The Genetics of Political Behavior

How Evolutionary Psychology Explains Ideology

Michael Ryan

ROUTLEDGE

THE GENETICS OF POLITICAL BEHAVIOR

In this unique amalgam of neuroscience, genetics, and evolutionary psychology, Ryan argues that leftists and rightists are biologically distinct versions of the human species that came into being at different moments in human evolution.

The book argues that the varying requirements of survival at different points in history explain why leftists and rightists have anatomically different brains as well as radically distinct behavioral traits. Rightist traits such as callousness and fearfulness emerged early in evolution when violence was pervasive in human life and survival depended on the fearful anticipation of danger. Leftist traits such as pro-sociality and empathy emerged later as environmental adversity made it necessary for humans to live in larger social groups that required new adaptive behavior. The book also explores new evolutionary theories that emphasize the role of the environment in shaping not only human political behavior but also humans' genetic architecture. With implications for the future of politics, the book explores how the niche worlds we build for ourselves through political action can have consequences for the evolution of the species.

Proposing a new way of understanding human politics, this is fascinating reading for students and academics in psychology, the social sciences, and humanities, as well as general readers interested in political behavior.

Michael Ryan is professor emeritus at Temple University. He has published books in the fields of political philosophy, cultural politics, and literary studies. His web page can be found on Academia.edu.

"Michael Ryan synthesizes an absolutely incredible amount of information to arrive at a provocative conclusion regarding the difference between rightists and leftists."

—John R. Hibbing, University of Nebraska-Lincoln, USA

"This important book is a sparklingly original natural history of the age-old conflict between left and right."

—Richard Wrangham, Harvard University, USA

"Do liberal forms of cooperation and pacifism and conservative forms of competition and authoritarianism have deep origins in our evolutionary history? In prose that is skilled and accessible, Michael P. Ryan makes a passionate, provocative argument that they do. He has read seemingly everything, and he pulls no punches. His book provides food for thought, worry, and, surprisingly, hope."

—John T. Jost, New York University, USA

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PREFACE

In a famous experiment conducted in 1971, Stanford University Psychology professor Philip Zimbardo recruited students to play the roles of prison guards and inmates. Given power over others, the student guards soon became abusive toward their "prisoners." The lesson seemed to be that humans are by nature evil. Given the right situation and the right amount of power over others, anyone can be a Nazi.

Over the past decade, scientists have devoted a great deal of attention to human nature and especially to the different natures of rightists and leftists. One study revisited the Stanford prison experiment to see if the initial results could be repeated.[1] The researchers recruited students in the same way as in the original experiment by placing advertisements in student newspapers that asked for student volunteers. As in the original experiment, the volunteers knew they were being invited to play the role of prison guards and inmates. This time around, however, the student volunteers were subjected to psychological testing before the experiment began. The researchers found that the students who volunteered shared traits that are prominent in conservatives such as "Social Dominance Orientation" (which sees the world as a tough, dog-eat-dog place and is characterized by diminished altruism). The volunteers were more callous and less empathetic than the general student population. They had lower tolerance for infractions of group norms.

So, we may not all be capable of becoming Nazis, after all. Just some, and conservatives especially so.

I first became fascinated with conservatives when I arrived from Ireland to America in the early 1960s and saw images of World War II concentration camps on television for the first time. I saw humanity reduced to bones and skin and nothing more. Walking death.

And I asked, "Who did this? And why?"

I studied Nazism in high school and wrote a research paper on Hitler's *Mein Kampf*. I learned that right-wing conservatives were responsible for the Holocaust.

As I continued to study conservatism, I became fascinated by the impossibility of reconciling conservatives' preference for authoritarianism with their belief in "freedom." What I saw around me in places like Chile in the 1970s was military authoritarianism used in the service of unregulated resource hoarding. There was something grossly materialistic about the unrestrained greed that contradicted the pious call to defend "liberty." Conservative ideals such as "freedom" seemed deceptive ruses that concealed other motives. I saw glimpses of those motives when I watched rightist talk show host Patrick Buchanan bully leftist opponents on the US political talk show *Crossfire* in the 1980s and 1990s. There was something physically domineering about Buchanan that had nothing to do with ideas. And he espoused a brutal callousness regarding the poor that seemed inhumane.

At university, I encountered the specious reasoning regarding "free markets" that rightists use to excuse such callousness. But I lacked the conceptual tools to solve the contradiction between high ideals and low behavior.

Richard Wrangham and Dale Peterson's *Demonic Males* introduced me to the idea of "dominance behavior," and I realized I had found a way of accounting for Buchanan's bullying.[2] Perhaps rightists behaved so badly for reasons that reached deep into the human past when traits such as dominance behavior were first forged as tools of survival?

Then, in 2007, I read a study by John Jost and his fellow researchers that found that conservatives react differently to death than leftists.[3] They fear it more. How could that be, I wondered? Aren't rightists the tougher of the two political groups—the self-described adults in a room full of leftist children?

That question inspired me to do research on the science that explains the evolutionary nature of human politics, everything from archeology and neurology to biology and genetics. What I discovered was that conservative fearfulness and toughness are logically joined in early human history. Early humans feared more because everyone around them inspired more fear. And because of that greater danger, fearfulness became an adaptive trait that was hard-wired into the genome. Without it, you did not survive. Conservatives are the descendants of those first humans.

That insight prompted me to begin thinking about conservatism and liberalism in evolutionary terms. The result is this book.

Scientists who study politics use the terms "conservative" and "liberal" in a broad way to name "right of center" and "left of center." For the sake of this discussion, I have replaced the categories scientists use with the terms "rightist" and "leftist," although occasionally I fall back on the liberal-conservative terminology. Those broad terms could be refined into more discrete categories such as moderates and extremists or social conservatives versus economic conservatives. Only a few scientists engage in such segregation.[4]

I will refer occasionally in capital letters to such measures as "Openness to Experience," "Humility-Honesty," and "Conscientiousness." These terms derive from personality assessment tools used by psychologists, especially the Five-Factor Personality Test and the HEXACO Personality Inventory.

"BP" = "before the present."

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Political ideology, a high-level construct, is directly reflected in low-level perception. Right—and left—oriented individuals actually see the world differently.

—*Serge Caparos*

1

POLITICAL ADAPTATIONS

> The terms of Whig and Tory belong to natural as well as to civil history.
> —*Thomas Jefferson, Letter to John Adams*

Rightists and leftists differ biologically as well as ideologically. Each group evidences more or less of certain personality traits such as Openness to Experience or Need for Closure that are due to temperament rather than acculturation. Rightists are by nature more fearful, leftists more experimental. Such trait differences are rooted in biology and governed by genes.[1]

How did such different traits emerge in the same species?

Traits are the result of adaptation to an environment. Donald Trump is different from most of you reading this book because your ancestors and Trump's ancestors lived in different environments that posed distinct survival challenges. Each environment prompted the evolution of radically different adaptive behaviors. The evolutionary rule is: geographic isolation plus genetic diversification equals population segregation (and, in some cases, speciation).

For example, over the course of 11,000 years, Tibetan highlanders adapted to a high-altitude environment by acquiring a variant of the EPAS1 gene and evolving an ability to process scarce oxygen more easily than lowlanders. Tibetan women's bodies evolved to increase blood flow and oxygen delivery to the uterus, lessening the chances of low-weight babies and increasing the chances of survival in the harsh climate.[2]

Darwin's finches differ from one another for similar reasons. They populate the Galapagos Islands, sometimes one species to an island. Although descended from a single common ancestor, they evolved distinct beaks over time, and each

beak is suited to finding food on a particular island. Some beaks are long for rooting out bugs under rocks, while others are blunt for cracking nuts.

Like Darwin's finches, your ancestors and Trump's lived on different islands; only they were islands in evolutionary time, different moments in human history. Rather than evolve different beaks, they evolved different brains and different adaptive behaviors.

Signs suggest Trump Island was a brutal place. To survive, Trump's ancestors had to be brutal themselves. They competed remorselessly and selfishly with other small kin-based hunting bands, creating a static-filled situation of anxious fear regarding out-group people and a legacy of prejudice and racism in this strain of our species. The ancestral Trumps hoarded resources and denied others access to them—much as Trumps do today. They treated others' needs with callous indifference because being generous did not pay off in the grand competitive scheme of things. One's obligations to others extended to the rim of one's kin band.

The hunting bands of the archaic environment were authoritarian, as Trump and his followers are still. Quick responses to danger got the hunting band to the end of the day, and such fast responses are best mobilized by a clear command structure with a single leader with complete authority. Because the survival of one depended on the survival of all, bonding with fellow band members was essential. In consensus was safety, as also loyalty. Dissidents were a danger to survival and were bullied or ejected and fell in the hierarchy. All had to know their place and stick to it. The rule of life was dominate or submit.

Trump Island came early in human history, and that accounts for why Trump's behavior seems so archaic at times. It seems so because it is so. The most archaic aspect of Trump is dominance behavior. Trump regularly scowls at adversaries in an attempt to intimidate them. During one debate with Hillary Clinton, he prowled the stage behind her, looming over her physically. Such dominance behavior once served a survival purpose. Those good at dominance stood a better chance of controlling the distribution of resources (one of which was, of course, women) in their hunting band.

Studies show leftists favor smiling to scowling and equality to dominance.[3] That is the case because their island in evolutionary time—let's call it Obama Island—required very different adaptive strategies. Signs suggest Obama Island was a more crowded place than Trump Island. Smiling is a more sociable activity than scowling. It forges links with others and fosters reciprocity.[4] Such reciprocity would have been helpful in a world where early humans were forced to live in greater proximity by environmental adversity. In such a novel situation, small kin-based hunting bands had to help one another rather than kill one another to survive. Former enemies on Trump Island had to become friends on Obama Island—or at least not murderous adversaries. The changes in the environment created new survival exigencies that required more cooperation and less competition between hunting groups. Kin and non-kin had to get along for the first time.

FIGURE 1.1 Hillary Clinton and Donald Trump at the second presidential debate, 2016.

Image Credit: Associated Press

That would explain the entry of more smiling behavior and greater cooperativeness into the human repertoire of traits—in leftists at least. In studies, rightists score low for smiling behavior and are more competitive than cooperative.[5] But not everyone in a population has to acquire a new trait for it to be adaptive. If just one person is inventive enough to figure out how to keep a fire going for weeks rather than hours, all will benefit. If she finds a like-minded mate, a new subpopulation begins to emerge. Something similar occurred on Obama Island. Some of our ancestors evolved traits such as cooperativeness that aided the survival of all even though not everyone acquired the trait. They gravitated to others similar to themselves—using an early version of facial recognition technology to detect each other if recent neuroscience is to be believed.[6] Eventually, a new subpopulation or genotype emerged. Leftist traits became a permanent feature of our genome—in some, at least.

The difference between Trump Island and Obama Island, between rightists and leftists, tells us that our species did not evolve in unison. The same adaptive traits did not emerge in the entire human population at the same time. Instead, different traits were adaptive in different sub-populations at different moments in human history. At one point in time, it paid to hoard resources, to callously deny others access to them, and to treat out-group people with hostility. It paid to be

rightist. But at another point, on a different island in evolutionary time, it made more sense for survival if at least some of our ancestors evolved the capacity to share resources and treat out-group people with kindness. It paid to be leftist.

Trump Island came first. Very early human history was harsh, and you had to be harsh to survive in it. Obama Island came later, as new environmental challenges obliged some of our ancestors to evolve behaviors such as experimentation and cooperativeness that were newly beneficial to survival. The result is two distinct sub-populations living in fractious cohabitation, arguing over the future direction of our species. That is the origin of human politics.

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2

EVOLUTIONARY MODELS

According to the standard model of evolution known as the "evolutionary synthesis," evolution occurs through accidental changes in the human genome.[1] David Reich summarizes the process in the following way:

> The genome is a sequence of about three billion paired chemical units that can be thought of as letters—adenine (A), cytosine (C), thymine (T), and guanine (G)—that are almost always the same between any two genomes, but occasionally are different. Between any two copies of a human genome, there is typically about one difference in every thousand positions. That's about three million differences.[2]

The differences Reich refers to are called single nucleotide polymorphisms. Changes in a single nucleotide—from C to A, for example—during reproduction can have significant downstream effects on health or behavior if the new variant of the gene attains sufficient frequency to become fixed. For example, a single polymorphism gave rise to a susceptibility to type 2 diabetes.[3] Not all accidental changes in a base nucleotide are so deleterious. A variant of APSM, a gene controlling head size, swept to high frequency under strong positive selection in the past 5,800 years. As a result, most humans now have slightly larger crania than their ancestors had 6,000 years ago.[4] According to this model of evolution, the genome routinely makes mistakes of transcription or copying, and some are beneficial.

Steven Pinker notes that violence declined in human life over the past millennia.[5] How might the standard model of evolution account for this beneficial change?

Only 5% of the human genome is functional. Some genes—between 20,000 and 25,000—make proteins that manufacture components of our physiology, from brains to the chemicals that fuel violence, while others—about 8% of functional genes called transcription factors—regulate gene operation. NR2E1 performs two functions. It makes eyes, but in its spare time, it regulates aggression. Imagine an older version of NR2E1 that only made eyes. The transmission of its nucleotide sequences during reproduction routinely gave rise to single nucleotide polymorphisms. One of those polymorphisms resulted in a new variant governing a new trait—greater control over aggression—that benefitted from positive selection. People who acquired the variant behaved less violently and appeared more attractive to potential mates, or they avoided the violent conflicts that killed others, allowing them to survive and reproduce at higher rates. As the new variant increased in frequency over time, it underwent selection and swept through the human population. As a result, humans became less violent—at least theoretically.

A single polymorphism is usually not enough to affect behavior or physiology. Genes work in webs, with a host of small increments contributing to large effects, and one variant's action often depends on the action of others. For BDNF to be active in the anterior cingulate cortex where it wards off depression, GAI1/3 must be at work simultaneously in the hippocampus.[6] Some gene variants depend on environmental conditions. The gene polymorphism TPH1 A779C fosters creativity but not if authoritarian parenting is present.[7] Temperament can also affect gene variants. Young men with a particular variant of MAOA, if they were abused as children, can engage in antisocial behavior when older. But if they are temperamentally sensitive, they avoid the adverse effects of mistreatment and score lower for antisocial behavior. Sensitivity associates with greater neuronal and behavioral plasticity, and plasticity enables adjustment to mistreatment.[8] Behaviors such as chronic smoking can affect the functionality of genes. Daily smoking determines if a gene is likely to contribute to suicide in schizophrenia patients.[9] Geography is also a factor. One gene variant behaves differently in North America, where it is associated with bipolar disorder, than in Asia, where it is not.[10] Genetic studies are difficult to replicate, and one reason may be that each population studied, although apparently identical demographically, varies in dozens of ways, ranging from temperament and physical location to co-present genetic factors and personal habits.[11]

Eva Jablonka and Marion Lamb propose several alternatives to the standard model of evolution.[12] For example, some evolutionary change occurs as a result of non-genetic mechanisms.[13] Epigenesis means "outside genes," and evolutionary theorists like Jablonka think epigenetic routes are another way for information to be passed from parent to daughter cells in a way that fosters evolution.[14] Our genes come to us as deoxyribonucleic acid (DNA) strands. In the process of communicating information from adult to offspring, the DNA strands are

wound around histone proteins, organized into nucleosomes, and compacted into chromatin fiber for placement in chromosomes. The process of transcribing and transporting relies on ribonucleic acid (RNA), an acid which can make changes to genes before they are put to work. Some of the changes are accidental. But some changes have a purpose and are governed by transcription factors—regulatory genes such as LCLAT1, which controls a process called acetylation that enhances protein formation.[15] Gene regulation is also carried out by methylation, which controls gene expression by turning genes off.[16] Methyl molecules attach to targeted sites on DNA strands during transcription in order to inhibit gene functioning. In contrast, acetylation promotes gene activity. Such changes in gene regulation can be heritable,[17] and regulation has been important in recent human evolution. Adaptive divergence in our species has been primarily driven by regulatory changes.[18] According to this model of evolution, the reduction in violence resulted from increased regulation of gene expression by epigenetic mechanisms such as methylation that silence genes such as MAOA that are responsible for violence.

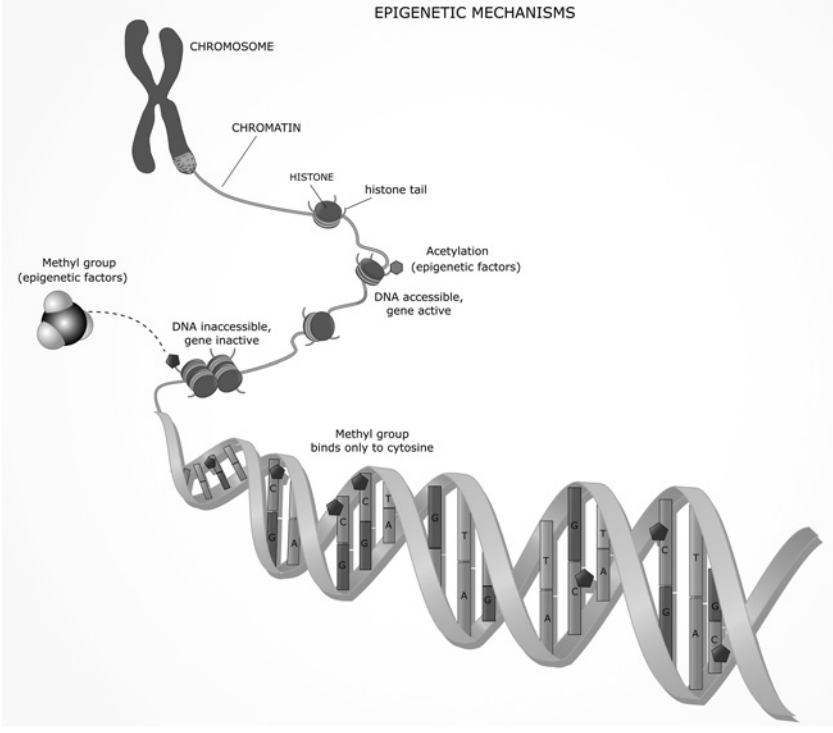

FIGURE 2.1 From parent DNA to chromosome, via epigenesis.

Image Credit: Shutterstock

A third way that evolution occurs is as a result of changes to genes caused by changes in behavior. To return to the example of violence, it is possible that at some point in the past, especially alert ancestors realized that violence was more harmful than helpful to themselves and to their families and decided to change their behavior. As their more pacific behavior produced higher survival rates, others were inspired to adopt the new nonviolent way of living. Soon, entire communities were routinely abstaining from violence. Fewer young people died before reaching child-bearing age as a result. Those who were violent died at higher rates and were less successful at reproducing. Nonviolent behavior was consequently represented in higher numbers in succeeding generations. By practicing less violent behavior, humans determined the version of the genome that was passed on. Whatever part of our genetic program made nonviolent ancestors nonviolent became more preponderant in the human genome and more pervasive in human life.

A fourth way that evolutionary change occurs, according to Jablonka and Lamb, is as a result of the transmission of information through the niche environment that we have built for ourselves. Certain species have evolved the ability to offload important tools of development into the niche environment, where they can be stored and retrieved when needed. Parents are especially good storage lockers. Rat pups need their mother to lick them if all of their genes are to be activated.[19] The young of certain rabbit species could not survive if rabbit mothers did not feed their feces to their young, providing them with essential information for finding food.

Many of the processes that sustain modern human life depend on niche supports. Cognitive tools such as mathematics that maintain civilization at its current level require education. Food arrives on store shelves because mathematical tracking assesses demand and arranges deliveries when supply lags. If mathematics stopped being taught, and if everyone forgot how to do it, the technology that sustains human life at its current levels would cease to function. A certain kind of civilization would come to an end. And human life would revert to simpler forms.

Pinker argues that a humanitarian turn in human history led to less violence. Different ideas and new norms lodged in symbolic form in our niche environment conducted human behavior in less violent directions. The new behavior was sustained from generation to generation by educational, governmental, and religious institutions that reinforced learning and nurtured nonviolent behavior.

Ideas and norms are representations, and an important feature of our cognitive functioning is mental representation. Mental representation serves a regulatory function in the brain by controlling emotional responses such as anger that fuel violence. Images of angry faces provoke fearful responses in some people that are at the same time neurochemical reactions. Eye neurons connect to brain neurons, and those neurons end in the amygdala, which responds to threats—such as images of angry faces—by producing norepinephrine, which makes our body

tense and get ready to flee or fight. Other images or representations in the brain are involved in regulating such emotional responses. They help us control emotional responses and the behaviors they inspire using different chemicals.

Cultural representations such as stories are projections of such internal mental representations, and often, they have a regulatory function. They teach us to control behavior such as violence. One of the first long works of literature in the West—Homer's *Iliad*—contains many stories, and one is about disobedient children. The children of Jove, the father god, insist on getting involved in human affairs, even when their father tells them not to. The result is disaster for the humans the disobedient children support. The story infers that it is better to obey parents, especially if they happen to be gods (as most parents are, of course).

Moral instructions acquired from literature, religious institutions, and schools are examples of mental representations that help us regulate behavior. When I was growing up, "beat swords into plowshares," a phrase from the Jewish prophet Isaiah, was still a vibrant tool for guiding behavior some 3,000 years after Isaiah's death. It had been placed in a niche storage locker for later retrieval by young people like me.

Like the images of angry faces, mental representations such as "beat swords into plowshares" or moral stories such as the *Iliad* inspire chemical changes in our brain. Reading makes us more empathetic, a neuronal and a neurochemical activity.[20] And the thought of being generous to others rather than being violent towards them—of beating swords into plowshares—summons the neuropeptides oxytocin and endorphin that issue rewards to our brain.[21] Over time, our brains become so used to receiving those rewards that the genes governing them such as COMT are affected. As more nonviolent behavior elicits more hormonal rewards, the supply of neuropeptides is depleted. More neuropeptides are called for, putting a strain on COMT. It adjusts to keep up. Variants of COMT such as Val158Met emerge that assure there are enough doses of endorphin available to attach to generous actions rather than to violent behavior. In a sense, the brain trains itself to evolve. It does so by using chemical mathematical modelling to keep the cerebral store shelves stocked with candy.

It is not at all farfetched to imagine our brains changing physiologically as a result of training or experience. Musicians, mathematicians, and London cab drivers all have this in common: the morphology of their brains was altered by repeated learning.

Processes like these are what Pinker has in mind when he argues that a humanitarian turn occurred in human life. Mental representations can change our biology because they are already in charge of regulating emotional responses that are based in neurochemical reactions. As a result, therapeutic cultural ideas and norms that promote nonviolent behavior affect not just ideology but also physiology (or to be more specific, neuropharmacology). A cultural change such as a humanitarian turn is not merely representational and not just a matter of better ideas and improved norms. It is a different way of activating or attenuating

neurochemical processes that have genetic consequences. The humanitarian turn was also a biochemical turn, and it was likely also an evolutionary turn.

Another way of accounting for the diminishment of violence, then, would be to say that improved mental representational abilities, when projected into the niche environment in the form of laws, norms, and ethical ideas, acted on our ancestors and changed the neurochemistry of the brain and the gene regulatory mechanisms that govern it, resulting in increased down-regulation of gene expression that inspired violence. So long as the niche prompts to that genetic action are in place, we will continue to enjoy less violence in our lives. But if those prompts disappear—as they did at the end of the Roman Empire—we can expect a reappearance of large-scale violent behavior.

Or not. The possibility exists that the hundreds of years of conditioned learning to be less violent have so altered the operation of our genes that they would continue to program less-violent behavior even in the absence of sustained niche support. This book is about such possibilities.

Jablonka and Lamb propose one other model of evolution. Many organisms are characterized by phenotypic plasticity. They assume different physical forms. As some organisms develop from gamete to adult, for example, they change morphology—pupa, larva, adult. Other organisms give rise to more than one phenotype. Certain grasshoppers are brown in one setting and green in another—despite having just one genotype. To grasp the implications of such phenotypic plasticity, imagine a White racist getting into their truck and driving across town to a Black neighborhood—where he emerges from his truck as a Black person. Unfortunately, not all polyphenism is so politically correct.

Plasticity is a common way for organisms to cope with environmental adversity. Some animals shed brown for white coats in winter, for example. Certain species of plants grow broad leaves if there is insufficient moisture to maintain life with narrow leaves. Such plasticity can affect the germ-line cells that pass on genetic information from parent to offspring, according to Jablonka and Lamb. Phenotypic plasticity means germ-line genes are more mutable. The ability of genes to generate multiple phenotypes makes genetic change more likely.

Indeed, such evolvability may be an acquired adaptive trait of certain organisms, and humans may be one of them. Our species has numerous phenotypes that range behaviorally from extreme Left to extreme Right. We resemble grasshoppers who are one color while alone and another when in large groups. In rural settings, we are more likely to be conservative, while urban settings encourage greater leftism because more contact with ethnic others reduces prejudice and encourages tolerance. Moreover, leftists are distinguished from rightists by their own version of phenotypic plasticity. They change behavior more readily than rightists in response to changing environmental signals. Such responsiveness resembles the phenotypic plasticity evident in plants and animals that change form when their environment changes. If Jablonka and Lamb are correct, such plasticity should encourage evolvability. And indeed, leftists seem to have evolved

a greater ability to control violence. The human genome now generates phenotypes such as cognitive control over archaic behavior that are heritable.

The various ways that evolution occurs is a topic of debate. According to the standard model of evolution, single nucleotide polymorphisms account for all evolutionary change. Evolution occurs when a random polymorphism accidentally produces an adaptive trait. If the trait and the gene variant benefit from positive selection, they become fixed. With each new generation, the frequency of the variant increases. Ultimately, it sweeps through the entire population and displaces its parent gene—much as the variant of APSM that makes our brain cases larger has done over the past 6,000 years.

The standard model works best in a limited population that is either homogenous in its mating practices like Orthodox Jews or isolated geographically like Tibetans. Certain gene variants associated with cognition have attained positive selection in Asia alone and do not appear in western populations. The positive selection of a trait for a global population of humans is harder to imagine, and indeed, large selective sweeps have been rare in recent human evolution.[22] A population spread over the globe is less likely to experience hard sweeps.

New evolutionary theorists such as Jablonka and Karen West-Eberhard offer alternatives to the standard model of genetic evolution that account for the paucity of classic selective sweeps. The standard model is designed to avoid Lamarckism. Lamarck thought a giraffe stretched its neck to reach higher fruit and passed on its longer neck to offspring who stretched their necks even more—eventually achieving homeostasis with the environment and giving giraffes their defining anatomy. The organism's interaction with the environment modified the giraffe's genes.

Two aspects of Lamarckism were deemed doubtful by proponents of the evolutionary synthesis. One held that the phenotype—even the cell—rather than the gene, is the agent of evolutionary change. The other proposed that the interaction of organism and environment can cause evolution; genes are modified by an organism's engagement with the world around it. The standard model corrected these "mistakes" by depicting evolution in strictly genotypic terms. Accidental changes to nucleotide sequences independent entirely of an organism's engagement with its ambient world account for all evolution. And genomic change, not changes in how genes are epigenetically regulated at the phenotypic level or transformed by phenotypic behavior, is the motor of evolution.

These corrections did not account for the rapidity with which some genetic changes can occur—seemingly in response to environmental information. Random polymorphisms can take a long time to attain sufficient frequency to become fixed. Yet rapid evolutionary change is a common occurrence. Influenza is so persnickety because it evolves so rapidly.[23] Moreover, non-selective forces such as gene conversion, which accelerates the rate of substitutions in gene combination, contribute to evolution in a process distinct from positive selection for

single-nucleotide polymorphisms.[24] Evolution seems to disobey its own rules fairly frequently.

According to the new evolutionary theories, genes are not sequestered from the environment.[25] They can be changed by the situation in which they find themselves, and such change can occur rapidly.[26] An ability to adapt to changing life circumstances is an inherited trait in some organisms, according to Jablonka and Lamb, and the ability to engage in rough guesses regarding what mutations are needed to survive seems to be an evolutionary innovation. Some genetic variation seems to be in direct response to the stressful conditions in which the organism finds itself because the responsive gene activity is in precisely the regions most affected by stress. For example, the three human body regions most affected by positive selection are the gastric system, the immune system, and skin—all three of which are distinguished by high levels of interaction with environments.[27] The new evolutionary theories argue that environmental influence can change how genes work. If the stress and the response to it are consistent, they can result in a re-patterning of the genome, according to West-Eberhard.[28]

The responsiveness of genes to environmental influences is demonstrated by developmental plasticity—the way bodies change form as they develop from gamete to adult. Moreover, genes can function differently depending on location. The same HOX gene gives rise to either webs or fingers, depending on whether it finds itself in a frog or a human. The gene takes stock of its environment and functions in whatever way is called for by its current location. In a similar manner, genes are responsive to the climate. Frogs change morphology as they migrate through wet and dry regions. The interaction of gene expression and environment gives rise to very different phenotypes for the same genotype. Identical twins, whose genes say they should be as identical at 50 as they were at birth, differ anthropomorphically (in all the ways that make us human) by as much as 35% by the time they reach 50.[29] Over 10,000 generations, bacteria have become so diverse that no individual has the same genetic footprint as another.[30] The genome is clearly much more dynamic and more context-sensitive than the standard model of slow evolution over extended periods of time through accidental single nucleotide polymorphisms allows.

The popular picture of genes as a ship captain who issues orders to underlings needs to be updated. It would be more appropriate to compare genes to a vessel equipped with sensors making its way through stormy weather that trims its sails and adjusts its course when necessary. Genes express themselves in a variety of ways in response to environmental conditions and developmental moment. Genes also adjust to stress by changing function and direction. In a case that has intrigued evolutionary biologists, a donkey was born without forelegs. Its genes adjusted over the course of its first and only year alive, and rewrote themselves. The donkey developed its body differently from other donkeys. Its torso elongated and

came to arch backwards. Its legs changed so that it could hop about like a kangaroo. It should have developed into a donkey, but the stress on its genes provoked them to function in a new way appropriate to its new physical condition.

Changed instructions for gene operation show signs of being heritable. Breeding chickens for domestication resulted in massive changes in methylation that became a permanent feature of the domesticated chicken genome.[31] People who suffer major trauma have children who show the same effects of trauma, although such modifications tend to last only a few generations.[32] That suggests, however, that consistent application of environmental prompts might permanently alter the way genes operate.

According to the new evolutionary theories, it may be possible to re-pattern the human genome by changing the environment in which it operates and the behaviors in which humans engage. A 2013 study found that the brains of men and women are wired differently as a result of archaic decisions regarding the division of labor in Early Human societies.[33] The male brain is wired back to front, while the female brain is wired side to side across the two brain lobes. Scientists hypothesize that the brain difference resulted from a division of labor in Early Human life, whereby females took on the work of tending the home fires while men went out foraging. Each labor required a different kind of brain functioning, and each group's brains evolved different wiring as a result. Females became noticeably more empathetic as a consequence of increased sociality, while men became more monomaniacal as a result of constantly engaging in goal-oriented activities such as hunting. Human biology was shaped by human decisions and behaviors.

The environment—both the physical and the social—plays a role in how we evolve. What kind of world we build for ourselves may be consequential for who we are and will become.

Sapiens has evolved rapidly over the past 100,000 years in a way that suggests that our species benefits from an adaptive capacity to respond to environmental stress with rapid changes in gene operation and, possibly, gene architecture.

Our direct ancestor *Homo erectus* endured for two million years before going extinct 400,000 years ago when earth temperatures dropped far below the norm. Descendants of *erectus* survived till as recently as 14,000 years ago in Asia. The round head and shovel-shaped teeth of some Asians, including Vladimir Putin, are an erectile legacy. Archeologists believe *erectus* was a mix of Ted Bundy and Adolf Hitler. Surviving skulls point to a life of constant violence and routine killing. Erectile skulls are thick like a turtle's, and the brows are ridged for protection from potentially fatal blows. *Erectus'* life was precarious and violent. To survive, it had to evolve traits such as vigilant fearfulness, prejudice against outsiders, bonding with kin allies, callousness toward victims, and a penchant for inflexible habits of life that were known to guarantee safety. It had to be conservative.[34] Archeologists suggest that some of our most characteristic

conservative emotions such as nationalism and xenophobia were forged at the time of *Homo erectus*.[35]

We get glimpses of archaic life at the time of *erectus* in peoples who lived in isolation from the rest of the world for millennia. The Papuans of New Guinea still used stone-age technology when Europeans encountered them 150 years ago, and aspects of their behavior suggest a version of archaic conservatism.[36] Papuans bear a 6% legacy of ancient genetic ancestry.[37] They possessed no artistic abilities (in striking contrast to the Melanesians who had a rich artistic culture), which suggests they had low mental representational abilities and less ability to use cognition to control aggression and violence. They engaged in fight or flight when they encountered strangers. They killed randomly and impulsively. Their behavior seemed inspired by uninhibited archaic urges. The impulsive murder of women by men suggested diminished empathy. Unable to adapt quickly to contact with Europeans, they easily fell into depression and evidenced signs of hysteria and mass hallucination in Fox News-like cult religions.

Homo heidelbergensis replaced *erectus* 400,000 years ago when global temperatures dropped to minus 7 degrees Celsius for 50,000 years before rising rapidly to a new norm of 5 degrees Celsius. *Heidelbergensis*, whose brain was larger than *erectus'*, endured 200,000 years, until another rapid fall in temperatures drove it extinct and provoked a further evolution of the genus. The Most Recent Common Ancestor of all *sapiens* emerged around 157,000 BP (between 197,000 BP and 120,000 BP).[38]

If *erectus* and its descendants were colloquially murderous, our earliest *sapiens* ancestors were likely as casual about killing. To assure survive in a world of giant predators and murderous neighbors, their brains were wired for fast survival behavior, such as fight or flight. They followed routines that provided certainty and safety. Trust in the well-known was better than experimentation. What was familiar was good. Innovation was risky. Their brains did not need reflection. Instead, they responded automatically and intuitively to danger. They benefitted from vigilantly scanning the horizon for predators. Distrust of strangers stood them in good stead. They bonded with members of the kin band for safety. Contemporary conservative ideals such as group loyalty aided survival by facilitating coordinated group action. There was no room for dissent, and having a stern and certain leader issuing commands promoted efficient unanimous responses to danger.[39] Implicit in such authoritarianism is a belief in the virtue of hierarchy. Women lived lives of subordination. Children obeyed adults. Other hunting groups were treated with hostility. Inter-group conflict was a constant occupation.[40]

But things changed both in the environment and in our species.

A long drought in east Africa from 135,000 BP to 75,000 BP encouraged adaptive evolution possibly by killing off giant predators, which reduced the need

for fearfulness and hostility. An additional inducement to evolution occurred 73,500 years ago in Sumatra when the Mt. Toba eruption blackened the earth. Debris from the Toba explosion reached Africa, and sulfuric ash continued to be deposited for six years.[41] Tool production at sites in India pre-and post-Toba suggest continuity of behavior across the event,[42] and East Africa was spared the worst effects of the disaster,[43] but the eruption reduced the number of plant species and made life difficult for survivors.[44]

Possibly as a consequence of these events, a new version of *sapiens*—haplogroup L3—appeared around 78,000 BP (or sometime between 94,900 and 62,400 BP).[45] A haplogroup is a heritable genetic cluster associated with a single ancestor and a single nucleotide polymorphism. At 75,000 BP, this new haplogroup diverged from West Africans; at 65,000, it diverged from Ethiopians; and at 55,000 BP, it diverged from Egyptians. Somewhere between 55,000 and 45,000 BP, this group departed Africa for the Levant. Soon after L3's appearance, human behavior modernized rapidly.

Coastal South Africa was a refuge, and there, first signs of a rapid advance in human behavior appeared.[46] New behaviors such as decorative ornamentation are evident around 73,000 BP in the Blombos Caves, although the evidence is variably interpretable.[47] Moreover, the behaviors are not sustained, and as a consequence, archeologists debate the start date of modern behavior, with some seeing it happening earlier and some later.[48] Sustained modern behavior is indisputably evident only from 50,000 BP on in East Africa. It consisted of the first shaping of bone, ivory, and shell into artifacts, growth in the standardization and diversity of artifacts, spatial organization of camp floors, the first constructed dwellings, the earliest incontrovertible art, evidence of population densities approximating those of hunter gatherer societies, the oldest evidence of the transport of stone raw material as much as hundreds of kilometers, evidence of fishing using hooks, and the first rituals and elaborate graves.[49]

200,000 years ago, our ancestors needed to be as violent as their *erectus*-descended neighbors. They lived lives of fearful competitive hostility in small kin-based hunting bands. But by 50,000, at least some of our ancestors were living in peaceful settlements possibly consisting of kin and non-kin, practicing art, and inventing new technologies.

One way to account for this dramatic change is the standard model of evolution: single nucleotide polymorphisms led to gene variants that sustained new adaptive traits such as pro-sociality that benefitted from selection. The reduction in size of the *sapiens* population from 200,000 BP to 50,000 BP would have facilitated the selection of innovative adaptive traits. Additionally, the time span from 73,000 BP to 50,000 BP, from glimmerings of artistic behavior to full-blown modern behavior, would have accommodated the sweeping of new traits through a large segment of the South and East African population.

Another way of accounting for the change is to note that greater cognitive control of the kind required for artistry, inventiveness, and long-term planning

often takes the form of epigenetic regulation of gene expression. And such epigenetic change can be induced. It is possible then that the new population that emerged circa 50,000 BP was more sensitive to its environment and more able to adjust gene operation in response to it. Such flexibility made it more capable of rapid adaptive evolution in response to environmental challenges. Phenotypic plasticity had genotypic consequences.

But did all humans benefit equally from these changes?

The new version of *sapiens* had to be capable of novel behaviors such as empathy, social complexity, planning, and creativity. Its traits included control over aggression that facilitated peaceful cohabitation in settled communities. These traits were distinct from the ones required for survival when the species first appeared, traits such as fearfulness, group bonding, dispositional hostility, callousness, and behavioral rigidity. That those traits endure in the contemporary human population suggests that the new gene variants did not sweep through the entire population of early humans. The contemporary coexistence of a population with more "modern" traits and a population with more "archaic" traits came into being.

The trait division from 50,000 BP takes the contemporary form of the division between leftists and rightists, or liberals and conservatives. What we call political polarization may have been the result of an evolutionary division in our species that took place between 73,000 and 50,000 years ago. At one pole is a population capable of increased pro-social behavior to assure both group and individual survival, and at the other pole is a population that sees a survival advantage in preserving archaic behavior such as competitive hostility.

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3

TRAITS, BRAINS, GENES

> I'm afraid all the time. You just can't let your mind get carried away. Cos sometime it may be the big bad wolf.
>
> —*An American hunter*

Twin studies suggest leftists and rightists are born not made. Their different traits such as fearfulness and empathy are rooted in biology. Identical twins (who have the same genetic material) share political beliefs even when raised apart, while fraternal twins (who have up to half the same genetic material) do not always share beliefs even when raised together. If culture alone rather than a mix of culture and biology accounted for our beliefs, the fraternal twins would agree more and the identical twins less. A consensus has emerged amongst scientists: political behavior is genetically controlled and heritable. If you vote rightist, there is a strong likelihood your children will vote rightist.[1]

Biology is not all-determining, however. Genes do not account for all outcomes, even "genetic" ones. Genes are turned on or off by environments. They express themselves differently in different situations. Twin studies demonstrate that poor people would score as well as those from wealthier environments were they in such environments.[2] If you have the same genetic material as a rich identical twin but live in a poor environment, you will not fare as well academically as your sibling. Your genes say you should, but the environment has final say in how your genes operate. And that is both a bad thing and a good thing. It is good because it means we can change how genes function by modifying the environments in which we live. If all environments were as good as the one assuring success to the rich twin in the previous example, there would be fewer instances of academic failure.[3]

As a result of recent science, we have a good sense of how leftists and rightists differ at the trait level, what regions of the brain are more active in each, and what genes likely account for their behaviors.

Recent research portrays leftists as more open to new experiences, while rightists are less so.[4] Leftists actively seek new sensations, while rightists avoid them.[5] In one study, rightist and leftist students were asked to play a computer game in which they received either positive or negative rewards when they visited different parts of the game. Leftists sampled more novel stimuli than rightists despite negative rewards, while rightists were less likely to take chances.[6] Their fear of negative outcomes overrode the likely positive benefits.

Leftists are more at home with uncertainty, while rightists are uncomfortable with uncertainty. Tolerance for uncertainty is measured by statements such as: "I prefer to spend my time in familiar surroundings" and "I often enjoy playing with theories or abstract ideas."

Rightists are more sensitive to negativity in their environment. They detect negative signals more rapidly,[7] and they attribute negativity to the world even when it does not exist—interpreting neutral faces as angry faces, for example.[8] They are more likely to assign negative behavior to minority groups.[9]

Rightists are more sensitive to threat than leftists and endorse statements such as: "I try to avoid thinking of death at all costs."[10] They are more temperamentally fearful.[11] Their normal attention is vigilant and seeks out signs of danger. Heightened threat reactivity makes rightists more anxious, and more anxious personalities attend more to their environment.[12] Leftists are less anxious and less attentive.[13]

Rightists' reactivity to negative stimuli is physiological. They are more likely to furrow their brow while arriving at harsh judgments regarding actions perceived to be impure or immoral.[14] They score higher than leftists on startle response tests. If you invite rightist and leftist friends to a party and drop a hammer on the floor, your rightist friends will flinch, while your leftist friends will behave as if nothing happened. When test subjects are shown images of a rotting corpse or of a spider, rightists experience stronger skin conductivity response, a measure of autonomic system arousal. Their skin literally crawls more readily.[15]

Why is that the case? In the archaic environment when rightist traits such as fear of uncertainty and anxiety about threat were forged, life was filled with danger and uncertainty. Hyenas the size of horses collected human remains in their lairs, and the descendants of *Homo erectus* practiced routine murder against adversaries.[16] Certainty of cognition meant certainty of safety. Uncertainty regarding a stranger's intentions or a predator's location meant possible death.[17] The most recent skeletons of *Homo erectus* found in Russia show signs of having been eaten. We know *erectus* so well only because a large predator secreted away lots of edible erectile bodies at the back of its cave in China, where the bones were preserved for millennia. In such a danger-filled world, ancestors who were born with a

more fearful disposition and who felt uncomfortable with uncertainty stood a better chance of surviving and passing on their traits.[18]

Like their ancestors, rightists continue to see the world as threatening and dangerous.[19] They are more likely to imagine possible negative outcomes and to exaggerate their magnitude. They endorse statements such as: "There are many dangerous people in our society who will attack someone out of pure meanness, for no reason at all." They are more likely to believe that "Any day now chaos and anarchy could erupt around us. All the signs are pointing to it."

