Genes, Evolution, and Civilization

REVIEWED BY MICHAEL W. MASTERS

[T]he biological equality of human races and ethnic groups is not inevitable: In fact, it's about as likely as a fistful of silver dollars all landing on edge when dropped. There are important, well-understood examples of human biological inequality: Some populations can (on average) deal far more effectively with certain situations than others.

— The 10,000 Year Explosion,
Cochran and Harpending

All beings so far have created something beyond themselves; and do you want to be the ebb of this great flood and even go back to the beasts rather than overcome man?

— Thus Spoke Zarathustra,
Friedrich Wilhelm Nietzsche

One of science's great mysteries is the trajectory traced by evolution as it morphed our early hominid ancestors into today's highly capable problem solvers, capable of sustaining a complex civilization. Until a few decades ago the evidence available for study of such questions consisted largely of cryptic, incomplete skeletal remains. But with the advent of molecular biology and genetics a much deeper, more precise understanding is within reach. Thanks to genes, answers that eluded earlier researchers are finally emerging—answers that, as it turns out, contradict the liberal diktat that all peoples everywhere must be identical in ability and character.

Liberals hold that culture explains why some groups succeed and others do not. No one doubts that culture is a primary matrix for dispersal of human accomplishment. But new research shows that evolutionarily driven genetic factors provide a powerful explanation of differences in both achievement and temperament. Not only have humans changed over shorter time spans than previously thought, but not every group changed to the same end. Genes must have their share of the credit in a full explication of the human condition. This case is ably presented in *The 10,000 Year Explosion: How Civilization Accelerated Human Evolution* by University of Utah professors Gregory Cochran and Henry Harpending.

For most of the last century, the received wisdom in the social sciences has been that human evolution stopped a long time ago—in the most up-to-date version, before modern humans expanded out of Africa some 50,000 years ago. This implies that human minds must be the same everywhere—the 'psychic unity of mankind.' It would certainly make life simpler if it were true. Unfortunately, a recent halt to evolution also implies that human bodies must be the same everywhere, which is obviously false.

The 10,000 Year Explosion:
How Civilization Accelerated Human Evolution
by Gregory Cochran and Henry Harpending
Basic Books, New York, NY, 2009
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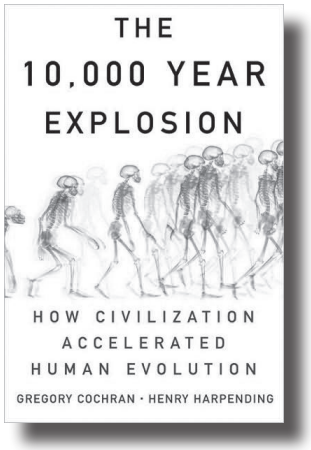
Clearly, received wisdom is wrong, and human evolution continued.

"In the light of modern evolutionary theory," the authors conclude, "it is difficult to imagine how it could have been otherwise." They depart unrepentantly from fabrications put forth by ideologues such as Stephen Jay Gould and Richard Lewontin. "Since the social sciences—anthropology in particular—haven't exactly covered themselves in glory, we have decided to take a new tack, one that takes the implications of evolutionary theory seriously." Calling their work "genetic history," they make their case by "cheerfully discarding unproven anthropological doctrine" in favor of genetics and molecular biology as well as "paleontology, archeology, and good old-fashioned history."



Lest the sensitive nostrils of the thought police scent a whiff of racism, the authors focus largely on culturally neutral attributes: propagation of mutations via natural selection, differing gene allele frequencies in various populations, varying susceptibility to diseases and genetic conditions, adaptation to changing climates, tolerance for lactose—a surprisingly important factor in the rise of civilization, the authors claim—and yes, even skin color. Their approach is well advised. It is difficult to incite blood lust among *hoi polloi* over DNA sequences such as OCA2 and HERC2 or MCPH1 and FOXP2, and it will no doubt prove impossible to rally the rabble to the guillotine because of mutation delta CCR5. The czar's family is safe so long as discussion focuses on proteins like Apolipoprotein A-I, and few mobs may be inflamed to loot and burn inner cities at mention of Alpha-1-antitrypsin deficiency.

Was Grandma a Neanderthal?

