

AI and You

Transcript

[AI in Fiction, part 2](#)

[Episode 53](#)

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Hello, and welcome to episode 53! We're in the middle of our first anniversary two-parter, a lighter episode about AI in fiction – books, movies, TV. If you want to be pedantic—and if you are, you're my kind of audience—then *this* episode is actually the anniversary, even though last week's was episode 52, because our first episode was on June 22, 2020, and that means today, or technically tomorrow is our one-year anniversary if you're listening to us on the day of release.

For this discussion, I invited my two long friends Doctor Robert James and Jim Gifford, who were core team members with me on the 2007 convention we produced for the centennial of the science fiction author Robert Heinlein. Robert teaches literature and has a series of books about the Academy Awards, called "WHO Won? An Irreverent Look at the Oscars," and Jim is my publisher and also the bibliographer of Heinlein, in addition to being an expert on characters from Frank Gilbreth to Max Headroom.

Last week we talked about AI in early science fiction and movies like *Metropolis*, and we've been following a loose timeline that takes us up to the early eighties at the point we rejoin the discussion.

Peter: Okay. We're back in the middle of our discussion with Jim Gifford and Robert James about AI in fiction and we were just talking about *Star Trek* there which, of course is covering a lot of territory. The next one that comes to mind is *The Terminator* and this just leaves giant metallic footprints all over the landscape of anyone in artificial intelligence, because if you are interviewed as having any expertise in artificial intelligence by the media, they will run a picture of the *Terminator* next to you; that is just guaranteed. And so, as far as its implications, it's not that dramatic. I mean if you've got an artificial intelligence with that kind of power, it picked just about the worst, most unreliable, self-defeating way of eradicating humanity that you could imagine; I mean, I could do much better than that. But it does make for a good story. Is it a cult film? This was Cameron's early days, was *The Terminator* expected to be a blockbuster or was it a surprise?

Robert: It was a small budget film, it has a little bit of stop-motion animation at the end but for the most part, it was a cheap science fiction film that was trying to cash in on the *Star Wars* phenomenon. In the other science fiction movies that were being made right and left throughout the next 10, 15, 20, half centuries.

Jim: Didn't Cameron kind of have it in his pocket for quite a while? I just, I seem to know that's one of those ones where he had the idea for it for a long time and didn't get a chance to produce it for several years.

Robert: He directed that, did he make something before that film other than a couple of, I don't even know if he made anything before *Terminator*. I'd have to go look it up. But I also was thinking it's interesting that *Terminator* becomes the dominant image of AI and a robot when you've got the most popular film in the world, just a few years before remaking Hollywood with *Star Wars* and C-3PO and R2-D2, who are another exemplar of the perfect servants. These are creatures who have intelligence at the capacity of making decisions, have the capacity in their own life yet, what did they spend their lives doing but serving their robot sense of humor.

Jim: Occasionally until the later sequels, there are no bad robots in *Star Wars*. All of the bad guys are corrupted humans.

Robert: Right. You don't get the killer droid so much later on.

Peter: But I think that C-3PO and R2-D2 are basically, Laurel and Hardy in metal and they ... they have personality but there is nothing about the fact that they are artificial that is important to the story other than the fact that you can disassemble them and put them back together again and they still work.

Robert: Which is what brought me to the idea first, I wasn't thinking about C-3PO and R2-D2, but why does *Star Wars* have no computers practically. I mean they are there, they obviously exist, Luke is told to let go of it, there are computer systems running stuff but there's there other than droids, there's no sense of any kind of vast computer system anywhere that has any real impact on anything anybody does, it's more of a fantasy than it is a science fiction film in that sense.

Peter: I think because when you have that trope it tends to suck the oxygen out of everything else around it, if you've got this giant central AI, directing everything then that has a gravitational pull that sucks the rest of the story around it, kind of like *Westworld* seems to be doing.

Robert: Oh true. But, it doesn't occur to you that the *Terminator* is essentially, those 1930s *Flash Gordon* robots brought back, they're just the unstoppable robot, it's the robot that's evil and until they play with the idea of reprogramming the robot for the second one - and again it's how they're programmed, they're the AI with Skynet in the *Terminator* movies, you know becomes awake, he just accidentally becomes awake, nobody programs him to be awake and then he takes upon himself the idea that he's got to wipe out humanity. Why, that's never really quite made clear, why that becomes his goal or what the whole point of the film is other than providing you with a villain but like Sheldon says on one of the *Big Bang* episodes, why does an AI need to create a hot teenage robot?

Robert: He doesn't send the script, right?

