

This is Imaginary Worlds, a show about how we create them and why we suspend our disbelief. I'm Eric Molinsky.

One of my favorite shows, Orphan Black, which is now its fourth season on BBC America.

The main character is a British woman named Sarah Manning – who is a drifter and drug dealer living in North America until --

CLIP: SARAH

She discovers that she's a clone who had been kept out of sight from all the other clones, and the shady corporation that created them. So she meets Alison the soccer mom:

CLIP: ALISON

Helena, the Ukrainian assassin:

CLIP: HELENA

And Rachel, the fearsome corporate mogul.

CLIP: RACHEL

All played by Tatiana Maslany.

Now I talked about Orphan Black in my episode about doppelgangers because there is a part of my brain that believes Tatiana Maslany is only playing Sarah, and all the other clones are being played by someone else.

Graeme Manson feels the same way, which is kind of weird because he helped create the show and he's on set every day.

GM: I'm constantly in state of state of disbelief with her skills, because she's not method in a weird way but she needs to stay in these characters all day, she'll talk with Sarah's accent, she'll carry herself like Alison, on Helena days you didn't want to be around her, Rachel, you don't want to give notes to Rachel.

But I didn't want to talk with him about the clones, even though they're awesome. I wanted to talk with him about the villains because I'm kind of obsessed with them.

There are actually a lot of villains the show but the main ones are called Neolutionists – which is a combination of “neo” and “evolution.” And here's the crazy thing: they're based on a real movement of people called Transhumanists, who believe that we should use technology to enhance our senses and abilities – either embedding tech under our skin or manipulating our DNA to live longer, and modify our bodies in weird and amazing ways.

GM: I don't think that transhumanists are villains at all, when you're coming up with bad guys, especially in sci-fi show, science is often – it's the dark side of science you end your heroes end up battling, but most science not dark at all, most science is smart people trying to better of humanity, and at the end of the day, at the foundation of the Transhumanist movement, that's what I understand it is -- it is to better mankind. Better to who's ideals always is the question I ask? And when it's tech, when it's patented technology, do they have a broader agenda in terms of not how spreads but how tech is absorbed?

Now in real life, Transhumanists are a disparate group that mostly talks about what could happen in the future. Their fictional counterparts on Orphan Black have come much further in developing the technology.

CLIP: LEEKIE

The clones discover the Neolutionists have a chain of command, which goes all the way up to multilateral corporations and shady government agencies.

GM: When the conspiracy is actually to control human evolution that's always been where we thought the neolution agenda lay. That's very different from a transhumanist trying to be all that all they can be, trying to expand all that means to be human. One of them I find as I said quite brave and a very human act in fact where as the other one its just power as it plays out among human beings.

Which makes them great antagonists for the clones.

GM: The clones are owned, they discovered through the course of the series they are patented tech and then you try to cast that off, you're a renegade, then you're a narrative underdog, and a narrative hero and as a writer that's the kind of juice you're looking for.

And Orphan Black keeps reminding us what's at stake with biotechnology: our bodies. That gives the show a feminist angle, since the clones – who call each other sister -- are fighting to have full control of their bodies and their reproduction.

GM: Dignity and freedom of choice is a big theme of the show.

But Graeme is also influenced by a subgenre called "body horror" – particularly movies by David Cronenberg like *The Fly* or *Dead Ringers*, where Jeremy Irons played twin gynecologists.

CLIP: CRONENBERG TRAILER

You can see the Cronenberg's influences on characters like Olivier – the Neolutionists who hacked his DNA to grow back his vestigial tail.

CLIP: SARAH AND OLIVIER

It is really creepy. When Graeme first pitched that idea in the writer's room:

GM: That one of those ideas where everyone was like you want a guy with a tail? Yeah, he's got a tail, wouldn't you have one I you could? Everyone's like no! To me the tail spoke about evolution which was interesting and then it was a funny battle with the network, that's pretty out there, but we managed to talk everyone into it, even to the point where we severed the tail, or the back cock as it was referred to in the writer's room.

Would you ever want enhancement, if everyone was doing it and you were like okay fine. What would you do?

GM: That's a good question. If my mind starts to slip, I'll do whatever it takes, I'll strap on whatever ridiculous gizmo or take whatever drugs to maintain my memory and my faculties. That's just practical. But life extension? I don't know. Who runs the world then? Whoever has lived the longest and wield power the most affectively? What happens to your ego when you've lived to be 300 years old? Is this only the domain to rich? And what does that do to society?

