

## The Science Studio With Steven Pinker

**ROGER BINGHAM:** My guest today on The Science Studio is Steven Pinker, who is a Johnstone Family Professor at Harvard University, who was at M.I.T. before that. He is a well-known cognitive scientist who works in language and he is, perhaps, best known for a trilogy of books. The first one, *The Language Instinct*, second, *How The Mind Works*, and the third one, which is the reason he is here today, is *The Stuff of Thought*. Steve, welcome.

**STEVEN PINKER:** Thank you.

**BINGHAM:** As I see you arrive, and I know the punishing tour that you're on, I wonder, sometimes, why people do this sort of thing. I'm actually going to read you a quote from Ernest Becker. Do you remember who Ernest Becker was, a well-known psychologist?

**PINKER:** *The Denial of Death*?

**BINGHAM:** Yes, *The Denial of Death*, and Ernest Becker said, in the front of one of his books, "I have reached far beyond my competence and have probably secured for good a reputation for flamboyant gestures. But the times still crowd me and give me no rest, and I see no way to avoid ambitious synthetic attempts; either we get some kind of grip on the accumulation of thought or we continue to wallow helplessly, to starve amidst plenty. So I gamble with science and write."

**PINKER:** That is terrific.

**BINGHAM:** What's your reason?

**PINKER:** I couldn't have said it better. Well, I enjoy sharing the excitement of the ideas that, that I work with, that my field has developed, and I do think there is something ennobling about knowledge, in this case, knowledge about ourselves, about our nature. I think, as Chekhov said, "Man will be better when you show him what he is like," and it is thrilling to be part of this collective enterprise of trying to crack the puzzle of how the mind works.

**BINGHAM:** You are, would now be called, I think, you actually have been called, a public intellectual. You are one of the people who communicate; you are the face of, one of the people who represent the face of science. There are responsibilities with that. How does that feel? I mean, is this a role that you were looking for? Is this something that you sought or is this mantle you bear at this point? How do you see it?

**PINKER:** Well, neither one. I didn't set out trying to be a public intellectual. You can't go to graduate school to become, you can't major in being a public intellectual. But I don't find it onerous, I find it flattering that people would be interested in my thoughts or analyses on particular issues and I try to use it in, in a way that I think would be enlightening, responsible, getting people to, at least, see a problem more clearly, whether or not they agree with my particular analysis of the problem.

**BINGHAM:** Just to make sure that we get this on the record, and since you are laboring to persuade people to go and, at least, acquire a copy of *The Stuff of Thought*, what is

the burden of this particular volume? What is the point, the major thrust of it?

**PINKER:** Well, the subtitle is “Language as a Window into Human Nature,” and I’ve written books on language, I’ve written books on human nature. This is the one that uses language as a lens into the brain, in a way. What can we learn about the human concept of space from the way prepositions work? What can we learn about our concept of time from the way tense works? What can we learn about emotion and taboo from swear words? What can we learn about social relationships from innuendo, and politeness, and other ways in which people don’t blurt out what they mean but veil their intentions in double speak? One of, these are some of a number of ways in which puzzles of language, I think, force you to understand something about what makes us tick.

**BINGHAM:** Okay. What is your position on language? Do you think that it is a uniquely human attribute?

**PINKER:** I think the answer to that depends on how you define the word “language”, but do I think that human language has unique features in the animal kingdom. Yes, I think it does. That is, I think that a lot of very special things happened in the six million years since we split off from the common ancestry of chimpanzees. I don’t think communication is unique to humans, clearly it isn't. Animals jabber, and call, and signal in many ways. But I think grammatical language, that is, conveying a proposition by the way in which you arrange symbols for the concepts that make up that proposition, in such a way that the meaning of the signal depends not just on the elements but the way they are arranged, and where there is an open-ended system of giving you an ability to express an unlimited number of ideas; that, I think, is unique to humans.

**BINGHAM:** When we first talked, on television, at least, that is over a decade ago now, and we were talking, you just had got the galleys back of *The Language Instinct*, so there is obviously continuity here. *The Language Instinct*, could you elaborate what you mean by an instinct?

**PINKER:** Yes, well, the title comes from a quote from Charles Darwin. “Man has an instinctive tendency to speak, as we see in the babble of our young children, whereas, no child has an instinctive tendency to bake, brew, or write.” And I think that captured the sense in which language has some evolved innate basis, an idea that is much more closely associated with Noam Chomsky, but that I think Darwin said first. And I think even though, as Darwin himself continued, he called it an “instinct to acquire an art,” which was the title of the first chapter, clearly, what we inherit is not a particular language or a set of words or constructions, but the ability to combine words according to grammatical rules, I think, is a special feature of the human brain. Something that is a product of evolution, even if the content itself has to be filled in by our community.

**BINGHAM:** This is a, obviously, a larger debate, which goes at one extreme nature versus nurture, one extreme constructivism, whether you are constructing representation as to, of ideas, and so on and so forth, or whether they are innate, innately given, even possibly an expansion of something represented in the genome. I don’t particularly, I think the details of that are too, will be too complex for us to sort of spend much time on now, and the controversy will rage on, but what is your, how do you differ from Chomsky on this? I mean, do you actually think there is such a thing as an innate module for language?

**PINKER:** I wouldn't call it a module because it is so interwoven with other parts of the mind. Language has to be connected to perceptual faculties so that we can hear and read; to short term memory so that we can keep it in mind what we, how we intend to complete a sentence as we begin it; with social cognition so that we can choose our words to maintain a relationship. So instead of the word module I like the word mental organ, which is actually from Chomsky, to give credit where it's due. In the same way that the blood is an organ, even though you can't draw a dotted line around it, and it, obviously, interacts with many other parts of the body. The word I prefer is, to modularity, is specialization. That is, it is a complex system, it's got parts that work in particular ways to do particular jobs and to talk to one another, the brain is not Spam, it is not a, there is no single principle that governs learning in all domains, I would argue. But that doesn't commit you to a bunch of snapped-in modules that don't talk to each other either.

