Thought on Tap #7 (Sciences and New Technology)

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Transcript:

Introduction:

Bretton Rodriguez: 00:00:00 You're listening to Thought on Tap, a monthly podcast about the role of the Humanities in the world today, brought to you by the College of Liberal Arts and the Core Humanities Department at the University of Nevada, Reno. This month we're talking about the role of the humanities and the sciences at new technology. And now here's our host Carlos Mariscal.

Sciences and New Technology: Carlos Mariscal: 00:00:18 Hello everybody. How's it going? Everybody having a good night? Yeah. Um, okay. So my name is Carlos Mariscal. Uh, I'm a professor in the Department of Philosophy. I also, um, am affiliated with the Core Humanities Department, the Integrative Neuroscience Department and the Department or, sorry, the Integrative Neuroscience Program and the Ecology Evolution and Conservation Biology Program. And I will be your moderator for today. Welcome to Thought on Tap, this is your monthly guide of News, views and brews brought to you by the University of Nevada, Reno, the College of Liberal Arts and the Department of Core Humanities. Um, I want to thank the Laughing Planet for being such a generous hosts. Yeah. Give it up for them. Providing the space, providing rounds for our panelists and food for you guys. So, uh, I'm very, very happy to have partnered with them. This is great. Um, so this is going to be the last event of our first season of Thought on Tap. Uh, those of you that have been to a couple of earlier ones, have an idea of how this is going to go. Um, and you can listen to them if you haven't attended any of these at ThoughtonTap.com. We have podcasts, versions of all of those events and there will be a podcast version of this, uh, after tonight. Um, so I hope you've enjoyed the first season. We focus this entire year on the role of humanities onto the various issues that are important to the to us today. Um, we're going to be back in September with an entire new series and a new theme. Um, and I hope you guys can provide us some feedback. I think there's a space for you guys to provide feedback on your tables, uh, about what you want to see. Um, so at this could be more and more of a, um, of what you want, uh, to experience here. All right. Um, after the panel tonight, we're going to have time for some questions

from you all about the things that concern you most. And uh, well let me introduce the topic for today. We're focusing on the role of humanities and sciences and new technologies. It's 2019 society is changing from the microphone in front of my face to the phone in front of yours. Uh, everything we have made is made in a different country, probably China. Um, and it's all brought to us. You could your from your phone, you can unlock it with your face. You can order things, you can order food to your doorstep within 30 minutes. You can order packages there within two days at the places where these items that you're ordering are produced and uh, and distributed. The workers are tracked up to the minute even to, uh, their bathroom breaks just so that things can be that efficient. Um, they are able to, uh, figure out what you want when you want your monthly box of caramels based on your browsing history based on, um, things that are tracked across all of your presence on the Internet using these deep learning algorithms. That's the, sometimes the programmers themselves aren't aware of the, uh, the reasoning that the programs used to, to draw conclusions about you. Um, they can infer all sorts of things about you. There's plenty of space up at front and all of our devices can record us. Now. This is the future we live in. Some of us even invite these devices into our homes and ask them the questions to and to play music and tell us the weather. We have easy access to technology that allows us to fake, uh, voices and, and video, um, making fact much harder to tell from fiction than ever before. It's not just society that's changing. You yourselves are changing. Um, these new biotechnologies that we produced allow us to control our own genetics and the genetics of our food, um, with greater precision than ever before in history. Old Biotechnology or old technologies, um, are producing, uh, gases that are threatening our very environment and ocean and ecosystem and possibly survival. We have access to more food and nutrition than any group of humans ever in the history of this planet. And yet we also have too much bad food and it's having all sorts of horrible effects on us. It's not just ourselves and our society that are changing, but our minds are changing as well. You don't need to remember anything. You can just Google things now. Um, there's classic tools that have been with us since the ages, from a cursive to spelling that we no longer need in the area of these new technologies. Your attention span is measurably shorter than your parents is and you're also a measurably sadder than your parents were. And I'm sorry if that made you sad. I just needed to get your attention back. Um, so times, sorry, times are changing faster than we can catch up maybe faster than we ever will. And so tonight we're going to talk about that, about all sorts of things related to that. There's a lot of ground to cover in the role of the

humanities and sciences and new technologies. Um, and in fact, some of this we offer classes in at are the very university across the street from us, the classes taught by, uh, our illustrious panelists and myself and, uh, various other people that may or may not be here today. Um, but tonight I'm going to focus on change the role of science and technological change on these three themes, our minds, ourselves and our societies. We're going to learn from the presence on the past, the real and the virtual, the industrial and the informational. And I'm extremely excited to be joined by a panel of such renowned, an illustrious experts, uh, to help guide us through this murky terrain. Uh, it's gonna be very interesting and engaging, hopefully. So let me introduce them up first. She is an associate professor of English at UNR, but the website's a little one. Professor, congratulations to full professor. Nice full professor. Yeah, give it up.

Audience: 00:07:12 [applause]

Carlos Mariscal: 00:07:14 Uh, she received her PhD from the University of Texas at Austin and has published several books including sins against science, the scientific media hoaxes, apoe twain and others. And our most recent book is these is scientists as profits are rhetorical genealogy. Her research includes work in environmental rhetoric, public perception of visual representations in science and the public role of scientists. Please welcome Dr. Lynda Walsh.

Lynda Walsh: 00:07:41 Thank you. I'm really happy to be here.

Carlos Mariscal: 00:07:46 Excellent. Um, up next, these and associate also an assistant. I am no good. Yeah. This is he a professor of computer science and engineering. That's all right. If I could promote myself I would too. No, that sounds great. Um, all right at UNR. He is affiliated with the Intelligence Systems and the Integrative Neuroscience Program as well. He received his MSC and PhD from here as well. His work covers artificial intelligence, machine learning, robotics and virtual reality and he's published dozens of papers on it using mathematics and computation to understand how we process visual information in relation to robotics, visualization and assistive technologies. Please welcome Alireza Tavakkoli.

