The Inconvenient Truth About Race

The 10,000 Year Explosion: How Civilization Accelerated Human Evolution

by Gregory Cochran and Henry Harpending

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Reviewed by Marshall Poe

This is the most difficult book I've ever had to review. I've read it and read it again. I've interviewed one of the authors. I've discussed it with people who know the subject. I've thought about it until my head hurt. I've had a fight with my wife about it. I've even read other reviews in search of guidance. I didn't find any, so I still don't know exactly what I should tell you about it.

Here's why: *The 10,000 Year Explosion: How Civilization Accelerated Human Evolution*, by Gregory Cochran and Henry Harpending, argues that the various races that make up humanity are genetically different in significant ways. We're not talking about skin, eye, or hair color. We're talking about intelligence, temperament, and a host of other traits that affect an individual's chances in life. The races, the authors claim, are differently abled in ways that really matter.

That, of course, is a dangerous thing to say. In 1994 Richard Herrnstein and Charles Murray made a similar argument in *The Bell Curve: Intelligence and Class Structure in American Life*. Critics pummeled the book and pundits had a field day excoriating its authors. Bob Herbert, a columnist for the *New York Times*, called it "a scabrous piece of racial pornography masquerading as serious scholarship," and said that its authors were in effect calling African-Americans "niggers." Herbert wasn't alone in his opinions.

Faced with *The 10,000 Year Explosion*, one is tempted to say, "Here we go again!" throw up one's hands, and be done with it. But that would be too easy. Cochran and Harpending are not racists dressed up as scientists; they are real scientists studying race (or, rather, the genetic traits of large human populations). The thesis they propose is not obviously ridiculous: The type of phenotypic variation we see among human beings is found in other species (such as domesticated animals) and clearly has an underlying genetic basis. Their argument will offend those who believe that people are "all the same under the skin," but that's no reason to dismiss it out of hand. In short, the authors deserve a fair hearing. If they are right, they are right. If not, then not. We'll try to find out which it is.

Before we lay out what Cochran and Harpending have to say about race, let's step back and put their thesis in context. They are hardly the first scholars to suggest that the races are differently abled. Before the mid-twentieth century, nearly all scientists believed this, including Charles Darwin himself. There were exceptions, such as Franz Boas, Margaret Mead, Ruth Benedict, and Ashley Montagu, but they were voices in the wilderness. All of that changed in the second half of the twentieth century, however, not because of any scientific advance, but because of the deeds of Adolf Hitler and Martin Luther King Jr. Hitler gave racist politics a very bad name, and King gave antiracist politics a very good name. These two leaders made it simply impossible to build a racist political program in the West successfully. This shift in attitudes was a boon to scholars who said that racial differences were insignificant and that race was a myth. Studying racial differences was out; studying the social construction of race was in. This was the prevailing intellectual and political norm for decades, and for the most part, it remains so today.

In recent years, however, there has been a resurgence of research into genetic differences among the races, or what should properly be called "descent groups," or "populations." The reason for this is technology. In the nineteenth century, the only way scientists could tell one descent group from another was on the basis of external appearance—a very crude technique indeed. In the early twentieth century, doctors developed a more refined way of identifying descent groups, using blood chemistry. Although this technique allowed scientists to get "under the skin," as it were, it was also far from exact. About a quarter-century ago, however, molecular biologists found a way to distinguish descent groups based on their genetic profiles. This technique proved to be extremely precise, and has now allowed molecular biologists to rewrite, literally, the history of humanity.

As they tell it, the human race began in Africa roughly 180,000 years ago with a relatively small population of Homo sapiens. It then proceeded through a very long process of growth, division, and reunion. As humans spread around the world from their East African home, they slowly grew more numerous. They also divided again and again into sub populations, sub-sub populations, and so on. For a variety of reasons, these groups became subtly different. Sometimes two or more of them mixed and became more alike. The results of this growth-split-and-merge process can be seen in the many descent groups—some we call "races" and others not—that make up humanity today. These groups are remarkably similar genetically, but they are also different enough to be distinguished phenotypically (by the way their genes express themselves) and genotypically (by the genes themselves). Given that people generally mate with their neighbors, it is not surprising that these descent groups overlap fairly well with folk racial categories (black, white, Asian) and even more so with language groups (Bantu-speaking, German-speaking, Mandarin-speaking).

