

## SCIENCE OF THE NOOSPHERE

**PJ Manney and David Brin**

with

**David Sloan Wilson**

**David Sloan Wilson:** Okay, so welcome PJ and David, a pleasure to spend time with you today. And this conversation is part of a series called the Science of the Noosphere, which is inspired by Teilhard de Chardin. And the series is panoramic in scope from the origin of life to the future of the Internet. All of the other conversations are with scientists, technologists, and futurists operating in non-fiction mode and this is the first conversation to dwell upon the goal of storytelling in general and fiction in particular, and imagining the noosphere and bringing it into being. So, let's begin with some introductions. Both of you are well known, but our audience is also highly diverse.

So, allow me to introduce you and invite you to add whatever you like. PJ, you are author of the trilogy (R)evolution, (I)dentify, and (C)onscience where the beginnings of those words are cleverly encased in parentheses. You started your career in the film industry. You're a former chairperson of Humanity+ and helped to launch the magazine H+. And now you're involved with a group called the New Mythos. Is there anything you would like to add to my briefest of introductions?

**PJ Manney:** I've also just joined the board of the Institute for Ethics and Emerging Technologies, which I also think will become apropos to this and David Brin of course is one of the fellows.

**DSW:** Awesome. Okay. Well, David you are a legendary science fiction writer and social commentator, including your non-fiction books The Transparent Society and Polemical Judo. You started your career in academia, earning your PhD in space physics in 1981. Our paths crossed a little bit. We're both frequent contributors to the online magazine Evonomics.com, and you even have an article in a book that I co-edited titled Pathological Altruism. Your chapter is titled self-addiction and self-righteousness, and I expect that that might be part of our conversation today. So, is there anything you'd like to add to my briefest of introductions?

**David Brin:** No, my wife seems to approve of me after 30 years, and I think that's the best encomium that a man can possibly state. Other than that, I try to do fiction, non-fiction, and I'm running two series of novels for young adults, one in which aliens kidnap a California high school and live to regret it. So, there's a number on Lord of the Flies. So, we try to pay forward as best we can, and I'm mentoring a bunch of young authors in that regard. And PJ if you know any apprentices that you'd like to send over, send them over.

**PJM:** Indeed, I will.

**DSW:** Well, we can already see that this conversation will be laced in humor. Okay now, let's begin with what the noosphere means to you and the influence of Teilhard on your own thinking. I should stress that the other people in this series vary widely in the specific influence of Teilhard, and that the common denominator of this conversation is the concept of the noosphere that he articulated. And that we are now trying to place on a strong scientific foundation. PJ, let's begin with you on your thoughts on the noosphere and the specific influence, if any, of our good old Pierre Teilhard de Chardin.

**PJM:** I actually discovered Teilhard after I started writing (R)evolution and was doing research into who was interested in what I saw as a merging of humans with technology. Not just our use of technology as an externalized force where wheels make us faster and levers make us stronger, et cetera, but as an internalized aspect of our physiology. I discovered that there was people called transhumanists. I'd never heard of them before, and through having discussions with them and trying to understand where their

points of view were, they had mentioned Teilhard. So, I started reading, and it was one of those things where for me the intuitions I had finally had a voice and a perspective that I would not have had.

I am not Roman Catholic. I'm not a priest. I'm not a paleontologist, so it was a really wonderful insight into a deep philosophical train of thought. That's why I want to continue exploring it because I think one of the things we will discuss later is the New Mythos, I think that his ideas are such a powerful myth that we can use to tell stories. And I don't use myth in a pejorative sense. I use it in a constructive, how do we tell stories? Where are the underpinnings that touch us at our deepest parts?

**DSW:** Great. And how about a little more of the noosphere PJ? With or without Teilhard, what does the noosphere mean to you?

**PJM:** For the noosphere, for me again, it was one of those weird intuitive connections that he actually gave a name to. Ironically, I'd written a scene in (R)evolution before I had really gone in depth into the noosphere, where my character Peter Bernhardt notices the wires above San Francisco. And it's not just the cable car wires, but all the wires and this integration of a world above him that he now has access to because he himself has become connected to the Internet. And to me, the noosphere was something that has been developing for quite some time. It's not a new thing.

I understood its existence before it had a name, and what I love about having a framework that now pre-exists is that we can have more conversations about it. This idea that the merging of human communication and human thought through technological means, we're swimming in it. And I think that there's an interesting aspect to humanity right now in that we are swimming in it. And like fish, we don't know we are in water already.

**DSW:** Okay. How about you David? Teilhard and the noosphere.

**DB:** One of the things that I specialize in is trying to put things in context, and one of the contexts that Teilhard lived in was the growing awareness that human interconnectivity was going to leverage human knowledge. Roughly about that time, maybe a little bit later after him, there was something that was well known to most science fiction people a generation or two ago, but no longer, J.D. Bernal's very influential essay, *The World, the Flesh and the Devil*, which really hit the intelligentsia really hard in the 1920s and was done as an essay. And yet, it was recognized as a great science fiction story because it talked about humans becoming parts of communities that in effect then had the cellular structure of a living cell, especially space colonies.

Now, pay no attention to the movie that bought the rights to that title. That's a pretty good movie, but absolutely it has nothing to do with it, but it's well worth looking at Bernal's essay as an example of the way people were thinking in those days. H.G. Wells as well was moving along such thoughts, but when the noosphere really had its biggest influence was after the atomic bomb when a large number of thinkers were saying there's no way that the knighted, nasty, brutish cavemen could ever navigate this future without destroying ourselves.

