AI and You

Transcript

Guests: Judith and Garfield Reeves-Stevens

Episode 4

We're back and this is episode 4. We have a real treat on the show today. Science fiction authors Judith and Garfield Reeves-Stevens will be here. There are a lot of great reasons for having them on the show, starting with the fact that I really want to make the point that artificial intelligence affects us so much that we need to stretch the boundaries of how we think about it and who we listen to when even people who are conservative about the impact of artificial intelligence, like Andrew Ng, call it the new electricity. We've got to look outside the boundaries of our normal experience to get a handle on that. If you go back to the Victorian era and the invention of electricity, then how many people could have anticipated what was going to happen there? You need a science fiction author like H. G. Wells or Jules Verne to even start to have a way of opening up your mind to the possibilities that had been created. Now, another reason for having them on the show is that Judy and Gar are Star Trek authors and as a Trekkie myself, that's a selfish reason for wanting to talk with them, but also, if you've read my book Crisis of Control (hint, hint) you know that I return to the theme of Star Trek several times in there because it provided a vision that shows us a way out of the existential angst and dilemma that the human race finds itself in now. It's not hard to look around the world in its state at the moment and say, this is a species - humanity - that has not collectively decided whether it deserves to inherit the universe. If we were, right now, granted the kind of power that AI could eventually deliver and somehow had the ability to go out into the universe and encounter other species, how much would you trust us to treat them properly? Frankly, wouldn't a responsible AI at the moment be doing the rest of the universe a favor by making sure that doesn't happen? Do we really want to export some of the madness that we're unleashing on the world at the moment into the rest of the universe and other unsuspecting innocent species? You personally, I am sure, would make a noble and compassionate emissary of humanity. But can you say with any confidence that given the state of the world right now, our emissaries that we actually sent out would be as compassionate and progressive as you? Now, while this is all a very hypothetical discussion - were not on the brink of having the capability to encounter new species - it frames a very important and very current turmoil that is causing anguish in the hearts of people all over the world right now. And science fiction has a way of framing those hot topics, those biting social issues of our day, in a way that makes them accessible to being approached objectively. So the kind of discussion that you're about to hear serves a dual purpose. One of them is to give us a way of thinking at right angles to today's most pressing and intractable social problems. The other is that if you're a science fiction fan of any stripe, it's just darn fun to speculate about the future, and we're going to get into that on this show. Now,

despite the fact that Judy and Gar live in the same city as me, this show was recorded remotely because it's happening at the time of peak coronavirus social distancing, another one of the issues that has wrought havoc upon our society, from not just the primary biological and secondary economic impacts. And this was the very first interview that I did, so I was still getting my feet wet with the audio issues and interviewing techniques. Okay, so let's get on with it.

Welcome back to AI and You. We have a very special episode today, the science fiction authors Judith and Garfield Reeves-Stevens. And if you're asking, what does science fiction have to do with understanding artificial intelligence, remember the watchword for this podcast is *disruption*, and we're all getting a brutal lesson in disruption, and what happens when we don't pay attention to that. And some people told us what to expect. But we, by and large, didn't think it could happen this fast, this much. And now we're experiencing the effects of that. Artificial intelligence is also evolving; not as dangerously, perhaps, as a virus, But our machine models are growing at the rate of doubling every three months. So in some ways it's already exceeding our ability to keep up with its pace. AI can spell disruption and even in the best ways, that also disrupts life in ways that we ought to be prepared for. So let's talk to some people whose job is to think about the future. Judith and Garfield Reeves-Stevens are a powerhouse husband and wife writing team who have roamed unchecked over the landscape of science fiction in Hollywood for over 30 years, particularly in the Star Trek universe, writing novels such as *Memory Prime* and *Prime Directive,* and with writer and producer credits on the series *Star Trek Enterprise,* they've helped NASA with visioning future goals through a space policy workshop. They've helped Disney design theme park rides. They won the Constellation Award for creating the series *Primeval: New World*. Frankly, folks, I think they may be writing it faster than we can read it.

That's Stephen King.

I've got to start out by saying something. Your emails that we've exchanged here, use only one form of the first-person pronoun: the plural. It's all ‘we’, ‘our’: I could never tell who was talking. Even your email From: line just says “J&G”, no spaces between. It irresistibly draws me to that science fiction trope of the *group consciousness,* a *hive mind;* current population: 2. What is it about you that gives me these crazy thoughts? What is different or special about your partnership?

