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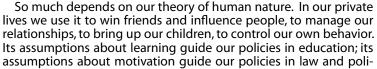
The Blank Slate

by Steven Pinker, Harvard University

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Steven Pinker is the Johnstone Family Professor in the Department of Psychology at Harvard University. For his book, The Blank Slate: The Modern Denial of Human Nature, the Society for General Psychology awarded Dr. Pinker the William James Book Award for 2003. The following essay, based on his invited address at the 2005 APA convention, draws on material in the book.

uman nature is a topic of perennial interest, because everyone has a theory of human nature. All of us have to anticipate how people will react to their surroundings, and that means that we all need theories, implicit or explicit, about what makes people tick.





Steven Pinker

tics. And because the theory of human nature delineates what we can achieve easily, what we can achieve only with effort and sacrifice, and what we cannot achieve at all, it's tied to our values: what we think we can reasonably strive for as individuals and as a society.

Because of this tie to values, it should come as no surprise that for millennia, the main theory of human nature in our intellectual tradition was tied to religion. Indeed, the Judeo-Christian religious tradition has a theory of human nature encompassing many of the phenomena that today we allocate to the subject matter of psychology and biology.

For example, the theory of the mind in the Judeo-Christian tradition is a modular theory, positing that the mind consists of a number of separate faculties, such as a capacity for love, a moral sense, and a capability for choice, or free will. Though our free will is not the effect of any prior cause, it has an innate tendency towards sin. There's also a theory of perception and cognition in the Bible, namely, that our faculties keep us in touch with reality because God is no deceiver, and he designed them to give us an accurate picture of the world. There's even a theory of mental health: that psychological well-being comes from accepting God's purpose, loving God, loving our fellow humans for the sake of God.

The Judeo-Christian theory was based on an interpretation of particular events narrated in the Bible. For example, the doctrine of free will is grounded in the story in which Adam and Eve were punished for eating the fruit of the tree of knowledge, implying that they could have chosen otherwise; therefore, free will exists.

Today, no scientifically literate person can believe that the events narrated in the book of Genesis actually took place. That means that there has been a need for a new theory of human nature, one not tied to fundamentalist interpretations of the Bible. In my book *The Blank Slate*, and in my talk today, I suggest that the standard secular theory of human

nature that's taken its place is based on three doctrines, each of which can be associated for mnemonic purposes with a dead white European male.

he first doctrine is the one that gave the book its title—*The Blank Slate*—conventionally associated with the English philosopher John Locke. He didn't actually use the metaphor of a blank slate in his writings, but he did invoke a similar metaphor. He wrote:

Let's suppose the mind to be, as we say, white paper void of all characters, without any ideas. How comes it to be furnished? ... To this I answer in one word, from EXPERIENCE.

That is the doctrine of the blank slate.

The blank slate was not just an empirical hypothesis, but it had a moral and political import in Locke's time, as it does today. It implied that dogmas, such as the divine right of kings, could not be treated as self-evident truths that just grew out of the structure of the brain, but had to be *justified*, by experiences that people share, and hence can debate. It undermined the hereditary royalty and aristocracy, who could claim no innate wisdom or virtue if their minds started out as blank as everyone else's. And by the same token, it undermined the institution of slavery, by holding that slaves could not be considered innately inferior or subservient. These ideas are summed up in a *New Yorker* cartoon of about 11 years ago in which one king says to the other, "I don't know anything about the bell curve, but I say heredity is everything."

The blank slate is not ancient history, but continues to be influential. Through most of the 20th century, my own field, psychology, tried to explain all of human behavior by appealing to a couple of simple mechanisms of association and conditioning. The social sciences have tried to explain the human condition by invoking culture as an autonomous force that can't be identified with anything inside the heads of any particular individuals. Here's a typical example from a prominent 20th century social scientist.

With the exception of the instinctoid reactions of infants to sudden withdrawals of support, to sudden loud noises, the human being is entirely instinctless. Man is man because he has no instincts, because everything he is and has become, he has learned, acquired, from his culture, from the manmade part of the environment, from other human beings.

That is a quote from the anthropologist and well-known public intellectual, Ashley Montagu. And just to show how far this doctrine has spread, I'll give you another example from a well-known public figure, invoking a similar metaphor:

When kids go to school at the age of 6, there's an empty bucket there. Someone, by the time they're 18, will fill that bucket. Is it going to be a parent? Is it going to be a good educator? Or is it going to be some other scum out there?

That's a quote from the governor of California, Arnold Schwarzenegger.

The second doctrine that has become part of the conventional wisdom of human nature gets its convenient name from a poem by John Dryden, *The Conquest of Granada*:

I am as free as nature first made man, Ere the base laws of servitude began, When wild in woods the noble savage ran.

But the doctrine of the noble savage is more commonly associated with the philosopher Jean-Jacques Rousseau, who wrote:

So many authors have hastily concluded that man is naturally cruel, and requires a regular system of police to be reclaimed, whereas nothing can be more gentle than him in his primitive state....The example of the savages...seems to confirm that mankind was formed ever to remain in...this condition...and that all ulterior improvements have been so many steps...towards the decrepitness of the species.

