



SCIENCE & NATURE

# Is There a Human Blueprint?

Two new books from intellectual giants Robert Plomin and Nicholas Christakis revive the “nature vs. nurture” debate about what makes people different from one another.

AUGUST 1, 2019

C. BRANDON OGBUNU, C. MALIK BOYKIN

*Blueprint: How DNA Makes Us Who We Are*

Robert Plomin

**MIT Press, \$27.95 (cloth)**

*Blueprint: The Evolutionary Origins of a Good Society*

Nicholas A. Christakis

**Little, Brown Spark, \$30 (cloth)**

In recent years, biology’s “nature vs. nurture” war has reemerged with advanced weapons, although the central questions have not changed: What makes us human? Why are we different from one another? Nonetheless, the methods used to address them have undergone several revolutions. We now benefit from hundreds of twin and adoption

studies, which have provided heritability estimates for dozens of characteristics relating to human behavior and wellness. Simultaneously, we are reaping the benefits of technological breakthroughs that have made it possible to screen thousands of individuals to uncover genes associated with particular traits. Thanks to this, we have been able to correlate genetic signatures with a growing list of physical (e.g., height, skin color), physiological (e.g., risk for type-2 diabetes, hypertension), and behavioral (e.g., risk for depression, autism) traits. At the same time, epidemiology, psychology, and sociology continue to demonstrate the pliability of the human experience across populations, and we continue to learn more about the social forces that create vast differences in the human experience.

## **Dialogue between the natural and social sciences should have fostered a golden age for the study of human behavior.**

In combination, work from the natural and social sciences should have fostered a golden age for the study of human behavior. And yet, conversations about how to explain differences between individuals and groups are more controversial than ever—perhaps not surprisingly, given the political implications of any answer. Recent breakthroughs in molecular biology have compounded the stakes. Genetic modification technologies are moving faster than the ethical frameworks required to discuss them, and rather than wait for a consensus to emerge about best practices, at least one rogue scientist has already produced **gene-edited babies**.

Two new books, both titled *Blueprint*, attempt to rise above the fray and make normative claims about the role of genetics in shaping human behavior, although their methodologies could hardly be more different. Geneticist Robert Plomin focuses on explaining why humans are different, while polymath physician-sociologist Nicholas Christakis wants to understand why we are, in his estimation, so very similar. That these two books, each authored by luminaries in their respective fields, were released within months of each other heralds the zeitgeist: modern society cares deeply about the science underlying who we are. And the difference in their approaches and messages reflect how complex the conversation has become, and how far away we are from a settled answer.



## **For Plomin, genetics are a fortune teller, indicating our fate if we have the knowledge to “read” them.**

Plomin is a titan of behavioral psychology and chief evangelist of the gene-omnipotence school of thought, also known as the hereditarian school. Plomin has built his reputation through a quarter century of important work on behavioral genetics, mainly with twin and sibling studies. Late in 2018, he released his *Blueprint*, which lays out his deterministic orthodoxy and addresses the subtleties surrounding whether “it” (the fundamental explanatory factor for who we are and how we differ) is “all in our genes.” Plomin’s *Blueprint* has the makings of a modern classic as one of the most direct and unapologetic takes on the topic ever written.

As an act of scientific communication, *Blueprint* is stellar. Direct and clear, the book at times reads like an autobiography: not only do we learn about the work that Plomin and colleagues have conducted, we learn also about what Plomin thinks and why he thinks it. A single theme runs throughout: that DNA is not only a meaningful contributor to determining who we are, but the most stable and predictive of contributors. For Plomin, genetics are in effect a fortune teller, indicating our fate if we have the knowledge to “read” them.

Plomin’s fortune-teller analogy **has already been criticized**, and much of the book is written as a kind of preemptive strike, aimed at quelling his opposition. In various ways, critiques of Plomin emphasize the importance of environmental forces—structural, experiential, and historical—on the fate of individuals and societies (this opposition is sometimes pejoratively described as pushing a “blank slate” agenda). Plomin’s detractors often highlight the **social implications of hereditarian overreach**. That is, if we attribute all of our behavior to our genes, we arrive back at a kind of predestination thesis, in which we are washed of any individual responsibility for our actions. This is no less worrying than the way that genetic determinism undermines social or structural explanations for inequalities. Indeed, this is the most radioactive of hereditarian ideas, with implications on gender diversity in the natural sciences, class- and race-stratified

differences in standardized test scores, and even sentencing in the criminal justice system.

