

Technically Optimistic

An Emerson Collective Podcast

In this episode, we consider how AI is currently creating massive shifts in the economy, culture and future of creativity—and the potential benefits and challenges we face right now. To address these questions, host Raffi Krikorian speaks with Erik Brynjolfsson, Director of the Digital Economy Lab; Justine Bateman, director, writer, producer, and author; Ari Melenciano, artist and creative technologist; and Keolu Fox, assistant professor at the University of California, San Diego and co-founder and co-director of the Indigenous Futures Institute. Together, they chart a path to help us navigate AI in the current moment.

RAFFI VO:

I'm Raffi Krikorian, and this is Technically Optimistic. It's episode five of our series on artificial intelligence.

CLIP:

BIDEN: Artificial intelligence or -- it promises an enormous - an enormous promise of both risk to our society and our economy and our national security, but also incredible opportunities - incredible opportunities.

RAFFI VO:

That's President Biden, outlining what has been a central premise of our show. AI has enormous promise, and simultaneously poses enormous risks. And though people are currently thinking seriously about regulation ... those rules and regs are a long way away, even in the EU, and they're closer than we are in the US.

And if you haven't heard the 2 episodes we did on this very challenge, you should check them out: "Rules of the Road" parts one and two.

CLIP:

BIDEN: Over the past year my administration has taken action to guide responsible innovation. Last October... (fades out)

RAFFI VO:

The problem, though, is that AI is actually already here. And it's already affecting people's lives. So, even though a policy solution is still far away, President Biden feels pressure to do... something.

CLIP:

BIDEN: And today, I'm pleased to announce that these seven companies have agreed voluntarily to voluntary commitments for responsible innovation. These commitments, which the companies will implement immediately, underscore three fundamental principles: safety, security, and trust.

RAFFI VO:

Voluntary commitments for responsible innovation. Effectively... a blessing for these companies to regulate themselves... until further notice, I guess. But AI is already changing how people work, live, and express themselves, and for some, in huge ways.

So, today on the show... we're gonna be talking about these effects that AI is having on the world right now. And we'll hear from people adapting and responding to the shifts that AI is bringing to the labor market, artistic production, and to indigenous communities.

MUSIC...

How are people changing their priorities, plans, and passions? How has AI already shaken up our society?

And, to us on the ground, is AI a helper? Or a threat? It's not always clear ... but we... are Technically Optimistic.

MUSIC...

RAFFI VO:

First, let's zoom out, and talk a little... about economics.

MUSIC...

Worrying about the effects of new technology on society is actually a very old phenomenon. It's not unique to AI. Through the Industrial, and then Mechanical, and then Digital revolutions over the past few centuries, there's been lots of anxiety. Will people lose their jobs? Will whole industries have to shutter? And what will be lost in the face of these new... efficiencies? We have always asked these questions.

CLIP:

VOICE: So if you are worried that your job could be replaced, is there anything you can do? Polling more than 8,800 workers, the CNBC survey found that about a quarter of workers, 24%, are worried that Artificial Intelligence will make their job obsolete. They should be worried, should they not? They should be worried, and they should be strategic... (fades out)

RAFFI VO:

But is it different this time around?

CLIP:

VOICE: *Which jobs is AI coming after first? If you're a middle manager, you're doomed. Any kind of commodity salesperson. Report writers and journalists. Accountants and bookkeepers. Not enough doctors... (fades out)*

ERIK BRYNJOLFSSON:

Well, I do think there's things to be scared of, there's things to be excited about.

RAFFI VO:

Erik Brynjolfsson is the perfect person to talk to about this.

BRYNJOLFSSON:

As this technology becomes more and more powerful, it can do amazingly good things. We could have the best decade in human history up ahead...

RAFFI VO:

He is an economist, a Senior Fellow at Stanford's Institute for Human-Centered AI, and Director of the Digital Economy Lab.

BRYNJOLFSSON:

It could also do some terrible things. We could have maybe the worst decade if we, if we play it wrong.

RAFFI VO:

Brynjolfsson's research focuses on the economic impacts of technology, and in books he co-authored like *The Second Machine Age*, he's been one of the most prescient and insightful thinkers on the topic. And so, naturally, he's been thinking about AI ... for a while now.

BRYNJOLFSSON:

My goal was to do the PhD joint in AI and economics because I wanted to see how it was changing the world. I went to MIT which had a couple of the best programs. I could not quite get the faculty to do both those things so I ended up just focusing on economics. But ever since, I mean, including that time, I was looking at the economics of artificial intelligence, like how is AI gonna change the economy? My dissertation was on information technology and the reorganization of work. So it's been something I've just been interested in a long time.

Raffi:

What's the conventional thinking of how AI and automation is going to impact all of us?

BRYNJOLFSSON:

Well, you know, the capabilities of affecting basically all parts of our activities with large language models, everything that involves language is being affected. And that's obviously a majority of the work in a modern economy like the United States.

Raffi:

I mean, a lot of the people I talk to, not the academics, but a lot of the regular people I talk to, are actually scared. Like they're scared in the sense of like, what happens to my job in this world? Are their fears misplaced, or should their fears be more nuanced?

BRYNJOLFSSON:

Specifically when it comes to jobs, I'd like to nuance it a little bit, as you suggest. There will be a lot of job destruction, a lot of job creation. Technology has always been creating and destroying jobs. I don't see mass unemployment or net job loss. It'll be more of a churn and restructuring and turnover. Right now there are so many things that need to be done in our economy that only humans can do whether it's a lot of creative work or childcare or health care or environmental work. So we're not running out of things for humans to do right now, maybe you dial it far enough into the future machines can do the full spectrum of things but for now there's plenty of work that humans can and should be doing. On the other hand, what we will see is changes in what humans have a comparative advantage in, and that will lead to falling wages in some areas and rising wages in others. A lot of it will be reflected more in wages than in employment, not to get too subtle about it, but in a well-functioning economy, prices tend to adjust and wages tend to adjust and shift people around that way rather than people just having nothing to do.

