Who's Afraid of the Big Bad Future

Katelyn Mae Petrin

In Warren Ellis's 2007 comic, Doktor Sleepless*, so-called "grinders" undergo radical body modification, put on masks, and beat up the police force. In 2016, real-life grinders are far too busy biohacking--implanting themselves with magnets, putting LED stars under their skin, and working with fellow citizen scientists across the world--to bother with political dissent. They dream of being cyborgs in a world with total morphological freedom--the ability for every person to choose what they look like when, without the limitations of funding or the interference of government. This movement has received both applause and condemnation. In a series of interviews, grinders explore how these dreams take shape and what makes them attractive to so many. Some grinders push at the limitations of their ideals, politically and structurally; others embrace the future with total idealism. Throughout these interviews, I look at how grinders may--or may not--challenge the status quo and how that may relate to the vitriol directed at their work. And I ask, finally, what are the consequences of locating dreams of the future in the human body?*

Be authentic to your dreams. Be authentic to your own idea about yourself. Grind away at your own minds and bodies until you become your own invention. Be Mad Scientists.

Warren Ellis, *Doktor Sleepless, Volume 1: Engines of Desire*

Any technology has a good side, a bad side and a stupid side nobody thought about ahead of time.

Margaret Atwood, interview with Daily News and Analysis: India

Germany. December 2010. Chaos Communication Congress, home to lectures about everything online. "Cybernetics for the Masses."

The formerly anonymous blogger Lepht Anonym stands at the front of a small room, revealed to the world for the first time. Pale, spiky-haired, dressed all in black, talking fast and waving hands for aerial punctuation, Anonym lays out between conditionals and disclaimers how to (and how to not) implant yourself with cyborg technology. Anesthesia and wound care, Anonym warns, are necessary skills for following these cyborg methods.

To the audience, Anonym's physical presence is something of a wonder: No one knew, really, who or what Anonym was until this moment. Anonym does not use he or she pronouns but, as a genderqueer person who dislikes the concept of gender, "it." Its appearance is, in some senses, a revelation. On the internet, identities are mutable; bodies are absent. But in what Anonym's fellow body-modifiers, known as grinders, call the "meatspace" of reality, the body is foremost. So the body will be modified.

To achieve this, Anonym walks the audience through what's considered a simple "biohack": a do-it-yourself biological experiment. This bodyhack gives an artificial "sixth sense." Find a tiny magnet. Get it bioproofed. Stick it in your finger. Feel electromagnetic fields in your fingertips.

Anonym presents this work as painfully simple. "All I do is play about with junk," it says. "I cut holes in myself, I put things in the holes, the holes are full of electricity and that's how things work. It's not complicated at all." If Anonym can do it, anyone can—or at least, that's the idea.

But biohacking is not for everybody; nor does it fulfill science fiction dreams of androids and jetpacks. It does not even really speak to the movement to which Anonym arguably belongs, transhumanism, a philosophy-turned-politics full of people whose dearest goal is to transcend the limits of biological evolution and the human body. Anonym knows this. "Most transhumanist dreams are all about immortality and eternal youth and wanting to become Superman and wanting to walk up walls like Spider Man and shit and it's just—not going to happen," Anonym says. With this method, Anonym promises an alternative. "This is very crude, very hacky transhumanism. If you want eternal life, you need to go bother somebody else." Everyone may not want to do this; but even so, Anonym stresses, anyone can.

This notion of "anyone can biohack" belongs, mostly, to the open source movement, which argues that information should be accessible to everyone, and that technology based on that information should be low-budget and available to anyone with a few spare twenties and some free time. For some this marks a new way of thinking: cybernetics for the masses. For others, this is just another iteration of the work that science has been doing for years, if not decades or even centuries. For a few, on that day, Lepht Anonym creates a lifestyle.

Months later, across the Atlantic Ocean, a man named Tim Cannon watches Lepht Anonym and thinks, "Oh, shit, the revolution started without me."

Detroit, U.S.A. April 2015. Penguicon (a.k.a. Giant Nerd Convention). Biohacker Panel.

"I basically saw this video on YouTube in April, and by May I had a magnet in my finger," Tim Cannon says, gesturing somewhat wildly. He wears a graphic t-shirt that reads "This is what AWESOME looks like!" As far as grinders go, the shirt is not wrong. Since the revelation in May, he launched a Pittsburgh-based biohacking startup, Grindhouse Wetware, that has gone on to be one of the most visible and successful independent producers of grinder technology. Cannon's the biggest name; he's had the most articles written about him; his company is probably the largest semi-cohesive assemblage of grinders. Everything about Cannon is loud. His introduction also rambles for several minutes longer than any of the other panel participants'.

At a table in the front of a hotel conference room sit three members of Dangerous Things, an older, less radical grinder startup that peddles RFID chips, electromagnetic devices that most people use like a personalized key. Amal Graafstra runs the business, Anita Fowler started in women's health and ended up in cyborg technology

to "encourage other people to take ownership of their bodies," and Drew Buglione tinkers with infrared vision experiments in his off time. Next to them sits Cindy Chestek, the odd woman out as the only biohacker who works in academia. She makes implants that could one day give fully controllable prosthetic limbs to the paralyzed.

They sit before several dozen rapt people as Cannon spins a long explanation of his most recent exploit. He implanted his arm with early versions of the "Circadia," a device "about the size of a bar of soap" that was intended to read and transmit biomedical data. After a few months of near-constant fear for his life, the battery pack corroded and the implant swelled, so Grindhouse declared the experiment a failure and Cannon removed the device.