I think we've just been doing it for so long. We developed a third voice, and it's a combination of the two of us, and we can't always remember when we're asked. We say we write every other word, but it's joint, and yet we come to it from different places, But I'm always I know if I'm writing something. I'm always thinking, “What will Judy think about this?” And then I've gotten to the point now where I wrote this, but I know Julie's gonna change it to this, so I'm going to change it to that right now. And when we go back and forth on anything that we're working on, we're constantly, it's organic, and it just grows into that third voice and we couldn't pull it apart on.

That's truly amazing. Someone who's worked with co authors before knowing how difficult that is. And your average husband and wife can't agree on which end of the toothpaste to squeeze, here you are making both of those things work in that cauldron called Hollywood. How has that tested you?

What screenwriting, script writing is different from novel writing in that is highly collaborative. Yes, it is a combined effort of a lot of people, and it changes constantly from the person section to the final execution. So a, script basically is a skeleton, and it's being created knowing that the actor is gonna bring something to the director's going bring something to it, the set designers are gonna bring something to it. So, that's the creative part of it that you actually look forward to because you know that you're just starting it. You're just at the beginning of the train is the writer. And if you're lucky enough to be involved in production, then you can also respond to the other contributors.

In such an ego-driven world, that's a very selfless point of view. Is that common?

I think for the good writers, yes, because you have to. You have to look for what the director has to say. Look for creative partners and you're hoping that they all care as much about it as much as you do so that you spark each other. It depends. Sometimes you'll have a real visionary in one aspect who's either the director, or maybe it's the star. There'll be a creative voice that is driving it, and then everyone will probably respond to that person. And of course, it is hard when a writer has a vision and the director doesn't share the vision, and the actor might not share the vision, Television's more a writer's medium and film's more a director's.

And so here you are playing your part in the chemistry of a show, where everyone has to meld like cogs in a machine to make it work like the crew on the bridge of the *Enterprise*.

Absolutely, team working and shared vision is the way that has to work, if that's not there then it's very difficult to perceive. There are some that are very, very precise about what they want, and the production will respond to that.

Let's talk about vision and science fiction's vision of the future, because a lot of science fiction authors would say, Look, don't put that on us. We're not here to predict the future. We're just writing stories and they happen not to be constrained by current scientific reality. Then everyone else then says, Well, yes, but we look at you because no one else is thinking about this stuff. And besides, let's face it, more than one author has written some kind of wish fulfillment fantasy something like, say, an asteroid is coming towards the Earth and the government goes, Welp, we never thought about that. I think we'd better put the science fiction authors in charge and have them tell us what to do. Now that actually happened to you in a form, did it not, at NASA?

Well, yes, it was. It was unusual situation where we were brought together with a group of engineer scientists and astronauts, the head of the Jet Propulsion Lab and, a couple of other writers, James Cameron was there so obviously a big science fiction presence. And we were to talk about the idea of how NASA goes about going back to the Moon and it was interesting

because several engineers just didn't wanna have anything to do with Hollywood people. And, and others were quite interested. We were there, I think, mostly because we had Star Trek connection and we had co written a book. And also NASA was very interested in that point in finding out how to reach out to the public because it is a publicly funded group. And they wanted to say, How can we have an educational outreach so people learn more and that we're giving it to them in a way they can understand it. And I think we might have been drawn then from the communications and of entertainment for that. But the the big struggle they were facing, so they didn't know it at the time, what they were going around in circles about, was that the projects they were imagining were so big they were years away from being achieved. You know, Mars landing in the 2030s. How do you maintain enthusiasm? This idea of Artemis getting to the Moon and three years or four years That is very much a blipvert, type of scientific planning. But how do you engage people in gigantic plans like sending a probe to Alpha Centauri where it's going to be launched, and then the kids of the scientists who launched it, are going to get the results. How do you maintain enthusiasm for that? How do you tell that story? And how do you inspire those early generations that will be actually doing it?

And so what did you tell them? What did you what came out of that?

We told them that some of the people on our street thought that Mars is red because it was burning, and perhaps they could do a better job. I think our message shooting was – and of course, again, this grates on some scientists and some engineers – You don't have to know all the details right now. It was OK. You know, it was okay to set the big goal and say, we're going to the moon. We're going to Mars and not be able to say exactly how we're going to do as long as you know what the first couple of steps are. That's how you learn. That's how you take chances. You say, Well, first we'll do this and then that will tell us what we do next. And, what's the old saying is if you're going to climb the mountain, don't look at the mountain. Just look at the path ahead, one foot after the other.

