

The Providence Roundtable  
March 7<sup>th</sup>, 2018  
*The Human Instinct* by Ken Miller

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**From the Feedback Survey:**

**“What questions, if any, do you have for our presenter, Ken Miller?”**

1. I would like to hear Ken expand on the limitation of the primate/human mind as it relates to our ability to understand reality through science.

We are, obviously, limited in many ways by the human nervous system. In perceptual terms, we can describe ways in which every one of our senses can be fooled by things such as optical or acoustical illusions. We can sense only part of the electromagnetic spectrum, even though the entire spectrum is part and parcel of reality as we know it through science.

Richard Dawkins once suggested that our evolved brains were simply not equipped by evolution to understand the exact nature of reality, and that may be why quantum reality is so hard to grasp. I did my best to address this question in Chapter 5 of my book, “The Mind of a Primate.” Darwin famously wondered whether he could trust his own mind on ultimate questions of reality, and his concerns are worth thinking about.

I tend to be an optimist on such things, not because I regard the human mind as perfect, but rather because our minds have evolved to the point where we know enough to question and correct their conclusions. Neuroscientist Gary Marcus famously wrote that the construction of the human brain is a “kluge,” a slapdash collection of neurons and ganglia that often leads us astray – but as he also pointed out, we know enough to outwit our inner kluges. Self-consciousness of our own limitations is our greatest strength.

2. From your perspective, can the science of evolution in society help our social interactions to be actually more or less violent?

I don't quite understand the wording of this question. However, if you're asking my opinion on Steven Pinker's latest book (“Enlightenment Now”), I do agree with him in a general sense. Human society has never been more prosperous, better educated, more peaceful, or more “enlightened” than it is now. But I part company with Pinker's unbridled optimism for future progress along those lines. While random personal violence may have lessened, society's capacity for mass violence has only increased – and social media has the capacity to bring

out the worst in us, as well as the best. So I think we must continue to strive to improve the human condition at the very real risk of having things slip backwards.

If the question is whether an understanding of the science of evolution can help society to become less violent, I would give that a qualified “yes.” That’s because I take, almost as a matter of faith, that knowledge is good, and that greater understanding of the human condition leads to an improvement of that condition.

3. Humans certainly have unique abilities, but so do other organisms. What makes us "uniquely" unique, and why does it matter?

I would argue that all organisms are unique, each in their own way, and that is one of the great imperatives behind the need to preserve biodiversity in the living world.

One way to understand what is truly different about the human organism from all others is the fact that you and I can consider that very question. No other organism in the 4 billion years of life on this planet has contemplated the process that gave rise to their species, no other organism has discovered quantum mechanics (although many make use of it), and no other organism spends its time considering the great questions of life – as we try to do in a Roundtable discussion!

- a. How can we be so sure we are the only conscious beings? We are not the only ones with art or music.

I would never argue that we are the only conscious organisms. A number of organisms can pass self-recognition tests that show conscious awareness, and these include cetaceans as well as our close primate relatives. A few years ago one of my former students was serving as Director of the National Zoo in DC. She proudly showed me a new habitat she had crafted for their orangutans, and invited me to pull up a chair and sit down next to the glass wall that separated visitors from the animals. With a few seconds, one of the orangutans spotted me, pulled up a chair of his own on the other side of the glass, and sat down to watch me, looking directly into my eyes as if I were an object of study, which I suppose I was. To this day I remain absolutely convinced that I was interacting with a fully conscious being on the other side of the glass.

Yes, other animals produce what we can recognize as art and music, no question. These things on their own do not make us unique. However, no other organism takes inventory of these creations the way that we do, no other organism engages in discussions of the art or music created by *other* species, and no other

organism has even thought to categorize and classify the living world. That's why the appearance of the human species on this planet roughly a million years ago was a pivotal event in the history of life.

- b. I would be interested in hearing more about how this all relates to free will and religion/spirituality.

I discussed free will extensively in Chapter 7 of my new book, and I would be glad to provide a copy of that chapter to anyone who might be interested. I am a firm believer in free will, not because religion/spirituality depends upon it, but because science depends on it. The whole of science is predicated on the premise that we are able to make free and independent judgments on the basis of empirical evidence, and if we are not, the whole of science (including the "science" that says we lack free will) is suspect. Stephen Hawking realized this and speculated on what it might mean if we ever achieved a complete theory of the universe. He wrote:

"If there really is a complete unified theory, it would also presumably determine our actions. And so the theory itself would determine the outcome of our search for it! And why should it determine that we come to the right conclusions from the evidence? Might it not equally well determine that we draw the wrong conclusion? Or no conclusion at all?"