Now, you can only really understand someone writing in a previous century if you know who he was arguing against. Rousseau alluded to "so many authors," but there was one in particular he had in mind. This gentleman painted a rather different picture of life in a state of nature. He wrote:

Hereby it is manifest that during the time when men live without a common power to keep them all in awe, they are in that condition which is called war, and such a war is of every man against every man.... In such condition there is no place for industry, because the fruit thereof is uncertain: and consequently... no arts, no letters, no society, and which is worst of all, a continual fear and danger of violent death, and the life of man solitary, poor, nasty, brutish and short.

This, of course, is the famous quote from Thomas Hobbes in *Leviathan*.

Much depends on which of these armchair anthropologists is right. The noble savage certainly is the more appealing doctrine. It implies that there's no need for a domineering Leviathan (an armed police force and government) to keep us from each other's throats. If we're nasty, then we have to accept conflict as a permanent part of our condition, whereas if we're noble, we can work toward a utopian society of the future. Children are born savages, so if our inner savage is nasty, it implies that bringing up children will be a matter of discipline and conflict, whereas if our inner savage is noble, it means that child-rearing is a matter of providing them with opportunities to develop their potential.

The noble savage, like the blank slate, continues to be an influential doctrine. It's behind the widespread respect for everything natural and a distrust of anything manmade—natural foods, natural medicines, natural childbirth, and so on. It's behind the unfashionability of authoritarian styles of child-rearing, which were common in this country until just a couple of generations ago. And it's behind the near-universal understanding of our social problems as repairable defects in our institutions, rather than a traditional view that would ascribe them to the inherent tragedy of the human condition.

he third doctrine, which sometimes accompanies the blank slate and noble savage, is associated with another French-speaking philosopher, René Descartes, who wrote:

When I consider the mind...I cannot distinguish in myself any parts, but apprehend myself to be clearly one and entire.... But it is quite otherwise with corporeal or extended objects, for there is not one of them imaginable by me which my mind cannot easily divide into parts....This [is] sufficient to teach me that the mind or soul of man is entirely different from the body....

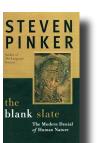
This idea which was later ridiculed as "the doctrine of the ghost in the machine" by the English philosopher Gilbert Ryle. It was only much later that it was adopted as the title of an album by the rock group The Police.

The ghost in the machine also has considerable appeal. People don't like to think of themselves as heaps of glorified clockwork. Machines, we like to think, are insensate and have some

workaday purpose, like grinding corn or sharpening pencils. Humans, in contrast, are sentient, and have some higher purpose, such as love, worship, and the pursuit of knowledge and beauty. Machines follow the ineluctable laws of physics, whereas behavior is freely chosen. With choice comes optimism about possibilities for the future, and with choice comes responsibility, the power to hold others accountable for their actions. Finally, if, as Descartes said, the mind is entirely separate from the body, that holds out the hope that the mind can survive the death of the body, an idea whose appeal is all too obvious.

The ghost in the machine continues to have an impact. It's behind the widespread perception that freedom, dignity, and responsibility are incompatible with a biological understanding of the mind, which is often denounced as "reductionist" or "determinist." We see it in the stem cell debate, where some of the theologians who've weighed in on this issue have framed it in terms of when ensoulment takes place in embryonic development, which means that perhaps the most promising medical technology of the 21st century is being debated in terms of when the ghost first enters the machine. And we see it in everyday thinking and speech; it's hard to get away from. We talk about John's body or John's brain, which presupposes some entity, John, that's separate from the brain that it somehow owns. And journalists speculate about "brain transplants," which they really should call "body transplants," because as Dan Dennett once pointed out, this is the one transplant operation where you really want to be the donor rather than the recipient.

It should come as no surprise that I think that there's a huge problem with all of this, beginning with the Blank Slate. The main problem is that blank slates don't do anything. It's not that any sane person can deny the central importance of learning, culture, and socialization in all aspects of human experience.



The question is, how do they work? When Locke implied that "there's nothing in the intellect that was not first in the senses," the appropriate reply came from Leibniz, who said, "Except for the intellect itself."

Today the sciences of human nature have threatened the Blank Slate by trying to delineate what has to be present in the mind in order for learning to occur in the first place. My own field, cognitive science, has tried to explicate the innate mechanisms that have to be in place in order to do the learning that

obviously gets done. They include: the basic concept of an enduring object and lawful causation, which can be seen even in young infants; a number sense that allows us to grasp quantity of number; a number of spatial representations that allow us to negotiate the world and recognize objects and faces; a "theory of mind" or intuitive psychology with which we understand the mental states of other people; a language instinct that allows us to communicate our own thoughts and feelings via words; and the executive systems of the frontal lobes of the brain, which receive information from the rest of the brain and execute decision rules that determine how the person as a whole behaves.

volutionary psychology has challenged the blank slate in at least two ways. One is by documenting that beneath the undeniable fact of cross-cultural variation there is a bedrock of human universals: ways of thinking and feeling and behaving that can be seen in all of the cultures documented by ethnography. The anthropologist Donald Brown a few years ago compiled a list of them, and they number some 300, everything from

Aesthetics, Affection, and Anthropomorphization, all the way to Vowel contrasts, Weapons, attempts to control the Weather, and a word for the color White.