In a moment, a transhumanist explains why the future won't be like Orphan Black, or Elysium, or Gattaca or any of those other sci-fi worlds. That's just after the break.

>> *UNDERWRITING BREAK*

Elmo Keep is an Australian journalist who covers technology. And yes, she has a very cool name: Elmo, like the Sesame Street character and keep, like the verb.

The first time she discovered Transhumanism, she was playing a video game called Fallout.

CLIPS: FALLOUT

EK: It is all about visions of transhuman science gone awry and awful.

The game is set in a post-apocalyptic future full of cyborgs and mutants.

EK: You know, there's a part where you get to a facility eventually which is where these ideas came from and the scientists which were the greatest minds on Earth managed to make themselves into uploads and put themselves into computers and augment themselves with mind enhancing drugs.

CLIPS: FALLOUT

EK: But they've gone completely crazy, and so they can't remember who they are, or what they're doing and quests revolve around trying to convince them of who they are, that they are the people who have created this horrible world.

CLIPS: FALLOUT

When she learned those scientists were based on real people, she went into research mode and wrote a great piece on them for a site called The Verge.

Now, Julian Huxley first coined the word "Transhumanism" in the 1950s. He was the brother of Aldous Huxley, author of "Brave New World."

But the movement itself – of people thinking that science fiction could become reality -- didn't gain momentum until the 1990s in California. Of course it was California – you've got that combination of New Age sensibility, Hollywood's quest for eternal youth and Silicon Valley's hubris.

But they didn't call themselves Transhumanists yet. At first, they were The Extropians.

EK: So extropy is in opposition to entropy, so this idea that everything is going to decay, everything will die. These are the known physical laws of the universe.

EM: That's the Definition of entropy.

EK: That's the definition of entropy. So the idea of extropy means we can resist that force.

It's interesting how transhumanists will often change their names in the spirit of reinvention. One of their leaders, Max More, was born Max O'Connor. He now runs a cryonics lab. His wife Natasha Vita More changed her name from Nancie Clark.

Natasha is one the most famous advocates for the movement. And she told me that her interest started way back.

NVM: When I was 11 years I had this bump in my jaw in the inside of my mouth, the long and the short of it is I had an aggressive tumor in my jaw which was basically eating up the bone mass within my jaw.

A lot of kids would be scared, but Natasha was fascinated.

NVM: During my recovery period, I had to go to my plastic surgeon's office in Chicago once a week, and then once every two weeks, and once a month for a year for follow up and in the waiting room I saw the most astonishing and poignant levels of deformity and necessary reconstructive surgery. It was shocking to be sure but it was more enlightening to gone through this at an early age seeing how humans are malformed and what can be done through surgery, medical technology to restructure our bodies.

She grew up to become an artist, and fitness model, but she couldn't shake that image of kids who were like dolls needing replacement parts. So she traveled around the world and met with experts in bioengineering, artificial

intelligence, and nanotechnology. In 1997, she poured all those ideas into a digital work of art called Primo-Post Human.

NM: It's my body used for the prototype, it's a naked body, it's interactive piece aspects of the body go to interactive description of how that part of body can be re-engineered.

Like one of the labels points to an arm and says, "Solar protected skin with tone-texture changeability."

NVM: Currently, if you lose arms we have arm replacement, if you lose legs replacements, some look like legs some that look like streamlined sculpture more beautiful and more adaptable and sustainable so if we have a whole body damage but our brain and mind are still active then a very fundamental objective would be to have the body replaced, a person like Steven Hawking's for example, his name is very active. What if he was put in a whole body prosthetic?

But not all of these adaptations were medical. Some are cosmetic – like if you're a Transhumanist scuba diver, you could theoretically alter your DNA to grow gills or breathe underwater instead of carrying that heavy oxygen tank.

NVM: I think that the body change color and tone and texture that the outer sheath of our skin if it could become a mesh to protect us from skin cancer, from melanoma and carcinoma, that would be advantageous to human so that would be a type of enhancement that would look similar to the human skin but change and look more interesting and have a shimmer to it like some animals in their feathers or in their beautiful texture of the snake's skin.

ME: Wow. I'm having flashes of Timothy Leary, Dr. Moreau, Henry Ford and Steve Jobs all at once.

NVM: I think you're spot on. Exactly. (laughs)

ME: Have you gotten negative reactions?

NVM: Oh yeah, I used to get very upset and in fact I cried a number of nights and it hurt because often I got attacked for being artist designer, for being a woman, for wanting to be younger than I am, but it did over the years cause me to go back to school and get two masters and a PhD so they get off my back on that.