As Cannon tells this story, Chestek makes faces of horror. She doesn't interrupt immediately—it takes another ten minutes of rambling, or so, before the other biohackers leave a conversational opening. Chestek seizes it hesitantly, saying, "I feel like I need to jump in here and say one thing. I am a firm supporter in personal freedom of all kinds. However, ah, doing what you did, you could die." That's what regulations are for, she explains. Cannon tries to interrupt her mid-conversation, but she talks over him. "I for one have not questioned the regulations that I live under because they're going to keep me from killing somebody." From Chestek's perspective, that's a good thing. She says she's grateful that we live in a society that values human life.

Here, Cannon can't restrain himself. "I would argue that we don't live in a society that values human life. I would argue that's not why those regulations are in place. Those regulations are in place in my opinion to protect wealthy investors." He adds, with self deprecation, "I'm admittedly a little conspiracy theoristy."

This kind of debate isn't uncommon. Some academic researchers have applauded the grinders' work as clever; others, like Chestek, worry about its consequences for scientific rigor and human life. Philosophical opposition also comes from figures involved with Humanity Plus, the most visible transhumanist publication.[1] The argument usually comes down to a matter of semantics: some transhumanists say that grinders' work is not real transhumanism because it's based on shock value, poorly designed experimentation, and modification rather than improvement of life; all grinders maintain that making immediate, small progress is more important than all of the above.

Natasha Vita-More, a philosopher and artist who holds several powerful positions in transhumanist circles (including a seat on the directorial board of Humanity Plus), has done some acclaimed transhumanist work. She also has a reputation among grinders for disliking their research.[2] She puts words to the central conflict between transhumanist and grinder ideologies: they have different understandings of valuable progress. Vita-More herself focuses on the transhumanist version of the long game—the elimination of death. "Death currently is something that happens to us when we least expect," she says. "It would be much more sane that people determine when their time is up or at least have some option about death. Death is final. You can't go back, it's what it is." Any sort of work that doesn't contribute to eliminating death contradicts Vita-More's definition of transhumanism. In that sense, grinders' work is

absolutely superfluous. That said, though, there are some ideological similarities. The biological body? It's part of death. Transcending the body is only a stop on the way to ending death, for transhumanists like Vita-More, and if you stop at transcending the body without eluding death, you haven't gone far enough. But grinders believe in working to change life. Many grinders don't focus on death at all, in their work.

The grinders operate on the assumption that the folks they call "academic transhumanists" are too wrapped up in theory to realize any of their ideas; the academics worry that grinders are too wrapped up in reality to realize that their work could have ideological and material consequences.

This debate is perhaps one of the only common grounds shared in either of the groups. Transhumanism as a philosophy is straightforward: It assumes that creating a "future human" is good, and that transcending the body is how we do it. Transhumanists as people are less so. Transhumanism claims neo-liberals, anarchists, libertarians, socialists, millionaires, students, engineers, drop-outs, scientists, salesmen; they have described the ideal human body as an interchangeable avatar, a floating cloud of brain uploaded to a computer, a total cyborg half-flesh half-machine, a consciousness leaping from husk to husk, a genetically-modified super-human, a non-body of nothingness, a Mr. Potato Head doll. A movement implies coherence or creeds adhered to or rejected—Luther's 95 Theses or the Xenofeminist Manifesto. But transhumanism has dozens of those, they all contradict each other, and people keep writing their own because they hate everyone else's.

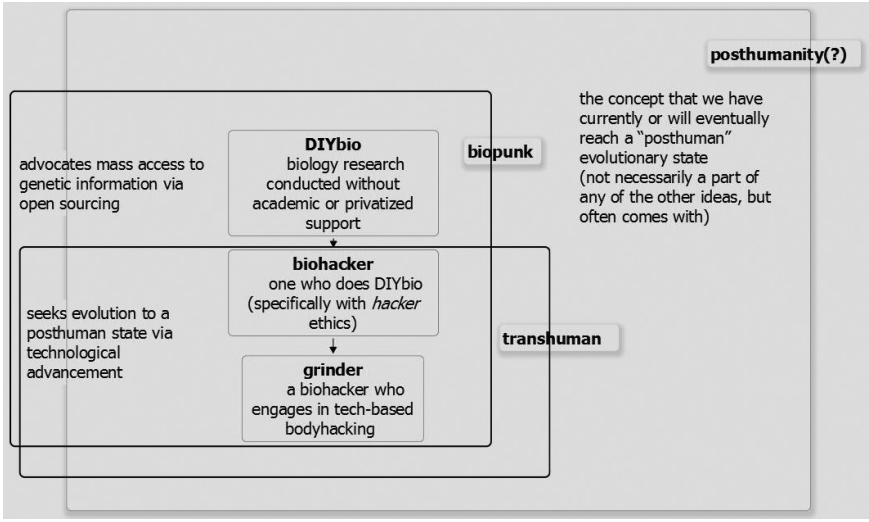

Figure. Treat this as a "venn diagram" (of sorts) that explains the most basic categories of transhumanist and how they relate. All DIYbio folks are biopunk but not all are transhumanists. Biohackers tend to be transhumanists more often, but not always. Meanwhile, the concept of "posthumanity" looms big and ambiguous behind all these categories, ranging from transhumanism's "evolved human" posthuman to academia's "humanity and machines living together in this world" posthuman.

Detroit, U.S.A. April 2015. Penguicon. Live Implantation.

"Let's make some cyborgs," Tim Cannon says.