**BINGHAM:** But it involves specialization?

**PINKER:** Yeah.

**BINGHAM:** What's the best theory we have at the moment about how such a specialization might have evolved? I mean, what are the pressures—

**PINKER:** [Interposing] You mean at the genetic level or the selection pressures? The genetic level we don't know, although I think we are going to learn, because with the revolution in genomic tools we will be able to find genes that have more of an effect on language than on other faculties, and using statistical patterns in the genome, see whether and when selective forces fix those genes in our genome. That has already been done with, with at least one gene that seems to have a large effect on speech and grammar. In terms of the selective pressures I think that is much clearer because we know that any intelligent system benefits from being able to exchange information with other intelligent systems. That is why the Internet makes a computer more powerful than if it was just sitting unplugged from the Net. We know from simulations that intelligent agents are under a selective pressure to be able to pool information with one another. And we know that humans are unusual, not just in having language, but in two other traits that are also unusual in the animal kingdom and that are exactly what would make language most useful. Number one, we acquire a lot of knowledge about our environment. All human cultures have technologies, tools, intuitive theories about how the local environment works, intuitive biology, where people are acutely aware of the different species that are around them, complex chains of behavior in order to make a living. So we have something to say to one another, mainly, pooling our hard won acquired knowledge. And number two, what also makes humans zoologically unusual, is the degree of cooperation that we have among non-relatives, where you can't just explain it by kin selection. We, we exchange things. We cooperate. We exchange favors, and information is an excellent commodity to exchange because if I tell you how to catch a fish or how to detoxify a plant poison, it is not as if I am now bereft of the knowledge. Information is a non-rival good. I can share it with you at very little cost to myself.

**BINGHAM:** So literally, talk is cheap.

**PINKER:** Talk is cheap. And we are on speaking terms and we have something to say.

So I think the triad of language, technological and scientific know-how, and social cooperation were, reinforced each other and co-evolved in kind of a spiral of co-evolution, bringing us to the point we are at today.

**BINGHAM:** Just let's get back a little bit and, and find out the trajectory that brought you to this point and working in language. I mean, you were born in?

**PINKER:** I was born in Montreal, part of the English speaking community in Montreal. I grew up there, spent my first 22 years in Montreal, went to McGill University, then went to graduate school at Harvard and pretty much have spent the rest of my life bouncing back and forth between Harvard and M.I.T., with interludes at Stanford and sabbaticals at Santa Barbara.

**BINGHAM:** Well, that is a great; actually, bouncing back and forth is an interesting way of putting it. I mean, there were lots of pieces written about your shift from M.I.T. to your current job at Harvard, where it was talking about poaching you and trophy professors. There was a whole piece, you must remember, on this. In other words, you were valuable goods that were transferred at some point. Do you find, was that, do find it sort of a strange experience to go through?

**PINKER:** Oh, I was flabbergasted. It didn't occur to me that anyone would care. But then, all of a sudden, I'm reading articles about the fact that I switched jobs. People switch jobs all the time. But, yeah, there was four or five articles about it, to my, my shock.

**BINGHAM:** How would you characterize the difference between the two places and why would you shift from one to the other, I mean?

**PINKER:** Well, I had been at M.I.T. for 21 years on the faculty and a year as a post-doc, and kind of enough was enough. It's good to be able to put yourself in different environments for the sheer sake of mixing up the sources of stimulation. And I am extraordinarily lucky. They are both just outstanding institutions, in many of the same ways, their emphasis on excellence, and in some different ways. Harvard does many more things than M.I.T. M.I.T. does a smaller number of things but does them extraordinarily well.

**BINGHAM:** You are obviously still doing work and publishing papers. I just was looking at a piece the other day that was published in the proceedings of the National Academy of Sciences, a piece that you have written with, with Martin Nowak and James Lee on the logic of indirect speech. Could you gloss that a little bit, just explain what this is about, because it sounds very interesting.

**PINKER:** Yeah, well, the phenomenon is that the kind of innuendo and politeness and double speak that we do all the time, sometimes without even realizing it. So, for example, I say, "If you could pass the salt, that would be great." Now, when you think about it, that doesn't make a whole lot of sense. It wouldn't be great to have the salt. Why not just say, "Give me the salt"? So that is an indirect request. There is the almost clichéd sexual come on, "Would you like to come up and see my etchings?" The veiled threat, "Nice car you got there. It would be a real shame if something happened to it." Why don't we just say what we mean? Why do we, why is the language of politics, of

diplomacy, of sex, of fundraising, of bribery, of threats, why is there, are these layers of innuendo? And this turns out to be a surprisingly difficult problem, and Martin and James and I argued that the solution requires at least three parts. One of them is the logic of plausible deniability. That is, I don't know when I'm, say, tendering a bribe or making a sexual come on, how my partner is going to react. If, so for, let's say I'm bribing a police officer who stopped me for a traffic violation and I want to offer a bribe, well, if I offer the bribe in so many words, if I have got a dishonest cop who will take it I am in good shape, but if I have an honest cop who arrests me for bribery I have paid a pretty high price. On the other hand, if I veil it in innuendo, if I say something like, "Gee, is there any way that we could settle it here without going through all the paperwork," and have a \$50 bill extending from my wallet, then the dishonest cop can sniff out the bribe behind the innuendo. An honest cop couldn't make a bribery charge stick in court by the standard of proof beyond a reasonable doubt. So I kind of can eat my cake and have it. I aim the level of vagueness in between the threshold for one audience and another audience, where the desired audience can exploit it, the undesired audience cannot. That is, I think, what we mean by plausible deniability. And that's, and we present a simple mathematical model as to how that would work.

That doesn't solve the problem, though, because we also use indirect speech in everyday life, in cases where there is no risk of going to jail. For example, the polite request, "If you could pass the salt, that would be great," or, say, bribing a maitre d' in a restaurant, slipping the maitre d' a \$20 bill in exchange for being seated immediately. So what are the costs and benefits there that would push someone to indirect speech, given that they are not in any kind of legal or financial jeopardy? There we have to go to some social and evolutionary psychology on human relationship types, and we tap into a theory from Alan Fiske at UCLA, tapping a wide, much broader variety of both ethnographic and evolutionary literature, on what kind of relationships humans have. And Fiske argues, very interesting way, that humans are always mindful about what kind of relationship they have, and they fall into a small number of kinds, including dominance, reciprocity, and communality, sharing, the kind of sharing that a family or a husband and wife might do, or close friends, and that the reason that we often are tempted toward indirect speech is that some speech acts change the nature of the relationship. You walk into a restaurant, the maitre d' is an, an authority relationship. He seats you when and where he pleases; you offer him a bribe, you are changing that, you are saying we are going to do business instead of you bossing me around. People get very touchy and awkward when it comes to changing a relationship type. So that makes the maitre d' scenario a lot like the cop scenario, even though you won't go to jail, that feeling of awkwardness, of changing the relationship type if the other person wants to keep one relationship and you're suggesting another, can duplicate the game theoretic mathematical structure of an overt bribe, where there are costs and benefits. And that is the second part of the theory.

There is a third part. I don't know if I'm starting to bore the audience.

**BINGHAM:** No, no, well, I, the reason I asked about this is, is that so much, a lot of science these days is actually being, can be applied to an understanding of what is going on in political systems.

