, accepting this is the necessary prelude to any conversation about what to do about it. "If you want to help people, you have to know what's most effective, so you need the science," she told me. Harden thinks that the conversation about behavior genetics will continue to go in circles as long as we preserve the facile distinction between immutable genetic causes and malleable environmental ones. We would be better off if we accepted that everything is woven of long causal chains from genes through culture to personhood, and that the more we understand about them the more effective our interventions might be.

The first thing that social-science genomics can do is help researchers control for confounding genetic variables that are almost universally overlooked. As Harden puts it in her book, "Genetic data gets one source of human differences *out of the way*, so that the environment is easier to see." For example, beginning in 2002, the federal government spent almost a billion dollars on something called the Healthy Marriage Initiative, which sought to reduce marital conflict as a way of combatting poverty and juvenile crime. Harden was not surprised to hear that the policy had no discernible effect. Her own research showed that, when identical-twin sisters have marriages with different levels of conflict, their children have equal risk for delinquency. The point was not to estimate the effects of DNA per se, but to provide an additional counterfactual for analysis: would an observed result continue to hold up if the people involved had different genes? Harden can identify studies on a vast array of topics—Will coaching underresourced parents to speak more to their children reduce educational gaps? Does having dinner earlier improve familial relationships?—whose conclusions she considers dubious because the researchers controlled for everything except the fact that parents pass along to their children both a home environment and a genome.

She acknowledged that GWAS techniques are too new, and the anxieties about behavior genetics too deeply entrenched, to have produced many immediately instrumental examples so far. But she pointed to a study from last year as proof of concept. A team of researchers led by Jasmin Wertz, at Duke, used GWAS results to examine four different "aspects of parenting that have previously been shown to predict children's educational attainment: cognitive stimulation; warmth and sensitivity; household chaos (reverse-coded to indicate low household chaos); and the safety and tidiness of the family home." They found that one of them—cognitive stimulation—was linked to children's academic achievement *and* their mothers' genes, even when the children did not inherit the relevant variants. Parental choices to read books, do puzzles, and visit museums might be conditioned by their own genes, but they nevertheless produced significant *environmental* effects.

Even the discovery that a particular outcome is largely genetic doesn't mean that its effects will invariably persist. In 1972, the U.K. government raised the age at which students could leave school, from fifteen to sixteen. In 2018, a research group studied the effects of



the extra year on the students as adults, and found that their health outcomes for measures like body-mass index, for whatever reason, improved slightly on average. But those with a high genetic propensity for obesity benefitted dramatically—a differential impact that might easily have gone unnoticed.

Some of Harden's most recent research has looked at curricular tracking for mathematics, an intuitive instance of how gene-environment interactions can create feedback loops. Poor schools, Harden has found, tend to let down all their students: those with innate math ability are rarely encouraged to pursue advanced classes, and those who struggle are allowed to drop the subject entirely—a situation that often forecloses the possibility of college. The most well-off schools are able to initiate virtuous cycles in the most gifted math students, and break vicious cycles in the less gifted, raising the ceiling and the floor for achievement.

Harden has perceived, in the wake of studies like these, a new willingness to consider the role of genetics: "I get e-mails now from curious social scientists that say, 'I've never thought genetics was useful or relevant for me, in part because I worried there was no way to talk about genes and intelligence, or genes and behavior, without dabbling in Murray-style scientific racism.'"

The Murray-Herrnstein gun that hung on the wall of William Darity's e-mail went off about a year later. On April 23, 2017, the popular podcaster Sam Harris released an episode—"Forbidden Knowledge"—designed to trigger a commotion among liberal intellectuals. Harris was affiliated with the so-called Intellectual Dark Web, a miscellaneous club (from which he has since distanced himself) bound together by a shared fixation with what it perceives to be liberal groupthink. In his interviews, Harris adopts a drowsy monotone that seems pitched to signal his commitment to the dispassionate promotion of disputatious ideas. On this occasion he invited listeners to "strap in" for a conversation with Charles Murray about "The Bell Curve," which Harris advertised as "one of the most controversial books in living memory."