The arguments between Oppenheimer and Teller. Who would have imagined that the mad Hungarian would turn out to be right, that human institutions leveraged by fear of this new device would decide to do things differently than they ever did things in the history of the species before. Teller said the famous line, "This time is different." And whenever anybody says that, you put your hand on your wallet and yet Teller turned out to be right. This time was different, and we grew up more just barely enough as individuals, as members of an enlightenment society. Now, there are a lot of science fiction authors who still inveigh against this.

Orson Scott Card is the greatest propagandist, a brilliant, brilliant writer, greatest propagandist against the western enlightenment and in favor of return to demigods and ruled by feudalism, but the main point in science fiction where this all came to roost was Arthur C. Clarke, Isaac Asimov, a number of

others who wrote stories that despaired of human wisdom and therefore, the solution was to subsume ourselves into a macro god-like connected single, unitary organism. Asimov called it Gaia, Galaxia in his Foundation novels and by the way, I finished Isaac's science fiction series, Foundation and Robot series with the approval of the estate tying together all his loose ends.

Arthur C. Clarke, Childhood's End.

So many others from that era took the attitude that we had to subsume ourselves, because no way a society based on individualism would work. I wrote an answer to that in my novel Earth, and we could discuss that because it just ain't necessarily so. We can have the noosphere without surrendering our individuality. David.

**DSW:** Yeah, I just wanted to add that the concept of society as an organism goes all the way back to antiquity. That's an ancient idea. Aristotle, Hobbes, it suffuses religious thought. And I mean it predates individualism by a long way. So, the idea that society needs to in some sense function as an organism in its own right and in another sense must respect individual rights and freedoms, is something that Teilhard got. He has a whole section on the value of the individual as that pearl beyond price. The idea that whatever we're reaching for with the noosphere really cannot just subsume individuals into some superorganism. It has to be a different kind of superorganism. That I think becomes clear from Teilhard.

And I know that David, you speak for that is as well. So it's not surprising with or without Teilhard and with or without the noosphere, that the idea of the superorganism is going to loom large in science fiction, as it has all the way back to the Greeks and before recorded thought, no doubt. Don't you think? Do you have any comments on that, either one of you?

**PJM:** I think the problem with thinking about the superorganism is that people have difficulties with frames of context and reference. They think of themselves as an individual. They don't think of themselves as a superorganism, of course which we are. We are superorganisms of superorganisms and as each of these frames expands who you include within the frame of context, I really love using the Eames' Powers of Ten film to visualize this. And yes, it's about exponential change, but really I like to use it as a tool to expand our concept of who's included within the frame and what choices we would make within that frame.

And we are not just individuals and ourselves clusters of superorganisms, but we are in community, we are part of nations, we are part of a globe, we are part of a universe. And at each one of these larger frames, we need to adjust how we see ourselves in it and realize that simultaneously, we're in each of these frames. And I think that's a problem that people have with this notion. Transhumanist critics love to say, "Oh, we're becoming part of the borg." No, we're not. We have always been in community. We have always been in communication. The difference now is that we're in community and communication with ever larger groups of people. So, our circles of empathy have to expand, our circles of communication have to expand.

And we're doing it already, that's the irony. This notion of being part of a superorganism is again, we're the fish in the water. We are part of the superorganism and the idea that we're not is simply a limit of imagination.

**DB:** Yeah, I agree with everything PJ said if I may. I think that one of the problems is that people tend to forget that all the way back to Thucydides when Pericles led the first experiment in an alternative to feudalism, 99% of our ancestors lived under brutal pyramids of power enforced by strong males with one objective, and that was to ensure the reproductive rights monopolies of their sons who never earned anything. We see this barging at the door right now, trying to reclaim control over human society. Orson Scott Card is a major propagandist for that and to try to return to this, and this is viewed, this pyramid of power is often portrayed as being a healthy organic thing, because the organism needs a brain and the brain is the priests and the barons and the kings at the top. Who else? Who else are you going to have?

Well, the enlightenment experiments starting with Pericles and then Locke and Adam Smith helping to—and Paine—helping to rationalize this enlightenment experiment which flattened it out into a diamond with a confident middle class, whose children can all in theory and increasingly so with each generation compete fairly. And that's the keyword that's missing from a lot of these noosphere concepts, and that is competition. In nature, you have level after level.

James Grier Miller's living systems theory showed this extremely well. David's aware of that, and that is that at every level of life, there are these basic interactions inside your living cells, organelles apparently compete with each other to gain status as the most important communication organelles. The result is a cell that when viewed from the outside seems an utterly cooperative entity. A fetus when it's growing in its mother's womb, and I talk about this in my novel *Earth*, the proto neurons compete with each other in fierce ecologies within the skull.

**DSW:** Neural Darwinism it's called.

**DB:** Exactly. The result is something that is unitary in the sense that it moves towards a common goal. In nature, the animals that compete with each other appear to be individually ferocious and yet a healthy ecosystem derives a larger cooperation out of this, the circle of life. What we have found is that the right and the left, both are right and they're both wrong. The left tends to hold in suspicion the word competition, which is the fundamental creative force of the universe. The right holds in suspicion regulation of competition to keep it from being toxic, because we're new at this level. When in fact regulated competition is what Adam Smith spoke of, and it's the only thing that ever worked and its track record is better than anything else.

And that's how you get a competitive society individual by individual, but a society that overall has been vastly more successful than all others combined.

**DSW:** Okay. Well, now I'm all primed and ready to go here for this conversation. Love what you all said. And of course, it's what the series is all about, but what I find if I could just take my turn here for a second, in all the other conversations and basically in all my interactions, this is in the world of non-fiction science and non-fiction is that the best of our current scientific knowledge about all of these matters is quite recently derived. I often say that for most of the 20th century, the study of evolution was confined to genetic evolution and had little to say about such things as human cultural evolution and so on.