**PINKER:** Oh, yes, right.

**BINGHAM:** Language, the way you're dealing with language, and the way somebody like, say, George Lakoff would deal with language, although, you, you guys differ, at least begins to make more explicit what is going on in political systems.

**PINKER:** Absolutely.

**BINGHAM:** And in candidates. On the other hand, you've got people like Marco Iacoboni, or, or various other cognitive scientists, Drew Westen, who are looking at brain scans to see if they can try and understand what does a liberal brain look like, what a conservative brain looks like. Some of this stuff is early days and a little worrisome in the enthusiasm which people have embraced it, perhaps, I'm not sure about that; what do you think?

**PINKER:** Yeah, I mean, I think some of it is the early stage and some of the applications, I think, are often clouded by the fact that the scientist often has such strong political convictions that they, I think, sometimes jigger the science to put their side on the side of the angels and to make their political opponents look like idiots. So I think it is a danger that you have in the application of science to political discourse but, nonetheless, I think it is an important enterprise. It is, I think, an extension of what our best political critics have often done, namely, to try to see through the cant and the manipulation so that we can evaluate policies and candidates on their merits; George Orwell being the most famous in terms of analyzing how the political system often perpetrates great crimes and atrocities by the use of euphemism. Collateral damage instead of dead civilians, revenue enhancement instead of tax increase, transfer of populations instead of a forced march, 80 percent of the people dying en route. So that is a tradition where Orwell consulted his own intuitions, and he was, of course, a superb amateur linguist. I think there is great promise in applying everything from linguistics to brain scanning to try to make these techniques more transparent, the better for a democratic populist to see through them.

**BINGHAM:** Yeah, one of the primary functions, as you know, of The Science Network is to try and illuminate areas at the intersection of science and social policy. We have been doing an annual meeting called Beyond Belief. The third one, which is coming up, deals very much with neuroscience, science policy, linguistics, and so on, the applications of science as to politics, to ethics, to law, and so on and so forth. The title of it is actually Candles in the Dark, which we use as a Science Network "brand", if you like, borrowed from Carl Sagan.

**PINKER:** Carl Sagan, yes.

**BINGHAM:** Who, who talked about science as a candle in the dark. And one of the things we are asking people who come to the meeting to do is to suggest some, pose a problem, something that, that exercises them at this point, at the intersection of science and social policy, and suggest a possible solution. I know you can't make it this time, but if you were to be there, do you have a candle in the dark?

**PINKER:** When it comes to applications I'm, I'm wary of making prescriptions, just because I think you really need a lot of expertise in that particular applied domain before being able to say anything helpful. So for example, I mean, I do think that there are some, there have to be implications of, say, language acquisition, one of my specialties,



for the teaching of a foreign language to kids. On the other hand, I haven't spent time in a classroom, I haven't evaluated programs, I haven't designed programs, so the kind of advice that I give would have to be very generic. This is the way to think about it, here are some things to keep in mind; but I would hesitate to say, "Here's a solution to the problem," being one step more abstract than the actual people in the trenches. And likewise, I can list some areas, social problems where I think the kind of things that I write about would provide insight to people who are trying to solve the problems, without myself feeling confident in offering a solution, so I will mention some others.

Our moral sense, the fact that we humans, I think, are apt to press a moral switch in framing certain problems, and that, I believe, can get in the way of sound policy making. So for example, in the handling of global warming, perhaps, our biggest global challenge, is it possible that some of the most popular solutions are going to be ineffective, just in terms of the sheer atmospheric chemistry, but people are likely to look that way because it makes them feel virtuous? For example, buying carbon offsets, when you buy an SUV and you plant a tree, you buy a Prius instead of a Corolla because it saves a couple of miles per gallon, are those kinds of measures really kind of, perhaps, even useless, because in giving people that moral glow they divert attention from solutions that have a much bigger quantitative impact on the atmosphere but might be, either be less sexy, or might even seem immoral on the face of it. Such as atmospheric engineering or increased reliance on nuclear power. Now, I'm not saying that I'm advocating nuclear power as a solution to global warming, but advising people that in evaluating these options, our own moral sense might stack the deck away from the ones that ultimately would lead to the best outcome. So that is a second example.

A third example might be education. How can we tap into the child's concept of number, of space, in teaching arithmetic and geometry? Another one would be seeing through political discourse. What are the techniques that hide the truth behind euphemism, and is there any way that we can change the political discourse so that politicians are less likely to stick to empty platitudes and more likely to offer specifics without being, without committing suicide at the public stage. Just about any, I would say that just about any study of the human mind has applications and I could tell you what the areas are without being the doctor that comes in with the cure.

**BINGHAM:** Okay. Let's, let's deal with the morality issue because we do a lot on this sort of stuff. You, you wrote a cover story for the *New York Times*—

**PINKER:** [Interposing] Sunday.

**BINGHAM:** *Magazine* earlier this year. I don't know if you came up with the cover line or they did but it was "The Moral Instinct".

**PINKER:** They did. The editors always choose the titles.

**BINGHAM:** Alright. So, and they obviously thought, well, this is nice, did *The Language Instinct*, this is the moral stuff, let's do "The Moral Instinct". But that does convey a message, doesn't it? I looked at it and thought, hello, another module here, reference to Mark Hauser talking about a moral grammar, based, analogous to Chomsky's linguistic grammar. And yet, many people would argue that surely morality is not just some sort of given, it is something which you build up through a lifetime of experience, and there are

different moral codes, different, apply in different places. We'll come back to that in a second, but some of the experiments that have been used, like the notion that, you know, the trolley experiments, which is now being called "Trolley-ology," the notion of whether it is appropriate to, well, why don't you actually describe that problem?

**PINKER:** Yes, well this is, I think, originally devised by Philippa Foot, yes, that's right. So it is basically trying to make clear what our intuitions are in cases of utilitarian calculations differing from some instinctive moral tendency. So you, classic problem, a trolley is running out of control on a track, a conductor slumped over the controls dead of a heart attack, he is about to slam into five people. You are standing at a switch, you can divert it to a side track. Unfortunately, there is a worker on the side track and so you, by saving five you would kill one. Is it permissible to divert the trolley? Most people say yes in pretty much every culture that has been looked at. You change the terms of the problem in what might seem to be an ethically irrelevant way by saying, you're standing on a bridge overlooking the tracks. The trolley is out of control. The only way to stop the trolley is by pushing a fat man in the path of the trolley, slowing it down. You save five people at the cost of killing one, is that acceptable? And now most people say no. By utilitarian calculus, both involve sacrificing one to save five, why is there such a strong intuitive difference between the two cases? So that is the, that is trolley-ology.