The book generated such outsized hostility, according to Harris, because it traffics in unpleasant truths. "People don't want to hear that intelligence is a real thing, and that some people have more of it than others," he said. "They don't want to hear that differences in I.Q. matter because they're highly predictive of differential success in life—and not just for things like educational attainment and wealth but for things like out-of-wedlock birth and mortality. People don't want to hear that a person's intelligence

is in large measure due to his or her genes and there seems to be very little we can do environmentally to increase a person's intelligence, even in childhood. It's not that the environment doesn't matter, but genes appear to be fifty to eighty per cent of the story. People don't want to hear this. And they certainly don't want to hear that average I.Q. differs across races and ethnic groups."

Harris was drawn to Murray's defense after an incident at Middlebury College, the previous month, in which Murray was shouted down by student protesters and his faculty chaperone was injured in a melee. Harris considered the deplatforming "part of an anti-free-speech hysteria that is spreading on college campuses," and concluded, "I find the dishonesty and hypocrisy and moral cowardice of Murray's critics shocking. And the fact that I was taken in by this defamation of him, and effectively became part of a silent mob that was just watching what amounted to a modern witch-burning—that was intolerable to me." The two men discussed Murray's contention that observed racial differences are at least partly genetic in origin, and that meliorist interventions like welfare and affirmative-action programs are unlikely to prove successful.



Harris seemed less interested in Murray as a scholar or pundit than as a culture-war trope. Soon after the events at Middlebury, the Web magazine Vox had published a piece that rejected even Murray's basic points about intelligence *tout court*. Harris's podcast seemed designed to reveal that the left's repudiation of Murray was motivated by politics rather than by science. After it was released, Vox asked Turkheimer to contribute a rebuttal, and he proposed that Harden collaborate. Harden felt a responsibility to accept the assignment. "People are very tempted by Murray's ideas, and there's a certain kind of person who almost certainly hasn't read 'The Bell Curve' but listens to Sam Harris, who has a huge audience," she told me.

She believed that the left's standard-issue response was unhelpful. "This is a very Christian thing I'm about to say, but it reminds me of the episode where Jesus is tempted by Satan in the desert," she told me, in Bozeman. "There's just enough truth in Murray that if you say, 'This is all wrong,' you paint yourself into a corner where you say intellectually dishonest things. Jesus has to say, 'This part is true, and this part is false.'" She stopped herself. "Don't write that I'm comparing Murray to Satan," she said, and then continued, "I know we all want to say it's not true that 'intelligence tests predict things,' but that's not the lie." To say that sort of thing ran the risk of furthering the martyrology of Murray, and of lending lustre to the notion that his ideas were indeed "forbidden knowledge." The scholar and critic Fredrik deBoer, who has drawn heavily on Harden's work, has been even more pointed in his criticism. In a 2017 essay, he wrote, "Liberals have flattered themselves, since the election, as the party of facts, truth tellers who are laboring against those who have rejected reason itself. And, on certain issues, I suspect they are right. But let's be clear: the denial of the impact of genetics on human academic outcomes is fake news."

The Vox piece, which Harden and Turkheimer wrote with the social psychologist Richard Nisbett, was headlined "Charles Murray is once again peddling junk science about race and IQ." There is a lot of good evidence, they wrote, to support the ideas that "intelligence, as measured by IQ tests, is a meaningful construct" and that "individual differences in intelligence are moderately heritable." They even conceded, with many qualifications, that "racial groups differ in their mean scores on IQ tests." But there was simply no good scientific reason to conclude that observed racial gaps were anything but the fallout from the effects of racism. They pointed out that in the one instance when Harris used James Flynn's work to push back against Murray's ideas, Murray responded with some hand-waving about a research paper that he admitted was too complicated for him to understand.