EK: The projects being worked on that are a transhuman project like gene sequencing or like trying to reverse aging are advancing, those things are actually in ways advancing, like Crispr the gene sequencing tool, people are like this is a transhumanist dream and it's real, so melding of the less extreme parts of it becoming more obtainable and so that's giving the broader transhuman movement hope that the more outlandish thing and difficult things will also be possible.

Elmo is particularly troubled by the idea of quote “radical life extension.” I mean it’s a tough idea to swallow but we’re not supposed to be around that long. Death is a big part of evolution. Natural selection improves and adapts the human body over generations. And each generation decides which ideas from the past are worth preserving, and what’s outdated.

EK: I think that would be a great sci-fi film in the cryogenics working the 10 people who could afford it, they're Simon Cowell, Max More, Elon Musk and the nanobots become self intelligent to survive but it takes them millennia to reconstitute the bodies and these five people wake up alone, millennia from now and horror film and want to die but they can't and be reconstituted, it's like a vision of hell really if you could live forever, it would be horrible.

But that’s not how Natasha sees her future.

NM: No, no I don't like the term immortality, it reminds me of Jean Paul Satre's No Exit, it's like you're stuck there forever, I like the idea of life expansion so you expand into multiple platforms or systems, to have your cells in a safety deposit lab so you can regenerate different body parts to be continually integrating with your computers, your technology, and to have a back up plan, back up your mind, back up your brain and to back up your body. I think chronic suspension is very important in that regard and all research done in brain transfer is very important.

I’m of two minds about this whole thing. I mean, living forever or hundreds of years? Yeah, sure! I’ll take it. Then I think of the game Fallout and I’m like – oh yeah, that’s could go really wrong.

On the other hand, I worry about my Dad, who is in a lot of pain orthopedically. I asked him if this technology were possible, would he ever want to grow new limbs, or upload his brain to a new body. He said sure with a wink and smile, because it sounds like science fiction to him.

But Elmo has another theory why transhumanism is popular now – which had never occurred to me.

EK: There's this growing awareness that the planet is in dire shape, and we haven't had this peak of environmental awareness before and to me connects with the rise of transhuman, these ideas are that's okay through tech we're going to reverse engineer the environment, we'll be able to fix stuff we done wrong like cloud seeding, these idea of geo-engineering, those are transhumanist idea.

In other words, if human beings are capable of messing up the Earth to the point where it may no longer be habitable, then the solution is to become better people – not morally, but genetically.

And this isn't just to solve climate change or world hunger.

Transhumanists believe in something called The Singularity – which is the moment in the future when artificial intelligence becomes self-aware, and we will have the opportunity to merge our minds with computers. They have a specific year in mind when this is going to happen: 2045.

NM: The human, as much as I like being human and I respect empathy and problem solving capabilities we're not all that smart we are unable to solve the problems at level need to be solved, and its, disappointing and it's like someone critique you and say you're not good enough didn't perform well enough, or you paper wasn't articulate enough.

ME: Someone only human. Not good enough.

VM: I can all mistakes in world and screw up and we're only human. I'm saying, come on, we can do better than that.

We'll see about that – or apparently some of us will.

In the larger debate over whether transhumanism is an accurate prediction of the future or just sci-fi wish fulfillment, Graeme Manson doesn't come down on either side, because he says, you can't separate the two.

GM: I understand the transhumanist movement is growing very rapidly, of course it is. If you're computer literate by the time you're three years old, if you're growing up with electronic devices, if you get so use to rapid technical change. It would seem like the

logical future for younger people growing up and then you feed everyone a steady diet of sci-fi and we're all fucked!

But you're not to blame for that! You're exploring deep questions.

GM: Well, we're all to blame.

That's it for this week, thank you for listening. Special thanks to Natasha Vita-More, Elmo Keep and Graeme Manson, who is glad Orphan Black is finally ready to come out of the closet and admit what we already knew. It's Canadian.

GM: We wanted a show that had international appeal so the decision was made set it in what we called Generica. We don't say what city it is. Once the show had legs and audience that all relaxed and not air brushing out the tower, but to us it is Toronto, Toronto is Generica.

This episode featured original music by Alexis Cuadrado. Imaginary Worlds is part of the Panoply network. You can like the show on Facebook – or leave a comment in iTunes. I tweet at emolinsky. I'll have a link to Natasha's images, and Elmo's article at my site, imaginary worlds podcast dot org.