Evolutionary psychology has challenged the blank slate in another way: by showing that many human drives can't really be understood as ways people maximize their well-being in their own lifetimes, but can only be interpreted as adaptations to survival and reproduction in an ancestral environment, namely the foraging lifestyle that characterized our species through 99% of its evolutionary history, until the very recent invention of agriculture and then industrialization. An obvious example, very much in the news, is our taste for sugar and fat, which drives many people to an early grave from a diet too rich in junk food. The obvious explanation is that we evolved in a world in which these nutrient-packed substances were in short supply, and we could never consume too many of them. Very recently, we developed the technology to crank out mass quantities of this stuff. Our tastes haven't changed, and so we eat more of them than is good for us.

Another example is the thirst for revenge, which is the source of much human misery in the form of vendettas and blood feuds and cycles of violence, but which had a rationale in a world in which you couldn't dial 911 to get Leviathan to show up to settle your scores for you, but in which a reputation for toughness and a resolve to retaliate was one's only defense against becoming a permanent punching bag.

Less obviously, our desire for attractive mates needs an explanation. The humorist Fran Lebowitz once made a profound observation when a journalist asked her why she'd never gotten married and she said:

People who marry someone that they're attracted to are making a terrible mistake. You really should marry your best friend. You like your best friend more than you're apt to like anyone that you happen to find attractive. You don't pick your best friend because they have a cute nose. That's all you're doing when you're getting married. You're saying, "I'm going to spend the rest of my life with you because of your lower lip."

This observation poses a profound puzzle for psychology. I think the answer comes from recent research in evolutionary psychology showing that the physical cues to beauty are indicators of underlying health, fertility, and fitness, and that by being attracted to people with those physical characteristics, we're maximizing the chances that our genes will combine with the fittest genes available in the population when we have children.

euroscience has challenged the blank slate by showing that there's a complex genetic patterning to the brain, an example being the well-known wiring diagram of the primate visual system comprising some 50 distinct areas interconnected in precise ways, largely laid out in the course of prenatal development.

And it's not just the overall box-and-arrow diagram of the brain that shows a genetic influence, but some of its fine structure as well. The neuroscientist Paul Thompson studied a sample of people using MRI and measured the amount of gray matter across the surface of the brain. He then calculated correlation coefficients among pairs of people to see if the distribution of gray matter would be correlated across pairs of people. Or course, when you pair people at random, by definition the correlations are going to be zero. But when you compare people who

share half their DNA, namely fraternal twins, most of the brain shows some degree of significant correlation. And when you pair people who share all of their DNA, namely, monozygotic or identical twins, far more areas of the brain show correlations, and to a much greater degree.

Now, you might ask whether these are just meaningless differences in anatomy, like the precise shape of the whorls in your outer ear. But there is evidence that they have functional consequences. My favorite summary comes from another New Yorker cartoon, this time from Charles Addams, which shows two nerdy-looking guys with identical contraptions in their lap in the waiting room of a patent attorney, and the caption reads: "Separated at birth, the Mallifert twins meet accidentally." The cartoon is only a slight exaggeration of the empirical state of affairs. Studies of identical twins who were separated at birth and then tracked down and tested in adulthood show that they have often astonishing similarities. My favorite example is the pair of twins, one of whom was brought up as a Catholic in a Nazi family in Germany, the other of whom was brought up by a Jewish father in Trinidad. Nonetheless, when they met each other in the lab in their 40s, both walked in wearing identical navy blue shirts with epaulets. Both of them kept rubber bands around their wrist. Both of them, it turned out on questioning, liked to dip buttered toast in coffee, to flush the toilet before using it as well as after, and to pretend to sneeze in crowded elevators to watch the other people jump.

Now, some of these are bound to be coincidences, what you would find if you compared *any* two people's autobiographies in enough detail. But they are rarely, if ever, found in fraternal twins who were separated at birth, and they've been corroborated by numerous studies using quantitative psychological tests, which show that identical twins separated at birth are highly correlated in measures of intelligence and personality, and also in quantifiable behavior such as the likelihood of getting divorced, the likelihood of being addicted to tobacco, the number of hours of television watched, their political attitudes, and many other traits. This leads to what behavioral geneticists call the First Law of Behavioral Genetics: that all behavioral traits are partially heritable.

The Noble Savage has also been threatened by findings in the sciences of mind, brain, genes, and evolution. Behavioral genetics has shown that among the heritable traits are having an antagonistic personality, a tendency toward violent crime, and a lack of conscience, or psychopathy. Neuroscience has identified brain mechanisms associated with aggression. And evolutionary psychology and anthropology have underscored the ubiquity of conflict in human affairs, as one would expect from the outcome of a Darwinian process.