Despite its inflammatory headline, the article represented an unusually subtle culture-war intervention. Nevertheless, Harris and his legion of supporters took it as the instigation of a "smear campaign." In *Quillette,* the researcher Richard Haier compared Harden and Turkheimer's repudiation of Murray to climate-change denial—the second time in a year that Harden had been thus indicted, this time from the right. The recriminations of what Harden now describes as "the Vox fiasco" dragged on over the next year, with parades of arguments and counterarguments, leaked personal e-mails, and levels of sustained podcasting that were, by anyone's standards, extreme. Harden told me, "The popular reaction was so divorced from that of the scientific community that men on the Internet were sending me papers to read without realizing they were citing work by my ex-husband, and that the work itself was a meta-analysis of *my own papers*."

Last summer, an anonymous intermediary proposed to Harris and Harden that they address their unresolved issues. Harden appeared on Harris's podcast, and patiently explained why Murray's speculation was dangerously out in front of the science. At the moment, technical and methodological challenges, as well as the persistent effects of an unequal environment, would make it impossible to conduct an experiment to test Murray's idly incendiary hypotheses. She refused to grant that his provocations were innocent: "I don't disagree with you about insisting on intellectual honesty, but I think of it as 'both/and'—I think that that value is very important, but I also find it very important to listen to people when they say, 'I'm worried about how this idea might be used to harm me or my family or my neighborhood or my group.'" (Harris declined to comment on the record for this piece.) As she once put it in an essay, "There is a middle ground between 'let's never talk about genes and pretend cognitive ability doesn't exist' and 'let's just ask some questions that pander to a virulent online community populated by racists with swastikas in their Twitter bios.'"

Harden is not alone in her drive to fulfill Turkheimer's dream of a "psychometric left." Dalton Conley and Jason Fletcher's book, "The Genome Factor," from 2017, outlines similar ar-

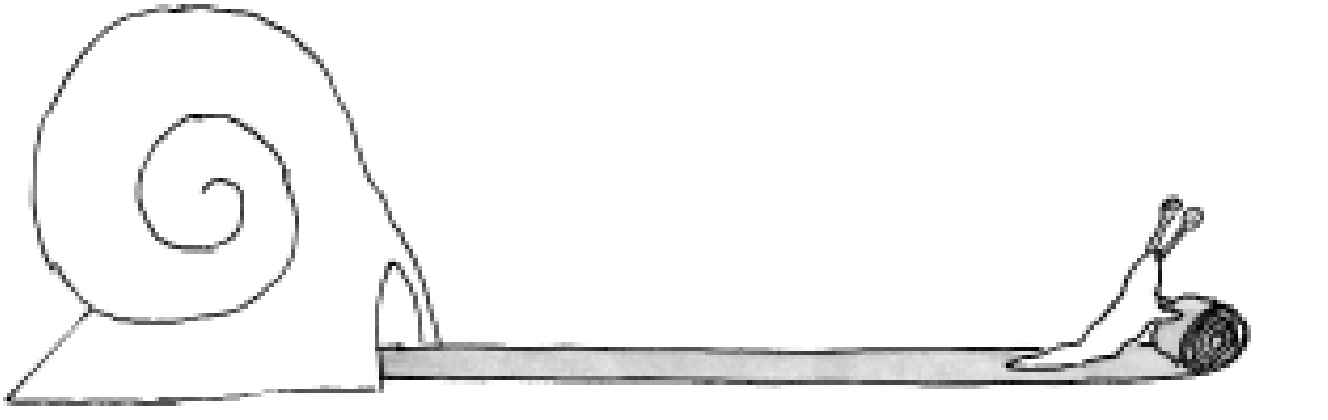
guments, as does the sociologist Jeremy Freese. Last year, Fredrik deBoer published "The Cult of Smart," which argues that the education-reform movement has been trammelled by its willful ignorance of genetic variation. Views associated with the "hereditarian left" have also been articulated by the psychiatrist and essayist Scott Alexander and the philosopher Peter Singer. Singer told me, of Harden, "Her ethical arguments are ones that I have held for quite a long time. If you ignore these things that contribute to inequality, or pretend they don't exist, you make it more difficult to achieve the kind of society that you value." He added, "There's a politically correct left that's still not open to these things." Stuart Ritchie, an intelligence researcher, told me he thinks that Harden's book might create its own audience: "There's so much toxicity in this debate that it'll take a long time to change people's minds on it, if at all, but I think Paige's book is just so clear in its explanation of the science."