Alireza Tavakkoli: 00:08:32 Thank you for having me. Thank you.

Carlos Mariscal: 00:08:35 Um, and next, finally we have a postdoctoral fellow in the department of core humanities here at UNR. He received his PhD in English from the University of Southern California. Among his many interests include science and technology

studies, modernist literature and visual culture and the relationship between, uh, the second industrial revolution and the US self-image from reconstruction to World War II. And he's published several articles on the ways in which technologies have shaped the way modernist writers think about history. Let's welcome Stephen Pasqualina.

Stephen Pasqualina: 00:09:13 I just want to say, I've, I've attended all of these all year and I've loved this series so I'm really excited to take part.

Speaker 2: 00:09:18 Awesome. Thank you. Yeah, this is great. Uh, hopefully some of you all have also attended all of the events this year and if not, there's always next year. All right, so, so let's see here. Let me, let me start with you. Um, so you're interested in the history of technology and you have a broad background in the humanities. I want to ask you a question that's been relatively constant throughout all of these events. And this is, uh, what is, what do you take to be the role of humanities with respect to new technologies?

Stephen Pasqualina: 00:09:49 So this is impossible to answer in two minutes. So I'm going to give you a very selective answer. Is the mic good? Sound is good? Okay. Um, it, I'm interested in the question in terms of the language used and I think that's one of the ways in which the humanities can contribute to a study of science and technology. And that's to put pressure on the discourse that we use when we talk about these things. Um, technology is presumably a field dominated by things, not by people. And I think the humanities roles who insert kind of the human subject back into these things that we encounter every day. Um, the other aspect I would talk about is that the word new, I think technology often has a readymade association with newness. When we think of technology, we think of inventors and inventions and innovations. But really the vast majority of our experience with the technological worlds is with rather old stuff; roads, bridges, buses, a toaster ovens, coffee makers, things like that. Um, even our computers are often, uh, not the newest or the latest for the greatest strength. So, um, I think, a focus more on maintenance rather than invention is something that the humanities can bring to the study of technology. And in that vein, I brought a quotation and I was approached to take part on this panel and I got really excited because I had just read this piece in the New Yorker on a really despicable figure named Anthony Levandowski who's a self driving car engineer. Um, apparently stole a lot of intellectual property from Google along the way. Uh, the, the piece in the New Yorker on him closes this way. It's a quotation from Levandowski says, "The only thing that matters is the future. I don't even know why we study

history. It's entertaining, I guess. the dinosaurs and the neanderthals and the industrial revolution and stuff like that. But what's already happened doesn't really matter. You don't need to know that history to build on what they made. In technology, all that matters is tomorrow." So I mean, I think this is an easily kind of mockable statement. It's maybe a straw man, but I think the humanities response to that kind of thinking, which I would say is actually pervasive in our interactions with technology and how our imaginings of technology is that technology has deeply historical roots. Um, technology is historical because it's embedded within industrial capitalism. It's embedded within our social relations with each other. Give an example later of what I mean by that. But it often projects the way that we relate to each other, the kind of society that we want to inhabit. Um, it's also historical because it's, the technologies that we engage with are deeply historical roots. They're based on often centuries of slow incremental development. And another way it's historical also is that it's related to a wide network of temporal and spatial relations across the globe. You mentioned that our technological products are built elsewhere. Um, understanding the labor that goes into our technological products is something that the humanities can kind of inject into the discourse of a technology.

Carlos Mariscal: 00:13:00 Yeah, no, that seems, uh, so paying attention to, to the history of that seems important to you said you had an example that you wanted to bring up later. I kind of want you to bring that up now.

Stephen Pasqualina: 00:13:14 Okay. Yeah. I was reading, this came out a couple of months ago. There was an article in USA Today about how as a lot of conservatives put it, the air is racist. Uh, the story was that pollution disproportionately affects blacks and Hispanics versus whites. And Donald Trump Jr. mocked this idea like, oh, now the air is racist. Even that's racist too. And the answer is like, yeah, it is racist, but it should adjust the way we think about race relations. It's not just a matter of individual morals or ethics. Racism is deeply embedded into the structure of our built world. And what that study showed is that, um, disproportionately neighborhoods that Blacks and Hispanics occupy are, are kind of dealt the pollution that's produced disproportionally by whites. Why is that? Because there's a correlation in this country between race and class. So the people who own the means of production are predominantly white. Uh, the people who own the cars on the highways are predominantly white and the people who live near the highways and the factories are predominantly not white. Right. So that's an example of the kind of networked-ness that we

need to think through in order to understand how technology is actually embedded in larger structures and isn't just kind of these flashy devices that exist in a, in a moment.

Carlos Mariscal: 00:14:37 Yeah. Uh, we, we tend to forget that the, the people with the least a political power also have, uh, at least the ability to modify their environment. Right. Which is why in Nevada always has to fight to keep out all of the nuclear waste that they want to bury under us. So, um, actually maybe, maybe with that I can turn to Ali. So you work on, on human robot interactions, um, both virtually and in real environments. Um, and I think we all get the feeling that robots are getting better and better and technology's getting is improving more and more. But as that happens, they take over more and more aspects of everyday human life. Right. Whether it's driving or cleaning or whatever. Um, so I want to ask about what you think the impacts of that might be. Do you have any worries about how that might impact our lives or mind?