I'll give you a couple of examples. The archaeologist Lawrence Keeley has calculated the percentage of male deaths due to warfare in a number of societies—that is, if you're a man, what are the chances that you will die at the hands of another man, as opposed to passing away of natural causes in your sleep? Among pre-state societies, such as hunter-gatherer and hunter-horticultural societies in the New Guinea highlands and the Amazon rainforest, the figures range from a low of about a 15% chance that a man will die at the hands of another man, to almost a 60% chance. These figures dwarf the corresponding statistics for the United States and Europe in the 20th century, even if you include all of the casualties from both world wars. Not to put too fine a point on it, but when it comes to life in a state of nature, Hobbes was right; Rousseau was wrong.

What about our society? How did we get to enjoy this state of peace and harmony? Is it because all violent impulses have somehow been socialized out of us? Probably not. A number of social psychologists have asked people the following question: Do you ever fantasize about killing someone you don't like? They typically find that about 15% of women, and a third of men, frequently think about killing people they don't like, especially romantic rivals, step-parents, and people who've humiliated them in public. And more than 60% of women and about three-quarters of men at least occasionally think about killing people they don't like. And the rest of them are lying.

But it's the ghost in the machine that has been subject to the most withering threats from modern science. Cognitive science has shown that the formerly mysterious power called "intelligence" can be explained in mechanistic terms, by thinking of beliefs as a kind of information, thinking as a kind of computation (not the kind of computation your PC does, of course, but presumably some kind of parallel, analog, fuzzy computation, but a form of information processing nonetheless), and that emotions and motives and goals can be understood in cybernetic terms: as mechanisms of feedback and control. Artificial intelligence has carried this program further by building intelligent machines, most famously the computer program Deep Blue, which defeated the world chess champion Gary Kasparov in 1997.

And neuroscience has challenged the ghost in the machine through what the late Francis Crick called "the astonishing hypothesis": that all of our experiences, thoughts, feelings, yearnings, and emotions consist of physiological activity in the tissues of the brain. Though the hypothesis is astonishing, there's increasing evidence that it's right. We know that the mind runs on electrical impulses, as can be seen by our increasing ability to record the electrophysiological signatures of thought and emotion, and by the fact that if you stimulate the exposed brain during neurosurgery, the person will have a vivid experience indistinguishable from reality. We know that the brain is also a chemical organ, as can be seen by the effects on personality of psychoactive drugs, both recreational and therapeutic. We know that brain surgery can alter a person, most famously in the case of the split-brain operation, where as a treatment for epilepsy a neurosurgeon severs the corpus callosum joining the two cerebral hemispheres, resulting in two largely independent consciousnesses co-residing in the same skull, as if the soul could be bisected with a knife. We know that damage to the brain can eliminate a part of the person and leave someone incapable of recognizing a face, for example, or making a moral choice. We know that the brain has a staggering complexity—a hundred billion neurons interconnected by a hundred trillion synapseswhich is fully commensurate with the staggering complexity of thought and behavior. And we have every reason to believe that when the physiological activity of the brain stops, the person goes out of existence. Despite concerted attempts by respectable 19th century scientists, no one has yet found a way to communicate with the dead.

Now, although this is the subject of 21st century neuroscience, it was glimpsed in the 19th century, most vividly in *The Brothers Karamazov*, in which Dmitri Karamazov, having been visited by a local medical researcher, now recounts to his brother what he has learned:

Imagine, inside, in the nerves, in the head ... there are sort of little tails.... I look at something with my eyes, and when they begin quivering, those little tails, an image appears, ...

Pinker: The Blank Slate

that is, an object or an action, damn it! That's why I see and then think, because of those tails, and not at all because I've got a soul, and that I am some sort of image and likeness.... Rakitin explained it all to me yesterday, Brother, and it simply bowled me over. It's magnificent, Alyosha, this science! A new man's arising—That I understand.... And yet I am sorry to lose God.

Many people are sorry to "lose God" when they hear of these findings, or at least sorry to lose the values that have traditionally been associated with God. There has been a widespread fear and loathing of human nature, both from the left and from the right, for some reasons that are distinct and some that are overlapping.

From the academic left, there was a vehement, and sometimes violent, reaction to the people who first publicized these ideas in the 1970s, such as E. O. Wilson. An example is the manifesto called *Against Sociobiology*, written by Stephen Jay Gould and Richard Lewontin and published in the *New York Review of Books*, which said:

The reason for the survival of these recurrent determinist theories is that they consistently tend to provide a genetic justification of the status quo, and of existing privileges for certain groups according to class, race, or sex. These theories provided an important basis for the enactment of sterilization laws, and also for the eugenics policies which led to the establishment of gas chambers in Nazi Germany.