The nomenclature has given Harden pause, depending on the definition of "hereditarian," which can connote more biodeterminist views, and the definition of "left"—deBoer is a communist, Alexander leans libertarian, and Harden described herself to me as a "Matthew 25:40 empiricist" ("The King will reply, 'Truly I tell you, whatever you did for one of the least of these brothers and sisters of mine, you did for me'"). The political sensitivity of the subject has convinced many sympathetic economists, psychologists, and geneticists to keep their heads below the parapets of academia. As the population geneticist I spoke to put it to me, "Geneticists know how to talk about this stuff to each other, in part because we understand terms like 'heritability,' which we use in technical ways that don't always fully overlap with their colloquial meanings, and in part because we're charitable with each other, assume each other's good faith—we know that our colleagues aren't eugenicists. But we have no idea how to talk about it in public, and, while I don't agree with everything she said, sometimes it feels like we've all been sitting around waiting for a book like Paige's."

Harden's outspokenness has generated significant blowback from the left. On Twitter, she has been caricatured as a kind of ditzy bourgeois dilettante who gives succor to the viciousness of the alt-right. This March, after she expressed support for standardized testing—which she argues predicts student success above and beyond G.P.A. and can help increase low-income and minority representation—a parody account appeared under the handle @EugenicInc, with the name "Dr. Harden, Social Justice Through Eugenics!" and the bio "Not a determinist, but yes, genes cause everything. I just want to breed more Hilary Clinton's for higher quality future people." One tweet read, "In This House We Believe, Science is Real, Womens Rights are Human Rights, Black Lives Matter, News Isnt Fake, Some Kids Have Dumb-Dumb Genes!!!"

In 2018, she wrote an Op-Ed in the *Times*, arguing that progressives should embrace the potential of genetics to inform education policy. Dorothy Roberts, a professor of law, sociology, and Africana studies at the University of Pennsylvania, strongly disagreed: "There's just no way that genetic testing is going to lead to a restructuring of society in a just way in the future—we have a hundred years of evidence for what happens when social outcomes are attributed to genetic differences, and it is always to stigmatize, control, and punish the people predicted to have socially devalued traits." Darity, the economist, told me that he doesn't see how Harden can insist that differences within groups are genetic but that differences between them are not: "It's a feint and a dodge for her to say, 'Well, I'm only looking at variations across individuals.'"

There is a good precedent for this kind of concern. In "Blueprint," Robert Plomin wrote that polygenic scores should be understood as "fortune tellers" that can "foretell our futures from birth." Jared Taylor, a white-supremacist leader, argued that Plomin's book should "destroy the basis for the entire egalitarian enterprise of the last 60 or so years." He seized on Plomin's claim that, for many outcomes, "environmental levers for change are not within our grasp." Taylor wrote, "This is a devastating finding for the armies of academics



and uplift artists who think every difference in outcome is society's fault." He continued, "And, although Blueprint includes nothing about race, the implications for 'racial justice' are just as colossal." Harden has been merciless in her response to behavior geneticists whose disciplinary salesmanship—and perhaps worse—inadvertently indulges the extreme right. In her own review of Plomin's book, she wrote, "Insisting that DNA matters is scientifically accurate; insisting that it is the only thing that matters is scientifically outlandish." (Plomin told me that Harden misrepresented his intent. He added, "Good luck to Paige in convincing people who are engaged in the culture wars about this middle path she's suggesting. . . . My view is it isn't worth confronting people and arguing with them.")