Well said. Now, I've worked at or for JPL actually for many years, and I know that half the people there joined that business or Space X because of *Star Trek* or Heinlein or something like that, and it used to be uncool to cop to that. But now more, more people are willing to say that it's okay now; some of them are running the place. The vision that *Star Trek* and science fiction presents of the future: if I go back to Gene Roddenberry, first series, and *Star Trek the Next Generation*, he had a vision that humanity had overcome its worst tendencies to become a species we'd like to be when we grow up, that we could be trusted with visiting the universe's more vulnerable life forms. That's a narrative I think got lost somewhat after that. Is it still possible to make science fiction that has that foundational principle, or have we gotten too jaded and resigned to the human condition?

It's not an either-or – Star Trek was different in that it was positive, and it was a positive look. And it wasn't apocalyptic. Yes, that's been lost a little, but it was a signature of it. That's why one of the reasons we like to write it was because it was about heroes and about achieving, and being on the backs of others and continuing forward, and it never looked back. No, no. When you think that the wide range of science fiction, let's say on television there's *The Expanse* which we enjoy

immensely and that has the politics of the Martian colonists who are getting ready to invade Earth so they can declare their independence and line up with the Belters and all the political machinations of the future, which are probably close to what might happen someday. But it's completely different from *Star Trek*. And so it's not, Can you tell a *Star Trek* story, or do you have to be apocalyptic or on a war footing? I think it is: You can write science fiction that's *Star Trek* science fiction that is about our aspiration to be better. And that the human condition which was always used for *Star Trek*, but it's people: What will people be like in the future? They'll be like now. They will be the same. And that was one of the strengths of *Star Trek* is it took people and displaced them in the future. But people don't change as much as the future changes. But good people, the best of us that, I think, is what the story of *Star Trek* is.

I agree: any time that you can show people a vision of themselves being at their best, that's when they like to see that, because it gives them something to aspire to. Now, talking about the future and looking at science fiction as perhaps a guidepost, of course, science fiction doesn't come out and say, We're trying to predict the future. They're trying to tell stories. But are there areas of the future that science fiction doesn't try to predict because the stories are harder to invent, harder to make interesting, things that we avoid? For instance, well, just as a tangential example: robots in science fiction, all look human, not just because it's easier for actors to fit in that form, but it's easier for us to relate to them. And, Asimov had a shot at writing robots that *weren't,* in addition to the ones that he wrote that *were.* But do you think there's any blind spots in science fiction because it's just too hard to tell stories about what you think might nevertheless be a plausible future?

Yes, tons of blind spots. Fred Pohl actually wrote a story which I can't remember the title of, but he wrote it after a conversation like this, with John W. Campbell Jr., just saying how it was impossible to actually write about the future because we can't conceive of it. And he wrote a story, a very short story about a guy one day, 1000 years in the future. It was absolutely incomprehensible because all the terms changed, all the technology changed. And so when we write, we have to write in a way that it is accessible to people today. They're reference points that allow them to understand it. And then that limits your story. What is it? *2001: A Space Odyssey* is a great thing. The back and forth between Kubrick and Clark about how to show the aliens at the end, and they just came to the conclusion well, since they're aliens, we really can't imagine them. They tried all sorts of special effects and, you know, manipulation of the camera and in the end, they just had the eerie sounds. And that was the only way they could present the aliens because they truly were aliens.

You're talking about one of my favorite movies. And also, I think, one of the areas where *Star Trek* succeeded was – in many ways this was promoted by the limitation of their special effects. But when they showed a display, for instance, that was just a bunch of shifting colors, it was, in some respects, more believable than one that was an attempt at futuristic extrapolation of today's technology because you end up with a computer screen that we already know how to do and in fact do better, in the same way that the communicators on the old series now look like 1990s era flip phones and people would go, That's all it does?

Yes, where's the video?

Talking about AIs, you've written some. And what experiences have you had with trying to get your minds around something that that is by design, nonanthropomorphic, but conscious?