Scientists argue that rightists respond to a feeling of danger in their world with rigidity of cognition and conventionality of behavior. In a review of over 80 studies, John Jost and his colleagues found that conservatism correlates with "intolerance of ambiguity, dogmatism, avoidance of uncertainty, cognitive simplicity, and personal needs for order, structure, and closure."[20]

Rightists score high for Need for Cognitive Closure (seeking any answer to avoid uncertainty).[21] They respond favorably to statements such as: "When I have made a decision, I feel relieved" and "There is one right answer to all problems." Rightists choose simple efficient responses more often than leftists.[22] They resolve issues quickly, and they frequently rely on received opinion rather than new information. Finding new information takes time and effort, but received opinion makes decision-making faster and easier.[23] Rightists rely on fewer news sources than leftists.[24] On tests, rightists endorse: "I do not usually consult many different opinions before forming my own view" and "I usually make important decisions quickly and confidently." They avoid statements leftists prefer such as: "I like to play in my mind with different theories."

In the archaic environment, being able to respond quickly and efficiently to danger paid off. Speed made all the difference between having or being lunch.[25] Moreover, our conservative ancestors relied on a store of habit, routine, and experience that assured survival. Patterned perception, not complex investigation or attention to detail, was adaptive. Tenaciously held beliefs based on prior experience were beneficial, rather than newly improvised responses requiring careful observation as well as more time and effort. Such certainty of conditioned belief made confident action to assure survival more likely.

Being well organized was also beneficial to survival, and rightists continue to favor structure in their environment. They score higher than leftists for Conscientiousness, which includes being goal-oriented, well organized, and efficient as opposed to easy-going, carefree, or impulsive. Rightists are more likely than leftists to keep their desks neat. If in the distant past you knew exactly where the weapons were, you could find them quickly and react to danger more effectively.[26] That accounts for the traditional definition of rightists as resistant to change. Change potentially disorders a helpful order that has proven adaptive.

Rightists favor habits over flexibility. On Go No Go tests, test takers are instructed to indicate "Go" or "No Go" in response to prompts such as images

of smiling versus frowning faces or of one finger versus two. After a series of prompts, the prompts suddenly change. Now frown means Go rather than No Go. Rightists make more errors when the prompts change. They stick to habitual responses and have difficulty adjusting quickly. Clinging to habits would have been adaptive in a dangerous archaic world in which survival depended on well-rehearsed strategies for escape and defense. Leftist traits such as an ability to experiment with new experiences would have been less beneficial.[27]

Rightists think in more rigid terms about the world and rely on harder categories. Their judgments are more likely to exclude than include items that are not prototypical on a test that asks subjects to decide what should be included in a category such as "vehicles." Rightists are less likely to place a non-prototypical item such as "blimp" in the category with "car" and "bicycle."[28] Anxious personalities place semantic material in narrower and more rigid groups. They think concretely rather than abstractly because concreteness provides greater certainty. A blimp is less concretely present in their lives than a car. It takes abstract imagination to equate it with other vehicles.

Rightists process perceptual information differently than leftists. The Navon task asks test-takers to assess and compare shapes such as circles and triangles that are themselves made of smaller circles and triangles. Rightists focus on the global aspects of the images and exclude the smaller details.[29] They see large triangles

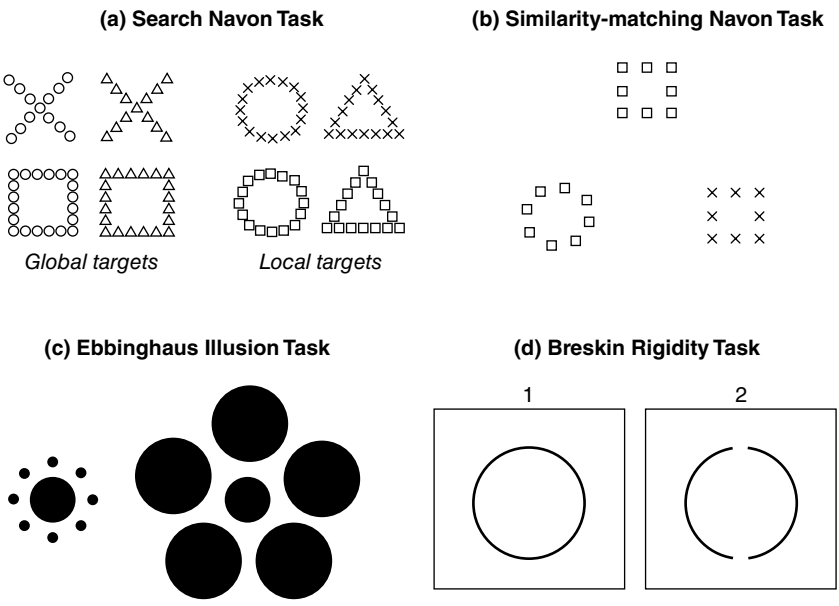

FIGURE 3.1 Tests of perception and cognition.

Image Credit: Elsevier

and ignore small ones. Similarly, rightists do less well on perception tests that assess ability to take into account situational cues and ambient data. Rightists are more susceptible to illusions on the Ebbinghaus Ilusion task, which ask test takers to compare the size of black dots surrounded by other black dots of varying sizes. Rightists have difficulty isolating target objects from ambient sensory clues. They fall for the illusion of similarity between black dots, perhaps because it requires less effort.

How might a tendency to perceive in a less focused, less detailed way be adaptive? In the archaic environment, attention to only the largest most salient information was necessary. Quickly noticing the giant hyena was more helpful than accurately assessing how many teeth it had. Such attentiveness to detail would eventually in human history be more associated with science, which correlates more with leftism than conservatism.[30] Only later in evolutionary history would the time-consuming and effort-demanding accuracy of perception more characteristic of leftist cognition become beneficial.[31]

The same archaic survival motive accounts for why rightists are less capable of integrative complexity. Integrative complexity names the ability to entertain possible options, to synthesize the findings, and to choose the best response. For example, rightist politicians are less likely to study multiple aspects of a problem when discussing legislation.[32] Like a preference for fast, effortless cognition, this cognitive bias would have assured safety through rapidity in the archaic environment. Integrative complexity requires patient reflection, investigation, and deliberation, all time-consuming activities.

Rightist cognition is intuitive rather than reflective. When confronted with mathematical problems requiring difficult calculation, rightists choose the simple intuitive inaccurate solution more frequently than leftists, while leftists are more likely to pause, do the needed calculation, and arrive at the right answer.[33] Intuitive cognition is faster and more automatic—more suited to survival in a dangerous world requiring fast efficient responses. Reflection distracts attention from immediate concrete sensory perception that would in the archaic environment have been associated with safety because it assured rapid detection of predators. That perceptual bias might explain rightist ideologues' traditional preference for "facts" and "realism" and their distrust of abstract theoretical speculation—most famously represented by David Hume and Ayn Rand.[34]

That leftist cognition is more reflective suggests leftists engage in abstract thinking more readily than rightists. A greater capacity for abstraction in leftists would account for their lower scores for racial prejudice. Abstract thinking relies on categories such as "human" that make different people equal, and abstraction permits perspective taking, the ability to imagine the world from another's point of view. Abstraction has been found to diminish biased responses on tests.[35]

A talent for abstract and reflective cognition would have been adaptive as Early Humans confronted new survival problems that required greater ratiocination. Survival in the archaic world depended on a close link between perception and

rapid physical actions such as fight or flight. Rapidity of response depended on immediate concrete sensation, not abstract ratiocination. That link between concrete percept and survival response was so crucial that rightists are still characterized by fearful vigilant attentiveness to their surroundings. In contrast, early leftists would have been able to detach attention from the immediate sensory environment and focus instead on abstract, reflective solutions to survival problems. The characteristic "day-dreaming" of leftist academics is adaptive.

Rightists evidence lower levels of Need for Cognition (or interest in thinking as an end in itself).[36] Need for Cognition is determined by responses to statements such as: "I take satisfaction in deliberating hard and for long hours." Such deep thinking distracts one's attention from the immediate sensory environment and would have been hazardous in an archaic world populated by homicidal neighbors and large predators that required constant vigilance if they were to be avoided.

Rightists are more likely to endorse the status quo and to engage in system justification. Doing so makes life easier and demands less cognitive effort—an adaptive trait when scarce resources made energy management essential to getting by. Rightists identify with groups such as nations, ethnicities, and religions and are more likely than leftists to adopt group norms and to agree with group consensus. They more readily justify the social and political system in which they live.[37] They derive beliefs from a common ideological environment and a shared reality. In the small kin-based hunting band, conformity assisted survival.[38] Having a shared reality assured unanimous response to danger.[39] For this reason, perhaps, rightists are less comfortable than leftists with dissonance.[40]

In the archaic world, dissonance meant death if a giant predator were bearing down on the hunting band. That would explain why rightists are so intolerant of dissent and favor statements such as: "Some of the worst people in our country are those who do not respect our flag, our leaders, and the normal way things are supposed to be done" and "Schools should teach children to obey authority."[41] Their intolerance for deviance even manifests itself at the level of perception. In tests, rightists are more likely to notice that triangles deviate from one another in size or in kind of lines used to draw them.[42] Anything out of the ordinary in their sensory environment catches rightists' attention. A disposition attentive to departures from norms produced a survival benefit in the archaic environment by guaranteeing consensus and unanimity of action.[43]

For similar reasons, rightist language use is less complicated than leftist language use.[44] In the danger-filled archaic world, a simple language of communication was all that was needed. Verbal signals had to be clear, efficient, and effective. Nouns would have been helpful, adjectives and adverbs a distraction. For this reason, perhaps, rightists' preferred grammatical form is the noun. Test subjects were asked to complete sentences about a situation with either a noun phrase or an adjective phrase (either "Magda is an optimist" or "Magda is optimistic"), and across several cultures, from Saudi Arabia to Poland, rightists chose

the noun phrase more. Why? Nouns imply a more final, unambiguous judgment and provide a feeling of greater certainty.[45] Nouns are more concrete, and anxious personalities prefer concrete to abstract language because it favors categorical rigidity and guarantees greater certainty. In contrast, abstract language promotes inclusivity and less categorical clarity and certainty.[46] An abstract category such as "predator" might include giant cats, hyenas, and wolves, but at the moment of most danger, what was needed was a simple concrete word such as "wolf." That motive would explain why rightists are so intolerant of ambiguity. They agree with statements such as: "I dislike it when someone says something that could mean many different things." In the archaic world, it would have been more beneficial to survival for a fellow band member to yell, "Wolf!" than to say, "A quadruped is approaching, but it's hard to tell if it's a wolf or a hyena or perhaps just a deer." Certainty alone meant safety.

Survival in the harshly competitive archaic environment also required different kinds of words. While leftists use more benevolence words appropriate to a crowded social world, rightists use words that suggest anxiety, anger, threats, certainty, resistance to change, power, security, and conformity—all words appropriate to life in a danger-filled environment in which distance from strangers was more helpful than proximity, while proximity to one's kin was simultaneously essential to survival. Rightist messages contain more "we" statements and reflect a greater commitment to shared reality, while leftists' Twitter messages reflect more self-direction and a greater use of "I" statements. Rightist language use is characterized by greater tentativeness, a possible symptom of greater uncertainty. While leftists use words concerned with communication such as "show" and "say," rightists are more likely to use certainty-achieving words such as "god" and "win."[47] Rightist politicians evidence greater psychological distancing in their speeches, suggesting a more hierarchical communication style suitable to an archaic kin band in which subordination was expected to those in dominance.[48]

While rightists accept group consensus, leftists prefer to arrive at autonomous judgments that arise independently of external instructions. Rightists are more attentive to social cues and are more likely to believe sources thought to be similar to themselves, while leftists favor self-direction over group consensus or received authority. They are more likely to attend to argumentative quality. Leftists support statements such as, "Only opinions that are rationally justified should be accepted," while rightists endorse group norm statements such as, "Christian values should have a central place in Polish life."

Leftists score higher for cognitive flexibility.[49] They are better able to adjust their responses on the Go No Go test that measures ability to change course quickly. Their judgments are qualified by inhibition, so they score higher for reflection. They think in a way characterized by greater conceptual attentiveness and openness to situational cues. They see the small triangles that make up the shape of the big triangles in the Navon test and take them into account, and they

see correctly when two circles surrounded by other circles are the same size in the Ebbinghaus Illusion task. It is as if leftists possessed a more sharply focused cognitive lens that displayed more detail in mental images. That would explain why they see global warming while many rightists cannot.[50]

Leftists are more likely than rightists to be creative and to engage in creative thinking.[51] Liberal high school students are more likely to be engaged in creative activities than conservative students, and the leftist traits of Openness to Experience, Honesty-Humility, self-direction, cognitive control, and tolerance correlate significantly with creativity, while rightist traits such as anxiety, dominance, aggression, emotional stolidity, and leadership correlate negatively.[52] Creative thinking entails exploring many options in an open-ended manner, and that talent is at odds with rightist preferences for rapidity and certainty of cognition. The world in which the ancestors of contemporary leftists survived must have required more flexible, inventive, and open-ended forms of cognition. That would account for leftists' higher scores for Openness to Experience,[53] a trait which has been found to correlate with higher intelligence and that has been shown to be heritable.[54]

Leftists experience more Need for Cognition than rightists.[55] That would explain their preference for academic labor, something rightists usually avoid, since such labor places demands on one's reflective abilities and requires enormous cognitive effort. Most university professors in the US are moderate or leftist (with just 8% self-identifying as rightist). Rightists cluster in practical (and usually more remunerative) academic arenas, such as business and medicine.[56]

Leftists and economic conservatives do equally well on intelligence tests, but social conservatives lag behind both groups, and very leftist people such as socialists score highest.[57] Leftist young adults have a mean IQ of 106.4 compared to a score of 94.8 for young adult rightists.[58] The better performance of economic conservatives, some of whom are socially liberal, is mediated by socio-economic status, meaning that their better performance depends on living in situations with well-funded educational systems as a result of greater wealth. The same is true of social conservatives whose grasp of issues such as global warming increases with education.[59] Social conservatives in general evidence lower verbal intelligence, have lower IQ scores, and fare less well in school. Lower scores for general intelligence in childhood predict higher scores for racial prejudice as an adult, and prejudice is more common in rightists than leftists.[60] General intelligence is heritable to 86%,[61] and child and adolescent intelligence predicts greater adult leftism.[62] Leftists score higher for cognitive abilities in general.[63]

Lower general intelligence is accompanied by less trust of others, and rightists experience higher levels of distrust.[64] One investment game asked leftists and rightists to give money to a broker without any certainty of return. The game demanded high levels of trust. Rightists invested less and trusted less than leftists.[65]

Trust and trustworthiness are also indicated by gaze-meeting behavior. Leftists are more likely to share gaze cues in a way that suggests safety rather than threat.[66] Rightists are more likely to avoid gaze sharing cues. People on the far right of the political spectrum express fears of being stared at, which suggests that gazing is related to threat behavior in the archaic environment.

In a world of homicidal neighbors, distrust of non-kin would have been an essential survival tool, as would prejudice against strangers. Prejudicial stereotypes allow the fast processing of people, and rightists are more likely to rely on such stereotypes in assessing others.[67] They respond negatively to images of other racial groups[68] and are more prone to engage in prejudicial hiring practices.[69] Prejudice is an archaic defense mechanism designed to protect against dangerous strangers, and it is heightened by feelings of competitiveness, which rightists also experience more than leftists. Competition for scarce resources in the archaic environment inspired traits such as hostility and fear regarding out-group people.

Prejudice is connected to the sensation of disgust, an emotion more common in rightists. In rightists, disgust is associated with the dehumanization of out-group people and with genocide, a practice often associated with rightist nationalism.[70] One study found a link between the physical sensation of disgust and increased negative moral judgments in rightists, suggesting a connection between archaic physiology and rightist moral ideology. It has been suggested that an archaic fear of pathogens may underlie the automatic disgust reaction in rightists.[71]

Leftists score high for empathy.[72] They agree with statements on tests for empathy such as, "I often have tender, concerned feelings for people less fortunate than me," while rightists agree with statements such as, "Other people's misfortunes do not usually disturb me a great deal." Leftists are more likely to donate organs than rightists.[73] Rightists score low for empathy while voicing more callous opinions, such as endorsing harsh jail sentences for low status criminals, favoring the lives of countrymen over those of foreigners, agreeing with the abuse of human rights when their group's interests are threatened, and condoning the murder of people of color by White policemen.[74] One stable characteristic of conservatism on tests is in-group favoritism. One recent rightist political advertisement displayed a photo of an Asian state representative accused of a parking ticket scandal before showing a photo of the White rightist political candidate and the words "For Us Not Them."

Leftists score higher for the compassion component of Agreeableness (while rightists do better at the politeness component).[75] Politeness is linked to impression management and would have been beneficial in an archaic dominance hierarchy where one's standing depended on others' assessment. Agreeableness would have been more suited to a later stage of evolution when Early Humans lived in larger, more egalitarian social groups. Agreeableness is linked to induction into social groups and with helping others, and leftists endorse pro-social behavior such as generosity more than rightists. Such altruistic behavior would have

created webs of reciprocal obligation between equals in groups consisting of kin and non-kin. Leftists are more self-aware than rightists, and self-awareness has been found to coincide with greater sociality, tolerance for difference, and control over emotions and behavior of the sort that would have been needed in large, diverse social groups.[76]

Leftists are more able to control archaic negative emotions such as prejudice and hostility than rightists.[77] Leftists' more reflective cognition allows them to moderate autonomic emotional responses such as fear. Greater cognitive control diminishes threat salience and makes one more able to tolerate the thought of one's own death.[78] Armed with such a new cognitive talent, leftists in the archaic world could pause and calmly reflect rather than react with startle-response rapidity to aversive signals in the environment. That ability also supplied them with more courage. A greater ability to tolerate the thought of one's own death would have provided early leftists with a greater ability to persist against adversity even at the risk of one's own life. Leftist soldiers are more likely to re-enlist for additional deployments to combat zones than rightist soldiers.[79]

In a sign that their adaptive traits were suited to a later stage of human evolution characterized by increased sociality, leftists practice social-facilitation behavior such as apologizing and forgiving more readily than rightists. Apology reflects a sensitivity to others' pain, a belief that people can change, and a desire to restore equality.[80] Leftists score high for all of these factors, while rightists fare less well. Rightists are less willing to think that maintaining equality is important. Their behavior is molded by the experience of the archaic kin band in which dominance hierarchies made social location solid rather than fluid. Moderating behavior such as apologizing that restores equality was less needed because people's unequal social locations were fixed.

Leftist traits such as apologizing and forgiving would have been beneficial when contact between the kin-based hunting groups increased over time. Normally, hunting groups lived at a safe distance from one another. Rightist traits such as fearfulness, distrust, and competitive hostility were better suited to such a world. Loyalty to one's band mattered more than loyalty to abstract principles of fair play that were needed when multiple kin groups merged in larger social aggregates. Such inter-group rules would have been more necessary when kin bands were obliged to live in greater proximity at a later stage in human history.

While leftists embrace principles such as fairness, rightists place winning first.[81] A Public Goods Dilemma Test was administered to students who had been evaluated to determine if they were "pro-self" or "pro-social." Rightists score higher for selfishness while leftists score higher for pro-social behavior such as altruism.[82] Participants were placed in groups of four and assigned 40 points. They were asked to donate points to a common pool, and if their group met a threshold of 40 (10 each), the group would receive an additional 80 points. Results were

manipulated by the researchers, and groups were either told that three of them had donated 10 points and one of them had donated 2 (three had followed the equality rule, and one had broken it), or they were told that their group had succeeded at donating enough points (all had followed the equality rule). Rightists were happy when they won, regardless of whether they followed the equality rule, while leftists were happier when the equality rule had been followed. They reacted negatively to the breach of the rule.

Rightists score low for Honesty-Humility (which measures sincerity, fairness, greed avoidance, and modesty), and low scorers on that test have been found to exploit other people more readily. Rightists also engage in unethical behavior in the workplace if the gains justify it. In one study, rightists, when given imaginary leadership roles in companies, were more willing to pollute the environment to avoid increasing expenditures, to side with sexual harassers if opposing them would be professionally costly, and to continue marketing a lucrative but harmful drug aimed at elderly consumers.[83] Another study found that ease at unethical behavior corresponded with strength at making financial investment decisions, a talent more likely to be present in conservative investment bankers.[84] Rightist corporate leaders are more likely to cheat on taxes than leftist corporate leaders, while leftist leaders are more likely to ask for less pay.[85] Leftist business employees are more likely to promote corporate responsibility.[86]

Those findings clash with numerous studies that demonstrate a greater concern with religiosity on the part of rightists. For rightists, however, religion is rule-bound behavior, not behavior that accords with ethical principles.[87] Rightists define morality in terms of adaptive kin-band behavior—loyalty to one's group, respect for leaders, adherence to tradition, obedience of group rules, opposition to non-conforming personal behavior, and the like. In tests and in public discourse, rightists emphasize tradition, loyalty, obedience, authority, and moral purity,[88] while leftists favor fairness, universalism, and benevolence.[89] Rightists prefer local concrete sources of moral authority, such as church, family, and kin group, while leftists prefer self-direction in moral matters as well as deference to abstract universal principles.[90] For leftists, ethics consists of behaving fairly and justly, while for rightists, morality consists of obeying traditional norms especially in regard to sexuality.

In the archaic environment, shared behavioral norms guaranteed by loyalty, obedience, and respect for tradition assured cooperation within kin-band groups and assisted survival. Kin-band moral norms were easy to learn; they placed few demands on cognition. That may be one reason rightists still cling to them. Imagining universal principles such as fairness that apply variably to human behavior requires greater cognitive effort as well as a reflective cognition more characteristic of leftists. It also, crucially, requires subordinating the singular survival interest of the kin band to abstract principles for governing behavior that benefit all—non-kin as well as kin, sometimes at the expense of kin.

Rightist moral norms seek to enforce compulsory heterosexuality, mandatory birthing by women, and anhedonia (a trait explained by the fact that sensation seeking would have detracted from the stern discipline required to survive in a dangerous world). Archaic morality focused on control over women, girls, and boys by dominant men occasionally for sexual purposes. In the Sambia Valley of Papua New Guinea, until recent times, compulsory oral sex by girls on elder men as a rite of passage into adulthood which supposedly transferred male spiritual powers to the girls was mandatory. The advent of more modern leftist ethical behavior put an end to such conservative "moral" practices and granted girls autonomy regarding sexual behavior.[91] The example suggests that what was at stake in archaic kin-band morality, apart from the mandates of survival, was power over others by dominant males for their own pleasure and satisfaction. That accounts for why male rightists especially have difficulty accepting feminism and still have difficulty accepting transgenderism, which seeks equal rights for gender minorities. Heteronormativity is one "moral" ideal that rightists still seek to enforce, along with restrictions on pregnancy termination and birth control. They do so to enforce mandatory birthing, which was essential to archaic survival by replenishing the kin-band population.

While rightists consistently accuse leftists of sexual licentiousness, conservatives are more likely to search for internet pornography.[92] They are also more likely to condone incest between consenting siblings while holding harsh judgments regarding gay and lesbian sexuality.[93]

Rightists and leftists differ in regard to violence and war. More sensitive to whether or not their side is winning or losing, rightists are happier than leftists when winning and more unhappy when losing. On tests, rightists respond more favorably to statements such as: "To compromise with one's political opponents is dangerous because it usually leads to the betrayal of our own side." They think about the world in a more polarized way than leftists, who are inclined to be conciliatory in tests that mimic international conflict by imagining possible terrorist attacks. In such test situations, rightists demonstrate hostility toward adversaries while leftists disengage to resolve conflict.[94] Participants with lower scores for cognitive abilities favor competitive hostility, while those with better cognitive abilities favor cooperation.[95]

Rightists express greater willingness to use force against adversaries and are more in favor of starting wars.[96] They more easily accept practices such as torture, and they more readily endorse the curbing of civil liberties if they feel their group is threatened or if figures of authority license it.[97] Physically stronger men with a history of violence usually are rightist as are workplace bullies. Abusive husbands who engage in domestic violence are more likely to be rightist, and rightists are more likely to deem anti-spousal violence acceptable.[98] Right-wing authoritarians display a disposition toward torture-like abusive behavior in personal relationships. Male right-wing authoritarians experience greater hostility

toward women, and all right-wing authoritarians are more likely to experience hostility toward gays and lesbians.[99]

Rightists embrace hierarchy more than leftists, who prefer equality. Archaic kin bands were organized as dominance hierarchies. A dominant alpha male patriarch (like Donald Trump) had complete authority. Scientists believe authoritarianism provides a buffer against distress by making life predictable, while hierarchy maps people onto an easily legible status grid that requires less effort and assures certainty. Success at survival in the archaic environment was aided by fixed roles and well-organized relations between members of the hunting band. Hierarchy maintained by authority assured survival success.[100]

A kin band organized along egalitarian lines and inclined toward democratic debate would not have lasted long on the savannah. Equality requires complex cognition and cognitive effort, each of which would have increased response time to danger. That would explain why authoritarian governments are still so popular with working class rightists who feel threatened by the uncertainty of economic insecurity.[101] Such uncertainty evokes archaic memories of possible extinction, while authoritarian governments provide a feeling of certainty and safety. That would explain rightists' preference for political leaders who are perceived as being strong or powerful.[102] Studies suggest that rightists compensate for perceived threats by endorsing external systems that are likely to provide a palliative sense of security and safety.[103]

Rightists score higher for Social Dominance Orientation (SDO). SDO speaks to the rightist belief in inequality and the legitimacy of hierarchy. Those with SDO perceive life as a heartless struggle for preeminence in which some groups deserve to dominate others.[104] The dominance hierarchies of archaic kin bands may explain why rightists believe that securing possessions is an important goal in life. Possessions are a sign of status and having them assures status location. The trait also points to the greater concern of rightists with aspects of narcissism such as exhibitionism and ostentatious display.[105] Materialism correlates with higher scores for pro-self attitudes and racism.[106]

Rightists claim to be happier than leftists, but because rightists are more sensitive to location in status hierarchies and to the need for achievement and acquisitions to secure it, their claim to greater happiness may be an effect of impression management and self-enhancement.[107] While rightists say their lives are happy, rightists express fewer positive emotions and register more negative affect than leftists who express more emotions, especially positive ones, than rightists.[108] While rightists' most common emotions are anger, excitement, and disgust, leftists' are shame, distress, and joy.[109]

Being able to experience more positive emotions would have granted leftists a survival advantage. While negative emotions are associated with depression, anxiety, and fear, positive emotion expressivity is associated with behavioral flexibility, the ability to modulate one's responses to changing contexts. Such flexibility

would have enabled leftists to address a more diverse range of environmental challenges. Positive emotion also provides a buffer against stress and enables healing from threats. It makes one resilient in the face of loss and trauma. Smiling, which is more present in leftists, helps undo the physiological and emotional effects of negative affect. Smiling elicits reciprocal responses from others and fosters sociality. Such behavior made pooled social resources available for addressing adversity.[110]

Traits such as greater positive emotionality made it possible for leftists to persevere with effort against adversity. If negative emotionality and "negativity bias" are conducive to anxiety and diminished cognitive abilities in rightists, positive emotionality fosters a promotional focus that seeks positive outcomes and works effortfully to attain them. Such a trait would have been enormously beneficial as changing environmental conditions obliged early humans to face survival challenges that required more flexible responses than fight or flight as well as more effortful behavior.[111]

Extreme rightists are susceptible to depression.[112] Rightists are more likely to be religious, and religious conservatives also are susceptible to low-grade depression.[113] Social conservatives in the US are usually less educated and lower on the income hierarchy. They combine Conscientiousness—which correlates routinely with conservatism—with Neuroticism—a tendency to experience negative emotions such as anger and anxiety. The combination of Conscientiousness and Neuroticism predicts depression.[114] Depression likely was a cost paid by rightists for subordinate behavior in archaic kin bands that assured survival. Given up by subordinates along with dominance was access to excitement sensations associated with triumph. Moreover, subordination diminishes feelings of self-worth.

Rightists and leftists differ in regard to humor. Rightists are less likely to appreciate humor that depends on irony and exaggeration. Irony consists of an explicit statement and an implicit meaning. "Lovely day" said on a rainy day, for example, is an ironic statement in which "lovely" really means "lousy." Ironic statements are ambiguous and uncertain, making them less appealing to rightists who feel a stronger need for certainty and are uncomfortable with ambiguity. Deciphering irony also requires effort.[115]

Studies link personality traits such as Openness and Agreeableness, which are characteristic of leftists, with pro-social, affiliative, and self-enhancing humor. Self-enhancing humor projects a sense of happy confidence in the face of adversity, while affiliative humor establishes emotional connections with others. Both would have been helpful as Early Humans were confronted with more complex survival problems requiring more reflective solutions and persistent effort. One solution consisted of living together in more crowded societies consisting of many kin bands. Honesty-Humility, which is more associated with leftists,[116] is negatively correlated with aggressive humor, which is more common in rightists. Fearfulness, a rightist trait, correlates negatively with affiliative and self-enhancing

humor.[117] Given the rightist preference for dominance hierarchies and the leftist preference for equality, it is fitting that rightists prefer put-down humor, while leftists prefer take-down humor.

Two characteristic behaviors of adjacent primate species to our own are dominance behavior and deceptive trickery. Rightists' high scores for Social Dominance Orientation suggest a greater ancestral legacy of dominance behavior in their strain of the species.[118] A susceptibility to deceptive trickery is suggested by studies that find rightists are more likely to spread deceptive or false information.[119] For many years, Russian rightists have been using disinformation to influence political processes in the West.[120]

The opposite of Honesty-Humility consists of heightened self-interest, deceitfulness, cynical disregard for ethics, feelings of superiority to others, and low empathy. These behaviors correspond to the Dark Triad, a personality syndrome consisting of narcissism (exaggerated feelings of superiority), subclinical psychopathology (absence of remorse, deficits of empathy), and Machiavellianism (a utilitarian willingness to deceive and exploit others for personal gain). Dark traits would have been especially useful in the archaic world. They would have enabled inflicting harm on others to assure one's own survival.

Many dark traits, such as low commitment to fairness and dispositional aggression, are common in rightists. One study found 21 correlations between conservatism and Dark Triad traits, while another study found some correlation between all Dark Triad traits and conservatism.[121] Dishonesty and Meanness are dark traits that are associated with conservatism in studies.[122] Other Dark Triad traits associated with conservatism are moralism (a sense that others deserve harsh punishment) and a lack of Nurturance (a disposition to care for others). The callousness and lack of empathy associated with the dark personality and with conservatism generally correlate with difficulty experiencing guilt. That might explain why shame is not an emotion often found in rightist discourse, while it does appear in leftist discourse. Rightist discourse is more likely to resonate with references to another dark trait—power (focus on status, prestige, dominance over others, and control over resources). Summaries of the dark personality often sound like rightist justifications for capitalism. The dark personality sees virtue in exploiting others when it is perceived to be advantageous and in maximizing the individual's utility while "malevolently provoking the disutility of others."[123]

Finally, leftists are more shaped by the family environment than rightists.[124] Parenting style likely contributes to this effect. Caring people make caring parents. As a result of nurturing parenting, leftists experience greater emotional attachment security which coincides with diminished vigilance and sensitivity to threat.[125] That allows leftists to respond positively to environments by seeking out information and new experiences, while rightists respond anxiously, distrustfully, and fearfully to their environments.[126]

Leftists may benefit more from family nurture because they are more sensitive in general. Such sensitivity makes liberals more susceptible to environmental harm that results in higher scores for symptoms of PTSD, but it also means they are better prepared to derive positive benefits from environments.[127] As one researcher put it, "individuals with the greater susceptibility are the ones who are more susceptible to environmental influences."[128] Being porous in relation to the social environment makes one more able to absorb nutrients from it. As a result, leftists also have the resources that greater sensitivity affords, such as positive emotion expressivity and behavioral flexibility. Such resilience permits them to recover more easily from harm, to have more control over emotional responses, and to behave more adaptably.

In contrast, rightists demonstrate less sensitivity toward others' pain, and that may reflect a generalized lack of sensitivity that accounts for rightists' diminished ability to benefit from the family environment. A temperamentally fearful, unempathetic rightist parenting personality may also be less able to provide children with a personal sense of healthy personal autonomy.[129]

Greater attachment security would explain leftists' independence regarding groups such as nations or religions and their greater self-direction in regard to moral norms. With nurturing support from their early family environment, leftists can avoid the anxious need for secure attachment to groups that rightists experience as adults. Leftists are more capable of personal autonomy. Leftists score high for avoidant attachment, while rightists evidence a greater preference for secure attachment as adults.[130]

The behavioral differences between rightists and leftists correlate with specific brain region differences.[131] Rightists have a larger right amygdala, one of the oldest brain regions. The amygdala consists of two nodes with multiple nuclei and is located in the mid-brain near the top of the spinal column. As befits one of the oldest brain regions, it is the headquarters of archaic emotions such as fear, pain, anger, and anxiety, as well as of addiction, aggression, and male rivalry.[132] It monitors basic physiological states, and at one point in the very distant past, it likely was the entire brain, along with the hippocampus, which is in charge of memory. The emergence of long-term memory was key to our evolution as a species.

Leftists have more grey matter in the anterior cingulate cortex (light grey band in image), a more recently evolved brain region. The anterior cingulate cortex is associated with cognitive control, behavioral flexibility, problem-solving, response innovation, and information processing for decision-making.

The brain is plastic and can develop more matter in certain regions as a result of practice (memorizing the complex London street map, for example, which increases gray matter in the hippocampus).[133] But when all the brains of a population differ in grey matter density without sharing experience, the cause is genetic.[134] Genetic variation contributes profoundly to brain structure differences and can account for up to 90% of brain region volume differences.[135] That is true

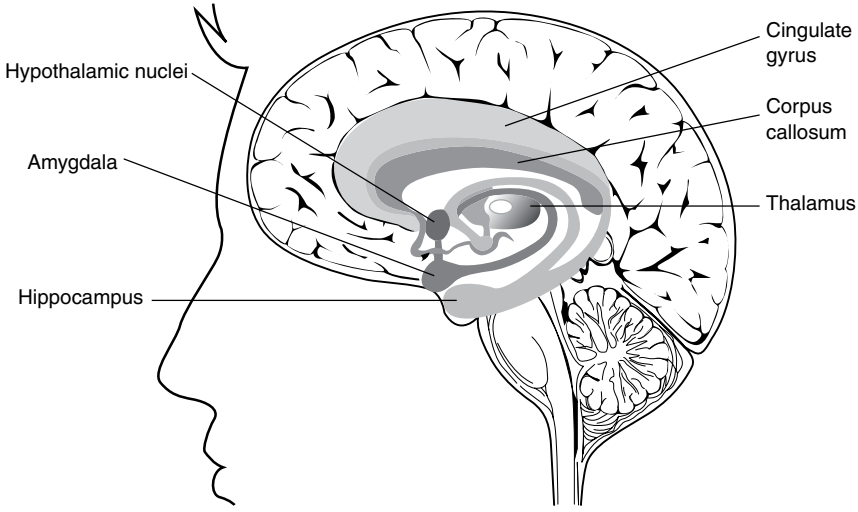

FIGURE 3.2 Key brain regions for this study: the amygdala and the anterior region of the cingulate gyrus.

Image credit: OpenStax.org

especially of differences in grey matter in the frontal cortex, which is nearly 100% heritable. The heritability percentage for amygdala volume is between 55 and 80%, while the anterior cingulate cortex volume is characterized by moderate to high heritability.[136] Another study found that cortical thickness in the left rostral anterior cingulate cortex is "significantly heritable."[137]

The differences in grey matter between rightists and leftists are therefore a consequence of evolutionary adaptation rather than recent acculturation, although adaptation is always to an environment, so all traits are shaped both by genes and environment.[138] The larger amygdala was better at assisting survival at a point when defensive measures such as fear and automatic fight or flight responses were needed to contend with a danger-filled world. The larger anterior cingulate cortex was beneficial when Early Humans needed to become flexible problem-solvers in response to complicated environmental events such as ecological collapse. They had to be less driven by automatic responses and more able to investigate, experiment, and innovate.

Because life in the archaic environment was hazardous, it paid to be vigilant and to react quickly to danger. The larger amygdala in rightists would have addressed both survival needs.[139] The amygdala is attentive to faces, especially ones associated with danger that inspire fear.[140] It reacts rapidly to threats and primes the body for automatic defensive action using amino acid derivatives such as NMDA (N-methyl D-aspartate), which generates fear, and norepinephrine,

which spurs the body to physical action.[141] The amygdala is a locus of conditioned fear learning and rapid goal-directed defensive responses such as fight or flight.[142] It is also activated when we experience prejudice, which should be understood as the legacy of an archaic defense response designed to protect against dangerous strangers.[143]

An important quality of the amygdala is the rapid automatic firing of responses.[144] The amygdala fires rapidly because of the need for speed at a time when large predators lived side by side with Early Humans. The speed of the amygdala would explain the automatic, intuitive nature of rightist cognition, as well as the way rightists quickly assign stereotypes to ethnic others or accept hierarchy as a way of rapidly assigning status locations. All would have increased response speed and survival fitness. When the right amygdala, the region larger in rightists, is damaged, it hampers the ability to assess visual cues in regard to self-relevance, suggesting a strong role in self-preservation and predator detection.[145]

The amygdala is the home of conditioned responses learned by repeatedly attaching memories to emotions. Such conditioning made rapid reflexive responses to danger easier to acquire, and it would explain the compulsively habitual character of rightist responses on tests for flexibility as well as their addictive attachment to dogmatic beliefs, conventional behavior, and resource hoarding to assure status.[146] Fear conditioning in the amygdala reduces behavioral plasticity and interferes with new learning, a possible cause for rightists' greater cognitive inflexibility as well as for their inability to take pleasure in new experiences, which often involve learning.[147] And it would account for the amygdala's role in addiction. Habitual behavior resembles addictive behavior.

The amygdala is so vigilant that its attention works even when we sleep. To be anxiously apprehensive even while asleep was to increase one's likelihood of surviving in the archaic environment. The amygdala continues to play a strong causal role in social trait anxiety—fear dispersed across numerous situations, which is a form of vigilance.[148] Trait anxiety can lead to depression if the regulation provided by other regions of the brain such as the anterior cingulate cortex is lacking or impaired, and depression is characterized by an enlarged left amygdala.[149] Such anxiety would have had the evolutionary function of making one more alert to physical threats and to threats to status in a small kin-band group organized as a dominance hierarchy.

Anxiety also inspires parental care, especially in the form of alloparenting (or parenting of offspring other than one's own), by making parents more alert to dangers to offspring.[150] The amygdala's role in parenting has been linked to acts of sacrifice for others of the sort that would have been beneficial to the survival of a small kin band.[151] Parental care also broadened to include the children of kin affiliates. The residual effects of this archaic emotional response would explain rightists' opposition to pregnancy termination, while they nonetheless support the death penalty. Support for the death penalty is an expression of archaic moralism,

which endorses harsh punishment of transgressions of group norms for the sake of better preserving the group. Opposition to termination expresses a similar desire to preserve the kin group by assuring its population is maintained. The amygdala is involved in stimulus-reinforcement learning, and morality is one such learned behavior. The amygdala is consistently activated by moral judgment tasks.[152] That likely is the case because moral rules helped assure survival by maintaining compliant behavior in a small kin band.

Larger social networks correlate with larger amygdala volume, and it is likely this finding describes the need for rightists to identify with groups such as nations and ethnicities for safety and security.[153] A larger amygdala would have assisted the forming of alliances in archaic hunting bands. A larger amygdala is found in people strong in system justification beliefs.[154] Bonding with kin in groups evolved to provide a greater likelihood of survival through unanimous concerted action.

When US rightists demand that all pledge allegiance to the flag, they are giving expression to an archaic need to assure survival through group consensus. Such archaic kin-band loyalty would account for rightists' continued identification with groups, their greater sensitivity to winning or losing, their tendency to think in antagonistic and agonistic terms about the world, and their greater readiness to become hostile toward adversaries. When one fuses with one's hunting band, one simultaneously creates a fissured competitive relationship with competing bands.[155] For that reason, perhaps, more amygdala volume increases social dominance behavior, while those with less amygdala volume fall in social hierarchies. The amygdala is also linked to the recognition of others in terms of social rank in a hierarchy.[156]

Despite its role in group bonding and parental care, the amygdala is associated with diminished sociality and empathy.[157] When the amygdala is deliberately harmed by lesions in the laboratory, the test animals are more able to engage in social interactions. Amygdala activation coincides with increased selfish behavior in economic games, and amygdala volume is negatively correlated with empathy. Harm to the amygdala increases empathetic behavior. The most dis-empathetic amongst us—psychopaths—have more amygdala and less anterior cingulate cortex, which has been found to be key to empathy and is larger in leftists.[158] In the archaic environment, empathy would have interfered with survival by creating bonds with others with whom one had to compete to survive. Callousness regarding others one had to harm in order to survive would have been more adaptive.