With the first review of Harden's book, these dynamics played out on cue. Razib Khan, a conservative science blogger identified with the "human biodiversity" movement, wrote that he admired her presentation of the science but was put off by the book's politics; though he notes that a colleague of his once heard Harden described as "Charles Murray in a skirt," he clearly thinks the honorific was misplaced. "Alas, if you do not come to this work with Harden's commitment to social justice, much of the non-scientific content will strike you as misguided, gratuitous and at times even unfair." This did not prevent some on the Twitter left from expressing immediate disgust. Kevin Bird, who describes himself in his Twitter bio as a "radical scientist," tweeted, "Personally, I wouldn't be very happy if a race science guy thought my book was good." Harden sighed when she recounted the exchange: "It's always from both flanks. It felt like another miniature version of Harris on one side and Darity on the other."

The day after Harden's brother returned to Memphis, she and I went for a walk around the campus of Montana State University. We wandered into the Museum of the Rockies, which has a world-class collection of dinosaur fossils, and she remarked that the experience would have been more fun with her children. I asked if her work had given her any special insights into the challenges of parenting, and she laughed and threw up her hands, joking that the only established public roles for psychology professors were either as center-right pundits or as dispensers of child-rearing advice. She told me, "As a parent, I try to keep in mind that differences between people are examples of runaway feedback loops of gene-by-environment interaction. People have some initial genetic predisposition to something, and that leads them to choose certain friends over other friends, and these initial exposures have a certain effect, and you like that effect and you choose it again, and then these feedback loops become self-reinforcing."

Behavior geneticists frequently quote an old disciplinary chestnut about how first-time parents are naïve behaviorists and that a second child turns them into convinced geneticists. In one chapter of her book, Harden mentions that her son struggles with a speech impairment. "Looking at how my children differ in their ability to articulate words, I can easily see the capricious hand of nature," she writes. "When it comes to inheriting whatever combination of genetic variants allows one to pronounce a word like 'squirrel' by the age of three, my daughter was lucky. My son was not." She emphasizes that parents are already well aware of how we might talk about genetics without making normative judgments. "I certainly am not implying that one of my children is 'superior' or 'inferior' to the other one," she writes. "Verbal ability is valued, but having strong verbal ability doesn't make one of my children more *valuable* to me. The genetic differences between them are meaningful for their lives, but those differences do not create a hierarchy of intrinsic worth."

The ultimate claim of "The Genetic Lottery" is an extraordinarily ambitious act of moral entrepreneurialism. Harden argues that an appreciation of the role of simple genetic luck—alongside all the other arbitrary lotteries of birth—will make us, as a society, more inclined to ensure that everyone has the opportunity to enjoy lives of dignity and comfort. She writes, "I think we must dismantle the false distinction between 'inequalities that society is responsible for addressing' and 'inequalities that are caused by differences in biology.'" She cites research showing that most people are much more willing to support redistributive policies if differences in opportunity are seen as arbitrarily unfair—and deeply pervasive.

As she put it to me in an e-mail, "Even if we eliminated all inequalities in educational outcomes between sexes, all inequalities by family socioeconomic status, all inequalities between different schools (which as you know are very confounded with inequalities by race), we've only eliminated a bit more than a quarter of the inequalities in educational outcomes." She directed me to a comprehensive World Bank data set, released in 2020, which showed that seventy-two per cent of inequality at the primary-school level in the U.S. is within demographic groups rather than between them. "Common intuitions about the scale of inequality in our society, and our imaginations about how much progress we would make if we eliminated the visible inequalities by race and class, are profoundly wrong," she wrote. "The science confronts us with a form of inequality that would otherwise be easy to ignore."