And I think it is part of a much larger set of issues concerning the moral sense. I think probably too much attention has gone to that particular, and in some ways, artificial problem. Just to get back to your concern on the title, I wouldn't have objected to that title. I think there was, even though I didn't select it, I think there is a set of moral instincts, I don't think it is a single module. And in fact, I mean, part of the article is that, psychologically, what we deem as moral has at least four distinct components, which, and when cultures vary, they vary not by having arbitrary codes that come out of the blue, but in how much weight they give to each of the four. The four being harm and benefit, that is, fairness of not harming someone unless they deserve it as punishment and if someone helps you, you owe them help in return; the moralization of hierarchy and autonomy. Many people think that deference to legitimate authority is a moral thing to do, our celebrity worship, loyalty to country, patriotism. There is an ethic of community, that conforming to social norms and being part of a harmonious community is a moral thing to do; and there is a notion of purity and divinity contrasted with defilement and carnality, closely related to our sense of disgust. We equate what is disgusting with what is immoral and what is clean and pure with what is morally praiseworthy.

This owes a lot to Jonathon Haidt and to Richard Shweder and Paul Rozin, to, again, give credit where it's due. The idea that there are different psychological components to the moral sense, I think, gets around the problem that, on the one hand, there is something very peculiar about morality. It is not just something that you could pick up by interacting with things or people in the world. You don't have to have morality, and morality; moral reasoning has a number of inexplicable quirks, such as the contrasting intuitions in the trolley problem. And we know that morality is something you find in all human cultures. We know there is a small fraction of people, psychopaths, who seem to be lacking a moral sense. So on the one hand there is evidence for universality. On the other hand, there is cultural variation. But I think you can reconcile those two



observations by noting that there are these different components that can be emphasized or suppressed. Ours is a culture where fairness and harm dominate the other spheres. In more traditional societies fairness takes a backseat to deference to authority and respect for community, for example.

But it is very much analogous to language, where what is, if anything is innate to language it certainly can't be the English language, or the Japanese language, but it could be a system for a combinatorial system.

**BINGHAM:** Sure. Again, what worries me about some of this stuff, in the same way as one who, extending, taking initial brain scans and making a large story out of them, what worries me about this is that the, as you just said, that the trolley-ology thing has become the focal center of all of this and has become the test case. As you are probably well aware, there is this, a lot of people have been sort of working on that. David Pizarro at Cornell, in fact, has shown that if you change the context of that and put African-American people onto the trolley, or vice versa, then the whole experiment changes. So it does seem to be context-dependent to some extent, and that is why I was raising the issue about how one can think of there being something so concise, as it were, as an instinct, or as a module for that when, in fact, it seems to be developed through one's life experiences, one's experience of status and relationships, and so on and so forth.

**PINKER:** Well, those aren't contradictory, no, and I don't know about the Pizarro experiment but, certainly, the contrast between the two paradigm cases is a very empirically robust phenomenon and is found in pretty much the same proportions in every culture that has been tested. But of course, it is sensitive to context, which is why there is a kind of science of trolley-ology, in a sense that that is what, that is how you probe the moral sense, by seeing how variables such as how direct is the causation, how intended, how foreseen, is the harm a means to an end or is it a desired by-product? It is those variables; it is the context sensitivity, the sensitivity to those variables that makes it a useful research tool.

**BINGHAM:** I think the jury is obviously out on this, and we spend a lot of time at these meetings discussing this precise issue because it seems to me to be elemental and very important. And I suppose the good point to take from this is that there is, now, beginning to be the beginnings of a science of morality, which, I think, is just—

**PINKER:** [Interposing] The science of moral sense, which I would distinguish from morality.

**BINGHAM:** The science of moral sense, I take the correction. If you had asked me a few months ago what Steven Pinker's next book was going to be and I didn't know, I would have said, oh, he's doing the moral instinct, it must be the next book. But I see that, in fact, if I'd thought a little harder and looked around a little bit I would have found that it, in fact, is not going to be that. But what I have here, in fact, is one of the Edge annual questions that John Brockman's group puts together. This is the volume *What Are You Optimistic About?* And I notice in here that you are optimistic about the decline of violence, and you also wrote a piece for *The New Republic* arguing that we are getting nicer every day was, was, again, some editor's line, I suppose.

**PINKER:** Yes.

**BINGHAM:** But you, you are talking about a history of violence here and you are arguing that, in fact, things are improving. How on Earth, do you read the newspapers?

**PINKER:** Yes, I do read the newspapers but, remember, the newspapers just tell you what the rate is now and it is true, the rate of violence is not zero, but the claim isn't that violence has vanished, the claim is it was even worse a while ago and, in fact, a lot of the evidence is all around us, but I think there is a cognitive bias to think that the present is more violent than the past. In fact, I've done experiments to show this, that people are systematically incorrect in judging rates of violence in different eras. So here is some qualitative things, just, you don't even have to look at numbers or graphs, but over the last millennium, say, in, certainly in western societies and to a lesser extent in others, we have gotten rid of human sacrifice, of slavery, of torture as criminal punishment, mutilation as criminal punishment.

**BINGHAM:** [Interposing] Mostly, I mean.

**PINKER:** Mostly in the sense that, say, waterboarding.

**BINGHAM:** Torture has been raised, I mean, that's-

**PINKER:** [Interposing] Well, there's a big difference between, for one thing, waterboarding and, say, crucifixion, yes. There is also a difference between, I mean, I am opposed to waterboarding of terrorist suspects, I've got to add this, but it is still different when it is used as a technique to extract information than when it is used as a form of criminal punishment. And if you look in the middle ages, where there were a huge list of capital crimes, like, you know, criticizing the King, or heresies of all kinds of ridiculous sorts, and the punishments would be things like breaking on the wheel, and burning on the stake, and ones that are too horrible to mention because I don't want to give viewers nightmares. I got nightmares when I started reading about these torture techniques. And they are gone. And as deplorable as it is that suspects are being tortured in Guantanamo there is no comparison, quantitatively, qualitatively. Slavery, the number of corporal punishment as part of the criminal justice system, things like stocks, branding, mutilation, so those are all qualitative things. You can look in the history books and see when they were abolished. Then there are a lot of quantitative things, too, that people don't appreciate, such as, homicide rates have gone down in western countries by a factor of 10 to 50 since the middle ages. That is something that you can actually tally because a lot of towns, starting in the middle ages, kept pretty good cause of death records. And criminologists have a consensus that there has been a massive reduction in homicide over the last few centuries. War, since the second world war, rates of war have plummeted, so that war between developed industrialized countries are, basically, zero. And other forms of war, although they peaked in the '70s, have also been in decline. Entertainment, we no longer torture animals as a form of entertainment. There's a long list of ways that people don't realize it until you present it to them, of how, in many ways, the old idea of the rise from savagery and barbarism may have something to it. The question is, what is it about our sensibilities, our foresight, our empathy, our knowledge, that allows us to repress these violent tendencies, which you do see popping up when they are not repressed? And so as a psychologist I find this an intriguing problem. It is nice, for someone who believes that there is such a thing as human nature, as I do, it's a nice kind of challenge as to how behavior can change, even

if there is something about our nature that hasn't changed. What is the dimension of variation? Is it that our sense of empathy can expand to encompass greater proportions of the earth's population and, if so, what drives our empathy circle outward? Is it that the functions of the prefrontal cortex of inhibiting behavior and counting to ten before you wallop someone, anticipating the consequences of committing violence kick in and, if so, why are we better at using our frontal lobes than our ancestors a millennium ago were?