Dozens of people line up in front of a table. At the front of the room sits Graafstra, who is implanting individuals with one of the oldest and most easily accessible biohacks: the RFID chip. It's often been compared to Christianity's Mark of the Beast. After starting his company, someone wrote Graafstra hate mail that read, "YOU'RE THE DEVIL'S MOUTHPIECE!!!!!" and Graafstra says he has found one of his company's most popular images—an x-ray of his RFID-implanted hands, which he had to fight endless medical legislation to create—reprinted in propaganda pamphlets that prophesy doom and the end of the world. A quick Google confirms this. Websites with titles like "End Times Prophecy" and "Rapturechrist" declare, in bad WordArt, that RFID tags are harbingers of the apocalypse. One article contains an embedded video of one of Dangerous Things' live implantations, much like this one. It says, "RFID microchips are not only ominous and foreboding, they are likely just the beginning of a future so technologically driven that humanity could be easily put in the backseat, dwarfed, diminished, disposed of and transcended."

Cannon seems overcome with glee at that very idea. "It's a science fiction convention where people are becoming the first wave of cyborgs!" he says, and strokes his beard, a goatee subtype known as the "chin puff."

It is tempting to dismiss the criticism. The Internet rumblings sound reminiscent of the church telling Galileo that, "Yes, thank you, but the sun revolves around the earth. Duh. Also, you're a blasphemer against nature," and throwing him in prison. In fact, the Catholic Church has already condemned transhumanism. They call transhumanism a source of concern regarding "the rising power that technological development grants to individuals and institutions that without respect for human life intend to determine our future and design new realities for their personal will and interests."[3] That is, according to the Catholic Church, technology is great, but people keep abusing it—transhumanists included. Many people attack Anonym's work specifically, and the word "self-mutilation"—a classic regulatory term applied to people with body modification—is rarely far from anything Anonym has published.[4] Anonym also gets the word "crazy" in the pejorative, often and loudly.

For every positive profile about cyborg possibilities, there are a dozen negative think pieces on how technology is ruining the millennial generation, taking all the jobs, or hurtling us toward Artificial Intelligence-crafted doom. The irrational fervor of the opposition, and the grinders' eagerness to say, "Look, yes, we have some problems, but we're still awesome," makes it perturbingly simple to just dismiss anyone who speaks out. Even if opponents don't speak explicitly in the name of religion or sanity, it's easy to paint grinders as the liberated visionaries and cast their opponents as the pitiful cretins who have been cuckolded by society's mores.

But under the hysteria, the hundreds of apocalypse movies, the existential terrors about what happens when the corpus homini loses its imago dei to bioproofed implants and steel flesh, there is a question that lingers.

What if cybernetics aren't for the masses?

People often worry that marginalized populations will be left behind in this just like everything else, or that the non-modified will become a new class of disadvantaged. This is often just presented as the reality of human modification under a capitalist system. People fear the replication of class and power dynamics: haves and have-nots, insurmountable discrepancies in access and education leading to entire segments of society cut out of humanity's future, systemic and systematic inequity. A conversation about human enhancement never escapes without some mention of the possible eugenic consequences—governments, with the power of science, have already sterilized thousands of black people, gay people, disabled people, and poor people. What's to stop the powerful from finding new ways to prevent "the undesirables" from ever being born? What's to stop transhumanism from becoming complicit in that?

These fears are not misplaced; they could very well be realized, despite the grinders' best intentions. But the grinders insist that they'll be making things better for those exact same people.

I could believe it. For such a small movement, it has an unprecedented number of nonbinary trans people; a number of its members are disabled. And looking around the room of people who're becoming cyborgs right in front of me, that claim is, again, so tempting to believe.

The crowd might be considered eclectic—a handful of people in costumes (everything from renaissance vests to sci-fi characters to a Sherlock Holmes outfit), a male with bright painted nails, a three-person couple. But it's also a little bit diverse; of the people waiting I can spot at least four genders and a number of races and ethnicities. Behind the couple a fellow stands on a prosthetic leg. People gather around the table and its workstation; it's nothing fancy, just a large injection needle, a gauze pad, a drape cloth, and some rubber gloves. Anyone could do this anywhere; the kit costs $40 and learning how to use the chip costs an hour or so on Google. By selling these kits on his website, Graafstra has made thousands of cyborgs. Now he's just adding a few more to the ranks.

And a lot want to be added. By the second day of the conference, they've already run out of kits. There are more wannabe cyborgs than resources.

Regardless of whether these technologies could become eugenic, right now, they aren't. And that still doesn't quite explain the objections of all the people who couldn't care less about eugenics. So what exactly is making people upset? What are the grinders doing that warrants such a virulent response?

A scholar named Donna Haraway has a theory that might answer this question. In A Cyborg Manifesto, she creates a metaphorical and symbolic notion of what the cyborg could be, "a fiction mapping our social and bodily reality."[5] And that is: destroyer of society, upender of regimes, bringer of liberation. Her cyborg is a postmodern disruptive source, a way to unsettle the power structures that dictate the technologies used to dominate society.

She describes these oppressions as "informatics of domination"—generally, all of the ways that knowledge is used to control people. These informatics include biology as inscription, neo-imperialism, optimum genetic strategies, and the like.[6] Look at

the concept that biology describes reality. People have argued that race is biological, and therefore race is real. But genetic research shows that there are no biological markers that correspond to "race" as society understands it—yet the argument persists.[7] Similarly, people argue that sex is biological, and that therefore male and female are objective, separate categories distinct from cultural beliefs. Yet, until the eighteenth century, despite visible indications of biological difference, western scientists believed that there was only one sex; and now, even with knowledge of chromosomal science, some societies believe in a third sex.[8] Individuals with both standard and non-standard chromosomes have variable expression of sex characteristics. The beliefs that race and sex are biological and therefore objective and irrefutable typify "informatics of domination." And thus, powers in the (post)modern age control global and individual social relationship using science and technology.