How, then, did humans acquire the ability to create civilization? The earliest modern humans (*Homo sapiens sapiens*) did not exhibit the needed skills. They first appear in the fossil record some 150,000 years ago, and yet civilization arises perhaps 10,000 years ago. The authors ascribe this development mostly to agriculture, but the changes that enabled it began earlier. Although it may seem an odd departure point, Cochran and Harpending begin their exposition with the Neanderthals. In doing so, they take on two questions that have long perplexed scientists. The first is the relationship—cultural, genetic, or both?—between early *Homo sapiens*, such as Neanderthals, and modern humans. And the second is by what mechanisms did modern humans advance from a Stone Age culture to complex civilization?

In the opinion of Cochran and Harpending the answer to the first question may provide the answer to the second. It has long been a widely accepted hypothesis that early hominid species originated in Africa and then spread out to other continents. *Homo erectus* did so and was eventually superseded by Neanderthals and other early *Homo sapiens*—who in turn yielded to modern humans. A point of particular scientific interest is, why did Neanderthals disappear? Also unknown is whether gene flow took place between Neanderthals and modern humans upon arrival of the latter in Neanderthal Europe.

Broadly, there are two theories about replacement of earlier forms by modern humans. The multi-regional theory claims that modern humans coexisted side by side with earlier forms for a few tens of thousands of years and that some gene flow took place between the two, resulting in "anatomical continuities between Neanderthals and contemporary Europeans," and perhaps with inhabitants of other regions as well. Supporters cite various skeletal characteristics, including the shape of Chinese incisors and the still-prominent brow ridges of Australian aborigines.

The Out of Africa theory is the politically correct one: Modern humans descended from African ancestors, some of whom left Africa more than 50,000 years ago, replacing earlier *Homo sapiens*. Why do liberals have an ideological stake in what is basically a scientific question? Because

if early modern humans intermixed with different earlier peoples in different regions of the world, then people around the world would be different, with different life potentials, and the equalitarian myth would crumble as surely as did Stalin's New Soviet Man.

Genetic studies lend credence to the latter theory, but with an important caveat. "It quickly became apparent in the face of genetic data that a dramatic out-of-Africa dispersal of modern humans did occur, but the extent of genetic exchange between the old and the new humans *was not resolved*." [Emphasis added] The primary criticism of the gene flow hypothesis is that modern humans and Neanderthals would not have been inter-fertile, but, Cochran and Harpending contend that viable matings likely were possible. If so, interbreeding with Neanderthals may have introduced beneficial alleles into the modern human genome, alleles that gave some regional populations adaptations not present in others.

Such genes need not be numerous to confer benefit. *The 10,000 Year Explosion* slays the myth that commonality denotes equivalency. Lewontin once boasted that "85 percent of human genetic differences are found within human populations rather than between groups," implying that group differences are inconsequential. However, this misrepresents the way genes code for physiological and behavioral traits. It presupposes a linear mode of operation—each gene controls some characteristic and each allele determines how that trait is expressed: hair color, height, etc. This is not the case. Some genes do determine traits or susceptibilities, but others operate in groups. Some appear to do nothing at all—and some alleles switch entire gene sequences on or off. "It turns out that the *correlations* between these genetic differences matter." Thus, "changes in a single gene can occasionally have a large effect" on the mature organism.

The authors speculate that if gene flow from Neanderthals to modern humans took place, the Neanderthal alleles passed on millennia of adaptations to European conditions without markedly changing the genetic footprint of Europeans. Even a few fitness-increasing alleles would spread rapidly while leaving behind only trace evidence of their origin.

> Imagine that humans occasionally mated with Neanderthals, and that at least some of their offspring were incorporated into the human population. That process would have introduced new gene variants, new alleles, into the human population.... The key property of an advantageous allele is that its frequency tends to increase with time, usually because it aids the bearer in some way.

Presence of Neanderthal alleles in the human genome is by no means proven, but suggestive hybrid skeletal evidence has been found in Portugal and Romania. Recent genetic studies find little evidence of commonality, but at least one gene is a candidate. Called FOXP2, it appears language related—and a new allele appeared some 42,000 years ago, just about the time modern humans encountered Neanderthals. If true, the mating theory offers one means by which some, but not all humans came to develop exceptional problem-solving competence.

