AT: Welcome to the Infinite Women podcast. I'm your host, Allison Tyra, and today I'm joined by Angelique Joy, an artist and PhD candidate at RMIT, to talk about the mathematician Ada Lovelace. So why don't we start with what Ada is best known for?

AJ: So Ada was best known for being a computer programmer or someone who developed a table or a code to understand a particular mathematical invention known as the analytical engine by Charles Babbage.

AT: And so this was basically the idea for a computer, like one of the very early ideas for the, sort of the hardware. Like she's been described as a computer programmer before computers existed. So she was writing like the earliest versions of algorithms, right?

AJ: Yeah, absolutely. So Charles Babbage, who is also another favourite being of mine, created, before the analytical engine, the difference engine. And the difference engine was essentially this massive, and he, well, he invented it more than actually created it. It was basically one of the first mechanical calculators. He got some funding from the British government. At the time, it was all in 1800s in the great, you know, industrial age, industrial revolution. That kind of was the precursor, and his first connection with Ada, and it was at this incredible exhibition that Ada came across the difference engine. She was completely enthralled with how the, you know, the functionality of the computational part of this engine. And while he never got to finish the build of that, his collaboration with Ada started with this early machine. His next invention was the analytical engine, which then took those kind of calculations to the next step. The calculations of the difference engine were very basic, where the analytical engine had this incredible new step of a control arm. And that control arm was like early code, - if this, then that, if this, then that. So binary code, on and off, on and off. That was based on his and Ada's love and kind of connection to the loom industry and the jacquard loom. So early jacquard loom industries had little punch cards that would define on or off, if this, then that, when the threads would be threaded into this part or that part to kind of weave these incredible intricate details in jacquard. So he borrowed those, the same kind of premise for this next big analytical engine, where the cards were a form of code, that then defined, you know, which part of the calculations and how the calculations worked in an analytical engine.

AT: So let's, let's talk about her mom.

AJ: Yes.

AT: She had a very, apart from, you know, this thing that she is known for, you know, writing these equations, she's also just a really fascinating person, not least because she was actually the daughter of the poet Lord Byron. But she never actually met him.

AJ: No, so he himself was this incredible, you know, queer, amazing character, who was a poet, who was romantic, who was flamboyant and over the top, who had, you know, relationships with men and women and all kinds of people. And Ada's mother was with him for a very short period

of time, and they did have Ada, their only child. And after less than a year, she kicked him out because of his philandering ways. And there are some, and in all of the kind of papers that you read, a lot of people say that the reason that Ada was instructed in maths was to counter the kind of loose, romantic potential influence of her father, even though she never saw him past infancy. However, the British computer scientist and historian Ursula Martin, who recently published an incredible book on Ada, having read through and researched the family's extensive archives and notes that her mother, so Ada's mother had collected and saved, had noted that actually it was more that Ada's mother herself had come from a, you know, was an aristocrat, incredibly financially privileged background, and quite an enlightened background in kind of the English aristocracy. And as a part of that, Ada's mother had a very well rounded education. So it was Ursula's position, after going through these incredible archives, is that just that it wasn't as interesting and scandalous a story as that the mother was trying to counter the father, it was just a natural extension of her own education, and her own interest in maths. She herself was quite a competent mathematician, to share and extend that knowledge with Ada, her daughter.

In these archives, there are notes from Ada's governance describing the many lessons that Ada had, including dissecting a fly, lessons in languages, maths, and sciences. In Ada's published writing, it's evident that she was also a really good writer, like very, very good writer. She was quite poetic, while also balancing that with her kind of mathematical and scientific knowledge. So of course, she couldn't have, you know, framed the things that she was able to frame and contextualize some of that high mathematical knowledge without also having had really incredible instruction in the literary arts. So while lots of people say that Ada's mother's interest in educating her in the maths and sciences was to give her this really analytical foundation to counter any wafflings in romanticism, it probably was just more than likely that she had come from an incredibly privileged background, and her mother was just sharing her own well-rounded education.