**BINGHAM:** I'm, there's six directions I want to go in, now, which is one of the fun things about talking with somebody who ranges so widely. It is also a constraint. Let me, let me take one position there, which is that we also, we talk a lot, at some of these meetings, about issues like religion, faith, belief. You grew up in Montreal from a Jewish background, right? Plainly, that is, I don't know to what extent you are still involved in that. I mean, I notice that in the dedication to *The Stuff of Thought*, which is dedicated to Rebecca Goldstein, Rebecca Newberger Goldstein, as I should know, having had her on *Beyond Belief* last year and she read wonderfully from a novel she was working on. You say that you, you describe her as my bashert to whom this book is dedicated. I under, I gather that means soul mate, and I gather that—

**PINKER:** Yes, it is Yiddish for; it is kind of like more like destined, yes.

**BINGHAM:** Destined. And I gather that you actually, now, are married?

**PINKER:** Yes, that's right. Well, we like to say we eloped, but the cat is out of the bag.

**BINGHAM:** The cat is out of the bag. Well, to what extent in dealing with these sorts of issues, does having come from a Jewish background color the way you think?

**PINKER:** Well, I think the, I didn't have a, my religious background was mostly cultural, not theological. I don't think the word God was ever mentioned in my household. I went to Sunday school and there wasn't a whole lot of God talk there. It was, there was a lot of arguing, and Jews are famous for being opinionated, as the old expression, "Ten Jews, eleven opinions." And so that tradition, perhaps, handed down from Talmudic disputation, was very much part of my Jewish education. Maybe it is part of my personality. My, the, and I'm very happy to acknowledge the influence of Jewish culture on my own thinking and personality, but for me, it is a cultural endowment and gift. It is something that I have a great deal of affection for, I think, in a way that, say, an Italian-American would have great affection for all, everything Italian. It is certainly not theological and nor is it, that is, I'm an atheist so I believe the advantage of being Jewish is that there is, it is kind of a don't ask, don't tell kind of religion where as long as you do the right things no one cares that much what you think. Of course, I don't do them, either, in terms of being religiously observant but I do mind the cultural tradition for the humor, the language, the tradition of intellectual disputation. I also don't, I used to think, and this was very much part of my background, that Judaism was the original source of morality in the western tradition; that the Jews gave morality to the world in the form of the torah and the ten commandments and so on. And I don't believe that anymore. I mean, I don't think there is anything, you know, I don't think the Jews have been immoral, but I think that the source of morality was, goes back to the, to the Greeks and was really developed in the Enlightenment and that the Bible is a pretty rotten guide to how we should treat each other.

**BINGHAM:** Again, six directions to go there, but because you have actually written about this, there is an additional point I want to raise here, which is that you have written about, why is there such a preponderance of intellectual brilliance in such a small community and how could that possibly have arisen, and you have written on this. Would you like to sort of scout the argument a little bit for me?

**PINKER:** Yes, well, I was writing, explaining a proposal by a geneticist and anthropologist, Henry Harpending and Gregory Cochran on, well they argued that it is not Jewish mothers, it is Jewish genes, and a very controversial hypothesis that selection for the middleman niche in medieval and early modern Europe— that is, merchants, retailers, moneylenders— involved Darwinian natural selection on genes that enhanced abstract intellectual reasoning. That it is more intellectually demanding to be a moneylender or a merchant than it is to be a farmer, or a soldier, or a craftsman and that, as a result, there was a millennium or so of selection, and the outsized representation of Ashkenazi Jews in intellectually demanding professions and pastimes, like chess, is a product of that. I didn't endorse that hypothesis; I don't know if it is true. I don't, I think we don't have enough evidence to believe it, but what I did do was try to explain it, including the empirical tests that would show whether it is true or false, which Cochran and Harpending explain themselves. They also argue that the genetic disease load in Ashkenazi Jews, something that has long been documented, the fact that Jews are more susceptible to a variety of genetic diseases, like Tay-Sachs, is a byproduct of selection for, of genes for rapid brain development. And that is what makes the hypothesis testable. And the test is actually quite straightforward. If you were to look at the intelligence of carriers of a single copy of recessive disease-causing genes characteristic of the Ashkenazim, they should, they would be smarter and that, if anyone wanted to do the experiment, that would test it.

**BINGHAM:** Henry Harpending, implicit in what you were just saying and also in other papers that Henry published last year, is that human evolution is still going on and at a fairly amazing clip.

**PINKER:** Yeah.

**BINGHAM:** According to him. If that is the case, I have to ask you about this because you, from an evolution psychology position and so on, the idea is that there is a human nature and that we, in fact, basically, have inherited a great number of adaptations which were useful to us in our days as hunter/gatherers, we still have them, and so on and so forth. Is that; does that jibe with Henry's notion of things changing so rapidly, selective pressures producing so many differences? Wouldn't there be cognitive differences happening now, wouldn't all our hunter/gatherer instincts have gone away and so on? Wouldn't we have a new set of instincts? Wouldn't we be remaking ourselves as we go along?

**PINKER:** That's, that is quite possible. In a sense, it would be, on the one hand, it would complicate one of the simplifying assumptions of evolutionary psychology, which is that so much more of human evolution took place in the hunter/gatherer stage than in the agricultural or industrial stages. That most of human nature would be weighted to the hunter/gatherer lifestyle. So that has to be modified depending on what the evidence looks like in terms of what proportion of our genes have been targets of recent selection

and, of course, what those genes do. They may just be disease-resistance genes. On the other hand, in a way, if he is right, and if there has been a lot of recent selection, and if it turns out that those genes involve cognition and emotion, it would kind of be evolutionary psychology on steroids in the sense that it wouldn't just be that we're adapted to that particular environment, but that we may have adaptations to much more recent features of our ecology. So I think that certainly is, will require changes in the simplifying assumption of evolutionary psychology, but it is too early to tell what they'll be.