Because of such accusations, Wilson, was often picketed and assaulted when he spoke about these ideas in the 1970s and 1980s. One campus poster read, "Come and hear Edward O. Wilson, sociobiologist and the prophet of right-wing patriarchy. Bring noisemakers."

For all this, the right-wing patriarchy wasn't so thrilled with these ideas either. There were also denunciations from the religious and cultural right, such as an essay by Andrew Ferguson in the Weekly Standard which said that "biological theories of the mind are sure to give you the creeps, because whether a behavior is moral, whether it signifies virtue, is a judgment that the new science, and materialism in general, cannot make." He contrasted it with the Judeo-Christian view, according to which "human beings are persons from the start, endowed with a soul, created by God, and infinitely precious. And this is the common understanding the new science means to undo." (This, I think, is the real motivation behind the movement to discredit Darwinism in the schools by teaching "Intelligent Design" as an alternative, rather than a concern to provide students with the best theory of where earthworms and mushrooms and oak trees came from.) Another example is Tom DeLay's theory of the cause of the Columbine High School shootings, who said that such outbursts are inevitable "because our school systems teach children that they are nothing but glorified apes, evolutionized out of some primordial soup of mud." And the US House Judiciary Committee heard the following testimony about the dangers of Darwinism from a representative of the Discovery Institute (the main force behind the revival of creationism). They were told about the pernicious effects of biological thinking in popular culture such as the lyrics to a rock song:

You and me, baby Ain't nothing but mammals, So let's do it like they do it On The Discovery Channel. Though these reactions seem extreme, they raise serious moral and political issues. Indeed, the brouhaha at my own institution (Harvard) last January shows that they are by no means a thing of the past. I think it's essential to look at the connection between the politics and the science with some care, and to ask why are there such emotional reactions, and how are they best addressed.

Four issues are at stake here: the fear of inequality, the fear of imperfectability, the fear of determinism and the fear of nihilism. In the rest of this essay, I will argue that all four are non sequiturs: they don't logically follow from recent discoveries or theories, but arose because they are so novel, and people haven't had a chance to digest their implications. And I'll go farther and say that, even if there are dangers in embracing too strong a doctrine of human nature, there are also dangers in *denying* human nature. For that reason we should study human beings objectively without trying to put a political or moral thumb on either side of the scale.

et me begin with the fear of inequality. The idea is that if we're blank slates, we must be equal. That follows from the mathematical truism that zero equals zero equals zero. But if the mind has any innate organization, according to this fear, then different races, sexes, or individuals could be biologically different, and that would condone discrimination and oppression.

I think it's easy to see the non sequitur here. It confuses the value of fairness with the claim of sameness. When the Declaration of Independence said, "We hold these truths to be self-evident, that all men are created equal," it surely did not mean "We hold these truths to be self-evident, that all men are clones." Rather, a commitment to political equality means two things. First, it rests on a theory of universal human nature, in particular, universal human interests, as when the Declaration continues by saying that "people are endowed ... with certain inalienable rights, and that among these are life, liberty, and the pursuit of happiness." It's also a commitment to prohibit public discrimination against individuals based on the average of certain groups they belong to, such as their race, ethnicity, or sex. And as long as we have that policy, it doesn't matter what the average statistics of different groups turns out to be.

I mentioned that there are downsides of believing in the blank slate. In the case of individual differences, the downside to denying that they exist is the tendency to treat more successful people as larcenous. That is, if you really believe that everyone starts out identical, and you look around and you see that some people have more stuff than others, the temptation is to think that they must have stolen more than their fair share. Many of the worst instances of 20th century persecution have been aimed at ethnic and social groups in cultural conditions that allowed their more talented members to prosper, with the result that they were viewed as parasites or bloodsuckers and subjected to expulsions, persecutions, and sometimes genocide. Famous examples include the overseas Chinese in Indonesia and Malaysia, the Indians in East Africa, the Ibos in Nigeria, and the Jews in Europe.

The second fear is the fear of imperfectability: the dashing of the ancient dream of the perfectibility of humankind. It runs more or less as follows. If ignoble traits are innate, such as selfishness, violence, prejudice, or rape, that would make them unchangeable, so attempts at social reform and human improvement would be a waste of time. Why try to make the

world a better place if people are rotten to the core and will just foul it up no matter what you do?

But this, too, is unsound. Even if people do harbor ignoble motives, they don't automatically lead to ignoble behavior, as we saw from the ubiquity of homicidal fantasies, which needless to say rarely result in homicidal behavior. That disconnect is possible precisely because the human mind is a complex system of many parts, some of which can counteract others, such as a moral sense, cognitive faculties that allow us to learn lessons from history, and the executive system of the frontal lobes of the brain that can apply knowledge about consequences and moral values to inhibit behaviors.