AT: Yeah, and in addition to, so her mom's name was Annabella, and so in addition to Annabella's love of maths herself, she was also really awesome. Like she was an educational reformer, she was a philanthropist, she established the first industrial school in England, fought for prison reform, she was an active abolitionist. And you know, as we're talking about like she also enjoyed math, her husband actually nicknamed her his "princess of parallelograms."

AJ: I love that, I love that. And in Ursula's reading the mathematician and historian, it was Ada's mother that had kind of facilitated her meeting Charles Babbage at one of these incredible exhibitions where a very small prototype of his difference engine was there.

AT: And as we're talking about awesome women that helped shape Ada, helping her education and giving her role models, she also had a friend and mentor in Mary Somerville, who was a scientist, a writer, a polymath. She used math to predict the presence of Neptune in 1842, years before the planet was actually discovered. She was one of the first female honorary members of the Royal Astronomical Society, because they couldn't be real members. And her book *Physical Geography* was published in 1848, and it was actually the first English textbook on geography, and it remained in use until the early 1900s. So she was a really awesome person as well, and

you have to think that having women like her mom, like Mary, really helped Ada, in addition to all of her other privileges, like being wealthy, being an aristocrat, you know, white, able-bodied, all the things. Yeah, you have to think that having these other women around really helped, I don't know, inspire her or just make it clear that women can do these things, can be mathematicians, can be scientists. And I think that's half the battle for a lot of people.

AJ: And I think during that time, you know, was this kind of Age of Enlightenment, this age of the Industrial Revolution challenging people's kinds of conceptions of God, and place, and person, and machine. And so, you know, along with all these incredible women that she was very, very privileged to be connected to, most especially her mother, there was also a time of kind of disruptive thinking around what women can and can't do, and more widely what people were allowed to do, and challenging kind of what were thought to be stable notions of being a human in the world. So, you know, that in itself was also, I think, you know, it was her time.

AT: Like a lot of historical women, there have been an annoyingly high number of scholars, I'm going to assume most, if not all, of them male, who doubted that she did the work. So, they claim that even though the letters are in her handwriting, she signed them, they still spend years debating who the "real author" was, like, trying to say that it was all Babbage, and claiming that Ada lacked the skills to do so, even though, as we've discussed, like, she studied math, like, various maths for years, like, since she was a child.

AJ: Yes, yes. And I think that mathematical historian Adrian Rice, who was the one that co-authored a book with Ursula, having gone through all of the archives that also Ursula had gone through. There is irrefutable documentation to prove that her correspondence with her tutors, you know, are just irrefutable evidence of her mathematical abilities, and her creative and conceptual thinking around the implications of what these kind of mathematical equations can have, and the impact they can have on our world. So, the archives that exist, these archives and conversations between Ada and her mathematical tutor absolutely are solid evidence that Ada, you know, has been the one that not only conceptualized the importance of the analytical engine and mathematics more generally, but also created herself the code that was an example for people reading about the analytical engine, for how to use it or how it could be employed.

AT: And I have to mention one area where her math was not as solid as she may have liked, because she had a gambling problem that we should probably mention.

AJ: Hilarious. When I was reading, so this was something I came across ages ago, and I just love so much this idea that there's this incredibly accomplished aristocratic woman that's, you know, engaging with lots of other amazing, incredible thinkers of her time, Charles Dickens, Babbage, and, you know, amazing people, who also was running a secret gambling ring on the side, trying to use her mathematical prowess to, you know, hack the system. And yes, unfortunately, she couldn't, she didn't get there, and she did owe some people money. I love that. I love that part of her story. None of us can be perfect. We are all, you know, holding the polarities of good and bad together, and that's what makes us awesome.

AT: Well, she reputedly once lost 3,200 pounds, betting on the wrong horse at the Epsom Derby. And so she tried to recoup her losses, form this betting syndicate. And as we mentioned, in 1851, she tried to create a mathematical model for successful large bets, but it went so wrong, she wound up thousands of pounds in debts - in the 1850s. So way more than thousands today. And so she was thousands of pounds in debt to the group and had to admit the whole thing to her husband, because up until that point when she realized like there was no getting out of this, she just hadn't told him any of it.