Let me just recount some of the things that some of the other conversations we've had in this series, which covers such thing as human origins and human history. People such as Peter Turchin which I know PJ you're already familiar with, and David, I'm glad to see that you're nodding your heads. So, here's a very capsule version of what we know from human origins to the present. And of course, this is right in the spirit of Teilhard and the noosphere. Point one, human origins is very much a major evolutionary transition. The first human, societies, small-scale human societies were already superorganisms. They were highly cooperative, much more cooperative than their ape ancestors, and that was thanks to social control and regulation.

Basically, the bully wins. Chimp society is a despotic society and in order for an egalitarian society to take place, there must be the means to basically resist bullying. And that was the transition that took place in the origin of our species, and we became so cooperative that we became mentally cooperative in addition to physically cooperative. If you look at all of the mental facilities, decision making, perception, memory, all of these are much more group level properties, from the very beginning, than people have appreciated. But of course, only at a small scale. And then following Peter Turchin, we learned that. So it looks like despotic primate society to egalitarian human society, and then with the advent of agriculture, despotic human society, pretty much David what you recounted. And then thanks to between-group competition, so David you're properly emphasizing there's always competition. Whenever cultural

change occurs, that's a competitive process, one thing replaced another thing. The question is whether that thing is a cooperative thing, or a disruptive, competitive thing, leading to the mega societies of today which are definitely a glass half full when it comes to cooperation and competition, but I mean a scale of cooperation which nobody could have imagined 10,000 years ago, including global cooperation which nobody could have imagined 300 years ago, the idea that the earth is the unit that needs to be the organism.

So, that's the scientific story that we're in a position to tell and in a position to update. And I'd love to know whether some of the people that you've become familiar with PJ and David, people like Peter Turchin, myself, maybe Joseph Henrich, other people that are at the forefront of the science of this, how much they're known to the science fiction writers and to the people in your neck of the woods.

**PJM:** I seem to be the person introducing other people like Turchin and yourself David to the rest of the science fiction community. I don't hear it spoken of much. I have some fans who are themselves scientists who are aware of these people, but I don't see it as something that's part of the dialogue in science fiction at all. It's ironically why I created the New Mythos, because I wanted new ideas and new ways of looking at how we eventually tell stories, because you have to remember that science fiction fans read science fiction. And yes, they're curious about things. They'll look at things on social media. They'll do a little deep dive in an Atlantic article, but they're not going to sit and read an entire academic paper.

And that's for David Brin and I to do and then translate that into storytelling. I think that it's the job of authors like ourselves to look at some of these new ways of thinking and try to make them part of the canon in a way that is easily digestible, but also doesn't give up the complexity. Complexity is one of the things we're talking about, and that's the hardest thing to get people—who I would refer to as civilians—to understand, is what complexity science is, and how it affects your everyday life, how the moment you start looking at. And again, it's like those frames of context. Once you start looking at a single issue through complexity, you're never going to look at the world the same way again.

And I think that both David and I tell stories that are actually designed to present complex ideas in ways that people don't even realize they're there. I mean we may mention it's about complexity, but they're so wrapped up in the story and so taken along by plot and character that they don't realize the spoon full of sugar we just gave them to give the information to go down.

**DB:** That's a very good summary. Now, I have had Peter Turchin over to the house here, and he's a nice fellow. And I think he's making real contributions at pointing out things. I'm less impressed when he says I have now, weaving all those things that I've pointed out, together into a model. Generally speaking, I channeled Hari Seldon. I was the guy who completed Hari Seldon's story and Janet Asimov was very happy, but generally speaking, such efforts to do or to weave a story about the future are better when they're illustrative thought experiments than when they say, I know this pattern and the worst of all these patterns is the notion of the society having life and death cycles, decadence.

This is the great cult incantation of the right, is cycles of history. And I'll provide a link to where I write what I believe is a devastating rebuttal of this cult incantation in its simple form is a complete lie. These cycles do not exist. Attractor states do exist, but I want to mention that again reiterate, that the way in which we have dealt with an increasingly complex society that could not have been managed from above. It just can't. Now, the Chinese and I'm going to provide you with a link for this as well, where I respond to one of the thousands of screeds being issued by the court intellectuals in the Beijing imperial court is saying basically that we have the best form of the pyramidal structure, and that's completely true. The Chinese always had the best form because it was meritocratic.

It had a lot of meritocracy to it. And therefore, we are the ones who can deal with technological obsolescence of labor with paternalism. We are the ones who can deal with AI, with fierce control from

the top. We are the ones who can plan an economy, and it all sounds very good. And it's completely proved false by all of human history and all of human nature. The way we deal with it, and we're doing it badly right now, but the way we've done with it very well, for the last 200 years increasingly so, is by expanding the circles of inclusion, flattening hierarchies, and sacking powers in our society against each other in highly regulated competitions.

So, that unlike nature, there's no blood on the floor, but a lot of positive sum output from the competition. And those positive sum outputs if cooperatively regulated, make for dealing with the complexity because then small groups can deal with this portion of the complexity. Small groups can deal with this portion, unhindered by some great theory by the king or the priests. So, I think it's terribly important when we talk about the noosphere, or these layerings and layerings and layerings and layerings to remember that each layer is internally highly competitive. And that's the creative force, but there are systems in each of these layers, the cell, the brain, the small society, the large society.

There are systems that keep it from getting out of control and cancerous and destructive that make the competition positive sum. In any event, PJ I'm looking forward to hearing more about the New Mythos.