Whether or not people find this disturbing very much depends on what they perceive to be the implications of these discoveries. The idea that the races are genetically different is not necessarily troubling so long as everyone agrees that the differences in question don't really matter. We all think that traits like skin color, hair type, and eye shape are not a legitimate basis for discrimination. We see them as incidental to a person's merit as a human being, and therefore irrelevant to how we treat him. If you were an employer who chose to hire someone with superficial trait X over someone with superficial trait Y, most people would consider you irrational and possibly a racist. Indeed, we usually call someone a "racist" because she discriminates between people on the basis of some cluster of superficial traits.

The idea that the races are genetically different is quite troubling, however, when the specified differences are universally considered important. We all agree that, in most contexts, it is legitimate to discriminate on the basis of traits like intelligence, equanimity, and honesty. We see these traits as virtues, the very stuff of "merit," and we believe they *should* affect how we treat people. If you hire someone with virtue X over someone without virtue X, no one is going to raise an eyebrow. You are neither irrational nor a racist; instead, you are smart and fair. The trouble starts when the possibility arises that virtue X might be *both* genetically determined *and* unequally distributed among different racial groups. In a fair competition, these "troublesome traits," as we will call them, would inevitably produce de facto racial segregation. People of race A, having virtue X, would be preferred over people of race B, who do not have virtue X. This would present us with a very unsettling dilemma. On the one hand, such discrimination would be legitimate insofar as it would be the result of consistently applying meritocratic principles. On the other hand, it would be illegitimate insofar as it produces racial inequality. Thus, troublesome traits might present us with a choice between upholding meritocracy and upholding racial equality. We would not be able to uphold both.

The question, then, is whether and to what extent troublesome traits exist at all. The overwhelming majority of researchers claim that they do not, and they muster a number of arguments in support of this claim. The first is that our species is too young for troublesome traits to have evolved. This objection is easy to refute: We know that different populations of the same species can develop significantly different traits over a much shorter period than the 180,000 years humans have existed on earth. Over the past several hundred years, for example, modern livestock have been significantly transformed by means of "artificial selection," i.e., breeding.

The second argument is that humans are too genetically similar for troublesome traits to exist. This point is also easily refuted. We know that a small number of genetic differences can have a massive effect on different populations of the same species. In many human populations, for example, a few genes can mean the difference between the frequent incidence of severe genetic diseases and their total absence.

The third argument is that standardized test results which have shown differences in ability between racial groups don't prove anything about genetic differences, because the tests are flawed. This argument is harder to dismiss. Some of the test results seem quite sensitive to cultural factors, which suggests that the tests are measuring nurture rather than nature. And even the tests that show persistent cross-cultural differences can be used to draw inferences about genetic differences only; they do not constitute direct proof of anything.

Enter Cochran and Harpending with *The 10,000 Year Leap*. They argue for the existence of troublesome traits, but they do so in a new way. Instead of inferring underlying genetic differences from controversial tests, they claim that the laws of population genetics predict exactly the sort of differences we see in the test data. They don't make any lengthy arguments for the tests as a valid measure of genetic differences. They simply state that *if* what they propose regarding population genetics and human history is true, then we should expect to see precisely those differences we do see in the test results.

To understand this line of argument, a short primer on population genetics is in order. Population genetics is a well-established sub discipline of evolutionary biology that studies gene frequencies in populations. A standard question in this discipline would be why gene X is common in population A but rare in population B, even though A and B are of the same species. There are a number of ways such differences can arise. Sometimes they are the result of pure chance, but the most important cause is natural selection. If natural selection is the reason for the unequal distribution of gene X, geneticists would say that gene X likely increased the reproductive success—or "fitness"—of A, whereas it decreased that of B. In population A, gene X was "selected for" and therefore spread; among B it was "selected against" and therefore disappeared or became very rare.