AJ: I also love that she yeah, that it was just this like little secret. And then at some point, she had to admit it to him when it had gotten kind of to a critical point, then she was like, I better tell the hubby what's coming on. I love that.

AT: I mean, it sounds like a more extreme version of an I Love Lucy episode.

AJ Love it. I love that.

AT: And another fun fact that, I mean to our to our modern sensibilities, it sounds weird, but pseudosciences were very popular in her day. And so she did have this interest in things like phrenology, where they thought they could, you know, tell all of these things about a person based on like the shape and the nubbins on their skulls.

AJ: Yeah, yeah.

AT: And mesmerism, which I think is like a form of hypnosis. And so she wanted to use math to understand how the human brain worked, but she was also looking at it through the lens of these pseudosciences.

AJ: Yeah, I think, as I said before, that kind of Age of Enlightenment where people were challenging Christian ideologies and thinking, I think it makes complete sense to me that she would have been picking up on all of these other kind of cultural conversations that were going on around her and thinking about through the lens of her own love and interest in math, "how could I think through the code of our electrical impulses?"

AT: This is one of those things where ostensibly it's also been tied back to this supposed preoccupation that her mother had with her potential madness inherited from her father, which I do have to say, to be fair, his behavior is consistent with bipolar disorder. And that is a highly heritable trait as well. So technically, her mom wasn't wrong to be worried about that. But in 1844, she apparently commented to a friend that she wanted to create a calculus of the nervous system.

AJ: I love this. I love this idea of trying to rationalize the seemingly irrational through this really concrete system of kind of mathematical understanding that felt so safe and comfortable to her.

AT: Yeah, I think a lot of us have that urge to try to bring order to the chaos to feel like we can control things that we can't control.

AJ: Yes, yes, yes.

AT: Not that I'm projecting or anything. (laughter) So now that we've got a bit more background about Ada herself, let's dig into the work that she was actually doing with Charles Babbage and his analytical engine.

AJ: Babbage was given funding from the UK government to build his difference engine. As a part of that relationship with the government, he then commissioned an engineer to build. That relationship for whatever reason broke down. And at the time, engineers then owned all of the tech specs and the drawings. So because of that, Babbage then had a bad relationship also with the UK government in terms of funding because he didn't meet their funding requirements, which meant to create the analytical engine, he was unable to get funding for it. So he started looking abroad for funding. And in 1840, he Italian scientists invited him to Turin, where he lectured on the principles of his analytical engine. In the audience was scientist and mathematician Luigi Menabrea, who in October 1842 published the first account of the analytical engine in French based on Babbage's lectures. Ada and Babbage chatted about ways that, because she'd kind of met him when she was much younger. And then later on in her life, they still maintained a really close friendship and relationship that was based on mutual love of maths. He then said, hey, you know, basically, "would you mind publishing this amazing piece that Luigi has written in English so that we can publish it here as well." So as a part of her translating it from French into English, she wrote extensive footnotes. So you know, Luigi would kind of say, this thing to do with analytical engine, she would translate it and then write down at the bottom a very extensive, incredibly insightful framing of Luigi's description. And as a part of that, that kind of framing would be, she'd be in correspondence with Babbage. There were lots of letters between them both as she was developing this translation. He was kind of encouraging her to continue on, not just with footnotes, but with her own thoughts and observations as a part of this translation. So as she went on making all of these observations and details, she then wrote what ended up being, so the paper that Luigi had written was about 20 pages long. She ended up writing an additional 20 pages about the analytical engine herself. And a lot of that was notes and information that she shared with Babbage, but was definitely not authored by Babbage. And that has since been proven by recent historians. What was also included as a part of her notes was a detailed table, instructions, codes, and rich explanations that have been brought into contemporary focus to show the incredible coding work and conceptual thinking of Ada. So she didn't just see the engine for its computational power. She also thought about it in terms of its wider impact on society. And coming back to her love of the jacquard loom, she kind of framed it as, this has the potential to not just, you know, make equations, but to also use that on, off, if this principle to code music, to code beautiful, incredible, intricate leaves on jacquard. So that kind of perceptive thought that she had is a part of why she has now become, you know, so incredibly famous, and held in high esteem as one of the first, not just computer programmers, but the first person that had seen the potential