See the problem? If we conclude, on the basis of scientific evidence, that we lack free will, then that very conclusion is predetermined by the conditions of existence, and therefore suspect. So, in my book I tackle several of the arguments against free will and find them suspect. Nonetheless, I also have to admit that I cannot, as a scientist, pinpoint a structure or mechanism or process within the brain to which we can assign the task of generating free will. My concluding point, which I believe firmly, is that if we do indeed have free will, it was evolution that gave it to us.

With respect to religion and spirituality, for my own views I'd refer you to my book "Finding Darwin's God," published back in 1999. My views on faith have changed very little since then, and I think I explored them thoroughly there. As a person of faith, I do believe that we have a spiritual side as well a physical one, and that questions of spirituality lie beyond the reach and competence of science.

4. What is it really like, defending evolution in the heart of Texas?

To be perfectly honest, it's been great fun! I suppose that's because I have a competitive nature, and love a good argument. But it's also because the situation in Texas is more complex than many people outside the state realize.

I have traveled and spoken extensively in Texas, and I love the state. It's far more diverse and interesting than the politically-charged stereotypes of the state that are commonly held in blue states like Rhode Island and Massachusetts. I've testified against anti-evolution initiatives in front of the elected State Board of Education several times, and always found enough support among the 15 members to reject those initiatives. Texas science teachers, in particular, are eager for support and backing from the scientific community, and I've spoken regularly at their annual meetings.

I've encountered opposition, to be sure, but also plenty of defenders. A few years ago, when an anti-science group published a list of 20 supposed "errors" in my Biology textbook, a professor from Baylor University rebutted that list before I even learned about it. Great to have such friends!

5. I would have liked to ask him if he thinks our country has become less opposed to the science of evolution over the last 20 years.

Yes, it clearly has. And the Gallup polling organization agrees:  
<http://news.gallup.com/poll/210956/belief-creationist-view-humans-new-low.aspx>

There are several reasons for this, but I suspect the most significant has been the increased emphasis on science education in grades K-12. A similar Pew Foundation survey showed that young people, aged 18-29 and educated within the last decade and a half, have the highest level of acceptance of evolution of any age group. This suggests to me that we are moving in the right direction.

6. Does evolution allow for one homo sapien Adam?

I don't believe that it does. The best genetic evidence suggests that our species went through a number of small population bottlenecks, but that evidence is not consistent with descent from just two individuals who lived less than 10,000 years ago.

- a. How does theistic evolution reconcile Romans 5:12-14 (i.e., death on this earth entered through Adam's sin.)

I am firm in my insistence that I am not a “theistic evolutionist.” The term makes no sense to me. Evolution is science, and theism describes a religious point of view. We don’t speak of “theistic physics” or “theistic mathematics,” so I see no reason to speak of “theistic evolution.” It is true that I am a theist and an evolutionist, but my view of evolutionary science does not differ from other scientists who are not theists, which is why I reject the term.

With respect to Romans Chapter 5, read further. Paul writes that “the wages of sin is death, but the free gift of God is eternal life in Christ Jesus our Lord.”

When Paul says that the wages of sin are death, what can he mean? Physical death? Surely not, since even the righteous die. Clearly, these passages speak of a spiritual death associated with the loss of salvation.

Sadly, many so-called creationists interpret these passages to mean that there was no death in the world until Adam sinned, and feel constrained to argue that creatures like *T. rex* were all plant-eaters. That’s complete nonsense. And as a plant cell biologist, I would point out that a diet of plants still involves death – for the plants!

7. Why was religion not mentioned as a distinct characteristic of humans?

Perhaps because I once read and enjoyed *Watership Down* by Richard Adams, in which the fictional rabbit culture had a religion of its own. That got me to thinking whether other animals might be conscious and might have something akin to religious beliefs.

But I think that religion certainly is one of the characteristic aspects of human culture, and if I had more than 20 minutes to speak at the Roundtable I certainly would have included it.

8. As a Christian, I would be fascinated to know what you think of the empirical evidence of the incarnation, life, death, resurrection and ascension of Jesus Christ.