> If FOXP2 is indeed a "language gene" and responsible, perhaps, for some of the creative explosion of modern humans in Europe and northern Asia, it would explain a major puzzle about modern human origins. There were at least two streams out of Africa 50,000 years ago, one northward into Europe and central Asia, and another eastward around the Indian Ocean to Australia, New Guinea, and parts of Oceania. *There is no trace of any creative explosion in populations derived from the southern Indian Ocean movement*, who brought and retained Neanderthal-grade technology and culture. [Emphasis added]

Nor is there evidence of a "creative explosion" in the founding sub-Saharan African population—a deficit still evident, as vilified Nobel Prize winner James Watson observed when alluding to the dim prospects for economic success in that region. In

terms of intellectual ability the question of interbreeding with Neanderthals is probably moot. As the authors note, regional differences in cognitive ability exist regardless of how such arose. They might just as well have delved into the genetic impact of Cro-Magnons surviving the rigors of an ice age.

Agriculture and Civilization

The authors believe that agriculture profoundly influenced the evolution of humans from small tribal bands of hunter-gatherers to more complex societies. "Favorable mutations are rare.... But as human population sizes increased, particularly with the advent of agriculture, favorable mutations occurred more and more often." Population concentration allowed favorable genetic changes to spread more rapidly. A beneficial allele takes "only twice as long to spread through a population of 100 million as it does to spread through a population of 10,000." The challenges of large societies led to different fitness payoffs and survival rates—which led to yet more genetic change.

> Agriculture 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. At the same time it led to a vast population expansion that greatly increased the production of adaptive mutations. So agriculture created many new problems, but it created even more new solutions.... Naturally increased population size had a similar impact on the generation of new ideas. All else equal, a large population will produce many more new ideas than a small population, and new ideas can spread rapidly even in large populations.

Many researchers attribute these changes solely to increased cultural sophistication. "The general assumption is that the winning advantage is cultural—that is to say, learned." In *Guns, Germs and Steel,* Pulitzer Prize-winning author Jared Diamond writes that a "larger area or population means more potential inventors, more competing societies, more innovations available to adopt—and more pressure to adopt and retain innovations, because societies failing to do well will be eliminated by competing societies."

Cultural transfer undeniably plays a role, but Cochran and Harpending do not stop there. "We take this observation a step further: There are also more *genetic* innovations in that larger population," particularly in "those populations that have practiced agriculture for a long time." As a result, "peoples in different parts of the world have changed in varying ways, since they adopted different forms of agriculture at different times—or in some cases not at all." The result isn't sameness; it is true biological diversity—not the phony kind touted in diversity seminars.

> Since genetic change wasn't uniform, discrete populations came to differ genetically from one another, and sometimes those genetic differences conferred competitive advantages. We believe that such genetic advantages have played a role in migrations and population expansions—and thus are important in explaining the current distribution of languages and peoples. In fact, history looks more and more like a science fiction novel in which mutants repeatedly arise and displace normal humans—sometimes quietly, simply by surviving, sometimes as a conquering horde.

Competitive advantage can include a more highly developed technology. Describing the Spanish conquest of a Mesoamerican Indian culture "similar to civilizations found in the Middle East 3,000 to 4,000 years earlier," the authors note: "Europeans were, in a sense, invaders from the future." If a group acquired "one (or a few) of those mutations that increase *group* fitness as well as individual fitness, it would have had a real advantage over its neighbors." Such groups would expand at the expense of their neighbors who did not possess these alleles.

> If the expanding group's success depended upon some improved tactic or

> weapon, the defenders could have copied it. But they couldn't copy a gene. It's hard to fight biological superiority, and expansions based on such superiority could have gone on far longer than ones based on cultural advantages, which are ephemeral.

These logical observations should lead any rational observer to an inevitable conclusion. "It's probable that the [genetically based] evolutionary response to farming also affected the distribution of cognitive and personality traits, and that these changes played a crucial role in the development of civilization and the birth of the scientific and industrial revolutions."

Evolving for Intellect

The 10,000 Year Explosion confronts the fact of a genetic link to intelligence unflinchingly. The authors' insistence that civilization arose not via culture alone but also from heritable genetic improvements in the human mind violates liberal orthodoxy. But the science is sound, and no amount of dissembling by sociologists can change that. Ideologues may succeed in ignoring or suppressing the message, but they cannot repeal biological reality.

> It is true that many dismiss the idea that intelligence is measurable, is influenced by genes, or can vary from group to group. These criticisms and dismissals, interestingly, hardly ever come from scientists working in the area of cognitive testing and its outcomes: There is little or no controversy within the field. IQ tests work—they predict academic achievement and other life outcomes, and IQ scores are highly heritable. If genes influence intelligence, then, over time, a situation in which intelligence boosts fertility must result in higher intelligence. That simple logic is the very essence of the theory of evolution by natural selection: Genes that cause increased reproduction gradually become more and more common in a population.