Peter: Well, that's why we know. So, little about Skynet, it's there to create this device that gives us this iconic story of this chase where the big thing for me was, this is a robot that our

institutions, the police can't stop, it defeats them. That is so chilling, and I don't think any of the sequels approached that the impact of that scene when it comes into the police station.

Robert: Right.

Jim: I'd agree. He's going through what should be a bastion of protection, at least in that era, and he's unstoppable, he's mowing him down, like he's it's a kindergarten.

Peter: But the actual AI in this movie is Skynet, this is the thing that's got the emergent intelligence, and yet its idea of getting rid of humans from the planet is to launch nuclear weapons, which are far more destructive to its own infrastructure than they are to humans. So, it's really a device that you are not supposed to examine too closely. But it is iconic, it is everywhere, and that's just, I think, illustrative are the sort of things that stick in people's minds. In the same way that artificial intelligence does because it was given that label; if it was called "electronic cognition," I might be out of a job but it would be just as accurate.

Robert: Well, has there been any, you know, we're talking about the *Metropolis* robot and we're talking about HAL, we're talking about the *Terminator*; in terms of movies, an image-based industry, have there been AIs that haven't been villainous or haven't threatened us in that way that is that influential?

Jim: *Bicentennial Man*.

Peter: As a robot or a disembodied central computer?

Robert: Well, the Robin Williams make of *Bicentennial Man* was one approach to it.

Peter: We've got benign robots like Data obviously, but as to RJ's question about a central computer, I don't know whether Deep Thought in the *Hitchhiker's Guide to the Galaxy* would qualify, it wasn't exactly indifferent.

Jim: It didn't do anything; it just sat there and thought.

Peter: Yeah. So, it did answer the question not terribly usefully, but there's actually a lot more philosophy under the covers of the *Hitchhiker's Guide to the Galaxy* than appears at first glimpse.

Robert: Yes. But, no I can't think of any benign AIs. It may go down the road that we're all too familiar with now, that anything large and controlling is seen as evil. I mean, look at the current thing that government is somehow inherently evil because it's controlling us and telling us what we can't do. So, even if you had the most wonderful benign godlike AI, there will be people who would chafe under being told what to do. So, maybe that's why those stories always go that direction.

Peter: It's certainly familiar territory.

Robert: We're definitely terrified of being out of control, that's what Hollywood popular fiction does; it makes us feel like we're in control. Even those films that threaten our sense of control, by the end we're back in control again, the *Terminator* is always destroyed by the end, human beings are always saved in the end, that's what the difference in popular fiction and a lot of literary fiction is. Popular fiction reinforces and literature often questions and untangles, it doesn't give us a sense of reinforcement that we are in fact in control of our own lives, that we can affect positive change. One of the things, very kind of stepping off the subject a second, if you compare the *Lord of the Flies* with a novel that's the exact same premise practically, Robert Heinlein's *Tunnel in the Sky*. *Tunnel in the Sky* is by far the more optimistic and positive and progressive of the novels and it's never mentioned the same breath with *Lord of the Flies* by any discussion, literature outside of us, this very small community of Heinlein nuts that we all belong to. Although I think it's by far the better more realistic novel.

Jim: To jump back, this is something that I was going to bring up when we brought up *Star Wars*. I've read a couple of good analyses: *Star Wars* is the ultimate anti-technology movie. All the technology is bad and when you say, we give control, what's the most famous scene? He doesn't use all of his fancy targeting equipment, he pushes it all out of the way and uses The Force, the ultimate rejection of control, of using, of being told what to do and so forth. He just uses his willpower to accomplish the goal instead of all of this massive technology that surrounds them.

Peter: The triumph of humanity; and Bob, I just wanted to reconnect with you on the *Lord of the Flies* parallel, there was an actual case, some decades ago in, I think Tahiti or somewhere near it, or Tonga that one of those south Pacific islands of some boys that were marooned for 18 months on an island and their story is pretty much *Tunnel in the Sky* and not *Lord of the Flies*.

Robert: Right. *Lord of the Flies* is, I know we're off topic here but *Lord of the Flies* is pretty much a satire on the British upper classes more than anything else, he went in there, ready to destroy them, he went in there wanting to ridicule and satirize them, he didn't go in there to create a story that really played out what would really happen and I've taught that novel to teenagers and they all look at it and like I wouldn't do that, that's not how that would work, that doesn't make any sense to them. But, to go back to the topic of AI, I think that, you guys are absolutely right that AI is a useful device to threaten us, more often than not, and it's been literary science fiction Heinlein's *Moon is a Harsh Mistress* and Asimov's robot stories and more recently Robert Sawyer's *WWW* series where he basically makes the argument that AI is inevitable and positive and cannot possibly hurt us. It's a very optimistic possible view of that.