I do not pretend to be a scholar of ancient texts or an expert on the life and times of Jesus. However, I do find it remarkable that Christianity found its roots and sudden explosion into prominence in what was arguably the world’s most

educated, literate, and scientific culture nearly 2000 years ago – the Judeo-Greek culture of the Near East. The explosion of the Jesus story into the literature of the Gospels and the letters of Paul convinces me of the reality of Jesus and of the effect his life had on those who knew him.

Incarnation is a spiritual concept, not a scientific one. The story of Jesus suffering a death at Roman hands by crucifixion is certainly plausible given the Roman attitude towards maintaining order in their subject territories. I cannot say anything scientifically about the story of the Resurrection, even with Easter approaching, since there is no data beyond the accounts in the surviving Gospels. And I do not seek a scientific explanation for either, since believers since the beginning of the Christian era have understood it as a miracle, beyond scientific explanation.

9. So how do we get from the mechanistic view of the human species to the exceptional conception of same, and

I think we get from the mechanistic to the exceptional by means of a critical, clear-eyed, objective consideration of what the appearance of the human creature has meant to life on Earth. For the very first time, our planet has produced a creature who is truly conscious not only of its own existence, but of the universe as well. As I wrote in my book:

*“This creature discovers the laws and principles of its own existence; delves into the past, probing its own history and that of other living things; begins to explore and understand the vastness of the universe, the improbability of its own existence, and the intimacy of its kinship to all of life. Now, we may ask, how should that creature regard itself? Should it regard what has happened on this planet as a thing of no significance? Should it look at itself as just a temporary collection of atoms and molecules no different from any other collection of matter in the vastness of space and time? Or would it be justified—knowing that it gained its life, its presence, and its consciousness in an epic journey from the big bang to the present—to see its place in the universe as special, its emergence as an event of genuine significance, and its self-awareness as the triumphant realization of the universe’s own potential? It is not a relic of religious superstition or an artifact of self-centeredness to think that the appearance of the human species matters for this planet and for the universe itself. Instead, it is a cold, rational appraisal of the fact that nothing like us has ever existed in the world of life we know.”*

- a. how might we apply that conception to further the progressive evolution of our species, our world, and the universe?

That's a great question. I take it on faith that knowledge is always to be preferred to ignorance, and therefore it's important for us to recognize and understand the role that evolution has played in the diversification of life on Earth. An understanding of the role our species has come to play in the world is especially important given the ways in which human dominance threatens the planet. Many biologists now argue that the Earth has entered a radically new era called the Anthropocene in which the planet's future will be determined principally by human activity. It's all well and good to be modest about the special qualities of our species and to see us as just one creature among many. But that view should be tempered with the realization that human activity has now begun to shape the rest of the planet in unprecedented ways. At this moment in history, we ignore our own centrality to the planet at our peril, and that's a message that science can and should convey.

10. Ken has been a lightning rod of late because of the perception, founded on "critical theory" that science is a "power structure" that intrinsically "oppresses." I'd like to learn his views on this situation (and the ideas that created it) and, too, how he remains cheerful and open despite the pressure.

Ha! I once overheard someone describing me as a "pathological optimist," and I suppose there's some truth to that. But if one has to choose a pathology from which to suffer, I might argue that optimism is not a bad choice.

I'm certainly aware of the ways in which critical theory has sought to cast science as the tool of social hierarchies and power structures, but I have never felt that I was a personal "lightning rod" for such critiques. My own take on such ideas goes like this: The scientific enterprise, at any moment in history, has always reflected the virtues and the faults of the societies in which it operates. The scientific community exhibits all of the pathologies associated with society, including racism, sexism, classism, and homophobia. That's because science is a human enterprise, and scientists have no special claim on virtue. So criticism of science along such lines is not only justified, but necessary.

Having said that, it is also true that science is the closest thing we have on this planet to a universal culture, one that cuts across national, ideological, and social lines to seek the goal of a universal truth about nature. For all of its flaws, it is

ultimately self-correcting, and we have witnessed that time and time again as faulty scientific ideas have been discarded and the scientific method used to move forward and progress in our understanding of nature. If you had to ask, I'd say that such a sense of progress is the basis for my enduring optimism about the value of the scientific project.

11. What evidence or context would make you reconsider the "uniqueness" of humans?

Even in our brief history, science has repeatedly humbled our egotistic and romanticized view of ourselves in nature.