Evolutionary change does not always take 10,000 years. An instructive example is the rise in intelligence among the Ashkenazi Jews of Europe over the course of a few hundred years. They constitute a distinct ethnic group, the largest subset of the world's Jews, but nevertheless retain the genetic imprint of earlier Semitic origins. More to the point of the story of evolution and intelligence, Ashkenazi Jews achieve the highest IQ test scores of any identifiable ethnic group, averaging "around 112-115, well above the European norm of 100." And well above the East Asian average of about 105.

This should confer success in a wide range of intellectually challenging occupations—and such is the case. "Jews are just as successful in such jobs as their tested IQ would predict, and they are hugely overrepresented in those jobs and accomplishments with the highest cognitive demands." Earlier Jewish populations did not exhibit such advantages; cognitively, "Jews, in those days, were much like other people." Since Ashkenazi Jews coevolved in Medieval Europe with other Europeans, the question naturally arises: How did, as the authors put it, "the Ashkenazi Jews get their smarts?"

Many selective factors were at work, some of them self-determined, others arising from Jewish cultural separation. One was a high regard for literacy, traceable to "the development of the Talmud." This created skills for white collar professions, which brought economic success. The second was endogamous mating, which ensured gene pool isolation. Third, "Rabbinical Judaism's long-term stability was also key, since natural selection takes many generations to effect large changes." Finally, economically successful (and presumably more intelligent) individuals, Jew and non-Jew alike, were likely to bequeath more offspring to the next generation. This selected for the traits of such individuals—hence the rise in intelligence.

To summarize the authors' main point—which is not about Jews at all—genetic change can occur rapidly in the presence of selective pressures, even within the human brain and even if selection is driven by "culture" rather than "nature." The rise

in Ashkenazi intelligence occurred within a few hundred years, not millennia. However, as we shall propose, not all change is progress—an apt caution against accepting certain popular political slogans at face value. Selective pressures can also act to lower cognitive capability—for instance, when the welfare state model and unlimited immigration become the basis of society.

Agriculture, Government, and Elites

Farming changed more than individuals. "Agriculture reshaped human society, resulting in selective pressures that changed us in many ways. Some of those changes involved fairly obvious accommodations to new problems in nutrition and infectious disease. Others consisted of subtle psychological and cognitive changes, some of which eventually led to revolutionary social innovations...." Humans were no longer nomadic. "The sedentary lifestyle of farming allowed a vast elaboration of material culture. Food, shelter, and artifacts no longer had to be portable. Births could be spaced closer together, since mothers didn't have to continually carry small children. Food was now storable, unlike the typical products of foraging."

People adapted. "Agriculture itself, and the particular form it took in state societies, must have selected for personalities that can only be called bourgeois, characterized by the traits that make a man successful rather than interesting." No longer could one merely kill and eat for the moment. Farmers had to "save a portion of their crop for seed and some of their domesticated animals for breeding stock." In a Darwinian sense, this would have reinforced "the ability to defer gratification for long periods of time."

> People can learn new traditions, but genetic differences must make this kind of self-denial easier for some people than it is for others. It takes a certain type of personality—with traits including patience, self-control, and the ability to look to long-term benefits instead of short-term satisfaction—and natural selection must have gradually made such personalities more common among peoples that farmed for a long time.

Values and social constructs changed too. "For the first time, humans could begin to accumulate wealth." Where there is wealth someone will covet it. "This allowed for nonproductive elites, which had been impossible among hunter-gatherers." Perhaps the most fascinating conclusion of all is that "these elites were not formed in response to some societal need: They took over because they could." And, we might add, because they wanted to, a point the significance of which is lost on most people—who simply cannot comprehend that for some people power is the ultimate goal.

The authors conclude that "elites turned into governments with a local monopoly on force." To be sure, there were benefits. Peasants "were safer, since they were no longer allowed to raid and be raided by their neighbors." However, there was a cost. "Foragers could walk away from troubles, but farms were too valuable.... So farmers had to submit to authority." A disinclination to tolerate dissent was—and is—a significant selective factor. "Aggressive, combative people may also have experienced lowered fitness once ruling elites began to appear." With group power in the hands of the elites, "Fight too often and you're sure to lose."