**DSW:** Well, if I could just immediately respond to you David, just to confirm that our visions are very highly aligned. What you just said is more or less what I would.

**DB:** That's what Adam Smith said.

**DSW:** Well, to a degree, but I mean nobody can foresee the future. But what I want to do, I mean there's so much to talk about and it's really lovely that there is this alignment. I think there's a strong scientific justification for what you just said David, but I want to get to the storytelling element. First PJ, back to you and then I want to add in the dimension of storytelling and fiction, but first PJ, please how you'd like to respond to what David just said.

**PJM:** I think David knows that I'm a bigger fan of Turchin's models than he is, and that's fine. My actual major in college was American history and American studies. So, his modeling of political violence and cycles of discord, I actually do concur with for a variety of reasons, which we don't have to go into it here. But beyond that, I do understand how it has been used by people for not so positive ends, the concepts. So, I can understand David's reluctance to want to agree with that. And I too am a friend of Peter's. He actually proofread my clear dynamic section in (I)dentify, but otherwise, I'm happy to talk about storytelling.

**DB:** Well, let me just ask you one quick question PJ, do you know about what Howe and Strauss called The Fourth Turning? It's a huge cult popular thing on the right and they point out to a lot of, what is it called, pareidolia, the seeing of patterns, the human tendency to see patterns.

**PJM:** It's not just Peter Turchin. We have hundreds of researchers now working on these models. And when I see the work being done around the world, Seshat alone is a fascinating project, where they just keep on adding information to the models, and the models seem pretty sturdy. This is a data conversation, that again, I'm happy to have maybe at another time.

**DSW:** So, first of all Peter is part of this series. So, Peter and Daron Acemoglu, author of Why Nations Fail have a conversation in this series. Peter began his career as a biologist, a population biologist studying such things as bark beetle populations and lemming populations. And they cycle, not because cycles are fundamental, but because that's what happens with complex multi-variable systems. They don't come to an equilibrium. They go up and down and it's often they're chaotic cycles. They're not like clockwork. It's not like a pendulum, but they go up and down. History is complex. And when Peter shifted his career from population biology to human history, he just brought this whole toolkit with him of complex systems dynamics, and human phenomena often go up and down.

And American history is an example. You can't deny the peaks and valleys of egalitarianism in American history. They exist.

**DB:** I don't deny it, but I think that it's because we have a recurring co-joined twin that gets angry every 30 or 40 years. I have an essay describing what we're in right now as phase eight of the American civil war. Phase four is the one everyone's familiar with from the 1860s. What I think is a more valid approach is attractors, and the fundamental attractor in agricultural human societies has always been feudalism because those who have power, whether it's from swords or money will try to cheat, not all of them, but a large faction will try to cheat in order for their sons to get maximal reproductive power. We're all descended from the harems of those SOB's, which is why males have the fantasies that they have probably.

But in any event, we found another attractor state. And I think this is relevant to what's called the Fermi Paradox. I think my number three hypothesis for why we haven't seen aliens is that the same attractor state that pulls in sea lions, elephant seals, stallions, male elephants, bull elephants and so on is actually fairly moderated and under some degree of control among humans. And I think that's probably rare in the cosmos, but that's bringing in a noosphere at a completely different level. I think the galaxy's waiting for us. I think we're the rescuers, and we better not blow it, but I do believe that it's very important. PJ's historian which I think it's necessary to point out that almost all science fiction authors grew up reading mostly history, more than science.

And it should have been named speculative history, because the great drama of our clawing our way without any help out of the caves in the muck and the mud through horrible misunderstandings and stupidities and sacrificing babies, because we thought it would save other babies. This is the story and science fiction extends it a little bit in thought experiments, or thought experiments to the side. So, I perfectly honor the whole notion that science fiction is a lot more about history than it is about any particular scientific gimmick.

**DSW:** That's a good segue into story and fiction. Let me wrap up our conversation so far to say that this is a very exciting time scientifically. Of course much is at play, much is at play, much is unsettled. And it's great to have folks like you in the conversation. I think the more literate everyone becomes about these developments, the better, and that includes the storytellers of the world. I'd like to introduce storytelling and fiction in two stages, because I think there's an important distinction between the two. Storytelling can take place even in non-fiction. I mean even when we stick to the facts of the world, there's ways to present it that qualifies as a story and other ways that qualify as not a story.

First, I'd like to ask you the question what's the distinction between storytelling versus non-storytelling in non-fiction, and then bring in fiction. So, what's the difference between storytelling and non-storytelling even when we're sticking to the facts?

**PJM:** Well, one of the things we have to remember is how our brains work and as social creatures, we have learned to respond to causality. It's partially a survival technique. If I heard a story about how lions can attack and how I could climb a tree and not get eaten, I'm going to remember that story when the lion attacks and I've got to tree to climb. And then I'm going to pass that story on. Our brains look for stories even when there's nothing but random information. There's actually a funny experiment with an AI who was taught to write scripts, and this was early on with the AI was literally just taking script elements and throwing them together almost at random.

There was no causality, but everyone tried to figure out what these scripts were about. They were trying to put a story to these random ideas. If we're looking at storytelling in non-fiction, what we're looking at is the presentation of information in a way that creates a through line, a causality if A and B then C. So, that can happen in any kind of writing. The best scientific writing is certainly that. The best of any kind, journalism, every kind of writing, not just writing, every kind of transmission of information that has an

effective sense for the receiver. I think that there's something we forget about story when we're talking about non-fiction, and that is that non-fiction storytelling needs to have many of the same impacts to land on the receiver.