I expect productivity to grow quite a bit, to be more than double the rate of growth in the past, more than double the rate of growth with the Congressional Budget Office is projecting for the 2020s. So that's going to make a bigger pie. Productivity is really what raises living standards. It's not from people working more hours or anything like that. It's from us being able to do more per hour. i.e. productivity. But that's going to be uneven. There'll be groups that are affected more than others and it's going to take time.

RAFFI VO:

So, if productivity is really the key thing here... how do we measure that? How do we measure productivity?

BRYNJOLFSSON:

And maybe it's worth taking a minute to define productivity. It's actually a really interesting concept, a simple concept, I should say. It's just output divided by input. And the way that's usually operationalized in the U.S. economy is GDP is the measure of output and hours worked is the measure of input. So it's a pretty simple concept. It turns out that both the numerator and the denominator can be hard to measure. So there's issues around measuring GDP. There's issues around measuring hours. But conceptually, it's pretty straightforward. So you could do it at the individual level, you could do it at the company level. It's not just from replacing workers. If you think about that output divided by input, you could have the same number of workers, but more output that would increase

Raffi:

Mm-hmm.

BRYNJOLFSSON:

productivity. And in most of history, that's what's happened. We haven't had mass unemployment. People are still working a fair amount. Unemployment right now is close to a historic low, but we have more output than we ever had before.

RAFFI VO:

So, tell me about what you call the productivity J-curve.

BRYNJOLFSSON:

The productivity J-curve is this idea that when you have a powerful new technology, whether it's artificial intelligence or before that, you know, electricity or the steam engine, it's not enough to simply buy the technology. You also have to reinvent work, reinvent skills. When American factories electrified, in the 1880s and 1890s, initially there was very little productivity gain. And that's because they didn't really rethink work. They just took out the steam engine, they put in a big electric motor and nothing much changed. It took literally 20 to 30 years until the 1920s really before you started getting really big productivity gains, like a doubling and tripling of productivity. And that was because they went and they rethought what a factory was. Instead of having a big steam engine in the middle, they had a bunch of separate electric motors with each piece of equipment, and they were laid out based on the flow of materials. That allowed them to be much more efficient. You had these assembly lines that were just reinventing work. For some reason, it took managers 20, 30 years to figure out that you could do things this new way. Similarly, with AI and other technologies, it's not gonna be enough to sort of just like, say, I don't know, take the cashier in a bookstore and remove them and put a robot there. That's going to be a, that'll be kind of a lame way to use artificial intelligence. You need to rethink the whole process and do different kinds of recommendations and process and delivery. If you do that, you'll get very large productivity gains. I am optimistic, as I often am, that this will happen a little faster this time because we already have a lot of the infrastructure in place. We already have an internet infrastructure so it can be plugged into existing infrastructure more easily than, say, electricity was, or some of the other earlier general purpose technologies.

Raffi:

OK

BRYNJOLFSSON:

I did a study of call center operators and we found that there was about a 35% increase in productivity for the people who are answering questions in the call center when the generative AI tool was helping them with their answers. The least experienced workers had about a 35% gain, the most experienced workers had close to a 0% gain. That aggregates up to the whole economy.

Raffi:

I mean, so you've touched upon it exactly, like this automation versus augmentation debate for a second of just like, your call center operator is a great example. Like you can imagine a world where we just replace call center operators, but I think what you're just arguing right now is like, we can actually just make them way more effective in what they're doing.

BRYNJOLFSSON:

This is a really important point and one that I've been emphasizing. I wrote a paper recently called the Turing trap and it stresses the fact that I think people get trapped too much in this idea of how can we use technology, especially AI, to replicate or imitate humans.

RAFFI VO:

The Turing test was developed in 1950 by the British computer scientist Alan Turing, who called it “the imitation game.” It was a thought experiment that if a computer could deceive a human being into believing that it was a human, then for all intents and purposes we could consider that machine to be... intelligent.

BRYNJOLFSSON:

I think it’s very evocative, it's kind of interesting philosophically. It's terrible as an economic strategy for two reasons. For one, it actually limits the upside a lot. We can do much better than humans. My calculator is much better than me, thankfully. That’s too low a ceiling for us to aim for. But there's a second thing that troubles me about it. And that is that if you focus on automating human labor and replacing human labor with capital, that will tend to concentrate wealth and power.

Raffi:

Hmm.

BRYNJOLFSSON:

So then capital is much more concentrated than labor in the economy. There's a few people who own it, and inequality would grow and not only would economic power become more concentrated, but I think ultimately political power would become more concentrated. So we both raise the ceiling and do it in a way that creates widely shared prosperity. So in my paper, *The Turing Trap*, I fleshed these arguments out a little bit more and basically called for us to spend a little less effort focusing on automating work and a little bit more effort on augmenting it.

Raffi:

Well then how do we educate business owners to actually do this? Because if they're looking purely on the short-term timeframe and they're not thinking your way, then it's just a financial calculation for them. We're just like, we're going to eliminate workers and replace them with a machine.

BRYNJOLFSSON:

Well, I spend a lot of time teaching at business schools and talking to CEOs. And one of the things I tell them is it's in their own self-interest to think about augmenting, not just automating. Let's go back to that call center example. There are companies that try to use the technology to completely automate the process. And I think we've all experienced, unhappily, where you call in and there's an automated voice response system that doesn't quite understand and can't handle the specific question you have. It's a very frustrating experience. As it turns out, when people call in, there are some questions the machine has a good answer to. There’s also this long tail of one-off questions that the machine doesn't really have any

training data for, but humans are pretty good at figuring out answers to those exceptions. So by keeping humans in the loop, you're much more likely to be able to solve a customer's question and make them feel cared for. Now, I want to be clear, it's not always true. There are places where you are better off automating and just replacing workers, but in my experience, talking to CEOs and a lot of managers, they instinctively focus too much on automating and they don't think enough about augmenting.

