

A Great Mind, On the Mind

Steven Pinker Updates Some Old Presuppositions

By Sid Jacobson

It is becoming increasingly difficult to define, much less describe, certain scientific disciplines, as they merge and coalesce into hybrids that blur or even obliterate their once clear distinctions. This difficulty isn't new, it's just amplified. I often remember Sheldon Kopp's description of the Human Potential Movement, in his wonderful classic *Guru: Metaphors from a Psychotherapist* (1971), written several decades ago. He invoked the image of a "Holy Trinity" to help place the myriad ideas and players in that field. These were Abraham Maslow as the Visionary, Carl Rogers as the Saint and Fritz Perls as the Superstar. It was a strong and instructive image. As I think of that image and try to apply it to the ever emerging field of the cognitive neurosciences (yes, the plural is intentional) it seems that for a Visionary none other than Charles Darwin would apply. Fortunately, or unfortunately depending on your vantage point, the field itself would probably vanquish the whole concept of Saint to antiquity. It does, however, have a Superstar: Steven Pinker.

By Superstar, Kopp meant a combination of genius, boldness and a willingness to spread the word, very publicly. That means the kind of mind that combines brilliance with a rare ability to communicate clearly to a mainstream audience. Steven Pinker has one of those minds. He is the Peter de Flores Professor of Psychology at MIT's Department of Brain and Cognitive Sciences. His three mainstream books are *The Language Instinct: How the Mind Creates Language* (1995), *How the Mind Works* (1997) and his latest *The Blank Slate: The Modern Denial of Human Nature* (2002), which I'll con-

centrate on here. Each of these books could be the culmination of a life's work, but the three together, coming from one mind is truly impressive. I did get to meet with him while he was on a book and lecture tour in late 2002 and, though I didn't get to conduct a formal interview, we did get to talk. I was able to ask a few burning questions, and he pointed me in the direction of some other resources. To begin with, though, an overview of the field of cognitive neuroscience in general, and Pinker's work in particular.

Michael Gazzaniga's name should be

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—Gazzaniga, 1998

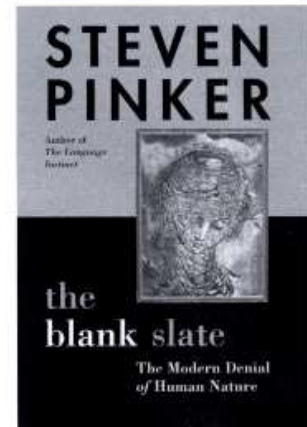
familiar to those in NLP as the long reigning expert on right-left brain functioning, and one of the founders of cognitive neuroscience. In his book *Cognitive Neuroscience: A Reader* (2000), he credits the term itself to George Miller (yes, The Magic Number 7 plus or minus 2 George Miller (1956); again a familiar figure in NLP), during a discussion of the two of them were having, which led to their collaboration in developing the field. In Gazzaniga's view it's more a field of interesting questions, than definitive answers to the problems psychologists have been addressing for a long time. In his wonderful little 1998 book, *The Mind's Past*, Gazzaniga offers the following:

Over a hundred years ago William James lamented, "I wished by treating Psychology like a natural science, to help her become one." Well, it never occurred. Psychology, which for many was the study of mental life, gave way during the past century to other disciplines. Today the mind sciences are the province of evolutionary biologists, cognitive scientists, neuroscientists, psychophysicists, linguists, computer scientists — you name it...Psychology itself is dead... (Gazzaniga, 1998)

So, the cognitive neurosciences are a collection of disciplines that have a central goal: figuring out how the mind works. Starting from the basic evolutionary premise that the mind is really a collection of evolved "mental organs" each having a specific function, just as physical organs do, the cognitive neurosciences then pose some truly fundamental questions: "What does each of these mental organs do?" "How are they built?" "What caused them to evolve; how and why were they adaptable in our species?"

Because there are so many valid approaches, not to mention levels of analysis, the field must continue to include views from various professions while the search for answers continues and those myriad fields continue to coalesce. (NLP'ers will certainly recognize the similarity in the development of our field.)

In that same book, Gazzaniga refers to his colleague Steven Pinker as, "...a remarkable scientist and scholar." (Gazzaniga, 1998, p. xiv) Exploring Pinker's work, the most remarkable feature is it's amazing breadth. He seems equally comfortable talking about topics ranging from traditional academic psychology, linguistics, genetics, evolutionary biology and neuroanatomy all



the way to philosophy, economics, social policy and feminist thought. Rather than re-stating his positions, or laying out all of his arguments (which, after all, it took him three books to do) I'll simply frame some of the discussions and allow Pinker to speak for himself as much as possible, from here on, with a few comments.