And that includes things like hope and inspiration, and a higher purpose, and a bigger sense of the world, and an understanding we didn't have before, and I'm in the shoes of someone else and I can empathize. So, the best of these nonfiction stories incorporate ironically all the same things that great stories do.

**DSW:** Imbued by emotions and values, right? So, I'm trying to distinguish this from what would count as not story. A dry scientific account somehow qualifies as some kinds of philosophical discourse count as not story. They're lacking elements of what we would call storytelling. It helps to flesh out what counts as not story and non-fiction in order to appreciate what counts as stories.

**PJM:** I think not story is a pile of data.

**DSW:** Not story is a pile of data?

**PJM:** Yeah. Once you start arranging if A then and B then C, I think you've got a story.

**DB:** Yes, but I think that sometimes, a good novel can be more fair than a non-fiction, so-called non-fiction argument. In that, if you're going to lecture to the readers in a novel, for instance, my novel *Earth*, that was the one I talk about, that goes to the noosphere and the macro notion of a macro sentient earth planet to a degree of literality that would shock you, incorporating superconducting domains in the earth's mantle. The point is that if you want to have a good drama, you have to have characters that interrogate the lecture you're giving, that interrogate the proponents of your point of view. And the better the novel, the better the story, the more cogent and on target the interrogators are going to be.

You're going to create characters who give the best arguments you can come up with against your point, and this is not something you see in what might be called tendentious non-fiction. And my most recent non-fiction book—*Vivid Tomorrow*—shows how you have science fiction across the last 50, 60 years has arguably guided our conversations so well that we are alive today, because of science fiction. In my opinion, there's no question that the self-preventing prophecies of *Dr. Strangelove*, *On the Beach*, *Fail-Safe*, *War Games*, *Prevented Nuclear War*, *China Syndrome*. *Soylent Green* recruited tens of millions of environmentalists who are now responsible for the possibility that we might make it. PJ.

**PJM:** I wrote a paper, first it started out as a keynote at UC Santa Cruz, and then I ended up publishing a paper called *Yucky Gets Yummy: How Speculative Fiction Creates Society*. And in it, I trace from the Greeks, from the Bibles, all the way to the present, the notion of how what we saw as characters that represented the yucky, and I used yucky as the 'official yuck factor'—the Arthur Kaplan and Leon Kass argument of the wisdom of repugnance versus not. Characters so yucky because they were created by man, not God. They were monsters, they were aliens, they were *the other*.

And how through the history of literature, *the other* has been turned from the villain to the hero, and why that's happened and how in making *the other* heroic including our monsters, and aliens, and creatures, et cetera, and mutants. And just the entire range of speculative fiction and fantasy and science fiction, we have been able to internalize the lessons that we as human cultures need to understand to move forward. Many of our technologies are integrated in these stories. Suddenly when you have the X-Men as mutants no longer being the villains of a story as in the 18th and 19th century and then becoming the heroes of a story, well now we look at mutants in a different way.

And who do those mutants actually represent? They're also metaphorical. They're both literal and metaphorical.

**DSW:** So much to say here, I wanted to bring in some of the scientific developments here, especially dual inheritance theory—the idea that basically in our species, there's a cultural stream of inheritance in addition to a genetic stream of inheritance, which enables us to think of our symbolic systems, represented largely as stories, as very much like our genes, very much like our genes. So, every person is a collection of genes. We call it their genotype, which influence just about everything that can be measured about them. We call that their phenotype. And every person because they're human beings is a collection of interrelated symbols, let's call that your symbotype, which also influence just about anything that could be measured—that very same phenotype. That's dual inheritance theory.

And what it means is, is that our symbolic systems represented very largely through stories truly determine who we are. It really blends, it just blends fact and fiction, the distinction between them. So much of our existence in inner and outer, mental and physical is socially constructed. Then the idea that we tell stories which are not yet reality, and then we step into those stories, so that they become the reality, makes perfect sense.

**PJM:** Makes sense neurologically too. We're looking at story as empathy creation stories are empathy engines. And normally, we're used to empathizing with just our tribe or our family, but now we have to empathize with people who could not be less like us in theory. We discover in fact our common values and our common humanity through story.

**DB:** And this is one reason why I think it ties a lot of it together to realize that most of the world knows for sure that Americans are crazy. But as John Travolta said in a movie, ain't it cool? But the pejorative aspect of that has been undermined by generation after generation of Hollywood propaganda, that if you watch most of the Hollywood films, especially the science fiction films, preach suspicion of authority. Some authority must be combated. Tolerance, diversity, and eccentricity, individual eccentricity. The audience bonds with the character at the beginning of the film, in part because that character exhibits some eccentric trait. And it does not have to be the same eccentric trait as the viewer.

The fact that it is an individualistic eccentric trait is the thing that enables the viewer to bond with the character, and the authority figure doesn't have to be invading aliens. It can be a nosy mother-in-law. The point is that these four things lessons have been so pervasive that I think it's one of the reasons why worldwide mafia oligarchy of almost all oligarch types has united, despite their differences. Some are ex-commissars, some are current commissars, some are casino moguls, mafiosi, drug lords. If you trace it, they're all united because they know that this propaganda system cannot be allowed to invent for one more generation. It's already extremely dangerous to the entire pyramidal zeitgeist, and that is about storytelling.

That is where a lot of the mythological battle has been taking place. I think it's very unfortunate that so many of the mythological champions in science fiction today don't give credit to past science fiction for having been the most liberal genre. I just watched *This Island Earth* last night with my wife, 1955, utterly cringe-worthy female lead who screams at many points, but she's one of the leading scientists in the world and she does brave things. Show me that in another movie from 1955. So, in the context of each era, science fiction was I think at the forefront of this expansion of inclusion project. And I'm all in favor of what the dominant science fiction community is doing now in making that project a centerpiece, expanding afro-fusion, multi-gender, all this stuff.