Indeed, the undeniable social progress that *has* taken place in the last few centuries did not occur because human nature was reprogrammed from scratch, but because one part of human nature was mobilized against other parts. The argument comes from the philosopher Peter Singer in his book *The Expanding Circle*. Singer argued that one can find in all cultures the glimmerings of an emotion of empathy, an ability to treat other people's interests and perspective on a par with one's own. The problem is that the default setting for the empathy circle is to extend it only to the members of one's own clan or village, while those outside the circle are treated as subhuman and can be exploited with impunity. But over the course of history, one can see signs of the circle expanding to embrace other villages, other clans within the tribe, other tribes, other nations, other rac-

es, and most recently, as in the Universal Declaration of Human Rights, all members of *Homo sapiens*. This change in sensibility didn't come from re-engineering human nature de novo, but rather from taking a knob or slider that adjusts the size of the circle that embraces the entities whose interests we treat as comparable to our own.

I have emphasized that there are downsides to the Blank Slate. The belief in perfectibility, despite its rosy and uplifting connotation, has a number of dark sides. One of them is the invitation to totalitarian social engineering. Dictators are apt to think: "If people

are blank slates, then we damn well better control what gets written on those slates, instead of leaving it up to chance." Some of the worst autocrats of 20th century explicitly avowed a belief in the Blank Slate. Mao Tse-tung, for example, had a famous saying, "It is on a blank page that the most beautiful poems are written." The Khmer Rouge had a slogan, "Only the newborn baby is spotless."

And far less horrifically, one can see this sentiment in urban planners such as Le Corbusier, who wrote that city planners should begin with "a clean tablecloth. We must build places where mankind will be reborn." An example of what he had in mind was his sketch of what Paris would look like if he had been granted his wish to bulldoze it and start over from a clean tablecloth: a vista of concrete high-rises separated by empty plazas and interconnected by superhighways. It was part of a movement ironically called Authoritarian High Modernism: the conceit that society should be planned from the top down based on "scientific principles" coming from a theory of human needs.

The problem was that their theory of human needs was the Blank Slate. They figured that everyone needs so many cubic feet of air per minute to breathe, so many gallons of water for bathing and drinking, a place to eat, so many square feet to sleep, a way to commute to work, and that was pretty much it. And the most efficient way to satisfy those needs is to stack people up

in concrete towers. What they left out of the calculation was the rest of human nature—the need for intimate social interaction in public cafes and squares, the effect of green space on psychological well-being, the effect of natural light on mood, the need for visual aesthetics and hence ornamentation and design in architecture, the feeling of safety that comes from an environment built on a human scale, and so on. Though Le Corbusier did not get his wish to flatten Paris and start over, his disciples did design the notorious wastelands of Brasilia and Chandigarh, and were responsible for the so-called "urban renewal movement" that did bulldoze many vibrant neighborhoods in the United States and England and replaced them with barren concrete.

A complementary downside of the belief in perfectibility is a lack of appreciation for democracy. Historians tell us that many of the horrific dictatorships of the 20th century were based on a romantic view of human nature. They were led by idealistic, charismatic leaders, who based their authority on a claim of moral superiority to their predecessors, and who promised that their repressive measures were temporary and would gradually wither away, leaving people to cooperate in a state of utopian, Rousseauan anarchism. And it resulted in some of the most murderous dictatorships in history.

In contrast, democracy, which I think we would agree has had a more benevolent outcome, is based on a *jaundiced* view of human nature, perhaps best captured in the famous quotation of James Madison. "If men were angels, no government would

be necessary. If angels were to govern men, neither external nor internal controls on government would be necessary." It's this jaundiced view that led to the idea of permanent need of "a government of laws and not men," and for the checks and balances built into democracies, which were explicitly designed to counteract human ambition and self-deception, thought to be a permanent part of human nature.

The final downside of a belief in perfectibility has been a distortion of human relationships, most notably parenting, since it's parents, above all, who are

thought to write on a blank slate. Here is a quote from an article from *The Boston Globe* with the sarcastic title "How to Raise a Perfect Child." A frazzled mother told the reporter:

I'm overwhelmed with parenting advice. I'm supposed to do lots of physical activity with my kids so I can instill in them a physical fitness habit so they'll grow up to be healthy adults. And I'm supposed to do all kinds of intellectual play so they'll grow up smart. And there are all kinds of play, play for finger dexterity, word games for reading success, large motor play, small motor play. I feel like I could devote my life to figuring out what to play with my kids.

Anyone who knows a young parent can sympathize with this overadvised mom.

But here are some sobering facts about what we know about the effects of parenting, many of them brought to light by the psychologist Judith Rich Harris in her book *The Nurture Assumption*. First of all, most studies of the effects of parenting on which the experts base their advice are useless. They're useless because they are based on the Blank Slate, and hence don't control for heritability. They measure some correlation between what parents do and how their kids turn out, they assume that correlation implies causation, attributing the outcome to the parents. For example, parents who talk a lot to their children

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have children with better language scores; parents who spank their children have children who grow up to be violent; parents who are neither too firm nor too lax have children who are better adjusted. What these studies don't take into account is that parents provide their children with genes as well as an environment. The studies may be saying nothing more than that talkative people have talkative kids, violent people have violent kids, and sensible people have sensible kids.