And while Haraway's cyborg is ultimately metaphorical, it is also channeled in nearly every popular depiction of cyborg published in the past few decades. Consciously or not, cyborg-as-destroyer-of-society forms the zeitgeist.[9] Grinders often subscribe to a trickled-down, depoliticized version of Haraway's manifesto. So when dozens of people who look totally different from what "polite society" condones line up to become cyborgs, they mobilize their identities. These lines of grinders refusing to look like white, middle-upper-class mainstream society could, perhaps, be seen as the literal manifestation of Haraway's metaphorical revolution. Using Haraway as a model, grinders become a concrete agent of the abstract chaos that ideas can create. And on some level, that makes them terrifying.

Figure. Graafstra's so-called "Mark of the Beast" hands, which are commonly featured on rapture-focused websites.

Detroit, U.S.A. April 2015. Penguicon. Grindhouse Wetware's Hotel Room.

Tim Cannon slouches in a chair, fiddling with a vape. I've just asked him why he locates his work in the body. His answer: It's the most *fun*.

"That's what's most exciting to me," he begins, "is when you start breaking down those boundaries of what makes, you know, how we're shaped."

Unlike many proponents of futurism and transhumanism who advocate an ethical plan for future technological development, he doesn't believe that there should be one coherent ideal. "If we have a mutual plan as to the future of the human body, then we are very, very limited—because somebody might want to look like a spider, somebody might wanna look like a bee, somebody might wanna be a jet plane, somebody might wanna be a spaceship. I say that all the time: I don't wanna go to space in a spaceship, I wanna be a spaceship."

For Cannon, this desire to "be" expresses itself in a myriad of implants. Most recently, his team has successfully released a preliminary version of an implant called the "Northstar," a five-pointed red LED that they hope will—when finished—let users control electronic devices (like their phone) with hand gestures. Cannon presents these ideas by chasing tangent after tangent and uses hand motions to emphasize points. He often seems to revolve around the idea that all changes to the body should be equally condoned and equally accessible.

"Society's like," here he puts on a fake, patronizing voice, "'you don't understand the distinction between putting a star in your hand and a big pair of fake titties' – and no, I don't understand the distinction. I really don't. If people are allowed to fold their penises into vaginas—which is awesome, I love the fact that that's a thing that can happen for people, right?—if people can manipulate their teeth, if people can manipulate all these other things through surgery, their nose sizes… why is it considered so risqué to start changing into forms that are non-standard?"

He's also not afraid to extend his cyborg ideas to other realms of the body and bodily autonomy. "Perhaps a third, fourth, fifth, and sixth direction in gender, you know, might be fun, might be interesting for some people to explore, you know, gender identities that are outside of your standard binary thinking."

Another grinder, Rich Lee, earlier said this same thing to me almost idea-for-idea: "I think it's a shame that humans only have two standard genders to potentially identify with, like as opposed to say some alien race that has like five genders or something, right? What if we could make that happen? How crazy would things be after that? I think that by introducing more options that way, or like moving that kind of stuff from the equation at all, maybe we could get past sexism or gender politics—potentially." Lee has his fingers in many projects, so they very well may have had this conversation with each other before. Or maybe it's just groupthink. (Lee and Cannon did both sport chin puffs in 2015.)

From Cannon's perspective, "there are many parallels between gender identity crises and transhumanism" because people feel trapped, like they should fit into a different space. "With me as a transhumanist, I feel like I was born into a box, like a

prison, like a slowly-rotting time-lapse cell that's going to kill me at the end. It's the world's most elaborate Saw movie kindof contraption." And he plans to escape, no matter what society says about it.

This perspective might sound great to many; it fits soundly within liberal political ideologies. There are a few moments that give me pause, as a reporter, though—the glee with which Lee and Cannon anticipate gender abolition seems out of place, given that they themselves will not change their genders. The transgender struggle (as much as they seem to genuinely support it) also becomes a bit of a rhetorical prop in Cannon's own arsenal of weapons against bioconservative ideologies. As Cannon says, his ideologies use science as "liberation from the hand that we're dealt." As much as he advocates the liberation of others, he seems uniquely—or perhaps just humanly—concerned with his own quest to "be a spaceship."

Lee also seeks to challenge the limitations of the body—though perhaps unlike Cannon, Lee has a more pressing need to do so. One day, Lee woke up and discovered his right eye could barely see. Doctors informed him that the condition was irreversible and that his left eye could follow suit at any time. Lee's grinder projects began as a way to regain some of the fifth sense he had lost—not by reclaiming his sight, but by implanting himself with the ability to feel electromagnetic fields through the common finger magnet, then adapting that technology to his ears. His ear implants serve as headphones and, Lee says, if all goes well, echolocators.

Lee also believes that humanity lacks biodiversity to the point that we face elimination from nature; that the ideal humanity would be diverse not racially or culturally but biologically, able to swap out limbs and evolutionary advantages; and that the path to human success is elimination of need. "I think humans are like time bombs," he says. "They all have these forty-eight hour reset switches that we're continually hitting." He goes on to explain that the longer you deprive humans of their needs—food, water, shelter—the crazier they get. "Everyone on earth is about forty-eight hours away from bad decisions, and about a hundred and eight hours away from murder." The solution? Take away need. Design implants that convert the vapor in air into breathable water; take pills to eliminate sleep. Give them to everyone. Turn the body into what Lee admits is "crazy": a "Mr. Potato Head" system where "I get to swap this part in and out." Improve the human condition, he says.

Here, some divides between the two grinders' philosophies emerge. While Lee became a grinder in part to transcend his own dwindling abilities and retains some of that philosophy in his work, Cannon admits no such constraints. Cannon even says, "We're not trying to fix anything. We're trying to be more than what we are." Cannon says he wants to abolish all the limitations of the body because he can. In this, he's sort of a punk-rock prophet of the grinder movement—with all the dissent and controversy that entails, garnering support and controversy both inside and outside the movement.