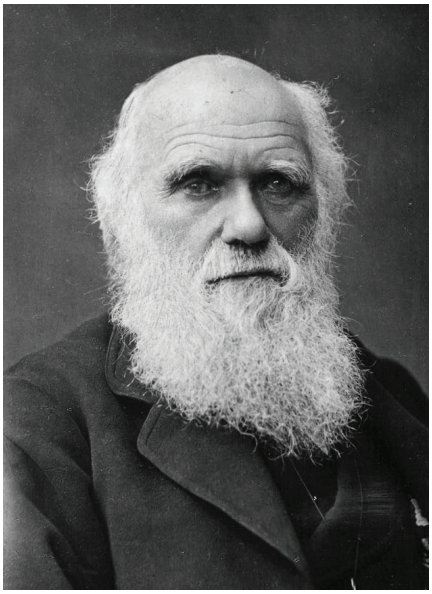
The inference is that elites "were in a very real sense raising peasants, just as peasants raised cows." It was to their advantage to "cull individuals who were more aggressive than average, which over time would have changed the frequencies of those alleles that induced such aggressiveness." The implication is disturbing. "Selection for submission to authority sounds unnervingly like domestication." Worse: "If your ancestors were farmers for a long time, you're descended from people who decided it was better to live on their knees than to die on their feet."

But, not everyone bows to king or commissar—which must also have genetic roots. Certain genes appear to govern restless and impulsive behavior—the 7R allele of the DRD4 gene, for example. The authors speculate that this allele may also govern behaviors consistent with refusal to kowtow to elites. Oddly, it is largely absent from East Asians. "It is possible that individuals bearing these alleles were selected against because of cultural patterns in China." Perhaps there is a ge-

netic basis for the Japanese aphorism: "The nail that sticks out is hammered down." This conjures to mind Benjamin Franklin's observation: "They that can give up essential liberty to purchase a little temporary security, deserve neither liberty or security."

Reversing the Trend

When natural environments reward cognitive ability with reproductive fitness it will be selected for. And yet there is a dichotomy. Past demographic change grew out of natural competitive advantages. But not all selections are natural—or contributory to uplift. Imagine nature replaced by, say, belief in self-sacrificing altruism. A people so afflicted might yield its resources, its territory, even its existence to groups without such beliefs. The altruistic group would disappear just as surely as if it were maladapted to a deadly disease—especially if other groups exhibited higher fertility. In words that could have been lifted from Garrett Hardin's *The Tragedy of the Commons*, the authors note that "smallish groups that do not limit their fertility will rapidly displace (in a few centuries at most) those that do...."



Charles Darwin

We read that in earlier times economically successful people raised more children to maturity. This is no longer true. Francis Galton—half-cousin of Charles Darwin and an early researcher into human intellectual achievement—noted in *Hereditary Genius* that prosperous (and thus smarter) members of nineteenth century English society tended to produce fewer children than the less successful, a trend that continues today throughout the West. Why aren't smart people raising more children? Those with foresight and the ability to defer gratification often choose to forego large families. But, welfare state clients demonstrably do not. Modern medicine and welfare politics have enabled less-restrained populations to raise large families with impunity—few barriers remain to reproductive profligacy. The welfare state ensures that such offspring reach maturity, repeating the cycle endlessly.

Pre-modern humans may have contributed to the human genome, but Neanderthals became extinct because their fitness (in a Darwinian sense) was less than that of the modern humans who replaced them. Many immigrants, past and present, are from areas where the "creative explosion" never happened but birth rates remain high. Those population segments will grow if altruistic welfare policies continue, resulting in strains on virtually every institution: government, law, finance, economics, commerce, education, health care, culture, and more. In the face of inevitable conflicts, centuries-old Western liberties will disappear. Social discord and rising levels of alienation will induce elites to "cull" those who resist their own dispossession. This is already under way via hate crime and hate speech laws, the latter of which criminalize those who speak in defense of their native culture and the land of their inheritance.

Cochran and Harpending do not deal with these issues, but like a child's connect-the-dots puzzle the implications arrange themselves in a pattern profoundly at variance with the universalistic tenets of Western societies. The details may vary, but the conclusions are based on sound science—liberals can hiss and shriek all they want, but they cannot refute the underlying genetic basis of human differences. They can only suppress. To possessors of the 7R allele of the DRD4 gene, repression is a red flag that must evoke a response. The polarization emerging in American social and political debate may be the embryonic stirrings of that response. ■