Broadly speaking, the environment is the "selector" referred to by the term "natural selection." Population geneticists characterize environments according to their "selection pressures," that is, the many forces at work that determine fitness. Geneticists would say that gene X worked for population A and not B because A was situated in an environment that placed it under different selection pressures than B. In other words, population A's environment selected for gene X because it improved fitness in that environment, and population B's environment selected against it because it didn't. The important point is this: When two genetically similar populations are subjected to significantly different selection pressures, significant genetic differences between the populations will nearly always appear.

Cochran and Harpending apply this theory to human beings, and make the following claims as a result: Humans live in populations, that is, groups whose members breed more often among themselves than with outsiders. Typically, all these populations taken together are at genetic equilibrium, meaning that a) the forces of natural selection have genetically optimized all of them for life under common selection pressures; and b) as a result of this optimization, they are relatively homogeneous genetically. Occasionally, however, some disruptive event—a change in the environment, a pandemic disease, etc.—upsets the equilibrium within *particular* populations. In other words, these changes affect only *some* of these populations, not all of them. For the affected groups, the traits selected under the old selection pressures are no longer advantageous under the new ones. At this point, two things tend to occur: sudden evolutionary acceleration and genetic division.

What this means is that as the affected populations adapt to new selection pressures, the rate of genetic change—measured by shifting gene frequencies—speeds up, exceeding the long-term average. This process, however, is usually temporary. Assuming that both selection pressures and population size remain stable, the rate of genetic change necessarily decelerates as natural selection adapts the affected populations to the new selection pressures. As the process approaches a new equilibrium between genes and pressures—meaning that nearly all new genetic mutations are deleterious—evolutionary change slows to a crawl, and the new equilibrium will remain mostly stable until the next disruptive event.

It should be immediately apparent, however, that this process causes something else to occur as well: It divides humankind into two different genetic types. The affected population has adapted to new selection pressures and reached a new equilibrium, while the unaffected populations have simply remained as they were. However, even when they do occur, divisions such as these have usually proven temporary, mainly because human populations are almost never completely isolated for long periods of time. For a variety of reasons, one population's genes tend to spread to others and the result is a species-wide equilibrium. But this return to a common equilibrium is not a given. If two populations remain isolated long enough and are subject to sufficiently different selection pressures, then they *can* evolve into separate species. This happened, for example, with chimpanzees and humans some six million years ago.

Cochran and Harpending use the theory of population genetics to tell the story—or rather *their* story—of human genetic history. It is a tale in three acts.

Act 1: The Primitive Hunter-Gatherer Equilibrium: 180,000-40,000 years ago. Humans originally evolved in East Africa about 180,000 years ago. They lived as primitive hunter-gatherers in environments that were friendly to this way of life. About 50,000 years ago, some of them left Africa in search of similar environments. They found them, and thus tiny populations of humans spread all over the globe. As a result, all humans, no matter where they were, lived this way for the better part of 130,000 years. Cochran and Harpending argue that, this being the case, humans became highly genetically adapted to hunting and gathering. "If a population… experiences a stable environment for a long time, it will eventually become genetically well matched to that environment." That's what happened to early humans. Genes that reduced fitness were weeded out; genes that improved it spread. The species-wide human genome was optimized and homogenized. As the balance between genes and selection pressures moved toward its optimum, the rate of genetic change slowed. After eons of genetic fine-tuning, there was very little room for improvement. The primitive hunter-gatherer equilibrium had been reached.

Act 2: The Modern Hunter-Gatherer Equilibrium: 40,000-10,000 years ago. Then, around 40,000 years ago, a disruptive event destroyed this equilibrium.

According to Cochran and Harpending's speculations, the event in question was a bit unusual: It was, they say, "introgression, that is, the transfer of alleles from another species, in this case Neanderthals." That's right, our ancestors mated with Neanderthals. By definition, this "introgression" of Neanderthal genes caused the rate of evolutionary change among the West Eurasians to accelerate. Very quickly after it occurred, they evolved into "behaviorally modern" humans, so-called because they created a more sophisticated material culture than their primitive ancestors. This culture included paintings, sculptures, beads, missile weapons, fish hooks, nets, ropes, baskets, and textiles. For a brief moment, humankind was divided into two genetic types: The new, behaviorally modern humans and the old, primitive humans, each living in separate populations. They coexisted for a time, but the genetic gap between them closed fairly quickly. The behaviorally modern genes enhanced fitness in many environments, and as a result, they spread to primitive populations around Eurasia and Africa. Eventually, the primitive humans disappeared, and humankind was once again united into one genetic type. After this, all behaviorally modern hunter-gatherers underwent the process of genetic optimization and homogenization that populations routinely experience when adapting to new conditions. In this case, the new conditions were behavioral modernity itself. As the new optimum balance was approached, the pace of evolution slowed again, and a new species-wide stasis occurred: the modern hunter-gatherer equilibrium.