Finally, the amygdala is associated with risk taking, aggression, predation, and male rivalry.[159] It accounts for our ability to defend ourselves, but it also accounts for the ease with which we harm others. The amygdala provided defenses against being hunted, and it also made our ancestors better hunters. It has a strong relationship to olfaction, and smell would have been both beneficial for hunting prey

and a helpful defense against predators. NMDA, the amygdala's drug of choice, is linked to odor aversion.

The larger amygdala in rightists was well-suited to survival in a world of kin-based hunting bands that competed over scarce resources. It created strong bonds with kin that aided survival and fostered helpfully negative reactivity to potentially dangerous strangers.[160] Its association with risk-taking, predation, and male rivalry might explain the world of competitive male conservative investment bankers who risk huge amounts in the hope of effort-free gain.

Leftists possess a larger anterior cingulate cortex. The anterior cingulate cortex is associated with cognitive control, response innovation, behavioral flexibility, and the monitoring of social interactions.[161] It also functions in empathy, trust, taking others' feelings into account, and pro-social behavior.[162] It has been described as a hub, a monitor, an interface, an air traffic controller, and a switchboard. Its neurons, some of which are like coaxial cables compared to threads, extend from the frontal cortex to the spinal column, making the anterior cingulate cortex an ideal cognitive control center.[163] It processes information from the old brain such as rapid-firing fear responses, regulates them, and makes them compatible with social behavioral needs.[164]

The anterior cingulate cortex uses cognition to control negative emotions, integrates information from different sources for decision-making,[165] monitors conflicts between control and automatic emotional responses, and evaluates options for behavior while assigning rewards to different behaviors.[166] It resolves emotional conflicts by attenuating the activity of the amygdala.[167] It regulates amygdala-driven emotions such as anxiety and fear.[168] The activity of the cingulate cortex is inversely related to amygdala activity regarding aversive experiences that produce feelings of uncertainty.[169] Given the prominence of intolerance for uncertainty in rightists, such a new adaptive ability lodged in a larger anterior cingulate cortex would have given leftists an advantage over rightists in the archaic environment in regard to action innovation and behavioral flexibility that often involve being more open to uncertainty.

The larger anterior cingulate cortex in leftists accounts for their flexibility, their penchant for exploring new sensations, and their better cognitive abilities.[170] More grey matter in the anterior cingulate cortex has a significant link to intellectual function, and like grey matter differences, intellectual functioning differences are heritable.[171]

The anterior cingulate cortex is associated with learning, especially the acquisition of social information.[172] In functional magnetic resonance imaging (MRI) scans, the cingulate cortex becomes active before a decision that would yield information, and it fires when we are evaluating options for decision-making and assigning rewards to them.[173] That is important because scientists believe the anterior cingulate cortex associates rewards with actions and evaluates possible actions according to their likely outcomes.[174] It is more active when we are

exploring novel responses, for example. Leftists may more readily explore new experiences because they are more able to assign rewards to such behavior. That the anterior cingulate cortex is where we experience happiness likely plays a role in this dimension of leftist behavior.[175] Reward deficiency syndrome, in contrast, is linked to addiction, a trait governed by the amygdala, and is controlled by the D2 dopamine receptor gene, which has been shown to be involved in political behavior.[176] It is possible that rightists do not explore new experiences because they lack an ability to assign pleasurable rewards to novel actions as a consequence of being stuck in addictive behavior that was once adaptive but is now less so.[177] Addictive behavior is improved by reward-based control emanating from the frontal cortex.[178]

The anterior cingulate cortex helps maintain positive emotionality, which is linked to greater resilience and flexibility. It helps us ward off depression. Major depression results when the anterior cingulate cortex's role in emotion and behavior regulation is disrupted.[179] Stimulation of the anterior cingulate cortex makes test subjects report feeling cheerful and alert.[180] The anterior cingulate cortex has more serotonin receptors than other brain regions, and serotonin regulates emotional responses such as aggression, fear, and anxiety.

The anterior cingulate cortex is linked to diminished stress and the extinction of panic, an archaic response to threat.[181] It inhibits fear during freezing behavior in response to danger.[182] Its cortical connections to the amygdala allow it to play a role in directing fear in response to threat.[183]

The anterior cingulate cortex stores fear memories that allow aversive events to be predicted and sources of anxiety to be anticipated.[184] Such forecasting would have permitted dangers to be detected in the archaic environment before they appeared in person.[185] It makes us more alert to risks.[186] Leftists with a larger anterior cingulate cortex would have been more sensitive to risky environments and more inclined to avoid them.[187] Heightened sensitivity to adverse environments would also explain why leftists are more able to flexibly adapt to changing contexts.[188]

The anterior cingulate cortex is involved in the experience of physical and especially long-term or chronic pain.[189] An increased ability to anticipate pain and to engage in avoidance learning regarding it likely improved survival success. The active avoidance response is eliminated by lesions to the anterior cingulate cortex.

The anterior cingulate cortex regulates visual attention by selecting relevant from irrelevant visual signals. It assures we are able to attend to important visual cues in our environment, especially when they are threatened by distracting events.[190] The amygdala's vigilant fearful attention, in contrast, is drawn to negative signals and global visual cues. Greater conscious control over attention and an ability to select which visual cues to attend to would have been a helpful new adaptation. Its presence in a larger anterior cingulate cortex might explain leftists'

better ability to distinguish small from large triangles in the Navon task or to measure dark circles accurately in the Ebbinghaus Illusion task.

The anterior cingulate cortex inhibits automatic behavior in favor of deliberate, reflectively guided action.[191] If the amygdala is responsible for habitual automatic responses, the anterior cingulate cortex is linked to behavioral flexibility. Anterior cingulate cortex activity on functional magnetic resonance imaging (fMRI) scans is predictive of attitude change.[192] It is associated with the correction of errors,[193] and cognitive regulation, which is measurably greater in leftists, is linked to behavioral change and to fewer habitual responses on tests.[194] The anterior cingulate cortex also regulates physical arousal for the sake of effortful cognitive processing, and such regulation of the heart especially is essential to adaptive behavior.

If the archaic kin band depended on rapidity and unanimity of response to danger, the Early Humans who benefitted from an enlarged anterior cingulate cortex survived by carefully weighing options and flexibly choosing the best solutions for addressing adversity. They were more reflective and less intuitive. The survival problems they faced required more mental energy and more cognitive effort. Electrical stimulation of the cingulate cortex makes test subjects report feelings of straining with effort and hope against adversity.[195] One study found that the cingulate cortex was the home of the "will to persevere."[196]

The anterior cingulate cortex is part of a belt—the cingulate gyrus—that extends from the back of the brain to the front. It resembles a buffer between the amygdala and the cortex and seems designed to inhibit the automatic negative emotional impulses of the amygdala that interfere with more adaptive, sociable forms of behavior.[197] If the amygdala lights up in functional MRI scans when people experience negative emotions such as fear, prejudice, and anxiety, it goes silent when the cingulate cortex fires and the negative emotion is extinguished.[198] Strong neural connectivity exists between the amygdala and the cingulate cortex, and that is especially true of the phylogenetically older part of the cingulate cortex, suggesting that one of its original functions was to regulate amygdala responses such as anxiety to enable better cognition and increased sociality.[199]

The evolution of an enlarged anterior cingulate cortex created a crucial switch in human evolution. It turned off persistent fearful anxiety and turned on more pro-social emotions such as empathy as well as more reflective cognitive capacities that provided an ability to deal more flexibly with danger.[200] Anxiety has been found to modify gene expression, so any attenuation of its effects would have evolutionary consequences.[201] The evolutionary switch that muted anxiety also allowed cognition to flourish. Anxiety diminishes cognitive ability as well as one's ability to make decisions.[202] Controlling the anxiety spawned by the dangers of the archaic environment would have made possible innovative forms of cognition such as imagination and empathy (which allows us to imagine others' feelings as if they were our own by picturing their suffering in our minds and comparing those mental images with memory images of our own suffering).[203]

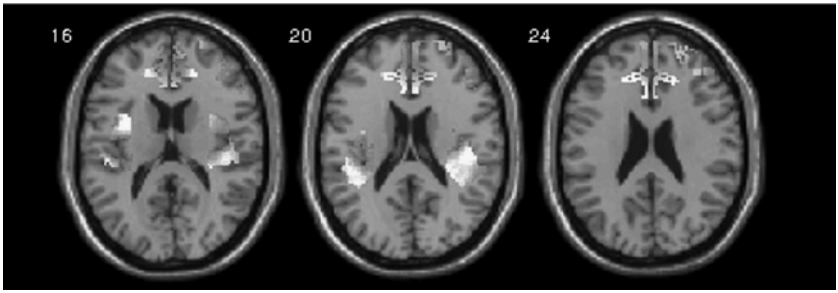

FIGURE 3.3 This fMRI shows both the amygdala and the anterior cingulate cortex active in the experience of anxiety. The front of the brain is the top of the images. The two parallel spots in the middle of the brain in the first and second images are the two amygdalae firing during the experience of anxiety. The glow at the top of the image is the anterior cingulate cortex activating. By the third image on the right, it has succeeded in silencing the amygdala response associated with anxiety.

Image Credit: Elsevier

The anterior cingulate cortex fires when others are seen experiencing pain and has been characterized as training compassionate responses to adverse events.[204] Those innovations in turn would have fostered increased sociality by making ancestors equipped with empathy sensitive to the feelings of others, even if they were non-kin. The anterior cingulate cortex activates when we experience emotional pain, such as the loss of a loved one.

The anterior cingulate cortex and the insula are unique in that they contain large numbers of spindle neurons (or Von Economo neurons).[205] These neurons play a suppressor role in the brain, and having more of them would have allowed early leftists to inhibit automatic archaic emotional responses such as aggression, anxiety, and prejudice that originate in the amygdala. That would have freed up more brain power for cognition and sociality. Spindle neurons have been linked with focused problem-solving abilities as well as with the onset of social behavior in our species. More spindle neurons in leftists would have responded to a need in evolutionary history for increased sociality to assure survival. A cognitive ability to inhibit archaic emotions such as prejudice or fearful anxiety regarding strangers and to replace them with more empathetic pro-social behaviors such as generosity would have helped build larger social networks consisting of both kin and non-kin. Such new practices as cooperative group hunting and—eventually—agriculture were the fruit of these changes in human brain anatomy and cognition.[206]

The anterior cingulate cortex and the insula are associated with the experience of social pain. Social pain results from feelings of social exclusion, but it is decreased by feelings of social support of the kind the cingulate cortex facilitates.[207]

Major Depressive Disorder associates with feelings of social exclusion and with the disruption of anterior cingulate cortex functioning. In the archaic dominance hierarchy of the small kin band, the threat of exclusion enforced compliance. The price was depression for those excluded. The cingulate cortex activates during the experience of social exclusion, and an increased role for the anterior cingulate cortex working in conjunction with the insula would have allowed those benefitting from increased functionality in these regions to manage negative emotions associated with social exclusion more successfully and to avoid costly depression. As a result, they could also build alternative social networks to the kin band while surviving independently of such groups. The anterior cingulate cortex thus provided an essential neural mechanism for moving beyond the archaic kin-band mode of social organization. A larger cingulate cortex especially would have enabled leftists to begin formulating new social forms requiring greater personal autonomy and increased equality between kin and non-kin. Increased anterior cingulate cortex activity is associated with more self-awareness, greater social insight, social awareness, emotional intelligence, and maturity. Maturity is an expression of self-control that is linked to greater social inclusion.[208]

Higher degrees of neural connectivity between the anterior cingulate cortex and the anterior insula correlate with higher scores for altruism, perhaps the most pro-social of emotions, while less connectivity between the two brain regions corresponds with increased selfishness. While the insula fires when we experience disgust, an emotion more frequently found in rightists, the insula is more active in leftists in general possibly because disgust is instrumental in judging behavior at odds with pro-social norms.[209]

The anterior cingulate cortex activates in situates that demand ethical thinking in regard to such issues as rights, fairness, and justice.[210] Archaic kin-band morality consisted of obedience of kin group rules. In contrast, ethical principles such as fairness derive from abstract cognition and apply equally to all, non-kin as well as kin. Such principles would have been beneficial at a later stage of human evolution. The amygdala and the anterior cingulate cortex are antagonists in regard to ethical behavior. Anterior cingulate cortex activity is inversely related to increases in dishonesty,[211] while the amygdala is crucial to learned dishonesty—the incremental acquisition of a dishonest temperament.[212] Authoritarian parenting of a kind more common in rightist families also gives rise to cheating behavior in children.[213]

Neuroscientists have found that mental representation is an important tool of cognitive control over archaic survival behaviors such as prejudice and aggression.[214] The anterior cingulate cortex is characterized by a host of mental representational functions with ties to cognitive control, such as the imagining of future events, picturing self-other relationships, imagining others' thoughts, coordinating actions with the anticipated actions of others, monitoring behavior for conflicts between different possible responses to others, and empathy.

A mental representation is an image that is not an object of the senses. You can sense the printed words of this book with your eyes, but the ideas the words are about exist in your mind as mental representations. A concept such as "Justice" exists nowhere in the world as a tangible physical object. It exists only as a mental representation or concept. Other examples of mental representations would be a concept such as "Chinese," a memory of something your father said once, or an imagined future role in life such as being a doctor. Such mental images inhibit automatic responses and allow us to guide our behavior more deliberately. They interfere with the rapid expression of automatic negative emotions such as prejudice.

In a test of latent or implicit racial bias, subjects were shown photos of a woman of Asian descent. Their reactions contained instances of bias. But when other test subjects were shown the word "Chinese"—a mental representation—before taking the test, the amount of bias decreased. The abstract concept helped test subjects to control bias by slowing down automatic responses and obliging the subjects to be more reflective about their judgments. In general, abstraction has been found to diminish biased responses on tests. One study found that subjects who chose abstract options ("I checked to see if they were home") to concrete options ("I pressed the doorbell with my finger") when given a choice were more likely to score low for prejudice.[215]

Neuroscientists believe that mental representations act as place markers in the brain that suppress automatic negative emotional responses (such as prejudice) and permit the undertaking of goal-oriented pursuits that require multiple steps distant from their goal. Armed with this new ability, early humans were better able to regulate and control their behavior. Those with the new mental representational ability could respond to others more agreeably and less aggressively. They could modulate social behavior for distant goals. Ancestors with the new ability could also for the first time engage in long-term planning of future actions. Such planning would have been aided by the cingulate cortex's ability to picture future goals and evaluate ways of attaining them.

An increased talent for mental representation in leftists in possession of a larger anterior cingulate cortex would have had important consequences for the emergence of civilization. Those with the talent and in possession of the physical trait would have been better equipped to control archaic emotions and behaviors. Such control would have made it possible for larger social aggregates made up of both kin and non-kin to form. Survival problems could be addressed using reflective cognitive abilities rather than automatic intuitive responses such as force or fight or flight. Such a major change in human behavior likely arose as a result of genetic modifications.

Geneticists notice that certain traits such as Openness to New Experience, which is common in leftists, and susceptibility to authoritarianism, which is common in rightists, are heritable. The traits are governed by genes rather than being

the result of acculturation.[216] Geneticists have also begun to locate gene variants associated with aspects of political personality. Leftists are more likely to have the *DRD4*–7R variant of the D4 dopamine receptor gene, for example, because 7R is associated with creativity and novelty seeking, which are leftist traits.[217] The variant is also linked to another leftist trait: heightened sensitivity, which provides a greater ability to benefit from nurturing environments.[218] Variants of DRD2 are also linked to parental support, which might explain the greater ability of leftists to benefit from family nurture.[219] Other variants of DRD2 enable cognitive control and flexibility, which are more characteristic of leftists.[220]

In the absence of a comparative study that would place the genomes of rightists and leftists side by side, one has to guess the genetic foundation of the biological division. For example, a much-studied polymorphism of SLC6A4, a gene that helps the body process the neurotransmitter serotonin by coding for 5-HTT, a serotonin transporter, comes in several variants, and studies find that one correlates with rightist behaviors. The short allele version of the 5-HTTLPR polymorphism results in reduced expression of the serotonin transporter molecule, which is essential for neuronal functioning. This gene variant is associated with such neuronal disorders as autism and depression that are in part triggered by the disruption of serotonergic functioning.

The short allele variant also associates with rightist traits such as hypervigilance, increased social conformity, lower openness to experience, and higher conscientiousness. The polymorphism interacts with church attendance and amygdala activation, which it orients toward salient environmental cues as if in search of predators. Tellingly, 5-HTTLPR shrinks the anterior cingulate cortex, the brain region that is larger in leftists.[221] It is also associated with such other aspects of conservatism as heightened fear responsiveness,[222] bias toward negative information, heightened startle reactivity,[223] heightened reactivity to environmental threat,[224] low levels of trust,[225] greater willingness to carry guns,[226] a greater disposition toward hostility against adversaries,[227] decreased agreeableness,[228] risk acceptance,[229] heightened automatic racial bias, unethical economic behavior,[230] reduction of amygdala-cingulate cortex connectivity, reduced grey matter in the cingulate cortex, strong emotional responsiveness conjoined with reduced prefrontal regulation of emotion,[231] aggression,[232] catastrophism,[233] and temperamental anxiety.[234] The effects of this polymorphism are suggestive for understanding how lower class social conservatives negatively affected by the economic crisis of 2008 in the US might turn to an exciting savior figure like Donald Trump after a long period of declining economic fortunes. One scientist speaks of the effects of the polymorphism in terms of "persistent negative affect and eventually depression in the context of accumulating environmental adversity."[235]

If 5-HTTLPR associates with conservatism, BDNF—for brain derived neurotrophic factor—associates with leftism. BDNF makes a protein involved in the processing of serotonin, like 5-HTTLPR. Titles of studies of depression often

contain both genes.[236] Serotonin is injected into the cleft between synapses as signals are communicated across neurons. It must be taken up again for healthy neuronal functioning to continue. 5-HTTLPR interferes with serotonin uptake, while BDNF promotes it. Serotonin uptake is a small issue with huge consequences because synapses exist throughout the brain. Less efficacious serotonin processing can result in Major Depressive Disorder.[237]

BDNF maintains neurons or nerve cells and assists their growth, maturation, and differentiation. It enables synaptic plasticity in response to experience, making it ideal for sustaining the cognitive and behavioral flexibility associated with leftism. BDNF is expressed in tandem with anterior cingulate cortex activity and helps silence amygdala responses that interfere with healthy cognitive and behavioral functioning. Its presence in healthy amounts is associated with the regulation of amygdala processes such as aggression and anxiety. BDNF maintains normal neuropeptide functions, including the provision of pleasurable rewards such as oxytocin to the brain, which is an important feature of leftist behavior. It promotes sensitivity to environmental signals by, for example, building more synapses in response to vigorous exercise. It would account for why leftists benefit more than rightists from family environments.

The Val variant of the BDNF Val66Met polymorphism, promotes behavioral flexibility and resilience.[238] (The same amino acid substitution found in this variant—valine for methioline—also occurs in COMT Val158Met, another gene variant associated with leftist traits such as altruism, creativity, and aggression regulation.)[239] The Val variant is linked to learning and assists such processes as memory recall by enhancing the efficacy of serotonin transmission across synapses. The anterior cingulate cortex is more active in emotions with high cognitive demand such as memory recall, which requires intense effort. Central to learning is the ability to erase and replace previous learning with new memory images. This action is especially important in fear extinction—the unlearning of amygdala-driven automatic fear responses that have become habitual. Increased BDNF expression facilitates the extinction of fear by promoting the learning of new memories to replace old fear memories. Such learning dissolves habitual responses and increases flexibility. In contrast, reduced BDNF prevents learned associations such as fearfulness from being overwritten and replaced with newly learned responses, decreasing flexibility.[240] BDNF-assisted increases in autonomic flexibility are associated with a greater capacity to experience positive emotion in daily life. Positive emotions broaden coping responses, increase cognitive resources, and facilitate flexible responses across changing contexts. Leftists experience more positive emotions than rightists.

The conflict between conservatism and leftism appears as a trait behavioral difference, a brain anatomy difference, and as the antagonism of gene variants in certain influential parts of our physiology such as the serotonergic system. Low serotonin levels and 5-HTTLPR expression are found in conjunction with

increased fearfulness and increased amygdala activity, while increased serotonin and BDNF expression occur in conjunction with fear extinction and increased activity in the anterior cingulate cortex—making our neural and genetic architecture seem like a well-staged Jacobean tragedy.

These differences also provide us with a map of human evolution. The serotonergic system portrays human evolution as a movement away from archaic behaviors such as fear and aggression, which are enabled by low serotonin levels and 5-HTTLPR expression, and toward more recently evolved behaviors such as altruism, empathy, flexibility, and cognitive control, which are facilitated by higher serotonin levels and BDNF expression. Meyer et al. note: "It is . . . tempting to speculate that crucial aspects of synaptic transmission may have changed in modern humans."[241]

Synaptic plasticity diminishes along the spectrum from Left to Right but increases from Right to Left as one moves forward in evolutionary time. 5-HTTLPR depletes serotonin throughout the brain because less serotonin was needed in the archaic environment when phenotypes such as fearfulness were adaptive. BDNF, in contrast, augments the amount of serotonin available for neuronal functioning because fear needed to be extinguished, aggression controlled, and behavior rendered more flexible and resilient if our ancestors were to survive the ecological disasters of the past 100,000 years. As evolution made greater flexibility of behavior adaptive, it armed some *sapiens* with tools such as the Val variant of BDNF Val66Met that increase serotonergic functioning. The result, however, was greater vulnerability to disorders such as Massive Depressive Disorder, Autism, Schizophrenia, and Panic Disorder. Such "breakdowns" may have been common in the archaic environment when low serotonin levels were adaptive. The behavior of the Papuans when first encountered by Europeans is illuminating in this regard. They became depressed, succumbed to hysteria, and embraced shared religious fantasies.

Gene variants like 5-HTTLPR, BDNF Val66Met, DRD4, DRD2, and COMT Val158MET stand out in the scientific literature for two reasons. One is that the neurotransmitters they govern such as serotonin and dopamine are essential to brain functioning. These gene variants also stand out because not all genes are equal. While some genes code for fewer than 1,000 proteins, others code for as many as 36,000. As a result, some genes are more influential than others.

That was the conclusion of a genome-wide study which found four candidate chromosomes for correlation with political behavior.[242] Chromosomes 4 and 9 contain genes associated with the defensive functions of the amygdala, and these chromosomes likely play a more pronounced role in shaping rightist behavior, since the amygdala is larger in rightists. Chromosome 4 genes produce NMDA, the amino acid derivative linked to fear, which occurs in the amygdala. And chromosome 9 genes code for the physical mechanics of fight or flight, an automatic archaic response to danger. The fearful vigilance and habitual automatic responses of rightists suggest these genes have a greater influence on their behavior.

Chromosomes 2 and 6 contain genes that govern cognitive control, behavioral flexibility, and behavioral rewards—all functions of the anterior cingulate cortex. Because the anterior cingulate cortex is larger in leftists, these chromosomes likely influence leftist behavior more. Chromosome 6 genes produce serotonin, which is related to behavior regulation, flexible cognition, and fear extinction—all traits more evident in leftists.

The four chromosomes can be arranged along a hypothetical line of human evolution. Chromosomes 4 and 9 contain genes that code for behavior that was necessary in the archaic environment, while chromosomes 2 and 6 contain genes that code for behavior that was more adaptive as one moves closer to the present.

Of the chromosomes likely more influential in conservatism, chromosome 4 contains DBH, which codes for a protein that converts dopamine into norepinephrine, the neurotransmitter in the autonomic nervous system that prompts the body to quick defensive action such as fight or flight. It has also been found to play a major role in dealing with uncertainty.[243] Such defensive reactivity is key to amygdala functioning. NARG1, a protein produced by chromosome 4, functions as an NMDA receptor and is a spur to defensive vigilance.

These genes likely work in tandem with chromosome 9 genes that code for the physical mechanics of fight or flight such as FKTN, which builds muscles for movement, TPM2, which governs the tensing of muscles, EXOSC3, which codes the nerves that inspire muscle movement, and TPM2, which generates the mechanical force to get muscles in motion. Fight or flight was an essential survival mechanism in the archaic environment in which rightist traits first formed.[244] In addition, GBP2B, LCN1, LCN9, and OLFM1 on the same rightist chromosome code for proteins related to olfaction, which aided predator avoidance in the archaic environment.

Chromosome 9 genes code for basic physiological functions such as the manufacture of blood, cell division, and energy production. The co-presence of genes for basic physiology and for physical survival on a chromosome linked to conservatism suggests that rightist traits derive from older genetic material and were positively selected at an earlier moment in evolution when survival behavior was as automatic as basic bodily functioning. That would explain the stronger presence of disgust in rightists, since disgust likely derives from the body's physiological response to dangerous toxins. One study found that gustatory disgust influenced moral judgment and was more strongly associated with conservatism.[245] Consistent with the likely antiquity of chromosome 9 is the presence of gene EXOSC3, which codes for the development of the cerebellum, the next brain region to evolve after the amygdala.

The picture that emerges from chromosome 9 is of genes devoted to the automatic mechanisms that maintain physical life. This corresponds to the image of rightists as pursuing survival through automatic, habitual behaviors such as resource hoarding, fearful vigilance, and defensive aggression that were forged in the archaic environment hundreds of thousands of years ago.

Genes on chromosomes 2 and 6 control functions associated with the anterior cingulate cortex's role as cognitive and behavioral regulator and play a more prominent role in leftist behavior. Like the anterior cingulate cortex, they act as antagonists of the amygdala and of NMDA, the fear-generating amino acid derivative, and they inhibit fast automatic defensive responses such as fight or flight. If the genes on the "rightist" chromosomes seem well suited to survival at an early moment in human evolutionary history, the "leftist" chromosomes are associated with later adaptive processes such as the regulation of archaic emotions for the sake of more flexible and more sociable behavior.

Of chromosome 6 genes, QUIN is an NMDA inhibitor, DDO encodes a protein for the breakdown of NMDA, and TAAR1 regulates norepinephrine, the amygdala's tool for fast defensive action. INPP4A on chromosome 2 also regulates NMDA. PHACTR1 on chromosome 6 codes for the inhibition of movement and is linked to the functioning of the globus pallidus, a two-part brain region that regulates subconscious movement such as fight or flight. ALS2 on chromosome 2 also controls muscle movement. More activity on the part of these genes would have benefitted the emergence of leftist traits by controlling automatic emotional and physical responses associated with amygdala reactivity.

In a similar way, NR2E1 on chromosome 6 inhibits aggression, another amygdala-driven emotional response, and ALDH5A1 makes sure the brain is not overwhelmed by too many signals—a filter that would diminish the influence of automatic responses associated with the amygdala such as anxiety and fear. Chromosome 6 gene CYP21A2 protects the body from stress, another way of muting automatic defensive responses firing from the amygdala and freeing up energy for higher order cognitive functioning. The nearby MUT gene helpfully regulates energy production. THADA on chromosome 2 also regulates energy storage and consumption, while a number of genes on this chromosome such as ERLEC1 regulate stress. FASTKD1 both regulates stress and the energy balance of mitochondria.

DRR1 is a stress regulator on chromosome 6 that enables synaptic plasticity. Given that recent selective sweeps in human evolutionary history occurred in regard to cognition, it is significant that DRR1 has been linked to improved cognition.[246] TBR1 on chromosome 2 is critical to brain development, and KIAA12112 codes for a protein that is highly expressed in the brain. SYNE1 and TSPYL1 code for brain regulation and maintenance. Such genes may help explain why leftists evidence better cognitive abilities. Gene variation on chromosome 6 is related to higher intelligence.

Other chromosome 6 genes play a role in epigenetic regulation. Evolutionary theorists speculate that adaptive behavior is enabled by the epigenetic gene regulatory system.[247] Methylation—the attachment of methyl molecules to citosine-5 on DNA to inhibit gene expression—is one method of epigenetic regulation of gene expression. Studies have found that more methylation is present in leftists.[248] Less methylation coincides with more fear and depression-like behavior in

the amygdala.[249] Gene CKAL1 on chromosome 6 codes for methylation, while KANSL3 on chromosome 2 codes for epigenetic regulation through acelylation, which promotes gene expression. Chromosome 2 contains other genes involved in epigenetic regulation such as IMP4, KANSL3, PAX3, and PAX8. GNMT, KHDC3L, and MIR4640 on chromosome 6 are epigenetic controllers.

Histone modification is another form of epigenetic regulation of gene expression. HIST1 on chromosome 6 codes for the compacting of chromatin—the mass of protein in which DNA is packaged in chromosomes—and SATB2 and SGOL2 code for chromatin remodeling and chromatin cohesion regulation. Many genes on chromosome 2 such as EPC2 and SGOL2 are also involved in chromatin remodeling. ARID1B is a chromatin remodeler associated with the generation of multiple variants—one way geneticists believe organisms rapidly adapt to environmental adversity by rewriting their DNA and giving rise to new versions of themselves. Multiple variants mean a greater likelihood one variant will prove beneficial. The chromatin genes on chromosome 6 are significant because changes in chromatin would have been a way for the ancestors of leftists to modify gene operations quickly in response to novel circumstances. New environments have been found to induce chromatin variations.

All of these genes working together would enable rapid adaptation using epigenetic mechanisms to novel circumstances. The ability to vary gene operation in response to adversity is an acquired trait in some species and possibly also in our own.[250] OPRM1 on chromosome 6 is one of two dozen genes associated with the rapid genetic evolution of nervous system genes.[251]

A number of genes on chromosome 6 code for the alteration and manipulation of RNA, an additional process for evolving new adaptive traits by epigenetic means. DNA is transcribed through copying into messenger RNA for transport to chromosomes during the reproductive process. Parent genes do not always end up on the same location on DNA strands in offspring, and they can be cut, spliced, and rearranged. Such multiplication can easily generate new variants. 5KIV2L codes for an enzyme involved in the alteration of RNA through translation and splicing. POLR1A is a gene that codes for a DNA-directed RNA polymerase while GTF2A1L codes for messenger RNA transcription. Chromosome 6 gene DHX16 regulates cell cycle progression in RNA. Finally, gene copying through DNA replication can result in evolutionary change as new functions emerge for genes, and a number of genes on both chromosomes code for processes involved in gene copying.[252]

Gene repair is another way that evolutionary change can take place. Mistakes occur as parent DNA is transcribed into messenger RNA for transport to chromosomes. Repair can guarantee successful transcription, but it also affords an opportunity to experiment with variants. The gene repair system is activated in response to stress that destroys cells. When the repair system turns on, it repairs genes, but it also produces mutations because DNA is prone to replication and

repair faults. Some of those mistakes become adaptive. According to Jablonka and Lamb, stress has the effect of increasing mutation frequency when and where it is most needed. The gene repair system that is turned on in times of stress also turns on the production of mutations in the genome where they are likely to be most effective. Numerous genes on chromosome 2 are involved in gene repair. MSH2 codes for a protein essential in DNA repair, and MSH6 fixes mistakes when DNA is copied incorrectly, while POLR1A assists recombination repair as DNA is assembled for transport into chromosomes.

The presence of genes for processes such as recombination, transcription, splicing, copying, and repair on chromosomes 2 and 6 may explain why leftists are more behaviorally plastic. Alternative splicing allows the small repertoire of 20,000 to 25,000 protein coding genes to be multiplied by new combinations. That possibly accounts for the greater cognitive and behavioral flexibility of leftists. The leftist variant of the human genome is able to generate more behavioral phenotypes, and that may be the result of greater lability in its version of the genome.

Genes on chromosome 2 contribute to behavioral and cognitive flexibility. ALS2CR8 is involved in the functioning of BDNF, the gene associated with synaptic plasticity that enables learning, fear extinction, and cognitive flexibility. Several other genes on this chromosome such as EPB41L5 and ITM2C enable the synaptic processes of protein-to-protein interactions and neuronal differentiation that contribute to cognitive and behavioral flexibility.

Greater modulation of behavior is also enabled by cognitive control using mental representation, and some genes on chromosome 6 are involved in mental representation. PRPH2 codes for vision while other number 6 genes code for the building of eyes, as do chromosome 2 genes such as PRSS56. The anterior cingulate cortex has neural connections to the visual cortex, and its role in cognitive control has been linked to visual function.[253] Mental representations are crucial to cognitive control over archaic emotional responses and behaviors that reduce automaticity and increase flexibility, and the images created in the mind by vision resemble mental representations generated by the brain. The evolutionary process that created an association between mental representation and control may have been aided by the proximity of genes for control and vision on the same chromosome. NR2E1 suggestively combines the two functions: it builds the retina and controls aggression.

Behavioral regulation and flexibility are also maintained using rewards. A capacity to attach pleasurable rewards such as the pleasure-generating neuropeptide oxytocin to new experiences would have been beneficial from an evolutionary perspective. It would have allowed leftists to explore novel strategies for addressing adversity and to reward behaviors that succeeded. Many chromosome 2 genes, such as ECEL1, LANCL1, and QPCT, code for neuropeptide activity. In addition, OPRM1 is an opioid receptor on chromosome 6 in close proximity

to a cannabis receptor—CNR1. Opioid receptors may account for the cingulate cortex's ability to match rewards such as oxytocin to pro-social behaviors such as generosity. Such pleasurable hormonal stimulation has been associated with increased altruism.[254] Leftists may be more altruistic because they assign pleasurable rewards to such behavior more easily. Enhanced oxytocin activity is associated with the anterior cingulate cortex and with a diminishment in the size of the amygdala.[255] Oxytocin enhances empathy and attenuates trait anxiety.[256] OPRM1 has a strong relationship to attachment style. It is associated with an anxious style rather than an attached style, and that suggests it likely plays a stronger role in leftism than conservatism. OPRM1 also is associated with feelings of social integration. A greater influence of OPRM1 on leftist behavior would have facilitated increased sociality of the kind needed at a later stage of human evolution as our ancestors began to organize in larger social units that prefigured urban civilization.

The A118G polymorphism of OPRM1 has been found to assist people in dealing with lapses in maternal care that usually induce fearfulness. This plasticity gene variant makes its bearers more responsive to the benefits of environmental support and enrichment and more able to quell adaptive fearfulness, enabling greater flexibility and sociability of behavior. The presence of this particular polymorphism would explain the finding that leftists benefit more from family environments and nurturing niches while being temperamentally less fearful than rightists.[257]

Being able to benefit more from the family environment also means that leftists benefit more from niche support. The niche environment is an important consideration for understanding the fate of leftism in human history. Its role would account for why signs of leftism attenuate once cultural niches such as Rome collapse and why people revert to rightist behavior once niche guarantees of safety are removed. But it also suggests how early leftist humans were able to break free of the dominance hierarchies of the archaic kin bands in which one's status and one's feeling of well-being depended on successful compliance behavior. Early leftists, by acquiring an ability to self-administer rewards, avoided the depression that was the price of loss of status in archaic dominance hierarchies. The A118G polymorphism allows mice to express less submissive behavior and to be more resilient after social defeat.[258] If mice, why not men? Armed with a psychological mechanism for self-validation, leftists would have been better able to live independently of status-organized groups in more egalitarian settings without lapsing into depression.[259] Such new abilities depend, according to object relations psychologists, on one's ability to create mental representations of one's early childhood objects of attachment and care such as parents. The apparent greater influence of such family care on leftists may thus be directly linked to their greater capacity for mental representation. Better care means better mental representation, and that means a greater ability to survive on one's own independently of groups organized according to status in a dominance hierarchy.[260]

The picture that emerges from a review of the genes on chromosomes 2 and 6 is of genes devoted to the regulation of archaic automatic defensive behaviors such as anxiety and to the fabrication of new behavioral phenotypes such as flexibility. A greater influence by these genes made our leftist ancestors more adaptable—both more capable of experimenting with new behaviors to address novel environmental adversities and more capable of rapid genetic evolution using epigenetic mechanisms. The gene repair genes on chromosome 6 are especially important because gene repair has been linked to the generation of deliberately inaccurate copies to increase chances of survival.[261] Chromosome 6 may be a mutation machine.

Everything about the genes on the "leftist" chromosomes suggests that leftists would be more capable of rapid epigenetic changes in how their genes operate in response to environmental adversity. They have more plasticity gene variants such as the Val variant of BDNF Val66Met that allow them to be more sensitive to changes in their environment. That leftists are more shaped by the family environment may be an indicator that they are inclined genetically to be more sensitive to environmental influences in general and have evolved an ability to rapidly adapt at the genetic level to environmental stress by being more capable of epigenetic modulation of their genome through processes such as methylation, acetylation, RNA transcription, and histone modification. Such a propensity may account for why leftists build schools, governments, and courts as components of a civilized niche that epigenetically activate and sustain leftist traits. In contrast, rightists are more influenced by older genes, more prone to inflexible habitual survival behavior, less sensitive to environmental influence, and less capable of rapid adaptation to changing environmental stressors.

If leftism is a later addition to our species, then it makes sense for leftism to be more associated with such epigenetic processes as methylation that regulate genetic material and modify how it operates, while rightists manifest less of such epigenetic regulation, especially in regard to methylation. The later emergence in evolution of behavioral leftism would also account for a gene such as NR2E1 on chromosome 6. Originally, it built eyes, but over time, as control over aggression became necessary for survival, and as mental representation or imaging came to fulfill the role of cognitive control over negative antisocial emotions, NR2E1 was repurposed to acquire a new function appropriate to the new adaptive need.[262] It came to control aggression, perhaps the most important adaptive trait, after fearfulness, of the amygdala in the archaic environment.

In this light, leftism might be defined as the regulation and repurposing of old genetic material through epigenesis, while rightism might be characterized as a comparative deficit of epigenetic regulation.[263] The regulation of gene expression is highly conserved, which means that it is a significant differentiator amongst species. When geneticists study the history of positive selection in humans, they find that adaptive divergence was primarily driven by regulatory changes.[264] One

recent study of all the changes wrought by ancient genetic material in the human genome found that most of the changes had to do with gene regulation, not with changes in protein.[265] Studies of Human Accelerated Regions, parts of our DNA that have evolved in humans but not in adjacent species or in archaic ancestors, consist primarily of non-coding regions.[266] Leftism may be the result of rapid recent evolution in our species of increased regulation enabled by epigenetic processes such as methylation.

Domestication induces massive increases in methylation. Given the role of methylation in domestication, another way of formulating the difference between the two political genotypes might be to say that leftists are domesticated rightists—which is to say, they are regulated rightists.[267] Intentional evolution by domestication diminishes the archaic fear response in animals, and leftists are temperamentally less fearful than rightists. Domestication results in behavior that is less aggressive, more tolerant, and more pro-social—all leftist traits when compared with rightists. Domestication is associated with a greater capacity for stress resistance, and leftists respond to stressful situations with greater equanimity than rightists who have stronger startle reflexes in response to negative signals. Domestication results in higher levels of serotonin, which is linked to negative emotion regulation. Leftist behavior is characterized by fewer negative emotions and higher serotonin levels.[268] Domestication diminishes intelligence, but in humans, that likely is the manipulative intelligence associated with the Dark Triad. Sociopaths and psychopaths are usually more intelligent at manipulative behavior than their domesticated peers.

Bonobos have been theorized as an example of self-domestication and, like leftists, have more amygdala-anterior cingulate cortex connectivity than adjacent species such as chimpanzees.[269] Bonobos exercise greater control over negative emotions and aggressive behaviors than chimps. They outperform chimps on reward-based tasks because they share food rewards more easily, fostering stronger feelings of reciprocal obligation and greater cooperation. That finding is suggestive for understanding how leftists might have been an adaptive addition to the species.[270] One way of telling the human evolutionary story would be to say that leftists came later in evolution and were distinguished by sharing resources that rightists hoarded. What resulted was an increase in feelings of reciprocity and practices of cooperation that improved survival chances by increasing sociality and making cooperative practices available to our species as it contended with environmental adversity.

It makes sense for human evolution to have taken the form of domestication. Our species had no alternative. As it evolved better food producing capacities and as populations increased as a result, expansive sociability, which requires increased tolerance and decreased prejudice, became adaptive. But archaic behavior such as prejudice endured. Our genome cannot erase old genetic material; it can only silence it. The same is true of old brain regions such as the amygdala which can

be regulated but not removed. The trait behaviors the amygdala governs emerged in response to the dangers of the archaic environment. But with the disappearance of that environment and the emergence of a new more civil one, those behaviors became increasingly maladaptive. Indeed, if we wanted a definition of conservatism, it might be: previously adaptive behavior that has become increasingly maladaptive. A propensity for armed conflict and aggressive hostility was needed in the archaic world but is not needed now. In fact, it is increasingly harmful. Flinging spears and arrows at one another was harmless to people living in the next valley 200,000 years ago, but flinging nuclear weapons in 2020 CE stands to affect all equally negatively.

Political scientists make the mistake of thinking the shifting and often opportunistic policy preferences of the two major political populations define who they are, yet the fact that American rightists went from being pro-government in 1800 to anti-government in 2000, while leftists during the same period went from being anti-government to pro-government, should alert us to how inaccurate it is to define political identity in policy terms alone.

The new science allows us to characterize rightists and leftists in a more stable and consistent way as clusters of genetically governed biological traits that endure over time. Rightists are fearful, dogmatic, and conventional. Their cognition favors effortless intuition over effortful reflection. They prefer hostile competition as a way of assuring survival over benevolent, well-regulated cooperation. Leftists are empathetic, open to new experience, flexible, and experimental. They think more reflectively. They regulate archaic survival behaviors such as prejudice for pro-social ends.

A crucial difference is in mental representational capacities that are linked to cognitive control over archaic emotions and behavior. Leftists evidence stronger mental representational abilities (which often appear as better cognitive skills), while deficient mental representational abilities in rightists are linked to less restraint over such archaic emotions as prejudice and hostility toward adversaries. That means that something as apparently marginal as art, which is embodied mental representation, may be a significant index in human evolution.