For me, his first popular offering, *The Language Instinct* aptly serves as "Chomsky for the rest of us." It's a monumental work that explores the foundations of the development of language, arguing as Chomsky does, that it is an inborn ability that all humans have, rather than a set of learned responses. While almost no one argues the point anymore, it's refreshing to have an accessible and well-researched work to rely on (in case anyone ever tries). Pinker's work is primarily in the area of language acquisition and he's written several other scholarly works in that area. But *The Language Instinct*, while certainly huge, and hugely instructive, is also an awful lot of fun. Here is a passage explaining how the context of a discussion shapes how we hear and interpret the sounds of the language, by setting up expectations:

If the expectations are accurate enough, the acoustic analysis can be fairly crude; what the sound wave lacks, the context can fill in. For example, if you are listening to a discussion about the destruction of ecological habitats, you might be on the lookout for words pertaining to threatened animals and plants, and then when you hear speech sounds whose phonemes you cannot pick out like "eesees," you would perceive it correctly as species—unless you are Emily Litella, the hearing-impaired editorialist on *Saturday Night Live* who argued passionately against the campaign to protect endangered feces. (Indeed, the humor in the Gilda Radner character, who also fulminated against saving Soviet jewelry, stopping violins in the streets, and preserving natural racehorses, comes not from her impairment at the bottom of the speech-processing system but from her ditziness at the top...) (Pinker, 1995, p. 184-5)

The Language Instinct's later companion book with the imposing title *How the Mind Works* extends these insights into other areas of thinking and perception in an attempt to get at the answer to the larger question of what a mind is actually for.

A brain is a precision instrument that allows a creature to use information to solve the problems presented by its lifestyle. Since organisms' lifestyles differ, and since they are related to one another in a great bush, not a great chain, species cannot be ranked...there is no

such thing as generic animal intelligence. Each animal has evolved information-processing machinery to solve its problems and we evolved machinery to solve ours. (Pinker, 1997, p. 182)

Not one to shy away from the even bigger issues of art, entertainment, humor, status and curiosity, in a chapter titled "The Meaning of Life," he artfully frames the questions and the presuppositions:

Of course we find pleasure and enlightenment in contemplating the products of the arts, and not all of it is a pride in sharing the tastes of the beautiful people. But to understand the psychology of the arts that remains when we subtract out the psychology of status, we must leave at the door our terror of being mistaken for the kind of person who prefers Andrew Lloyd Weber to Mozart. We need to begin with folk songs, pulp fiction, and paintings on black velvet, not Mahler, Eliot, and Kandinsky. And that does not mean compensating for our slumming by dressing up the lowly subject matter in highfalutin "theory" (a semiotic analysis of Peanuts, a psychoanalytic exegesis of Archie Bunker, a deconstruction of Vogue). It means asking a simple question: What is it about the mind that lets people take pleasure in shapes and colors and sounds and jokes and stories and myths? (Pinker, 1997, p. 523)

These two works together form, for me, a broad, readable and hugely entertaining overview of the cognitive neurosciences. I especially enjoy the fact that I don't have to be highly knowledgeable in the variety of areas Pinker addresses. I've read Chomsky, Darwin and Dawkins, but Pinker's explanations of them consistently seem clearer than my own understanding of what I've read.

In *The Blank Slate*, he expands the territory even further to the whole of human nature and—yes—he believes we do have one. The central premise is that there is a danger in ignoring the realities of human nature, instead of embracing and understanding them to get where we want to go. The danger is that our incorrect, and therefore misguided, presuppositions about that nature will lead us astray in our lives and our societies. In that sense, this is a book *about* basic presuppositions, how and why we develop them and the importance of being constantly vigilant regarding their validity. Here Pinker explores, and deftly explodes, some of the most highly esteemed presuppositions about human beings. The three he concentrates on centrally are: The Blank Slate, The Noble Savage

and The Ghost in the Machine.

John Locke's well-known concept of the *tabula rasa*, generally though not literally translated as "blank slate," says that humans are born without any innate knowledge; simply waiting for that knowledge to be stamped onto their empty brains entirely through experience. The idea of the Noble Savage, generally attributed to Jean-Jacques Rousseau "...captures the belief that humans in their natural state are selfless, peaceable and untroubled, and that blights such as greed, anxiety, and violence are the products of civilization." (Pinker, 2002, p. 6) The concept of a Ghost in the Machine, he attributes here primarily to the ideas of Rene Descarte, who "...rejected the idea that the mind could operate by physical principles. He thought that behavior, especially speech, was not caused by anything, but freely chosen." (Pinker, 2002, p. 9) This is the mind/body split we all know—and at least in NLP, usually try to avoid. For Pinker these three doctrines, "...or as philosophers call them, empiricism, romanticism, and dualism..." (Pinker, 2002, p. 10) tend to travel together and intertwine themselves, upsetting our logic, and therefore our behavior, in harmful ways that spread through every aspect of our lives. The book is dedicated to dissecting these philosophies, and the values and practices they spawn, and to reinject biology, and scientific thought in general, back into the beast from which they were removed.