Ali Tavakkoli: 00:15:34 Well, um, definitely there are worries within the community. Um, uh, of research. Basically there is a big area and ethics of robotics and, uh, basically policies that need to be set and all the social aspects and impacts of robots. The, when I look at robots in our lives and we're not there yet, um, and you know, it's going to be probably in the next decade or so, um, that there shouldn't be a need to invest human capital for certain tasks and certain things that we can outsource them. And I see the role of robotics to basically approach that and try to take tasks that we as humans don't necessarily need to do or want to do. And as a good example of it is, for example, if you look at areas that are prohibitive to human presence, you know, you mentioned, um, nuclear waste and that's a really good area that you want to take humans out of and place machines in. So that would be a really good example of where you want the robots to operate. But without policies, certainly, um, they're taking humans' jobs. And so, um, unless we put in place a mechanism for the workers to be able to advance themselves so that they won't, we won't necessarily need to use them for those particular types of jobs. And then they would be able to, you know, I guess climb up the ladder, um, if you will, in the workforce.

Carlos Mariscal: 00:16:55 The idea there would be the, um, everybody would benefit if we were to take away some of these particularly dangerous little wage or, or hard work.

Ali Tavakkoli: 00:17:06 Exactly. And, uh, you know, uh, the productivity will definitely increase. Uh, there are certain tasks that humans can't do, so

robots can actually be utilized to do those tasks. And those would be the areas that robot explorer have the most impact. Obviously there's a lot of research needs-need to be done. There's a lot of questions need to be answered. And uh, one of the areas that I'm working with is also to still keep humans in the loop. I'm actually working at the limits of autonomy. So the question here is that, um, the idea of having a fully autonomous robot to do all the tasks that you needed to do as a great thing, but it's really expensive, it's complicated to do and uh, um, and at the same time you probably want to have some sort of supervision, if not tele operation in the loop, uh, you know, their robots are physical things, so there's a potential for a failure. Um, safety is an issue. And so these types of tasks that we bring in both autonomy of our robotic agents and the independence, the independence of the human mind would be an interesting area to explore.

Carlos Mariscal: 00:18:09 Excellent. This is a perfect alley-oop Lyn. So, so Lynda, you work on one of your books, uh, touched on, um, science as it first entered American politics. Um, and I was wondering what you would, what you had to say is if there's any lessons we can take from that or..?

Lynda Martin: 00:18:27 Right. So my first book was on scientific media hoaxes, so fake stories, fake science news that was published in major newspapers in the 19th century. Um, and, uh, so if you ever want to read a really good history book about, uh, the role of science and American history, you should read the launching of modern American science by Robert V. Bruce. It's a great book. So just to give you a snapshot of sort of what Bruce, his argument is, um, these hoaxes happened at a time in the mid 19th century when science was really still done in people's barns and garages, um, by, uh, by pastors, by school teachers as a hobby. Um, toward the beginning of the period that I studied in the 1830s, by the end of the period I studied, which was like in the 1890s, we had the American Academy for the advancement of science. You know, science was, uh, the sciences were fully fledged parts of American public life. And my hoaxers were very troubled by that transition, um, because it went from being something that humanists did, you know, so pastors, you know, preachers, poets, these are the people who are doing science. And they were doing it as part of their apparatus for exploring the world and understanding it to a point where science became professionalized. It became a profession of its own. And it started to gain a lot of lobbying power with the federal government. And my hoaxers were very disturbed about this. Sheila Jassanoff has described something called the civic epistemology. And she says, every culture has a

dominant civic epistemology, which is the way that culture understands to seek truth and bring it back to, uh, to the political arena to make policy. And during this period that I studied, the dominant civic epistemology in the US went from being essentially a humanist epistemology of art, of religion, of literature, philosophy, right, to, to being a scientific epistemology during this period that I studied. And-and my hoaxers wrote stories to try to fool people in order to wake them up. So what they would do is they'd write a story that fooled thousands of people and then they would reveal it and say, look, you're putting your faith in things that are you don't understand that are dangerous and you need to wake up and realize that science is taking over society. So in a way, we haven't left that moment. You know, there still are hoaxes that go on. I studied one that happened in the late 20th century by Alan Sokal called the Sokal hoax. Um, so in a way we've never left that moment. We have an uneasy relationship with, um, the sciences and professional science organizations. Um, in our political life. We are as, as a nation, we are a civic epistemology. Sheila Jassanoff would say, is intensely, um, populist and democratic. We think everyone should have a say in how policy gets made. Spoiler alert: it doesn't actually work like that, but this is, this is sort of the idea that we have. And so we're constantly uncomfortable with the role that scientists play on scientific experts play in making policy. Because on the one hand, things are so complicated with new technologies like AI that we need people like Ali to explain them to us, but on the other hand were nervous because we don't understand and we have to trust Ali. And then what if he's not right? Or what if he has a different agenda that we don't understand? Right? And we get very anxious. So we're, we're in a, we're in a perpetual state since the late 19th century of anxiety about, um, science and technology is how I would sum up.

Carlos Mariscal: 00:21:53 So, so I, I think about, um, for example, uh, Andrew Wakefield says study that purported to find some link between autism and the MMR vaccine. And it turned out that not only was it a fraudulent, but he got his medical license revoked and everything, but, but it spawned an entire anti-vaccination movement, right? So is would that be another example of ways in which science can be a double edge sword or?

Lynda Martin: 00:22:20 Yeah, certainly it can be. But you know, for every, for every Andrew Wakefield out there, there is a DDT or three mile island. I mean there are situations in which legitimately scientists and the people who fund them in the people who support them, um, have created technologies that have ended up being very damaging. Um, and so people, we expect people to be able to,

to, to trust the one, you know, the good science and not trust the bad science. But this is a really complicated proposition for most people. And the, the, I would say that also the Anti-Vaccs Movement did not just come out of the, the Wakefield. Sure. But it certainly, it was certainly was a contributing factor. But kind of like Steven was talking about, we have to look at the whole network of factors that go into that. Other factors that have contributed to the anti-vaccination movement are the fact that we haven't had any major epidemics in this country in the memories of most of the parents that are now making these decisions about vaccination. I remember reading a comment by a baby boomer on a blog that said, you know, if any of these parents had had a childhood friend die of Polio, they wouldn't think twice before vaccinating their children. But our collective memory has lost the memory of some of these I'm epidemics that vaccinations treated. Um, you also have people like Wakefield who step out into the public very confidently and prophesied about, uh, you know, the effects of science and technology. Um, you also have the, uh, the gradual diminishment of public funding for science, which means there's less transparency in the way that science and technology and medicine get reported to public since the 70's is just scientific funding has fallen off a cliff, public scientific funding, it's gone more into private-private pockets, um, the funding of that work. So all of these factors together lead to a situation like we have with measles epidemics and antibiotics. Yeah. Yeah, yeah.