Peter: And perhaps the lack of literature in that respect is that, it would be boring to have an optimistic view of the future?

Robert: That's why utopias don't work, you've got to have problems, you've got to have things go wrong for them to be an interesting story.

Peter: Now then let's talk about *Star Trek*, because that has a vision of the future that is as optimistic as you can get for the people living under the umbrella of the Federation. We're shown the edges of that, where they're expanding and meeting their problems. Let's talk about some of the characters in that because we haven't mentioned Data yet. Actually that brings me to something that a friend of mine once pointed out: Looking at the progression of characters in the TV series, we had the original series which had Spock who was not human and then the *Next Generation* we had Data who was not organic and then *Deep Space Nine*, we had Odo, who was not solid, and then in *Voyager*, you had the Doctor character who was non-corporeal. And he hypothesized at that point, that the next series would contain a character that was non-existent; the captain's imaginary friend. It's a compelling kind of trend. Let's talk about Data for a moment and it is that just an extrapolation from Spock? Let's have someone that really can't be anything but logical, he was built that way?

Robert: And desperately wants to have emotions, whereas Spock, desperately wants to not have emotion. And the episode they did with the two of them on, there's a very empathetic connection between the two of them; the two fit very well together because they're two sides of the same coin. But, I think Data is an exact example of an AI that was designed to be an AI and was designed to be helpful and optimistic but also to have a sense of independence and being able to do what it wants to do with its life and yet it chooses to serve and yet there's episodes with Lore and where Data also malfunctions, where they become extraordinarily dangerous. And I always thought in *Star Trek*, it was funny that they ever just didn't simply send Data to fix everything because he could do practically anything and why are the only way that the other characters have anything going on, is that they have to hold Data back and they have to not just simply invoke his capacity because the fact that Worf could somehow fight something, well Data could walk in and you know break it apart in nothing flat.

Jim: Well that goes back to the original series: once they brought in the transporter, they had to come up every single episode they had to come up with a reason why they couldn't just teleport Kirk and Spock out of danger. It was the ultimate *deus ex*, so they had to add Data became the same, there's lots of serial stories that have some godlike figure in them that you have to disable before you can actually tell a reasonable story again.

Robert: Harry Potter stories or why isn't Harry just running to Dumbledore every time something happens to where Dumbledore can fix it.

Peter: And the interesting thing about the doctor character in *Voyager* is that it's a pure computer simulation, the only visual that there is a projection and yet it has all this more emotion that eluded Data, that by this point they've programmed that in.

Jim: A bedside manner perhaps.

Robert: I think about the Moriarty character where Data, where Geordi tells the computer created a villain capable of defeating Data, not capable of defeating Sherlock Holmes and the computer which is not sentient by any account, there's never been a moment, even though the

computer can do almost everything, there's never been a story where the computer became sentient on the vessel itself, yet Moriarty becomes sentient and he rapidly evolves out of being the villain into being something more. And that's kind of taking the whole idea of AI, becoming dangerous when it becomes sentient and suggesting that an AI would truly evolve beyond the restrictions of pulp fiction, pop fiction, the need for a villain. And he becomes a character deeply in search of curiosity, deeply in search of learning, deeply in search of independence. It's a really fascinating character to play off against Data, particularly.

Peter: And is it also then playing on our fear of something becoming bigger than us in some dimension, kind of like the John Henry story but if that happens with intelligence, there's this fear that we are irrelevant, that it could do whatever it wants to us that intelligence alone could be ultimate power that could be used to defeat us. Is that a trope?

Robert: I think it is, but I definitely think that there is an underlying fear to much of the American working class in recent years, as they've seen their capacity to learn a living doing very basic things - we're heading into a world where almost everything that we can do, if it can be done by an app, it's going to be done by an app and we're losing an enormous number of jobs over the next 20 years, there's simply, there won't be any need for an enormous - I mean why are accountants still having careers when TurboTax is there, I mean, 80 percent of what accountants have done is taxes and now with TurboTax you can literally do it in 15, 20 minutes yourself practically, follow the directions. I live in fear of the day that they create an app that can teach because I think it's coming that there have been a lot of predictions over the next five to ten years. Great revolution and technology is going to be creating a computer program that can effectively teach students through feedback, through setting up what works and what doesn't work. You could have a teaching app that would be far more effective than a teacher would, one teacher with 25 kids, I haven't taught small children for a long time. But, if you had an app that would teach somebody how to read effectively and would diagnose their issues and go through the database and pull out what actually works and keep working with the child and constantly feed the child, interesting stories and stories that are based, I mean stuff can easily be programmed, if somebody sits down and is willing to do it, this kind of AI, I think - I'm surprised; we haven't had *more* stories in the last 15 years about the dangers of AI and the whole fear of being replaced. The fact we were having these things 15, 20, 30, 40, 50 years ago, just shows how deep-rooted automation started setting fears into us.