I have good cred from the 1980s in my novels on these things. I have great early cred on all of those issues, but—look at me, I have to be marginalized now, I understand. Okay. But what I don't like is the added frisson of resentment towards the older generations of science fiction, because it was always ahead of its time.

**PJM:** I agree with David and that's one of the things where speculative fiction has the ability...all fiction has the ability to progress the social conversation. One of the most important books of the 19th century

was Uncle Tom's Cabin. You had countless stories like this. Dickens brought about the reform laws. You can point directly to pieces of literature...Dostoyevsky change the conversation in Russia. You can look at specific authors and pieces of fiction and actually mark their effects on entire social structures. However, we are far more siloed in our information and our reading. Everyone read Uncle Tom's Cabin in the United States. It was read as much as the bible in the US.

You can't say that about any single piece of fiction anymore. We're lucky if 1% of the population actually reads something specific. But having said that, there are waves of similar stories. Should I discuss the New Mythos specifically because... Okay, let me just back up because I think this will help.

So, this all started because in 2018, I was at Norwescon sitting with Gordon van Gelder, Nisi Shawl, and Elsa Sjunneson. And I had an actual epiphany like out of body experience, you know, crazy. We were on a panel discussing science fiction in the age of President Trump, and all these little bits of things that I've been taking in for the last several years all hit me like a tidal wave.

And it was that we were great at dystopic fiction, but we weren't telling the readers, who were now willing to fight, what to fight for. They had finished the battle, but now what? We were focusing on the chosen one stories, but the problem with the chosen one is everybody is responsible for changing society. Not a single person we can all point to and say, "Well, that's the one, I'm voting for and they're responsible. And if they don't do what I want, they're bad." We had all of these failures of storytelling. I mean superheroes for me are an enormous failure in the present day, because they're all about restoring the status quo. Something invades Gotham or Metropolis—a big bad. And the entire goal is to bring society back to its set point.

That's not how society works, that's not how history works. Nothing works that way. If we think every single battle is about restoring the status quo, there's a problem with that kind of storytelling if we're trying...

**DSW:** Can I break in here because I want to make a point that because every culture relies on stories as part of their DNA, their cultural DNA, then there will be stories for every variety of culture, including the cultures that we deem bad, plus the ones that we want to be the cultures of the future. So stories where there's a disruption and then a return—a disruption of the social fabric and then a restoration of the social fabric, of course those stories are going to abound in cultures around the world and it's the stories of those cultures. It's the way those cultures preserve themselves.

We might want to have different stories because we want the culture to change, but we should acknowledge that every culture, no matter whether we approve of that culture or not, that's what a conspiracy theory is. It's a story, for a certain kind of group in a certain ecological situation. I think we have to appreciate the diversity of stories is no less than the diversity of all cultures, whether those cultures are benign or pathological. Whether we want them to change or we don't want them to change, that's how diverse stories are. Would you agree with that?

**PJM:** I agree with that to a certain extent, in that specifically for instance in Asian storytelling structures, there is an absolute need for a return to the traditional sense of purpose. I don't think though that if you're doing science fiction or fantasy, that is a necessary aspect to the genre. In fact, I think it's a false aspect of the genre.

**DB:** Except that most of those superhero stories, while they nullify a large disturbance in the form of something evil, generally there are finger wags and lessons to be learned. And certainly in the ongoing xenification of the image of the hero, I'm referring not to the actual root of *zeno* as in the alien, but xenification in the sense of more and more like Xena warrior princess. The xenification of the image of the hero is certainly something that is having an effect. You can no longer say little girls have nobody to point to who kicks butt .

**PJM:** Having worked on Xena, in fact that's actually how I became friends with David 10 years ago when I gave the very first version of this New Mythos idea of speculative fiction creating society. He was in the audience and he said, "Anyone who worked on Xena is a friend of mine."

**DB:** I did not know that, except possibly through the noosphere. I had an idea that you would smile if I coined that word.

**PJM:** My point is more this, that there are many other ways to tell a story than the ones that are at the forefront right now in our genre, and you don't have to have a single chosen one hero. You can have a community. You don't have to have a classic heroes journey, where the hero might be changed, but the society is brought back to the status quo. You don't need to do that. There are many changes...you don't have to have a three-act structure. I mean there are so many ways we can look at how to tell a story and in fact, looking towards other cultures, not just western culture. Western culture of course has been steeped in the three-act structure since the Greeks. So, I am open to other kinds of storytelling.

I'm saying that we should all be exploring other kinds of storytelling to see what kinds of stories fit best that might guide our future activities toward something like a positive future. When we end the story, when we have the smallest denouement, we got the bad guy and then the story ends, boom, out. The problem with that is then what? It helps you learn to fight whatever you think the bad guy is, but it doesn't tell you then what you do with it. I try to explore that in (C)onscience with well, what are the options? Once you get rid of the big bad, then what? And I think that there's a tendency to think that the audience is less able to take complex stories or ideas than they are.

**DB:** Well, PJ I have to say that your customers and mine are perfectly comfortable being uncomfortable. Now, you're right that there is a great deal out there that is troglodytic, and one of the problems we face is that this great worldwide oligarchic push is taking advantage of a minority of Americans, but a large minority of Americans that recurringly is capable of deep anomie toward the future and towards smartypants nerds, which is the principal propaganda on their media. I do have to take issue with one thing you said, and that is our storytelling being rooted in the Greek. Well, the Greek mythos, the plays and all of that were much more Asian as you say. A notion that the lovers cannot ever actually kiss.