**BINGHAM:** So one of the other pieces that, that bears on this is another Brockman thing, *What Is Your Dangerous Idea?* And your dangerous idea was groups of people may differ genetically in their average talents and temperaments, and is this, essentially, what we have been, to some extent, what we have been talking about here, or an extension of it, anyway?

**PINKER:** Well, it is related to that in the sense that if all human evolution stopped before the ancestral populations split off and went their different continents, then it would be almost impossible for there to be innate differences between groups. If evolution has continued since after that split then, at least, it's possible. Now, it doesn't mean that it happened, and if it did happen it doesn't mean that it happened in different ways in the different branches. It could be that this, whatever selection has taken place recently has happened in every branch of the human lineage. So one doesn't imply the other but it does open the door to it.

**BINGHAM:** And you also said at the beginning here, because you wrote the introduction to this, and I thought it was rather nice, that, it was a piece about the importance of science in boldly facing and coming up with these dangerous ideas, and that science has this immensely important role to play. This goes back to the point I raised earlier about your being a kind of a statesman of science at this point. How do you see, given the fact that we have an election coming up not too far away, what do you see the role of science in future administrations? Do you think that there is enough emphasis on science? Do you think it has been given short shrift?

**PINKER:** I think it has been given short shrift. I am one of the advocates of ScienceDebate'08.

**BINGHAM:** We will have some of those people coming to Beyond Belief.

**PINKER:** Very good, yes, they are, the idea that the Presidential candidates should have one debate on science and technology. I think, I was originally skeptical about the idea that there was a Republican war on science, to quote from Chris Mooney's book, but I think there is a lot, unfortunately, there has been a lot to that, that there has been a suppression and a hostility of science in the last eight years, and which I dearly hope will be reversed. For one thing, we have to have a grip on reality. If climate change is happening, we had better do something about it. We have to know what the facts are. If, I think, there is enormous potential for mitigation of human misery in biomedical research, if we have got a bioethics council that is trying to say that every advance in genetics is going to lead to Brave New World, based on pure science-fiction dystopia, then I think that has enormous potential for increasing human suffering.

**BINGHAM:** The President's Council on Bioethics just produced a report on, which was entitled "Human Dignity," a concept which they were unable to define and then had great problems with, and you wrote a piece about that in which you said?

**PINKER:** "Dignity is a useless concept when it comes to, above and beyond human rights or human autonomy." That is, if you prevent people from harming others or constraining their freedom, then you have everything that you need in a bioethics, and this additional concept of human dignity adds nothing. Let me be concrete on what we are talking about. Imagine that you had some procedure that made people happier and healthier, let's say, people could get compensated for organ donation. More people would donate kidneys, more people who die waiting for a kidney would have their lives saved. What is not to like? Well, the argument is that it comprises human dignity. If you put money in someone's retirement account for donating a kidney, you are making it a commodity and that insults human dignity, and so we shouldn't allow it. I say, if the price that you're paying is tens of thousands of people dying needlessly then dignity is not doing any moral good. In fact, it is doing moral harm. Likewise, if there is a research on embryonic stem cells, if that has the potential to make human lives longer and happier and healthier at the cost of some nebulous notion of human dignity being compromised, then so much the worse for the concept of dignity. We don't need it.

**BINGHAM:** But so many people in that report, obviously, were deeply concerned about, about this, as a concept. There has to be, let's just dig it a little deeper, I mean, there has to be something there that means something to people, even if it is a kind of folk psychological term that hasn't been properly understood and hasn't been unpacked properly. Plainly, if people say things like they would like to die with dignity, there is some, something meant by that.

**PINKER:** Oh, yes, no, absolutely. And, of course, note what you are doing there, you are respecting peoples' wishes and so it boils down to what other bioethicists call autonomy or rights. Namely, people have the right to live the lives they want as long as they're not harming someone else. So dignity is something that each one of us values for ourselves and, to that extent it ought to be respected, just as someone, all our other interests ought to be respected. Dignity is also something that we should cultivate in the sense of making it harder for people to be tempted to harm one another, and more likely to respect one another. So as a good emotional reaction it is something that we should foster, but when it is brought in, in this very abstract way, to outlaw procedures that actually save lives, that actually cure diseases, then I think it is an abuse of dignity. That we use it in cases where it is something that people want to preserve for themselves, and when people voluntarily relinquish dignity in search of some higher good, like not dying, then I think we should respect that, the case of the compensated kidney donor, perhaps, being the clearest.

**BINGHAM:** Values often formed in the home, going back to Montreal and your family, your parents were, any science background here at all?

**PINKER:** Not a science background. My mother was a guidance counselor then a Vice Principal. My father did various things, including real estate and law and sales. But there was, certainly, an encouragement of science, especially if it would involve some connection to medicine.



**BINGHAM:** My son the doctor.

**PINKER:** Exactly. But more than that there was an interest, from both of my parents, in science, and there still is. I am fortunate they are both alive and healthy. They, my parents bought me, when I was 12 years old, the *Time-Life Science Series*. Every month a volume would come in on a different topic, and I certainly owe my interest in the mind to the fact that one of those volumes was called *The Mind*. And so there was an encouragement but they weren't, themselves, scientists.

**BINGHAM:** Okay. Sisters, brothers?

**PINKER:** Oh, my brother is a policy analyst for the Canadian government and my sister is a journalist and author. She, herself, has a book on sex differences called *The Sexual Paradox* based both on the scientific literature and her own experience as a child psychologist.

**BINGHAM:** Sexual differences, male/female differences, cognitive differences, some alleged different way in which males and females are treated in school. Should women, should there be single sex schools? That entire debate, that is something you have been involved in, of course. You were at Harvard and defended Larry Summers, who made an unfortunate remark, which seemed to imply that he was sexist. Perhaps, you would like to, sort of, remind us of that?