Pinker is a scholar, first and foremost. His command of his subjects is formidable to say the least and he constantly reminds us to think scientifically and logically about the big issues. Early on he warns against violating logic by jumping, or omitting, important levels of analysis. Fans of logical levels should appreciate the following:

The big thinkers in the sciences of human nature have been adamant that mental life has to be understood at several levels of analysis, not just the lowest one. The linguist Noam Chomsky, the computational neuroscientist David Marr, and the ethologist Nico Tinbergen have independently marked out a set of levels of analysis for understanding a faculty of the mind. These levels include its function (what it accomplishes in an ultimate, evolutionary sense); its real-time operation (how it works proximately, from moment to moment); how it is implemented in neural tissue; how it develops in the individual; and how it evolved in the species. For example, language is based on a combinatorial grammar

designed to communicate an unlimited number of thoughts. It is utilized by people in real time via an interplay of memory lookup and rule application. It is implemented in a network of regions in the center of the left cerebral hemisphere that must coordinate memory, planning, word meaning, and grammar. It develops in the first three years of life in a sequence from babbling to words to word combinations, including errors in which rules may be overapplied. It evolved through modifications in the vocal tract and brain circuitry that had other uses in earlier primates, because the modifications allowed our ancestors to prosper in a socially interconnected, knowledge-rich lifestyle. None of these levels can be replaced by any of the others, but none can be fully understood in isolation from the others. (Pinker, 2002, p. 70-71)

As well, he reminds us to think systematically and give all the functions of the mental organs the same rights as all the others:

If...the mind is a system with many parts, then an innate desire is just one component among others. Some faculties may endow us with greed or lust or malice, but others may endow us with sympathy, foresight, self-respect, a desire for respect from others, and an ability to learn from our own experiences and those of our neighbors. These are physical circuits residing in the prefrontal cortex and other parts of the brain, not occult powers of a poltergeist, and they have a genetic basis and an evolutionary history no less than the primal urges. It is only the Blank Slate and the Ghost in the Machine that make people think that drives are "biological" but that thinking and decision making are something else. (Pinker, 2002, p. 166)

In fact, cognitive neuroscientists believe that there are a number of built in mechanisms that make up our abilities in information processing. Pinker gives us his list, with the proviso that it is "tentative but defensible." (Pinker, 2002, p. 220) His choices include: an intuitive physics, an intuitive version of biology, an intuitive engineering, an intuitive psychology, a spatial sense, a number sense, a sense of probability, an intuitive economics, a mental database and logic, and of course language. (Pinker, 2002, p. 220-221) These evolutionary competencies were adaptable at some time in our past, but of course vary in their value today. In fact, in some ways they probably get in our way and have, along with a number of other traits, to be overcome rather than relied on for our survival. One example he mentions more than once is in learning Newtonian physics, during the course of which the student has to overcome his or her natural intuitive sense of physics. (Pinker, 2002, p. 220)

His comments on education expand the notion that we are naturally good at some things, but need to learn others:

...education is a technology that tries to make up for what the human mind is innately bad at. Children don't have to go to school to learn to walk, talk, recognize objects, or remember the personalities of their friends, even though these tasks are much harder than reading, adding or remembering dates in history. They do have to go to school to learn written language, arithmetic, and science, because those bodies of knowledge and skill were invented too recently for any species-wide knack for them to have evolved. (Pinker, 2002, p. 222)

In the final section of the book, Pinker uses voluminous research, along with his piercing logic, to tackle the "Hot Buttons" most of us think about, with chapters on politics, violence, gender, children and the arts. His discussions on violence and gender are especially pointed and thorough. Biology, not culture, is nearly a mantra in these late chapters (as throughout the book), and as always, he backs up every assertion. In terms of violence, statistically, modern human cultures are far less violent than ancient ones, which certainly supports the possibility of societal control. However, the possibility of control in no way suggests but the cultures themselves create the violence in the first place. Cultural themes of masculinity, sexism, individuality and heroism through violence (modern media, for example) are often blamed for levels of violent behavior in American life. But:

...Spain has its machismo, Italy its braggadocio, and Japan its rigid gender roles, yet their homicide rates are a fraction of that of the more feminist-influenced United States. The archetype of a masculine hero prepared to use violence in a just cause is one of the most common motifs in mythology, and it can be found in many cultures with relatively low rates of violent crime. James Bond, for example — who actually has a *license to kill* — is British, and martial arts films are popular in many industrialized Asian countries. In any case, only a bookworm who has never actually seen an American movie or television program could believe that they glorify murderous fanatics like Timothy McVeigh or teenagers who randomly shoot classmates in high school cafeterias. Masculine heroes in the mass media are highly moralistic: they fight bad guys. (Pinker, 2002, p. 310-311)