Carlos Mariscal: 00:23:59 Then actually, so, so maybe they'll, that takes us to, to Steven. Um, you, you're interested in the, the historical role of industrialization in our national mythology. Um, in, one of the things about our national mythology is that it covers up some dark history. Um, I just thought, do you have any, so we might be moving or we are in the middle of another revolution. Uh, uh, under most people would say we're in an information revolution. Now. Do you think there's any lessons that take from some of the darker aspects of the industrial revolution and how it affected us moving forward?

Stephen Pasqualina: 00:24:36 Yeah, I mean, many lessons I would say. Um, let's choose the, I answered that with another story, which is related to the light pollution story. Um, this urban planner named Robert Moses, who built much of the infrastructure of New York City, many of the bridges, um, the UN building, he was involved in building, um, and the parkways on Long Island that lead back and forth from your city into the eastern parts of Long Island. He was, uh, you know, he hated working class people and he hated blacks and Puerto Ricans. Um, and this is documented in a huge biography of him and called the Power Broker. He designed the

parkways in Long Island so that buses could not go down the parkways. Why? Because people of color and working class people were on the buses. He didn't want them having access to Jones Beach. Right. So this is an aspect in which the built material world, which we think of as neutral or just a given is encoded within the social relations that you could trace to an individual's kind of imagining of how the world's or how we ought to relate to one another. Um, I think that when we kind of valorize automation or invention, we often forget that these aspects to our encoded within social relations and that there's just countless examples from the past in which you can see that these technologies that are kind of fetishized as a game changing or life altering are actually perpetuating the same kind of mythologies that we inherited from the past.

Carlos Mariscal: 00:26:19 It seems like a, I forget, I think this is called the Matthew principle. We're wealth just accumulates. Right? Um, so I went to both Duke and New Mexico State University and I get alumni requests for, yeah, yeah. New Mexico Tech. Right. You did a, yeah. Yeah. So I went to New Mexico State University and I get alumni requests from both. Right. Um, but the people, a lot of the people that went to Duke University can donate a lot more money. And as a result, it gets to be a much, much richer university. And this happens with all, all of these industries, all of these universities. Right. Um, it just keeps accumulating in a, in a troubling way. Yeah. So, so maybe we should try to be a little bit more optimistic. Maybe. Maybe we can go to Ali here for very little. That's right. Um, okay, so, so you work on robotics, um, and it touches on some issues in assistive technologies and it might have implications for medicine, manufacturing, other areas. So in terms of change, maybe perhaps imminent change or just exciting change that you see in the, in the forefront, what areas do you think that we should be paying attention to?

Ali Tavakkoli: 00:27:33 Well, uh, obviously you're all probably heard, uh, Watson, right? The, uh, AI, um, that won The Jeopardy and, uh, obviously that's really a fun application for it. But what a lot of people don't know is that it's actually being used in the medical sciences for developing new treatments, new, uh, technologies and, you know, basically using the massive amount of thinking power, if you will, um, to find and solve problems that we cannot solve as human beings, even collectively, all 7 billion of us together. So, um, that's a really exciting area to see, to see exactly how these technologies are being used for developing new treatments. Uh, another project that actually is really interesting too, and that deals with the graphics, it's called Folding At Home. So it's a project that has run at Stanford. And, um, what they did is they

looked at a bunch of people who are using game consoles. And usually when you have your game console, um, you know, not playing on it, it's just basically sitting there and collecting dust so you can register your game console onto their websites. And, uh, then whenever you are not playing a game or not using your game console in any, any way, there are going to outsource the computations that they need to fold proteins. And they're using this to find basically to, to discover what are the folding mechanisms of proteins that basically co-create genetic anomalies. Um, uh, look at, uh, folding of these proteins, proteins to develop new treatments and stuff like that. And so without the technologies, you know, obviously, you know, the Internet is there to connect these machines, but then the graphics processing units that they're programming to do these stuff, um, um, you know, are very important aspects. So it's an anything coming back to the example about the Anti-Vacc-ers and bad science, uh, my philosophy is that, you know, good news is no news. So when we hear a news about, oh, something happened and you know, some scientists factor results, there are millions of scientists who actually do good science that basically benefits to society. So, uh, you know, getting caught into the, the news of the day, uh, basically it's kind of sort of distracts us from what's actually happening to, you know, to help in the long run. And obviously the fake news and bad science don't help. And so we do need to, as scientists to hold ourselves to a different standard, basically.

Carlos Mariscal: 00:29:56 Yeah, that's a good point. I mean, most science, the fact that the vast, vast, vast majority of scientists do good work. They care about their work, that they're doing it, not because they want to make lots of money, but because a, they think that it's important and interesting and exciting. Um, and we pay attention to the 0.1% of these situations that are, that are troubling and it's important that we, uh, squash them down as soon as possible.

Ali Tavakkoli: 00:30:19 Exactly. Exactly. Yeah. To detect the bad science and also to basically squash them, right? Right. Before they actually have societal impact. That's important.