Jim: Well, without getting too much sideways, though that's one of the underlying things I've written about mostly consumer economics, but the underlying changes that we're facing too and that's one of the major things that there are simply politicians stand up and say we're going to create jobs, there are no good jobs. The jobs have been replaced by first, basically heavy automation, and then robotics and now AI. And there was just a story in the *New York Times* that the lowest - something I've talked about for several years - the lowest tier of basically desk workers are now going to be replaced -like accountants' clerks. Auditors, things like that, no longer need to be done by its two or three people supervising an Accountant Bot 5000 can

handle what 50 people used to do... and I had a direction for that; I can't remember what it is now.

Peter: Well, there's a lot of nuance to this - hint, listen to the other episodes of the show - and in many areas the best solution for some time to come will be human plus machine, not machine instead of human. But, getting back to AI in movies, I think that now brings me to one that's made an impact, and that's the movie *her* with Scarlett Johansson as the operating system of an iPhone or similar, that the main character falls in love with. And then discovers unfortunately that she's in love with several hundred other people - or they're in love with her - it's complicated basically - because she can do this. Now we don't even see her but it's the quality of the conversations and the voice that makes that believable, so that's Spike Jonze, I believe, made that. Any comments about that movie or antecedents? Is it a remake of something else I'm not aware of?

Jim: I haven't seen that one. RJ probably has, there's also the one similarly either Simone or Sim1, of which is a similar thing without quite all of the tentacles going out.

Robert: There's also a *Big Bang Theory* episode, where Raj falls in love with Siri, I don't know if that came before *her* or not. But I've seen *her*, it's a remarkably quiet movie, it really is, a film that kind of gently plays along the surface of our loneliness, the desperation we have to have connection, to have somebody care about us, if anything what *her* shows is how intensely human an AI might become, and then in becoming human in that ability to satisfy another's loneliness to make somebody else feel, that they themselves would reach out to other AIs and then we've seen this happen in more than one project where the AIs decide, they're going to leave that they can do better than us. That's not the only story that's ever played with that but off the top of my head, I can't think of any others. But I remember watching *her* and thinking like it seemed very familiar, the fact that at the end the AIs are going away, they don't need us anymore, that's been played out with an awful lot of fiction. Just not too many movies.

Peter: It's kind of inevitable consequence of the ones where the AI becomes greater than the capacity of humans, because it's either gotta to end with either us being wiped out or the AIs being wiped out, or a permanent separation and you see something like that in *When Harlie was One* and *The Adolescence of P-1* and of course with Mike on the Moon.

Robert: Right. Absolutely! I think *her* is just a delicately made film, it's really for a science fiction film, especially coming out of Hollywood, it is not what Hollywood.

Peter: No blood.

Robert: It's no blood.

Robert: And practically no action.

Peter: And then we have *ex machina* and this one is like filming the Turing Test. Can this robot creation fool you into thinking that it's human? And actually that reminds me that it seems very

much like one of the original *Star Trek* episodes, *Requiem for Methuselah*, wasn't the one where the character had built his own Galatea that was so convincing he pushes her and Kirk together to see if he'll fall in love with her? He does and then reveals, Yep, I was just seeing whether that would work because I wanted to know how good I was at making robots.

Jim: Well, that leads sideways into somebody we haven't touched on, he didn't write a lot about robots but when he did, it was very empathetic of course, is Bradbury. And the story of the guy who built his own family, his family had been killed off and they come and find him and he's living there with his family and his wife and his two daughters like that and it turns out that they're all androids and he leaves and they just kind of keep living their life which of course leads to one of the absolute all-time great short stories ever written, *There Will Come Soft Rains* which the AI house keeps maintaining itself, even though people have been wiped out.

Robert: Puts me in mind too of the character Vision, the superhero from the *Avengers* movies but going back to the original comic book series, his awakening and then wanting to have a human emotion, have fallen in love with Scarlet Witch and then being played out most recently in *Wandavision* which is remarkably innovative television but that's the same kind of question is how can an AI, will, it become human. Does it want to be human? Does it want to connect with a human? Ultimately in the comic books, Vision ends up with another android family but they emulate human beings, they have children and they have a dog that's what *Wandavision's* playing with some of that, they have a dog named Sparky but it just occurs to me that starting in the '60s and early '70s with that character, science fiction ideas often filter into comic books - and rarely the other direction back out, they tend to steal from science fiction, not the other way around - but Vision is another example of an AI that's trying to find its place in the humanoid form, in the same way that you get Data and other robot figures that want to become human, which is not what you typically would expect that, they're going to spend their time instead of becoming more than human - which is another novel, we could cover with Ted Sturgeon which had some of the same issues with AI and becoming more than what it was before. You don't really get a sense that those characters are going to evolve away from humanity but rather evolve into humanity.