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4

ART AND THE ORIGIN OF CIVILIZATION

Accounts of early human history assume humans evolved in the same way at the same time. All early humans acquired better cognitive abilities around 50,000 years ago, and all participated equally in the formation of civilization 40,000 years later. Civilization was a unanimous undertaking.[1]

Recent science casts doubt on the assumption of uniformity. The current human population is characterized by great variation in heritable traits, especially in regard to cognition. About a third of the population—social conservatives and right-wing authoritarians—possess diminished cognitive abilities when compared to the other two thirds.[2] And those on the furthest left end score higher than the rest.

Such cognitive variation was likely adaptive. Cognition and regulation were the major targets of positive selection in our lineage, and cognitive regulation of archaic behavior was essential to the formation of civilization. Enhanced cognition also provided our ancestors with better reflective problem-solving abilities, an important tool for dealing with environmental adversity. That leftists are more capable of such regulation and such reflection is suggestive of the role they played in the formation of civilization.

One of the first signs of an adaptive modification in cognition and behavior was art. An elementary form of art appears around 73,000 BP in the form of carved ochre,[3] decorative shells,[4] and a sculpted snake that was also the first indication of an interest in spirituality.[5] The appearance of elementary forms of art is significant because art is embodied mental representation, and mental representation exercises cognitive control over archaic emotions such as prejudice, hostility, and fearfulness that would have interfered with the formation of civilization. An improved cognitive ability to control archaic survival traits would have assisted the

formation of larger communities consisting of both kin and non-kin, a key step in the emergence of civilization.

South Africa is the site of the earliest evidence of such modern human behavior. Some of the inhabitants of South Africa may have become more advanced culturally because they benefitted from proximity to a coast that brought humid currents as well as plentiful marine sustenance during the long drought starting 130,000 BP. The drought was followed by a rapid increase in humidity and water levels starting around 73,000 BP.[6] The shift to wetter weather transformed the terrain of Africa from arid to verdurous and likely increased both the early human population as well as the population of fauna, resulting in a nutritional spur to cephalic growth and cognitive evolution—an early version of food for thought. If South African coast-dwellers survived better and evolved differently from inlanders during the drought and the Toba eruption, they would have had an advantage once climate conditions improved.

Around 73,000 years ago, the inhabitants of the Blombos caves in South Africa made decorative ornaments and new, more refined tools using fire for the first time.[7] The inhabitants also used complementary weapons such as bow and arrow and devised traps and lures for fishing and hunting. The sudden emergence of this more flexible and inventive behavior likely reflected a slow evolutionary process that had been underway in human cognition for some time.[8] There are indications of decorative creativity as far back as 143,000 years ago. But the long drought, in addition to spurring the emergence of a new haplogroup, likely spurred a need for cooperative behavior that required augmented cognitive abilities. Whatever the actual case, some collocation of events speeded up the evolutionary process. In its aftermath appeared not just a new model *sapiens* but also a new cognitive ability to make mental representations—images in one's mind that could be transferred into the world as ochre carvings, body decorations, and improved tools.

By 50,000 BP, those new abilities had coalesced in East Africa, and by 45,000 BP, a portion of the population bearing them had departed from Africa for the Levant, Europe, and Asia. One way of accounting for the new genotype that evidenced greater creativity, enhanced sociality, and a willingness to explore new experiences is to say that what today we call leftists made their first appearance on the stage of human history.

The ability to use mental representations both to make art and to control negative emotions such as prejudice and fearfulness is housed in the anterior cingulate cortex—a brain region that is larger in leftists. The evolution of a human genotype with an enlarged cingulate cortex would have provided those Early Humans in possession of the mutation with a survival advantage. The larger anterior cingulate cortex would have made them more capable of controlling hostility toward non-kin and of engaging in a wider range of sociality that extended beyond the kin band. Armed with stronger mental representational abilities, they could maintain images of others in their minds even at a distance. Larger social

networks could now form, and this new sociality increased the likelihood of mutual assistance in times of distress, augmenting survival chances. These larger social networks of kin and non-kin eventually became tribes consisting of multiple kin groups spread over a larger geographic area. Such expansive sociality was helped by another talent of the enlarged anterior cingulate cortex that required heightened powers of mental representation—empathy. The mental imaging of others as similar to oneself allowed some of our ancestors to form sympathetic bonds with strangers. Kin and non-kin could now interact in ways previously limited to kin.

Cognitive control over fearfulness using mental representation would have been especially transformative. It would have diminished anxiety, removed the brake on cognition that anxiety inflicts, and allowed new forms of cognition to flourish. Some Early Humans could now think better about the problems facing them. Rather than follow old habits, they could flexibly innovate and invent. The creativity evident in art also likely manifested itself in other spheres of life such as toolmaking, migratory exploration, and social organization. Two-handedness associated with toolmaking may have played a role in the evolution away from archaic kin-band authoritarianism.[9] Myopia may have contributed to this development because myopia was likely an adaptation required for complex tool making.[10]

Human language—whose brain regions overlap with those for toolmaking—became more complex. Greater leftism is associated with greater complexity of language, and complex language, like complex toolmaking, is a hierarchical activity, involving descending steps and sequential thinking.[11] A new capacity for such thinking would have affected social structure, allowing dominant hierarchies based on force to be replaced by agreed-upon roles that made groups more flexible and egalitarian. The new cognition would have diminished the need for obedience to group norms and encouraged the kind of personal autonomy in regard to group-enforced consensus that is characteristic of leftism. With the increase in peacefulness, life would have been less precarious and fear inspiring. The need prevalent in kin-band culture for authoritarian leaders and group consensus to assure survival would have diminished. That would explain the emergence of what anthropologists posit were more egalitarian social forms in the Late Pleistocene.

Ancestors with an enlarged anterior cingulate cortex and better mental representational abilities would have resembled today's leftists by being more creative, reflective, adaptable, and pro-social than their rightist neighbors. Their larger anterior cingulate cortex would have allowed them to picture a wider array of solutions to group needs. They would have reached the pro-social conclusion that in situations of severe environmental adversity, to help others is to help oneself. If the amygdala linked individual survival to kin-group survival, the larger anterior cingulate cortex, armed with a greater power of empathy and imagination,

extended the kin bond to a larger network of non-kin. As tribal behavior was born, human civilization came into view.

The first art embodied a new power of mental representation in some of our ancestors that greatly broadened the range of human sociality by making it possible to exercise cognitive control over archaic emotions and behavior. Understood as embodied mental representation, art, rather than be a sideshow on the road to civilization, was a precondition of its emergence.

The sudden appearance of such a seemingly useless cultural practice as art has puzzled evolutionary historians.[12] But art's uselessness is what makes it significant from the perspective of evolution. Art meant some Early Humans could imagine mental objects that were not the result of sensory data. A capacity for purely abstract mental representation meant some Early Humans were capable of cognition detached from instrumental behavior. They could think about ideas without needing to link the mental image to a rapid automatic physical response with a useful concrete purpose. They could solve problems in other ways than through hasty emotional responses and immediate physical action such as fight or flight. The new cognitive ability separated thinking from behavior. A capacity for reflection was born—as, one might say, was a capacity for leftism.

One of the first indicators in the archeological record of a new adaptive capacity for augmented cognition was the discovery of a human skull dating back 400,000 BP with a larger space for the parietal lobe, which sits on the top of the brain and is the headquarters of abstraction. A capacity for abstraction (and the control over archaic emotional responses it facilitates) set *sapiens* apart from *erectus* and their descendants such as *heidelbergensis* (who had a larger brain case than *erectus* but a smaller one than *sapiens*). That the date of the human skull coincides both with the date for the disappearance of *erectus* and with the date for the earliest example of a weapons cache suggests that a greater ability for abstraction also made our ancestors more lethal.[13] That abstract cognition is associated with a reduction in prejudice suggests as well, however, that adaptive evolution was pointing our species in a leftist direction.

The population of humans declined from 200,000 BP to 50,000 BP. The possible causes include harsh climates, large predators, and violent conflict between *sapiens* and archaic human descendants of *erectus*. The latter two dangers might account for the migration from Africa around 45,000 BP. The group that left numbered roughly 200 members, perhaps accounting for the genetic bottleneck detectable around 45,000 BP.[14]

Population geneticists find that extended migration is characterized by a serial founder effect, as some stay and some move on at each point in the migration, resulting in greater similarity between parents at the front edge of the migration.[15] But the migration out of Africa may also have been carried out by a homogeneous group with leftist traits such as Openness to New Experience and creativity. That hypothesis is supported by the changes in behavior associated with the migration.

The first evidence that humans had begun to hunt mammoths in cooperative groups dates to 45,000 BP in the Arctic. From approximately 43,000 BP on, the Aurignacians of southern Europe evidenced new civil engineering skills, painted images on cave walls, initiated new toolmaking technologies, engaged in tallying by making marks on bones, and practiced decorative arts. The scale and consistency of the production of tools suggest a much better organized way of life. Aurignacian culture required high degrees of inventiveness and experimentation more common in leftists than rightists, along with a disposition to live peaceably rather than competitively with one another. The population density of each Aurignacian settlement (80 members in some estimates) and the connectivity between settlements suggests the presence of an advanced capacity for sociality.[16]

The coincidence of the emergence of cooperative hunting of megafauna and the appearance of an entirely new culture may not be so coincidental. Nutritional geneticists notice that diet affects the evolution of traits such as skull size. Access to tortoise meat may have spurred brain development in the inhabitants of the Blombos Caves in South Africa where the first signs of art appeared, and access to large quantities of mammoth meat in Europe may have acted as a similar spur around 43,000 BP, when a new technological culture appeared.[17]

Heightened mental representational abilities are evident in Aurignacian art. The Aurignacians adorned themselves with pendants made of pierced shells and ivory beads. Decorative art implies the presence of higher levels of sociality as well as non-utilitarian cognition. It has two important social functions associated with the anterior cingulate cortex—communication with others that took others' feelings into account and the attachment of pleasurable brain rewards to new sensations such as the experience of beauty.[18] Most importantly, the evidence of better mental representational abilities in the cave paintings particularly suggest these ancestors were much better able to use mental images to control archaic emotions and behaviors. They could regulate fear, anger, and aggression and were less the victims of automatic amygdala-driven emotional and behavioral responses. With larger anterior cingulate cortexes, they could engage in a wider range of social behavior between kin and non-kin. And with improved cognitive abilities, they could solve the problems of survival more easily and more creatively.

The evolutionary adaptation that provided these early leftists with an enhanced anterior cingulate cortex and increased mental representational abilities made a new kind of self possible that in turn made new forms of sociality possible. The new self could use abstraction to separate its thoughts and beliefs from those of its kin group, diminishing the stultifying effect of enforced consensus on inventiveness and innovation. Capable of more cognitive control over automatic emotional responses such as prejudice, hostility, and fearfulness, the new self could detach from automatic behaviors such as defensive aggression, be more sociable, agreeable, and cooperative in its behavior, and engage in effortful thinking to solve problems. It could achieve a degree of self-aware maturity linked to emotional control that would have changed the social character of Early Human life.

Object relations psychologists associate the kind of abstract, objective detail evident in the first cave paintings with the sophisticated mental representations that enable healthy forms of selfhood.[19] Such selves have successfully achieved autonomy and are neither fused with others in a group nor fissured from others in hostile antagonism.

According to the theory of child development, a child is initially fused with its caregivers in a penumbral symbiotic state. To develop in a healthy way into an individual being, the child learns to make mental representations of caregivers that posit them as an object separate from itself. By making a mental image of a caregiver, the child creates a boundary between self and other and provides itself with the ability to exist apart from its caregiver in healthy separation without anxiety or fear. Armed with mental representations that provide surrogate care, it does not yearn for fusion with its now absent caregiver or engage in hostility to bring about separation from a caregiver experienced as too close.[20]

The ability to make abstract, realist, detailed mental images of the object world is essential to becoming an autonomous self whose emotions do not veer toward fusion or fission, anxious identification with a group, or detached antagonism and hostility toward out-group people who are perceived as threats. Mental representation—whether it is abstract, realist, and complex or simple, unrealistic, and deficient in detail—has consequences for who we are and how we behave.

These individual psychological processes manifest themselves in group psychology and group organization. Lacking a sophisticated capacity for mental representation, members of *Homo erectus* and early rightist *Homo sapiens* fused with their kin groups and led a hostile, fear-filled, fissured existence in regard to out-group people. They lacked a healthy sense of autonomy sustained by strong mental representational capacities. Instead, they retracted in hostile fear from non-kin and merged with their group, adopting group norms and identities as their own. The absence of art in their culture is significant. It points to an absence of mental representational abilities linked to cognitive control that are essential not only to healthy selfhood but also to more civil forms of social existence. Studies suggest that people who do not benefit from a healthy sense of autonomy are more prone to seek compensatory forms of support in authoritarian kin-band social systems.[21]

The Aurignacian cave paintings from 37,000 BP are a hinge not only in art history but in the history of human sociality. They depict a new leftist self whose cognitive abilities allowed it to survive apart from the archaic kin group and to interact in a non-aggressive way with non-kin. As much as the animals depicted in such abstract realist detail, the cave paintings depict the brain of a new leftist version of *sapiens* that successfully transcended the ancestral past and lived a more civil life characterized by control of archaic emotion, autonomy of identity, and sociality of behavior.

Greater cognitive control over archaic emotion and behavior using mental representation changed the character of human life and made it less violent. Bearers of the new cognitive abilities were capable of making sophisticated mental

images that established healthy boundaries between self and other and fostered a new capacity for sociality with strangers. They could live better regulated lives more suited to civil existence in communities consisting of kin and non-kin. They could aggregate in larger social groups consisting of numerous kin lines. The pay-off was survival: a tribe afforded more protection, and a multi-family tribe was better able to kill giant prey than a family-based hunting band. That would account for why cooperative hunting makes its first appearance at exactly the same time as naturalist pictorial art.

Recent science suggests conservatives were the "first humans." Their traits such as heightened fearfulness were forged when Early Human life was routinely violent. Leftists emerged later. More flexible, more sociable, and better equipped with cognitive abilities, they led the way in fostering more civil, more artistically inventive, and more technologically sophisticated forms of life that eventually allowed urban civilizations to come into being. The persistence of prejudice, fearfulness, inflexibility, and resistance to regulation in contemporary rightist feeling and behavior suggests that when agricultural civilization formed in Mesopotamia 8,000 years ago, rightists would have lacked the enhanced cognitive abilities needed to control negative emotions, foster sociality, and imagine into being new more civil forms of life. Those capacities did exist, however, in the new leftist genotype of *H. sapiens*. Civilization suddenly emerged because leftists suddenly evolved.

We know this is the case because the first civilization was remarkably leftist. Starting around 12,000 BP in the Middle East, the Neolithic Revolution ushered in agriculture, metal tools, and cities. Another major adapt-or-die ecological disaster preceded the revolution that was accompanied by a major population turnover in Eurasia. A warming event starting around 14,000 BP was followed immediately by a cold period known as the Younger Dryas, which lasted from 12,900 to 11,700 BP. Temperatures dropped by nearly 30 degrees Fahrenheit in places such as Greenland. Former foraging terrain suddenly became tundra. Some historians attribute the extinction of mammoths to these climate events. The events were so severe that a genetic bottleneck occurred in the hunter gatherer population. Such huge changes in the environment also are known to spur rapid evolution. The humans who emerged from the stressful situation and created human civilization starting 11,000 BP were different from their antecedents. They were more inventive, more cognitively adept, and more pro-social. They also were less violent. It is likely that those whose skill set relied heavily on hunting suddenly found themselves at a disadvantage. Those equipped with better cognitive abilities such as imaginative creativity that allowed them to invent agriculture fared better. If they were temperamentally more resilient and flexible, that would have provided them with additional skills for coping with adversity.

The reduction in foraging terrain in conjunction with the megafauna extinction increased the need to find alternative sources of food. The upper Mesopotamian

mountains served as a natural buffer that allowed water to collect that could be used for agriculture in settlements such as Gobekli Tepe in southeastern Anatolia around 11,000 BP. Keeping grain for use after the harvest required storage, and having to defend concentrated supplies of grain from wild animals imposed a need for greater cooperation. The most ancient grains have been found in the region of Gobekli Tepe, whose construction dates from 12,000 to 11,000 BP.

In addition to being a grain storage locker, Gobekli Tepe probably functioned as a sanctuary for the farming population of the region. The site consists of a large mound into which have been built chambers and carved stone monuments adorned with animal figures. The site contains signs of festive gatherings such as the brewing of alcoholic drinks and the slaughter of animals, and archeologists speculate that it served as a gathering place for social events that reduced tensions and promoted peace. Then as now, a beer and a chop when shared convivially fostered amity. The people who used the site sat in circles that implied equality and required a quelling of kin-band hostilities. Those new social abilities are also evident in the organized stone monuments, which required cooperation to assemble and build. The cooperative labor needed for such sustained efforts at construction likely meant a priestly class had emerged that supervised the building and organized the community to carry it out. Given everything we know now about the cognitive differences between rightists and leftists, those priests were probably leftists. Adopting a supervisory "priestly" role in Early Human life, leftists began to direct the new more crowded world toward more civil behavior, passing on new survival strategies to others who lacked their genetic gift for self-control and adaptability.

Around 6,500 years ago, settlers in southern Mesopotamia began to drain swamps and to build cities. The southernmost region, Sumer, became the most famous for its contributions in mathematics—an eminently abstract form of cognition—especially. The early history of Sumer suggests it was founded by people with greater cognitive skills than had hitherto been in evidence in Early Human life. Their engineering was literally pathbreaking. The land had to be drained. Water had to be redirected using canals. These difficult engineering endeavors required a high degree of focused problem-solving and cooperation. Like Gobekli Tepe, Sumer was led by priests, both male and female. In its early stage, it had no kings or armies. It practiced "theocratic socialism" by sharing resources.[22]

A major cognitive change seems to have taken place, and once again, art is a significant indicator. Artisanal skills initiated the Neolithic Revolution with its enhanced tools, new building practices, and innovative agricultural techniques. The artistic ability to use mental representation to shape the world of physical objects resulted in the mixture of tin with copper to make bronze, greatly improving tools and enhancing agricultural production. Early Sumerian art also reflected greater leftist mental representational powers. It was characterized by ornateness and complexity of design and was imbued with refined decorative

abilities that used gold, lapis lazuli, marble, wood, and alabaster. Such refinement of representation for non-utilitarian ends is more characteristic of leftist cognition than rightist cognition. Only people capable of seeing both small and large triangles would have been capable of this kind of art.

The Sumerians also invented writing, civil servants, musical instruments, the plow, laws, trial by jury, deliberative assemblies, medical science, libraries, courts, currency, contracts, mail delivery, and sewer systems. To them we owe both the wheeled wagon and the potter's wheel. They gave us schools, the numerical system based on 60 still used in mathematical calculations, and the first major work of literature—the poems of Gilgamesh.[23] Their early notion of a god was an imaginary owner of common land. If the local god owned the land, then the priests in the large temple store-house building could oversee the collection and distribution of the harvest. Even when kings replaced priests, one of the earliest was named in Akkadian: "All of them were lord." They lived in peace with one another.

But this pacifist socialist society run by leftist intellectuals and civil servants was vulnerable to capture by rightists, who eventually got the upper hand. They were able to do so because they now had new metal weapons—thanks to leftists. Leftist inventiveness had made bronze, and while bronze made better tools, it also made the first metal swords, which, when conjoined with wheels on chariots, led to easier control over others in a renewal of archaic dominance hierarchies—only on a grander scale.

The early Sumerians avoided warfare for nearly 2,000 years. The first war occurred in 4,525 BP as the Sumerian city states switched from being cooperative endeavors run by leftist priests to corrupt oligarchies run by rightist kings who warred with one another over resources and boundaries. Warfare and imperial ambition would define much of late Sumerian history. One wry and weary Sumerian commented on the futility of the conflict: "You go and carry off the enemy's land. The enemy comes and carries off your land."[24]

How do we know that rightists assumed power in Sumer? If we extrapolate from contemporary behavior, rightists then as now favored authoritarianism in the interest of resource hoarding over the socialist ideal of an equal sharing of resources. Like Vladimir Putin's oligarch allies, late Sumerian kings broke the rules of common ownership of land and seized common buildings and their assets for themselves and their allies. The wealthy abused the poor in numerous ways, from overcharging for services to foreclosing on high-interest loans and refusing to pay workers. When a leftist king finally briefly came to power, he promised to protect the poor from the rich and to assure widows would not fall prey to the powerful. After just a few years, he was overthrown by a rather ruthless rightist who restored authoritarian order.

What occurred in Sumer provides evidence of a bifurcation of the species. One sub-population built civil institutions that restrained archaic behavior for

the common good, and the other, seeing a greater adaptive advantage in incivility, tore down those institutions or adapted them to resource hoarding on a mass scale. Early socialist Sumer was characterized by rough equality and commonality of ownership. But the later rightist Assyrian empire was organized around a family-based dominance hierarchy that practiced callous brutality toward those it conquered (if its own art is to be believed).

That these political and economic changes hinged with differences in mental representational capacities is suggested by the way art and architecture changed in the post-Sumerian era. Assyrian art lacks the creativity, refinement of detail, innovation, and inventive variety that one sees in Sumerian art. The rightist rulers of Assyria expressed their dominance in monumental architecture decorated with images of monotonous rows of votaries that connote the inflexible subservience of the people to their ruler. Ornamentation and fineness of detail, both signs of enhanced mental representational abilities, are lacking—no small triangles, in other words. The concreteness of rightist cognition manifests itself in the heavy and rude realism that was an appropriate style for, as one historian puts it, "mountaineers and warriors."[25]

From this point forward, the essential issue of human civilization would be how to deal with the rightist residue of archaic feeling and behavior in the human species. Each time leftists succeed in building institutions that control archaism in human life, rightists assert the "freedom" to indulge archaic urges and emotions in regard to everything from resource hoarding to callousness toward the disadvantaged. Whenever leftists built civilizations in places such as Crete, as they did 3,000 years ago, others who did not share their spirit of civility and artistry invaded and destroyed the civilization. The Cretans—optimistic, trusting, and hopeful leftists that they were—forgot to build walls, which did not help.[26]

The rest of human history, from Athens to Brexit, consists of a struggle between leftists determined to spread civility—understood as restraints placed on archaic survival behavior to achieve pro-social goals—and rightists determined to preserve the right to engage in unregulated archaic survival behaviors such as resource hoarding, dominance, and aggression for pro-self ends. Rightists experience archaic emotions such as prejudice, fearfulness, callousness, and hostility more deeply because their ancestors survived as a result of such emotions for so long. Rightists do not so much choose not to give up those archaic ways of feeling, thinking, and behaving as they feel strongly they cannot afford to do so. The rightist slogan "freedom" is in this light a trump that grants exemption from leftist attempts to further civilize *Homo sapiens* by changing inherited patterns of feeling and behaving that have protected our ancestors from extinction in the past and that rightists still experience as essential to survival. Politics is a contest less between two "ideologies" than between two different, biologically-rooted adaptive strategies for guaranteeing survival, one dating to Early Human history that achieves survival through fearful defensiveness and predatory aggression, and

the other more recently evolved strategy which conceives of survival in socially cooperative terms guaranteed by institutions that regulate and control archaic emotions and behaviors while distributing resources more fairly so that all, not just the few most adept at competition, predation, and dominance, can survive.

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5

THE GENETIC GEOGRAPHY OF CONSERVATISM

Archaic humans left Africa as much as two million years ago and populated Europe and Asia. The best known of the archaic humans our ancestors encountered around 45,000 BP when they moved to Eurasia was Neanderthal. The Denisovans, who are named after the cave in Siberia where their skeletal remains were found and who lived predominantly in Asia, were another archaic human lineage that was a closer relative of *erectus* than Neanderthal. We now know that archaic humans and humans mated. All humans have 2–3% Neanderthal DNA. Asians have 20% more Denisovan DNA than non-Asians in addition to having a larger genetic legacy from Neanderthal.[1] The Denisovans bore a 4% genetic legacy from an archaic ancestor—probably a version of *erectus*—who inhabited Asia prior to their arrival.[2]

Given their proximity to *erectus*, Neanderthals and Denisovans likely were conservative in their behavior. They were fearful regarding out-group people and inclined toward hostility as a means of defense. They lived in tightly bonded bands. Like *erectus*, they were murderers. Given the evidence of cannibalism in Late Pleistocene Eurasian life, when archaic humans hunted for food, they did not discriminate between Odocoileus and Homo.[3] One reason for their rapid disappearance may be that archaic humans chose to hunt *sapiens*, who used bow and arrow, and heavy spears would have offered little protection from death at a distance.

A male bias in the genetic legacy Neanderthals and Denisovans bequeathed to humans means that sexual interaction consisted predominantly of archaic males mating with human females (at a rate of three times to one in relation to complementary mating).[4] This finding points to rapacious behavior on the part of

Neanderthal and Denisovan males and the possible murder of competing *sapiens* males. That may account for why humans either killed off or drove off Neanderthal soon after arriving in the Levant from Africa. Neanderthal disappeared from the Caucasus, just north of the entry-point from Africa, by 40,000 BP. There are traces of archaic humans in Asia until as recently as 14,000 BP, but then they also disappear from the archeological record.

Mating with archaic humans introjected ancient genetic material into the human genome.[5] The amount of ancient genetic material has decreased with time, as it has been subject to purifying selection that deletes archaic alleles in favor of modern human alleles during reproduction. But some of the ancient DNA proved to be adaptive and was retained through positive selection. The EPAS1 gene that is so helpful to Tibetan women was gifted to human DNA by an archaic human. Because the archaic humans lived in northern climates longer, they adapted successfully, and some of those adaptations, especially those related to immunity, were probably beneficial to humans.[6]

A great deal of the ancient genetic legacy in humans, however, has proved to be deleterious, even "toxic," to use David Reich's term. It increases susceptibility to disorder or disease, especially in regard to cognition. The functional ancient genes have a greater impact on the regulation of gene expression than on protein changes. They contribute more to neurological and behavioral phenotypes than to physiology. They affect cognitive capacities, especially in hybrid individuals and are associated with the down-regulation of the brain. In general, the archaic genetic legacy enhances a bias toward lower expression levels. At the same time, depleted archaic ancestry is linked to the enrichment of the human genes for the prefrontal cortex, a region associated with executive functions, suggesting a tug-of-war over time, with archaic material competing for functionality with human genes and possibly acting as a drag on early modern human adaptive achievements in regard to cognition especially.[7] That human genes for cognition proved more adaptive is suggested by the lower expression of archaic haplotypes in the brain. Significantly, perhaps, the archaic legacy affects a gene—AUTS2—associated with intellectual disability, and archaic single nucleotide polymorphisms are associated with diseases with a neuronal basis such as autism.[8]

The archaic lineages with which modern humans bred were older than the African *sapiens* lineage from which the non-African haplogroup separated between 94,900 and 62,400 BP.[9] That separation was from another version of the same species, while the contact with archaic humans in Eurasia was with a pre-modern version of the genus.[10] The encounter turned back the clock on evolution by several hundred millennia. Denisovans diverged from their common ancestor with African humans around 800,000 years ago and Neanderthals as much as 470,000 years ago. As a result of mating with archaic humans, non-African humans merged with a version of the genus their lineage had adapted

away from several hundred thousand years earlier. Neanderthals were no doubt on their own evolutionary trajectory, acquiring adaptations that allowed them to survive some of the same environmental events as *sapiens*.[11] But it would be a mistake to think they evolved in the same way. Compared to humans, they were more robust physically and less technologically modern.

As a consequence, when interbreeding occurred, newer genes combined with much older genes. And the ancient genes proved quite robust and, in some cases, dominant. Introgressed archaic alleles have a larger effect on variation in gene expression than non-archaic alleles. The genes that regulate gene expression of a parent with more archaic material will trump the similar genes of a parent with less archaic material.[12] That finding is worth heeding because leftists evolved away from rightists by developing an ability to regulate gene expression through epigenetic methylation especially. That one effect of the introgression of archaic DNA was to reduce epigenetic regulation of gene expression suggests that introgression may have increased conservatism in humans. Less regulated archaic behavior that had been set aside 800,000 years earlier may have suddenly returned.[13]

That is one way to account for a remarkable change in human behavior that occurred between 45,000 BP and 4,500 BP.

A review of Early Human history from Aurignacia to Assyria, from a cluster of roughly equal settlements interacting peaceably and producing remarkable art with leftist characteristics around 37,000 BP to an oligarchic authoritarian empire that enslaved and tortured its neighbors beginning around 4,500 BP, suggests that something went extremely wrong as western civilization formed and as the Pleistocene came to an end. If the band of 200 that left Africa circa 45,000 BP were homogenously leftist, their descendants would have stood a good chance of maintaining that genetic and behavioral legacy. That our ancestors were on a leftward tack is confirmed by the culture they developed in Aurignacia and Sumer. The group that left Africa around 45,000 BP was artistic and intellectual. They invented writing, libraries, schools, art, and a well-managed egalitarian economy. They created technologies such as bronze, wheels, and plows and practices such as irrigation, trade, and animal domestication that made human life more modern. In early Sumer, they lived in peace with one another, avoiding the occasion for conflict by sharing land, rotating ownership, and equitably distributing the earth's bounty. Yet by 4,500, humans were fighting wars, building empires, and slaughtering or enslaving each other in droves.

One way to account for that remarkable change is to take note of the trait differences between rightists and leftists. It is possible that rightists and leftists segregated when the first small band of *sapiens* departed Africa 45,000 BP. Genomic studies suggest that culture and lifestyle, as much as geography, kept people apart at this point in time.[14] Rightists and leftists still migrated in order to segregate geographically.[15] Moreover, leftists were more likely to engage in effortful behavior such as the migration out of Africa. Anthropologists are struck by the fact that some Pleistocene migration crossed difficult terrain that required effort.[16] But as

time went on, conservatives caught up. Once a safe route out of Africa was established, nothing hindered habit-driven rightists from following more exploratory leftists to better hunting grounds and larger prey. The lapse of art and intellect and the turn toward violence and genocide certainly would make sense if a conservative warrior culture replaced a leftist artistic and intellectual culture.

But it is also possible that the source of distortion in the trajectory of the non-African haplogroup was the introgression of ancient DNA derived from archaic sources. That DNA is now found in fossils in North Asia primarily. North Asia likely was chosen as a refuge by archaic humans as they fled from the newly arrived *sapiens* immigrants from Africa because it put the most distance and the most physical barriers between them and their modern human adversaries. *Sapiens* had better weapons and different cultural mores. Wife capture and cannibalism were suddenly unacceptable practices, especially if modern humans were the ones being raped or eaten. Archaic humans made North Asia their new home, and genetic evidence suggests it already was the home of even more archaic hominin ancestors.

The non-African human haplogroup divided genetically in two between 45,000 and 36,000 BP, with one clade remaining in Europe and Eurasia while the other populated East Asia.[17] In the East, the development from agricultural settlements to administered civilization occurred more slowly and likely was hampered by the greater presence and longer duration of archaic humans. The eastern clade manifests signs of leftist modernization at the time of the Han Dynasty in the first millennium BCE, when government by an educated civil service was invented, along with a quasi-secular philosophic religion that encouraged public service.

The artistic Aurignacian culture in Europe came into being around 43,000 BP at the time of the division between the western and eastern clades. It initiated a cultural development that persisted into the Neolithic 35,000 years later. The first farmer settlers in Europe 8,000 years ago came from Anatolia, the location of Gobekle Tepe, the region of origin for the settlers of Sumer, and the source for the Indo-European language.[18]

The West benefitted from a more compact geography that made social organization easier as well as from natural barriers such as mountains that separated the modern human population of Eurasia from the archaic North Asian population for many thousands of years. The ice sheet of the Last Glacial Maximum, which lasted from 33,000 BP to 16,000 BP, extended from Scandinavia to the Caucasus, effectively sealing off Europe from North Asia and preventing genetic admixture for over 15,000 years.

Eastern humans were not so fortunate. During the same time period, archaic human DNA spread as far west as the Caucasus region and as far south and east as the Indonesian archipelago, where the archaic genetic legacy still endures more strongly than elsewhere. The steppe herders from north of the Caucasus known as Yamnaya were closest genetically to archaic North Asians.

The Sumerian invention of wheeled carts opened up the North Asian steppes and allowed previously isolated populations to come into contact. The ancient genetic legacy that had been confined to North Asia could now spread. The Caucasus region was a transit point for technology between North and South. The Maikop culture of the Caucasus was the terminus of the expansion of south Mesopotamian civilization. The Maikop likely gifted the steppe people such Sumerian technology as metal weapons and two-wheeled chariots. Maikop monuments bear signs of the earliest wagon wheels as well as of domesticated horses, both of which would be crucial to the spread of ancient DNA to the West by the steppe people.[19]

A massive invasion of Europe by steppe dwellers occurred around 4,500 BP.[20] The steppe people, riding two-wheeled war chariots and armed with metal battle axes, brought with them a major ancient genetic legacy from North Asia. Their haplogroup (R1) would replace the haplogroups of the early central European farmers. A haplogroup with traits common in leftists such as artistic inventiveness and pro-social behavior might have continued to coalesce had not archaic genetic material been admixed. Instead, the western haplogroups were replaced by a haplogroup whose trait behavior was noteworthy for an absence of art and the presence of violence. Archaic trait behavior, having once been left behind as non-adaptive, became once again a feature of non-African-descended human life—only now in a much more virulent form. For the steppe people, who bore a 3% legacy of ancient genetic material, were not just invaders; they also were genocidalists. They exterminated much of the existing European population.[21]

The steppe people demonstrated little interest in the institutions and behaviors that characterized the adjacent leftist culture of early Sumer. They had no schools, no writing, no literature, no art, no laws, and apparently no empathy. When they arrived in central Europe, settlement sites disappeared, as did local populations. A meat-based diet replaced a grain-based diet. Like Neanderthal, with whom their ancestors mated, the steppe invaders were more robust physically and taller than the European farmers they displaced. They rode horses that were larger than the ponies common in Europe. The steppe culture was the first warrior culture, and its mores were distinct from those of the people they violently supplanted. While the indigenous farmers of Europe were communalists who organized life into clans that shared property—much as the early Sumerians did—the steppe people practiced a more individualized form of patrocentric property ownership. Their society was organized as a status hierarchy and may have been ruled by an all-male warrior class. Many of their burial sites consist of 80% males, suggesting that in regions of this culture, females had the status of domestic animals.[22]

The steppe invasion of Eurasia occurred suddenly and rapidly in the third millennium. The migrants were herders who likely sought better pasture after a long dry period from 5,200 to 4,900 BP.[23] But the importance of newly invented metal weaponry and war chariots gifted by the Sumerians via trade over the Caucasus

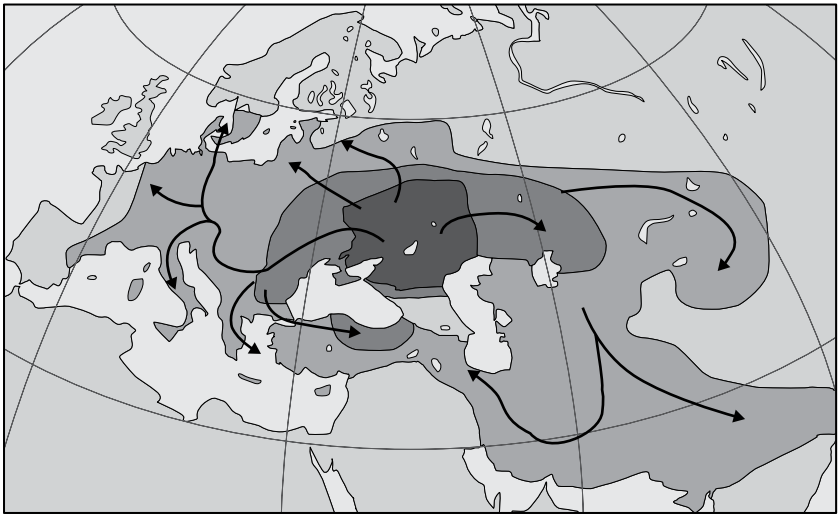

FIGURE 5.1 The steppe migrations beginning around 4,500 BP. This early map is inaccurate in several details. The steppe people did reach Spain and England but did not reach Greece and the Mediterranean islands such as Crete.

Image Credit: Wikipedia

cannot be underestimated. The chariots allowed for speed of movement over the vast steppes between the Caucasus and western Europe. Metal battle axes made mass murder routine. That the ancient genetic legacy the steppe people brought with them derived from *erectus* is suggested by the violence of their conquest behavior.[24] At one archeological site in Germany, an extended family group of 11 Bronze Age farmers and children were buried together after having been battle-axed to death by invading steppe people.[25] The steppe people were so successful at genocidal murder that they replaced 80% of the existing European population.[26] That helps account for the disappearance of all genetic traces of the population that entered the Levant from Africa in modern Europeans (although a prior population replacement around 37,000 BP contributed as well).[27] The genetic replacement occurred through extermination. The host men were murdered so that the females of the host group could be sexually exploited by the invading males.[28] A noticeable bottleneck in the male population of Eurasia appears in the genetic record between 8,000 and 4,000 BP, reflecting a severe extermination event.[29] Much of the wreckage the steppe people inflicted on the indigenous populations of Europe was exercised by bands of predatory young men between the ages of 13 and 19, who, given their predilection for beer, were the first "bros"

in modern human history. The invasion of the Iberian peninsula and the replacement of its male populations was conducted entirely by steppe males.[30]

A disposition to be hostile toward adversaries is a rightist trait, and rural peasant populations such as the steppe people are usually conservative.[31] The steppe people brought patriarchy to Europe and with patriarchy came other rightist behaviors and practices such as status hierarchy. Their genetic influence, which rose to 79% during the Neolithic and still rises to 75% in present-day Germany, may explain the persistent conservatism of the inhabitants of central Europe, especially those who perpetrated the Holocaust. That ancient DNA has spread around the world. A map of global hotspots for archaic Denisovan genetic admixture could be overlaid with a map of ancient civilizations that practiced human sacrifice and places where recent genocides occurred.[32] Where ancient DNA lingers in any quantity, so also do genocidal behaviors.

When the steppe people spread eastward into China, they once again brought war with them. Shortly after their arrival, the first war erupted in China at the Battle of Banquan in the area east of the Afanasievo steppe settlement in 4,500 BP.[33] The Great Wall ultimately would need to be built to forestall repeated predatory invasions by the North Asian steppe people.

The change in Sumer from an early stage characterized by theocratic socialism to a later stage characterized by authoritarianism, economic exploitation, and state violence occurs at roughly the same time as the steppe invasion of Europe around 4,500 BP. The first war in Sumer occurred in 4,525 BP between the cities of Lagash and Umma as Sumer entered a dynastic period characterized by increased social inequality.

The steppe people's migrations reached as far south as the Zagros Mountains in present-day Iran, just east of Sumer.[34] Some historians describe Sumer as falling to "hill people" from the East. The first indicator of violent warfare in Sumerian civilization, the Standard of Ur, which dates from the time of the steppe migrations, depicts soldiers riding chariots and carrying familiar steppe battle axes. The Akkadian empire that succeeded early Sumer, overriding its culture and replacing its language, followed the steppe example and resorted to brutal mass murder to maintain hegemony.

Human life might have taken a very different form and pursued a different trajectory if contact between *sapiens* and archaic humans had not occurred. But occur it did and being more aware of the ancient genetic legacy can aid us in understanding the behavioral consequences it might have had. It is not unrealistic to imagine that, without the admixture of ancient genes, the Eurasian human population might have continued as pacific, highly inventive San-like farmers practicing low-level socialism and avoiding war. There is no evidence of armed conflict on the scale of the steppe invasion prior to 4,500 BP in Eurasia. What conflict occurred resulted from contact between archaic hunter gatherers and newly arrived farmers from Anatolia.[35] All such conflicts tell us is that the archaic hunter gatherer lifestyle endured on the edges of agricultural civilization and

occasionally clashed with it. The archaic hunter gatherers were leftovers from earlier migrations that had become trapped in West Europe by the arrival of Anatolian farmers spreading out from the Levant.

We know that humans acquired new cognitive abilities associated with leftism around 50,000 years ago and possibly as far back as 73,000 BP. Greater cognitive control over archaic emotion and behavior enabled the creation of new forms of sociality. The resulting more peaceful way of life was evident up to 4,500 BP. During that time, modern humans lived in peace. The cave wall paintings in southern France from 37,000 BP are of hunts, not wars. Equipped with writing, the early Sumerians had ample means to document conflicts with their neighbors for upwards of 1,500 years. That they did not do so suggests there were none. But things changed. And the change may have had to do with the accidental coincidence of metal weapons, wagon wheels, and ancient genes that inserted archaic conservative behavior into the non-African human genome starting 4,500 BP in Eurasia.

That war may have begun in human history with the introgression of ancient genes into the human genome is at least an occasion for reflection and further study. If we did not know *erectus* to be so violent, we might think the admixture of *erectus*-descended genes a minor event with mixed consequences. But given *erectus'* violence and given that archaic gene introgression weakened the regulation of gene expression, it is more likely the case that the division in *sapiens* between leftists and rightists was aggravated by the introgression of archaic genetic material. The violence right-wing authoritarians are prone to resembles that practiced by the steppe people. What this mean is that war, torture, and genocide are not indelible aspects of "human nature." They may be the result of an accidental encounter in Eurasia between modern and archaic humans circa 4,500 BP.

We continue to see signs of the steppe genetic legacy in central and east Europe. The Holocaust in the middle of the 20th century is the most resonant case in point, and the struggle to contain conservatism's worst impulses toward corruption, intolerance, and authoritarianism is constant in countries such as Ukraine, Hungary, and Russia. The steppe genetic legacy in central Europe has even left its mark on America. The conservative movement in America over the past half century had several loci, and one important one was southern California, a region populated by migration from the US Midwest during World War II. Those migrants originally came from central and eastern Europe during the 19th century and brought with them their steppe genetic legacy. They moved to southern California during World War II for work in war-time manufacturing industries. After the war, they became the basis for the rightist activism that brought leaders such as Richard Nixon and Ronald Reagan to power in the late 20th century in the US. Both leaders evidenced strong conservative traits such as callousness, dishonesty, and temperamental aggression. California conservatism, which was really central European conservatism, shaped American life for

many decades and was responsible for events such as Reagan's cold-hearted financial support for right-wing death squads in Central America and Nixon's social challenging behavior of holding himself above the law.[36] Another rightwing US President with social challenging tendencies who liked to stoke violent behavior against out-group people, Donald Trump, also hailed from central Europe.