And later:

The first step in understanding violence is to set aside our abhorrence of it long enough to examine why it can sometimes pay off in personal or evolutionary terms. This requires one to invert the statement of the problem — not

why violence occurs, but why it is avoided. Morality, after all, did not enter the universe with the Big Bang and then pervade it like background radiation. It was discovered by our ancestors after billions of years of the morally indifferent process known as natural selection. (Pinker, 2002, p. 318)

Turning questions on their head is a common strategy of Pinker, throughout his work. He relishes reverse logic, in a sense reverse engineering an argument, the way technicians might do with a piece of equipment, to see what makes it work; or not. Similarly, he uses counter-examples to commonly held beliefs and myths, allowing the reader to do the myth-shattering for him. I would be surprised if his arguments did not polarize people, just by the nature of his views, regardless of the evidence he uses to support them. I found myself wanting him to be wrong about many of his assertions on education, child rearing, violence, personality development and more. In many cases, though, my own internal arguments quickly collapsed under his avalanche of data and reason, regardless of my own intuitions, experiences and beliefs.

Likely to arouse as much controversy as any are his views on gender, especially in the political sphere. He begins by wisely dividing feminism into two camps: gender feminists and equity feminists. Gender feminists in this view are those who believe in the myths of the blank slate, suggesting that there are no real biological or psychological differences (beyond the obvious) between boys and girls when they are born. Therefore, it must be masculine society that's responsible for putting girls and women in their respective places. Equity feminism, on the other hand, doesn't rely on any biological or psychological presuppositions to bolster its positions. It's a moral doctrine demanding equality of treatment. In some ways Pinker comes across as a strong feminist, even while applying some of his harshest criticisms to the "lunatic fringe" (Pinker, 2002, p. 341) in the feminist field. He also sticks to his evolutionary guns:

From a gene's point of view, being in the body of a male and being in the body of a female are equally good strategies, at least on average...Natural selection thus tends toward an equal investment in the two sexes: equal numbers, an equal complexity of bodies and brains, and equally effective designs for survival. Is it better to be the size of a male baboon and have six-inch canine teeth or to be the size of a female baboon and not have

them? Merely to ask the question is to reveal its pointlessness. A biologist would say that it's better to have the male adaptations to deal with male problems and the female adaptations to deal with female problems.

So, men are not from Mars, nor are women from Venus. Men and women are from Africa, the cradle of our evolution, where they evolved together as a single species. (Pinker, 2002, p. 343-344)

As usual, he then gives a long list of differences in the interests and tendencies of men and women and, not a few, but a dozen specific kinds of evidence of these differences. Clearly, Pinker believes in morality, beauty, goodness and the values most people would like to inject into the minds and hearts of their children and society as a whole. It's just that his position is that most of these are *moral issues*, and must be separated from the biological and psychological arguments that are usually (and usually incorrectly) used as justification for some particular point of view. Women and men, for example, are different, and generally (statistically) want different things. But it's wrong to force people into roles they don't want and that, not science, is the reason not to.

So, in a book about nature vs. nurture, do we get "the answer?" Of course not. A struggle between the two has never been the best way to frame the important issues covered here anyway. The two work together to make us who we are. Pinker gives research based views, for the most part, rather than definitive conclusions about how. He does say clearly, based on a variety of studies, that probably 20-25 percent of who we are, in terms of personality and character traits, is due to individual experience. That's a lot. Think of the often invoked genetic comparison between the great apes and man; that we differ by only a percent or two of our genetic code. Obviously, that two percent can be huge. Anyone in NLP who has explored the effects of past experience in our lives knows its importance and Pinker would never diminish something so central. He simply insists on carefully choosing our presuppositions and placing them in a logical, defensible, context.

Any fan of great research, well thought out arguments and terrific writing will enjoy and learn from this book. It's the definitive discussion of nature and nurture from someone who's done his (and it seems everyone

else's) homework. No one, I suspect, would agree with everything in it, but I also suspect that Pinker's goal, like most in the cognitive neurosciences, is to pose the questions, frame the arguments, and continue the dialog. I'm still doing it in my own mind.

Steven Pinker has a generosity at his core. He wants to share what he knows. During my brief discussion with him I did have the opportunity to ask him about specific professional applications. I asked about psychotherapy. He immediately reminded me that he's not a trained therapist, but did point me to a recent internet discussion he had on Slate.com with Martin Seligman (Pinker, et.al. 2002) I also asked about a personal interest of mine: specific learning skills that we should be teaching children. Again, he said he just doesn't usually think about specific applications at that level. Fair enough. I guess that's the job of those of us in those fields. Some day I hope we can frame the problems as cogently, and take this level of understanding and use it to inform the decisions we make in developing those applications. Perhaps, in NLP, we already are.

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