Carlos Mariscal: 00:30:28 That's a great, uh, caviat. Thank you for that. Yeah. Um, so, so Linda, um, following up on that-

Lynda Martin: 00:30:35 I first want to disagree with what you guys were just talking about for a second. Let's do, um, I agree with you, but I actually disagree that the problem is like 1% of bad science. I think that the problem is that people don't understand the other 99% of science and understand that it is actually this science and

engineering are actually humanities in that they are done by people, right? And these are very, very bright people, extremely well trained people, very moral and ethical people. But there are people and sometimes they try really, really hard and they still get the wrong answer because we can't, we just can't predict all of the complexity in our environment. So we will make a chemical or we will design a machine and then it will have an, it will have unintended consequences because that's just what happens when we make technologies. The philosopher Bruno Latour talks about this as a proliferation, right? Of, so we, we have, uh, we make a drug. It creates a problem. We make another drug to treat that problem and then we make another drug to treat that problem. And that's what he calls the proliferation of hybrids. And this is just status quo for the modern condition. So I think what really need- we need to do is to help two people understand that that's how science works and that, yeah, sometimes it's going to make things that make us sick. Most of the time is going to make things that help us out a lot. But that is just how it works. And we need to just kind of adapt to that and not expect scientists and science to be perfect in some way to be like a superhuman or a godlike activity. And I've written a whole book about how that Godlike, uh, perception of science and technology came to be. It's very serious and it is, it is actually really tightly connected to religious thinking in the United States. So there's a, there's a whole genealogy of how that came into place, but we read, that's where we, I think in my opinion, we need to start is having people understand that this is a human and not a superhuman enterprise. Yeah. So, sorry, I'll get off the soapbox.

Carlos Mariscal: 00:32:19 I want to ask you about that yet. Um, but, but before that, one of the things that, um, somebody argued to me once is that we do a really horrible job educating people about science. We tell them about the products of science, the outcomes of science. We don't educate them on the process of science. And so when people here, uh, in the 1900's that, uh, eggs were that you, we used to think eggs are great for us. And then we discovered that they had cholesterol and then we thought, oh, they're bad for us. And then we discovered that there is a difference between good cholesterol and bad cholesterol. So now they're great for us again. People think the only thing people hear from that is that science keeps changing its mind. Um, they don't realize how difficult it is to do nutrition studies, for example. They don't realize how difficult this process is to disentangle all of these variables. Uh, so that was my soapbox, but yeah. Um, okay. So, so I wanted to ask you about, uh, about the, perhaps this will get into your book, but, um, you've written about scientists manufacturing certainty in an uncertain world, I think as your

phrase. Um, so we're talking about new technologies and we're talking about things going into the future. And these technologies may turn out to be a revolutionary. They make change all sorts of, uh, things from our daily lives. They might change everything. Do you think there's still any value in discussing a potentially revolutionary technologies given the fact that there's this uncertainty?

Lynda Martin: 00:33:49

Well, I'm a rhetorician so uncertainty is like, that's the baseline condition. There is no getting rid of it. I mean, if we ever get rid of uncertainty, I'm out of a job, you know? Um, but I'm not worried about it, uh, because there's no way that anyone can get rid of, of, of uncertainty. So what happens when I, when I say that scientists, manufacturer certainty, that's a different kind of certainty. It's probably best to think of it as conviction. So, um, it's political certainty. It's not technical certainty. There's no such thing as technical certainty doesn't exist. We never 100% understand anything. However, in Congress or in city council, you can for a moment have everyone come to a consensus about what to do about something. That conviction is what a congress or the city council look to scientists and engineers and technologists to provide them. And when scientists and technique and, and engineers and technologists try to hedge and try to be uncertain in case after case after case that I looked at this gets rejected by these, these governing bodies because what they want is this, they say, just tell us what to do. They literally say that there's like transcripts of like congressional hearings where a scientist is trying to say, well look, there's still like a 15% uncertainty about this. And, and the, the congress person will stop them and say, just tell us what to do. And so this is because this is because of a long historical relationship between political certainty on the one hand, which is a thing and technical certainty on the other hand, which is not a thing, right? And there's a long kind of uneasy relationship between these two. So in when discussing revolutionary technologies, of course they're going to be uncertain. But what's really interesting, and you'll see this happening with folks like Levandowski, with Elon Musk who has come out making um, you know, wide sweeping claims about AI and what it can and can't do, right? And, uh, Steve Wosniak also has done this to split plot back and forth on whether AI is going to kill us or not. These-these folks, and they're usually men step forward as profits and very confidently opine about gear. They, they're very certain about that Ai's going to kill us, our AI is not going to kill us. And this feeds right into this obsession that we have this need, this, this like addiction we have for political certainty in what is essentially always wanted to be a probabilistic and uncertain situation. So what we need is more voices at the

table, not just the white men talking about AI we need, we need women talking about it. We need a communities who are affected by self-driving cars and robots are placing their jobs. We need more voices in order to be able to negotiate uncertainty together. As a group of people, we have like thousands of years of experience as humans with coping, with uncertainty, in making decisions in the face of rampant, uncertain. We do it all. You do it every day when you get in your car, you do it every day when you decide whether or not to spend money from your bank account, right? You do it every day. When you make a decision about your health you are, you are finding conviction in a situation of ramping certainty. We have these skills, we just have to authorize ourselves to use them when it comes to scary things like AI that we think we don't understand and have no part in. In fact, we do have a part in it and we have to claim it and we have to use the skills we applied to our bank account to make decisions about self-driving cars.

Carlos Mariscal: 00:36:59 So I want to ask, um, Allie about Ai, is it going to kill us?