Act 3: The Agricultural Disruption: 10,000 years ago to the present. Then, 10,000 years ago, another disruptive event occurred: Some populations in the Near East learned how to grow food. Agriculture, the authors claim, "imposed a new way of life (new diets, new diseases, new societies, new benefits to long-term planning) to which humans, with their long history as foragers, were poorly adapted." In other words, agriculture brought with it radically new selection pressures. As one might expect, the rate of genetic change initially rose sharply as the Near Easterners struggled to adapt. But then, as the Near Eastern populations worked toward a new optimum balance, something unprecedented happened: Instead of slowing down, the pace of genetic change accelerated. This revolutionary development was not caused by a disruptive event and the new selection pressures that followed. Instead, it was caused by a radical increase in population. Agriculture provided more food than hunting and gathering, and the agriculturalists turned this food into more agriculturalists. The population exploded. This had unexpected genetic consequences. Cochran and Harpending explain it like this: The larger the population, the more genetic mutations it produces; the mutation rate remains the same, but the total amount of mutations increases because there are more humans carrying the mutating genes. The more genetic mutations are produced, the greater the chances that a fitness-enhancing mutation will appear and spread throughout the population. This means that population growth in and of itself accelerates evolution. When a population is expanding, there is always "room for improvement" thanks to an ever-increasing number of possibly beneficial mutations, so even when optimization is reached, the rate of evolution never slows down. Taken together, the adoption of agriculture and the resulting population growth accelerated the rate of evolution as nothing had before.

According to the authors, this change also led to the reappearance of significant genetic differences among human populations. Humans who adopted agriculture and experienced the resulting population growth became genetically different from those who did not. "This picture of adaptation to agricultural diets," so the authors claim, "has two important implications: Populations today must vary in their degree of adaptation to such diets, depending on their historical experience, and populations must have changed over time." In other words, humankind was again divided in two. Only this time, claim Cochran and Harpending, the genetic gap didn't close. On the contrary, it widened, and new genetic gaps appeared. Humankind was divided into three, four, five, and so on. The crucial factors in this unprecedented process of genetic differentiation were the adoption of agriculture and population size.

To begin with the former, the authors propose that the earlier a population adopts agriculture, the more time it has to adapt to new selection pressures, and the more time it has to adapt, the more different it will become from the species-wide genetic "starting point," i.e. the behaviorally modern equilibrium. They explain, "The evolutionary responses to an agricultural diet must differ, since different peoples adopted different kinds of agriculture at different times." Thus, the descendants of the first agriculturalists, the Near Easterners, are the most genetically distant from the behaviorally modern equilibrium. They are followed by the descendants of later agriculturalists—North Africans, Indians, East Asians, Mesoamericans, etc. These populations, in turn, are followed by the modern descendants of populations who adopted agriculture relatively recently or still live as hunter-gatherers: Aleuts, Australian aborigines, African bushmen, as well as certain Siberians and Amerindians, whose genomes should be quite close to the behaviorally modern type.

Cochran and Harpending argue that the genetic gap between agriculturalists and non-agriculturalists is still with us, though it is closing as the genes of the former spread to the genomes of the latter. But they also claim that new gaps have occasionally appeared within agricultural populations themselves. Some of these populations—civilizations, empires, societies, and nations—have grown very large and very complex. Both of these characteristics increase the probability that some sub population—a territory, class, ethnicity, or profession—will become genetically different. Large, complex populations create the "space," so to speak, in which sub-populations can become genetically distinct. The force that differentiates them is, of course, natural selection, but here the selection is engineered by other human beings in the same population. Socially induced selection pressure can be subtle, as when one class oppresses another, and not so subtle, as when one race tries to exterminate another. The important point is that socially induced selection pressures accelerate genetic change in the affected sub population and move it toward a new local optimum balance, one that is similar to that of the general population but adapted to local circumstances.