RAFFI VO:

How should CEOs incorporate AI into their businesses?... Should AI augment human labor, or replace it? There's one spot where these questions couldn't be more urgent... and that's in Hollywood, where it's all up for grabs.

CLIP:

SOUNDS OF PROTESTERS CHANTING...

RAFFI VO:

The Writers Guild of America, or WGA, who represent thousands of film and TV writers, went on strike on May 2nd.

CLIP:

SOUNDS OF PROTESTERS CHANTING...

RAFFI VO:

At the other end of the bargaining table? the Alliance of Motion Picture and Television Producers... the AMPTP. There are a number of core issues that the writers say are crucial, like residuals from streaming media, and overall job security and compensation. But a principal concern? AI.

CLIP:

VOICE: ILARIA PENA (WRITER) They're trying to get computers and artificial intelligence to take the jobs of hard-working real human beings.

ERIC HEISSERER (WRITER AND WGA MEMBER) You lose the heart and the soul of the story you're telling if you let AI control that. I mean the first word is artificial and so it will always feel somewhat artificial.

RAFFI VO:

The Writers Guild tried to include language in their new contract that would disallow AIs to, write or rewrite quote literary material. They also asked the studios to not use writers' work as "source material" to train AIs in the future. But the producers rejected both proposals... instead offering... "annual meetings to discuss advancements in technology."

CLIP:

FRAN DRESCHER: *It is disgusting. Shame on them. They stand on the wrong side of history at this very moment.*

RAFFI VO:

And then, on July 14th, the Screen Actors Guild, representing over 150,000 actors and other media professionals, joined the WGA and also went on strike. AI was a central concern for SAG, as well.

CLIP:

DRESCHER: *And it's unconscionable...*

RAFFI VO:

Fran Drescher is the president of SAG-AFTRA.

CLIP:

DRESCHER: *At a moment when streaming and Ai and digital is so prevalent in the industry it is disemboweled the industry that we once knew...*

RAFFI VO:

How serious is the threat here? How close is the prospect of a ChatGPT-generated sitcom script, read by digital voice clones of actors, synced to a deepfake performance animation by digital doubles?

Oh, by the way, if you think this kind of thing is unrealistic... everything I said for the past 15 seconds has actually been an AI clone of my voice. It took, like, 6 hours and 30 bucks to make.

Is this the AI Raffi speaking right now? Or is this the real one? Don't you think it's kind of hard to tell the difference?

CLIP:

Nervous giggling...

RAFFI VO:

So are Hollywood's writers and actors really in existential danger.... from AI?

BATEMAN:

I mean, just basically for people who don't realize it yet, it's not some magical mystical genie or something. It's just a program.

RAFFI VO:

That's Justine Bateman. She's a writer, director, producer, and actor. You might remember her acting across Michael J. Fox as Mallory on Family Ties... a sitcom from the 1980s, which got her two Emmy nominations.

She's also a very helpful person to talk to right now. And not just because she's a member of both the WGA and SAG. She also has a computer science degree.

BATEMAN:

Yeah, so I got my degree in 2016. So I have a somewhat recent education in coding. So yeah, I had AI classes and all that.

RAFFI VO:

And so... she has some strong feelings about AI.

BATEMAN:

It's just a, it's just a program. And it's more complex than what I'm going to describe, but it's just a program that you feed in a bunch of data. Like if you want it to write books. You feed it in as many digital books as possible and a dictionary and a novel formatting instruction book, et cetera, and then you give it a task: I want you to write me a mystery novel and it'll spit out an amalgamation of what you fed it. Now, if you've not fed it any mystery novels at all, it won't quite know what to spit out. So it can only spit out an amalgamation of what it's been given. You feed it in a bunch of stuff, you give it a task, and it's gonna spit out a result based on what you've fed it.

RAFFI VO:

Justine's right about this. And we talked about it in our first episode. Most LLMs are examples of what the researchers Timnit Gebru and Emily M. Bender famously characterized as... stochastic parrots. In other words, they produce language that seems meaningful to us... but it's produced without any understanding. You know... like a parrot.

CLIP:

PARROT SAYING "HELLO"

Raffi:

What was the eye opening moment for you? Was it chat GPT coming out? Was it earlier than that? I mean, when did you notice that this was going to be an issue?

BATEMAN:

I noticed it was going to be an issue when a friend of mine, who's a really talented video artist and editor, he was messing around with AI animation some months ago, and I asked him, how much of this are you illustrating? Because he's really talented. And he said, none of it. And then it dawned on me how we're gonna get rid of quote content. Because for the last 10, 15 years, I've been unhappy with the treatment of film and series, the treatment of filmmakers, the mistreatment of their work. By categorizing as content. So when streamers and then others were referring to our films and series as content, I was just like, no, no, no. But then they started denigrating the work itself because they're using so much viewer habit data to

almost design what that content is going to be. And this is horrible for the filmmakers. I know one person has a series and the note he says he gets most often is “this is not second screen enough.” That is horrifying. When you start referring to everything as content and everything is just reduced to what is going to fit this sort of viewer data. You've now reduced our work to something that can be automated. And especially if you're going to do reboots, remakes, sequels, rehashings. Really does this century yet have its own pop culture? It doesn't. It has pop culture from the 20th century reheated. And that's easy to automate.

Raffi:

Is the issue you're talking about then, the fact that people are using tools in an automation way versus an augmentation way, like building tools that writers could use to help them do their jobs better, or is the issue something getting to our core humanity in some way, like we're no longer seeing things that are of high value art, and we're now seeing things that are instead cheap effectively.