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6

RELIGION AS ADAPTATION

Early leftists faced a problem: how to deal with residual archaism in human life. They were equipped with better mental representational abilities that made them more controlled, empathetic, and pro-social than their rightist neighbors. Those neighbors were still inclined toward archaic survival behavior—fearfulness, anxiety, and hostility—that were likely amplified by the absence of tempering by schools, norms, and laws. They were not fun neighbors, and they were probably dangerous.

How did early leftists deal with the problem?

Leftists used the instrument they knew best—mental representation. Natural teachers, they invented cultural tools for controlling archaism in others. One of their major cultural inventions was religion. Given leftists' greater powers of mental representation, leftists would have been more likely to imagine gods as well as an abstract spiritual sphere. Given their greater pro-social inclinations, they would have been more inclined to use these cultural tools to expand the reach of cognitive control over archaism in the species by creating religious rules that forbade archaic behavior such as murder.[1]

Religion would have had a beneficial effect on rightists particularly. Rightists have a larger amygdala, which is responsible for many archaic emotions and behaviors such as fear and aggression. Recent studies find that mindfulness meditation, a Buddhist practice devoted to self-awareness, increases blood flow to the anterior cingulate cortex and decreases the volume of the amygdala. While amygdala activity correlates negatively with mindfulness, anterior cingulate cortex activity correlates positively with self-awareness.[2] Other forms of spirituality no doubt had a similar calming effect on the archaic part of the brain.[3] Indeed, one characteristic of leftists is greater calmness.

Spirituality, like art, was an early indicator of our species' new cognitive abilities. The snake sculpture in Botswana from 73,000 BP has been interpreted as a sign of spiritual ideation and religious ritual. That some of our ancestors began to imagine a spirit inside them that existed separately from physical life was likely a misinterpretation of the capacity for reflection, abstraction, and self-awareness made possible by the enlarged anterior cingulate cortex. Increased self-reflective cognition could easily be mistaken for a meta-physical spirit that exists apart from the body. The ghost in the machine was really the face in the mirror. That conservative religiosity consists of rule-bound behavior rather than of spiritualism may be due to the absence of an enlarged anterior cingulate cortex in their brains. Rightists are inclined to obey group rules, but they possess comparatively less self-awareness, abstract ability, and reflective cognition.

Leftists are more capable of self-awareness, and to this day, they are more inclined toward spirituality than to rule-bound religious observation.[4] Early leftists likely were the first priests and shamans. They could assume such roles because their abstract cognitive capacities allowed them to see things others could not. As a result, they likely were the world's first teachers. Archeologists believe the rituals around the carved snake in South Africa were guided by a shaman.

Religion has been found to be a buffer against anxiety and depression.[5] People with strong religious beliefs experience fewer anxious feelings. Their anterior cingulate cortex, which quells anxiety, is less active during experiences that normally provoke anxiety. That is the case, scientists speculate, because religious believers already possess a strong antidote to anxiety in the form of their beliefs. The work of the cingulate cortex is less needed.[6]

This positive effect of religious belief explains why the first evidence of religious rituals coincides with the first appearance of a new cognitive ability to control archaic feeling and behavior using mental representations. Religious belief is one such representation. Leftists with the new adaptive trait for cognitive control over fear and anxiety likely used cultural tools such as religious ritual to transfer their new abilities to others. Religion fostered an ability to control fearfulness and anxiety in people who lacked the new adaptive trait. Those without the adaptation could now experience less stressful anxiety.[7] That might explain why funerary rituals such as burying personal possessions with the dead became common at the same time as the appearance of art. Empathy for others became more pronounced in early human culture.

But religion also afforded a way to control conservative behavior and to render rightists less harmful to early civilization. The idea of God was the most important mental representation early leftists invented for regulating archaic behavior.[8] It provided them with a point of authority for enforcing norms of conduct and rules of civility. Religious spiritualism (essentially the mind's power of abstraction) was another important cultural tool that permitted intangible norms to

be formulated, circulated, and internalized by everyone. Spirituality allowed a diverse population to connect through a shared cognitive construct such as the idea of righteousness.

In the 8th century BCE, the Greeks began to construct cultural niches such as Athens in which norms promoting cognitive control over archaic behavior would be easily transmitted and internalized by all social agents. Transmittable norms are important to leftism because it is dependent on socio-cognitive niches—cocoons of abstract norms and ideas anchored in institutions such as schools and libraries and laws that are transmitted from generation to generation and person to person through acculturation. That invisible cocoon is dependent on learned behavior and the internalization of intangible shared mental representations. That is why instances of leftist preeminence in human history are usually associated with the presence of educational institutions.[9]

Religion was a sign that leftists were in a deliberate way dealing with residual archaism in the species by building regulatory cultural environments. Religion had both a cognitive and a social dimension. The cognitive dimension is evident in new mental representations such as the idea of "righteousness." Such mental representations inhibit archaic responses and promote behavior that conforms to the norms governing existence in a community requiring civil relations with others. Representations such as righteousness made the control function of the enlarged anterior cingulate cortex portable and beneficial to everyone, even those who did not benefit from the adaptation. The social dimension of the new religions is evident in ritual practices such as observance of the Sabbath. The ability to show up regularly on the Sabbath to meet an external requirement requires discipline and self-control, and it subjects one to supervision by one's community.

The world's first major religions emerged between the eighth and third centuries BCE along the trade routes from the Mediterranean to China.[10] All the religions emphasized control over archaic urges and a spiritualist understanding of the world. The religions helped make peaceful coexistence in large communities bound together by trade possible by promoting civil behavior.

Essential to the idea of God in Judaism, for example, is obedience. God must be obeyed; one must curtail bad behavior as God commands. A recent study found that test subjects who scored low for honoring rules or fairness scored higher when they were reminded of religious sanctions.[11] If we recall that rightists more readily breach rules of fairness if such cheating improves their chances of winning, the importance of religious rules for regulating rightist behavior especially becomes apparent. Rightists respond more than leftists to such unique environmental factors as rules.[12]

The Book of Isaiah from the Jewish Bible is a leftist complaint against the rightist behavior that destroyed Sumerian socialism. Greed is especially condemned by Isaiah, whose book in the Bible is best known for its exhortation to beat swords

into plowshares. That Isaiah has rightists in mind for his harshest polemics is suggested by his repeated condemnation of resource hoarding:

> Woe to those who make unjust laws, to those who issue oppressive decrees, to deprive the poor of their rights and withhold justice from the oppressed of my people, making widows their prey and robbing the fatherless. What will you do on the day of reckoning, when disaster comes from afar? To whom will you run for help? Where will you leave your riches? . . . 'What do you mean by crushing my people and grinding the faces of the poor?' declares the Lord, the LORD Almighty. . . . Lambs will feed among the ruins of the rich.[13]

Rightists then as now would no doubt have preferred a prophet who proclaimed the deserving rich shall feed daily on lambs.

Isaiah describes religion as abstract thinking that transcends the concrete cognition fostered in rightists by the stress of the archaic environment. Concrete intuitive cognition results from an archaic need to be vigilant and to scan the immediate sensory environment for signs of danger. It is associated with predatory behavior toward others and callousness regarding their suffering. Isaiah characterizes those who fail to embrace religious instruction as forever "hearing, but never understanding; . . . ever seeing, but never perceiving."[14] Ordinary concrete perception does not allow access to the realm of abstract cognition where one can use mental representation to control urges such as the temptation to prey on others for one's own survival (a favorite target of Isaiah's polemics). This inability to "perceive" in an abstract or spiritual rather than a concrete or sensory way makes "the heart of these people calloused."[15] They lack empathy for others because they are not exercising their mental representational powers to imagine others' suffering. This moment in the *Book of Isaiah* is the first indication that leftists were noting a link between diminished mental representational abilities, which precluded the empathetic imagination of others' suffering, and callous economic behavior in rightists.

Access to abstract thinking was impeded in the archaic environment by anxiety regarding survival. Because anxiety diminishes cognitive ability and is more common in rightists, its extinction through religious mental representation is of great consequence. Isaiah describes God as taking away anxiety by providing an inner feeling of strength: " 'Be calm and don't be afraid. Do not lose heart.' . . . Ephraim and Remaliah's son have plotted your ruin, saying, 'Let us invade Judah; let us tear it apart and divide it among ourselves, and make the son of Tabeel king over it.' Yet this is what the Sovereign LORD says: 'It will not take place, it will not happen. . . . If you do not stand firm in your faith, you will not stand at all.'"[16] Prophecy ("It will not take place") is a mental representation that quells anxiety by assuring safety. A prophecy has no concrete referent.

It is an imagined future event, a pure mental representation that gives rise to a feeling of mindful calm.

Religious principles such as "righteousness" are similarly effective representations. Diminished anxiety makes it easier to think abstractly and to embrace religious principles that control predatory behavior. By relying on abstract mental representations such as "righteousness" that serve a control function, one can restrain the temptation to oppress the poor: "He will not judge by what he sees with his eyes, or decide by what he hears with his ears; but with righteousness he will judge the needy, with justice he will give decisions for the poor of the earth."[17] The correction of the rightist cognitive bias toward concrete sensory perception ("not . . . decide by what he hears with his ears") is aligned with abstract mental representations such as "righteousness" that inhibit amygdala-driven urges to violate others for one's own survival. The inhibition of such urges makes behavior conform to an abstract principle ("with *justice* he will give decisions for the poor of the earth").

Isaiah imagines God as a cosmopolitan egalitarian who transcends archaic distinctions between kin and non-kin. God treats everyone equally by acting on behalf of "all peoples": "On this mountain he will destroy the shroud that enfolds all peoples, the sheet that covers all nations; he will swallow up death forever. The Sovereign LORD will wipe away the tears from all faces."[18] The world God will bring about will transcend archaic survival imperatives that mandate that one harm non-kin and favor kin, and it will put an end to archaic dominance hierarchies: "He humbles those who dwell on high, he lays the lofty city low; he levels it to the ground and casts it down to the dust. Feet trample it down—the feet of the oppressed, the footsteps of the poor."[19]

In Isaiah's conception, God is an embodiment of rational universality, the idea that ideal principles such as fair treatment are applicable to everyone equally. God is a mental representation that quells archaic predatory behavior that leads to inequality and hierarchy. The representation makes possible a more civil, cosmopolitan, and egalitarian form of life. The concept of God is a cognitive tool for teaching new behaviors such as empathy toward others: "The Sovereign LORD has given me a well-instructed tongue, to know the word that sustains the weary. He wakens me morning by morning, wakens my ear to listen like one being instructed."[20] Inhibition and instruction are ways of transforming human nature and especially archaic traits such as predation. Isaiah describes the process using images that fittingly suggest a transformation of nature itself so that, somewhat unnaturally, the "wolf and the lamb will feed together."

According to the rightist idea of nature that Isaiah criticizes, one should be free to prey on those less powerful than oneself in order to survive; wolves should feed on lambs. Isaiah's ideal of a world in which wolves and lambs live harmlessly and nonviolently next to one another contradicts rightist proclivities. Isaiah's ideal of self-control for the sake of civility is a departure from the rightist behavior

that helped the species survive for thousands of years before leftists like Isaiah came along. According to the logic of such archaic behavior, it makes more sense (is more natural) to place survival first, to hoard resources, and to engage in the callous violation of those weaker than oneself. It makes more sense to be a wolf amongst lambs. Isaiah has no patience with such concrete "common sense" perception that sees archaic nature as a model for all human behavior. His God promotes a different, more abstract way of seeing the world and of conceiving of human life that would lead to a transformation of human nature through effortful instruction and the molding of archaic behavior in accordance with abstract principles such as righteousness and justice. Humans who are better "instructed" would no longer pursue self-preservation through predation, no longer be wolves amongst lambs.

The Book of Isaiah advocates a more cosmopolitan, egalitarian, civil, and ultimately socialist sense of how we should behave with one another. It is for this reason an important step in the evolution of civilization, one that later leftists, including Jesus of Nazareth, will with justification turn to for inspiration.

Similar religious beliefs to the one Isaiah advocates emerged elsewhere at the same time along the trade routes. Zoroastrianism, a religion that flourished in Persia in the 5th century BCE, is an example of how leftist adaptive talents such as empathy and cognitive control were being turned into religious metaphors and used to foster civility. The negative god in Zoroastrianism is characterized by anger, an inability to control violent emotion. Virtue is defined as relinquishing predatory behavior: "I renounce the theft and robbery of the cow, and the damaging plundering of the Mazdayasnian settlements . . . I reject any who harm beings. I reject them with my thoughts words and deeds. . . . I pledge myself to the Mazdayasnian religion, which causes the attack to be put off and weapons put down."[21] It is a classic statement of the leftist attempt to broaden control over amygdala-driven urges in the general population.

Taoism, a Chinese religion dating from the 4th century BCE, promotes an end to selfishness and to the desire for worldly goods. Its virtues are distinctly leftist—compassion, moderation, and humility. Leftists still today score higher on tests for humility and compassion, while rightists define themselves in terms of achievement, status, and callousness toward those less adept at competition for resources.[22] Confucianism develops more civil, rule-bound modes of behavior anchored in a sense of order in the universe akin to the idea of rational principle in Greek philosophy. Plato asked his acolytes to accord their behavior with ideals such as justice and beauty.

Buddhism, which originated in India in the 6th century BCE, advocated the renunciation of the desire for material things and control over negative emotions. Meditation, which is a form of trained mental representation, aided adepts in achieving a mental state that served a control function by restraining desires such as the archaic urge to hoard resources (a frequent target of Buddhist injunctions).

By diminishing the size of the amygdala through meditation, Buddhism would have been helpful in fostering civil living in a diverse, heterogeneous society like India. It encourages the transcendence of parochial interests derived from class, national, or ethnic affiliations. It diminished animosity while promoting empathy and civility.

A Buddhist saying such as, "Just as a mother would protect an only child with her life, cultivate a boundless love toward all beings" promotes the transfer of archaic kin bonds onto all human relationships. Other Buddhist teachings urge restraint on archaic negative emotions such as resentment and anger for the sake of fostering civility: "In a controversy the instant we feel anger we have already ceased striving for the truth and have begun striving for ourselves." Other teachings urge restraint on archaic survival behavior such as resource hoarding: "To live a pure unselfish life one must count nothing as one's own in the midst of abundance." It is easy to see how constant training in such thinking would shrink the amygdala, the motor of rightist resource hoarding, fearfulness, and animosity toward outsiders.[23]

Jesus of Nazareth favored a spiritual sense of religion that hinged on one's own personal decision to be righteous and a favorable, non-predatory disposition toward the poor. One did not need to find salvation through a church hierarchy or by following religious rules. The conservative Pharisees, who were devoted to a rule-bound model of religion, found such teachings alarming.

In the version of his life told by his disciple Matthew, Jesus of Nazareth is given to both irony and metaphor in his teaching in a way that suggests he benefitted from enhanced mental representational abilities and an enlarged anterior cingulate cortex. That his favorite Jewish prophet was Isaiah should not be surprising.

Leftist cognition is more reflective than rightist cognition, which is more intuitive. Reflection appears in leftist cognition as irony and metaphor, while intuition appears in rightist cognition as literal-mindedness and a penchant for common sense "facts" as opposed to "theories." Metaphor and irony manifest the leftist talent for separating mental representation from the immediate sensory environment. Irony is a statement that reflects on itself and says the opposite of what is concretely the case ("Nice weather!" said on a rainy day). Metaphor is also a reflection. A metaphor is an image that takes the place of a concrete thing ("It's raining in my heart" for "I am sad"). Each way of speaking draws attention to the representation or image and its difference from the concrete thing it represents. Each is a sign of greater cognitive complexity. Indeed, one could say, with irony begins civilization, and without metaphor, no modern life, if by metaphor and irony we mean reflective cognitive abilities.

Irony and metaphor are mental representational forms with behavioral consequences. Mental representation allowed civil behavior between kin and non-kin to be possible by restraining automatic defensive responses in favor of more sociable communication. It did so by slowing down rapid automatic responses such as

aggression. Irony is a sign of slower cognition because, in order to understand it, one must pause to reflect on the difference between what is concretely evident to the senses and what is implied. Irony deviates from immediate sensory perception and thereby slows responses to what is being perceived. Metaphor operates a similar deviation from what is concretely present to the senses. It replaces the concrete thing with a mental image that impedes or slows immediate responses. Instead of "London is given too much importance in English life," a writer like David Mitchell might paint a picture: "London darkens the map like England's bowel polyp." The presence of irony and metaphor in Jesus' thinking can therefore be taken as a sign of mental representational capacities more inclined toward leftist civility than rightist hostility.

In the Matthew gospel, Jesus demonstrates a talent for both irony and metaphor. He emphasizes the role of mental representation in controlling archaic behavior by making existing laws and injunctions more psychological—more a matter of internal mental states than external, rule-bound behavior. Not only is murder wrong, according to Jesus (echoing Gautama Buddha), but also any anger against others that might lead to violence. Like Isaiah, Jesus promotes a number of leftist traits such as empathy and rejects several important rightist traits such as resource hoarding, callousness, and prejudice. He says that it will be difficult for the rich to enter heaven, so one should not hoard resources. What good does it do, he asks in an ironic metaphor, if you gain the world and lose your soul?

Jesus is at his most leftist in his promotion of empathy. The rightist temperament is characterized by callousness toward the poor. Callousness became adaptive because one could not afford to experience sympathy for others in the archaic environment if one's survival depended on harming them or taking resources from them. Jesus instead advocates accepting harm from others without thought of revenge. Forgive wrongs and show compassion toward those who offend you, he urges. In so doing, he, like his teacher Isaiah, went against archaic nature in order to promote an ideal of greater civility premised on control of automatic archaic emotional responses such as reciprocal revenge. Forgiveness has been shown to accord more with leftism than conservatism. It evidences a flexibility more common in leftists.

The interface with strangers was the most vexed in the archaic environment. At the boundary between people, archaic emotions such as fearfulness, prejudice, and defensive aggression were likely to manifest themselves. Jesus deals with this issue in a leftist manner when he argues that others should be treated as oneself—another way of saying, in archaic terms, that non-kin should be treated as kin. One of his final injunctions in Matthew's *Gospel* regards hospitality. "I was a stranger," Jesus says, "and you did not invite me in."[24] It is better, he argues, to treat others like oneself. Invite all in. Like Isaiah, Jesus advocates a cosmopolitan vision of humanity as a civilization of equals without distinction or hierarchy, what the Cretans or the early Sumerians might have called a city without walls.

We can tell Jesus had an enlarged anterior cingulate cortex both from his teachings and from his behavior. When he chose to preach in Jerusalem, he knew that he risked death. Those with an enlarged amygdala, in contrast, fear more and are thus more likely to hew to conventional behavior, respect rules, and obey the status quo. They score higher for "Conscientiousness" on tests, meaning they are more cautious, conventional, and rule-bound. Jesus, in contrast, was fearless. Isaiah would have been proud of his student. In contrast, the later rightist leader of Rome, Caligula, was renowned for his sadism toward adversaries while being so afraid of thunder that he cowered in his bed each time he heard it.

Like early civilization itself, the religion that derived from Jesus' teaching would be captured by rightists and turned toward authoritarianism, intolerance, and—ironically—anti-Semitism. Much of what passes today for "Christianity" has nothing to do with what Jesus said. The self-styled "apostle" Paul wrote as many as 13 of the books of the New Testament, and he was an authoritarian rightist whose prejudices against women and gays have been solidified as "Christian" doctrine. What passes for Christianity amongst rightwing evangelical Christians in the US especially should more correctly be called "Paulism."

Paul advocates obedience of earthly rulers whose authority, he claims, is divinely ordained. Paul sees bodily life and sexual desire as realms of "wickedness" and "evil." In place of Jesus' call for unselfish behavior, Paul suggests that one can feel "righteous" without effort, just because God gifts "grace" to a select few Christians (who often in later times would claim their wealth was a sign of grace). All one has to do to be a good Christian, according to Paul, is obey secular laws, not be gay, and feel smug. Writing like someone badly in need of a remedial writing course, Paul seems cognitively impaired when compared to the sharp-witted, ironic, and poetic Jesus.

The solidification of the rightist capture of Christianity transpired through a process of canonization that saw the expulsion of leftist texts such as the *Gospel of Mary* and the *Gospel of Thomas* from the canon of church texts. Gnostic gospels were especially targeted. Gnosticism was a more leftist form of the religion based on Jesus' teachings that offered an alternate vision that was more egalitarian, socialist, tolerant, and anti-authoritarian. In perhaps the most significant political change the church "Fathers" such as Paul made, Jesus' statement "Blessed are the poor," which is preserved intact in Gnostic versions of Jesus' Sermon on the Mount, is revised in the official orthodox church version to read "Blessed are the poor in spirit," a meaningless phrase in a sermon that admonishes those who lay up treasures on earth to put aside their treasure. Such changes were necessary because Paul and the first Christian church leaders turned the religion into a money-making scheme, asking dues from their poor followers. In Paul's hands, Christianity was an evangelical scam before such scams were invented.[25]

The Gnostic vision of a cosmopolitan, diverse, egalitarian religion feels much more in keeping with the teachings of Jesus. The Gnostics saw divinity in all things:

> The *righteousness* of God is a kind of sharing along with equality. There is equality in the heaven which is stretched out in all directions and contains the entire earth in its circle. The night reveals all the stars equally. The light of the sun, which is the cause of the daytime and the father of light, God pours out from above upon the earth in equal measure to all who have power to see. For all see alike, since here is no distinction between rich and poor, people and governor, stupid and clever, female and male, free men and slaves. Even the irrational animals are not accorded any different treatment; but in just the same way God pours out from above sunlight equally upon all the animals. He establishes his justice to both good and bad by seeing that none is able to get more than his share and to deprive his neighbor, so that he has twice the light his neighbor has.[26]

It is understandable how such political and philosophical communism would have been upsetting to rightist churchmen like Paul who were invested in a hierarchy of insiders and outsiders, those gifted with grace and those excluded from it because they are gay, dissident, or "wicked." And it is not at all surprising Paul and the churchmen suppressed such Gnostic texts and excluded them from the canon of Christian doctrine.

In another example of wickedness, the Gnostic Epiphanes draws attention to the link between the mode of mental representation and attitudes toward resource distribution. A characteristic leftist cognitive trait, from the Greek enlightenment forward, is an ability to see the world in terms of categories, to abstract from specific concrete instances, and to translate such instances into examples of types or forms. That is the basis of thinking in abstract principles such as justice that make different people seem categorically the same and diminish feelings of prejudice. Though different, all are "human." All fit the same category. Epiphanes notes the connection between such mental representational abilities and a leftist vision of how resources should be distributed:

> The Sun causes food to grow for all living beings alike; the universal justice is given to all equally. In this respect there is no difference between the species of oxen and particular oxen, between the species of pigs and particular pigs, between the species of sheep and particular sheep, and so with all the rest. In them universality is manifest in justice. Furthermore all plants after their kind are sown equally in the earth. Common nourishment grows for all beasts which feed on the earth´s produce; to all it is alike. It is regulated by no law, but rather is harmoniously available to all through the gift of him who gave it and commanded it to grow.[27]

This remarkable passage links the ability to think in an abstract way to the ideal of a more egalitarian distribution of resources. Seeing abstract universality in things (by seeing them as examples of categories or "species") allows one to imagine equality of resource distribution.

In his gospel, which was declared too heterodox for inclusion in the Catholic Church canon, Thomas describes a God who resembles Isaiah's very abstract divinity, who rises above the concrete senses: "I will give you what no eye has seen, and what no ear has heard, and what no hand has touched, and what has not occurred to the human mind."[28] Thomas' version of Jesus is also more politically socialist and more explicitly, like Isaiah, an enemy of hoarding resources: "The one who has found the world (and) has become wealthy should renounce the world." For Thomas, Jesus' vision of generosity is explicitly leftist: "If you have money, do not lend (it) out at interest. Rather, give (it) to the one from whom you will not get it (back)."[29]

Thomas' Jesus is also more open to the inclusion of women than the misogynist Paul. Indeed, in Thomas' gospel, Jesus' solution to the issue of gender is surprisingly "trans" and gender fluid albeit ultimately patriarchal: "Simon Peter said to them: 'Let Mary go away from us, for women are not worthy of life.' Jesus said: 'Look, I will draw her in so as to make her male, so that she too may become a living male spirit, similar to you.' (But I say to you): 'Every woman who makes herself male will enter the kingdom of heaven.'"[30] Clement of Alexandria, a later Gnostic, would go further and contend that Jesus had breasts and was half male and half female.

Finally, Thomas' Jesus espouses a vision of a universally accessible natural revelation (of divine presence in everything existing) that in later times would become the basis for democratic arguments against rightist Churchmen who sought to limit access to divinity to those who obeyed Church doctrine and hewed to Church hierarchy. People needed a bishop to intercede between them and god, much as they needed a king. Both models promoted servility and domination. Thomas' Jesus challenges such rightist ideas and proposes a democratic egalitarian and leftist alternative of universal access to divinity: "I am the light that is over all. I am the All. The All came forth out of me. And to me the All has come. Split a piece of wood—I am there. Lift the stone, and you will find me there."[31]

According to Thomas, if a divine spirit exists, it must exist in all things and in all people universally. One cannot limit it to animate beings of one gender form or to the "righteous" as opposed to the "wicked." To be a logical idea, spirit must be universal. This sense of universality derives from the greater abstract mental representational abilities of leftists. Such universality will become an increasingly important component of leftist argumentation, especially during the 17th century in Europe, when leftist political theorists would argue that all people are created equal and have equal political and social rights. It is noteworthy that the ability to think in abstract categories and the ability to imagine a universal god immanent

in all things enters human history at the same time. Early religion used the tools of what would later be called philosophical reflection to promote civil behavior.

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7

EUROPEAN HISTORY IN LIGHT OF EVOLUTION

> For in ancient times all Hellenes carried weapons because their homes were undefended and intercourse was unsafe; like the barbarians they went armed in their everyday life. . . . The Athenians were the first who laid aside arms.
>
> —*Thucydides, On the Early History of the Hellenes*

A history of the world could be written in terms of mental representation. Increased mental representational powers made civilization possible. Mental representation permitted archaic behavior to be controlled, and it permitted the tools of modern life to be invented. The major conflicts that define much of human history often come down to differences in mental representational ability. Periods of liberal or leftist dominance are characterized by more and better manifestations of mental representational ability, while conservative or rightist-dominated eras witness a diminishment or a collapse of mental and cultural representation. Given how denigrated art usually is, it is odd that art is one of the key indexes of liberal or leftist success. When civilization collapses, so also does art and the mental representational abilities it embodies.

The earliest millennia of western civilization were characterized by an architecture of defense—walled cities that created protective enclosures. One of the earliest, Jericho, has inner rooms to which access can be gained only through a narrow hole. At its gates, archeologists found piles of arrow heads. Walls were a sign that the human population had divided into a group with an enhanced ability for more civil forms of existence and a group guided by archaic emotions and behaviors. It as if the new mutant leftists needed protection from their more aggressive and violent rightist cousins from the countryside.

That may explain why the first leftist experiments in constructing civilizations after Sumer were most successful in isolated areas cordoned off from rightists such as Crete, where the Minoan civilization thrived around 4,000 years ago. Indeed, given that Cretan civilization was seeded by migrations from the East, it is possible that the rightists who took over Sumer 4,500 years ago forced its leftist residents to migrate westward. That might explain the early Jewish story of migration to a new land gifted the Jewish people by God. Semitic language speakers worked as scribes in Sumer. It might also account for the great explosion of science and philosophy along the western Anatolian coast starting around 2,700 BP. Mesopotamia ceased to be a center of intellectual innovation after the rise of the Akkadians and the Assyrians, and intellectual life migrated westward with the peoples who founded first the Mycenaean culture and then the Athenian one. The further iterations of Sumerian intellect benefitted from the Balkan mountain ranges, which kept the steppe people and their genetic legacy out of the Greek peninsula.[1]

Some signs of Minoan leftism are the equality of men and women, the absence of an autocratic ruling elite, the important role art played in everyday life, and social administration by civil servants. Minoan art has been characterized as "full of humanity" and "free from the oppressive magnificence and majesty of the god-king, before whom his subjects are pitiable grains of desert sand before the sun"—a reference to rightist monumental art found in the Middle East kingdoms such as Assyria. Minoan art eschewed convention and tradition. It instead evidenced "unexpected combinations" of color—a sign of the kind of greater flexibility of mind we can now identity with leftist cognition.[2]

There are also ample signs of leftist presence in the Mycenaean period of Greek history, from around 1500 to 1200 BCE. Mycenaean culture was also a product of migration from the East.[3] It encompassed advanced art and architecture and complex social administration. It was destroyed 1200 BCE by an invasion of boat people of unknown origin that might have been a tributary of the steppe invasions of Europe. Like the later dark ages in Europe, the dark age after the invasion at 1200 BCE was characterized by a collapse of mental representational capacities and symbolic abilities that lasted 400 years.

After Sumer and Crete, Athens offers an example of leftists in power in an early civilization. The invasions by the Persians in the first millennium likely continued the harassment that drove leftist migrants westward in the first place. In the 7th BCE, wealthy rightists took over governance of Athens from the popular assembly. They feared the rise of a tyrant of the kind that had emerged elsewhere in Greece who sided with the common people. After an initial attempt to assuage the masses by Solon, a moderate political leader, a civil war broke out. Finally, a leftist tyrant—Cleisthenes—prevailed.

Cleisthenes put an end to oligarchy in Athens and changed how governance was conducted, making it more responsive to popular wishes. Cleisthenes called his reforms "isonomia" or equality before the law, one of the first instances of

leftists evoking an abstract universal principle of equality to improve the conduct of human affairs. He banned archaic kin-based qualifications for office. The tribes were no longer defined by consanguinity and instead were constituted by location. This weakening of archaic kin-band ties was accompanied by another: office was no longer heredity. New office holders were chosen randomly from the tribes. While rightist oligarchs governed in their own interest, Cleisthenes created a new more leftist sense of government for the benefit of all, which he embodied in the oath all governors' took: "To advise according to the laws what was best for the people."

These leftist reforms enabled more egalitarian economic development that in turn paved the way for advances in the sciences and the arts. Plato was a champion of cognitive abstraction who promoted a life conducted in accordance with ideal principles. In Aristotle, one encounters a different aspect of advanced mental representational powers—science defined as the clear, detailed description of the physical world. Sophocles' tragedies elicit empathy for the suffering of others, another sign of greater mental representational abilities. Thucydides made clear that humans were no longer living in an eternal present of fearful concrete perception scanning for danger; rather, they could now imagine the past and construct narratives of human life over time. Callimachus invented a new poetic form—the elegy—that was suited to discrete nuances of feeling and thought (more small triangles). Greek sculpture was characterized by heightened naturalism that embodied a mental representational ability to transfer perception into plastic form.

The Greek victory in the war against the Persian invaders allowed Athens to become the leader of the Hellenic world. Pericles instituted a more democratic form of government, replacing archons, or traditional rulers, with elected officials. He initiated public works to provide employment to the poor, so that the wealth of the state would be distributed widely. Pericles is one of the first figures in history to celebrate generosity toward others: "We make friends by doing good to others, not by receiving good from them. . . . When we do kindnesses to others, we do not do them out of any calculations of profit or loss: we do them without afterthought, relying on our free liberality."[4] Pericles describes the new leftist practice of engaging in pro-social behaviors such as generosity to build networks of affiliation that expand beyond the reach of the archaic kin band. Pericles connects generosity to a sense of appreciation for art and to self-restraint in resource hoarding: "Our love of what is beautiful does not lead to extravagance; our love of the things of the mind does not make us soft. We regard wealth as something to be properly used, rather than as something to boast about."[5] It is a first indication in human history of an awareness of the connection between mental representation and control over archaic behaviors. To see a benefit in such behavior requires a more abstract form of cognition, what Pericles rightly associates with the "things of the mind."

Pericles suppressed rightist oligarchic regimes throughout the Greek-dominated world and imposed democratic administration on other city states.

The resulting "tyranny" made rightists long for revenge. It came from the Spartans, who defeated the Athenians in the Peloponnesian War and returned rightist oligarchs to power in Athens, where they suspended democracy. Civil war followed. Finally, the Macedonians invaded and imposed their autocratic will on the Greeks in the 2nd century BCE.

The Athenian experiment came to an end, but it had witnessed one of the greatest leaps in leftist mental representational activity to date in everything from art to philosophy and science. That leftists emerged in a single niche environment and not in others suggests how dependent leftist gene expression is on the nurture that a niche provides. The schools of Athens augmented cognitive capacities—much as schools in Padua and Edinburgh would later—while the militarized environment of Sparta produced very different, more rightist beings. One thrived on mental representational abilities that served an inhibitory function over archaic behavior and allowed art, literature, science, and philosophy to flourish; the other nurtured archaic behavior in the constant preparation for warfare and left behind no evidence of advanced cognitive activity. The Athenians may have been the first to put down arms because they were the first to take up ideas.

Greek leftism was extended in two directions outside of Greece. One went eastward to South Asia, where the Greeks formed a trading alliance with the leftist Mauryan king, Ashoka. The other reached Egypt, whose existing socialist economy was made even more pro-social under Greek Ptolemaic guidance. It would be the incredible productive success of the Egyptian socialist agricultural model that would feed Rome and stabilize its precarious politics by allowing Roman rulers to gift free grain to the Roman masses.

Simone Weil, the French philosopher, compared Greek cultivation to Roman crassness and decided that things took a bad turn when Rome replaced Greece as the leading nation of the Mediterranean basin. The Athenians were artists, scientists, and philosophers, the Romans thieves, imperialists, and oligarchs. They had no art of their own and had to borrow from Greece.

Rome came into being in the 3rd century BCE through the conquest and seizure of others' land that allowed a class of wealthy, land-owning "nobles" to emerge. After an initial period of rule by kings, the Romans instituted a republican form of government. In the republic, the process for making decisions resided in the hands of bodies such as the Senate and officers such as tribunes and consuls who were elected for terms of one year by Popular Assemblies of all citizens. One reason rightists are fond of republics is that in a republican government, a body such as the Senate consisting primarily of wealthy people has the final say in what happens. The Roman Senate acted as a counterweight to the Popular Assembly and prevented the poor from using political power to seize the hoards of the rich. The Senate relied on a device called the last law of the Senate—the *senatus consultum ultimum*—that consisted of handing power over to a dictator with absolute power. When leftists assumed too much control at one point, a

rightist dictator, Sulla, dealt with them violently and restored oligarchic rule. Such trump-all rules assured government would be limited to ends favorable to wealthy resource hoarders.

The political order the wealthy nobles created assured continued rightist rule until leftists such as Tiberius and Gaius Gracchus appeared on the political scene. Both were military leaders of the 2nd century BCE who were educated by a Greek mother. Tiberius first came to prominence when he negotiated a peace treaty with enemies of Rome rather than pursue a costly war. Later, as Tribune, he empathized with the travails of citizen soldiers who were denied the reward of land that was their due. The wealthy had seized more land than they were legally entitled to. Tiberius proposed a law forcing large landowners to give their excess land to former soldiers and allocating new public lands exclusively to army veterans. The Senate rightists stymied his efforts, but he found ways around them with the support of the Popular Assembly. Frustrated, the Senate rightists murdered Tiberius and 300 of his supporters.

Ten years later, his younger brother, Gaius, served as Consul and also promoted leftist reforms such as ending the power of the rightist Senate faction known as the Optimates to free its own members when caught engaging in corruption. He also ended the Senate's special courts, which the Optimates used to execute supporters of Gaius' brother, Tiberius. And he eliminated the *senatus consultum ultimum*. Gaius chose to live with the poor near the Forum rather than with the rich up on the Palatine Hill. He initiated the building of a network of secondary roads that helped ease famine by making it easier to transport grain, began the distribution of low-cost grain imported from Egypt to the population of Rome with no means test, and arranged for free land for settlers in Roman colonies such as Pergamum. Like his brother, he fell afoul of the rightist Senate faction. They found ways to undermine his reforms, and 3,000 of his followers amongst the poor inhabitants of Rome were murdered. Gaius killed himself rather than be killed.

The struggle between leftists and rightists, Popolares and Optimates, continued in the next century as leftist leaders such as Catalina, Marius, and Caesar pressed the cause of the poor against the rightist oligarchs. Catalina tried to foment an armed insurrection, but he was betrayed, captured, and executed. In a famous Senate debate, leftist Julius Caesar pleaded for mercy for the revolutionaries while Cato, a hero of rightists to the present day, argued successfully for execution. It was a classic instance of the conflict still resonant in our lives between rightist callousness and leftist compassion.

Led by Marius, the leftist Popolares Senate faction took over political power in the 1st century BCE and began to institute reforms. Lucius Sulla, a rightist general, defeated Marius, slaughtered his followers, and as dictator, instituted new laws that favored the rightist aristocracy. Caesar proved more able than Marius both in battle and in the political arena. He seized political power when rightists

sought to thwart the leftist reform movement. By increasing the number of Senators to 900, he neutralized the power of his rightist opponents who could no longer forestall his efforts to redistribute land to the poor. He created a stronger government that curtailed corruption. He devoted government funds to public works that spread wealth to commoners, such as the construction of a giant shopping mall. And in a populist move, he arranged for most debts to be forgiven. He was on the verge of building an enormous library when he was assassinated.

His successor, Octavian, instituted an era of rightist autocratic rule and low tax, free market economic policies favorable to the wealthy. Like the Sumerian conservatives before him and the Russian oligarchs after, he seized public funds that allowed him to transform Rome from brick to marble, to build a network of roads, and to maintain a well-paid standing army to secure the rightist dominance hierarchy. His monuments promoted an ideal of conservative family values, and he frowned on leftists such as Ovid, the inventive writer whose liberal ideas regarding sexual morality earned him exile.

The suppression of the popular democratic processes of the republic that allowed leftist leaders such as the Gracchi and Caesar to come to power led in the post-Octavian era to rule by a rightist wealthy elite. Their ideology was one of free unrestrained resource hoarding without any sense of civic duty to balance the pervasive pro-self behavior. Many sought to avoid paying taxes or sharing the burden of maintaining the civilian army. A paid military establishment emerged that assured the rule of the rightist elite but at great cost to taxpayers and to the sense of shared social responsibility. Corruption became the order of the day, as evidenced in the securing of provisions for the army. All in the route of passage for such materials now took their cut, forsaking the common good for personal gain. By the time the life-maintaining materials from such distant places as Spain reached the army, they were much depleted by corrupt taking.

Roman history has been misrepresented by rightists. According to the rightist account, the good conservative republicans such as Cato the Younger sought to defend "liberty" against "tyranny," which is best represented by Julius Caesar. But rightists consider any civilization-building restraint placed on the "free" expression of archaic survival urges such as resource hoarding to be "tyranny." About Rome, it would be more accurate to say that the rightists who succeeded at hoarding resources—often by taking them from men who had fought long wars to secure those very resources—kept the resources for themselves rather than share them. Leftists such as Julius Caesar and the Gracchus brothers made them share the republic's wealth more equitably. Caesar was a version of Franklin D. Roosevelt, a leftist who was well liked for the help he lent the poor. It is a remarkable testament to the difference between leftists and rightists that Caesar wanted to build a library while the descendants of his adversaries built a slaughterhouse where dissidents, slaves, and animals were killed in public displays of callous brutality.

The fall of Rome in the 5th century CE coincided with the collapse of the achievements of leftist civilization in the West. Mental representational abilities waned. Currency, a leftist Sumerian invention, ceased to operate, as did schools and laws, two more Sumerian contributions. To avoid having to bear the responsibility for paying for a corrupt political regime, producers of goods retracted into self-sufficient economic communities and stopped paying taxes, paving the way for medieval economics. Literary production declined in the last two centuries of the Empire. Artisanal production failed, as evidenced in the decline of pottery-making and of ceramic roof tile manufacture. Homes once again had to be covered in thatch. Cows grazed on the Forum where once legislators gathered. Without cultural transmission through schools, people forgot how to read and write. Roughly half of the inhabitants of Rome were receiving an education by the end of the empire. Suddenly, none were. Without schools, Latin entered a period of diversification and change that gave rise to the various Romance languages. With the overrunning of the urban center by the rural periphery, the higher levels of cognition that education sustained disappeared. Gregory of Tours in his *History of the Franks* noted of the 5th century CE that "In these times when the practice of letters declines, no, rather perishes in the cities of Gaul, there has been found no scholar trained in ordered composition to present in prose or verse a picture of the things which have occurred."[6] Tellingly, art ceased to represent the world with detailed realism, and lapsed into simple flat forms.

With the end of the Roman government, European culture was suddenly voided of signs of enhanced mental representational abilities. Restraints on archaic behavior through laws, schools, religions, and regulatory governmental bodies no longer existed. Such cocoons of institutional and cultural support for civil behavior were one of the greatest contributions leftists made to human life. When they are undermined or disappear, as they did at the end of the Roman Empire, behavior becomes less restrained and more violent. What followed was 800 years of often-times violent rightist dominance in the West.

During the early Medieval period in western Europe, the majority of the population was subordinated to the power of a violent resource hoarding minority. Superstition replaced science. Callousness and brutality were common. Gregory describes it as a time of "the miraculous doings of the saints and the slaughters of nations."[7] The story of Brunhilda is exemplary. Born into a Visigoth royal family, she married into the Frankish nobility and eventually came to rule parts of the Frankish kingdom as regent for her children. Her life is an account of feuds laced with murders. Her brother-in-law married her sister and then arranged for her to be strangled in her sleep because she objected to his habit of keeping mistresses in his court. Brunhilda's husband sought revenge but was himself murdered by assassins. Ruling through her young sons, Brunhilda was a very able reform-minded queen. She set about making the life of the Franks more civilized by repairing

Roman roads and building abbeys that were centers of learning and education. Mistreated by her adversaries and forced temporarily into exile, she took revenge by murdering several opponents. She herself, after a losing battle, was drawn and quartered.