Cochran and Harpending offer the Ashkenazi Jews as an example of this phenomenon. In the Middle Ages, European Christians confined the Ashkenazi to a small set of occupations, most of which required intensive intellectual activity. In other words, Christians imposed a new and unusual set of selection pressures on them. The standard process of evolutionary acceleration, optimization, and genetic homogenization then took place. Since the new selection pressures favored certain intellectual abilities, genes that produced these abilities were selected and spread throughout the Ashkenazi sub population. As a result, the Ashkenazi Jews became different in terms of both their genome and their abilities. "We propose," Cochran and Harpending write, "that the Ashkenazi Jews have a genetic advantage in intelligence that arose from natural selection for success in white-collar occupations during their sojourn in northern Europe." Cochran and Harpending hold that this is not an isolated case. In large, complex agricultural populations—just like the ones almost all of us live in—it is happening all the time to one degree or another.

The moral of our authors' story is this: The races are different in ways that matter because, given what we know—or think we know—about population genetics and human history, they must be. Science predicts that troublesome traits should exist, and they do. We now need to ask two questions about this theory: "Is it correct?" and "Does it matter?"

Are Cochran and Harpending correct? They may be. The theory of population genetics is sound. If you believe Homo sapiens is an animal species like any other, then you must believe that it obeys the laws of population genetics. One of these laws is that populations under sufficiently different selection pressures will diverge genetically. So if, as Cochran and Harpending argue, different human populations have existed under very different selection pressures, it seems that they must have diverged enough to produce the troublesome traits suggested by standardized tests and other data.

The validity of this thesis depends on three kinds of evidence. The first is historical evidence of selection pressures sufficiently powerful to result in species divergence. Cochran and Harpending say that there were two such episodes: The Neanderthal introgression 40,000 years ago and the advent of agriculture 10,000 years ago. From an evidentiary point of view, we don't know if the former happened at all, but we do know that the latter did. In other words, one scenario is speculation, the other is established fact. I am not qualified to evaluate Cochran and Harpending's arguments for the Neanderthal introgression. All I can say is that it seems possible, it would have altered selection pressures if it occurred, and most experts doubt that it did. The theory is a clever way to explain the mysterious transition from primitivism to behavioral modernity, but being clever isn't proof of anything.

I can say a bit more about the advent of agriculture. Cochran and Harpending are on solid ground when they claim that this new mode of production and everything it brought with it—namely, civilization—changed selection pressures in a whole host of ways. Humans living by agriculture need to do many things that hunter-gatherers don't: They have to eat a lot of food that isn't meat and isn't tasty or terribly nutritious; they have to work very hard for that food; they have to stay in one place for a long time, and this place is mostly populated by strangers; they have to live in a hierarchal society with extensive division of labor; and they have to get used to living according to rules and laws, some quite restrictive; they have to go to school, or at least learn new skills; they have to fight without running away, sometimes in large groups such as armies. It certainly seems reasonable, then, to suggest that an environment defined by agriculture would have selected for genes and traits that were not favored on the African savannah. Moreover, since agricultural populations have been continually changing for 5,000 years, and for the most part these changes have been in the direction of increasing size and complexity, it also seems reasonable to suppose that selection pressures have continued to change both globally (across the entire human population) and locally (in specific sub populations). We all have to do things that people living in ancient Mesopotamia didn't, and most of us have to do things that others in our population don't. Modern selection pressures are both different from and more varied than pre modern selection pressures. The question is whether these selection pressures are different enough to cause significant genetic divergence—the kind that would produce troublesome traits—among and within populations.