It must be tragic separation. There must be tragedy. The mother genre is fantasy, and the mother genre fantasy, you can have fantastic elements as in science fiction, but there are certain tropes, and that is that things get back to where they were. The social order doesn't change. Science fiction is a bastard offspring of fantasy, in that it's all about change, starting with Mary Shelley. And even though she pushed things back where they were and said don't do this, it was nevertheless a dystopic science fiction experiment. And a lot of science fiction, I talk about this in Vivid Tomorrows. A lot of science fiction expresses the criticisms that you just expressed that we need to get away from chosen ones.

And I do this in some of my Star Wars versus Star Trek rants, where the Star Wars is essentially fantasy. It is absolutely devoted to the mother genre that it's all about demigods, and the Republic not only doesn't do anything right. It doesn't do anything, and this is exemplified by the ship in Star Wars which is a single seat fighter with a squire or drone or droid or Sancho Panza. But the Republic can't fit on a little fighter. The thing about Star Trek is it's a naval vessel, and that means that the captain is only way, way above average. And she must call upon way, way above average people to help every time, and half of the episodes are about the Federation.

It does stuff, it's about stuff. It's a topic of conversation, it's a topic of criticism, and often a topic of hope, how we could be different than we are. We may not be worthy to make the Federation, but maybe we can make ourselves worthy to make the makers of the makers of the makers of the Star Trek Federation. So, I agree with everything you said. I just wanted to point out that there are a lot of stories like yours and mine that point out that large numbers of way, way, way above average people can change things.

**DSW:** One thing we've been saying all along, but I just wanted to make it explicit is that stories are much about motivating action. Basically, they create a moral worldview that motivates action, much more than a dry scientific account. Science tells you what is. It doesn't tell you what to do without adding values, but stories add those values and emotions and so on. Once you step into the world of a story, you are compelled to do something, and that basically defines stories. Now, we've been talking a lot about like the stories that move us in a direction that we'd like to go, as opposed to stories that move us in some other direction, like stories that maintain the status quo, whereas we want stories that change the status quo.

I wanted to bring in indigenous stories because if we're going to talk about genres of stories, we really have to go way back to hunter-gatherer indigenous societies. And I'm going to read from another conversation partner I had, Tyson Yunkaporta, who's an aborigine and he wrote a book called *Sand Talk: How Indigenous Thinking Can Save the World*. And here, he's describing a folk figure in Australia, Emu. He says, "Emu is a troublemaker who brings into being the most destructive idea in existence: I am greater than you, you are less than me. This is the source of all human misery. Aboriginal society was designed over thousands of years to deal with this problem. Some people are just idiots, and everyone has a bit of idiot in them from time to time, coming from some deep place inside that whispers, "You are special. You are greater than other people and things. You are more important than everything and everyone. All things and all people exist to serve you. This behavior needs massive checks and balances to contain the damage it can do."

What he's describing, correctly in my view, and as basically science is coming to, is that this is social control, controlling the bully, controlling the aggrandizing individuals, the problem of social life and so many stories exist to restore that balance.

That's a balance that needs to be restored in all societies, quite apart from what we actually do which might be different in the future than in the past. A lot of these themes that were we're talking about, they go back to the beginning under the entire nature of stories in all societies, including oral societies.

**DB:** Well, I think it's very important to recognize that some of the finger wagging wisdom that we get from other societies and other traditions reflects our own wisdom, in that the notion of expansion of inclusion which has been the great far too slow, grindingly slow, grindingly painful, but the great inexorable American project was never done anywhere else to anywhere near the momentum and the degree. What it points out is how hard it is to uplift a little plug from my own universe, how hard it is to uplift cavemen apes. It's really, really hard. Ask any woman who gets married. It's really, really hard to do, especially when you do expand your vision to include bull elephants, stallions, male lions, elephant seals, and all of that.

And you realize that I am greater than you, so I'm going to take all your women and wheat is something that is amazing that we can hold in front of ourselves a vision a future society in which this is all under full degree of control, under full degree that boys are all raised, so that it's all under control, and the portion of this that is pansexual that women can be bullies too. This is not easy, and so there's a part of me that says I want to include, I want to learn from these aboriginal stories, and all of that and these give us good guilt trips. And there's a part of me that goes, "Well, you know, I'll bet you, I'll bet you your tribes, this wouldn't be one of your top legends if it wasn't a daily problem for you."

**DSW:** Tyson would agree with that, and I read the story in part because I think that it more or less conforms to what you say David when you talk about the authoritarian threat, is that's like Emu run amok basically. We have now, we have a situation in which Emu is not constrained at all now. And you say that authoritarian societies cannot work as far as the future is concerned.

**DB:** Their track record is so abysmal that long litany of horrors that we call history is more than enough refutation to allowing feudalism or pyramidal structures back ever again. Because if we do this time,

they'll make sure that democracy and enlightenment are never tried again. And we'll just be one more failed Fermi site, and the galaxy will have to wait for somebody else. And isn't that a grand burden?

**DSW:** PJ, I'm going to enter our wrap-up round here after your turn PJ.

**PJM:** So, what ended up happening was at this Con, I just started channeling everything I said to you, and we got such an incredible response. That's when you know you're on to something, and then I later found out that Neil Stephenson had been on a similar track with the group at ASU, Arizona State University and others have been thinking about this as well, but I thought it's funny, there's no place for us to talk. I started a Facebook group which is now private, because it has to be for the new rules on Facebook called the New Mythos and I'm the only moderator.