BATEMAN:

For me, tech needs to solve a problem. And maybe it solves a problem you didn't know you had, like the iPhone before the iPhone came out. Did we know we needed to have a computer in our pocket? AI in the arts does not solve any problem except the problem of these distribution ends, these entertainment companies not having a wide enough profit margin. Their profit margins are already very wide. So it solves the problem of insatiable greed. It does not solve a problem for a writer. A writer writes. A writer has a pretty cool tool that they use called a brain. And I don't believe that any writer needs any AI to tell them what to write. No artist needs AI to tell them what to paint. No artist needs AI to tell them what music to put together. I would never, I love writing. I would never use AI, not in a million years. Never. I would never use AI to write because I love writing. Why would I give that to some computer program to do for me? It just makes no sense to me whatsoever. So I'm not interested in it. I'm not interested in reading anything that's written by AI. I'm not interested in seeing anything rehashed period, honestly, whether it's by humans or AI. I want to know what's next. And this ain't it. What's next? That's only going to come from humans. It's not going to come from an AI program. I mean, by design, it's just a rehashing of the past. I think the more people understand that, the better.

Raffi:

If you think about this as like a socio-technical thing, like our entire culture is now currently based around looking back and where no one's actually pointing forward in some way.

BATEMAN:

Yes. And it has been for the last 10 to 15 years. So AI does not solve that problem. AI compounds that problem.

Raffi:

Would you never use it to write, to give you 10 options of what to do next?

BATEMAN:

No, for what?

Raffi:

Just to help you prompt your brain?

BATEMAN:

To prompt my brain? No, I, like in my lifetime, there's no way I would ever be able to write them all and certainly not be able to raise the money for them all and shoot them all. I wish, I wish I could.

RAFFI VO:

In episode 2, we heard from Congressman Jay Obernolte, who, like Justine, also studied computer science and Ai. And he had a whole different take on the strike in Hollywood.

REP. OBERNOLTE:

You look at the screenwriters strike in Hollywood. AI is one of the central issues in that disagreement, where the screenwriters are saying, we do not want anyone to permit the use of AI to write movie scripts.

Raffi:

Mm hmm.

REP. OBERNOLTE:

And in a way, you can completely understand their point of view, right? They think that AI writing scripts means fewer jobs for script writers. But on the other hand, think about the potential upsides. You know, think about the fact that the use of AI enhances productivity, which means the cost of writing a script goes down. But also, generative AI means probably the cost of creating a pilot based on some new content goes down. And if the cost of everything radically decreases, you could have an explosion in the number of new pilots, new shows more content, which actually could greatly increase the number of available jobs for script writers. But by the way, the best script writers would be the ones that had figured out how to use AI to enhance their productivity and their creativity. So there we go. That's the dilemma. So do you let a group of people say, no one can use this technology, or do you say, hey, look, it's the needs of the many versus the needs of the few. Who is benefiting from this? And use that to guide you. And I think that that's what we have to do.

RAFFI VO:

The economist Erik Brynjolfsson basically... agrees.

Raffi:

You know, we spoke to a woman who is advocating as part of the Hollywood strike that we need to ban all AI there. Her point is twofold. One is that: the producers are just simply looking for a way to eke out more cash out of the system by eliminating writers. But then two, there's a question of just like the humanity aspect of our creative output.

BRYNJOLFSSON:

Well, I couldn't disagree more with her. So I think it's, well, the part I agree, probably the producers are looking to eke out more money. And one way to do that is by keeping humans in the loop. And in my classes, I tell the students, embrace the technology, I expect you to be more creative. And I think the writers should embrace the technology and they'll come up with fun new movies and screenplays and books that are powered in part by the interaction of humans and technology. So I think the coming decade could be one of flourishing creativity. If humans and machines work together. But we're not at the stage now, and we probably won't be for some long period where humans are useless in that process. They add a lot. And that's especially true, not just in fiction, but in nonfiction where the machines, as we know, they have problems with hallucination, with confabulation where they make things up that aren't true. And you really need a human, if you're a doctor or a lawyer or an investor, to double check that work and make sure it's accurate. But I would advise the writers to embrace the technology. There's no way they're going to hold it off and prevent it.

RAFFI VO:

But Justine does not see it this way. For her, the stakes are too high. **As a reminder, the Writers Guild sought to get the studios to agree to not let AIs write or rewrite scripts, and for members' work not to be used for AI training.**

BATEMAN:

Well, I think the Writers Guild did a great job with their demands. They proposed the NPTP, the group of legal representatives for the studios and the streamers, and anyone who wants to use a WGA writer you have to agree to use what the AMPTP has negotiated on behalf of all the studios. When it came to AI, they said, "okay, here's our proposal on AI..."

RAFFI VO:

As a reminder, the Writer's Guild sought to get the studios to agree to not let AIs write or rewrite scripts. And for members work not to be used for AI training.

BATEMAN:

And the AMPTP's response was, we reject your proposal. We're not countering it. We're not talking about it. We will agree to discuss this technology with you in a year. And to that, the Writers Guild appropriately declared a strike. I mean, you don't need somebody on the set because there's no set. Eventually, there'll be no set. I mean, eventually, I mean soon. Like the AI-generated. background, you won't need a crew, you won't need the actors, it'll either be

scanned or it'll be actors they made in AI. People might think this hyperbole, but you look at the demos and I dare you to like find a difference between that and somebody with like a TikTok filter or just had plastic surgery, or something like we're also very accustomed to seeing non-real faces. So it's just one click away from having AI faces.

RAFFI VO:

The Screen Actors' Guild is demanding that no AI likeness be made from any performer unless they give their "informed consent," which they argue should be negotiated separately on any given project.

CLIP:

DUNCAN CRABTREE-IRELAND, SAG-AFTRA'S CHIEF NEGOTIATOR: They proposed that our background performers should be able to be scanned, get one day's pay, and their companies should own that scan, their image, their likeness and should be able to use it for the rest of eternity on any project they want, with no consent and no compensation.

BATEMAN:

To do that to actors, to take their whole person... what they look like, what they sound like, how they move, and then discard them, that's just heinous. So if that's gonna be their same response, it's impossible for the SAG leadership to make a deal with that.

Raffi:

How do you think this all ends?