Peter: I'm wondering is *The Matrix* an example of a movie that originated from a comic book.

Robert: I don't recall it being a comic book first but I may not be aware of it, there are periods in my life where I read comics quite intensely in periods, where I ignored them completely but I don't recall off the top of my head...

Peter: There's certainly some overlap between the simulation hypothesis and AI. I want to mention here we had a letter from a listener called Richard who mentioned some of his favorite movies in this respect and some of which we've already mentioned like *her* and *ex machina* and then he lists *Robot and Frank*, *Marjorie Prime*, *Transcendence* - which is mind transference with Johnny Depp, and Chappie. Have you seen Chappie? The robot, I think does this come out of South Africa?

Robert: I don't think seen any of those films. Unfortunately I've been so heavily involved watching the older films, I have not, and there were several years where I didn't watch practically anything that was coming out in the theaters.

Peter: It's a robot that, again, wakes up but it is quite childish, so it gets taken advantage of by the humans it blunders into, it has the emotional age of a seven-year-old but you feel intensely empathetic for it, as it's quite innocent and yet the humans that it encounters invariably abuse it.

Robert: Kind of a darker version of Spielberg's *AI*.

Peter: Yes that is what - heavens, we have to mention that, I mean its title is "AI" and yet isn't it like the most forgettable of Spielberg movies. I think I just demonstrated that...

Robert: I'm not sure about the most forgettable, but if not - he was not the right - it would have been much better if Kubrick had made it.

Jim: He spent two and a half hours going nowhere in particular.

Robert: Right. Which is unusual for Spielberg, who generally has a pretty good sense of plot, but I think it wasn't his project to begin with. It was Kubrick's and Brian Aldiss and it feels very Philip K. Dick in some ways but it's a failed film in many ways but a lot of Spielberg's movies are, I don't think they're going to last as well as his best films will, but quite a few of his movies that have not aged well.

Peter: We have to talk about Philip K. Dick,

Jim: I was going to say...

Peter: If anyone should have gotten fabulously wealthy off Hollywood blockbusters, it should have been him, I mean how many billions have been made from his ideas? And this obsession with how do we know who we are, is your idea of who you are correct, do you even have continuity of identity, and [other] fascinating ideas? He didn't get rich off any of that. Did he?

Robert: No, but he got a chance to see *Blade Runner* before he passed away. I suspect his heirs have picked up some substantial money from that but even so, they weren't paying a lot for those film rights back then.

Jim: Well, there's actually a very relevant PKD story, it is kind of the other end of what we've been talking about a short story called *Top Standby Job* and it's a world, is a very Phillip K. Dickian world where humans are essentially idlers; machines have taken over, AI runs everything, but for some reason union rules require that all machines have to have a human standby. So, there's an automotive robot building cars but the union says a man has to be standing there as a standby, this guy gets called from the union hall to stand by for the presidential AI, it's the top standby job and it fails and Dick takes it from there, and it's basically the unraveling of all of an AI-controlled machine-controlled world, because there's this one key

failure and this guy is savvy enough to take over as president and change everything but Dick covered - we'll still be analyzing Dick 100 years from now.

Peter: I'm struck by how many of the, particularly the Hollywood offerings, feature robots that are humanoid - in many cases indistinguishable from human - and the reasons for that are obvious, and I think twofold, one is it's cheaper to have an actor than some kind of special effect or device, and two, we're going to relate more to something that is human or certainly looks like it, it's not an accurate portrayal of the trends in artificial intelligence that are worth focusing on; a movie about people losing their jobs, wholesale to artificial intelligence I think would be unwatchable, no matter how accurate it was. Is there anything which gets it right, and is - we've gotten a lot of high production value shows lately and in things like *humans* and *Westworld*, gobs of money being spent on things like that to make them look as appealing as possible. *Westworld* at least makes it believable and it shows you this amount of detail that goes into the control of the robots, it's not just push a button or wind up a key on the back and make them go, but they've got all these parameters and controls that mirror some of our complex real systems today. Any comments on the direction that things seem to be taking with these recent offerings?