Again, Cannon and Lee do not represent transhumanists, or even grinders. It might be most accurate to say that no one represents transhumanists or grinders. Their dreams are the ideological equivalent of Lee's Mr. Potato Head vision of humanity: swap out a part here, put the feet were the eyes go, make the Frankenstein

creature of your whimsy. Both have their own intensely personal reasons for their grinder work; these reasons result in disparate but parallel philosophies. Together, though, these are two of the more media-prominent grinders. They have clout in grinders' representation to the outside world, even if they do not control grinder thoughts.

But they agree on a few crucial ideas. The body needs to change. Society doesn't want that. They can (and should) do it anyway.

Cannon also says that accepting human limitations—of death and the body—is treated as good. Anyone who resists is shouted down. Even the law places limitations on Cannon's work, telling him he can't implant consenting friends, he can't access some of his own medical information without going to a hospital, he can't conduct certain sorts of research. You can't seriously try to transcend the body within existing frameworks, Cannon suggests. And he wants to fight nay-sayers that range from individual to governmental.

Cannon explains, "This *has* to come from the basement because nobody can do it."

Detroit, U.S.A. April 2015. Penguicon. Dangerous Things' Hotel Room.

"I hope there will be more women being active and being vocal about biohacking. So we don't have to rely on Tim Cannon to yell," Anita Fowler says, then pauses. "As much." A knowing laugh goes around the room.

Amal Graafstra adds, "Yeah, he's good at that," and Drew Buglione nods in agreement.

Graafstra plays with a colonoscope (they've been offering free colonoscopies, but suspect Penguicon is "maybe not the right venue"). Buglione sits on the bed, and Fowler, in a chair. Early on, in response to a question, one of them says, "I'd love to just yell about that for hours," and then they did exactly that. A handful of questions, normally about thirty minutes' worth, turned into a three-hour philosophical ramble that wandered between conversations about everything from personhood to cavity prevention. They switched between disagreeing with each other vehemently and pointing at each other in excited agreement.

Buglione's top research priority is to one day circumvent death. Graafstra asks, "Do you feel like your anxiety about death has to do with the fact that you have an atheistic view?" and they spin into a rant from there.

"There's this idea that what biohacking is strictly doing is enhancing the human experience. But it doesn't have to be. I think it's all kindof part of the same thing. We want life to be better, not worse. So. We biohack," says Graafstra.

Fowler, as the only woman in the room and the only woman grinder I've met in person, has a more nuanced take on "making life better" than many other grinders. Her experience with women's rights and issues of bodily autonomy in other areas of life ensures this. From her perspective, when it comes to "people gettin' up in arms about privacy issues and about personal autonomy and everything, women seem like

they'd be the first ones at the forefront." In the grinding world, they aren't—but it's not a grinder-specific issue, Anita says. That's just STEM.

But, she hopes that can change because biohacking's political consequences and women's societal inequality might have something to give to each other. She offers up birth control IUDs and pills as examples of biohacking. "Women don't even think about it. It is harder for some women to accept an implant over taking a pill or doing the patch or whatever, but it's much easier to accept without people thinking, 'I'm biohacking.'" But Fowler wants this ignorance to change. "Once people start realizing that they're already doing it, it becomes easier to accept that people are doing it for augmentative reasons or medical reasons."

Graafstra tacks on to that, "There's a huge subset of biohacking that's focused on morphological freedom and that kind of touches on even current trends in gender equality and the definition of gender—is it a mental thing, is it a physical state, what is it?"

Fowler adds that recent theories of gender and sexuality have much in common with her biohacking. "The more acceptance there is around the fact that there's a spectrum [of gender and sexuality], the more acceptance there is about biohacking."

Graafstra points out, though, that people are drawing lines, even though they're asking these questions: some things are acceptable, but changes like nipple removal, tongue and penis alteration, or removing a finger are less allowable in society.

For Fowler, this is all connected. She uses the example of people who have a condition where they don't see their limbs as part of them, so they choose to amputate. That raises questions, Fowler says, about "whether you can just alter in your brain structure to fix that, or take your leg off." From there, she wonders what people will choose if they have the option of either.

"Right," Graafstra jumps in. "But that's the assumption. What I find interesting is your choice of verbage. You're saying 'fix it' and 'permission.'"

"Exactly!" Fowler shouts a bit, gesturing excitedly. "Exactly."

Graafstra goes on, "But that's the same verbage that gender people are dealing with. 'You know, we gotta fix that gay person, can we change their brain?'"

Fowler argues that means it comes down to a matter of brain alteration versus choice of doing away with legislature. Graafstra challenges her on this. "But if you say the same exact option to a gay person—would that be acceptable?"

Fowler shoots back a technological application in that actual direction. "If you could become totally pansexual or you wanna stay strictly gay! Like now it could be a choice."

"That's the thing is," Graafstra returns. "How do you label that? Is that a fix? Is that just freedom? Self-expression? We could see this person who doesn't feel comfortable with their leg and they want it gone, that's something wrong, that's a pathology of some kind. But that's the same exact."

This raises the question, though: How do philosophies like this affect the lives of people closest to these issues? In some sense, Fowler and Graafstra have stakes in these issues as grinders (and, on Fowler's part, as a woman)—not necessarily as people who are highly constrained by medical and identity issues. One of the less visible members

of Grindhouse Wetware, Ian Linnell, has a more intimate perspective on these issues. Linnell explains, "I don't think I've ever really fit in with the cis-heteronormative paradigm." That's because Linnell is agender. Instead of "he" or "she" pronouns, Linnell uses singular "they." Linnell's identity falls under the same general category of "nonbinary" gender identities as Anonym's; some nonbinary people consider themselves transgender, while others do not. The term agender can refer to a wide range of feelings and gender expressions. For Linnell, it means that they "don't identify as any gender. I don't feel constrained to act in ways that are expected of whatever gender."