The second kind of evidence is drawn from observed phenotypic differences among descent groups. If, as Cochran and Harpending claim, selection pressures changed and diversified drastically after the adoption of agriculture, then we should see many such differences. There is no doubt that we do. People of different descent groups often—though not always—look different from each other. As Cochran and Harpending indelicately put it, you would never mistake a Finn for a Zulu. But the observed differences are not confined to appearance. Some are behavioral. To use the obvious example, people of different descent groups often—though not always—perform differently on a wide variety of standardized tests. As we've seen, many critics doubt that these tests can be used to draw inferences about genetic distinctions. Yet the critics have yet to provide a good reason why such differences—troublesome traits among them—would *not* exist given what we know about population genetics and strongly suspect about human history. Changing selection pressures produce differences, not similarities. The selection pressures on humans have certainly changed. Therefore, we have every reason to expect that we would see differences like the ones we see in the test data. If we didn't see them, that would be very surprising indeed. The question, again, is whether the changes in selection pressures were powerful enough to produce the phenotypic differences that we observe in the data.

The third kind of evidence is observed genetic differences among descent groups. If the laws of population genetics hold and Cochran and Harpending's retelling of human history is accurate, we should see these genetic differences. There is no doubt that we do. Geneticists have identified the genetic characteristics of many descent groups; moreover, they have succeeded in measuring the genetic *distance* between many descent groups. Some are very different from one another, which suggests an ancient divergence, and some are very similar to one another, suggesting a more recent divergence. This is consistent with the authors' version of events. Critics counter, however, that these genetic differences are too new and too few to manifest themselves as anything like major phenotypic differences. Cochran and Harpending meet both of these objections by showing that species can change quickly and that a few genes can make a large difference in behavior. The key question, of course, is whether these few genotypic differences actually give rise to troublesome traits.

Does it matter? Cochran and Harpending make a strong case that it does, and that the races are different in significant ways. I doubt, however, that they will convince many people. The idea that the races are differently abled is just too odious and frightening for most of us to stomach. Perhaps there are some things that we shouldn't believe—or at least say—even if they are true.

This, however, may not be one of them, because the implications of Cochran and Harpending's theory are not as frightening as you might think. Even if they are right, the sky will not fall. Instead, we will have to rethink some things that, in the end, are not very important to the way we live. For example, we will have to dispense with the notion that people *then* were basically the same "under the skin" as people *now*. As a historian, I don't find this threatening in the slightest. Far from it: I can't wait to get to work fleshing out what it might mean for our understanding of the human past. We will also have to toss out the notion that people *here* are the same "under the skin" as people *there*. This doesn't particularly bother me either. I already accept that people are different "over the skin," and I have no problem living happily among cultures that are acknowledged to be different from each other. Though I can't say for sure, I doubt I would have any difficulty living happily among kinds of people—races, descent groups, populations, or whatever you want to call them—that are acknowledged to be different as well. This is true for two reasons. The first is an "is," and the second is an "ought."

By happy accident, the differences that genetically divide us into types are not that significant. The majority of them are, in fact, completely trivial, at least to fair-minded people. They don't affect what we consider "merit" in any way, and the few genetic characteristics that do—the troublesome traits—are neither very numerous nor very influential. At present, we can identify only one trait—or rather one cluster of traits—that could be called troublesome with any degree of confidence: intelligence. This shouldn't really worry us, because differences in intelligence among races, if they exist at all, do not appear to be very large. Moreover, it's not as if *all* members of race X are *always* smarter than members of race Y or Z. In fact, the differences appear to be so slight that one cannot confidently predict that any given member of race X will be significantly smarter than any given member of race Y or Z. The differences show up in the aggregate, not among individuals. Of course, there may be other traits—the jumble of characteristics we call "temperament" is a possibility—but we have every reason to believe that they too will be minor.

There is a sense, however, in which none of this really matters. More or less all of us believe that it is wrong—not to mention irrational—to treat people differently on the basis of race. This is not an empty conviction; it has repeatedly moved us to action.

It was on the basis of this belief that slavery was ended, fascism defeated, civil rights secured, and apartheid shunned. In each of these instances, lives and treasure were sacrificed in the name of this idea. Today, only people on the lunatic fringe base their political beliefs on folk racial categories like "white" and "black." Clearly, we are not the same people who concluded that because the races are different, we must treat their members differently. That conclusion simply no longer makes sense to us. Humanity appears to be reaching the point when it can discard the immature idea that being marginally different in the aggregate—even when it concerns important traits—has any bearing on the way we should treat individuals. After all, we are not the groups to which we accidentally belong; we are ourselves, and we must be treated as such.

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