implications of computer encoding on our world and society. So she understood not just the kind of theoretical implications of maths, but also the human implications, the creative implications, the generative implications of maths on our society. So that paper was largely forgotten, sadly, until another incredible historical figure whom I completely also love. And another amazing queer story of a person that history had almost forgotten. And that is Alan Turing. So he was a part of a group of people that were breaking codes in World War II for the British and trying to kind of intervene or intercept codes from the Nazis and, you know, trying to progress the war effort for the British. So he, as a part of his own mathematical code breaking research, happened to come across this particular paper by Ada. And it was his writings and reflections on Ada's work and Ada's own reflections that that then brought her work up and back up to where it deserved to be. It also influenced his own creation of code and his own building of his own big giant machine to break this code. So I think both of those kind of three figures have, you know, this really incredible historical assemblage of code and computer code that we now understand today. For me, there's this incredible and beautiful through line from those three characters to today and how we understand code. In Ada's paper, she talked a lot about computers and their capacity to think or computational machines and their capacity to think. Turing countered that and he did believe that computers could potentially have the capacity one day to think. That's a really interesting conversation in the context of today when we're looking at AI and people being afraid of losing their jobs and AI kind of impeding our humanity and our consciousness. There are some historians that believe that Ada's capacity to think about computers more, and code, more kind of theosophically was definitely there. But that in her paper, she was appealing to the kind of god-fearing governmental types that could have potentially given Babbage funding. So that's kind of another interesting conversation about Alan and Ada's perceptions and ideas around the machine's capacity to think through code.

AT: One of the things Turing's best known for apart from the work that he was doing at Bletchley Park that you mentioned and his, I mean, really tragic story after the war, but one of the things that he is remembered for is the Turing test, which is meant to be a way to test whether artificial intelligence is essentially sentient.

AJ: Yes, yes, yes. And I think later on that there were some other dudes that created the Ada test that was for the same thing, but to counter Alan's. Yeah, it's a very interesting conversation. She's quite a poetic writer. I love so much the way she frames it. It does, you know, she kind of has her leg in in both the creative and the analytical camps and brings them so nicely together. But so she writes about AI or computer's capacity to think, "The analytical engine has no pretensions, whatever, to originate anything. It can do whatever we know in order it to perform. It can follow analysis, but it has no power of anticipating any analytical relations or truths. Its province is to assist us in making available what we are already acquainted with." And I just love so much her framing of this idea that computers are really just a reflection of us, and are really just a reflection of our own ways of being and moving through the world. Alan does counter that in some really interesting ways. And I think in the context of today talking about AI and talking about robots and computers and thinking about that they're going to take over the world, it's really interesting looking, I think for me, that last little statement really stood out for me in making

available what we are already acquainted with makes me think about, for example, the AI robot that was let loose on Twitter a few years ago, that just turned into this vile, racist, horrible thing that just violently sexist thing that had to be, you know, culled, killed, stopped, whatever. And I think, you know, computers really just are an amplification of what we already are and what we already know. So I think that's what she's pointing to when she's saying that there, you know, these are extensions of who we are, and they are unfolding from the information we are inputting into them. So I just, I love that quote so much.