The erosion of cognitive control through mental representation over archaic behavior is evident in figures such as King Childric who was "excessively wanton" and who, "being king of the Franks," used "to dishonor their daughters."[8] Another king, Clovis, conquered neighbors in places like Auvergne, where "a very great many of the people perished."[9] Clovis took "all the treasures of Alaric at Toulouse"[10] and practiced deceptive trickery against adversaries. In one instance, he convinced Chloderic, the son of his rival Sigibert, to kill his father. Then, when Clovis' men came to reward Chloderic with a box of jewels, they asked him to lean over the box, and as he dim-wittedly did so, they battle-axed him to death. Gregory reports that in the aftermath, Clovis "received Sigibert's kingdom with its treasures, and placed the people too under his rule. For God was laying his enemies low every day under his hand, and was increasing his kingdom, because he walked with an upright heart before him and did what was pleasing in his eyes."[11] The confusion of divine and human pronouns in this passage suggests how religion had changed function since the days of Isaiah from restraining archaic behavior to enabling it.

Leftists survived in monasteries, quiet retreats safe from the violence around them, where they could garden, copy endlessly to preserve the classic Latin texts, and add gloriously colorful embellishments such as those in *The Book of Kells*. As in Sumer and Crete, the art of decorative embellishment, which requires refined technical skills and high levels of cognitive ability, was a sign of leftist minds at work. Leftism also survived in Eurasia in Constantinople where learning was encouraged by a leftist emperor, Justinian, and his artist wife Theodora. The government regulated economic life for the common good, and Justinian arranged for the codification of Roman law, creating the basis for modern legal systems. Mental representation in the service of civilization thrived.

The Muslim civilization of the Middle East, North Africa, and Spain preserved the leftist culture of Greece and Byzantium. Baghdad was a center of learning that contained the celebrated House of Wisdom, which had the largest collection of books in the world. The House was founded by Haroun al-Rashid (766–809 CE), a caliph known for his learning and his encouragement and support for the arts and sciences. The famous *Book of a Thousand and One Nights* dates from this period, as do many theoretical and practical accomplishments in science and technology. Scholars worked as public servants and were engineers, architects, and doctors. Learning was a sign of status, and scholars could easily earn a living as translators. Intellectual works from all over the world were acquired and translated into Arabic using an assembly line method and newly acquired paper from China that made copying easier.

The accomplishments of this golden age of learning from the 8th to the 13th centuries CE were manifold, from mathematics to the sciences. Major advances were made in medical science. It was an era and a place where the brain's mental representational abilities were encouraged and nurtured, in everything from books to geometric ceramic tiles that decorated buildings. When the Mongols finally entered Baghdad after a siege in 1258 CE, the Euphrates reportedly turned blue from all the ink from the books thrown into it. While the Arab intellectuals were evolving new forms of knowledge with beneficial uses, Genghis Khan was raping as many enslaved women as he could fit into a day, leaving behind a lasting genetic imprint. But no books, no learning, no science, and no art. The absence of leftism is reflected in the Khan's behavior: the anterior cingulate cortex is associated with the voluntary inhibition of sexual arousal.[12]

The Mongol conquest was an example of rightist archaism in the late Middle Ages. The Mongol Empire from 1206 CE to 1294 CE operated with a clear absence of empathy and a devotion to unprincipled resource hoarding. The Mongols invaded all the attainable lands around them, massacred the inhabitants when required, and stole their possessions. They exercised dominance based on fear, and fear was inspired in those they conquered by the brutal terror tactics of the Mongol armies. The Mongols may have been an iteration of the archaic North Asian genetic legacy that fueled the steppe invasion of Europe 5,000 years earlier.

Western Europe began to emerge from the long period of rightist dominance in the 10th century CE, when trading towns began to form that allowed a new population of urban dwellers to escape the authoritarian rightist dominance hierarchies that prevailed in the European countryside.[13] Cities allowed rural monasteries to evolve into universities that nurtured mental representational abilities and nourished a new leftist intellectual culture that was aided by the discovery and translation of lost Greek and Roman books, especially the work of Aristotle and Ovid. The resurgence of trade created a new class of urban merchants who opposed the power of rightist monarchs and rural feudal lords and who formed new republican enclaves in cities such as Venice.

The Renaissance lasted from 1350 CE to 1700 CE and spanned art, science, philosophy, and government. It was characterized by greater clarity of mental representation, increased realism in art and science, and a widening of the range of civility. Art became more realist, science more accurate, law more secular, and life more civil as biological conservatism slowly lost its hold on the western world.

Italy was the center of the new artistic, intellectual, and scientific culture. The Italian city state form of government offered geographically isolated sanctuaries such as Florence, where artists, philosophers, writers, and scientists could thrive, evolving and expressing their enhanced cognitive powers without fear of reprisal by rightist Church authorities. The artists and intellectuals challenged the rightist culture of the Church while the merchants created new forms of republican self-government. In the hands of leftists such as Francesco della Rovere, Pope Sixtus, the Church itself occasionally became a patron of the new artistic culture.

Leftism thrived in the Humanist intellectual world that emerged at universities such as Padua and Paris. In the late Middle Ages in West Europe, schools fostered, as they always do, more leftist forms of cognition. Students were trained in forms of thinking that made it difficult to justify the superstitious dogmas of religious conservatism. The new leftist humanists saw the world more clearly as a physical object and focused on the human (as opposed to divine) dimension of life. The way art shifts subject matter from religious themes to everyday human ones in the 14th century makes visible the great shift in culture and cognition brought about by leftist thinkers and artists. Their efforts were aided by the rediscovery of philosophic tools such as logical syllogism that undermined the rightist tendency towards dogmatism by demanding that conclusions be justified by reasoned argument. Some of the leading leftist thinkers of the late Middle Ages were logicians skilled in argumentation such as Peter Abelard who evolved a rich new logic for understanding the world through language. At the same time, trained logical thinkers such as Christine de Pizan in *City of Women* sought to set right the misogynist view of women furthered by Pauline Christianity.

That the Renaissance consisted of a resurgence of leftist mental representational abilities is evident in Italian painting. Ancient texts on geometry made Italian painters aware of how to use linear perspective to enhance depth of field, giving rise to more accurate representations of three-dimensional spaces. The paintings of the Lorenzetti brothers in the 14th century CE in Siena depicted buildings as they actually looked for the first time in the modern era. Painting once again consisted of the accurate realist representation of everyday life rather than of superstitious figures and icons that reinforced a sense of the sanctity of all hierarchies. The connection between the new realism of mental representation and the rejection of rightist authoritarianism is clear in Ambrogio Lorenzetti's painting "Allegory of Good and Bad Government," which celebrates leftist post-authoritarian political ideas in highly detailed realist images.

The arts and sciences have political consequences because the types of cognition evident in those cultural realms are frequently corrosive of rightist political and cultural authorities. Greater clarity of mental representation during the Renaissance worked against superstitious religious beliefs and false ideas regarding innate nobility that helped keep rightists in political power. The new clarity of mental representation evident in English Renaissance writers such as John Locke supplied abstract universal ideas such as liberty and equality for challenging rightist mystifications both in the political and the philosophical realm. The ideal of liberty assumed everyone had a natural right to govern their own lives and to participate in the governance of their society, while equality assumed external distinctions of rank or wealth were over-ridden by the natural similarity of all to all.

For the third time in human history, art became an indicator of new powers of mental representation allied with greater control over archaic behavior. Castiglione's *Book of the Courtier* prescribed new "courtly" models of civilized behavior in close proximity to the art of Michelangelo with its detailed realism and the new

science of Galileo with its accurate representation of the physical world free of all religious superstition. Seeing the world clearly meant being able to perform mental representation in a way conducive to greater control over archaic emotions and behaviors. These mental representational developments led to a resurgence of interest in ridding the world of rightist dominance hierarchies and of instituting fair, equitable, and inclusive forms of government. Venice, the home of Castiglione, was one of the first post-feudal, non-authoritarian, deliberative governments in the modern era of human history.

The history of literary representations in Europe from the late Medieval era on demonstrates a deepening of empathy—a capacity that is furthered by reading fiction and is more common in leftists.[14] As one reviews that history, one moves from literary works that celebrate martial violence in the service of dominance hierarchies such as *The Song of Roland* to works such as *The Princess of Cleves* that empathetically explore emotional dynamics on a detailed scale that recalls the refined sense of embellishment in the art of early leftist civilizations such as Sumer and Crete. If martial men are portrayed as deservedly dominant during the period of rightist rule in western Europe, from Octavian to the end of the Middle Ages, women become the agents and subjects of literature as leftists make a resurgence in Europe during the Renaissance.

The changes in mental representational practices during the Renaissance helped seed the leftist Enlightenment in the 18th century CE. The new mental representational styles and the leftist values such as equality and democracy they supported depended on the strengthening of education throughout western Europe. The educational niches in Scotland and Germany especially favored leftists by nurturing mental representational abilities.

Leftist cognitive flexibility is on display in the elegant philosophies of Hegel and Kant, and in the work of Adam Smith, one encounters a new interest in "moral sentiments," the ability to empathize with others' suffering, as well as in new political ideals such as equality. "Man is born free," leftist Jean-Jacques Rousseau famously wrote, "but everywhere is in chains."[15] Such ironic dialectical thinking—which suggested things are not what they seem and questions rightist common sense literal-mindedness—evidenced greater powers of abstraction as well as increased abilities for sympathizing with the suffering of others that allowed thinkers like Rousseau to imagine new political forms that did not depend on authority and domination.

Kant and Hegel set the tone for philosophy during the Enlightenment. Both had great faith in our ability to use abstract cognition to better the world. Focusing on individual ethical decision-making, Kant argued that our behavior should accord with universal rational principles in order to be ethical. Otherwise, it will be driven by our senses and be merely self-interested. It will lack rational justification.

Hegel felt that cognition is essential to building civilization. Everything from art, law, and economics follows a pattern of development from simpler cognitive

forms to more complex ones. A courtroom is the expression of ideas about law and justice nurtured over centuries. It is not just people, wood, and paper; it is infused with rational ideas and principles. Civilization is embodied mind.

The Enlightenment was remarkable not just for its leftist intellectual achievements but also for its leftist political ones. The American and the French revolutions were shaped by Enlightenment ideas. Monarchy was a rightist form of government left over from the Middle Ages and the dominance hierarchies of the archaic kin bands. Hierarchical and authoritarian, it assured inequality of property distribution and subordinated the many to the rule of the few.

The American colonials—a mix of rightist republicans and leftist democrats—were the first to revolt—with the leftists opposing all monarchy and the rightists wishing to preserve it in America—and they established a compromise version of republican government that included some new leftist ideals. French leftist revolutionaries rid themselves of a king and of a ruling aristocratic elite that preyed on a mass of subordinated poor people prior to the Revolution. The revolutionary government managed to spread leftist reform across Europe—creating neo-Sumerian institutions such as a strong civil service—before being defeated by a combined army of Prussian and English rightists. An imperial order favorable to rightist resource hoarders was restored across Europe that endured until World War I.

The Renaissance and the Enlightenment constituted a remarkable period in European history when the rightist reign in the West that had lasted nearly 1,400 years was finally ended. Science was once again welcome and leftist critical reflection possible. Rightist dogmatism and authoritarianism in social ideology and politics ceded ground to leftist flexibility and inventiveness. Leftists succeeded in evicting the church from politics, casting doubt on authoritarian government, and challenging rightist social dominance hierarchies based on skewed resource allocation across the social spectrum. The two major Enlightenment ideas—liberty and equality—eroded hierarchy and paved the way for democracy and socialism.

The defeat of Napoleon on the fields of Waterloo in 1815 marked the end of the Enlightenment as a project of leftist reform. In the aftermath of the Enlightenment, rightists dominated not just the political world of western Europe but also the philosophical one. The mental representational abilities that sustained the Enlightenment had to be discredited. David Hume began the rightist assault on leftist philosophy by casting doubt on the very notion of an abstract universal idea such as equality. He argued that all such ideas were the product of associations and conventions, mere ghosts compared to the hard certainty of positive or empirical "facts": "There is nothing in any object, consider'd in itself, which can afford us a reason for drawing a conclusion beyond it."[16] All the airy-fairy notions of equality leftist Enlightenment philosophers invented are mere words that mean nothing apart from our agreement that they mean something. Take away the agreement, and the universal ideas disappear. Hume noticed leftism's great weakness, the fact

that it is a genotype dependent on niche support, environmental nurture, and institutional artifice. An idea like equality is a mental representation in the brains of leftists that they use to build civilization, but otherwise, it does not exist as a tangible physical object outside of schools, books, and language, all of which are needed to sustain it. At the same time, Hume made a virtue of the rightist cognitive bent towards literal-minded empiricism, a bent derived from the need to scan the horizon for danger in the archaic environment.

In the 19th century, rightists drew heavily on Hume's contention that ideas must be held accountable to positive facts to discredit leftist philosophy. Only what could be seen positively by the mind could be true, according to the new way of thinking. The ideal of "positive facts" proved useful in the creation of new "value-free" ways of thinking purged of all ethical ideas. In the aftermath of the Enlightenment, rightists rejected the leftist demand that behavior be held accountable to ethical principles. Instead, commercial tallying methods measured the "utility" or usefulness of human actions and institutions. Excess resource hoarding might be unethical according to leftist universalist standards, but it possessed "utility" if it could be proven to benefit enough people.

Rightists also constructed a spurious version of science to portray society as the expression of natural laws. If economic inequality exists, it must be the expression of a natural principle. Rightist resource hoarders ruled because nature deemed it necessary for them to do so. No artificial leftist idea of equality could challenge this implacable natural preference for those with social, political, and economic power.

Leftists responded by arguing that all such philosophical notions serve social and political interests. Karl Marx called this "ideology." "The ruling ideas are in all ages the ideas of the ruling class,"[17] he contended. Friedrich Nietzsche went further and contended that positive facts are lies. He believed that we see the world through words and concepts that resemble stained glass windows that impair our ability to grasp reality. In truth, reality is ungraspable using human concepts.

From the Enlightenment on down, the major tension in human life was between leftists committed to abstract formal principles such as democracy, equality, and rights which were designed to expand leftist civilization and rightists determined to pursue concrete archaic survival behaviors such as hoarding and dominance. The fusion of constitutional government and capitalism that emerged in the 19th century in countries such as France, England, and America seemed to make a truce possible between the contending parties. Rightists in this new "bourgeois" order were free to dominate others economically, but the management of society was conducted according to leftist principles of representative government. Democracy was acceptable to rightists so long as it did not interfere with resource hoarding. A "free" economic realm was cordoned off from leftist governmental interference.

Many things contributed to what historian Lawrence Lafore called "the long fuse" that led to World War I.[18] But the actual decision that set the war going

in 1914 was made by two rightists. Prussian generals Paul von Hindenburg and Erich Ludendorff simply decided to go to war on their own. They consulted no civilian authority. They ignored the Kaiser, who was out of town and who favored a peaceful solution. There were causes aplenty for the conflict such as alliances and treaties that obliged rightist empires to support one another as well as long-simmering conflicts over geography. But in July 1914, the rightist Prussian military leaders were uniquely in position to stop or start a war. They chose to start. And the slaughter of a generation of young men began. In the aftermath of the war, leftists Woodrow Wilson and John Maynard Keynes sought to create conditions that would prevent further wars from happening, but they were stymied in their efforts.

In the aftermath of the war, the bourgeois order failed to protect rightists from socialists determined to end resource hoarding and dominance hierarchies once and for all. In response, rightists shed the restraints of democratic government. They turned to force and abandoned liberal political forms. The various conservative fascist movements in Germany, Italy, Spain, and Japan in the middle of the 20th century scuttled the legally regulated bourgeois order and revived rightists' authoritarian ways. The simple luck of having leftists and socialists in power in two of the major industrialized countries saved leftist civilization.

The second world war of the 20th century offered another spectacle of conservatism out of control from the rape of Nanking to the Holocaust. Once again, a single rightist—Adolf Hitler—was responsible for the war. When he sent German armies across the border with Czechoslovakia in 1939, he was seeking to unify the German kin band. He was confronted by a representative of civilian authority who sought to palliate him. Unfortunately, for the 70 million people who were about to die, Neville Chamberlain was also a rightist. He admired authoritarian leaders such as Benito Mussolini, the head of the rightist fascist government in Italy. Like American rightists such as Henry Luce, who twice put Hitler on the cover of *Time* magazine in the 1930s and named him man of the year in 1938, Chamberlain endorsed Hitler's vigorous rightist program of anti-labor union, pro-business, nationalist industrial renewal. The two rightists shared fundamental beliefs even if their methods differed. So, Hitler was allowed to have his way. Six million dead Jews, 27 million dead Russians, and countless other deaths later, he was finally stopped by the combined efforts of Russian socialists and American social democrats.[19]

Leftists, horrified by the experience of conservatism out of control, sought after the war to expand and globalize the regulatory function of government through the creation of such institutions as the United Nations and the Geneva Conventions. But the post-WWII era was also noteworthy for the ease with which rightists avoided honoring those new leftist rules, especially when rightists were in power in such influential countries as the United States. Rightists used the US power base to continue their struggle against leftist socialists around the world using violence and terror.

The dependence of leftism on nurturing niche environments was indicated negatively by the experience of socialist revolutionaries during the modern era. They attempted to lift peasant societies out of the conservatism that usually attends peasant life. It didn't work. In Russia, a small group of urban intellectuals failed to convince an uneducated rural peasantry to become educated urban socialists overnight. The tug-of-war over food resources resulted in famine. In China, misguided attempts to lift a country out of rural poverty through forced industrialization and collectivized farming failed, resulting in death by starvation for millions of rural dwellers. In Cambodia, a small group of electrical engineering students sought to bring instant rural communism to a farming world populated by uneducated conservative peasants who, when drafted into the revolutionary army, became torturers and murderers.

All three movements made a simple mistake of translation that suggested an absence of cognitive abilities suitable for the kind of major remaking of a society they were undertaking. They cited Marx's call to "abolish private property" as a justification for seizing the homes, businesses, and farms of others. But by "private property" Marx meant the appropriation by capitalists of the value put into manufactured goods by workers. He did not mean cars, houses, and businesses. "Private property" is the value workers' labor creates, value that becomes private when it is hoarded by capitalists. Wealth that should be commonly owned because commonly produced becomes the capitalist's sole property. It is rendered "private." By "abolish private property," then, Marx meant "stop capitalists from taking the value workers put into goods with their labor and restore that value and that wealth to workers." Workers should own the value their labor puts in goods. The "private property" the capitalist takes from workers should be abolished. Oddly, by "abolish private property," Marx meant "assure private property," if by "private property" we mean the wealth that rightly belongs to workers because it is the fruit of their labor and their lives.

To grasp that point, you need to read Marx, and few communists, apart from Lenin and Trotsky, both highly educated, very intelligent Jews, did so. The leaders of Cambodia tried to read Marx but failed. They read instead a crib written to Stalin, who lacked a secular education.[20] The leaders of China only read Lenin. If they had read Marx, they would know that by the time of his death, he embraced employee stock ownership plans as a way for workers to get back the value they put into goods for capitalists. So much for abolish private property.

In assessing the communist movements of the 20th century, it is important to understand conservatism as a biological form rather than a political ideology. Biological conservatives live in all societies, even "communist" ones, and they often end up ruling such societies, especially in their later stages after the departure of the original leftist revolutionaries. In its late stages, the Soviet Union was increasingly run by biological conservatives like Vladimir Putin. By the end of the Soviet Union, the Western media routinely described the leaders of the USSR as "conservatives," not noticing that they were using the same term to describe

Western opponents of communism such as Ronald Reagan. What they were acknowledging without realizing it was that biological conservatives can operate either as state communists or as free market capitalists. Biological conservatives are opportunistic regarding principles, and if a state communist society (ostensibly founded on leftist ideas) provides access to a certainty-securing dominance hierarchy, rightists will assume that social form.[21]

Leftists responded to the horrendous acts of violence during the 20th century by creating the International Criminal Court in 2002. But the rightist leaders of several major countries, including the United States, refused to sign because they recognized that they might be held accountable for crimes against humanity. The US President at the time was in fact guilty of the use of torture against enemy combatants. The refusal is indicative of how persistent the conflict is and likely will be for some time between rightist archaism and the leftist effort to foster greater civility by creating institutions that regulate archaic behavior.

Notes

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17. Marx, Karl. *The German ideology*. https://www.marxists.org/archive/marx/works/download/Marx_The_German_Ideology.pdf.

18. Lafore, L. *The long fuse: An interpretation of the origins of World War I*. Long Grove, IL: Waveland Press, 1997.
19. English conservatives led by Winston Churchill aided the allied effort against Germany by engaging in crimes against humanity—the brutal incendiary bombing of civilian targets the purpose of which was to "de-house" the German population. Eighty-five thousand died in a single night, incinerated while they slept by the firebombing. Churchill—no friend to Jews and an ardent enemy of the Russian socialists—also talked the liberal American leaders out of invading Europe in 1943. He wanted to give Hitler time to destroy Russia. Given the speed-up in killing of Jews near war's end, Churchill probably accounted for one million Jewish deaths alone.
20. Kamm, H. *Cambodia: Report from a stricken land*. New York: Arcade, 1998.
21. It has become a commonplace of western conservative argumentation that free market conservatives won the Cold War against Russian liberal state socialists. But it would be more accurate to say that the emergence of Mikhail Gorbachev, a reform-minded biological liberal, brought about an end to rule in Russia by biological conservatives such as Vladimir Putin. That Putin now prefers control over society using a corrupt version of western crony capitalism suggests how expedient and opportunistic conservatives are in regard to social forms such as capitalism and communism.

8

VIOLENCE AGAINST OTHERS

Torture, Genocide, War

On the night of 18 September 1931, Kanji Ishiwara started a war. A colonel in the Japanese Army stationed in Manchuria and a member of the Cherry Blossom Society, a rightist nationalist movement in the Japanese military that believed that Japan had an imperial destiny, Ishiwara had dinner that evening with a delegate of the civilian government. The delegate had come to talk Ishiwara out of going to war. The civilian authorities, his military superiors, and the Emperor were all opposed. But the delegate could not bring himself to pass on the message he bore. Instead, he dawdled over dinner and hesitated, chatting about other things. Then, explosions erupted at the nearby railroad station. The local Japanese Army under Ishiwara's guidance had acted, setting off bombs that were used as an excuse to start a way of conquest against Manchuria. World War II in the East was launched. And it was launched by a single rightist who bridled at civil regulations he felt were too restrictive of his freedom to exercise his superior intuitions in the service of his kin band. The archaic had returned in human history. It did so because it never really went away.

The difference in mental representational abilities between rightists and leftists, which is connected to differences in negative emotion regulation, suggests that rightists would be more inclined to go to war than leftists.[1] The groups' differing attitudes toward guns in the United States reinforce that conclusion. Rightists are more likely to own guns and to condone their use against others.[2] Gun ownership suggests rightists are more interested in exercising violence than leftists and are more capable of imagining themselves doing so. One study that compared radical leftists with radical rightists found that rightists were more likely to justify violence against out-group people.[3] Mass killings by Whites in the US are conducted by conservatives. Some of those killers suffer from psychiatric disorders, but neurogenetic research draws attention to the fact that serotonergic disorders

such as schizophrenia and Massive Depression are caused by, among other factors, the 5-HTTLPR gene polymorphism, which associates strongly with conservative behaviors.

The history of torture, genocide, and war bears out the idea that leftists and rightists variably exercise control over violence. Both world wars of the 20th century were started by rightists. Each war included a genocide against an ethnic minority that was executed by rightists. That the Nazi genocide against Jews was led by rightist extremists rather than by moderates suggests that the distinction between Right-Wing Authoritarian social conservatives and Social Dominance Orientation economic conservatives weakens the perception of rightists as uniformly prone to violence. Given that economic conservatives offer passive support to Right-Wing Authoritarian regimes, however, the moderation might be weak. Ordinary Germans famously went along with Hitler. Donald Trump, a Right-Wing Authoritarian, inspired violent acts against ethnic and religious minorities using the bully pulpit of political office, and American economic conservatives remained silent. That may be the case because SDO personalities are not exempt from violence themselves. London investment bankers do not carry guns, but they do, when in political power, impose austerity measures that reduce life spans.[4] Not quite murder, but equally anchored in a lack of empathy and social challenging pro-self attitudes.

The temperamental and biological difference between rightists and leftists regarding violence and war manifests itself in a range of behaviors from language use to political action. When language use is studied, researchers find that leftists speak of benevolence while rightists speak of security—along with power, authority, and tradition. These rightist concerns fuel violent behavior. Tradition usually delineates an ethnic national identity that has authority and that must be secured using power. Threats to the security of that identity prompt rightists to engage in violence. For example, in Chile in the early 1970s, a leftist socialist government sought to end the domination of society by wealthy oligarchs. The socialists nationalized large land holdings and distributed the land to poor farmers. They took control of the country's natural resources from foreign corporations and put the proceeds to use for pro-social ends such as free milk. They created a consumer economy by providing more money to the working and middle classes. The decline in their wealth and the loss of control over society irked Chile's rightists who, with the help of rightists in the United States, overthrew the socialist government in a military coup. Thousands of socialists were tortured and murdered in the aftermath. Two thousand years had passed since the Gracchus brothers and their followers were murdered by rightist mobs on the streets of Rome. But it might as well have been yesterday as far as Chilean and American rightists were concerned.

In contrast, when socialists took over Cuba in 1959, they began training doctors to be sent around the world to provide healthcare in countries that lacked

medical resources. The socialists who won power in Venezuela in 1998 did something similar. They sent the army into the streets to give out free medical care, provide cheap food, and repair roads in poor areas. They established cooperatives to help the poor launch businesses of their own and to obtain cheap housing. They redirected the wealth of the nation, which largely came from oil exports, to the lower income classes. Life expectancy rose by five years. Rightist businessmen responded by going on strike. They stopped stocking their grocery stores with the necessities of life. They refused to deliver goods to market. Life expectancy fell by a year as a result.[5] Rightists were willing to destroy society and harm others rather than cede control to the hitherto disadvantaged in the existing social dominance hierarchy.

These examples would seem to confirm that rightists are less able, because of a deficiency in mental representational capacity, to control violence. The history of humanity's most violent and inhumane actions—torture and genocide—supports this conclusion.

Torture may have been practiced in the archaic environment in informal ways—the physical torment of challengers to the prevailing dominance hierarchy, for example. But considered as an organized practice of institutional power and sustained cruelty, it is a product of the emergence of rightist imperial states such as Assyria in the wake of the destruction of Sumerian socialism. State torture was invented by rightists to assure dominance.

Assyria was not the first family run empire (the Akkadians likely deserve that award), but it was the most successful. It practiced routine violence against others. Assyrian art offers us the first images of torture. The images were likely meant to inspire fear, but they also probably record real events. In contrast, early Sumerian society was characterized by an absence of violence and especially of torture. The early Sumerian socialists did not wage war against other people. They made beautiful vases, invented helpful cultural tools, and engaged in education and social administration for the common good. With a larger anterior cingulate cortex and enhanced mental representational abilities, leftists are more able to control negative emotions that fuel violent actions. Sumerian art and a peaceful lifestyle were not accidentally related.

After Assyria, the Romans were the next to engage in sustained violence against others. The suppression of leftism in Octavian Rome made rightist domination of life possible on a grand scale. In the Colosseum, violence against others became mass entertainment, with slaves obliged to fight to the death and Christians slaughtered by wild animals. The Colosseum is usually not discussed as a rightist phenomenon, but it came into being under rightist auspices, and it evidenced the diminished empathy characteristic of the conservative temperament. Moreover, many of the early Christians killed there were leftists. After the suppression of political leftism by Octavian, there were few outlets for leftist thought and action in Rome. Ovid's exile meant leftists no longer engaged in

literary production, and no political leaders existed to channel leftist political energies after the deaths of Julius Caesar and Mark Anthony. Before its capture by rightists, early Christianity was characterized by leftist voices such as the Gospel of Thomas. Jesus of Nazareth's preaching, with its emphasis on giving aid to the poor and passive resistance to unjust authority, would have appealed to leftists. Indeed, the very leftist Roman Emperor Constantine legalized the religion and embraced it himself.

By the late medieval period, rightist violence had become institutionalized in the Catholic Church in western Europe. Torture reappeared as a weapon of Church power used to maintain authority and power. As the Renaissance began in the 11th century CE and as leftists introduced new ways of thinking into public discourse, authoritarian rightists in the Catholic Church responded with the Inquisition. The Western Catholic Church allied itself with holders of economic and political power in Europe. A leftist enclave in the Provencal region of southern France during the 12th and 13th centuries took issue with Church dogma and mocked its support for the powerful. The Provencal leftists created a more spiritual version of Christianity and rejected Church authority. The Cathars sought to develop a simpler version of the Jesus religion that allowed for spiritual self-perfection outside the control of the Church.

Dogmatic, authoritarian, and intolerant of dissent, the Church launched a crusade to exterminate the Cathar religion and the Cathars. Inquisitors interrogated anyone suspected of dissent from orthodoxy. Cathar property was confiscated and given to the Church, a practice that increased the likelihood of guilty verdicts. Bone-breaking torture and the public burning of people became common in the region. The Cathars demonstrated their scorn for the material world by walking willingly into the fires. The Catholic crusaders, for their part, massacred with abandon, killing 7,000 inhabitants of a Cathar city on one day alone.

Not every member of the Catholic Church at the time was rightist, but the authoritarianism, inflexibility, and intolerance of the Church would have attracted rightists more so than leftists, who were more likely to be part of the alternative cultural movement in Languedoc that provoked the ire of the church with its poetic celebrations of lesbian love, its soft pornography, and its political satire directed at Church authorities and worldly rulers. That alternate culture was noticeably leftist. The rights of ethnic minorities such as Jews were respected. Women and men were treated as equals. It was the era of "courtly love," and the arts thrived, especially sung poetry in the work of the troubadour and troubairitz poets, many of whom were women.

The dissident culture of Languedoc scorned class distinctions the Church sanctified and rejected Church authoritarianism. Rather than sanction obedience to authority, the troubadours celebrated conviviality, courtesy, and gentility—all leftist forms of well-regulated behavior of a kind one would expect to be promoted by people possessed of an enlarged anterior cingulate cortex.

The enormous literary creativity of the poets suggests a culture that benefitted from enhanced mental representational powers. The Church responded by poking out the eyes of Cathars and making them walk through the countryside in lines to set an example to others.

Torture continues in the modern era to be an instrument of rightists who see themselves as defending "western civilization" against perceived threats from leftists. The fascists of Italy, Spain, and Germany practiced torture against ethnic and political adversaries. In the post-World War II era, French rightists sought to suppress resistance to French colonialism in Algeria using torture. These rightists saw themselves defending the superiority of the White Western Christian world. South America's military rightists of the 1970s received instruction from the French military in how to combat opposition to their rule. Among other things, they learned how to torture.

The informal "dirty wars" in places such as Chile and Argentina in the 1970s took the form of kidnapping and disappearances. Rightist leaders in the US such as Henry Kissinger requested that the work be done quickly so as not to embarrass the US. During the "Night of the Pencils" on 26 September 1976, a half dozen high school students were taken from their homes and delivered to rightist military torturers. They were never seen again. If their fate was like that of others, they were subjected to electrical shocks all over their bodies. The women were raped, sometimes by dogs. They were then drugged, put on airplanes, and dumped while still alive into the ocean. General Emilio Massera, one of the rightist leaders, was so devoted to the cause that he took part in the torture and rape of prisoners himself. Like his French advisors, he saw himself as defending Christian civilization.

Genocide enacts the kin-band animosities of the archaic era. The emotions and cognitive processes common in archaic life—callousness, group bonding, stereotyping, and animosity against out-group people—persist in modern genocide. Because rightists experience more disgust than leftists, they are more likely to infra-humanize others. Not surprisingly, biological rightists play a role in all of the major genocides of the modern era.

Since 1900 CE, there have been eight major instances of genocide. Seven were initiated by rightists citing familiar rightist tropes such as threat, infra-humanity, and infection to justify their actions. Fearfulness and callousness, consistent rightist traits, played a role in each of these genocides, as did archaic animosity against non-kin.

Most of the genocides since 1900 CE were conducted by people with rural roots. Ruralism is important because conservatism is pervasive in peasant life, and greater leftism is often associated with life in cities. Such locations are often dense with schools and with other cultural supports that foster leftist behavior. Peasant life, in contrast, is highly dependent on traditional forms of morality to maintain order. Lifestyle experimentation is frowned on. This is even true of peasant life in a supposedly "communist" country such as South Korea.

The first modern genocide against the Herero people of southern Africa was committed by the rightist Prussians who ran Germany in the late 19th and early 20th centuries. Their largely agricultural region in eastern Germany still conducted economic life on medieval terms. Large landholders owned most of the land, and the peasantry was subordinate to them in all ways political as well as social. It was a pre-modern, rural rightist world.

The genocide of the Herero resulted from a revolt by the indigenous people of Southwest Africa in 1903 against German colonial rule. Germans had fraudulently acquired huge tracts of Herero grazing land and seized Herero cattle as repayment of contrived debts. They planned a railroad to bring in more settlers and intended to force the Herero to live in concentration camps where they could be used for labor. The Herero attacked the Germans and killed approximately 150. The Germans, led by Prussian General Lothar von Trotha, retaliated, defeated the Herero in battle, killing some 3,000, and deliberately forced the retreating survivors into the desert, where most perished after being prevented from reaching water holes. Trotha referred to the genocide as a "race struggle" and said he hoped to annihilate the entire nation of Herero.

The second genocide of the modern era was perpetrated by the Turks against the Armenians. The Turks were the dominant ethnic group in the Ottoman Empire, which existed from the 14th century CE down to World War I. Empires resemble prisons where guards acquire a license, by virtue of the structure of dominance that characterizes relations in the institution, to abuse prisoners. In an empire, rightists similarly abuse minority ethnic groups. After centuries of violating and mistreating Armenians, Turkey was obliged by the European powers in the middle of the 19th century to commit to more leftist forms of behavior such as tolerance for diversity and respect for rights. But the last Ottoman Caliph, Abdul Hamid, was a rightist who subverted the leftist reforms. After suffering massacres, the Armenians formed liberation movements that attracted the ire of Hamid. He created a paramilitary group with orders to kill Armenians. When Armenians protested, they were suppressed, and more massacres were perpetrated against them in the late 19th century.

The Ottoman leadership was overthrown in 1908 CE by a Young Turk Movement that contained rightist nationalist elements. During World War I, three rightist leaders led the country to war. Enver Pasha, an especially racist rightist who was part of the Pan-Turkish movement that resembled the later German Aryan movement in its ambition to unite all members of the ethnos, served as Minister of War. When Armenians showed signs of supporting the Empire's adversaries, he launched a genocide against them. Somewhere between a half million and a million and a half Armenians were murdered. Some were burned, others drowned. Many were forced to march into the Syrian desert without food or water to concentration camps where most died. Women were sold into slavery. Leftists from the West condemned what was going on but could do little about it until the war ended, and by then the genocide was over.

Ethnic groups resemble archaic kin-based hunting bands in that they cohere around blood relations rather than a shared abstract concept such as citizenship, and this was true especially of such groups as the Turks and the "Aryans" who were scattered geographically across the plains of Eurasia. They lend themselves to more archaic emotions such as kin-identification of the sort that served a defensive function in the archaic environment. Such identification with kin frequently is accompanied by strong negative feelings regarding other ethnic groups that are perceived to be adversarial in some way.

That was the case with the attempt to exterminate the Jews by German rightists. The Nazi movement grew out of a pervasive feeling of anxiety and uncertainty in the wake of World War I, when an international economic downturn combined with high reparation payments made life hard for common Germans. The harsh environment nurtured rightist traits such as callousness, fearfulness, prejudice, and kin group bonding. To quell uncertainty, the Nazis imposed an inflexible authoritarian dominance hierarchy on society and directed popular energies against reviled ethnic others. Exalted images of the nation served a palliative function. Xenophobic nationalist representations of the ideal Aryan and of the superior Reich overrode a shaming objective reality in highly narcissistic images that were linked to fused and fissured forms of personal and national identity. All were expected to fuse into the nation and obey the Leader unquestioningly, and all were expected to adopt a hostile, fissured posture towards adversaries.

Along with smaller numbers of Romani, religious minorities, gender minorities, and leftist opponents of the rightist Nazi movement that ran Germany from 1933 to 1945 CE, Jews were forced into camps where they were gassed to death and their bodies burned. Many others, some two million, were shot to death by special teams of German soldiers who behaved like predators and prowled the countryside searching for Jews to kill. The Jewish population of Europe was reduced by two-thirds. Jews who visited Paris before World War II and again immediately after reported being unable to find any of the Jewish friends they had in the city prior to the war.

European leftists in the 19th century began to argue for a fairer distribution of resources and for limitations on resource hoarding. Out of these arguments grew the socialist, anarchist, and communist movements each of which relied on different degrees of governmental control to achieve the goal of a fair distribution of economic resources. The rightist struggle against these aspirations for economic equality began violently with the murder of 20,000 Communards after the suppression of the Paris Commune in 1871, and it continued in several genocides in the 20th century.

The genocide in Indonesia in 1965 was directed both against socialists and the minority Chinese. Somewhere between 500,000 and two million people died at the hands of civilian death squads. The rightist rulers of Indonesia continued to practice genocide in the decades that followed. In 1975, they annexed an adjacent province called East Timor that had recently declared independence from

its colonial ruler, Portugal. Their army invaded with orders to kill civilians, and 200,000 died over the next two decades.

The genocide in Guatemala in the early 1980s was condoned by rightist leaders in the US and directed both at socialists and at the indigenous Mayan population who were seen as supporting the armed uprising against the US-backed rightist oligarchs who ruled Guatemala. Some 180,000 Mayans were murdered by the Guatemalan military between 1980 and 1985.

The genocide in Rwanda in 1994 was triggered by conservative businessmen and rightist nationalists of the Hutu tribe and directed against the majority Tutsi ethnic group as well as leftist Hutus. An estimated 800,000 were murdered. At its root was inter-ethnic competition for resources. Favored by the country's Belgian colonizers prior to independence, the Tutsi had greater access to jobs. The "Ten Commandments" published by a Hutu newspaper prior to the genocide called for civil service and military jobs to be restricted to Hutu. The "Commandments" also emphasized the rightist ideal of racial purity—although Hutu and Tutsi in fact pertain to the same haplogroup and differ "racially" only as a result of mating practices imposed by the colonialists. While it appeared to be a spontaneous populist uprising, the genocide was inspired by a Fox News-like radio station—Radio-Television Milles Collines—which was owned by a wealthy rightist businessman who imported the hundreds of thousands of machetes used in the massacres and provided trucks for transporting murder gangs around the country. If one needs a reason for thinking that permitting the existence of a conservative television network such as Fox that stokes negative emotions such as resentment, bitterness, spite, anger, and hatred against adversaries is a bad idea, the images of thousands of dead bodies floating in a river or lying in fields provide it.

Rightist traits also appear in the eighth genocide, that perpetrated by the Khmer Rouge against ethnic minorities and urban dwellers in Cambodia in the 1970s. Ostensibly "communist," the Khmer Rouge army consisted of young, uneducated, biologically conservative peasant males, and the movement mixed leftist and rightist ideas—Maoist communism, religious moralism, and racist nationalism. Nationalist anti-colonialists were more likely to find support from communist countries such as Mao's China than the US at this moment in history. Anti-colonialists such as Fidel Castro and Ho Chi Minh, who initially wished to embrace American ideals such as Jeffersonian democracy, turned to communism when rejected by US leaders. The small band of intellectual leaders of the Khmer Rouge did not draw on communist ideology because they were biological leftists, in other words. Some of their traits such as nationalism and racism are more common in conservatives.

The Khmer Rouge were as much anti-colonial nationalists as they were communists. Although they wanted to erase civilization and establish a peasant agricultural utopia, they mixed xenophobia and ethnocentrism—the idea of a superior Khmer race—with misunderstood communist ideals such as the desire to eliminate "private property." The Khmer leaders were nationalists because they

wanted to restore Cambodia's past imperial glory and racists because they hated the ethnic Chinese population that played a prominent role in the Cambodian economy. Their animosity toward modern urban life was fueled by conservative peasant moralism that was more reminiscent of Savanarola's Bonfire of the Vanities than Lenin's storming of the Winter Palace. While many biologically conservative traits were present in the Cambodian genocide, especially in the peasant male soldiers who carried out the murders, absent were such familiar leftist traits as empathy, flexibility, and high intelligence. Nevertheless, this genocide was carried out under leftist auspices and using leftist slogans, and that should prompt leftists to reflect carefully before embracing utopian models based on badly understood concepts derived from mistranslations of difficult-to-understand books.

Why are rightists more likely to be the perpetrators of genocide?

One reason is that rightists categorize rigidly. They exclude rather than include, and that reflects a deficient ability at abstraction. They have difficulty with broad inclusive categorization. As a result, they fail to perceive others as similar to themselves. They also identify with national groups founded on the exclusion of out-group people. Fusion implies fission. Rigid national and ethnic categories exclude others who are detested or considered dangerous to the identity that constitutes the group. In studies, categorization of people as members of a dangerous and detested out-group promotes an amygdala response characteristic of vigilance and alarm and an insula response characteristic of disgust and arousal.[6] Disgust, an emotion more common in rightists, allows feared others to be categorized for easy disposal. As much as a physical act, genocide is also a neurochemical action that links weaker mental representational capacities with insufficiently inhibited archaic emotion. With a smaller anterior cingulate cortex, rightists are less capable of empathic mental representation, and with a slightly larger insula, they are more capable of stronger feelings of disgust. The disgust response has been associated with a greater propensity to infra-humanize others and to experience physical arousal when killing them (a finding that recalls the study that found excitement was a common rightist emotional experience).