With this experience of self, the philosophy of postgenderism—as Linnell describes it, "the idea that the use of technology to eliminate at least what we usually think of as gender would be a desirable outcome"—becomes logical, if not necessary. Many grinders identify as postgenderist regardless of their own gender.

For Linnell, postgenderism means two things: first, that society's understanding of gender is wrong, and that technology can be used to demonstrate this; second, that, understanding gender as a way of self-expression, society needs to broaden its ideas of acceptable self-expression. Linnell demonstrates these problems in action by breaking down issues that surround availability of gender and sex change technology.

With the United States' current insurance and consent system, hormone replacement therapies and sex change surgeries that allow gender non-conforming people to transition are rarely available without a diagnosis of "gender identity disorder." Linnell explains, "the medical industry is what controls what people are allowed to do to their own bodies. As long as the medical industry and bodies like the FDA industry are regulating gender transition, it will be happening, but on the other hand that [regulation] is exactly what biohacking and grinding movement are aiming to challenge."

Linnell hopes that one day we will live in a world where people can 3D-print their own bodies from scratch, transfer their brains into those bodies, and look however they want whenever they want. But right now, the medical industry enforces necessary change over desired change. That's the same idea that Fowler and Graafstra hit on, as well; society enforces rules about body autonomy that individuals increasingly question. "I think that these two different philosophies about what you can or should do with your own body will go up against each other," says Linnell.

What does that mean for the future? The folks at Dangerous Things think that mostly, society itself has to continue its own evolution, parallel to human evolution, that changes concepts of normal.

Graafstra offers, "Like anything, it's not the technology that's driving this. It's people and their goofy social constraints."

With this assumption, Graafstra also brings another idea: "We're definitely not a designed being or creature." This concept, in part, may explain some of the problems that people encounter with grinders' ideologies. Most obviously, this contradicts religious understandings of the body as deliberately crafted in God's image. But this same concept also influences the same medical notions that Linnell points out. Often, the scientific establishment's decisions about such modifications take farcical turns: In the 1990s, the National Institute of Health ruled that hormone treatments

could be given to people of short stature because being short has negative psychosocial impact.[10] Medicalization is treated as necessary to justify interventions that improve lives. Why are people only allowed to alter their physical form if they are labeled ill, or disabled, or socially abnormal? Because there is an assumption of a body that all bodies are expected to conform to.

As Dangerous Things sees it, to accept biohacking is to change this very concept of what the body ought to be.

"I'm preparing society for implants, right?" explains Graafstra. "Making it normal and not anything that's shocking. And that's true. If there's one thing about biohacking that's really interesting, we're pushing the social envelope of what's normal and acceptable and even newsworthy."

Fowler adds, "Biohacking is so great in that it does cross over all of these certain battles that are being fought like in feminism or race differentiation."

Her ultimate point calls for more radical change than many of the other grinders, who merely hope that their technology might improve others' straits: "The fact that we are biohackers and we wanna be accepted as this requires that society as normal needs to be adjusted," she says.

And Linnell, the floating voice over the phone who is sometimes laughed at on the streets for their gender-ambiguous clothing, hints at a sense of motive for this claim: "We want to go out and do things and make the future that we were promised."

The Ether.

Fowler's "biohacking is great" statement comes with a "but." She says, "One of the things that I am concerned about is socioeconomic disparity. We're trying to fix a lot of that because we don't want a lot of augmentation or a lot of medicine or whatever to be just for rich people. We want it to be open access, we want it to be for everybody who wants it. But there's still a certain amount of socioeconomic privilege that goes into even getting the information that it exists."

She goes on, "I wonder if that gap is going to be slowly closed as the movement expands, or if one section of the population [will be] getting modified even more dramatically and then another part of the population can't—how is that going to effect even how we define within our own species. I feel like that disparity already exists to some extent. Most Americans, I think, value themselves more than they value someone from a developing country." And she asks the big question, the one that lingers for many people: "How much more will that be when we experience our lives in a completely different manner?"

When I pressed most grinders on this point, they either responded with unflagging optimism (that this is cheap, that anyone could do it) or with this exact concern. There's nothing surprising about the former response, but there is, perhaps, something surprising about the fact that people who seem so in-tune with social issues simultaneously claim such an unlikely, egalitarian outcome.

If you want, you could make the movement look pretty ugly to its fellow progressive thinkers. Any movement has its blind-spots and every individual has their

prejudices.

Anonym, who might be classified by some Americans as falling under the trans spectrum, holds the perspective of many second-wave feminists who believe that the transgender movement is detrimental to gender equality.

Another grinder, discussing gender equality in the transhumanist movement, called Natasha Vita-More "practically a man, anyway." When I asked, "Why do you say that?" he deflected to, "Oh, gosh, I don't know, I'm not a fan of Vita-More, admittedly." The same grinder seemed terribly surprised when I asked him whether he knew any people of color in the grinder movement. His answer: He couldn't think of any, even in the larger transhumanist movement and especially amongst prominent grinders. After pausing, he admitted a bit awkwardly that the movement "does seem to be pretty white-male oriented, but I don't think that's intentional or anything." He's not sure why, but he says he's thought about it.

Lee, in his ponderings about race, imagined the elimination of colorism (though, he specifies, not racism) through technology. Like many aspects of grinder theory, this theory sounds ideal. He said he thinks that given a skin color-changing technology, many countries' inhabitants (for example, people in China and the United States) would decide to be light-skinned. In that situation, he said, "If somebody's dark-skinned I might look at them and say, 'I don't know if they're dark-skinned because they want to be or they're born that way or—I don't even care.' Because tomorrow, they could be light-skinned. Who knows." He adds, "I think once that becomes popular, I would find it hard for people to be able to actually discriminate." Ignoring the fact that technologies have long been used for skin bleaching and skin lightening—with outcomes that are not exactly free of discrimination—this sentiment rests on the assumption that discrimination itself is located entirely in the physical appearance of the body, more so than its relationship to the real world.