Criticism has not humbled Plomin; in many ways, *Blueprint* finds him doubling down on his positions—at times with peculiar results. In an effort to defend the determinism of genes, the effect is at times the opposite. For example, he asserts that “heritability of body weight is greater in wealthier countries such as the US than in poorer countries such as Albania or Nicaragua.” This goes by quickly, but the idea here is a rather radical one: in a nutrient-poor environment, genes associated with high body weight are going to be less predictive than they would be in a nutrient-rich environment. Because the DNA-destiny of genes that confer high weight must have certain nutrients, provided by a certain environment, in order to manifest. The implication of this seems lost on Plomin: DNA doesn’t operate in isolation, but only as a function of the environment in which it (the individual person in this case) exists. With this in mind, we can ask Plomin: How good of a fortune teller is DNA if it can read the same palm but offer different fortunes depending on the GDP of the country the palm calls home? If this is the most one can say for it, then DNA doesn’t function as a “blueprint” for anything.

## **How good of a fortune teller is DNA if it can read the same palm but offer different fortunes depending on the GDP of the country the palm calls home?**

Plomin encounters an analogous dilemma in his discussion of the effect of environment on phenotypes: “Genetic research shows that non-shared environmental influences are not only unsystematic in the sense that they are mostly a matter of chance, they are also largely unstable, that is inconsistent over time.” It strikes us as peculiarly incurious to decide that all aspects of nature that undermine DNA’s predictive powers are merely a “matter of chance,” “unsystematic,” and “unstable.” It is in effect to say that whatever cannot be studied with Plomin’s particular methods is no more than statistical noise. A richer alternative is that the world is not just an obstacle to DNA doing its job. In reality, DNA has no choice but to interact with the world and has never existed apart from it. Consequently, whatever predictive powers DNA has are *always* about the world: full of interactions, circumstances, contingencies, and context. This interpretation isn’t “blank state” ideology—it’s biology.

And this seems to be the direction that the evidence is mounting. Recent large-scale population studies have shown that genetic signatures for several traits (physical, physiological, behavioral) are not even consistent in homogenous populations spread across a wide terrain, such as in Finland. In addition, most of the data that Plomin cites is drawn largely from people of European descent, but most of the world is non-European or mixed. If the data reflected this human diversity, it would certainly shift and perhaps fully undermine our current picture of heritability. For diseases such as type 2 diabetes, we are already finding that **the genetic story is a mess**: signatures exist, but can differ from individual case to individual case.

These findings reflect a biological real world more complicated—and frankly more fascinating—than the one Plomin champions.



Despite the far reach of the debate surrounding Plomin's hereditarianism, genetics is but one method used to generate an increasingly intricate picture of human nature. Another means through which scientists establish essential rules of human biology comes from a focus on the commonalities and differences between cultures. Using this approach, one can impute basic properties of human society, and, by extension, of the individuals that compose it.

The regressive arm of this argument resembles its cousin in genetics: differences between groups imply inequity, and inequity implies a hierarchy. The more progressive end of the culture-comparison school, however, uses features present across societies as evidence for universality, even equity. While large observable differences between human societies are present and consequential, few reveal anything essential (and perhaps none reveal anything immutable) about any group. That soccer is more popular in Uruguay than Curaçao might be important. The notion that soccer's popularity speaks to something essential about the *people* of Uruguay or Curaçao is made of the same corrupted stuff that we find in ethnocentrism, nationalism, and fascism.

**In contrast to Plomin, Christakis argues that culture rather than genetics is responsible for the differences**

## between societies.

Christakis's *Blueprint* contends that similarities between cultures can teach us about what it means to be human. Christakis traverses political science, anthropology, network theory, and other disciplines to piece together his central argument: human societies have essential features that can tell us about how we evolved. In contrast to Plomin, Christakis argues that culture rather than genetics is responsible for the differences between societies:

[But] genes surely explain very little of the variation among cultural groups in the long lists of traits propounded by anthropologists. There are no genes for surgery or idolatry that explain why some societies cut people open or make images of gods. Such variation is due to culture.

When discussing societies with drastically different marital structures—such as the Hadza of Tanzania and the Turkana of western Kenya—Christakis doesn't care why they are *different*, but rather finds in them evidence that many of the central characteristics of human societies are global, even when refracted through cultural specifics. Why do the Hadza prefer monogamy and the Turkana polygyny? How did it get that way? That's a question for a different book.