AT: I feel like anytime we talk about algorithms as a reflection of humans, because AI is trained on what humans put into it, whether that's the programmers' biases or the data set that it's working from and whatever biases may be involved there. But I feel like we only talk about algorithms as a reflection of humans in really negative context. So you hear about, you know, algorithms that are designed to help prioritize patients in hospitals. But then when you look at the actual outcomes, like, "oh, well, actually, that's really racist, sexist." You see algorithms used to make hiring decisions about who gets a job interview. And then you discover that, "oh, it was lower ranking women's colleges." And I wish I was making that up. That is a thing that happened, because it's trained on, so like the hiring ones are trained on who we're already employing. And so it is prioritizing people who match your existing cohort, rather than looking at what the actual qualifications are for the profession. And I think there is a view of, "oh, it's the algorithm. It's infallible. It's impartial." And it's fundamentally not. None of them ever have it.

AJ: They are all born from humans that, you know, we created them, they are born from our existing structures. So of course, you know, our existing structures are built upon what we know to be racist, ableist, sexist systems. So of course, the computers that we, or the AI and the programs that are born from that are a reflection of that. Of course, they are. Absolutely. Of course, they are. And I think that the idea that computers and AI are separate from us is a false binary. We are not separate from them. The materials that literally create this hardware are born from this earth, the programs and the code that goes into them as, you know, we've shown from Ada, are created from us. We are interconnected. And I think it is a cop-out when people say, "oh, but it's the algorithm," because in projecting onto the machine, people are then choosing to not take responsibility for the production of that machine and what, you know, all the outcomes from that machine. But, you know, we are connected. There is no way to separate us and the earth from the machines that we have created.

AT: I for one welcome, our Roomba overlords.

AJ: Me too. I'm all for, I'm ready.

AT: Put some googly eyes on it and I'm good to go.

AJ: Absolutely.

AT: Now, your particular area of interest is looking at technology, cyborgs and creative

speculations for technologically mediated new worlds. So first off, what does that mean? And second, how does that connect back to Ada?

AJ: So my early work started from, you know, being an autistic person in this world feeling incredibly alone and isolated and wanting to understand why non-compliant bodies specifically for me, that was the autistic body, are not included in new worlds that we're creating with technology. So just as we discuss with things like AI being born from the systems that currently we all exist within, I wanted to understand why when we're employing these incredible technological developments, why are we building them on these existing structures? We're using all this amazing technology to invent, to speculate, to world-build, but we're still building it on these systems that keep bodies out, that don't make space for divergent or non-compliant bodies. So I am an artist predominantly, so it is all about creative speculation.
So it started from imagining what could happen if a technologically mediated body, so right now you and I are having a technologically mediated conversation. So all it means is technology is an interface between you and I, or technology is an interface between myself and any other part of the world that I might be engaging with. What would happen if that disrupted, queered, cripped, or looked different than it does right now? And that's really all that it's about. It's about me going, how can I disrupt the tech-bro transhumanists and how can I use the same lens of technology to make our world kinder and softer, to claim space in those kind of tech spaces for softness, for caring, for divergent bodies. And that's really for me, that's what it's all about. Some of the theorists that I work with are theorists that work in what's known as the field of post-humanism. So that doesn't mean anti-human, it means what could come after thinking about the, you know, we think of the human as the center, which is a white male able-bodied human. So thinking about post-human is to think past that, to think past the kind of central human white male body that we think of what comes after that. And that kind of realm of theory is known as post-humanism. And one of my favorite theorists in that area is Donna Haraway. And she talks a lot about cyborg bodies, and that is just a body that's using technology to mediate its world. By her definition, we're both being cyborgs right now because we're using our computers to talk to each other. So she talks about people wanting to make positive changes in the world, that code and technology is where it's at. That all of our future worlds are underpinned by some kind of code. And that is social codes, that is literal computer code. And that for me is where I found Ada. So thinking about forms of code, you always think that they are developed by the Silicon Valley dudes. You always think about it like that. But actually, there's incredible female stories and queer stories of these amazing people who were looking to code and create code, literal code, and then creatively thinking about the conceptual codes that underpin and frame our world. So that was kind of for me, Ada is not a central part of my research. Ada is just probably what I would cringily say, a special interest, just a kind of periphery interest to my main kind of body of research.