Ali Tavakkoli: 00:37:03 Sure. Well, uh, I can think of a quote from, um, Rodney Brooks is a, a professor from MIT, a works at the, uh, computer vision and uh, yeah, I mean, um, computer science and artificial intelligence lab and he is the inventor of I robot. Right? So, um, he basically was talking about, uh, whether robots are going to be killing us in the near future or distant future or whatever. Right. And you said, you know, the problem with making, uh, making a killer robot is that, or a killer AI for that matter is that it's someone along the way that's going to notice it. Um, to get there, you have to build on a lot of different technologies. You have to use a lot of different theoretical backgrounds, mathematical tools, and somebody would, would, would figure out that you are building your killer robot and they're going to stop you doing that. It's kind of like building a nuclear power plant or a nuclear bomb and you're in your living room. It's not gonna happen. So, um, you know, I mean obviously we can't never say never. So just for those of you who don't want to go to sleep tonight, it might happen, but I wouldn't be too worried about it this at least for the next problem in millennium or so. Um, but you know, the big question really is, uh, is for everybody to get involved and really understand, make science accessible, make technology accessible. That's really the important point because at end of the day I go to my lab, my graduate students are working on their little projects and you know, usually people don't ask us what we are doing and when to be. You're talking about what we are doing, we are talking in technical terms. So these kinds of forums are really, really

important and it needs to kind of, you know, we need to have a lot more of these opportunities for scientists to get together and with the, with the public to talk about, you know, what is it that we are doing? It may sound scary on paper a, I might not understand all of the equations that are going on, but if somebody tells me in a, in a way that I understand what's going on, I feel more, I feel a lot better about it. And I think that's important.

Carlos Mariscal: 00:39:12 Uh, yeah, I guess maybe this might be to both you and Steven. Perhaps it's about surveillance. Whichever one of you wants to take it on. Yeah. All right. So, um, we are being more, well, this is literally being recorded, uh, and being watched by a whole bunch of people who are making really uncomfortable eye contact with me right now. So the question is, uh, we are getting more and more surveilled, uh, now than any humans I've ever been in human history. Right. Um, should we be scared of that? Should, should that give us hope?

Ali Tavakkoli: 00:39:51 Very good question. It's like, at what point do we draw the line, the line between our security and our privacy? Right. And I just leave it at that. Uh, it's, you know, these two are contradictory to each other. If you want to have privacy, then you lose security. If you want to have absolute security, you lose absolute privacy. So that would be a question left to the politicians and to the general public. How much do you want to be surveilled versus feel secure?

Carlos Mariscal: 00:40:18 Right? Or maybe to Steven w what do you, uh, what, where's the limit between privacy and security?

Stephen Pasqualina: 00:40:24 I would just say that I think that the majority of decisions about the degree to which you were surveilled or not made democratically, um, there's a, a piece that came out in BuzzFeed recently that reported that based on an executive order from Donald Trump, uh, in the next two years, the United States is installing facial recognition software at for every international flight. And that is not theirs. There's very few legal kind of guardrails against how that information can be shared. I can't even fully anticipate how that would be shared with corporations or what would the effect on my life be with my face being shared with these different corporate bodies. Um, so I would just say that to go back to the points we were just talking about that both Ali and Lynda brought up about kind of getting more involved in science and technology. I fear that these domains are in some ways fundamentally undemocratic, that we don't have access to the knowledge you needed almost by necessity. I think this is a structural problem that's more

difficult than just appealing to the public. Right? How do you communicate, I mean, I deal with this myself as a humanist. How do you communicate complexity and uncertainty in sound bites? Right. So I'm not sure you ask this question about like is there any hope in the preponderance of surveillance? I, there are examples I look to the past for these. There are numerous examples of counter surveillance and anti-surveillance that I find kind of uplifting mostly symbolically though they have real effects like kind of everyday one that we are, we're all aware of now is um, you know, the filmings of police brutality with cell phone cameras. That's an example of using a surveillance technology to kind of resist the kind of state operated surveillance that we often think of when we think of that term. But you could answer that, but I'll leave it there for now.

Carlos Mariscal: 00:42:22 Excellent. So, um, in a little bit, uh, we're gonna turn it over to the audience. In fact, if anybody has questions, maybe raise your hand now or write them down now. Uh, so we can, uh, yeah, turn them. So, okay. Um, first let me, I want to wrap this, this discussion up with, uh, with, uh, asking Lynda this question about, um, the public, right public knowledge. So you've done some, uh, some work in which on, um, how the public, uh, interpret science, how they, uh, view visualizations and how they are educated by that. Um, so is there any way that we can that that can eliminate our discussion?

Lynda Martin 00:43:05 Oh yeah, definitely. Well, first we have to start with the word Publics and not public. Um, because um, this is something that rhetoricians understand is that at any time someone says something, you know, if Ali publishes a paper, if a Elon Musk makes a statement, anytime that goes out into the world, it creates a public of the people who listened to it. And Elon Musk is especially noticeable this way right, they're called the Musketeers. Is he any one of his tweets gathers this group of people who retweet and discuss. And that is a public right. And then there's another public that I'm part of that pays no attention to Elon Musk whatsoever, unless he shows up, you know, in a student's thesis or something. So we are, we are many, many publics and these publics coalesce around a moments of crisis or statements that people make and they can dissipate again too.So they're very, the, the notion of public is actually many and it is very dynamic. So that's something that's important. So it makes studying the public and how the public understands science really difficult because there are science says, and there are publics and they're all bumping into each other like bubbles that overlap all the time and then popping and then starting up again and then popping. So rhetoricians like me always have to pay attention to the time and the place