Jim: Well, a striking one that comes to mind is, the Russian one, *Better than Human* which is... besides the fact that it's filmed in like Moscow of just yesterday, so it's like watching something filmed in New York, New York porn for those of us who enjoy the city. But, I mean basically shot in in Moscow and environs in like most people have no idea what Moscow the city looks like, these days. So that's very interesting but it's a very Asimovian sort of story with these robots that are programmed to be helpers and stuff and some of them are getting away from. There's one model that has its own motivation, its own willpower and it just I think it covered a lot of very striking ground besides being from a very unusual source.

Robert: I do think that we are approaching a much more sophisticated sense of science fiction, particularly in television rather than film, although we occasionally do get like *her* which is quite a sensitive unorthodox portrayal of the science fiction story. But, it really strikes me that television because of the shifts in our marketing, that TV is where adults spend their time for their entertainment values, so what used to work in the films in the '70s and even in the '80s where they were still making films for adults, once you get *Star Wars* and *Jaws* and the move to the blockbuster mentality, movies were not willing to take risks, they were looking for things that 14, 15 year old boys would see over and over again and stories about robots and would be fine, if they're hot chicks, they're trying to kill you, that one of the *Terminator* films or it's a robot that can change shape and it's trying to kill you and *Terminator* too but...

Peter: The fembots from *The Six Million Dollar Man*, and I'm embarrassed to remember that, keep going...

Robert: Or the *Stepford Wives*, another...

Jim: Ah, but were they robots?

Robert: Yeah. But when you come down to it, television is really taking some risks and you just compare the current television version of *Handmaid's Tale* versus the old film version and the television version is much more sophisticated, they've got space, they've got time, they've got a strong enough profit base with cable and streaming that they can try things. Or even the Marvel universe, the movies are often quite wonderful, but the *Wandavision* was taking risks and chances that nothing in their films was willing to do in terms of how they told stories. And again, that's a story that's organized around an AI that somehow is brought back to life briefly. I have not watched the end of the series yet, I'm waiting for my son to come back from Notre Dame to do that. But it really strikes me that you could see a whole new explosion in stories about AI that will be told with a lot more sophistication than what we've seen in the past.

Peter: Well, I think we've got that in *Black Mirror*, it's this anthology of shows that have no elements in common, no characters or themes but they share a similar take on technology, the have you really thought about this, this kind of technology could lead to this. Jim what sticks out for you in that series?

Jim: In *Black Mirror*?

Peter: Yeah.

Jim: Unending sheer brilliance, it's absolutely an unbelievably brilliant take on, I think Heinlein would have loved it, they take one idea and run it right to the end and you don't always even know what the idea is, until it's halfway through. I've only seen about half the episodes, I know a lot of them deal with some form of artificial intelligence or robots or simulated humans or simulated lives but they certainly are breaking new ground with every single episode.

Robert: And now I need to add that to my watch list.

Jim: Oh you must.

Peter: And the technology in those is a bit beyond what we're going to have next year. But I do want to say that *her* represents technology that we could do now. I mean that is literally achievable now. It's not far down the road, put a few elements together of existing technologies, it's really more motivation, than it is technological, limitations. So, I've just got to give that a call out as being something that's not as speculative as the other things that we've been talking about, just like having...

Robert: You mean a sense of an AI of a program that would satisfy our loneliness...?

Peter: Yes.

Robert: Wasn't there, an early computer program, back in the 70s that would have Eliza, is that one correctly?

Peter: Yes.

Jim: Yeah and it seems it's rebuilt on new platforms every few years and gets more and more sophisticated even back when it was 50 lines of BASIC code, it could be a little eerie.

Peter: There's at least one case, I think in Japan, of someone marrying a robot, doesn't ask me if that was legal, but that's what they said they did. So, it's, we're not far away from that happening, it's not going to at that point be capable of the kind of conversation that we're holding here, it's not going to be even arguably self-aware, or conscious, but it doesn't need to be those things to that extent in order to get to the point that the computer did in *her*. Wow, we have been, this is just fascinating to talk about the things in artificial intelligence and robotics that are having an impact on our life, that show up in the popular culture because one TV show, one movie makes more impression on us than a thousand papers, or products, or documentaries, and so as much as we might like to ignore being put in the press with a picture of the Terminator next to us, we might at least understand why that's happening. What final thoughts do you have about this topic of AI in fiction or things that it's maybe made you think hey, I should go back and watch that again, or things you want to tell the audience, go pay attention to this.