BATEMAN:

I think at least in entertainment, I think it's gonna go primarily AI, because of the cost cutting. Like talk about getting rid of that pesky overhead of having to pay people to do the work you're distributing. And I think the people that are perpetrating that will tap into what has been very successful in social media, and that is people's narcissism. And they will include the viewer in, either through face replacement or, you know, getting themselves scanned. And then there'll be, not only will they cut out this overhead of filmmakers, but they will be able to charge more to the user to put the user in these films. So they'll be able to upcharge people.

Raffi:

Mm-hmm.

BATEMAN:

And then I think people will start to feel kind of sick about it, kind of dead about it. I just, I think it's going to get very bad, but I do think there's going to be something spectacular on the other side of this. I think when people get tired of losing their jobs and they get tired of looking at themselves having been scanned in films and everything and the novelty wears

off. I think there's going to be something really spectacular that's really real, really human. But I think there'll be a lot of destruction before that.

RAFFI VO:

Erik, you've been very optimistic with me today. But... what's the downside? The impacts are not going to be equally distributed. So clearly in some places, for some people, there will have to be downside. Right?

BRYNJOLFSSON:

Absolutely, and I am concerned about that. Over the past 20 years really, unfortunately, while we have had higher productivity. We've also had more inequality and big chunks of Americans and people in other countries have been left behind. If you're a high school educated or less, your real wages have fallen on average. And not just wages, we've seen life expectancy fall for that demographic. We've seen increased deaths from despair, drug abuse, alcoholism, depression. So these are really... damaging, painful outcomes for big chunks of the economy. And it's not just technology, there are other forces at work, sociological forces, globalization, but. The way the technology has been used has not been beneficial, broadly. So looking forward, I don't want a replay of that. I want us to work a lot harder to make sure that we create shared prosperity. And one of the reasons that I'm calling for focusing on using these technologies to augment and not replace people is that I believe we have choices. You can try to use it to replace people. You can try to use it to augment people. If you go the second path, you can much more likely to shared prosperity. But I'm concerned that we won't make the right choices and we need to make a real effort. It won't happen automatically.

Raffi:

I really love that your notion of like, we actually have choices. This is actually not inevitable.

BRYNJOLFSSON:

Exactly. And I would even strengthen it. I mean, these are tools and we have more powerful tools than we ever had before. So almost by definition, we have more power to change the world. And so our values become really salient. You know, when all you have is a spear or rock, there's only so much you can do to change the world. Now we have like awesome and almost godlike technologies that can massively shape our health, our well-being, our politics. So let's think real carefully, about which direction we want to point those tools.

RAFFI VO:

We'll be right back... after a short break.

MIDROLL

RAFFI VO:

Welcome back to Technically Optimistic. This week we're talking about the effects that AI is already having on labor, creativity, and culture. We just heard from Justine Bateman on why

AI is so antithetical to her creative process. But Ari Melenciano, a Brooklyn-based artist and creative technologist, has a different view on generative AI's role in her practice.

ARI MELENCIANO:

So I grew up as an artist, and also just a lover of technology, went to this amazing program at NYU for graduate school called Interactive Telecommunications Program,

RAFFI VO:

She's now a professor in that same program. Side note: I taught there, too.

MELENCIANO:

But I was also really frustrated. I had grown up in PG County, Maryland, which is a really beautiful place to grow up and be a black person. It's just like a kind of a black utopia. Um, and so moving from there and going to NYU, even though New York has always been my second home and all my family's here, it's an entirely different demographic. And so it felt different because politically things are very different. Uh, we were moving from Obama to Trump and so it was just a whole different kind of vibe. And so. Being in that environment, while I loved the curriculum, I was really frustrated that I was one of the very few Black students and there were no full-time Black professors. And so for me, it felt very natural to kind of just combine the exciting parts of my program and then also just fill that void that I felt for myself and create a space that could do that. And so Afrotopia was birthed out of that.

RAFFI VO:

Afrotectopia is an organization Melenciano founded that supports projects by Black creators at the intersection of art, design, and technology.

MELENCIANO:

I want black people to be able to exist within the world in a way where their humanity is first. I feel like oftentimes race is used as a qualifier or as a... way for other people, like you have black attached to a title or a name or something, that it automatically puts a lot of things on it as opposed to us being able to exist inside of a space that is just natural to who we are like, for me, I really want us to just as black people exist and be and not perform and fill in what other people think that we should be filling in.

RAFFI VO:

OK, That's really interesting... and it reminds me of some of the things you've written about. You created art using AI image generators. And you reflect on how it highlights some things about identity and performance... How should we think about these generative tools? Do you think that they can reveal truths about our selves, or our society?

MELENCIANO:

Yes, it's not giving a realistic truth. Really all that it's doing is just being a reflection to the dominant narrative that's online and also the dominant group of people in the way that they

are interpreting people and labeling them through the metadata. So much of it is built off of language. And language, when I give talks on AI, I'm constantly reminding people that the foundation of this generative form of AI is rooted in language. It's the clip model.

Raffi:

Mm-hmm.

MELENCIANO:

It's pairing images that have existed online and the captions and the way that we've used the captions and the way that we use language very much dictates our idea of... identity of values of logic, all sorts of things. They completely control our psyche. And so when we think about how language does that, but then also who is deciding these different metrics and frameworks for the ways that we use language, which is a really small group of people, especially when we think about who's actually creating these, developing these technologies and the people that are developing them in big tech are very predominantly white men in the Western world. And so it's the way that they are using language to represent people and represent cultures and identifying nuances or missing nuances within cultures.

Raffi:

Can you tell me more about the clip model?

MELENCIANO:

Yeah, so the clip model is what's been used for pairing the images that exist online and how they have been tagged through captions language. So the metadata, pairing it together and then turning that into a way where we can use words, placing words into latent space kind of like how Spotify understands this is what you probably want to listen to based off of your activity.

Raffi:

Mm-hmm.

MELENCIANO:

So it studies the way that it studies the activity of language. in the world.