AT: It's kind of awful that we do have this significantly male-dominated, and I would say toxically male-dominated, not just there's a lot of dudes, there's a lot of dudes who suck, managing a lot of the tech sector. And what's particularly annoying about that is that as we've noted with Ada, women have always been involved in computer programming literally from the very beginning

before computers even existed. But even once we had the machines, you know, arguably the first practical programmers were the six women who programmed the ENIAC computer, who I've talked about in another episode. They were literally having to figure out how to make these machines that the men had built, but had no idea how to work. These women were the ones saying, "okay, well, I guess we have to figure out how to make it work." And then you saw over time that women just slowly were sort of edged out of computer science. But what I find interesting about what you've been saying about your focus, it still comes back to, the technology reflects the humans. And you're saying, right now it is reflecting our society in terms of it is mirroring the power structures. But it doesn't have to. And you're sort of, are you staging and uprising, is what I'm saying?

AJ: 100%. Yes. I 100% am. I am on a deeply personal level, quite anarchistic in nature. And I don't mind a creative fight. And I really do think that there is at the moment, this very binary discussion of technology, it's very dystopia or utopia. There's like this, this kind of cultural anxiety about robots taking over the world and "we're going to lose our jobs" and all of this kind of stuff and "AI is going to ruin everything." And then there's this like, "oh, but also technology can do this and we're all going to, it's all going to be amazing." And I actually think neither is true. The truth is probably somewhere in the middle and we're already living it. And I think this kind of cultural anxiety of projection into what a future world could be, means no one is sitting here now critiquing what I like to call the tech bro transhumanists that are the Elon Musks of the world thinking about, "oh, if I intervene in my body with this technology and then everyone is going to be cyborgs in this way," it's all still framed, as you said, on the existing power structures because everyone's so afraid of what's going to happen in the future that no one's just concretely thinking about how can we critique now? How can we hold those guys to account now? Because they're already developing what's next, it's not okay for us to say, I just want to go back to the forest, Because if we say that then no one is standing in their court challenging them, no one is fighting that, no one is disrupting that, if we all just go, I'm afraid, I want to go to the forest, no one's fighting them, no one is holding them to account. So I just, I do feel, and it does come from having lived in an assigned female at birth body, it does come from having an experience of being othered. It comes from living in an autistic body/mind where the worlds and the structures that currently exist I have been excluded from, and right now I can feel and see that a lot of that technology I am still already being excluded from. And there's also this really incredible connection with autistic people and technology and the development of technology, this amazing history around autistic people actually often being at the forefront of technology. And reading through Ada's story, while I wouldn't say she was autistic, there's definitely, definitely evidence of a neurodivergent kind of approach to the world. You know, she was at the edge of technology, we've always been here, and as you were saying just as the women have always been here, the dominant power structures of commercialisation, weaponisation and sexualisation then push us out. And that happens in gamer spaces, for example, I do have an autistic son who when he was younger and being bullied at school, he would come and find respite at home with the games because there was community, there was safety in space and that was, he's almost 18 now. In those spaces because they've become so mainstream, he's being pushed out of those spaces. He's now being bullied in those spaces because that kind of

mainstream dominant culture and that commercialisation is just coming into those spaces in such an overt way. And if we don't stand in this arena with the tech bro transhumanists, and hold them to account, then where will we be? Then, when we're creating all these worlds, then we'll still be other than.

AT: I like that you've repeatedly mentioned holding, the tech bros specifically, but in general, holding people to account. And I think that's something we've sort of touched on a couple times in this conversation about people using technology to remove their own personal responsibility. So when we're talking about, you know, your teenager being bullied online, it's a lot easier to bully people when you're you can hide behind an avatar and a username. It's a lot easier when we're talking about those algorithms and saying, "oh, it's not my fault that we discriminated in our hiring practices or treatment at a hospital. I didn't do that. The algorithm did that." Andlook, I don't want to be that person who compares everyone to Nazis. But that does definitely feel like saying, "I was just following orders." So I do feel like there is this trend of people hiding behind technology to avoid taking personal responsibility for their own behaviors and actions.

AJ: Yes, 100%.