I'm always ready to reconsider and change my views on any aspect of science on the basis of new evidence. But my claim of "uniqueness" for our species is not based on any single biological characteristic such as bipedalism, tool making, communication, or even mental capacity. Rather, consider what I wrote in the final chapter of my book about my thoughts one August evening as I prepared to watch the coming of an annual meteor shower:

*"I'm hoping for a clear sky tonight. It's expected be the peak of the annual Perseid meteor shower, a chance to glory in streaks of sudden fire as fragments of a comet come crashing through the Earth's atmosphere. In between those moments of spectacle, there will be a chance to lie still in the darkness and absorb the quiet beauty of the nighttime sky. The experience has always made me feel small against the vastness of space, but it's also one that has helped me, as a biologist, appreciate what it means to be human. ...*

*Of all the creatures, of all the forms of life that grace the surface of this small planet, there is only one that looks this way into the nighttime sky. Only one knows the Perseid spectacular is coming. Only one plots the distances to stars. Only one contemplates the age of its universe, only one is aware of the mysteries to be solved in starlight. While all of life is one, while all of life is linked by ancestry, structure, and design, only the human creature seeks answers to questions in the stars."*

When you note that "science has repeatedly humbled" our view of ourselves, you have actually made my point. Science itself is a creation of the human mind, and that is our species' ultimate claim to unique status. Specifically, the very fact that we can analyze ourselves in a scientific context is unique among all creatures and explains why the appearance of the human species on this planet marked a turning point in the history of life. We are unique because of the very capacity for self-evaluation that, as you note, has humbled us.



What evidence would make me reconsider? That's easy to answer. When another species develops a scientific culture that can probe the stars, discover the atom, and catalogue its own evolutionary history, I will be glad to change my views on this. But I don't expect that to happen anytime soon.

- a. Why do you support any claim that humans are "special" if you can only be proven wrong in time?

I think I've already outlined that. Any scientific judgment can "be proved wrong in time," since science is never final. Science is always tentative, and scientific ideas are always subject to potential disproof. But the tentative nature of science does not prevent us from drawing conclusions on the basis of current knowledge, and we should never be shy about doing so. It's always possible that new evidence may emerge that would disprove evolution, for example. But in the absence of such evidence, and in the presence of overwhelming evidence that supports evolution, we should not be hesitant about stating what we know about the evolutionary process and the evolutionary origins of our own species.

As noted in my response to the first part of your question, find me another species capable of developing a genuine scientific culture, and I will be glad to yield on this point.

12. I'd like to know what Ken Miller thinks of the Bible. Does he consider any of it true? (It seems like the resurrection, which defies science, is a necessary tenet of Christian faith.)

I find that my fellow Christians often think of the Bible as a single book, which must be literally, historically, and scientifically true from cover to cover, so that if any part of it is not perfectly accurate, the whole of the Bible is suspect. This is a mistake.

This way of thinking ignores the actual history of the Bible, which is not a single book but a collection of individual books written at different times by different authors for a variety of different purposes. Just as important, one must realize that the collection that today we call "The Bible" was actually the result of a series of arguments, debates, and political compromises that took place several centuries after the life of Jesus. To neglect this is to miss the whole point of these books, some of which are poetic in nature (The Psalms, the Song of Solomon, for example), some of which describe genuine historical events (The Books of Kings),

and others which contain spiritual visions (The Book of Revelation) unconnected from historical events.

Yes, the Resurrection does defy science. But think about this. If the Resurrection were an event that was perfectly explicable in scientific terms, then it would not be a miracle. Christians in the First Century were perfectly well aware that the Resurrection did not have a natural explanation, and therefore understood it just as we do today – as a miracle that is beyond science.

- a. And if he does parcel out true from not true, has he considered any danger in doing so-- using our cultural moment to define God's word?

Now you're pressing me into theology, which is certainly not my strong suit. The process of "parceling out" true from not true is something that believers do all the time when they read Scripture, but not in the way implied by this question. The Book of Genesis, for example, is not scientifically true in that it does not conform to what we have learned scientifically about the geological or biological history of the Earth. But if Genesis is read for its spiritual message, it can be understood as a document that defines the relationship between Creator and His Creation. This is not an example of using the current "cultural moment" to define God's word. I'd suggest reading St. Augustine's book "The Literal Meaning of Genesis" to see what I mean. The notion that Scripture should be interpreted in the light of empirical (scientific) knowledge is not merely a notion from the current moment, but was already accepted by this great Christian writer in the 5<sup>th</sup> Century.