of any interaction and we can't make, we can't make sweeping generalizations across those. Um, so I would say in terms of studying visualization, um, I'd make a couple of points that go back to some things that Stephen and I'm Ali both said. First of all was visualization. It's a very, very old technique, uh, for communicating. It's actually the oldest technique. We were making hand prints on caves and drawing cows before we were a writing anything down. I mean, thousands of years before we were writing anything down. So visualization is actually very, very old. And interestingly, um, Aristotle who sort of the founding father of rhetoric talked a lot about visualization. He talked about “Phantasia”, which is the ability to image something in your head, imagine something and make it real to yourself. And this is the foundation for the entire discipline of rhetoric and largely the discipline of philosophy as well, that ability to make present to yourself something that doesn't exist. And this is actually the root of Tech Nais, which is craft. It's a way of linking things and understanding them, which is the root of technology. So when Stephen says that technology has really historical and really old, it's really old, like it before it, before a robot ever gets built, it's in someone's head, right? That's not the only place that is. I'm not saying it's the only place it is. Um, but it is largely in someone's head. So the Tech Nais starts in the human mind and the human imagination as a Phantasia it before it ever becomes a built object. So that's one thing I would say about visualization is very, very old and it is actually completely key to a human visualizations actually completely key to the making of technology. The other thing that I would say, it also kind of taps into something that Stephen said about racism. I'm studying right now. I'm doing a project with Katherine Fusco in the English Department. We were studying W. E. B. Dubois, the famous African American and writer and novelist. He did a series of wonderful, wonderful technical graphics that were shown at the 1900 Paris exposition or beautiful data visualizations. And uh, in in the course of studying these visualizations, Katherine and I came across something really heartbreaking, which is that W. E. B. Dubois himself started out his career as a sociologist, absolutely sure that science was going to be able to free African Americans from racism. And he ended up discovering 20 years later that science was part of the apparatus that was keeping African Americans oppressed and he quit doing science he turned to rhetoric and public advocacy instead cause he just lost his faith in science and he didn't lose, he didn't lose his faith because of some sort of like deal that was struck between sociologists and Republicans or Democrats at the time. He lost his faith because racism was baked into the methods that he was using, who got counted in, who didn't get counted. Who is considered a

civilization worth studying and who was not considered a civilization where studying. So there was a very fundamental linkage between the problems that were oppressing his people and the methods that he had been taught in Europe and the United States to study things. So, and you can see these, you can see these same methods play out in his visualizations. So I would, I make two comments about visualizations. They are very old and they're very, uh, and they're very useful. I'm very hopeful and they're also very dangerous and very sad.

Carlos Mariscal: 00:47:30 Um, yeah, maybe, maybe some of our audience has some, a happier, good questions that can, uh, can I just-?

Audience Member 1: 00:47:39 So in relating to the surveillance thing because I'm very interested in, into that topic for many reasons and because I like pirates and stuff and because of my life, I don't know. A, I was, I was wondering if, uh, after listen to you about poly-surveillance and all that stuff, which is super interesting. I was thinking if we actually think that is the opposite in terms of if massive surveillance, like why we experiment experimenting now, right? Like it's not only like public, like a the government spying on us, but also like all the social media, like all the momentary surveillance if a, if, if a term, I don't know. Eh, so the thing that maybe that massive surveillance could be at the same time, a means to domesticate the power of surveillance itself. Like I'm thinking about my mom, like she was, she said baby boomer and the, I don't want to, you know, I'm a millenial but now we'll have centennials like it's a very complex world, but she, um, she's, she's a journalist and she was like she is not working, eh, practicing that anymore. But she's very into information and stuff like that. But she was also a victim of an illegal surveillance of the FBI in Puerto Rico. And she had a carpeta or binder back in the days, which was like an illegal surveillance in the 70s and stuff and even though she's a human being like very prone to information and surveillance, at some point she has a Twitter where she says that what she thinks and stuff like that. But she doesn't have a Facebook, she will never post a picture of herself eating at some restaurant. You know like there's like she has like this memory of these illegal surveillance, however she is a journalist and all that stuff. So maybe like this also like massive surveillance is also, it could be turned like called turn as you were. I was, you were saying they really like your phrase about Eh, about the community understanding like how would they want to negotiate on certainty. So it's, I want to transfer that into that topic of surveillance in terms of maybe that massive surveillance could be also like a measure of counter surveillance in terms of people just resign that I don't know. Like do you

think it could be, because I'm worried about my life as well. I don't know.

Stephen Pasqualina: 00:50:16 I'm very open and I hope somebody challenges me on this because I don't like my answer, but my thought is that we take part in our own surveillance and that's kind of the complexity that we have to face. It's not just some big bad rich executives that are looking down on us and selling our information. We volunteer that information and that's become embedded into our cultural apparatus. I actively participate in my own surveillance. I get these ads on Instagram and I'm like, I know you just listened to me. I was talking about Bark Thins and now I see an ad for Bark Thins. Um, yeah, I, I think that there is a kind of dialectical relationship between culture and these economic and corporate structures that we encounter and that we inevitably come to take part in these things that seem alien. I remember when Facebook first came out, I was in college and a friend of mine said, you got to sign up for Facebook. I said, what is it? She described it and I said, so wait a second, I'm going to put my name and pictures of myself on the Internet. That's like exactly what my mom told me not to do. And now that's totally normalized. Right. And we continue to, to take part in that culture of surveillance that's embedded into social media. So, uh, I would just say that I'm not sure that there's, at least in my imagination, a method of counter surveillance that can resist this large apparatus that we've become complicit within.

Carlos Mariscal: 00:51:47 Great. Any other questions over here?

Lynda Martin: 00:51:51 I just have just a really quick comment on that. There was a really great Ted Talk by an artist in Florida who got mistakenly, ah, this is kind of during like, you know, the 9/11 stuff I Patriot Act stuff. He got mistakenly a linked to a hit the same last name as someone who was like a known terrorist. And so he, he was a visual artist and the FBI, uh, detained him for six hours at the airport, questioned him, and then put him under a program of a survey of daily surveillance where they would call him. They would harass him, they would check his email. And so what he did as an art installation, he started taking pictures of everything he did every day, every meal he ate, every room he was in, he did it, I want to say on a five minute interval. And then he would post those pictures to, he was, he was required to check in every day. So he posted all of those pictures to the FBI page and he said his strategy, he subversive strategy was to flood them with so much data that they would not be able to like make heads or tails out of it. So anyway, it's a great story.

Ali Tavakkoli: 00:52:53 So before the question, if I may also add, if, so that's what AI could actually sort of help and in terms of, you know, if, if we have all these massive amount of data out there for the government for example, to look at them, we might feel comfortable if not a person is looking at them, but the machine is looking at all these and then end up picking things that they think are picking. So it's kind of like sort of make us feel better, I guess. Right. That's a good if application for AI there.