Some of these instances are more clearly naiveté than bias; others may be more ambiguous or outright prejudiced. But it's easy, if you sample just a few sentences from a few individuals, to turn the movement into a white man's fantasy utopia. If anyone could choose to be any color, any gender, any class, any creed, in a world where deviating from the ideal is dangerous, it seems terribly likely that we may end up with societies that look like the local *ubermensch*.

But at the same time, no grinders claim to be political. They can talk class politics for twenty minutes, but if you mention the word "politics," they shrivel up a little and change topics. One of the only grinders I've spoken with who willingly admitted their work was political? Anonym. It said, "I don't do it because of politics, and I wouldn't say it's a political issue. But to say there's no politics here would be wrong" It's "silly," Anonym said, to claim that there aren't political implications to at least some grinder work.

But, Anonym also adds, despite the grinders' ideological coincidence with these politics, it sees "no ethical or logical overlap" between identity politics and grinder work. Anonym also doesn't perceive a destabilizing effect or combination between its work and social categories that so many of its followers claim exist. It doesn't think that the work is inherently anything more than an individual scramble for choice and

access. And that's just it. The grinder movement is not claiming to champion any causes, is not claiming they'll liberate the masses, is not claiming any fancy degrees in identity politics to do their work. They just want to do science; they just want more people to do science; and, as almost every single grinder I spoke to told me, they're doing this because it's just plain *fun*.

And it just so happens that their fun terrifies people.

There is something very political happening here—whether a given grinder uses identity politics to champion their cause or not. Knowledge. It's being reclaimed, dispersed, offered up. When Anonym started getting into biohacking in its late teens, it found that the future technology, the cyborg devices—"everything was owned by companies." As a kid who grew up poor and still struggles to pay for its ideal degree, it started trying to make its own. "I didn't like the idea that it was only available to people who could buy it," Anonym added.

Lee comes from a similar perspective. "I don't want to say we fight for the poor, but we definitely see the problem. And a lot of us are poor. We know our budget." He designed his headphone implants in part because he couldn't afford the cornea transplant that would be necessary to regain his sight.

As Rich Lee said, "If there is a technology that comes out that's very life-altering, or something that's very significant, I'll do whatever I can to reverse-engineer it, pirate it, come out with some sort of open source solution that people can get their hands on."

And as Anonym said, "If it's under 50 euros, I've got it. Otherwise, no."

The transhumanists I spoke to came from many different walks of life. One held a programming job and lived in a wealthy East Coast city; another held a sales job in a flyover state; another was getting a bachelor's degree in science from a swanky university; another had to drop out of university for financial reasons; another was an engineer who has consulted on government project; another worked in medicine and joined a group of entrepreneurs in a grinder lab; those entrepreneurs themselves range from math tutor to full-time company CIO. The grinders are by no means wealthy extraordinaires a la Tony Stark.

I don't want to play "diversity checklist," here; that's far from my intent. But. They know how to use computers. They have enough free time to pursue biological knowledge and tinker. They have enough spare cash to build cheap labs. The idealistic dream of the everyman who can just do some science research in their spare time—that's not a poverty-wage dream or a house mom's dream or the dream of the many children expected to support aging parents. It requires time, it requires education, it requires 20 spare dollars that not everyone has.

U.S.A.; U.K. Various times. Conversations, by phone.

Bodily autonomy wasn't a goal Anonym set out to achieve, or something that drove it explicitly. "That's always been underlying," it says. And Anonym can't quite put a finger on why its so important that people have bodily autonomy. Without autonomy, Anonym's not quite sure what life would look like. Why? "Fundamentally.

I just feel like it's awful. I'm just appalled. But there's no logical reason." It adds, struggling for words, "it's just visceral," and "anyone who wants to do something with their body should be able to." The struggle is jolly, not fraught; it laughs over not being able to give a very academic answer.

But there are academic answers. Vita-More, who pioneered body-based transhumanist theories, says, "I don't locate the future of the human species or human consciousness exclusively within the material, biological sphere. … The essence of identity, personhood, is already transversed outside the neurological makeup in the brain onto digitality, zeroes and ones, not only through email, Facebook, metaverse and Second Life, and other types of platforms for avatar and identity. But there will be far more immersive domains nearing—today, virtual reality for one. And telepresence. If we are able to move atoms, we will certainly be able to move identity from one location to another." She envisions a world of platform-diverse bodies and substrate-autonomous persons: bodies that could look like anything, free of matter, at once an intensification of the grinder dream (to master the body) and the exact opposite of its implications (to leave the material form behind.) She envisions many bodies, many shapes, colors, vibrations, charges.

But even Vita-More, who advocates the most biology-irrelevant, body-independent transhumanism I've encountered, and who actively denies that her work is body-focused, admits: "We will always have a body. That is something I feel very confident about saying."

And for Anonym, that reality is pressing, immediate, inescapable. Its greatest wish is that the government would "give affirmation of the right to do whatever you want to your own body as long as you don't harm anyone else." And to some degree, Anonym's work petitions for this outcome.

Whereas Vita-More hesitates to put so much emphasis on the body. "It's a matter of mobility rather than trying to transcend the human body. The human body will always be a lovely vehicle, but it will not cover all of our needs," she says. Vita-More also pushes against the assumption that autonomy is so contingent on governing bodies' declaration of what you can do with your physical being, because "the autonomy of a person is not substrate-tethered, or substrate exclusively bound." In simpler words: it's not bodily autonomy. It's just autonomy. And everyone should have it, regardless of form.