Christakis doesn't steer entirely clear from controversy, however. The book's penultimate chapter describes why culture is critical to human progress, how cultural evolution can operate like biological evolution, and how culture may influence biology. In this last area, Christakis's *Blueprint* takes its own Plomin-like leaps. It begins by outlining several safe examples of how cultural changes can drive biological evolution: the ability to digest lactose in response to a pastoral lifestyle (because it was beneficial in societies with milk-producing animals), and the sickle cell trait evolving as a response to yam domestication (because yam fields are breeding grounds for mosquitoes). Christakis then descends into speculative terrain, offering that humans might be getting smarter because of urbanization: "For instance, as a species, we may be getting smarter because we live in cities, where urban culture is getting ever more complex, stimulating, and demanding." This is a fun suggestion, if only because it runs counter to the almost ubiquitous (if unsubstantiated) fear that the fraying of meaningful social bonds in cities and via social

media is making us all dumber. But it's also unclear what it says about Christakis's view of cultures that are *not* largely urban: Is the intelligence of urban humans leaving them in the dust? That doesn't seem like an argument Christakis would want to make, but the latter supposition seems inseparable from the former.

## **Christakis offers that humans might be getting smarter because of urbanization, but it is unclear what he then thinks of cultures that are *not* largely urban.**

An even larger leap follows, with Christakis suggesting that large, organized religions might have selected for brains predisposed to believe their truth claims. The problems with this supposition are fairly obvious (and Christakis almost certainly understands them): the success of global religions such as Christianity and Islam among the colonized and subaltern could not be the result of genetic priming. And it seems both impossible and unethical to give an account of their success without attending to geopolitics and power. Or, in a quite different vein, what does this theory offer to explain the rise of atheism? Said differently, it appears that people everywhere have the (biological) capacity to readily adopt religion in some contexts and give it up entirely in others.



As different as Plomin's and Christakis's *Blueprints* are, both are vulnerable to troublesome overreach. Slight perversions of Plomin's arguments are so directly allied with classical scientific racism—that ethnic groups are not only essentially different but can be ranked—that he mostly steers clear of the issue in his work, and when he does engage, dismisses the notion that his findings explain differences between groups. However, while he insists that his work should not be extended to justify bigotry, merely saying so is not itself exculpatory if a reasonable extension of his theories points directly there. If we believe that genetics explains why classroom A outperforms classroom B, that is quite enough: the justifications to treat the two groups of children “differently”—with disinvestment in classroom B, for example—follow automatically and without a moral check (after all, we're just “following the data”).

# **It is possible to believe that genes do the heavy lifting with regard to why humans are different while acknowledging that history and context profoundly influence how society is structured.**

In fairness, Plomin himself helps us understand (perhaps unintentionally) why these interpretations are misguided. In his *Blueprint*, he reminds the reader that a key feature of heritability is that it “describes what is but does not predict what could be.” For example, the heritability of schizophrenia may reveal more about the individuals in which those measurements were taken than it does the average person. And even more, this heritability says little for what we *can do* as a society to influence how any particular schizophrenic fate plays out. Tomorrow might yield a discovery that tweaks this heritability: a new drug could lower it, a famine could increase it. That a trait may be driven by genes doesn’t mean that culture or human ingenuity can’t tweak the strength of that relationship tomorrow.

Christakis’s *Blueprint* has a less direct connection to discrimination, but the substrate is still present: even if we don’t believe that the Turkana and Hadza are innately different, we might rank their societies based on whose culture fits our personal palette. We can replace “genes” with “culture” and we can still have the same old bigotry.

It is important to note, however, that characterizing the central ideas in either book (and their putative schools of thought) as intrinsically bigoted would be imprecise: it is possible to believe that genes do a lot of the heavy lifting with regard to why humans are different—physically, physiologically, psychologically—while fully acknowledging that history and context can profoundly influence how society is structured. Similarly, we can appreciate the differences between societies—how they live, love, and build relationships—without a reflexive value judgement on which ones are “better.”

The study of humans and how we differ should not have cosmic consequences, but in 2019, it does: essentialist racism and xenophobia have new life as a political instrument in the West. And this is why the work of Plomin, Christakis, and many others matters. We must fully appreciate the many powers of DNA and admit that context and culture—past, present, and future—can transcend these powers, and craft the multiverse that defines the



experience of being human.

## While we have you...

...we need your help. You might have noticed the absence of paywalls at *Boston Review*. We are committed to staying free for all our readers. Now we are going one step further to become completely ad-free. This means you will always be able to read us without roadblocks or barriers to entry. It also means that we count on you, our readers, for support. **If you like what you read here, help us keep it free for everyone by making a donation.** No amount is too small. You will be helping us cultivate a public sphere that honors pluralism of thought for a diverse and discerning public.

**SUPPORT BOSTON REVIEW**



[Facebook](#)

[Twitter](#)

[Email](#)

[More](#)

## More In Science & Nature

## **Programming My Child**

DAVID AUERBACH

## **Defensible Space**

JESSIE KINDIG

---

# **BOSTON REVIEW**

**Printing Note:** For best printing results try turning on any options your web browser's print dialog makes available for printing backgrounds and background graphics.