RAFFI VO:

Your art involves creative explorations of identity through having an AI image generator like Midjourney respond to prompts you compose. Tell me a little about your process... and what you might have discovered from it.

MELENCIANO:

So there are two parts of the computational anthropology. The first part, where it's me doing things like grabbing images from the public domain and using the way that they caption those images, archival images from centuries ago even, and being able to render different

images that look very similar to the original images, which was fascinating within itself. That was one part of it. Another part was using my own headshot and then applying different words on top of it. attributes that are mine or aren't. I would say things like “born in Miami, drinks a lot of tea,” which is true. But I had, but I had other attributes that weren't true and to see the way that it would render me. It never really rendered me correctly. It always was changing my appearance and that would make sense. But the fact that it felt the need to change my appearance was really interesting. And the way that it would, like if I drank a lot of tea, it would then make me more Asian, little things like that, or the fact that I am an aunt, but it would age me by about like 30 years. So that was me studying the computer. But the way that I studied myself was through the other part of it, which was creating my own personalized model through Google's technology of Dream Booth, and then using that inside of Stable Diffusion. And seeing myself... pose in different ways, rendering a whole new alternate reality of myself. Like I was a supermodel in Egypt and drinking champagne on a yacht off Amalfi Coast. Like I was living this really extravagant and lavish life and that lavish life was really fun to just play within.

Raffi:

Hmm.

MELENCIANO:

But the other part was just seeing my identity in entirely different ways than I've ever represented myself. I've never posed in front of a camera the way that would render me or wore my hair in those kinds of styles. So it's little things like that where I realized, oh, okay, identity, what we think is identity is really this external performance, in a way that we want people to perceive us and we want them to identify us in certain ways, but it does not exist internally. Like when I'm doing things with no one around and I'm not communicating myself or trying to represent myself in any way, I'm not thinking about my identity at all. And so that was liberating in that I understood identity is really just this playground, I don't have to take it so seriously. Like the fact that when you become aware of this performance of identity, then you can kind of take a step back and really figure out do you want to continue playing in that space that you're performing in or do you want to do something else, but also just this freeing moment of I can do anything. I could be any person that I want to be. I could represent myself anyway.

Raffi:

I guess how should I think about that though? Like, you know, there's one sense of like what I view my identity internally. There's a view of identity as other people see me or maybe as a unvarnished camera lens might see me, not distorted by AI. You're describing this other like view of a world mediated through these systems. In some way, the word glamorous you use there is tied to a value that maybe a creator gave to that word when they're making that AI system. I guess what I'm wondering is like, is this saying something about our society? Or is it simply saying something about the people who create these systems?

MELENCIANO:

Yes, I think it's absolutely representing, it's hard to know who exactly it's representing. I think

Raffi:

Yeah.

MELENCIANO:

I think it's representing just the people that have been most active online and the way that they represent themselves and the way they tag themselves in the metadata within that, but then there are also different parts of it of... the developers are going in and kind of filling in the gaps within that too. But then I also do want to take a step back and say that with identity, Um, you can play within it so much. For me, when I say I could be anything, it's more of, I know that still when someone looks at me, they're going to have a certain understanding because of my phenotypical nature and the way that I naturally present myself. But I also know that there's a lot more room to play within than what I thought before. I think I was very rigid in my understanding of the way that I existed within this world. And I think a lot of us are kind of really just so invested and rigid in the way that we present ourselves and don't play around enough with the way, we don't understand how much we could play around and that's really what I was exploring.

Raffi:

That's super interesting. So are you basically saying this gives you more freedom? Freedom might be a loaded word, but is this more freeing in the way that you think about what your identity is?

MELENCIANO:

It is more freeing for me and how I think about my identity. Yes. And I think it's like, sometimes it might be, okay, I'm going to wear my hair in a way I've never worn it before, but it also is freeing in that I got to see myself represented in a certain way and I'm satisfied with that moment of having seen myself in that way. And then I can go along not caring

Raffi:

Oh, that's interesting.

MELENCIANO:

Like, okay, I saw myself with like really great makeup. Now I can continue not wearing much makeup and you know, it's like, it's little stuff like that where I saw myself looking in a super cool gothic outfit. Now I have no interest in even wearing that.

RAFFI VO:

I talked to some writers and artists who see AI as something to be avoided... you know, as something very opposed to their creative practice, or to the kinds of habits they want to cultivate making art. You've... kind of gone the other way on that. What do you make of those

artists who find this technology... scary? Or threatening? Or dehumanizing?

MELENCIANO:

I've had conversations with writers and people that, uh, are very hesitant to create with AI. And I'm like, you could talk to it. You know, you could just play around with it, see what it says, like throw in your ideas and then have this back and forth. And they're like, no, I don't want to touch it because I'm an artist and, you know, I have to stay true to my craft. And it's like, I get that. But I also think the way that we think about artistry is that we really think that we're just like this individual who is off in our own corner, not influenced by anything, coming up with all these ideas purely by ourselves. That's not what we're doing at all.

Raffi:

Hmmm

MELENCIANO:

You're studying so many different people's ways of being and that's influencing your way of being. And so this form of technology, is not that different from our way of being creative in that it's really synthesizing a bunch of different people's understanding. And you are kind of like massaging it and trying to figure out how to pull out what it is that could align with you. So I just I think there's a very drastic binary understanding. Like it's a strong dichotomy between you can either be a pure creative or you can be a creative that plays with AI. And if you are a creative that plays with AI, you're not. It takes all the value away from being a creative because now you're using something that's grabbing a bunch of other things from other people, but that's really what being a creative is all along. So I think there's a lot more space for people to play in that they don't even realize.

Raffi:

You know, I've also spoken to people who talk about these systems as fundamentally backwards looking. All they do is create really good mishmashes of stuff they've seen before and so they're not actually pushing us as creative beings forward in a lot of ways. They're just letting us explore backwards in a bunch of different ways.