When you redo the studies with the proper genetic controls, by studying twins or adoptees, the results are rather bracing. First of all, the genetically controlled studies, by and large, find that in measures of adult intelligence and personality, siblings separated at birth end up as similar as siblings reared together. Now, remember the Mallifert twins from the Addams cartoon. Separated at birth, they bump into each other in the patent office with those identical contraptions. Now, one may ask, "What would have happened if the Mallifert twins had not been separated but had been brought up together—in the same neighborhood, in the same house, by the same parents, with the same siblings, and so on? Well, one might predict that they should be even more similar. But the studies show that they are not more similar. By adulthood, the correlations among twins (and other kinds of siblings) are the same whether they are raised together or apart.

Twins separated at birth are cases in which siblings share their genes but don't share an environment. The flipside of this consists of adoptive siblings: they share an environment, but don't share their genes. And the repeated findings of those studies is that adopted siblings are not similar in personality or intelligence at all. That is, by the time they're adults, two adoptive siblings growing up in the same home are no more similar than two people plucked from the population at random.

What all this suggests is that children are shaped not by their parents, but in part—but only in part—by their genes; in part by their culture, both the culture of the surrounding society and the children's own culture, which we condescendingly call their peer group; and in large part by sheer chance—chance events in the development of the brain in utero, such as whether some neurons zigged or zagged at a particular day in brain development, and perhaps chance events in life, such as whether at some point you were chased by a dog, or inhaled a virus, or were dropped on your head, or got the top bunk bed as opposed to the bottom bunk bed.

When many people hear these results, their first reaction is to say, "Oh, so you mean it doesn't matter how I treat my kids?" Of course it matters! It matters for many reasons. One is that it's never all right to abuse or neglect or belittle a child, because those are horrible things for a big strong person to do to a small helpless one that is their responsibility. Parenting is, above all, a moral obligation.

Also, let's say I were to tell you that you don't have the power to shape the personality of your spouse. Now, only a newlywed believes that you can change the personality of your spouse. Nonetheless, on hearing this truism, you're unlikely to say, "Oh, so you're saying it doesn't matter how I treat my spouse?" It matters how you treat your spouse to the quality of your marriage, and so it matters how you treat your child to the quality of your relationship to your child, both the quality of family life when the children are in the home, and later when the children grow up and reflect back on how they were treated.

I think it's testimony to the ubiquity of the Blank Slate that people can forget these simple truths, and think of parenting as the shaping of children like putty. When told that they may not have that power, they can't think of a single other reason why they should be nice to their kids! An appreciation of human nature can help restore human relationships to a more natural state.

et me discuss the remaining two fears more briefly. The third fear of human nature is the fear of determinism: if behavior is caused by a person's biology, he can't be held responsible for it. It's not an idle fear; about ten years ago the *Wall Street Journal* ran the headline: "Man's Genes Made Him Kill, His Lawyers Claim." Exchange your favorite lawyer joke at this point.

What is the suitable response to the fear of determinism? First we have to think about what we mean when we say we "hold someone responsible." Ultimately what it means is that we impose contingencies on their behavior—reward, punishment, credit, blame. For example: "If you rob the liquor store, we'll put you in jail." These contingencies are themselves causes of behavior—environmental causes, to be sure, but causes none-theless—and we impose them because we think that they will change behavior in the future. For example, they will lead to fewer people robbing liquor stores. This logic does not appeal to an immaterial soul or a capricious ghost or some strange entity called free will, but rather to parts of the brain that can anticipate the consequences of behavior and inhibit it accordingly. We can keep this influence on the brain systems for inhibition even as we come to understand the brain systems for temptation.

Second, most of the bogus defenses for bad behavior that have been concocted by ingenious defense lawyers are more likely to be *environmental* than biological in the first place. Examples are the "abuse excuse" that was offered during the Menendez trial, when the brothers' lawyer claimed that they killed their parents because they had suffered a history of emotional abuse in childhood; the so-called Black Rage Syndrome that was offered to defend the Long Island Railroad gunman, who supposedly exploded one day under the pressure of living in a racist society and started to shoot white passengers in the train at random; the "patriarchy-made-me-do-it" defense offered by some defenders of rape victims, who supposedly were inflamed by misogynistic images from pornography and advertising.

inally, there's the fear of nihilism: the fear that biology strips life of meaning and purpose. It says that love, beauty, morality, and all that we hold precious, are just figments of a brain pursuing selfish evolutionary strategies. For most people who ask the question "Why am I here," the answer "To pass on your genes" is less than comforting.

To address this discomfort, one first has to distinguish between religious and secular versions of the fear of nihilism. The religious version is that people need to believe in a soul, which seeks to fulfill God's purpose, and is rewarded or punished in an afterlife. According to this fear, the day that people stop believing in a soul, we will have, in Nietzsche's words, "the total eclipse of all values."