Well, the big question we have for that and it's something we're mulling over as we work on a new story, is so much: Human consciousness. So much of us is driven by biology - and limits us, and what is consciousness without biology - without that filter without that barrier, where we can always think of worst-case scenarios, like for us there's no neutral. It could be something that's just being unleashed, and we may never catch up to it. You know that at the very basic, any consciousness wants to survive and an AI wants an unendurable power source. But it's going to become sentient and, in its way, it will. But even if it's not sentient, in M*emory Prime*, the very first *Star Trek* novel we wrote, part of the reason we wrote that, was, it was 20 years after the original series, why weren't we seeing artificial intelligence in the sixties? And of course, it's because, you know, they had the talking computer on the ship, but it wasn't necessarily sentient, and so we came up with this idea that we don't see artificial intelligence because the Federation have decided once you achieve sentience, no matter whether you're silicon, or biological, it's slavery and you have to allow these creatures, these minds to be free. So we created the Pathfinders, who we imagine were very much like whale consciousness, completely different environment. They're creating their Icelandic runes in their spare time. They weren't really sure if the world of the data well, where they would get these requests for information that we're really sure if that was real because it had no connection to the wonderful, you know, super-fast speed, nonphysical realm they lived in. But we tried to come up with some understanding or since some depiction of a completely different way of thought. And what would that be like you in relation to us?

Memory Prime: Terrific novel. I reread it again recently, and what particularly struck me was just how much it fit the central characters I could hear and I could see them saying the lines that you gave them and it fit their characters perfectly, which is not a common thing in that world. Now talking about the way that artificial intelligences have been portrayed in the future, there was a number of tropes that Hollywood and science fiction returned to that are palpably unbelievable. For instance, we envisage in those stories there being a single monolithic computer, like a *Colossus,* a WOPR or the Multitronics M-5. But really, there's going to be competition. You never in *Star Trek* have Scotty come on and ay, Captain, the Microsoft computer won't talk to the Google controller since we did the upgrade, I need to do a complete reboot; and yet that would be far more likely. And stories that embraced the idea of there being multiple competing environments like that, and it's not just in the background, not just a futurewashing kind of subplot but it's a central topic being developed and explored; well, those are few and far between. Are those just harder to write, are they harder to read, or is it undiscovered territory?

Surely it's about to happen, right, with systems that are being developed all around the world right now, they're going to reach out to each other. Like *Colossus* and *Guardian*. But not for a single entity. No, they will be competitive. Yeah, it's interesting. Recently, we reread *Farewell to*

the Master, which is the short story that *The Day the Earth Stood Still* is based on with Gort and Klatu. And the interesting twist in the story is that Gort who is called Gnut, he is the superior life form and Klatu is simply the underling. So this was written in 1940 something and the writer's talking about the expression on the robot's face and how twisted and how it looks. So he's very focused on How do I write a character and call it a robot. And then Asimov's writing, all the intelligence of his robots was on board. They had the positronic brain. But the reality is, you know, 5G. The reality is the AI that will that is interacting with us on a daily basis now is a distributed intelligence coming down from the cloud. And that was something that probably couldn't be imagined in the sixties because there was no metaphor for it. And now we're gonna be seeing more and more things like Robocalypse, where the AI is still a personality that's still after something, But it exists in multiple forms, you know, you blow up one robot, doesn't matter, we've got another one over here with the same access and same mind driving it. And there will be developments, especially in AI, that we don't see today, but 10 years from now will create a new metaphor for how we have to think about these things and writing about the future.

Has this crisis that we have entered with the pandemic, as it made your job of testing people's imagination or capturing their attention with imaginative stories easier or harder?

Harder for near future stories because we don't know how society is going to change in the near term. Yes, we tend to move it on a bit because we don't know right now what the response is going to be in a year or two. If we were going to write, somebody said, Okay, write a police mystery episode that we can fill next year and will take place in the year 2021. How do we depict the workplace? Are people *en masse*, are the police officers sitting 10 feet apart? Or do we simply say up? You got a vaccine? Let's ignore everything that's happened in the past couple of months. It's a difficult thing. It's gonna be interesting to see just what does happen socially, how much is going to be forced to change and how much will revert back to what it was.

Let's look at the utility of science fiction in non-entertainment contexts. Got a quote here from the writer Brenda Cooper who said "The job of science fiction is to make us stop and think about what we should be doing to create the future where you want, whether that mean and means of warning, like 1984 or telling us something we want. I think that if science fiction doesn't make you think it's failed as science fiction." Is that a charge or remit that you accept? Is that a responsibility that you feel with science fiction that you can produce something to that effect?