MELENCIANO:

You could say that. But I would also yeah, that's, I don't, I'm, it's hard to say these kind of things. So you don't want it to be misinterpreted. And I'm not saying that this stuff is going is better than us creatively, or any of that or pushing the needle forward entirely. I would just say that it's just creating a new lens. It's like, yes, it is a mashup...

Raffi:

Hmm.

MELENCIANO:

But that mashup is something new. And it's not gonna replace the ability for humans to

always be able to think in ways that the AI could not. And the AI can create things that a human might not think. It's like the AI is just reflecting everything that it's ever seen and humans can create something that an AI has never seen before. but the AI can also create something that a human has never seen before. So for me, it's just, these are different ways of creating and one is not necessarily better than the other. I would say humans are always going to prevail. I think human creativity is always going to be able to far surpass what a computer can generate because it can only look at what it's seen, but I wouldn't devalue what it's creating.

Raffi:

I'm hearing like a very complex like relationship with this technology. Like you have a very nuanced way of like sort of like exploring this like connection. Does that make you pro AI or does that make you where complicated?

MELENCIANO:

For me, for one, it's just another tool. Like that's how I see it.

Raffi:

OK

MELENCIANO:

I see it as a tool, and I also see all the limitations of that tool. Like when I'm making portraits right now with Pastel, I know that it's not gonna render in the same way that I'm creating with oil painting. It's much more forgiving. Like there's a whole, it's an entirely different world, entirely different form of creating. So when I say tool, I'm saying, yes, it's just another tool in that this is not going to replace human creativity ever. Like there's so many things that humans can do that it can never replicate. I'm saying that for one, right now it requires you to look at a screen, to use the fingertips, to type something into the keyboard. Like there's so many limitations to it. And then also foundationally in the way that it's designed, I'm not going as far as saying, oh my God, it's going to overtake. intelligence of humans because I don't see it as actual intelligence. I see it really as just mimicking the ways of being of a really small group of people.

MUSIC...

RAFFI VO:

All too often... generative AI reflects reality for only a small subset of the population. Limitations in training data can reproduce and reflect biases that exist in society. The datasets themselves, and what AI developers choose to do with them, are largely hidden from the public. So even if we have an awareness that bias exists in a model... it's much harder to know what we regular people... can do about it.

KEOLU FOX:

I've worked in human genomics for over a decade, starting with the Human Genome Research Institute. And so I've been mining genomes for over a decade...

RAFFI VO:

Keolu Fox is a genetic scientist and professor in the anthropology department at UC San Diego.

FOX:

But I never connected the idea of mining genomic information data derived from human beings and its value, its worth, as a resource and making comparisons with other resources like, you know, cobalt, diamonds, water, timber...

RAFFI VO:

Keolu is a Native Hawaiian.. and the work he's doing with indigenous communities shows us.. not only how data limitations can have real effects on people's lives.... He also shows us one way to push back.

FOX:

That I think was the biggest kind of breakthrough. I mean I started looking into the value of these things when 23andMe sold access to their database to GSK. It was like a big moment..

CLIP:

VOICE: Glaxo Smith Kline. They put 300 million dollars into the genetic startup that's 23andMe. What they get for that is a huge database.

VOICE: This is a major pharma company that is obviously looking at everything you have.

VOICE: What we hypothesized on from those early days when we started the company is that if you have a large amount of genetic data you're going to start to be able to make insights that you wouldn't have otherwise ever been able to see.

FOX:

And then there was another acquisition and I think those things really kicked things over the edge because I knew, one, how little diversity they had in their data set and how much money they got for access. And I'm a student of population genetics, so I know what these mechanisms mean and how important they are for informing how we develop drug targets. I think people are extremely intelligent in any community, especially historically marginalized communities, they're coming from a position where they've been exploited and so they're suspicious of any type of research. People that come from our communities don't like being told where they come from. So the interpretation of our diasporic trajectories and our just migratory history broadly, that's a really sensitive issue for most indigenous communities. So there's like the medical action ability and the way that data feeds directly into the development of the next generation of therapeutics, which have an immense value financially. And then there's the narrativization of the genome and how that directly impacts

people's identity.

Raffi:

I mean, most people that I talk to get so worried about biases in the systems that are being built. So like data being excluded, which cause these systems not to have a fuller picture when they sort of go through their AI tasks, whatever those might be. You're also maybe advocating for..."we don't want these systems to be biased, but we want to be compensated to help you unbiased these systems." Is that a succinct way of saying it?

FOX:

Definitely, that's a beautiful way of saying it. I think we see the manifestation of bias in a lot of different data science tasks. The genome is a really unique one because we know that the vast majority of sequencing that we've done has been in Western European populations. So if you really think about what that means, it means that something like, I don't know, 96 to 98% of these studies are done in one population of people, which means that every algo we train as a test set is trained on that, you know, that, this biased brain catchment of data, and that means that the alternatives that we, that are kind of output from that are going to be biased towards solutions for one population of people. Now if we layer that with the fact that 95% of clinical trials exclusively feature individuals of Western European ancestry, we get into this super kind of like Brave New World of health disparities. We should be Recruiting people that really reflect the diversity we see every day, but we're not and we're missing out on a lot of data. So what we've done is we've said, all right, we wanna disproportionately recruit historically marginalized people, but we're also gonna give them agency and ownership of their data. We're going to decentralize access to biobanks. We're going to give people the freedom to think about what happens with the biological material. Right? So after we process your blood sample, do we destroy it? How do we dispose of it? If it's kept in a biobank, are we transparent about that relationship? And then there's another education piece on the backend, which is "what are we doing with the data? How transparent are we about what we're doing with the data?" If it's commodified, do you receive a piece of the pie? And that's where these larger ideas around benefit sharing come from.

CLIP:

VOICE: The Native BioData Consortium is the first indigenous-led biological and data repository.

VOICE: We're always having people coming here to study us. And we don't realize while that's happening that we're being exploited.