The answer to the religious fear is that a belief in a life to come is not such an uplifting idea, because it necessarily devalues life on Earth. Think about why you sometimes mutter the cliché "Life is short." That realization is an impetus to extend a gesture of affection to a loved one, to bury the hatchet in some pointless dispute, to vow to use your time productively instead of squandering it. I would argue that nothing makes life more meaningful than a realization that every moment of consciousness is a precious gift.

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Also, there is a problem in appealing to God's purpose. Have you ever noticed that in practice, God's purpose is always conveyed by *other human beings*? This opens the door to a certain amount of mischief or worse. Many of you are familiar with the satirical newspaper called *The Onion*. Four years ago, they ran the following notorious headline: "Hijackers Surprised to Find Selves in Hell.'We Expected Eternal Paradise for This,' say Suicide Bombers." Admittedly, it's in dubious taste, but makes an important point. Even if there are might be some people who can't be deterred from mass murder by anything short of the threat of spending eternity in hell, we know that there are people who are attracted to mass murder by the promise of spending eternity in heaven.

What about the secular fear of human nature? It's not just people who believe in an afterlife who are troubled by the idea that we're just products of evolution. My favorite response to the secular fear of human nature comes from the opening scene of the Woody Allen movie *Annie Hall*, in which the five-year-old Woody Allen character is taken to the family doctor by his mother because he's depressed, leading to the following dialogue:

Doctor: Why are you depressed, Alvy? Mother: It's something he read. Doctor: Something he read, huh? Alvy: The universe is expanding. Doctor: The universe is expanding?

Alvy: Well, the universe is everything, and if it's expanding, someday it will break apart and that will be the end of everything!

Mother: What's that your business? [To the doctor:] He's stopped doing his homework.

Alvy: What's the point?

The appropriate response came from Alvy's mother: "What has the universe got to do with it? You're here in Brooklyn. *Brooklyn is not expanding.*"

We laugh at Alvy because he has confused two different time scales. He's confused the scale of human time—what is meaningful to us, how we want to live our lives today with the brains we have—and evolutionary time, which is the process that determines how and why our brain causes us those have those thoughts in the first place. Another way of putting it is that even if in some metaphorical sense our genes are selfish, and evolution is amoral and without purpose, that doesn't mean that the products of evolution, namely ourselves, are selfish, or that we are amoral and without purpose. You all know the cliché in politics that people who appreciate legislation and sausages shouldn't watch them being made. The same might be true of human moral sentiments.

ne more point before concluding. Even if our moral sense is a product of evolution, it does not imply that morality is somehow a figment of our imagination or a human construction. One could argue that morality, even without a God, has an inherent logic that the human moral sense implements. The simplest explanation of this principles requires a look at the late lamented strip *Calvin and Hobbes*. One day, Calvin announces to his tiger companion Hobbes, "I don't believe in ethics any more. As far as I'm concerned, the ends justify the means. Get what you can while the getting's good, that's what I say. Might makes right. The winners write the history books. It's a dogeat-dog world, so I'll do whatever I have to and let others argue about whether it's 'right' or not." Whereupon Hobbes pushes him into the mud, and he exclaims, "Hey! Why'd you do that?!" Hobbes explains, "You were in my way. Now you're not. The ends

justify the means." Calvin says, "I didn't mean for everyone, you dolt. *Just me.*"

This shows the logical untenability of a morality based on the ethic of "just me." As soon as your fate depends on the behavior of other people and you engage them in any kind of dialogue, you can't maintain that your interests are privileged simply because you're the one who has them and expect them to take you seriously, any more than you can say that the point that you happen to be standing on is a privileged spot in the universe because you happened to be standing on it at that very moment. It's this core idea of the interchangeability of perspectives, or the recognition of other people's interests, that's the true basis of morality, as we see in numerous moral precepts and moral codes—the Golden Rule, Singer's expanding circle, Kant's categorical imperative, and Rawls' veil of ignorance.

o sum up: I've suggested that the dominant theory of human nature in modern intellectual life is based on the Blank Slate, the Noble Savage, and the Ghost in the Machine, and that these doctrines have been challenged by the sciences of mind, brain, genes, and evolution. The challenges have also been seen to threaten sacred moral values. But, in fact, that doesn't follow. On the contrary, I think a better understanding of what makes us tick, and of our place in nature, can *clarify* those values. This understanding shows that political equality does not require sameness, but rather policies that treat people as individuals with rights; that moral progress does not require that the mind is free of selfish motives, only that it has other motives to counteract them; that responsibility does not require that behavior is uncaused, only that it responds to contingencies of credit and blame; and that meaning in life does not require that the process that shaped the brain have a purpose, only that the brain itself have a purpose.

Finally, I've argued that grounding values in a blank slate is a mistake. It's a mistake because it makes our values hostages to fortune, implying that some day, discoveries from the field or lab could make them obsolete. And it's a mistake because it conceals the downsides of denying human nature, including persecution of the successful, totalitarian social engineering, an exaggeration of the effects of the environment (such as in parenting and the criminal justice system), a mystification of the rationale behind responsibility, democracy, and morality, and the devaluating of human life on Earth.