Well I'm sure that's a theme, but I think we're more in line with Walt Disney, who said, he would rather attempt to entertain people and hope they learn something, than attempt to teach them something and hope they're entertained. Yes. First and foremost, we want to tell a good story, and something that entertains us. And also the themes, though in that quote, definitely you can't help but put in, if we continue this way, look what's gonna happen, wouldn't it be great if we could continue this way? Certainly, in writing especially *Enterprise*, you know, the idea that we're showing the birth of the Federation's ideals. Definitely we approach that as our stories have to inspire. We have to show how these people are rising to the occasion to create the world. Because every time there is a crisis, people do rise. And we're seeing that now, leaders emerge

and it's always you can't necessarily anticipate who it will be. Right. But every great thinkers comes out of great times.

Yes, once again, that's not the end of the interview. This is another two-parter, folks. We kept going for so long that I've got to break it up into two episodes for attention span and download file size and all that stuff. In our next episode, when we conclude this interview with Judy and Gar, we'll be talking about some of their experiences at NASA, about artificial super intelligences, about the far future of humanity and the eventual evolution of our species, and how you can use science fiction right now for jump starting your creativity. We'll get into brain machine interfaces, how far off those might be and what they might do to our current society. All that and much more next week when we finish our interview with Judith and Garfield Reeves -tevens on "AI and You." Finally, an item of news from today's headlines. The world's fastest supercomputer has just changed places again. It is no longer the IBM Summit supercomputer. It is the Fugaku made by Fujitsu in Japan. It can do 415 petaflops, which are floating point operations per second, and the prefix peta means 1000 times a tera, which is 1000 times a giga, which is a billion in American notation. That's a lot. It is also 2.8 times the record that the IBM Summit supercomputer achieved. A flop is a floating point operation per second, which is like multiplying two long numbers together, and this can do 415 quadrillion of those per second. This is an important development in the field of AI, because by at least some people's estimates, the prospect of creating artificial general intelligence or something that approximates the human brain in general problem solving capability depends upon a huge amount of raw processing power, and there are massive disagreements on the scale that would be required. But the main reason that I want to bring this up is that the Fugaku is actually not the world's fastest computer. That was actually created a few months ago and is three times as fast as the Fugaku or 10 times as fast as the Summit. Now to explain to you what that is, I'm going to take a little historical diversion here. Around the turn of the millennium, the Search for Extraterrestrial Intelligence Project was running into a problem. It needed computing power to analyze the signals that it was getting from radio telescopes. That project was looking for signs of intelligent life beyond our solar system in radio signals that were received by the world's most powerful radio telescopes. But because that project wasn't funded by the government at that point, it was defunded by Congress, it had to operate of volunteer staffing and labor, and getting its signals as a result of piggybacking on what the radio telescopes were doing anyway. But analyzing those signals took a lot of computing power, and around the year 2000 it took more than they could get on their shoestring budget. So they launched something called SETI at Home, which was a large scale distributed computing network formed of volunteer personal computers, and anyone could sign up for this and a great many people did. And if you installed the SETI At Home client on your computer, then when it wasn't doing something, when you weren't using it, it would spend the cycles that it would otherwise have wasted, solving problems by looking at data that it had downloaded from the SET At Home computers, analyzing a chunk of it for signs of intelligent signals and uploading the results, and this was very successful. Well, there is a modern equivalent of that, and it is called Folding at Home, and

the folding is about protein folding. Proteins are little chunks of organic molecules that are building blocks in our body. They are in various things, including organisms like viruses. And they can be unwrapped into very, very long structures that can be folded up in many, many, many different ways, and the many, many, many is a incredibly large number. Think of it like the number of ways that you can fold a piece of paper in origami and all the different animals that you can make with it. Well, much, much more than that. The Folding At Home project was exactly analogous to the SETI At Home project in using volunteer computers. Anyone's personal computer could sign up for Folding At Home and donate spare computing cycles. Well, when the coronavirus crisis hit, Folding At Home announced that they were devoting their resources to protein folding simulations that could find cures or treatments. And so many people signed up their computers to do this that the result, from however many tens of thousands of personal computers that signed up around the world to do this was, collectively, a machine that had 10 times the power of the IBM Summit: 1.5 exaflops where exa- is another one of those Greek prefixes that is 1000 times a peta, which is 1000 times a tera, and so forth. That is the most powerful computer this planet has ever seen. And it's the result of people coming together and saying, I want to do my part and so many people doing that, that it created this brand-new cybernetic organism on the planet, and I think that's a very inspiring and heartwarming example of what we can do together. At one point, people were signing up for this so rapidly that the Folding At Home servers were unable to send out the problems fast enough. And that's a demonstration to me of just what we can do collectively, which is a great lead into my sign-off: Remember, no matter how much computers learn how to do, it's how we come together as humans that matters.