AT: And I think something else that you've touched on here is the social model of disability, which is basically saying that any or most what we call disability, so like autism, which, you know, I'm an autistic person. I don't consider myself disabled. But I agree that the social model of disability says that I'm disabled because the premise is that there is nothing wrong with the person or their disability. The problem is that society is not built to accommodate us or acknowledge us. We were not factored in when things were being set up. And it sounds like a lot of what you're looking at is how the social model of disability, and other forms of prejudice, is played out in these new spaces that we are creating.

AJ: Yes, and how it's amplified. I think that there is something about the rate and speed of virtual and digital communication in spaces that amplifies those structures that you're talking about, because it's not just a mirror reflection. It's a reflection that is then amplified, because information technology just is so fast. It's so moving. The capacity for communication and images is just, you know, tenfold than what it is for us having a conversation peer-to-peer or face-to-face directly. So that itself, you know, is just a part of why it is just an amplification of all of those structures and systems that exist. And I think for me, technology itself in part and in many places and, you know, was created by autistic people, neurodivergent people who felt othered by normative society and spaces that they were kind of stuck in. So it feels like such a shame that what may have in some respects and in some little pockets have been safe spaces now also are not because of that kind of, as you were talking about before, that pushing out by those kind of dominant structures being superimposed back on to what was maybe a minority or an alternate space, which has now become a dominant space.

AT: It just feels like most technology is a double edged sword where it's simultaneously a way to connect with people and to build these communities that you're talking about. But at the same

time, there is always that risk of intrusion.

AJ: And another favourite, incredible post-human feminist theorist, Rosi Braidotti, talks about we are in the worst of times and we are in the best of times. And she says something like how to think such dissonance. And the idea that we are in this incredible, exciting, technologically mediated world with all of this potential, but it is a double-edged sword and the flip side of that is all of these other things are being amplified because no one or few people are holding to account the people creating that. So yeah, we are in the worst of times and the best of times. And her kind of balm for that or, potential solution for that is about holding the binaries that I talked about before when people were kind of saying, I am separate from a computer and I am separate from AI. Her kind of position is to hold those binaries together, to hold that fear and to hold that hope together and kind of mediate them and use them both to work together to find new ways of making it that are inclusive, that are safe, that are thinking through the kind of ethics of the technology and the ethics of AI. And how do we reduce the negative amplification of those systems while we are using those technologies?

AT: I think part of what makes it hard, because you talked earlier about how we can't just run off into the woods. I think we also need to acknowledge that in the difference between run and hide and stand your ground and fight, it is a lot harder. The more marginalized a person and a community are, the harder it is to fight both from the standpoint of having the resources, having a platform, having clout, having influence, having money, but also the exhaustion of, particularly if we're talking about different disabled communities, do you have the emotional energy that you can expend on this fight? And when you have to choose your battles like that, it's a matter of self-protection.

AJ: 100%. And I am very cocoonedly safe as an artist, because my fight is speculative fabulation and making creative outputs that potentially challenge, that potentially no one will ever look at. So no one may ever read my thesis. So I think it is from quite a safe little tower that I say fight. And by fight, I mean, I'm going to make all of these soft tech little nano tech balls that are kind of speculating on what could be a soft tech or a soft cyborg. So yes, when I say fight, I think there are a multiplicity of versions of fighting and that doesn't always have to look like literally being on the front line fighting. That can look like small agitation. That can look like zigging when the control systems we're required to work within or asking us to zag. That can look like a thousand safe little actions that are just disrupting things that we're asked or required to do. I agree with you 100%. And as someone who gets very burnt out very easily and very overwhelmed with communication, when I say fight, I mean, disrupting ways that are safe and fun and creative for you. And I think I did when I was younger, but as I've gotten older, I don't have some big vision that I personally am going to be able to disrupt and change the tech bro transhumanists. That would be wonderful. But I think where we have the capacity, a small tiny little contribution is still a contribution and it's so important and matters so much.

AT: Join us next time on the Infinite Women podcast and remember - well-behaved women rarely make history.