Robert: I certainly don't think we're done with the topic, I think AI will continue to be a major part of science fiction, both in books and TV and movies. I'm just slowly working way through the series that Terry Pratchett did with Stephen Baxter called *The Long Earth* in which one of the major characters AI that takes the form of a Tibetan monk named Lobsang in which he claims that basically his soul was put into the computer and now this character is more or less running the exploration of these countless millions of Earths that are just one step sideways from the one, we're at, the only difference is that most of them are uninhabited rather and so completely virgin but the AI is the one that's thriving much of, there's an AI cat that shows up. So, I think that the idea of humans and computers and the capacity of computers to become human and the capacity of human beings to merge with computers - I mean we mentioned a little earlier *Cyborg*; we might look at Seven of Nine in the Borg, which the Borg of course are playing with the fears that we have of being submerged into the machine, obviously, and *Voyager* being Seven of Nine being a character that emerges out of the machine, most recently played with *Picard* that whole series has been played off AI.

Peter: Wasn't that a Cold War thing though, and they called it "The Collective" - you could hardly have a more direct allusion to the Soviet Union, right?

Robert: Right. But, if you've seen *Star Trek: Picard*, that entire series AI and what it means to be human, and what it means to be intelligent and how those two interplay with each other that's the central theme and that's one of the best television series of the last half decades.

Peter: And actually we didn't talk about some of the far future speculations of positive outcomes. And when Asimov and Clarke and those golden agers were writing, they wrote about a future that was disconnected from the present, that was always so far in the future that no one ever referred back to anything present day. And they would take it off into hundreds or

thousands of years in the future. In doing a lot of the thinking about the ultimate destiny of our partnership where I keep coming to the conclusion that Asimov got there first and put it in a story, and we were talking about how when if AI doesn't defeat us or we don't defeat it, it might go away. Well, the other possibility is that, if it actually wants to serve us that it concludes that the best way to do that and give us our autonomy is to do it secretly, so we don't know it's there. And I was thinking, I thought I was quite proud of coming up with that idea, then I realized Asimov had already done that, decades earlier with the conclusion of the *Robot* series and a robot that was subtly guiding humanity from an invisible base. Jim, any final reflections here?

Jim: Robert said a lot of things. I would say two observations, one kind of trivial, the one thing that most science fiction got wrong, Asimov got wrong, *Star Trek* got wrong and this persisted for quite a long time was even Heinlein got it wrong, is that these intelligent creations we built would be able to understand human language and programming, we could simply tell them what to do, we could program them in Loglan, the Asimov robots could understand the most complex speech from humans but could not talk. And they basically got that entirely backwards, we've had systems that could talk naturally for 40 years and we still don't have systems that can interpret instructions with any degree of precision. I find that amusing that all of them got it so backwards and the final thought maybe that I have on all of this and stuff is what happens when AI starts writing science fiction?

Peter: There is some stuff being written by AI right now that is at least compelling from a novelty standpoint but it is also surprising in the degree of readability and interest. It is nothing on the length and cohesiveness of a short story, let alone a novel but if you were going to restrict it to short satire, you would be pleasantly surprised. I think gentlemen tell our listeners where they can find your work, if you want them to find you, that is if you want them to see what you've done and either be in touch or admire you from a suitable distance. Bob?

Robert: Well, my books are on Amazon, type in my name Robert James, "WHO Won?", that should take you to my page. I have a Facebook page, called "WHO Won? An Irreverent look at the Oscars" as well, more than welcome to come join me there. I do have a blog but to be quite honest to you, I've forgotten where that's at; I have to go back and add pages back on to that unfortunately. And I used to have a Twitter account but I haven't been paying attention to that but Facebook "Who Won? An Irreverent look at the Oscars", my page and then on amazon.com, my books are available there.

Peter: And it's a fantastic niche that you inhabit there, that look at the Oscars unique work, unique series of works. Jim?

Jim: I'm fairly easy to find, I've been online and everywhere for since there was an online and I guess the easiest place to find nearly all of my books as well as Peter's, is at nitrosyncretic.com which is my publishing company and anyone who's interested in what it means to be a consumer in this age can find me at renegadeconsumer.com.

Peter: And you have some other projects perhaps coming up or...

Jim: I always have many projects. I'm writing an extended biography of an American family right now that takes most of my side time.

Peter: We're all busy people with interesting lives and thank you for coming on the show. I'm sure this is going to get a lot of attention. It's been tremendous amount of fun!

Jim: Actually I just want to point out one thing, since this is an audio, no one can view it, there's a bit of a visual pun going on here. One of my interests is the television character Max Headroom and for the entire time of this conversation, I've had a *Max Headroom* background going and he wasn't worth going into indirectly, but, of course one of the great AIs of all literature.

Peter: Absolutely! It was a fun show. Alright, thank you gentlemen, that's the end of our interview.