It's a beautifully kept garden, but everybody can talk and everybody can post and everybody can join, where its authors, many of whom you've heard of that bring to it new ways of thinking, new ways of structure, new thoughts about character, new thoughts about story period. We bring history, sociology, psychology, economics. We're looking to tell new stories of a future that will benefit us all, and that's the key. Again coming back to these expanding frames of context and reference, I want to see something that at least benefits our world. That's my minimum, and one of the things was very inspirational for me was reading Robert Wright's *Nonzero* and which is one of the great books.

Clearly, both Davids, you're fans, and his idea of these win-win-win scenarios of these positive non-zero-sum games, that's what it's about. So, how do we tell stories about positive non-zero-sum games, where we have conflict, we have drama, we have all of the things that make great story? But in it, in these different stories, we find different seeds of how we're going to succeed, what is it going to take for us to chart a better future, and that includes different interpretations of the noosphere.

**DB:** And that is one of the reasons why in both of my young adult series and PJ, I'm going to send you all five existing novels. I'm going to dump them into your mailbox. The young adult series that has all the bright up-and-coming authors in it portrays kids from across time yanked into the 2340s, the 24th century to help save a Utopia that's in peril. That way, you can have the adventure. You can have the peril, but the vision of the future is, "Hey, you kids, guess what you did in the 2060s and '70s saving the world from the mess left by the baby boomers. You're our heroes, that's why we're yanking you into the future. You made a wonderful civilization. Now, could you help us save it?"

Neil Stephenson of course, he's a fantastic, wonderful fellow. He and several others and the ASU group have all been involved in this notion that the simplest way, and I talk about this in *Vivid Tomorrows*, the simplest way to get your heroes in pulse-pounding jeopardy is to assume everything's rotten. And I mentioned the four positive messages of Hollywood Sci-Fi, suspicion of authority, tolerance, diversity, and eccentricity. There are two very, very destructive messages. No institution can ever function, and your neighbors are all sheep. Because if the heroine is in danger at a certain point and can call 911 and get actual professional help, that messes up your story.

If she can knock on a neighbor's door and say, "I have a problem," and the neighbor says, "Joe across the street, he'll help you." You knock on Joe's door and Joe says, "Hold on a second, let's go," then a good writer can get around the problem of functioning institutions and functioning neighbors, can write around that handicap, that difficulty. But poor writers, they simply go with this really destructive propaganda that all the institutions that our ancestors built are useless, and your neighbors will be of no help, whatsoever. And I think that's terrible.

**DSW:** Well, let me initiate the wrap-up round here. This has been so great, and I think one purpose of this is to continue interacting with each other. So, this is not really the end. I wanted to say a little bit more about the Science of the Noosphere project, which is embedded in a larger project called Human Energy. And Ben Kacyra who's the founder of that project talks very much in terms of the third story. What he means by that the first story traditional religions, the second story materialistic science, and the

third story some kind of value-laden science that's close to what Teilhard was about with all of his writing. So, the idea that it does have to be a story, it can't just be science, it has to be science portrayed as story is what we're all about.

What I'd like to end discussing is just how do we do this. One is to make science available to the current generation of science fiction storytellers. This science is very new. It needs to be spread far and wide, including the artistic community basically, and that becomes their raw material. And then is there any other way to facilitate storytelling? So, how do we actually bring storytellers into this project? It's a scientific project. It needs to be a storytelling project in order to actually work towards global cooperation, the global good, call it the noosphere. So, what do each of you have to say about that? David, why don't you go first and then we'll end with PJ.

**PJM:** To me, all culture as much as science informs culture, all culture actually comes from the arts and humanities, in that how we communicate the science, how we communicate what reality is, is what makes the impact. One of the things I did briefly was I used to talk to scientists, like JPL and other places and try to get them in a frame of mind to understand that even their fellow scientists wanted to hear why this mattered to them, why does this matter to the audience, what is this connection through story, that can make an impact on their science being communicated more broadly. I think that everyone has to learn how to be a storyteller.

We are naturally whether people realize it or not, but there must be for the third story by definition, you literally called it the third story then. By definition, we have to find that synthesis. It's not STEM, it's STEAM. You need to have the arts in the middle of all that analysis, because you have to make sense of it. As David said earlier, fiction often makes more truth, more sense than the data we accumulate, because we're able to see the bigger context, multiple contexts, bigger pictures that the scientific inquiry by definition is not really supposed to do. It's supposed to go down the silo, whereas the art can go across silos.

And that's where the third story comes in for me personally as a storyteller, because it is that synthesis of where do we find value and meaning and where do we find the hopefulness to drive us to a better future.

**DB:** I am in awe and I don't know what I could add to that. I mean I would rather leave that as the last word, but I will say that the ability to spread oneself...When I give keynotes at universities or commencements, I talk about how human beings can be many. PJ mentioned Robert Wright's *Nonzero*. You can be many. You can have a pastime. Scientists are the first priesthood to encourage amateur science to compete with each other to get on PBS, and explain what they're doing. And when I was in grad school, we were worried that specialization would get narrower and narrower and narrower with time and the exact opposite happened. Scientists today talk to people outside their field more than they ever did before.

Computer literature searches played a large role in that, but the ability to be eclectic, the ability to grasp that which is outside your field, even if it's on an amateur level, but to get the essence of what's going on all around you is in my opinion one of the greatest examples of the positive sum game. And I encourage everyone to not feel limited. That doesn't mean that the narrative we're hearing of hatred of scientists and of do my own research. No, a certain amount of humility is called for. If all the experts agree on something, then you might bear the burden of proof. But—but to keep asking questions, that's another story. And it's to some extent as PJ said, it's all about story.

**DSW:** Awesome. Okay, that's a great way to end up. Thank you both of you. That was just awesome.