VOICE: The idea is that if you collect a lot of data from a lot of different people in this genomic space that you'll be able to create solutions for mankind. But because of our not only unique history with Europeans but also our unique history in the places that we live, our data is very valuable and will help the world, but we'll be the last recipients of that help.

VOICE: That money should be ours because it belongs to us, the data belongs to us.

RAFFI VO:

You're working on giving an indigenous community back ownership of their data.

FOX:

Right.

Raffi:

And in this case it's their biological data from pharmaceutical companies. But, I'm curious... could this scale up? Could we generalize that to all communities.. and all our data?

FOX:

Yeah, that is a really complicated question and a really good one and I love it. I would say first, I think the value proposition for a lot of our communities should be all of these drugs are made in a one size fits all manner. for other communities of people.

Raffi:

Hmm.

FOX:

So the efficacy, or what in genomics we call the pharmacogenomics effects of these aren't tailored for you. If we want to move towards personalized medicine and precision medicine, which we do, and using all of these incredible tools to do that, we really have to think about it from a community and population level first. But the flip side of that is, you can actually gain new novel mechanisms and insights from engaging indigenous communities because our genomes are a reflection of extreme environments, high elevation, remote archipelagos in the Pacific. And these, much like Darwin's finches, those migratory histories shape our genomes and lead to the development of new biological mechanisms. And those things are relevant to everyone and can increase the sort of types of therapy that we develop.

Raffi:

So what does the infrastructure then need to look like?

FOX:

So you could think about it horizontally, saying we wanna change standards at existing companies. But standards are like toothbrushes... Everybody has one, but nobody wants to share.

Raffi:

Mm-hmm.

FOX:

And so you can also innovate vertically and say, actually man, we're in control of every single component that goes into this. So we did this with and continue to do this with the Native Biodata Consortium. And what we do is we're in control of the land where our biobank is, our

sequencing center, our cloud infrastructure for data storage. The people we train. We're training the next generation of indigenous data scientists internally so that we're prioritizing issues around ethics and indigenous data sovereignty and governance. When you're in vertical control of all of the components, you control the standard of the product. And that's another way, I think, to push and disrupt the whole industry.

Raffi:

I mean, I love this because like, you know, a lot of the questions on the podcast are around who gets to make decisions, who gets to be in control. These big companies, not saying there's anything wrong with companies, but the way they act is they've centralized control within their engineering departments that impact hundreds of millions of people. But like you're trying to basically flip that on his head. Just like: we will be in control, we will be the people that are engaging, it's our data, it's our community, and building the infrastructure around that, in order to engage with us, you need to go through our local mechanism.

FOX:

Absolutely. I think that is like one of the most exciting ideas and trajectories for a lot of the science we're doing. The only way to flip it the other direction is say, well, why don't we create smaller networks of miniature biobanks, miniature cloud servers, and distribute the labor and the innovation amongst communities because you can pop up and build smaller pieces of infrastructure embedded within community. And what that does is by decentralizing it, you're also de-black boxing it. So you are in effect creating transparency and literacy around these things that communities distrust. With the Native Biodata Consortia and we have a small campus on the Cheyenne River Reservation and it seems to really resonate with the community. The way we've been able to train the next generation of scientists locally. Man, these kids are smart! But also the type of knowledge we're imparting on them. Like this has to be the first time we've done something like this. So it just opens up the possibilities of like, what are these entry points for precision medicine locally, synthetic biology locally, computation locally. And I think that is only going to continue to grow.

RAFFI VO:

But you also try and provide, like, education about AI itself, too, right?

FOX:

Yeah, yeah, yeah. I think the potential and the potency of AI-related tools right now is so cool and intoxicating and interesting and exciting. But it also brings up this just larger series of ethical questions I think that everyone is having right now. A lot of people are looking to the same pundits for expertise.

Raffi:

Mmm.

FOX:

They're going to this whole like Oxford University Canon of the way that AI should be operationalized and from that point of view it really looks like a continuation of a lot of the forms of bias we've seen. Even in the way we like sound the alarm on the ethics of the utilization of these tools, right? So we should have more conversations about that, for sure. When we're building literacy and fluency amongst our communities, I always start off by saying, how many computer languages, scripting languages do you know that were created by indigenous people? And the reality is there's one that everyone uses, it's quite ubiquitous, and it's R. R was created by Ross Ihaka, who's a Maori man

Raffi:

Yeah.

FOX:

From the University of Auckland. And so I point to that always to say, look what's possible. Indigenous languages go extinct every day. It's really sad. There are a lot of parallels with like how indigenous people think about the world and how we create data structures and How we transfer and understand knowledge and how we create our identity. What is stopping us from creating new scripting languages that wield machine intelligence in new ways that empower our communities? Literally nothing. We are thinking about all of these new and exciting applications of of machine intelligence, whether it's like federated learning approaches to compare and protect and safeguard access to data, or the applications of new forms of art. I think the possibilities are quite limitless. And for the first time, you will see Indigenous people in a complete position of innovation and control. So it's going to be very exciting.

MUSIC...

RAFFI VO:

On the next episode of Technically Optimistic, we're gonna go wide... and talk.. responsibility.

Who's responsible for making the AIs seem.. more human?

CLIP: Roz Picard: *"There's a lot of interest in creating AI that's starts to feel supportive and caring and respectful of you.."*

Who's responsible for the view that tech can solve all our problems?

CLIP: Meredith Broussard: *"Social fairness and mathematical fairness are not always the same thing..."*

Who's responsible for vetting AI research?

CLIP: Kyunghyun Cho: “We’ve been chasing all this kind of fame and reputation and interest to the point that our papers were rather sloppily created papers of the products.”

And in a society where hate, conspiracy, and disinformation flow freely... who is responsible... for the truth?

CLIP: Maria Ressa: “*I’m actually shocked that the U.S. government allowed large language models out.*”

We take on some of the biggest ethical and political questions raised by AI ... and we’ve got some absolutely amazing guests to help us think through things.

That’s next time... on Technically Optimistic.

[CREDITS]