That's the end of the panel talk.

We mentioned Data from *Star Trek* several times, and I thought I would share with you something I found comparing his capabilities. In the landmark *Next Generation* episode, *The Measure of a Man* (which is quite a deep exploration of the philosophical questions of an artificial being), he says he has "an ultimate storage capacity of eight hundred quadrillion bits. My total linear computational speed has been rated at sixty trillion operations per second." In today's currency, that's about a hundred petabytes of storage, which many companies have at their disposal, and which would cost you about three million dollars.

But if Data's operations are the same as ours- because we also rate computers in terms of operations per second, and the trend has been from complex instructions to simple ones – then that makes Data a 60 teraflop machine, which was about 60,000 times faster than the fastest supercomputer when the episode came out in 1989; but today, we have the Japanese Fugaku supercomputer at 1.4 *exaflops*, which is 1,400 *petaflops*, which is 1.4 million teraflops, in other words, 25,000 times faster than Data. Although it is somewhat bigger. In consumer hardware, the M1 chip in my new Apple Macbook runs up to 2.6 teraflops per second, so about 25 of those would give me a Data. But the M1 is a system-on-a-chip that also includes a 16-core Neural Engine capable of up to 11 trillion operations per second, although they aren't floating point. And you can get GPUs that go further in terms of raw horsepower.

Of course, it's going to take an unknown greater amount of hardware to do what Data was doing. All this goes to show is the danger of trying to put a number on a futuristic computer's performance. In the 1972 book *The Adolescence of P-1*, which we mentioned, Thomas Ryan wrote that P-1 had attained consciousness at a whopping 5 gigabytes of memory. You're better off using a made-up unit, like how *Star Trek* elsewhere often referred to memory in units of "quads," without ever saying how big one of those was.

Robert was talking there about fear of an AI that could teach. Well, AI has a lot of application in education, but teaching is one of the safer roles in it – safer from automation, that is - and the younger the student, the safer the human's job. Not just because it's more demanding to teach kindergarten

because of how much you have to know about young people's thoughts and feelings, compared, to, say, delivering an information dump or theorem proof to postgraduates, but also because your students are not going to sit still – literally – for a dull robot. I'm sure there is a comedy script in here somewhere with a scene of kids running amok around a teacher robot that's getting milk poured over its head or something like that. But in any case, with two girls who completed kindergarten not that long ago, I was especially in a position to see how challenging the job of teaching them is, and I think that kindergarten teachers may be the most underappreciated and underpaid segment of the entire workforce.

On another note, when Robert mentioned Lobsang, the AI in Stephen Baxter's *The Long Earth* that was apparently a reincarnated Tibetan monk, that reminded me of an interview with the Dalai Lama that I quoted in *Crisis of Control*, where some westerners were talking with him about AI, and then one of them brought up reincarnation. He said, "There is a possibility that a scientist who is very much involved his whole life [with computers], then the next life [he would be reborn inside a computer], same process! (laughter)" So I guess that constitutes official support for the idea of being reincarnated inside an AI.

In today's news ripped from the headlines about AI, looking at robots, an interesting development in the field of artificial skin. Associate Professor Van Anh Ho and Lac Van Duong at the Japan Advanced Institute of Science and Technology have developed an artificial sensing system called TacLINK that's low-cost, scalable, with a simple structure. They can determine the pressure points created by something in contact with their robot skin not through embedding sensors in the skin as you might expect, but by pointing a camera at it and observing the deformation. Interesting approach, thinking out of the box, and it seems to work. Professor Ho said it could be "easily fabricated by casting and therefore, be implemented on other parts of robots, such as fingers, legs, chests, and heads, and even for smart prosthetics for humans, allowing a disabled person to perceive sensations the same way as a normal human." Amazing.

Robert James' books: <https://www.amazon.com/Robert-James/e/B00AAA73SW/> . Jim Gifford's books: <http://nitrosyncretic.com/>

We are going from fiction this week to fact next week, when we will be talking with Tony Gillespie. He is a Visiting Professor at University College London, a Fellow of the Royal Academy of Engineering, and a Fellow in avionics and mission systems in the UK's Defence Science and Technology Laboratory. His book *Systems Engineering for Ethical Autonomous Systems* is a very practical treatment of how autonomous systems should be designed for safety, including lethal weapons and self-driving vehicles. We'll be talking about this fascinating intersection of regulation and engineering, even including how you can design systems to follow the Geneva Convention.

That's next week on *AI and You*. Until then, remember: no matter how much computers learn how to do, it's how we come together as *humans* that matters.

<http://aiandyou.net>