But for Anonym, that sort of philosophical abstraction doesn't reflect a reality where governments control reproductive rights, scientific research, and corporate technology. "If we don't exercise a right to bodily autonomy you may lose it, or it may get eroded."

This is, perhaps, the crux of the grinders' work, what makes it so threatening to law and order, what makes it so close and yet so far from United States identity politics. Because whatever it is and is not, grinder work is absolutely an exercise in bodily autonomy. And no matter how conscious or white or male or cisgender or political the people exercising that right may (or may not) be, that exercise still speaks against laws that restrain that autonomy.

Demanding a future where those laws no longer exist for *anyone* is sheer specula-

tion. It might turn out well; it might not. But as Anonym says, "speculation created transhumanism."

For Anonym, the most productive use of that speculation is taking "concrete steps towards using technology to make concrete changes to life." Maybe someday, it acknowledges, we will have nanobots that could give complete morphological freedom—and maybe "we'll look back at what I'm doing now and laugh our asses off and ask, 'Why did you even bother to do that when you can just change everything?'"

But for now, Anonym says, "The body is what we have to work with." The body is the first (and only) step. "Hope is great, but hope doesn't get me to the future."

Notes

1 **the most visible transhumanist publication** See, for instance, the comments section in Peter Rothman, "No, Biohackers Did Not Just Discover Eyedrops That Give You Night Vision -- And Using Them Might Damage Your Eyesight," *H+ Media*, accessed March 31, 2015, http://hplusmagazine.com/2015/03/30/no-biohackers-did-not-just-discover-eyedrops-that-give-you-night-vision-and-using-them-might-damage-your-eyesight/. Although this is a huge and vastly complicated issue, I have chosen not to talk about it in depth because it is mostly driven by a few individuals' personal beliefs. There is almost zero coherence of community or identity within the current transhumanist movement, so to properly portray the in-fighting and its causes would just be an endless task.

2 **has a reputation among grinders** I say "has a reputation" because I have been unable to find her saying anything negative that explicitly names grinder technologies. Vita-More certainly has her own ideas about what transhumanism should look like, and those ideas do contradict grinders. Several editors of *Humanity Plus* have also expressed public disdain for grinders (both in articles and comments sections). I just have not been able to locate Vita-More doing so. It's hard to determine if some grinders' animosity towards her is borne from things that she actually did or said, or is more generally related to the actions and words of *Humanity Plus* as a larger body of individuals. She ended our interview after ten minutes because she said CNN was several hours late and had just arrived, so I didn't get to ask in-depth questions about this conflict.

3 **They call transhumanism a source of concern** The missive, the Madrid Declaration on Science and Life, doesn't just concern transhumanism; however, many of the declarations made at this conference apply to them. Some people have sensationalized this document, claiming that it proves Catholics have "declared war" on transhumanist ideologies. See (for both a link to the Madrid Declaration and a dramatic interpretation of the declaration) Anonymous, "The Catholic Church Has Declared War on Transhumanism," *H+ Magazine*, October 4, 2013, http://hplusmagazine.com/2013/10/04/the-catholic-church-has-declared-war-on-transhumanism/.

4 **the word self-mutilation is often bandied about** See Charles T Rubin, "Transhumanist Self-Mutilation," right-wing propaganda, *Futurisms: Critiquing the Project to Reengineer Humanity*, (n.d.), http://futurisms.thenewatlantis.com/2011/01/trans-

humanist-self-mutilation.html, Ari N. Schulman, "Celebrating Self-Mutilation," *Futurisms: Critiquing the Project to Reengineer Humanity*, February 15, 2011, http://futurisms.thenewatlantis.com/2011/02/celebrating-self-mutilation.htm, and the comments section of *Cybernetics for the Masses*, YouTube, Chaos Communication Congress, 2011, https://www.youtube.com/watch?v=a-Dv6dDtdcs. For information on use of term "self-mutilation" as regulatory, see Victoria Pitts-Taylor, *In the Flesh: The Cultural Politics of Body Modification* (New York: Palgrave Macmillan, 2003), 12.

5 **a Cyborg Manifesto** is just one chapter in a much larger book about the changing relationships between human and technology. Although the book was written as philosophy over 40 years before grinders became "a thing," much of it is prescient. See Donna Jeanne Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 150.

6 Ibid., 161.

7 **Genetic research shows that there are no biological markers that correspond to "race"** This has been discovered as of the genomic age. Skin colors have no inherent similarity or dissimilarity of DNA. "Biological Aspects of Race: AAPA Statement on Biological Aspects of Race," *American Journal of Physical Anthropology* 101 (1996): 569–70.

8 **Western scientists believed that there was only one sex** This theory was presented by historian Thomas Laqueur in an acdemically ground-breaking book. He observed that doctors understood women to be just an improperly developed man. Rather than two inherently separate sexes, Laqueur argues, women and men were considered two variations of one form. This theory is debated, but its details are generally accepted. Thomas Walter Laqueur, *Making Sex: Body and Gender from the Greeks to Freud* (Cambridge, Mass.: Harvard University Press, 1990) and Gilbert H. Herdt, ed., "Preface & Introduction: Third Sexes and Third Genders," in *Third Sex, Third Gender: Beyond Sexual Dimorphism in Culture and History* (New York: Zone Books, 1994), 11–84.

9 **Cyborg-as-destroyer-of-society forms the zeitgest** Just try to find a movie that includes cyborgs but doesn't involve an apocalypse.

10 **hormone treatments could be given to people of short stature because being short has negative psychosocial impact** This decision comes even as hormone replacement therapy is still denied to transgender people.

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