The perspective of "gene blindness," she believes, "perpetuates the myth that those of us who have 'succeeded' in twenty-first century capitalism have done so primarily because of our own hard work and effort, and not because we happened to be the beneficiaries of accidents of birth—both environmental *and* genetic." She invokes the writing of the philosophers John Rawls and Elizabeth Anderson to argue that we need to reject "the idea that America is or could ever be the sort of 'meritocracy' where social goods are divided up according to what people deserve." Her rhetoric is grand, though the practical implications, insofar as she discusses them, are not far removed from the mid-century social-democratic consensus—the priorities of, say, Hubert Humphrey. If genes play a significant role in educational attainment, then perhaps we ought to design our society such that you don't need a college degree to secure health care.

In my conversations with her colleagues, Harden's overarching idea was

almost universally described as both beautiful and hopelessly quixotic. As one philosopher put it, "What I love about Paige, and also what I find so incredibly moving and courageous and reckless about her, is that she thinks she can change the whole apparatus—this large-scale framework for moral responsibility—on the basis of our understanding of our genes. I'm not sure genetics has the capacity to shift our intuitions, at least on the left—because of course the right already cares about genes. In principle, the left could try to take genes as a starting point, too, but in practice it's probably a different story. It's really awful to think about, but I think the fact that she's an attractive and charismatic Southern woman seems not irrelevant to her desirability as a culture-war ally for the right." James Tabery, a philosopher at the University of Utah, believes that underscoring genetic difference is just as likely to increase inequality as to reduce it. "It's truly noble for Paige to make the case for why we might think of biological differences as similar to socially constructed differences, but you're bumping into a great deal of historical, economic, political, and philosophical momentum—and it's dangerous, no matter how noble her intentions are, because once the ideas are out there they're going to get digested the way they're going to get digested," he said. "The playing board has been set for some time."

In Bozeman, Harden seemed anxious that she had not heard from Turkheimer about her book. It took him a long time to get around to reading it, he told me, in part because of the ways their ideas have diverged in recent years, but when he finally did he wrote her an e-mail that said, "I really do think the book is great—in fact I think it will be instantly recognized as the most important book about behavior genetics that has ever been written. You should get ready to be very famous." He told me, "I'm really proud of Paige. She's amazing. And it's, well, an interesting experience to have a student that gets this successful based in part on disagreeing with you." He still looked askance at GWAS. "I think that Paige's dilemma—and I don't mean this in a bad way, because she takes the problem very seriously—is in that balance that everyone has to seek. If you're me, who thinks that it's all just correlation, then you're the 'gloomy prospect' guy and everybody thinks you're a wet blanket. And if you think, 'Wow, the whole world turned out to be genetic,' then you're Charles Murray, and in between you have to walk this very careful path. You have to believe in a certain amount of genetic causation or you don't have a science, and you can't believe in too much genetic causation or you believe that poor people are poor because they have poor genes—and that's a very, very delicate walk."



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Harden's political optimism is tempered by a serene personal realism. At the end of our walk, she admitted that it wasn't always easy to reconcile herself with whatever it was that behavior geneticists' results were telling us. "Take the heritability of an outcome like divorce—it's totally wild, because there's a whole other person there!" Plenty of twin research suggests a meaningful, if puzzling, genetic correlation with divorce. Harden's parents are divorced, as is she.

"I use this example of my sunglasses," she said. She removed her Ray-Bans and took out her phone to show me a photograph of two previous pairs, both of which had lost the same lens. "I think of the heritability of life events as the repeatability of things that seem serendipitous. I'm clumsy in ways that persist over time, I have certain tastes that persist over time, and I guess I think of the heritability of divorce in the same way. My subjective experience of my sunglasses being broken is that you have good intentions and life goes awry—it's easy to interpret these things as events that happen to you. But, on the other hand, I bring all sorts of things that make these experiences repeatable in ways that are extremely difficult to describe. It's obviously difficult to do exact science on the ways I repeatedly break my Ray-Bans, just like it's difficult or impossible to explain marital status on a molecular level." She picked her sunglasses up off the table and put them back on. "But I do think that in the end you end up becoming yourself." ♦