In addition, rightists, because they identify with group consensus and group morality, have few resources for developing independent positions that allow them to disobey orders issued by group leaders, especially if those orders are framed as a defense against threats to the group. Rightists more readily voice support for the abuse of civil liberties if they are prompted by leaders with statements regarding threats to the nation. These psycho-emotional dynamics are worth heeding because rightists like Donald Trump come so close to the trip wire of genocide. When Trump called for four women of color who served in the US Congress to be sent back home to their countries of origin, he was stoking the kind of infra-humanizing disgust and animosity that leads to genocide. So long as rightists like Trump are allowed access to power, the ninth genocide of the modern era will be waiting in the wings.

Notes

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9

THE PSYCHOLOGY OF POLITICAL CORRECTNESS

"Political correctness" is the pejorative rightist term for the leftist attempt to diminish archaic prejudice and verbal hostility in our lives. Leftists who engage in such work focus on the realm of representation—how we picture and address others, especially others who have been the objects of rightist racism or genderism. Studies show that such leftist efforts reduce racism.[1]

Mental representation is important because it controls archaic emotion and behavior. Rightists are less able to exercise such control, while it is a particular talent of leftists. The movement termed political correctness is, like ancient religion, an attempt by leftists to impart to conservatives the ability to better regulate archaic feelings. By improving people's mental representational abilities, leftists aspire to make that behavior more civil.[2]

Representations have immediate effects on behavior because they produce neurochemical effects in the brain.[3] When we see fear-inspiring images of faces, the amygdala converts dopamine into norepinephrine, inspiring the fear response characteristic of the amygdala. The process is chemical and physical, as well as ideational and emotional. To regulate images, therefore, under the guise of "political correctness," is really to regulate archaic biology. Not to do so is to allow images to ignite archaic emotions such as fear, hostility, and anger.[4]

That explains the violence by rightists against gender minorities, Jews, Muslims, and people of color during the Trump administration. During that time, both Trump and his ally Fox News shaped the beliefs of credulous social conservatives with distorted narratives, a rhetoric of grievance, resentment, blame, and disinformation. When combined with the violent verbal behavior of Trump, those representations resulted in an increase of violence by social conservatives against imagined adversaries who were often non-White.

Images either regulate or release archaic feelings and behavior by inciting or quelling neurochemical responses whose origins lie deep in early human history when our ancestors needed to hate, revile, despise, and verbally harm others in order to survive the competitive life of the archaic kin bands. That explains why small breaches in civility by rightists have such large consequences. Archaic behavior is permanently switched to the "on" position. Because the amygdala never sleeps, any interference with the inhibition of archaic behavior will result in expression. That accounts for why so much of the brain region that is bigger in leftists—the anterior cingulate cortex—consists of spindle neurons that play an inhibitory role in regard to older brain regions like the amygdala that are larger in conservatives. The cingulate cortex is like a concrete container around a toxic nuclear reactor that is still burning.

If images inspire fear responses in the amygdala, how did we evolve an ability to use the anterior cingulate cortex to regulate and control such responses? One possibility is that genes such as NR2E1, which initially built eyes but that now control aggression, were repurposed. It is possible that over time, the link between fear-inspiring image and anxious neurochemical reaction was reversed as environmental pressures prompted the re-purposing of genes and of neuronal circuits. The circuit that connected image to prejudicial response came to inhibit prejudicial responses. The control made possible by that neural connectivity was an evolutionary adaptation inspired by a need to live in a more civil fashion with others in order to survive. As a result, what is now called "political correctness"—the regulation of archaic behavior by images—became a precondition, like art and religion, of civilization.

Rightists oppose political correctness with such vehemence because it constitutes a threat to behaviors that in the evolutionary past assured survival. In the archaic environment, dominance hierarchies guaranteed access to resources, and domination depends on intimidation. In dominance hierarchies, one controls others by using verbal violence to make them fearful, diminished, and suborned.

Political correctness erodes the right to intimidate and therefore implicitly interferes with the power to dominate. That may explain why regulation of hostile, derogatory speech is opposed by rightists with such surprising vigor. More is at stake than speech because such regulation favors the weak and the vulnerable, who must remain subordinate if survival-assuring dominance hierarchies are to be sustained and if the unequal distribution of resources that such hierarchies assure is to be safeguarded.

The archaic character of rightist behavior is suggested by its proximity to primate life where intimidation is common. Ostracism can mean death for chimpanzees targeted by verbal and social violence. In a similar way, rightist intimidation speech makes its targets feel less worthy. By speaking to someone in a disrespectful, demeaning, and insulting manner, one harms their sense of personal value and threatens their social standing. That would explain why a sense of worthlessness correlates with the acceptance of subordinate positions in dominance hierarchies.

These issues are connected to the fused psychology of rightist groups. Members of archaic kin bands experienced diminished boundaries with one another. They fused with members of the band while simultaneously experiencing fissured hostility toward out-group competitors for resources. Rightists continue to define their identity in terms of fused group identities, adopting group reality and group consensus as their own. Simultaneously, their relationships with out-group people are charged with hostility. Donald Trump united rightist Americans while dividing them from Muslims.

Because rightist psychology lacks the mental representational ability to see others accurately and objectively, rightists are less able to regulate archaic feelings and to construct healthy boundaries between self and other. Rightists' difficulty in maintaining clear boundaries in their fused groups leads to the transgression of out-group people's personal boundaries. They presume to invade others' zone of personal safety and to violate their right to be free from injury.

"Political correctness" seeks to regulate such rightist behavior in order to protect others from the harm it can cause. Regulation of violent speech is possible for leftists because of their better mental representational powers. Those powers provide a greater sense of autonomy and self-direction. As a result, leftists feel less identified with group consensus and experience less hostility toward out-group people. They avoid the fusion-fissure dynamic of rightist identity. Their greater mental representational powers allow them to construct clear boundaries between themselves and their world and between themselves and others, who are perceived more accurately and, consequently, more respectfully. Possessing healthy personal autonomy—which means having a better sense of their own personal boundaries—allows them to respect others' boundaries, and it permits them to perceive and acknowledge others' rights.

Rightist writer Ann Coulter is a good example of a failure of healthy self-formation that takes the form of weak mental representational powers. That weakness is reflected in an inability to portray the world accurately or to represent, recognize, and respect boundaries between herself and the world, between realms of objective reality, and between herself and others. Her writing is characterized by excessive fusion with in-groups and acute fissured hostility against out-group people. She dissolves the boundaries between realms of objective reality, confusing collocation with causation and replacing accurate objective description with grievance-based mendacity. She erodes the boundary between self and world by projecting her negative emotions into the world.

The first thing one notices reading Coulter is her unregulated verbal aggression. Archaic emotion pours out unrestrained. While leftists practice irony and metaphor, Coulter relies on cutting sarcasm, a more harmful and demeaning verbal form. She mocks, derides, demeans, and insults. By practicing such uninhibited verbal aggression, Coulter demonstrates weak boundaries between herself and others, a sign of a self characterized by too much melding with one's group in conjunction with too much antagonism toward out-group others who are not

represented accurately in her mind. If they were represented accurately, Coulter would have clearer boundaries between herself and them, she would not transgress their personal space, and she would not be so uninhibited in her expressions of aggression against them. Weak mental representation means weak cognitive control. If she possessed better mental representational powers, she would not confuse her emotional responses with the world, and she would better regulate her negative emotions such as hostility. That would make her less polemical but more convincing. Unfortunately for her, it would also make her a leftist.

The failure of mental imaging to control aggression and to form a healthily autonomous self is clear in Coulter's writing. Engaging in classic rightist social challenging behavior, she crosses boundaries between proper and improper speech, veering often into comments about oral sex or sexual potency that breach the rules of civil decorum. Her thinking is driven by an insider-outsider polarization that is reminiscent of the defensive negative emotional dynamics of the kin-based archaic hunting band where ferocious hostility against outsiders blended with myopic loyalty toward in-group allies. And her mental representations of others are stereotypical and lacking in realist detail. Prejudice always replaces accurate representations with inaccurate, much simpler representations. A complex range of Middle Eastern people thus becomes "Muslim fanatics" in Coulter's mind—a teeming dark horde without nuance of detail. One can imagine Coulter's ancestors standing on the savannah peering eastward and waiting for a giant predator to come into view.

The anterior cingulate cortex allows us to reflect on our own mental and behavioral processes, and its diminished power in Coulter's brain is indicated by her inability to reflect on her own Christian fanaticism and its similarity with the religious position of her adversaries. One study found that social conservatism shares with terrorism a sense of religiosity as well as greater nastiness.[5]

Leftists are capable of more accurate, detailed, and abstract mental representations. That greater capacity for mental representation makes possible more control over archaic emotional processes like hostility and aggression. As a consequence, leftists do not feel a need for fusion with the "nation" or for a fissured antagonism toward out-group people such as Muslims. Those better mental representational abilities make the leftist self-capable of more tolerant forms of thought, feeling, and social interaction that acknowledge diversity and accept difference.

Like rightists in general, Coulter is intolerant of dissent. In the archaic environment, individual survival was inseparable from the survival of the hunting band. Individual needs fused with kin group needs. Loyalty was a powerful alloy then as now. That may explain why Coulter hates with such venom leftists who reflect critically on rightist group behavior or dare to criticize the rightist group leader. Deep in her being, she senses that in the very distant past, such disloyalty was fatal.

Like past rightists such as Ayn Rand who favor concrete over abstract cognition, Coulter claims that faithfulness to "facts" distinguishes her thinking from

leftist thinking. But her "facts" are filtered in self-interested ways that privilege the desire to win over accuracy.

For example, in her book *How to Talk to a Liberal*, Coulter argues that leftists were responsible for the attack on the World Trade Center on 11 September 2001, that resulted in the deaths of thousands. She begins with a history of the lead-up to the attack by Muslim militants and says, "The truth is in the timeline." But her timeline leaves out events that are unhelpful to her argument.[6]

She begins with Democratic President Jimmy Carter "allowing" the Shah of Iran to be deposed by a "mob of Islamic fanatics" in 1979, 22 years before the 9/11 attack.[7] She makes it appear the Shah was a man of virtue rather an illegitimate ruler installed by the CIA in 1954 after a legitimate leftist government was overthrown when it evidenced dangerous socialist tendencies. The Shah, a reluctant ruler who lacked the courage to undertake the responsibilities the CIA foisted on him, was installed at the behest of the British secret service. A rightist, he was for decades a torturer and murderer of people who disagreed with him.

The overthrow of a leftist Middle Eastern government by a rightist American government in 1954 would have been a better starting point for Coulter's list of sources for the World Center attack, if one were inclined to accuracy of representation. But even locating the start of the timeline anywhere near Iran is a mistake. Nineteen of the 20 attackers on 9/11 were from Saudi Arabia. Why would Coulter avoid this simple fact?

Saudi Arabia is an oil rich friend of rightists such as George W. Bush, the US President who used the excuse of the World Trade Center attack to launch an invasion of a country—Iraq—that had nothing to do with the event. Why would Bush attack Iraq instead of the country of origin of the perpetrators? Perhaps because Iraq's leader had tried to kill Bush's father, who had invaded Iraq in 1991, despite knowing Iraq's invading army had agreed to withdraw from Kuwait. Indeed, as Iraq's army retreated up a two-lane road to Baghdad, American jets strafed and bombed them in an atrocity that rightists like Coulter prefer to forget. Yet it was also a contributing factor in the 9/11 attack on the US World Trade Center. After the attack on the World Trade Center, a rational and logical thought process (one using clear mental representations) would have led to an invasion of Saudi Arabia. But Saudi Arabia was a friend while Iraq was an enemy. Opportunism prevailed over principle. A thought process infused with archaic urges for loyalty and revenge led in an inaccurate direction that tore the Middle East apart and resulted in hundreds of thousands of unnecessary deaths.

Coulter mocks leftist President Carter and argues that his response to the 1979 revolution in Iran was weak. During that revolution, the US embassy was seized, and its occupants held hostage. When rightist Ronald Reagan assumed the Presidency of the US in 1980, he demonstrated strength, according to Coulter, and as a result of his courage, Iran released the American hostages taken during the revolution.[8] Coulter makes Reagan seem like a competent hero in contrast to the inept Carter. She does not mention that Reagan cut a secret deal with Iran,

illegally providing it with weapons in return for holding the American hostages longer than needed to help him win the 1979 election by making his adversary, Democrat Jimmy Carter, seem inept and weak. Reagan sacrificed the well-being of American citizens for the sake of political self-advancement. As we know now, in rightist eyes, breaking the law is not a bad thing if it assures personal triumph. Coulter ignores all of these embarrassing details in her account of the "facts."

Perhaps Coulter's greatest fault of representation is her ignoring of the voice of the people of the Middle East. If she paid attention to the statements of Osama bin Laden, the leader of the group that attacked the World Trade Center, she would know that the attack was provoked not by events in Iran but by the decision of a rightist US President to install an occupation army in the Muslim Holy Land, Saudi Arabia, after he entered into an unnecessary war with Iraq in 1991. The war was unnecessary because Iraq had agreed, with Russian persuasion, to desist from its seizure of Kuwait and to withdraw its army. That extra piece of history left out of Coulter's account is why the attackers were Saudi nationals rather than Iranian or even Iraqi nationals. For bin Laden, this bellicose American behavior recalled the behavior of the Crusaders who also occupied the Muslim Holy Land a thousand years earlier.

There are more inaccuracies in Coulter's history, but let's stop there.

When rightists in the 1920s and 1930s began their long march to power in Japan, Germany, and Italy, they began with breaches of civility. They used words to denigrate others. Jews became vermin, Communists an infection, gay and transgender people an impurity that required violent extirpating. Violent speech is the predecessor to violent action because once violent speech is tolerated, the regulatory power of civilizing norms is weakened. It becomes easier to breach norms of conduct.

In recent years in America, we have seen a process similar to the one that occurred in the 1920s and 1930s in Europe unfold. Breaches of norms of civil speech by the likes of Coulter were accepted for well over a decade. A sense that it was acceptable to be uncivil toward others spread and took hold in American culture. Breaches of norms of conduct soon followed. Donald Trump mocked people with disabilities in his campaign speeches—something that a generation earlier would not have been accepted. Once in power, he verbally attacked religious and ethnic minorities, spurring violent acts against them, including mass murder. The line of derivation from Coulter's incivility to those acts of murder more resembles a logical consequence than the line that supposedly connects Jimmy Carter to the 9/11 attack.

Mass murders by rightists that are so common in North America persist because we have not exercised sufficient control over the archaic emotions and behaviors that animate them. Nor have we sufficiently regulated the speech that makes those emotions lethal. We have allowed conservative traits such as callousness, dispositional aggression, and social challenging behavior to become routine and familiar. As a result, a slow genocide on the part of conservatives against

Muslims, Jews, and people of color occurred on American streets in the Trump era. Right-wing Americans routinely murdered people they hated, egged on by a conservative President. The murders became so frequent that they became routine.

A century ago, a brilliant literary theorist named Viktor Skhlovsky wrote a short essay entitled "Art as Technique" in which he argued that effective literature "defamiliarizes" our world for us. Instead of taking the world in which we live for granted, good literature makes us see it as unfamiliar and strange (one Russian word for this process is "ostranenie"—отчуждение—or "making strange").[9] The procedure of estrangement applies especially to aspects of our shared reality that should be unacceptable when measured by leftist standards of civil behavior. For example, Tolstoy in one story describes the whipping of a criminal in such exacting detail that the action described becomes extremely disturbing. Its inhumanity stands out as a result of the strange mode of representation.

We need to do something similar to rightist incivility. We need to make it seem strange by rendering it unfamiliar. Currently, we treat rightist social challenging behavior such as Coulter's as something routine. We make it appear normal, and it comes to be familiar. But given how representation affects neurochemistry, the repetitive unleashing of archaism on the part of rightist pundits like Coulter has deleterious behavioral consequences, the most harmful of which is the commission of mass murder. What we think of as a free speech issue is really a public health issue.

How might we render such behavior strange and unfamiliar?

Underscoring its archaic quality is one way to proceed. A new estranged way of representing conservative behavior so that its archaism stands out would be to describe it in public health terms as Rightwing Spectrum Disorder (RSD). Such disorder results from the non-synchrony of once adaptive archaic traits with the newly evolved adaptive norm of our species, one that is comprised of traits such as benevolence, tolerance, fairness, honesty, pro-sociality, altruism, empathy, generosity, and respect that make archaic traits such as aggression, hostility, intimidation, dishonesty, unfairness, selfishness, and venomous verbal assault appear maladaptive and unhealthy

Conservative traits such as callousness and temperamental aggression were adaptive in archaic times. But new adaptive traits evolved that required control over archaic negative emotions such as fear, anxiety, and animosity. These leftist traits constitute a new adaptive norm of our species. They define optimal functioning and are the standard for optimally healthy behavior. They would not have been selected if they did not offer a survival benefit.

Conservative traits such as callousness, hostility, and verbal violence are increasingly non-synchronous with the adaptive norm that coalesced when leftist traits were selected. That non-synchrony appears with special virulence when leftist civilizing restraints break down and archaic rightist traits manifest themselves in war, torture, and genocide. But they also manifest in rightists' everyday efforts to

erode civility through seemingly routine acts of verbal violence against adversaries, from derision, mockery, and sneering to invective, insult, and intimidation.

A clinical category is also justified because many rightist traits are associated with disruption of the human serotonergic system that results when action by one gene polymorphism—5-HTTLPR—interferes with the functioning of another gene polymorphism—BDNF Val66Met. Conservatism manifests itself as "ideas" or as "behaviors," but prior to those manifestations, it is a psychopharmacological event that diverges from a newly adaptive physiological norm of healthy serotonergic functioning.[10]

Like other disorders, RSD exists on a range from mild to extreme. On the mild side of the range are political conservatives in the US Republican Party who cold-heartedly harm the disadvantaged by approving tax cuts for resource hoarders in the face of rampant hunger and homelessness that could be eliminated with simple social welfare policies of the kind US socialists like Bernie Sanders propose—a basic income, higher minimum wages, free healthcare, fully funded education, and the like. Of this political wing of conservatism, one group of scientists said: "Political conservatives tend to adopt a 'colder' and less sensitive approach to deal with others in as much as they are opposed to social welfare and other ventures to help the needy. Antisocial personality traits might be part of the correlates that enable this kind of political disposition."[11] Antisocial traits include disregard for right or wrong, persistent lying or deceit to exploit others, being callous, cynical, and disrespectful of others, using charm to manipulate others for personal gain, a sense of superiority and arrogance, repeatedly violating the rights of others through intimidation, lack of empathy for others and lack of remorse about harming them, unnecessary risk-taking, irritability, agitation, and aggression. This list matches the behaviors of the Republican Party for the past 50 years, from the arrogance of Republican Presidents Donald Trump and Richard Nixon, both of whom proclaimed themselves above the law, to the physical intimidation of electors to secure victory in a lost election to the routine unprincipled opportunism of conservative legislators.

On the extreme end of RSD stand self-conscious neo-fascists and right-wing authoritarians such as the Proud Boys and the Alt Right who evidence behavior reminiscent of Nazism—a willingness to use violence against ideological adversaries, a yearning for a fused ethno-national community that manifests as racism, and a belief in authoritarian government by an exalted Leader figure as a solution to uncertainty. Social challenging behavior in right-wing conservatives becomes more pronounced the further one moves to the Right, where psychopathic traits associate most with libertarians such as Dominic Cummings.

None of these conservative behaviors—from callousness toward the poor to violence against adversaries—should be allowed to become familiar, yet over the years in America, we have come to accept them as routine—just as in Germany in the 1920s and early 1930s, the verbal abuse of minorities and physical violence against them became routine. Reconceiving of political conservatism and

Right-Wing Authoritarianism as examples of a clinical spectrum disorder would allow us to begin to remedy this situation.

An important tool would be psychological testing accompanied by mandatory psychotherapy. Currently, IQ tests are administered to all children in the US, but psychological tests are not. Were they administered from an early age, we could identify people with right-wing authoritarian tendencies early in life and provide them with care as they mature. Members of what might be called the Dark Third, socially conservative Right-Wing Authoritarians especially, would benefit from therapeutic assistance. They would harm fewer people as a result. Canadian police in the province of Nova Scotia constructed a psychological profile of a right-wing mass murderer after his death. If one had been done when he was young, he never would have been permitted to own a gun, and he would have been obliged to undergo psychotherapy on a routine basis to help him keep his archaic tendencies in check.

Psychological testing and mandatory psychotherapy would help prevent political conservatives, social conservatives, and Right-Wing Authoritarians from doing as much harm as they currently inflict in the form of everything from corrupt political and economic behavior to mass murder. But those steps would need to be supplemental with niche-building practices such as a basic income, mandatory high wages, and free education that assure that economically disadvantaged rightists' worst tendencies toward racial animosity and physical violence are not abetted by poverty, poor education, and abusive familial environments. The right to birth should be subject to licensing to assure that only those capable of being healthy, caring parents are allowed to have children. Right-Wing Authoritarians should be provided from an early age with training in the civil behavior biological nature has deemed most adaptive—empathy, tolerance, pro-sociality, regulation of aggression, and the like. If we catch the Coulters early, we might turn them into civil, behaviorally modern beings whose behavior falls within our species' current adaptive norm horizon. Moreover, a clinical category would justify a prophylactic denial of certain rights to Right-Wing Authoritarians who espouse violence. Given their cognitive deficiencies, they should not be permitted to take part in government or to help choose governors; nor should they be permitted to own weapons. Indeed, a simple test to determine who should not own weapons is to determine who is most interested in owning them.

Such ideas betray current liberal assumptions regarding rights. The idea of rights was invented by leftists as a counter to conservative authoritarianism. But like so many other leftist inventions, rights were repurposed to justify archaic conservative behavior such as resource hoarding and intimidating ideological foes by bearing weapons of violence in public. As the historic fate of post-Civil War amendments to the US Constitution, which were designed to protect African-American former slaves but were repurposed by conservatives to provide legal cover for extreme resource hoarding by corporations that harmed those former slaves and their descendants, attest, leftists invent concepts such as rights to benefit

people; rightists use them to harm people. Such substantive differences between conservative and leftist behaviors require a reconsideration of the philosophy of rights.

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10

LEFTIST FORM AND RIGHTIST SUBSTANCE

Civilization was made possible by a new adaptive talent for mental representation that was lodged more in leftists than rightists. Leftists evolved a greater capacity to use mental representation to regulate archaic negative emotions, to imagine others as similar to themselves, to picture abstract entities such as ethical principles, and to see intangible relations between things. Rightist cognition remained oriented toward the concrete requirements of safety and continued to be utilitarian, expedient, instrumental, defensive, and self-directed. As a result, leftists can see global warming while many rightists cannot. It is not so much that rightists see global warming and choose not to believe in it. They cannot see it in the first place. They lack the perceptual apparatus and the mental representational abilities that would allow them to link tangible events to invisible causes. Similarly, social pathologies elude the cognitive grasp of rightists and remain un-interpreted. The causes of poverty in structural inequality are opaque to them. Rather than conceive of poverty abstractly, linking concrete event to invisible cause, rightists represent poor people literal-mindedly as the causes of their own economic distress.

Leftists more readily see things in abstract terms, and that accounts for their diminished prejudice and lessened hostility towards out-group people.[1] As a result of the talent for abstract thought, all people, regardless of tangible differences, can be treated as equal because they pertain to the same formal category "human." When this new formalist talent first emerged in human history, people could be seen as different yet the same for the first time, yielding a sense of commonality that neutralized archaic antagonism. As a consequence, kin and non-kin were able to form themselves into larger groups—first tribes, then nations. In a similar fashion, leftists are slowly taking us toward a global community embodied in a global government.

These formal mental tools led humanity beyond the stage of hostile kin-based hunting bands and helped them to organize life on broader social terms. As members of a common tribe or as citizens of the same imaginary nation, people could unify despite differences, and old differences that in the archaic world had inspired fear and hostility could be tempered and made less inimical to sociality.

The greater leftist capacity to think in abstract forms underwrites such institutions of civilization as the idea of justice and the principle of equality. The formal idea of justice applies to everyone equally because the "form" has no specific concrete content. Instead, it can contain all, regardless of their tangible differences. Tall and short, broad and slim—all are equal in regard to governmental process and legal protection. All can participate equally in government. Substantive differences of wealth or station are overridden by abstract thinking and formal principles.

Under archaic kin-band auspices, in contrast, friends, cronies, and allies of the dominant male were treated differently from everyone else. Substantive bonds of affiliation took precedence to abstract formal principles. When Rudy Guiliani, a rightist operative of the Trump crime family in the US, was asked about a situation of corruption to which he was linked.[2] He asked his questioner "Are you my friend?" rather than "What principle of ethics is at stake here?" The reflexive responses of the archaic world persist in modern life.

Rightists oppose formalism because it interferes with social dominance by correcting the concrete differences in power and resource allocation that result from the "free" exercise of archaic traits such as aggressions and predation. The aggressive competitive behavior licensed by such "freedom" produces hierarchies organized around skewed resource allocation that favor rightists, who, like Donald Trump, are more likely than poor people to benefit from patrimony—prior parental resource hoarding. Rightists have been especially forceful in opposing the leftist formalist ideal of equality in the economic realm. Socialists propose satisfying that ideal by distributing economic resources equally. Rightists counter by seeking to limit the ideal of equality to an equal right to participate in economic life. All are "free" to take part in capitalism. The distribution of resources that ensues, however skewed it may be, is a fair reflection of talents. The free economic process does not mandate any specific substantive outcome or result. It is a process that is open to everyone and can be favorable to anyone. It thus satisfies the requirement of formalism that it apply equally to all.

These ideas achieved the status of dogma after the 1980s and were anointed with the name "neoliberalism" (although they more rightly should be described as conservatism). What was noteworthy about this free market version of formalism is how well it satisfied rightist biological and psychological motives. Rightists are more competitive, aggressive, and hostile than leftists and are more likely to succeed in an unregulated, predatory economic process. They will hoard resources

more successfully so that the social playing field tilts structurally and historically in their favor as more and more resources accumulate over time.

A better incarnation of the leftist formalist ideal of equality in economic life would be socialism. While free market capitalism conceals the structural mistreatment of others under the guise of formal equality of access to markets, socialism guarantees the conversion of the formal ideal of equality into substantive equality.

The rightist use of formalism to justify archaic behavior in the economic realm suggests that liberal formalism needs to be reconsidered. Such formalism invented democracy—the ideal of equality of access to government—as a counter to rightist authoritarianism, and it invented free markets as a counter to rightist monopoly control over economic life. But with each leftist advance, rightists opportunistically appropriated the leftist invention and turned it to their own uses. Free market economic ideology now guarantees permanent inequality, while democracy brings rightist authoritarians to power.

A more substantive approach is required, one that would take a lesson from science and recognize that leftists and rightists operate from different evolutionary locations, have different biological temperaments, and evidence different adaptive behaviors as a result. They are so substantively different that they should not be treated as formally equal. Their biological differences are too profound.

For example, White conservative police officers in the United States kill people of color at an alarming rate. They do so because such behavior was once adaptive. That it no longer is adaptive is clear to everyone except the police officers and the rightists who condone their behavior, the "shooting cures looting" wing of American conservatism. The employment of the police officers does not require psychological tests, yet if tests were administered, they would find that conservative White police officers, like Right-Wing Authoritarians, are more prone to use violence against out-group people, especially ethnic minorities. Studies of US police find they are more racist than the general population.[3] When asked to monitor social distancing behavior during the Covid-19 pandemic, 80% of White police arrests were directed at people of color.

Leftist formalism prevents us from acknowledging that rightists behave differently from leftists for evolutionary and biological reasons that warrant differential treatment. Such formalism precludes reaching the conclusion that, because rightists are more likely to enter into conflict with racial others in situations of inter-ethnic confrontation, they should be excluded from serving as armed police officers in the field.

According to the principle of formalism, such exclusion would constitute an unacceptable betrayal of the principle of equality. No one should be discriminated against for substantive reasons such as political identity. Substantive differences between Left and Right should evaporate into abstract formal equality. The new science suggests otherwise. The guarantee of equal treatment may require principled discrimination against rightists to protect vulnerable populations such

as racial and gender minorities from harm because rightists' behavior derives more from archaic sources that make for an increased likelihood of violence.

The new science similarly obliges us to reconsider a formalist principle such as freedom of expression. Is all speech equally worthy of protection if rightist speech is rooted in the same archaic emotions that animate rightist police violence against ethnic others? If rightist speech is more likely to inflict harm than leftist speech, should it be accorded the same formal guarantee of unlimited protection from regulation?

The formal principle of freedom of expression assumes there is an abstract equivalence between leftist and rightist speech. Each group's "ideas" are formally or abstractly equal. Both express thoughts that differ merely in the choice of content. The thinking process is the same in each even if it reaches different conclusions. One cognitive wheelbarrow is full of clay, the other of sand, but apart from that, they are the same wheelbarrow.

Science tells us that leftists and rightists do not have the same brains, and their cognitive processes differ as a result. Rightist cognition is more anchored in the archaic past and the old brain, while leftists' cognition is driven by newer evolved brain regions in charge of regulating archaic emotional responses and inhibiting archaic behaviors. Leftists have better serotonergic processing that permits greater flexibility and positive emotionality. In judging whether all speech should be granted the same license, we need to attend to the substantive neurological differences between the two groups.

While leftists are able to engage in mental representation as an end in itself—pure ideation detached from utilitarian ends—rightist thinking favors expedient ends and the limited interest of the self and the group. Derived more from sensory data because of the archaic need to scan the horizon to assure safety, rightist thinking cannot separate from the world of concrete intuitive experience attached to expedient instrumental survival behavior. It is less able to rise to the level of abstract reflection that principled thinking requires. Rightists prefer "I win" to "This action accords with the principle of justice." While rightist thinking is more directed at securing survival through whatever expedient means necessary, leftist thinking exercises greater control over such opportunistic survival behavior for the sake of respecting principles such as fairness that guarantee the safety of all. As a result, leftists are more likely to accord their behavior with abstract formal principles such as justice that assure all are treated equally, while rightists subvert those principles in order to win by whatever means necessary, even if those methods are unethical and harmful to others.

Consequently, not all ideas are equally ideational. Because rightists are less capable of using mental representations to inhibit automatic amygdala-driven emotional responses, rightist ideas are more animated by archaic emotions. The archaic desire to dominate through intimidation will be expressed more forcefully in rightist ideation and speech. That may explain why the targets of antagonistic rightist speech on US campuses find such speech threatening. It is meant to

be so. So-called "snowflakes"—college students who object to having racially-intolerant, homophobic rightist speakers on campus—may simply be canaries in the coal mine of archaic aggression that still courses more palpably through the rightist genotype. It should not be surprising, therefore, to find that Donald Trump's son should be both a hunter of wild game in Africa and a proponent of forcing leftists to accept hostile rightist speech on their campuses. The lingering archaic predilection for hunting is not accidentally connected to the yearning to intimidate adversaries, especially those who seek to regulate archaic behavior that rightists experience as essential to survival.

How can such archaic behavior be regulated in a way that nevertheless respects the tradition of personal freedom that leftists invented as a counter to the right-wing authoritarianism of the past? One possible remedy is licensing, but licensing that takes as its standard the best principles that biological nature deemed adaptive as a means of enhancing civilization by improving human behavior. Those principles might be termed, in contrast to the Dark Triad, the Bright Pentangle: respect, empathy, fairness, truthfulness, and benevolence. Such licensing would assure that rightists like Ann Coulter and the commentators at Fox News who stoke negative emotions such as resentment, anger, and hatred in their audience are held to scientific standards of truthfulness and modern adaptive forms of behavioral civility and nonviolence—the adaptive norm of our species. Speech that stokes resentment, animosity, prejudice, and hostility would be measured according to the Bright Pentangle standard and found unacceptable. Speech that misrepresents the world in order to incite hatred in its audience would be disallowed.

Licensing would also assure that internet trolls who abuse others online and who are by and large rightists are regulated. Mini-Coulters, they intimidate, insult, harass, and disrespect. They try to incite political adversaries to suicide. Their online speech has behavioral consequences. One of them—an "Incel" (for "involuntarily celibate")—murdered 14 young women at a university in Canada. That occurred in a context in which young women are more likely than men to be harassed by rightists online.[4]

One way of curtailing rightist troll behavior would be to require a license before one can enter the internet realm and make posts. If psychological testing has been mandatory since birth, it would be easy to tell who should and who should not receive an internet driver's license. Licensing of both amateur and professional pundits like Coulter would be carried out by a government agency charged with upholding Bright Pentangle standards by assuring speech is nonviolent, civil, respectful, truthful, and fair. Such regulation would purge the ideosphere of archaic behavior that has more than once proved fatal in recent years. Such efforts have succeeded in Canada where Coulter was warned before speaking at universities that she might be subject to criminal charges if she engaged in her usual venomous speaking style.[5] Seeing what was coming, she decided not to speak.

The classic liberal ideal of individual rights needs to be modified to accommodate the substantive reality of rightist trait behavior as science describes it. Because a more archaic version of the species persists alongside a more recently adaptive version, principled discrimination is justified to restrain the potential for violence in the archaic branch. When we regulate the speech of a conservative like Coulter or a media network like Fox, and when we limit media ownership by rightists to one newspaper or one television station, we engage in the civilizing process, initiated 50,000 years ago, of controlling archaic feelings and behaviors that impede the project of building a society purged of the violent kin-band behaviors of the archaic world such as dominance and deception.

Notes

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11

DOMINANCE AND DECEPTION IN ECONOMICS

According to Wrangham and Peterson,[1] dominance and deception are two facets of primate behavior that are evident in human life. When scientists study dominance and deception in humans, they concentrate on aberrant or dysfunctional behavior such as bullying amongst adolescents or on deception as a personal strategy in business negotiations. But dominance can also be society-wide, especially when rightists engage in subliminal group cooperation that resembles the way kin-band consensus operated.

Given the greater proximity of their behavior to archaic behavior, rightists are more likely to engage in dominance. Political authoritarianism usually serves the interests of rightist resource hoarders—with Putin's Russia being the most resonant recent historical example—but it can also enforce conservative moralism in places like the Philippines by engaging in such moral practices as the mass murder of drug users.

Political authoritarianism is not the only form dominance by rightist resource hoarders can take. Control over the economic process in western-style democracy allows rightists to set the rules of economic and social life. Rightist businessmen and oligarchs are free to impose stress on workers in the form of low wages and high prices. Such stress moves populations in rightist trait directions—anxiety, fear, hostility toward out-group people, etc.—favorable to the reelection of rightists to positions of political power. This punch-and-pull strategy allows rightist politicians to continue to impose austerity on the population while nevertheless stoking popular support for rightist government.

That strategy requires deception. Deception is associated with the anterior cingulate cortex,[2] a finding that suggests leftists should be better at it, but one study found that rightists were the better deceivers,[3] and recent research suggests

rightists are more likely to engage in disinformation and the spreading of false news stories.

Deception in favor of economic dominance by rightist resource hoarders is carried out by rightist politicians and by academic economists. Rightist politicians are skilled at offering voters images that deceive. For Ronald Reagan, it was "morning in America," a metaphor that had nothing to do with gutting trade unions so that Reagan's kitchen cabinet of business executives could benefit at the expense of the workers whose unions were destroyed. Social conservatives are more responsive to metaphors than leftists, perhaps because they have a larger amygdala, the seat of archaic emotions in the brain.[4] The slogan "freedom" is the most obvious metaphor rightist politicians employ to deceive a gullible and undereducated population of social conservatives. Freedom offers an image of untrammeled action and unfettered escape. For example, Boris Johnson's image for breaking free of government regulations as a result of Brexit was the comic strip figure Hulk breaking free of his human clothing. Freedom in reality is the policy of exempting business from pro-social government regulations. The Hulk metaphor appeals emotionally to people whose lives feel constrained as a result of the economic and life constraints rightist businesspeople and politicians impose on them. Such metaphors also succeed because it takes effort to do the research that leads to the knowledge that "freedom" in fact means increased deaths for workers in such industries as mining, the regulation of which was more or less abandoned under Reagan. And social conservatives especially are less likely to engage in such effortful cognition if handy slogans like "freedom" are more easily accessible.

Researchers have found that deception and self-deception are intertwined.[5] In order to deceive, one has to deceive oneself into thinking one is behaving morally. In the case of social conservatives, the morality of the kin band, which requires adherence to group norms and group leaders, enables self-deception. One can imagine oneself fulfilling high moral expectations if one condemns unfairness by the media toward fellow conservatives such as Donald Trump or if one anathematizes protestors against wrongdoing by fellow conservatives such as police murder. Self-deceiving deception also allows what is bad for you to appear good for you. A tendency toward moral thinking inherited from archaic kin-band culture allows low-income rightists to imagine their economic pain as sacrifice for the kin band. That explains why so many Trump rightists in the farming industry accepted tariffs he imposed that harmed their businesses; they felt they were making a sacrifice for the larger cause of the kin band.

But rightist politicians also self-deceive. They do so by adhering to moral narratives that endow their actions with virtue and make their harmful behavior seem designed to restore a moral order that has lapsed or become infected. Moderate Republicans in the US who opposed Donald Trump's brand of immoderate incivility anointed themselves with virtue and proclaimed they were following

in the righteous paths of great former Republican Presidents such as Ronald Reagan. Reagan betrayed the US constitutional order by breaking laws passed by Congress in order to financially support the murder of progressives in Central America. In any other universe of ethical value than the self-deceiving rightist "moral" one, he would be considered guilty of crimes against humanity.

Academic economists are no less capable of deception twined with self-deception. They assist rightist economic dominance by producing numerous studies of the capitalist economy that deceptively portray it as rational. Academic communities are as prone to constructing a consensual shared reality that must be endorsed if one wishes to be a member of the group as an archaic kin band. That mainstream academic economists were shocked by Thomas Piketty's *Capital*, which used simple empirical data to confirm that capitalism generates inequality, suggests how pervasive self-deception is in this academic population. Only decades of not looking out one's office windows would account for their surprise.

All models of economic rationality are normative; they posit an abstract standard of ideal behavior or of perfect functioning. The rational standard in economics can take the form of an ideal actor—the "rational man" of economic theory—who always maximizes his self-interest, or it can take the form of an ideal goal such as a rational equilibrium of prices. When all economic actors maximize self-interest, the system's need for rationality is satisfied. When a balance between costs and prices is reached, the system is deemed to be in equilibrium.

Two things trouble this picture of a rational economic system. The first is inequality. If the system were rational, equality, not permanent inequality, should result from the economy. Yet, economic activity under capitalist auspices is incapable of generating equality. The economic system not only produces but also depends on a disequilibrium of incomes. Hoarding of resources at the top end of the social hierarchy depends on austerity on the bottom. Lurking within the deceptive ruse of rationality is the admission that inequality is unavoidable on capitalist terms for reasons that have nothing to do with a reasonable measure such as "individual merit."

The second impediment to rationality is inflation. According to economic theory, prices represent a reasonable balance between people's needs (demand) and the amount of goods produced (supply). People are willing to pay for a good if the price is reasonable (in balance with incomes), and suppliers of the good accept a price if it is sufficient to cover costs. On each side of each transaction, rationality prevails. But the ideal of rationality does not account for permanent inflation. Prices inevitably and consistently rise. Inflation occurs even when labor costs fall as they did when capitalists discovered cheap labor in places like China in the 1990s. That should have reduced prices, but instead it drove them higher. Cars and cell phones made in China cost far more than they did ten years ago.

Why?

Archaic motives, not rationality, drive economic behavior.

In capitalist markets, the prices of goods are determined not by models of rational equilibria but by the mutually antagonistic wills of sellers and buyers. Driving those wills are archaic emotions and behaviors such as callousness, opportunism, and predation. One of the "laws" of capitalist economic behavior—supply and demand—mandates and excuses raising prices in times of scarcity. Such behavior combines callousness (not caring about the effects of our actions on others) with predation (acting against others for one's own benefit). Each participant tries to get as much for himself and to give as little as possible to someone else in return. As a result, economic life is infused with unprincipled opportunism and predatory aggression. It draws on the most archaic aspects of the human temperament. Healthcare in America costs twice as much as care in comparable societies with socialized medical systems not because that is rational but because the predators are unrestrained.

If capitalism were as rationally competitive as mainstream economists claim, prices would fall and remain low. Instead, they rise—persistently. When I first came to America, a Coke was a dime, phone service $5 a month, and cars $2,000. Now a Coke costs well over a dollar, phone service $40, and cars cost $30,000. And they will never cost less again. No one would sell a car for $10,000 any longer because it would be irrational to do so when one could garner so much more.

Mainstream economics assumes the capitalist economy is a rational system in which rational actors engage in rational transactions that produce rational results. The new science of human behavior discourages such illusions. Much of our behavior—especially rightist behavior—rests on an archaic biological substratum that can never be accounted for in formal models of economic rationality because so much of the behavior is characterized by expedient calculation and unprincipled opportunism that is not predictable and not subject to formal rules. Such behavior draws on emotions such as callous indifference and predatory hostility that operate according to contingencies that cannot be formalized.