- b. Is there another option for reconciliation?

I am sure there are many other options, and neither I nor any person I know would claim to have the last word on scientific or spiritual truth.

13. When you say "we are unique", are you thinking of homo sapiens, or all Homo? I would think that the other archaic humans, such as Neanderthals, would probably evolve to create music and science, and to gaze into the universe, if they weren't extinct.

Great question. Most investigators now consider the Neanderthals to be members of our own species, *Homo sapiens*. So do I. We have the complete genomic DNA sequence of Neanderthals, and it's clear that modern day humans possess considerable genetic similarity to these individuals. Several years ago there was a sci-fi novel that contemplated the discovery of a tribe of genuine

Neanderthals in an isolated region of Africa. Their presence led to immediate questions about what constitutes human nature, and whether these creatures should be considered to be human or not.

My own answer to your question is that these archaic humans do indeed share in the characteristics that have made us a unique species.

- a. Do you think that given enough time to evolve, some species that are sophisticated enough (to have the traits that you consider uniquely human) is bound to appear?

I do. And in my book I argue that the biological “niche” we humans occupy could well have been filled by another, quite different species, had evolution taken a different course. And, if we humans manage to drive ourselves to extinction, another species may very well evolve to that point. Along those lines, I could even propose where that species would come from. Specifically, from the mollusks. Check out Peter Godfrey-Smith’s wonderful book “Other Minds: The Octopus, the Sea and the Deep Origins of Consciousness” and you will see what I mean.

- b. And when a species reaches that level of sophistication, the quest for purpose is bound to happen?

I think that the quest for purpose is inherent once a species reaches self-consciousness.

- c. Or, maybe the Neanderthals would have evolved to be like Martians (regarding their understanding of the meaning of life)?

Maybe they would have. But I regard what we have come to know about the Neanderthals to imply that they would have functioned quite well in modern human society.

14. Would you go into how the mechanism of evolution was able to lead to the development of humans?

Sorry, but this is the one question I will defer for another time – and possibly for another book. To recount the complete story of human evolution is well beyond what I have time to write as I answer other questions from the Roundtable.

However, Chapters 2 and 3 of my new book do deal specifically with the evidence for human evolution, and I would suggest you look them over when the book comes out in a couple of weeks. I'd be glad to discuss it further with you at that point.

15. How does Ken understand his own Christian faith in the context of evolution?

On this issue I am an orthodox Catholic. Four Popes have written in support of the idea that evolution can be considered as the mechanism by which God created the diversity of life on Earth, ourselves included. As St. Augustine observed, God does not so much create the universe as to allow the universe to create itself.

a. Is it one form of human self-reflection and consciousness?

I'm not quite sure of what you mean by "it" in this question, but I certainly do believe that evolution is what produced these capabilities in our species.

b. Does God exist within or outside of the evolutionary world/reality?

When religious skeptics demand empirical proof of the existence of God, it seems to me that what they are actually demanding is that God be naturalized. In other words, that the presence of God be revealed within the natural world in the same way that we might detect a cosmic ray, a subatomic particle, or a virus. But the Abrahamic conception of God is *not* that He is part of nature – rather, God is the reason for nature. His existence, therefore, is not a question that science can address.

16. Do you consider it theoretically possible, whether you are a believer or not, that there is a God who created the universe and cares about human beings, and that evolution can still be a valid explanation of a process? I think that this is a perspective of some theologians who are not biblical literalists.

In a word, yes. I explored exactly this idea in my first trade book, "Finding Darwin's God."

a. I was a little confused about the concept that intellect and creativity and free will are less real if their manifestations are "mere" results of evolution. This relates

to the point in the first question that if God is critical to one's sense of worth it is possible to have it both ways: God created the universe and a process by which a creature would evolve materially and at some point also be imbued with a soul.

I'm not sure that I ever advanced that idea. I certainly do believe that intellect, creativity, and free will are indeed the product of evolution, and that fact does not make them any less real. What I have argued is that any attempt to "explain away" human thought and behavior as the deterministic results of natural selection invalidates the independence of human thought and judgment. It would also invalidate science itself, since science depends upon the human ability to evaluate and consider empirical evidence.

I certainly do believe that we are creatures of a material world, originating in a fully naturalistic process (evolution). But that reality does not contradict the idea that a Creator is the reason for the existence of that material world. As C. S. Lewis once wrote, "He [God] likes matter. He invented it."