**PINKER:** Yes, that is a, Larry Summers, in looking at the causes of a very narrow phenomenon, namely, why is the ratio of tenured faculty at elite Universities in science, engineering, and math not 50/50. And one possibility is that it is because women are discouraged from, and there are barriers, and biases. And that is, generally, the only one that you are allowed to talk about; if you open up the pages of *Science* magazine, or look at a report from The National Academy, that is the only thing that is mentioned. And Larry said, well, as any labor economist knows, that you can't take unequal outcomes as proof of discrimination, because there may be differences in lifestyle preferences. People choose different jobs depending on the exact mix of money, hours, social interaction, intellectual stimulation. There may be statistical differences in mixtures of abilities that, when you look at the extreme tail, will lead to a statistical imbalance. If, on average, men are more likely to be found at the extremes of the distribution, that is, there are more retarded boys than retarded girls, but maybe more math freaks among boys than among girls. Even if it is a small statistical difference, when you get out to several standard deviations beyond the mean then it will be noticeable in statistics, like how many math professors of each gender are there at M.I.T. The argument was, I think, statistically quite sophisticated. Larry Summers, of course, being a brilliant economist, similar to arguments that I made in *The Blank Slate*, but through a series of tragedies and blunders, part of it being the political correctness of academia, part of it being some, I think, bad decisions that Summers, himself, made as this unfolded, it blew up to a kind of academic political crisis. A lot of the statements got distorted, such as, "Women can't do math," which is, only a mad man could believe that. And it's, what I thought was sad was that a teachable moment had passed. Mainly, how do we deal with the possibility that there are statistical differences between groups of people in a way that preserves our commitment to, to fairness and equality? By the way, part of the argument also, of course, is that women are over-represented in other areas of academia. In my own field,

language development in children, it is probably three to one female biased.

**BINGHAM:** That was an interesting phrase that you used there, and it seems to me that, I wonder if I am putting words in your mouth, that this is one of the things that you do, in response to my reading the Ernest Becker quote, is that you do spend a lot of time enlarging and elaborating on teachable moments, and that seems to be your trade, if I could put it that way.

**PINKER:** In terms of the so-called public intellectual side, that is right. Often, it is often just because of the dynamics of publishing, namely, editors like some news hook when they assign a piece and when I hear one that has, is a good opportunity to explain some cognitive science, that is when I will jump in.

**BINGHAM:** I made a slight error earlier when I said, when I said that this was the third book in the trilogy. I sort of forgot about *The Blank Slate* there for a moment, there, so it was really *Language Instinct, How The Mind Works, Blank Slate*.

**PINKER:** And then there is my book *Irregular Verbs*.

**BINGHAM:** *Irregular Verbs*, which sort of leaps off the shelves, and then *The Stuff of Thought*, right? If you had not been a scientist, what would you have liked to have been?

**PINKER:** Oh, certainly some kind of educator. I think at one point I wanted to be a math teacher. I could also, at one, I also fantasized at one point about being a computer programmer, but I think it would not have been as fulfilling a career.

**BINGHAM:** You must be very diligent to have this computer, I mean, I asked you years ago, how on earth you managed to assemble all this information, because the books are absolutely full of information. There are cartoons. Do you have a staff of people finding cartoons for you, and jokes?

**PINKER:** No, I don't, but like many people now, I get them involuntarily by email. I save the ones I like. I read the, I read the comic pages in the *Boston Globe*. I have both physical files of clippings and I read newspaper and magazine with a scissors. Nowadays, of course, more and more of it is electronic and I have directories in my computer in which I store links or articles that are relevant to language, or to evolution, or to brain science, or genetics.

**BINGHAM:** How do you actually, how do you write?

**PINKER:** I like to write intensely. I like to cordon off blocks of time in which I write morning, noon, and night, day after day, taking out a couple of hours for exercise and socializing and discussion, but a good day for me, when I'm writing, is to wake up and write and then go cycling or jogging before dinner and then get back to work after dinner, and then do the same thing the next day.

**BINGHAM:** You are not an owl or a lark; you don't work better at night or in the morning?

**PINKER:** No, that's right. I like the—

**BINGHAM:** [Interposing] Just grind away all day long?

**PINKER:** I grind away all day long, and I think one of the reasons I like that is because the, the image that keeps coming to mind is the juggler with the balls. Once they are in the air it is easy to keep them in the air. The hard part is getting them in the air in the first place. And when I'm trying to connect a lot of ideas, to have them at my fingertips, both in my own mental space but, also, even physically, to have my books and papers in front of me for an extended period of time, and I know that is the book in that stack that has that quote, or that graph, that makes it easier.

**BINGHAM:** We're actually sitting in what used to be the study of Francis Crick, the late Francis Crick.

**PINKER:** Is that right?

**BINGHAM:** Yeah, this window here, you see there is a double helix up there, Francis Crick, of course, was co-discoverer of DNA and some people would regard him as the most eminent biologist of the 20<sup>th</sup> century. As you know, when Francis came to the Salk Institute he then shifted from biology to neuroscience, essentially taught himself neuroscience, and became immensely interested in consciousness.

**PINKER:** Yes.

**BINGHAM:** That is another of the areas that you work in. You talk, you have some thoughts on free will and so on, and on consciousness. These are, again, issues that come up in all the things we have been talking about, morality, religion, belief, and so on, and are being explored by scientists now. What is your current position on this?

**PINKER:** Yes, well, I share Francis' excitement. He was the one responsible for making it exciting. That consciousness has become a topic in cognitive neuroscience, and that we are understanding more and more about the neural correlates of consciousness, NCC, I think he coined that acronym.

**BINGHAM:** With Christof Koch.

**PINKER:** With Christof Koch. I have a lot of respect for their theory of what underlies consciousness. I also think that there is a little nugget, a little kernel of the problem that is, may not be a scientific problem, the so-called hard problem of consciousness, a nice term from David Chalmers, but one, of course, that goes back to Descartes and before. Namely, that there is still a gap and there may always be a gap, as to, even after we have identified, down to the last neuron firing, what goes on in the brain when someone is conscious, why it actually feels like something to be that brain may be a puzzle that will stay with us. That is where I will place my bet. And in that regard I have allied myself with a tradition of people, most recently Colin McGinn, but before that Thomas Nagel, David Hume, Noam Chomsky, Gunther Stent, the biochemist, and others, who have suggested that there are some puzzles that might stay with us simply because our minds are structured in a way that they can't wrap themselves around them. And the so-called hard problem of consciousness might be one of them, although, this is, the hard problem of consciousness may not be a problem; Dan Dennett, famously, doesn't believe there is such a problem, which I think is preposterous, but he thinks it is preposterous that I think there is such a problem. And it says nothing about progress ever stopping in terms of the so-called easy problem of consciousness, Francis' problem, the neural correlates of

consciousness. There it is a tremendously exciting field and I think it is going, I think we can expect a complete solution.

**BINGHAM:** Dan would say that you had to have language to qualify as a conscious, as well, right?

**PINKER:** In one sense, yes, and I don't, I would not agree with that. I mean, as much as I have devoted my life to understanding language, I tend to think it gets overrated, that too much is attributed to language. I think there is lots of consciousness that goes on without language.

**BINGHAM:** You have the whole of history to work with. Who would you have liked to have sat down and have a conversation with?