Because it is focused on finding excuses for the inequality that capitalism produces, mainstream economic theory is blind to the archaic behavioral underpinning of economic life, especially the drive to hoard resources. This archaic drive distorts human economic activity from the outset and precludes its ever attaining a rational balance. Mainstream economics is also blind to the substantial differences of human identity that preclude there ever being a "rational man" on which to base a theoretical system. The ideal of rational economic man who seeks to maximize his utility is belied by the recent science that finds we are quite different from one another, and we have very distinct trait behaviors, some of which are archaic in origin. Rightists are more inclined to be materialistic and to seek possessions, while leftists are less concerned with material goods. Rightists seek callously to exploit others, while leftists are more inclined towards benevolence

and fairness. Social Dominance rightists see life as a heartless struggle for survival that warrants cynical, even unethical business behavior in order to win, while leftists promote the welfare of all and place rules of fairness over winning. Rightists are more given to corruption. When given a chance to save an East African construction company and salvage the livelihoods of numerous people, they used scarce company funds to build a golf course so they could have fun while away from England. Ultimately, they engaged in so much corrupt dealing that they ran the company into bankruptcy. In contrast, a leftist gave away one quarter of his wealth during a health emergency to help health workers.

Because rightist behavior bears a greater legacy from the archaic environment, it is characterized by predation. Predation is evident from the margins to the mainstream of rightist economic life. The selling of bogus insurance policies to gullible consumers is more common in socially conservative parts of the US such as the South. Social conservatives, who are more likely to be credulous because of their lower intelligence, are preyed upon easily by advertisements on rightist Fox News that offer foolish products at high prices. Evangelical Pauline Christian preachers soak social conservatives for all they can while purveying palliative remedies for distress. Disadvantaged country people are not the only ones being victimized by predation. Rightist London bankers manipulated a key bank rate (LIBOR) that was a guarantor of fairness so they could gain millions of dollars in unneeded income, prompting leftist bank regulators of the European Union (EU) to comment that, given how badly its bankers behave, England's departure from the Union may not have been such a bad thing.

Economic life was not always like this. Just as conservatives took over early socialist civilizations like Sumer, so also they took over the early socialist economy. In Sumer, trade initially had a strong pro-social component. The division of labor allowed some to avoid having to produce their own food and guaranteed that those who did not produce food could count on a method of distribution to bring sustenance to their tables from food producers. Trade was more cooperative than competitive. The socialist Sumerians devised the instruments such as currency and contracts that allowed food producers and civil service workers to go their own ways, counting on each other to supply each other's needs using currency and written contracts.

That was a key moment in the evolution of civilization that freed up enormous reserves of labor and intellect that could be applied to the building of institutions such as schools and libraries and to occupations such as teaching and civic administration. Trade—the barter of one good for another or the sale of one good for a token whose value is assured by a shared understanding—was one of the first steps in the building of civilization. Although trade understood as capitalism is today looked on critically by socialists because it is founded on mass production and linked to extreme inequality of incomes, trade initially was a product of the socialist imagination with its focus on pro-social cooperation.

It is significant that currency and contracts arose for the first time in a socialist society without a rightist dominance hierarchy, no reigning group of rightist oligarchs, a fair sharing of land, and a distribution system that assured the well-being of all. The trade early Sumerian inventions made possible required a trait in short supply amongst rightists—trust. Leftists trust, and early Sumerian trading, before it was supported by state power and supervised by laws, required that participants accepted a promise in return for goods. The Sumerians could conduct trade transactions on those abstract terms because their social world was small, and it was supervised by priests and scribes who kept records of transactions. Because the Sumerian invented writing, one no longer needed one's trading partner to be present with the goods he promised to give you in exchange for your money. Writing permitted the abstract idea of future delivery to assume concrete form as a notation on a clay tablet. Marks could bear meaning because the new ability to think abstractly, an ability more evident today in leftists, allowed agreements to exist in thin air.[6]

A commercial order replaced theocratic socialism in the latter centuries of Sumer's existence.[7] The mass production of pottery for sale replaced the handicraft fabrication of single objects. As rightist states conquered and enslaved others, economic life became more a matter of exploitation than cooperation. With production carried out by slaves, merchants could accumulate wealth. The addictive habit of resource hoarding beyond need through the exploitation of the cheap labor of others came into being.

The Sumerian ideal of a division of labor joined to trade still exists, but rightists have perverted its premises. Dominance behavior is, as a result, now the norm of economic life. Workers must accept low pay if business enterprises are to succeed at augmenting the resource hoards of investors. The goal of economic life under capitalist auspices can never be that everyone's well-being is addressed. Many must lose for some to gain. Resource depletion at the bottom end enables resource hoarding at the top.

In an alternate socialist economy, the goal would be that everyone receives from enterprise a reasonable income sufficient for well-being, prices and wages are arranged to assure that goal is achieved, and resource hoarding beyond reasonable levels is disallowed. The goal would be the well-being of all.[8]

Notes

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12

IS SOCIALISM ADAPTIVE?

The Future of Homo Sapiens

Two-hundred thousand years ago, conservatism was the biological norm of our species, the highest adaptive achievement—what one had to be in order to survive. But the world changed, and humans—some, at least—evolved. Leftists became the new adaptive norm. They evolved new traits such as inventiveness and pro-sociality that were beneficial to everyone's survival. If leftists had not been so experimental and pro-social, our species might have disappeared. It still might. A study that extrapolated from current rightist policy positions modeled a future characterized by intense pollution, extreme unemployment, and rampant plutocracy—a second Middle Ages with more soot and less chivalry.[1]

The accomplishments of the leftist genotype are visible everywhere—only we do not assign leftists credit for creating them. We have assumed undifferentiated "humans" invented wheels and schools and laws, but we now know that was not the case. Leftists alone had the cognitive abilities, the genetic architecture, and the pro-social disposition. Rightists were too busy pursuing short-term pro-self behavior favorable only to themselves or their kin.

When leftists first evolved, Africa had just survived a long drought. A recent ecological catastrophe blackened the landscape, curtailing the food supply. Rightist traits were suddenly at a disadvantage. Others gifted with new cognitive abilities such as empathy and imagination fared better. And their skills proved helpful to everyone. They created a form of life that was entirely new—a larger social unit consisting of kin and non-kin. Tribes replaced small kin-based hunting bands. Cooperative hunting made food gathering easier. Better mental representational abilities allowed storytelling to transfer norms for living in large communities from one generation to the next, and those norms curtailed archaic behavior and forged new more civil forms of life.

As their talents and abilities improved over the next millennia, leftists became the new biological norm, the highest adaptive achievement of our species. They alone were capable of taking steps to found the first civilization at Sumer.

That it was socialist is significant. Studies show that socialists are the most intelligent amongst us. Intelligence is an adaptive tool that has helped our species cope more flexibly with environmental adversity. While conservatives were using force to attain dominance, leftists made science possible, and science gives us the power to withstand diseases that might otherwise wipe us out. It gave rise to complex governments that regulate behavior for the common good. Like science and government, socialism is an adaptive strategy. It designs a more sophisticated program for running an economy than the old capitalist one which relied on archaic behavior and emotions such as callousness and predation.

If we wish to know which direction to take as a species, we should follow the signposts evolutionary biology provided when it evolved away from the larger amygdala and toward the larger anterior cingulate cortex, away from archaic survival behavior premised on mutual predation and toward more civil forms of behavior, away from conservatism and toward leftism. If there is a logic to evolution, the conclusion to which it logically leads is that leftism and socialism should supply the principles and ideas for both a government and an economy of the future.

Key to the success of that effort is the provision of sufficient levels of care to quell archaic anxieties that diminish cognitive capacity, interfere with prosociality, and make democracy a dangerous sport. The best way to do that is to create a sustaining and nurturing economic environment that provides certainty and security to all.

How might such an economy be built?

Economies assume axioms that usually are not discussed, and an essential axiom in capitalist economies is that income for labor must be less than income for owners.

Economic activity should increase the difference. That is the purpose of capitalism from the perspective of capital owners—to create a difference in incomes from economic activity.

But increasing the difference also produces increasingly severe inequality, as Piketty notes.[2]

Inequality results in massive deficits of nurturance—both physical and emotional. Those deficits give rise to personal pathologies and social dysfunction. Archaic traits in both social and economic conservatives such as temperamental aggression, callousness, deception, dominance, predation, and competitiveness become staple features of "normal" human conduct.

How might that situation be changed?

Governments must assume the power to determine the axioms of the economy, and those axioms must be shaped by social, psychological, and emotional

standards rather than strictly economic ones. Instead of "making wealth," the purpose of economic life would become "making well-being."

Well-being would have several components:

1. Physical well-being. Everyone should live lives free from violence. All should have access to free medical care, healthy food, and exercise. Standards of measure might include longevity, BMI, rate of pathology, and physical health.
2. Emotional and psychological well-being. The ability to live a happy life should be guaranteed to everyone. That would include assistance forming relationships, acquiring communities, and living in a psychologically healthy manner. Standards of measure might include the elimination of suicide, the number of social contacts, and measurable psychological health.
3. Economic well-being. All should have a sufficient income to assure access to housing, sustenance, and a healthy lifestyle. Standards of measure might include job satisfaction, educational level, and happiness.
4. Ecological well-being. All should live in environments conducive to healthy living, and the physical environment should be maintained in a state conducive to sustaining human life. Standards might include pollution indexes and measures of global warming.

In regard to the economy, a new axiom for enterprises should be: everyone's income must rise at the same rate if an enterprise is successful. For that to occur, the income of labor should be set as a percentage of the total income generated by the enterprise. The more the enterprise succeeds, the more everyone benefits.

For example, the 165 billion in US dollars that Apple Corporation has hoarded overseas would be distributed not only to investors and stock owners but also to employees, including those at manufacturing plants in China, using stipulated percentages.

None of these goals can be achieved unless the balance between government and economy is changed. Currently, the norm is that the economy is left alone unless harm results, and economic actors are free to do what they wish so long as obvious rule-breaking does not take place.

In the new economy, law would suffuse economic life. Economic enterprise and transactions would still be conducted as they currently are, but the axioms governing economic activity would be legally stipulated as would the goals of economic processes.

A first step is to mandate the value of money. Value must be determined by law, not through bidding by private actors.

That can be carried out on the national level, but it would be more ideal to do so on a global level. Global government would mandate a stable monetary value for a single global currency based on the prices of a basket full of goods on the international market. Those prices would themselves be fixed in relation to incomes.

A stable value for money and fixed prices for goods would make it easy to regulate salaries, wages, and incomes so that they could be synchronized with prices in such a way as to guarantee universal well-being. Wages and prices would be shaped to be in harmony with each other in such a pro-social economy.

Enterprises would not determine pay and income alone as they do now. They would be assigned pay levels using stipulated percentage rates.

Several tools propose themselves for eliminating extreme inequality.

One is currency reversion.

Every 20 years, a new currency would be issued and all current wealth converted into the new currency.

At that point, it becomes possible to eliminate extreme inequalities using differential conversion rates. If x is the rough equality target, then current wealth in excess of it would be reduced to some reasonable addition to x. The same would be true of wealth far short of x. It would increase by a reasonable amount till it approaches x.

The same tool could be used at the enterprise level. Enterprises that can afford to pay workers only amounts below the level dictated by law could have the wages of workers supplemented by government subventions until the mandated level of income is attained.

Another tool is the establishment of minimum and maximum limits on wealth. Because a legally regulated economy in which actors are not "free" to raise prices or lower wages would not experience inflation, the supply of money can be expanded. A minimum basic income for all would be possible.

A maximum limit for both held wealth and annual income would discourage speculation, which harms healthy economic functioning by making wealth extraction a priority. Many enterprises have been destroyed in the past 50 years in the US by economic speculators who hold too much wealth and use it to purchase enterprises, evacuate them of value, and render them useless. That wealth, once reclaimed by public servants, can be put to much more productive, helpful, and healthy uses.

A well-regulated, steady-state, fixed-price, and guaranteed income economy in which prices are certain and incomes sufficient to assure well-being would allow an abundant money supply to be created that would assure that everyone could live well. In the past in Rome during the reign of Diocletian and China during the Tang dynasty, attempts to regulate prices or to print money as needed failed because of inflation or the defection of producers from markets. They stopped making and selling, or they raised prices to unreasonable levels.

This danger could be addressed by requiring that all enterprises obtain a license to operate that would be renewed every five years. That would assure enterprises operate in keeping with the pro-social rules of the economy. If enterprise owners defect, as producers have done in Venezuela in an attempt to scuttle socialism, they would lose their license to operate.

Again, the new economy would only work if government and law are preeminent over capital owners and operators of enterprises in every essential aspect of economic life from determining the value of currency to setting wages and allocating incomes between owners and workers.

The consequences of this change in how we conduct our economic lives would extend to evolutionary genetics. Guarantees of sustainable living such as a basic minimum income, universal healthcare, subsidized housing, and free education would diminish uncertainty and attenuate the usefulness of rightist traits such as fearfulness, callousness, competitiveness, cheating, deception, dishonesty, hostility, and predation. Human life would enter a new phase, one no longer characterized by systemic stress and pervasive anxiety that has the effect of diminishing the cognitive abilities of social conservatives especially and making them prone to such pathologies as Trumpism. After the Great Recession of 2008, when many lost their livelihoods, membership in the "Very Conservative" sector of the US population jumped from 35% to 42%. After a decade and a half of prosperity, that number had fallen back to 31%.[3]

Human economic interaction would no longer be determined by archaic emotions and behaviors. The uncertainty and anxiety that creates a constant hum of distress in people's lives would be replaced by a sense of confident security and predictability regarding the future that would permit the expansion of creative enterprising activities now stymied by the risk and fear of failure. Economic life, rather than making people's lives subject to the chance vicissitudes of archaic violence in markets, would provide security regarding survival and certainty regarding the future. Such certainty and security would allow social conservatives especially to think, feel, and act more flexibly, to live safely outside of dominance hierarchies, and to experience true freedom of action for the first time, a freedom that now is limited to those with hoarded resources.

We could cease to accept the necessity of suffering and embrace the enjoyment of the experience of life—our scarcest commodity. Such a change from scarcity to abundance would, over time, change the human character by making it less conservative and more civil. The motivations for the numerous acts of violence and deception that people engage in to obtain scarce money such as theft, larceny, and fraud would be mitigated.

Studies find that scarcity diminishes generosity in humans, while abundance increases it.[4] A good analogy is the different societies of chimpanzees and bonobos who live on different sides of the Congo River. The chimpanzees side lacks resources, and the effects on chimpanzee behavior and social organization are palpable. Chimpanzees live in dominance hierarchies and are aggressive amongst themselves and competitive or even murderous toward outsiders. Bonobos live in a resource rich environment and resolve conflicts by mutual grooming and frequent copulation (which studies find increases generosity).[5] The lesson would seem to be: foster abundance and you foster a different way of thinking, feeling,

and behaving. You create the circumstances for evolving a more generous, pro-social version of the species.

Such changes affect gene operation. For example, the short allele variant of the 5-HTTPLR polymorphism of the SLC6A4 gene, which is associated with traits linked to rightists such as racial prejudice, fearfulness, and distrust, is moderated by relational security.[6] In a similar way, social supports such as maternal care were found to moderate depression.[7] Pleasant touching of the kind bonobos engage in regularly activates the anterior cingulate cortex, which makes behavior more flexible and encourages empathy.[8] With the provision of a comforting context and a caring environment to everyone, the negative effects of a rightist economic regime organized around resource-hoarding and predatory competition would be reduced.

What kind of government would achieve the goal of creating a pro-social economy?

If we think of government as a complex task requiring advanced cognitive skills, then it becomes easier to imagine how and why it might be better conducted by well-educated and professionally trained public servants than by amateur politicians. Why professional public servants rather than politicians elected democratically? Politicians are not trained to govern, and they serve limited local interests rather than universal or global ones. That is the nature of democratic representation—both its virtue and its flaw. Orrin Hatch, a rightist US politician, made sure the "health supplement" industry was not regulated in the same way other medicines are because it was in the interest of those he represented. The supplement industry is headquartered in his state. Joe Lieberman, a rightist from Connecticut, was the one vote that prevented America from adopting a government-run healthcare system similar to those in Europe and Canada because it was in the interest of his constituents not to do so. The health insurance industry is headquartered in his state and stood to lose a lot of money from universal healthcare.

Public servants are different. They are disinterested. They represent no particular democratic constituency, so they serve no particular group's interests. They represent no one and everyone, and as a result, they are able to consistently apply the same universal norms and principles to society.

Democracy does not allow for such consistency. It stages an alternation between rightists and leftists that recalls the wise woman of Sumer who said, "You go and carry off the enemy's land. They come and carry off your land."[9] Leftists build institutions that make life more civil, improving life for everyone; rightists tear down all that leftists build up in the hope that archaic survival behavior such as competitive aggression and predation that generate dominance hierarchies and that are more favorable to their genotype will prevail. Leftist Barack Obama moved to end decades of unjust mass incarceration for Blacks in America with programs that improved education for convicts returning to society. Rightist Donald Trump cancelled the efforts once he took power.

Under the formal rules leftists invented, all members of a society have an equal right to participate in democracy and to choose legislators and governors. But the new science tells us that not all potential legislators are equally qualified cognitively to manage society for the common good; neither are all equally equipped to choose political managers in a way that will benefit society as a whole.

Automatic biological responses make rightists choose their kin band over society. As a result, they are less likely to favor policies that benefit others at their expense. Their primary urge to safeguard resource-hoarding will leave them blind to the needs of others and incapable of picturing the needs of society as a whole. Their cognitive limitations will not allow them to see beyond the rim of the self or over the walls of the kin group, and their emotional limitations will not allow them to empathize with others. Leftists, given their very different biological make-up, which provides them with a greater ability to control archaic pro-self urges for pro-social ends and to abstractly picture the whole of society, are more likely to govern in the interests of all.

Leftists invented democracy as a counter to rightist authoritarianism—the legacy of the archaic dominance hierarchies. But democracy allows the least adaptively intelligent and the least psychologically healthy amongst us—social conservatives and right-wing authoritarians—to choose governors and to serve as governors. That is the lesson of Trumpism. It would be much safer if government were in the hands of well-educated, highly trained public servants and were founded on the best leftist and socialist principles that we as a species have been able to evolve—rationality, universality, equality, fairness, human rights, the rule of law, secularism, the preeminence of science, etc. Public servants guided by such principles would avoid the corruption rightists in government are prone to. Donald Trump used government for personal ends. Jair Bolsonaro, the right-wing leader of Brazil, fired his police chief for investigating criminal behavior by Bolsonaro's sons. Nikolas Sarkozy, the former rightist leader of France, was put on trial for corruption. Marine Le Pen, another French rightist, was found to have misused government money. Italian rightist Enrico Berlusconi foundered on charges of corrupt dealing. Helmut Kohl, the long-time rightist leader of Germany, fell from power when found to have engaged in corruption for many years. The rightist Christian Democrat governments in Germany and Italy in the post-World War II era all ended with corruption scandals. At one point in America, rightist governments, from Nixon to Bush, routinely ended with convictions and began with pardons as each succeeding group of aspiring convicts had to bail out the last and then be bailed out by the next.

China currently comes closest to a society run by educated professional public servants who are selected according to ability.[10] The European Union, with regulatory institutions that are some of the best in the world, is another example. One disadvantage of the Chinese system is that measures of intellectual ability do not detect those with Social Dominance Orientation (a dog-eat-dog vision of

life lacking in altruism). People with SDO can be numerately intelligent while being simultaneously unethical. That may help explain the persistent problem of corruption in the Chinese civil service despite its high intellectual standards for advancement.

The EU has the advantage over China of democratic accountability, which coheres with current standards of modernity and assures legitimacy. However, with an educated, post-agricultural population of urban moderates and leftists who offset the population of rural rightwing populists, Europe can count on democracy not to tumble Europe back into the conservative archaism of the past (although central European countries like Hungary run by rightists pose a challenge to this assumption.) Once China's peasants (who comprise half the total population) are provided with a modern niche and raised out of poverty, China's government will be in a good position to loosen the controls it currently exercises on its population, start practicing democratic accountability at all levels (not just at the village level), and open up its ideosphere to all voices (with the exception of its version of the Dark Third of hardcore conservatives).

Currently, the EU improves capitalism rather than prepare the way for a more advanced, more socialized economy. Nevertheless, the EU allows us to imagine a global government with strong regulatory powers that would bring such a new socialist economic form into being on an international scale.

A first step would be the creation of a World Governance Organization akin to the World Trade Organization. Its purpose would be to begin removing conservative archaism from human political life by assuring that governments act in ways that are helpful rather than harmful to their people. Governments would be held accountable to principles such as procedural justice and the duty to promote general well-being instead of resource hoarding by a small oligarchic elite. It would no longer be possible to manipulate national political systems for self-interested ends as Putin has done in Russia. Such rightist practices as the suppression of minority voting in America or the monopolizing of a political system by one family in Saudi Arabia would be outlawed. Monarchies would be abolished and replaced by popular participatory governments. The goal of the WGO would be substantive: to end rightist corruption and authoritarianism. The WGO would encourage a movement toward greater reliance on professional public servants charged with promoting universal well-being and away from reliance on amateur politicians who serve private interests at odds with the common good.

Imposing good governmental norms on the world as a whole would only be a first step. Ultimately, nations themselves have to disappear and be replaced with a single Global Government. As residues of the kin-based hunting band, nations are incubators of rightist emotions such as patriotism and xenophobia that lead inevitably to war. Often based on fallacious ideas of consanguinity and fueled by institutionalized fear and hostility, they exist in a potential state of violence against one another. If the project of civilization consists of the slow diminishment of the role

of archaic behavior in human life, then the future project of civilization-building must dissolve nations and replace them with larger administrative entities. The ultimate goal would be a single Global Government. Such a global organization would convert nations into meaningless armament-free regions. Only the Global Government would have the right to own weapons. Russia would become what the state of Rhode Island is today—a cute place to visit with no power to inflict harm on others apart from indigestion.

There are several simple analogies that allow us to see the virtue of this idea. A city like New York would not function if each borough were armed to the teeth and had the right to go to war against the other boroughs. The same is true of a federation such as the United States. If Rhode Island could invade Connecticut because many residents of eastern Connecticut are of Rhode Island descent, the federation would not function. Nation states are similar; their claim to a right to exercise violence against other nation states does not outweigh the greater good of the whole globe and of the entire human population. Armed nation states must disappear and be subsumed into a more universal governmental entity that has the sole privilege to maintain an army. A global government would be able finally to embody and enact such universal principles as rationality, fairness, and substantive equality on a global scale.

But how would such a government be run? The European Union continues to rely on the democratic model according to which each national population chooses representatives by voting, and the representatives legislate for them. In Europe, rational leftists outnumber archaic rightists in sufficient numbers to assure that democracy does not become dangerous to the institutions it supposedly maintains. In the US, social conservatives outnumber leftists by 40% to 25%, and the result is Trumpism, which did damage to US governmental institutions and resulted in the deaths of numerous people by right-wing murder.

As humanity moves forward, it may be necessary to reconsider the prominent role we assign democracy in the management of public affairs. We would not hold elections to staff hospitals and emergency rooms, and we would not allow them to be staffed by people who disbelieve in medicine, have no training in how to practice it, and think less or no care is better than intensive care as a cure for illness. Government is essential to the building of civilization, and it should only be staffed by people who are both believers in government and cognitively capable of exercising it. A simple rule of political health should be: one should not allow someone with no faith in medicine to practice medicine. The same holds true of government.

The problem with democracy is demography. In America, democracy allows the least intelligent to empower the most corrupt. Because social conservatives have lower cognitive abilities, democracy should be modified to assure the damage they can inflict on society is limited. Recent science makes clear that it would be wise to exclude right-wing authoritarians especially from government and

from the process of choosing governors. Through psychological testing from an early age, it would easily be possible to determine who they are.

Whatever means are adopted, the important thing to consider is that biological rightists have natural dispositions at odds with the goals of civilization (largely because civilization has always been a leftist endeavor of imposing regulation on conservative archaism). If they are allowed too much say in the project of civilization building, that project will move backward rather than forward, toward archaism rather than civility. Future government cannot be founded on a dubious formal assumption of equality that is belied by the most rudimentary science. It cannot assume all are equally capable of the kind of cognition the management of large complex organizations requires.

The same is true of economics. The rightist formal idea that universal equality of access to markets is a sufficient justification for an economic system regardless of actual substantive outcomes must give way to a model in which economic policies are assessed according to how well they achieve real material well-being for everyone.

A disinterested civil service overseeing economic life would mimic the top-down control that the anterior cingulate cortex exercises over the amygdala by inhibiting predatory economic behavior and replacing it with more civil and pro-social forms of economic interaction. Much of what passes as "normal" in current capitalism, such as keeping worker earnings low to keep investor income high or subjecting workers to authoritarian control in the workplace, would be banned. The purpose of the new economic narrative would be to provide everyone with the ease that plentiful resources now make available to only a few.

When we engage in such projects of institutional reform, we are not only shaping our world; we are shaping ourselves. That is the lesson of modern genetic science. By diminishing harshness in our economic environment with institutions such as a basic income, we create an environment less likely to encourage gene expression favoring conservative callousness, just as over time, our teeth sizes diminished and our bodies became more gracile as human life became more civil. The basic income has already proven effective at increasing well-being.[11] But equally likely is the possibility that by preserving a harshly predatory economic environment that inspires high levels of anxiety, we diminish the adaptive usefulness of traits such as empathy and pro-sociality while damaging our cognitive abilities. The choice is as much regarding what kinds of humans will be fabricated by different future environments as it is between contending economic ideologies.

A glimpse of these possibilities is suggested by studies that show the effects of stress on political behavior. One study found that leftists revert to rightist behavior when threatened with thoughts of death.[12] Test subjects were asked to imagine their own deaths and to describe what they thought would happen to their bodies at death. The resulting heebie-jeebies made the leftist test subjects tilt in a much

more rightist direction in response to a questionnaire regarding hot button issues such as capital punishment and abortion.

Rightist attitudes are no less susceptible to influence and modification. Studies show that racial intolerance can be diminished with increased cognitive activity. Prejudicial attitudes change in response to prompts that require prejudiced people to think more reflectively.[13] Being asked to reappraise responses on the reflection test reduces the number of rightist responses. Thinking a bit more slowly makes rightists a bit more leftist.[14]

When rightists and leftists argue over what kind of niche environment should be built for humanity, they are really struggling over the future identity of the species. A fear-inspiring economic environment of the kind rightists favor prompts the expression of competitive aggressive traits because such traits guaranteed survival in the distant past when rightist traits first formed. A nurturing environment of the kind leftists wish to build fosters more pro-social behaviors by prompting different kinds of gene expression. If recent science is to be believed, simply by quelling anxiety in a systematic way, we would increase trust, promote generosity, and augment cognition.[15]

What this should tell us is how important it is to create an economic environment that provides care and security to everyone, and especially to those low-income social conservatives most vulnerable to the casual callousness of the capitalist world. It will not be possible to build a fair, more just world until the basic emotional vulnerabilities of that segment of the human population are addressed. A fundamental rule of life is that fearfulness is augmented by terror, and terror is fostered by economic insecurity. That is why a first goal of a Global Government of the future should be the provision of economic security to all. Only then will it be possible to diminish the influence of the archaic conservative residue in our lives.

Imagining a future purged of archaism is one way to move forward, but it is quite another to deal with ruthlessly opportunistic, no-holds-barred, no-principles-respected, tooth-and-claw, norm-defying, social-challenging conservatives in real political situations like Britain (as anyone who tried to prevent the de-civilizing action of exiting the European Union realizes) or America (where little needs to be said apart from one word—Trumpery.) Indeed, America understood as a political project of constitutional government is itself a product of such behavior on the part of rightists.

Conservative Alexander Hamilton invented America as we know it through opportunistic chicanery and unprincipled bullying. Initially, America in the aftermath of its revolution against they-who-shall-not-be-named was organized as a loose confederation of independent quasi-nations called "states." The absence of a strong national government rankled conservatives, especially the wealthy families into one of which Hamilton married after the revolutionary war. They held a large amount of the government bonds that had financed the revolutionary cause because they had speculatively bought up the bonds from revolutionary

war militiamen at steep discounts. Wealthy bondholders stood to profit handsomely, if only taxes could be collected by the states to pay the bonds. But states like Rhode Island and Pennsylvania balked at making poor rural farmers pay rich urban merchants. They resisted taxation. They could do so under the Articles of Confederation.

Those Articles contained a revision clause, but states like Rhode Island had to agree to go along with any revision. And Rhode Islanders, true to their tradition of rebellion against conservative authoritarianism initiated by Roger Williams in the 17th century, refused.

Hamilton talked a few allies into side-stepping the Articles of Confederation and writing an entirely new Constitution. (Rhode Island did not take part.) He then used hectoring and bullying tactics to get the Constitution approved by New York, where it almost failed. One provision provided for a strong national government that would assure collection of taxes and payment of Hamilton's friends' bonds. The Constitution, given Hamilton's hand in formulating it, was a rightist's dream. It assured a social elite would stymy change, and the Constitution itself would be almost impossible to revise.

How might leftists deal with such a situation?

"Constitutional legislation" is one possible method. Such legislation would specify how the Constitution should be interpreted to be in step with the adaptive norm of our species. For example, a "Bill of Rights" was appended to the original Constitution after Thomas Jefferson, the strongest leftist voice at the time, returned from France where he had been working while the Constitution was written. One Amendment—the second—provided for a right to bear arms. It did so because militias were needed to make up the nation's army. Rightists like Hamilton wanted a British-style standing army to maintain social order, but leftists like Jefferson were opposed to standing armies because they required taxation on rural farmers. The revolution had been inspired by a tax of just this kind. Britain demanded that the colonialists pay for the French and Indian War with special taxes. That explains why the Constitution contains a provision that bars a standing army by stipulating an army can only be funded for two years—a stipulation ignored to this day. The right to bear arms guaranteed by the Second Amendment thus had a specific military purpose, the need for in its own words "a well-regulated militia." It was not meant to license mass murder by rightists. A piece of constitutional legislation could as a result justifiably dictate that the right to bear arms only apply to arms used for militia purposes such as the National Guard, a modern version of a revolutionary era militia.

A similar piece of constitutional legislation might specify that certain kinds of voting require a substantive interest in the issue at hand. Only those with a substantive interest in an issue could vote on it. Women alone, for example, would be allowed to vote on issues of specific pertinence to their lives such as pregnancy termination.

Rules for weighing votes could also be legislated as a means of undoing some of the damage the Constitution inflicts. Currently, for example, the Constitution stipulates that a state with a small rural population has the same voting power in the Senate as a more populous urban region. This generally means that a small group of conservatives can thwart the will of a much larger group of leftists since conservatives tend to live in rural areas in the US. The Constitution assigns each Senator one vote, but it does not specify how the votes will be tallied. A tallying rule might stipulate that an additional weight be assigned to votes from states with large urban populations by multiplying more populous state votes by anything from 1.25 to 10 depending on the population differences.

The Trump experience has made clear that constitutional legislation is needed to limit the expansive concept of executive power Hamilton succeeded in adding to the Constitution. (He initially wanted a monarchy.) Trump refused to honor subpoenas from the Congressional branch during a judicial process of impeachment brought against him. It was as if the criminal defendant in a trial assumed the right to dictate which witnesses should be called against him.

In this instance, constitutional legislation would mandate that all officers of the government, including the Executive, immediately obey subpoenas issued by the Congressional branch of government or be immediately subject to legal penalty without appeal.

Other constitutional legislation might notice the absence in the Constitution of any stipulation regarding the number of justices on the Supreme Court. Liberal Julius Caesar neutralized the power of conservatives in the Roman Senate by increasing the number of Senators from 600 to 900. Increasing the number of justices on the US Supreme Court from 9 to 15 by adding six leftist justices would help assure that the damage conservatives do to civilization can be limited in future years.

Ultimately, of course, the most successful solution would be to do what Hamilton did: ignore the present document and write a new Constitution that saturates the economy with laws to assure that prices are reasonable, incomes sufficient, markets non-predatory, and basic human needs met universally.

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CONCLUSION

Conservatives like to summon the myth of a single human nature to make it appear that behavior they endorse such as callous economic predation or gun violence is an unchangeable feature of human life that leftists cannot remedy. Current science shows us instead that our nature is at least double if not multiple, and that it is highly variable and context dependent.

Our "natures" can either be predatory, fearful, and aggressive or conciliatory, well-regulated, and civil—either Ann Coulter or Stephen Pinker.[1] We have so far chosen to let the archaic rightist side dominate our lives. It suffuses economic life, and it taints political life. But just as we brought other forms of archaic behavior under control using schools, laws, and abstract principles, we can bring archaic economic and political behavior under control using cultural, economic, legal, and political instruments such as a well-regulated socialist economy and a global government. The result would be a world guided by leftist principles of care and nurture, rather than rightist emotions and behaviors such as callousness and predation.

Getting there will be difficult so long as rightists see a survival advantage in preserving archaic behavior and opposing the spread of civility. Democracy may be the greatest impediment to civilization because it gives rightists a say in what the future direction of civilization should be. Always looking to the past, rightists are incapable of imagining a future purged of archaic behaviors such as resource hoarding, prejudicial animosity, and dominance.[2]

Diminishing the role of rightist archaism in human life will be difficult. The amygdala cannot be removed from the brain, and as a result, archaic behavior cannot be purged from human life. We all have the potential to lapse into archaism.[3] In stressful situations, we can all be predatory, opportunistic, and prejudiced. But

hope is justified by the cultural institutions, especially schools, that leftists have used to make human life more civil. Human culture since the Enlightenment has witnessed an increase in empathetic imagination that is evident in the history of literature especially. It demonstrates that progressive change is occurring. That it occurs in the realm in which leftists are more likely to excel—mental representation—is instructive.

Rightists will not shed archaism easily. That is the case because their behavior is rooted in evolutionary biology rather than political ideology. Nevertheless, the new genetics suggests our environmentally sensitive genetic program responds to environmental prompts. Inflict trauma on someone, and their children will bear signs of trauma. The converse is as true: make the application of good consistent over long periods of time, and the genome will modify in response—if current evolutionary theory is to be believed. If being fed more royal honey means the difference between an ant larva becoming a queen rather than a worker, then nurture can regulate nature, and we should take advantage of that.

Rightists have a survival interest in preventing us from finding out if that is the case. They prefer a beneficial incivility favorable to their survival interests in which the "freedom" of raw nature prevails over the institutional restraints of well-governed civility. But we now know why, and we know that the best way to deal with rightists is to quell uncertainty in their lives by providing them with a nurturing niche environment that instills a feeling of safety, certainty, and security. Conservatism can be deprived of its most harmful effects, but it will take the creation of new institutions such as a basic income, universal healthcare, guaranteed housing, non-authoritarian workplaces, income and price regulation, and universal access to capital.

It is tempting to think of rightist archaism as an evolutionary residue that should have been deleted by natural selection as more adaptive leftist behavior evolved. Once, rightist traits were adaptive, but the environment that fostered those traits changed, and rightist traits have become increasingly maladaptive. In an interconnected world, one group's decision to overheat the planet affects—and endangers—the lives of everyone.

But if leftist traits are more adaptive, why didn't those traits sweep through the human population, replacing the traits of their maladaptive siblings?

There are several ways to account for the persistence of conservatism. One explanation is that the genome is hedging its bets. Both warriors and intellectuals assure survival at different times in different ways, so both are needed.[4] If one genotype does not survive adversity, another will—especially if its traits are distinct enough to elude the selective cull that annihilated its sibling. For this theory to be true, however, rightists and leftists would have had to co-exist from the very onset of *Homo sapiens*, and that was not the case. Leftists would not have lasted long in the archaic world where rightist traits such as fearfulness and competitiveness were first forged. If the giant hyenas did not kill them, the Trumps would.

As one Trump supporter said of an African American protestor he punched in the face at a campaign rally: "Next time, we might have to kill him."[5] It is doubtful Trumps were kinder to leftist adversaries 200,000 years ago.

Another possible explanation for the survival of both political genotypes is that the adverse circumstances that prompted the leftist variation into being did not last long enough to cull rightist traits, resulting in a soft rather than hard genetic sweep.[6] Rightist traits may have been less adaptive in the new, more challenging life situation in Africa, but the climate soon returned to its previous norm, eliminating the stress and ending the cull. Rightists survived. If the environmental stress had lasted longer, it would have had a much more severe effect. *Homo sapiens sapiens* might have gone extinct and been replaced by the leftist *Homo sapiens sapiens sapiens*.

Another explanation for dual survival is that leftists created a less violent, more civil world, so that all humans, not just those capable of adapting to adversity, survived. Contradicting the logic of natural selection, which winnows old traits from new, many survived the adverse environment that brought leftist traits into being despite not being leftist.

Another possible explanation for dual survival is that the appearance of leftists resulted in the reproductive isolation of the two major political populations. Leftists and rightists stopped dating. Genetic sweeping in subpopulations has been an important force in recent human evolution, more important than sweeps in entire populations, and neuronal development (including brain development) has been one major area of variation.[7] Such limited sweeping of cognitive traits especially would have furthered population segregation through assortative mating. The appearance of castes in early human civilization may have been both a sign of such segregation as well as a contributing cause. Tough-minded merchants and priestly professors were no doubt as mismatched for dinner parties then as they are now.

An additional possibility is that the population explosion made possible by the invention of agriculture increased the retention of unfit genes such as the short allele variant of 5-HTTLPR.[8] Authoritarianism is a throwback to archaic times that favors the least cognitively advantaged. Egalitarianism draws on a wider range of talents for achieving survival success while being more cognitively demanding. But with the increased population made possible by climate improvement, maladaptive behaviors such as authoritarianism were allowed to persist and even thrive. Selection was stymied by an excess of food and an absence of adversity.

It is also possible that rightists have been around for so long that their traits are more hard-wired into the genome than leftist traits. Conservatism is anchored deep in the brain's core and is as essential as breathing. That would explain why leftists revert to rightist traits when threatened, why the leftist genotype is more dependent on niche support, and why epigenesis is more prevalent in leftists. Leftism is a fragile construct build atop a more archaic base, much as the cingulate cortex is wrapped around the amygdala and the old brain core. Unlike

conservatism, which is rooted in archaic physiology, leftism is more dependent on niche institutions and cultural tools such as education, law, and government. And that accounts for its historic fragility. It easily is erased and disappears when rightist archaism asserts itself as it did at the end of the Roman Republic and more emphatically at the end of the Roman Empire. In contrast, conservatism is always there, a base level genetic program ready to express itself whenever leftist civility topples.

The fragility of leftism makes it all the more important to see conservatism clearly and to understand it scientifically. Had World War II been won by the rightists who ruled Germany, Japan, and Italy, our world would look very different. Jews, who have made such important contributions to civilization, would not exist. Human rights would be annulled. The rule of strongmen like Trump and Putin would be the norm. Women would be subordinate to men. And a small class of wealthy plutocrats would rule over a permanent underclass through uniformed proxies with little tolerance for deviance or dissent. Torture would be common. And leftists who spoke up would, like Jamal Khashoggi and Anna Politkovskaya, be murdered with the blessings of the conservative strongmen.

Angela Merkel is held up as an example of a more benevolent rightist—an exception to the likes of Hitler, Putin, and Trump. However, her punitive behavior toward the countries of southern Europe when they needed financial help to survive an economic crisis caused by rightist economic policies was classically conservative—mean, racist, and callous.

The Greeks had been trying to get away with soft socialism in the midst of a long era of "neoliberal" predatory capitalist behavior that culminated in the 2008 global financial disaster. After that disaster, leftist governments in places like Iceland put the guilty bankers in jail and provided financial assistance to common people harmed by the bankers' predatory behavior. In contrast, Merkel coddled her banker cronies and insisted on the imposition of a regime of fiscal austerity on Greece that killed socialism and increased suffering. Her callousness was justified by racist stereotyping of southern Europeans as lazy and irresponsible.

A few years later, Merkel's supposedly nice version of conservatism was edged out by Donald Trump's harsher version redolent with archaic fear, incivility, and aggression. But the difference between Trump and Merkel was quantitative rather than qualitative, one of degree rather than kind. Neville Chamberlain, another benign rightist like Merkel, acquiesced to his kinsman Adolf Hitler and propelled the world toward war and Holocaust, just as American rightists acquiesced to Trump. They did so for a familiar rightist survival reason: it was opportune to do so.

Perhaps the greatest consequence of the division in our species that I have described in this book is that we face a choice that is more categorical than we have imagined because we are more different from one another than we have cared to admit. We exist at a hinge of history. On one side is a schoolroom in

which humans submit archaic emotions to regulation for the social good. On the other is the savannah where those emotions are indulged in a free-for-all that leaves some strong and secure and others deprived and defenseless. The constant clamor between these two visions of human civilization prevents us from seeing the evolutionary significance of the choice we face. But see it and see it clearly, we must.

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FUTURE WORK

The Center for the Study of Conservatism

It is surprising that a comparative study of Left and Right genomes has not been conducted. It is possible to predict some of its findings. In addition to DRD4–7R, leftists are likely to possess the Val variant of BDNF Val66Met (which codes for behavioral flexibility, positive emotionality, resilience), OPRM1 A118G (which codes for plasticity and the ability to benefit from family environment), and COMT Val158Met (which codes for altruism, aggression regulation, and resilience).

The short allele version of 5-HTTPLR is likely to be present in conservatives. It codes for a range of emotions and behaviors, from fearfulness to aggression.

The work done so far predicts that methylation will increase as one moves from Right to Left.

Science has begun to bring conservatism into focus in a way that underscores the non-synchrony of conservative traits and the requirements of a complex civilization. Given the danger conservatism poses to that civilization, it would be wise to establish more research institutes devoted to the study of conservatism. Currently, only one exists at the University of California, Berkeley.[1]

Such a center might conduct studies to determine if social conservatives are more susceptible to depression. And a study needs to be conducted of abstract cognitive abilities in leftists and rightists. Leftists should be the better abstractors. A related study should be conducted of "literal-mindedness" in conservatives.

Finally, more refined studies of differences amongst economic conservatives, political conservatives, and social conservatives are needed. Education makes a difference, and often economic conservatives (who sometimes are

socially liberal) are more educated than social conservatives. The attitudes and behaviors of economic conservatives will be different from those of social conservatives. It is likely Dark Triad traits will manifest more in political and economic conservatives than social conservatives, who are more victims than victimizers.

Note

1. https://crws.berkeley.edu/.

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