**PINKER:** Oh, probably David Hume, in terms, and Thomas Hobbes. Those would be the first two on my list, perhaps. I mean, Charles Darwin, but everyone is going to say Charles Darwin. But Hume had the kind of mind where there wasn't a single topic that he thought about that he didn't have something interesting to say. And also, strikes me as being a kind of a bon vivant, a wit, and just interesting person to bounce ideas off. And Hobbes also; Hobbes, like Darwin and Orwell, contributed his name to something very nasty. I mean, Orwellian and Darwinian and Hobbesian, but nonetheless, all three of them are, were brilliant and quite morally sophisticated men, and Hobbes anticipated a lot of what we now call cognitive science, the idea that, and neuroscience, the idea that the mind is a mechanism. That was not obvious in the 17<sup>th</sup> century and he was uncompromising about it. I also think his analysis of violence was way ahead of its time, and it is not what we remember as the mean life, in the state of nature as nasty, brutish, and short, which seems to imply that he thought that we had this irrational thirst for blood, but he actually analyzed the dynamics of violence in a way that we would now call game theoretic. Where he showed that some aspects of violence are what you would expect, given rational agents in any kind of competition. So I think both his analysis of cognition and his analysis of violence made him well ahead of his time and I would love to confront him with what we now know and get his take on it.

**BINGHAM:** Interesting. Darwin you mentioned this, obviously, we are coming up to Darwin at 200, February the 12<sup>th</sup>, 2009 will be Darwin's bicentennial. Also, Abraham Lincoln on the same day.

**PINKER:** Oh, yes, and the sesquicentennial of *The Origin [of Species]*.

**BINGHAM:** Right, is coming up on November the 24<sup>th</sup>, publication of *The Origin*. We will be doing something about Darwin on The Science Network on a regular basis. Perhaps you could, what would, do you have a "My Darwin", my thoughts about Darwin, what Darwin means to me sentiment here?

**PINKER:** Yeah, what Darwin did, and here I am borrowing in part from Dan Dennett, is he, he unified the world of life, and ultimately of mind, with the world of physics and chemistry. So he, he built the, the most important bridge in the great continuum of human knowledge, and showing that complex life adaptation, diversity of life, needn't be attributed to a miracle, but it is intelligible based on physical causation.

**BINGHAM:** And you would have liked to have dinner with Darwin, as well, I guess?

**PINKER:** Well, Darwin, as well as being a really nice guy from all accounts, but he truly did have an extraordinary mind. The idea that was popular for a while that he was a kind of dullard who counted barnacles and stumbled upon this theory, obviously wrong. He is an extraordinary mind. You can see that by looking at some of his lesser known works, such as *The Expression of the Emotions in Animals and Man*, a book that I, whose reissue I reviewed for *Nature* a few years ago, with enormous subtlety and sophistication of observation. And he, he made these amazing empirical predictions that people don't often call attention to; so at the end of *The Origin* he said, "Well, nothing that I have said so far can answer the question of whether life originated once or more than once, so it is possible that animals and plants were independent. But I know, I have been told that certain chemical irritants can cause tumors to form on animals and galls to form on plants. That leads me to think that there may be a chemical commonality beneath all that diversity." Man, what a prescient prediction. And here is another one. "When the first human fossils are found they will be found in, pre-human fossils, hominid fossils, they will be found in Africa." How did he know that? Because that's where the chimps are, and chimps and humans are morphologically the most similar. So it is, those are just two observations, not the most famous ones that Darwin has made, but that lead me to think that, yes, he'd be a hell of a dinner companion.

**BINGHAM:** Yeah, a very smart guy, as well. Here is a question. Who would be the wisest person you know, who would be the smartest person you know? Who is the smartest person first?

**PINKER:** Oh, dear. That is, having spent my life in these wonderful institutions I have met so many smart people. Oh, the smartest, oh, there are too many and I don't want to make too many enemies. I should, and the wisest, boy, I had better not.

**BINGHAM:** Okay. Is there a question that you would have liked to have answered that people have so far failed to ask you, what would that be? Is there some question that you would really like?

**PINKER:** That no one has ever asked?

**BINGHAM:** Yeah, that you would really like to expound on and nobody has ever got around to it?

**PINKER:** Oh, lots, how does the, how does the brain represent a proposition, an idea that can be true or false? I think that is a core of the bridge between neuroscience and cognitive science and I think it is still an unsolved problem. I think our neural network models can account for a lot of phenomenon but I don't think that capturing the meaning of a sentence is something that we have a good neural model for now. That would be one. What was the, what were the evolutionary precursors to language? What did the hominids who used language before our species sound like? Why do we enjoy music? Is there, does it have an adaptive function? I am skeptical that it does. If not, is it a byproduct of some quirk of our neural wiring and, if so, what is it?

**BINGHAM:** Yeah, because you did refer to it as auditory cheesecake.

**PINKER:** Auditory cheesecake, yes. And it is one area where everyone wants it to be. At the same time as people are, often, very critical of evolutionary psychology for saying

that certain things, like a moral sense or an adaptation, everyone wants music to be an adaptation. And so I get it from both sides.

**BINGHAM:** I think we will actually do a meeting on music at some point and we'll have Dan Levitin in and you can come and argue with him and we'll all have a nice conversation about that. Is there any discovery that you wish you could have made?

**PINKER:** Oh, boy, where would I begin?

**BINGHAM:** Oh, just a lot?

**PINKER:** Oh, yeah, to be, you know, to be there at the moment, well, certainly, the discovery of a structure of DNA, certainly, would be up there. The Hubel and Wiesel discovery of feature sensitive cells in the visual cortex; George Miller's discovery of top down influences on speech perception; even Noam Chomsky's first mathematical analyses of language, showing the elegant mathematical structure of simple phrases. Well, those are a few.

**BINGHAM:** We usually end with this question about what are you optimistic about. In the sense we dealt with that earlier because it is the subject of your next book, but let me just try it again, anyway. What are you optimistic about, given the state of society at the moment?

**PINKER:** That the processes of enlightenment and reason will continue to drive violence down. That some of the events that we have enjoyed in our lifetimes, that were almost unthinkable beforehand - the fall of the Soviet empire, the end of apartheid, the fact that the Cold War ended without the use of nuclear weapons; if you would have said any of these, the fact that Israel and Egypt are at peace, the fact that the homicide rate has plummeted since the 1990's in the United States, if you would have made any of those predictions in 1975 or 1985 people would have said, "What are you smoking?" But they all came true. My hope is that an ability to see the future, to think about our predicament, to see our predicament as a problem that can be solved, will lead to more pleasant surprises like that.

**BINGHAM:** Steven Pinker, thank you very much.

**PINKER:** Thanks for having me.