Carlos Mariscal: 00:53:19 Yeah. Over here. Yeah.

Audience Member 2: 00:53:20 Okay. So Stephen, like earlier you were talking about that like to learn some of the lessons, like the industrial revolution, right? And you're like you said something along the lines of, don't ask me to be like, I'm optimistic about it. Right. And do you think that's because of the way that we like tell history, like the way that we tell you linearly like leads to things like, I don't know, Western imperialism, right. And like supremacy. And do you think those are things that like choke the past and maybe the future when it comes to like scientific innovation?

Stephen Pasqualina: 00:53:50 That is a very good, challenging question. Um, yeah, my research is largely about how we imagine and I represent history and I think that there's absolutely relationship between colonial thinking and linear historiography that imagines time moving progressively. Um, and I think that a model for me of revolutionary thinking would be a cultural critic named Walter. Benjamin who kind of gives us a vocabulary for thinking nonlinearly about history? He sees it, he, you know, you advocates through this kind of method of seizing on moments from the past and identifying her own moment with these moments of possibility, um, that often get kind of swept away in his official historical narratives. Um, does that answer your question sufficiently? Yeah. I, there's lots to say about this. This is a challenging question, but yeah, that's what I would say for now.

Carlos Mariscal: 00:54:46 Hey, maybe we should, uh, start to, to wind down. Um, and I'd like to see if any of our panelists have any closing thoughts of thing, lessons that they want us to take away from tonight. Um, does anybody want to jump in first? Yeah.

Lynda Martin: 00:55:04 So I think that, you know, Stephen's absolutely right and the issues that we have about why, you know, and then the concerns that Ali has about how science is not communicated well to the public are structural. They're not going to be fixed by, I mean, this is part of it, but this is not going to fix it. Like what we're doing here right now. Um, so there need to be

structural changes, right? So, but I would say that it's not entirely hopeless. So I just got back from Colombia and I gave a couple of talks. They're at a university and at a book fair in Colombia and the Colombian government has a program called the “Apropiación De La Ciencia”. And the idea there, the word Apropiación means appropriation, like people taking science for themselves, but it also means fitting science better to various public. So it has kind of, that word has two valances to it that our English word doesn't really have. But, uh, so they're, they're actually looking at trying to make structural changes in the way science is done, not communicated, done in Colombia. And so a good example is they have something called forensic civicism. So there are unfortunately, as a result of the narcotic wars in the 1980s, there were, in the political wars, there are a lot of mass burials and, uh, where no identifying information. So groups of citizens have banded together now with forensic scientists to do exhumations of these burial grounds and work together as citizen scientists and scientists to these bodies and repatriate them to their families. So this is an example of, of people with a vested interest actually learning and doing science alongside the scientists in order to accomplish something that is of grave concern and reduces uncertainty for that community. So these things are not impossible. They are they difficult. Yes, but they're not impossible.

Carlos Mariscal: 00:56:42 Excellent. Uh, Ali?

Ali Tavakkoli: 00:56:44 Thank you. Yes. So, um, I want to say two things. One is, um, I kept thinking about a PhD comic that I saw a while ago. Uh, I love them. I know, right? It's great. So, uh, anyway, and it's, it, it was one of the, uh, one of the comments was about, it was about this, basically what you were talking about, about what scientists do and what publics understand. It's kind of like causation and correlation type of thing. It's like, Eh, you know, it just Grad student discovered a, that leads to b, and then it goes through the media cycle and at the end of the day, a kills everybody or something like that. So the question here is that, you know, so, so the thing that I want to say is really, uh, it's the idea on that science is not democratic and accessible is, is really something that is a given. It's a fact. And we need to sort of come up with ways to circumvent this problem. And, um, great people like, you know, Neil deGrasse Tyson who write really accessible books on, um, you know, astrophysics and all these really, really complicated phenomenon that are very, very accessible. So it shows that it can be done. And so, uh, we need to find ways to do it as scientists, uh, find, uh, I guess spokesperson who can convey the complexities that are discovered in a, in an accessible way. And then for the, for the

policy makers to actually make it accessible as well. So one of the things that I want people to know is that yes, the public funding that we get from places like National Science Foundation, the Department of Defense that support our research, they actually require us to have public data publicly accessible or methods publicly accessible. And if you go on NSFS website, you would be able to see every single and read every single project description or at least a summary of the project description right there on their website. So, um, the accessibility is a question. The availability is a question and it's really a question of how politicians and the public and us get together and you know, try to make it transparent.

Stephen Pasqualina: 00:58:45 Awesome. Thanks. Stephen?

Speaker 5: 00:58:48 So going back to your opening question about the role of the humanities and new technology, I think that for me, my interest in this topic is that the problem that technology presents us as deeply aesthetic and it's phenomenological. And these are the domains of the humanities. For instance, this smartphone, my visual experience, my tactile experience of using the smart phone is necessarily divorced from the socioeconomic conditions that produced it. The natural resource extraction that produced it, the labor that went into it. So my work is oriented toward finding aesthetic models that help us overcome that problem, which I don't know if it's doable, but the humanities takes up these infinite tasks often. Right. So I just would close by saying that we need to find aesthetic models and ways of verbalizing the deeply connected relation between our kind of visual experience and these large networks that exceed that experience.

Carlos Mariscal: 00:59:52 Awesome. Uh, I'd just like to put our hands together and thank our panel

Audience: 00:59:57 [applause].

Carlos Mariscal: 01:00:04 I also want to thank the Laughing Planet again for hosting a Daniel Enrique Perez from the Core Humanities Department, Deborah Moddelmog in the College of Liberal Arts in the University of Nevada, Reno, and the entire Reno community for this spectacular evening. In addition, I'd like to think a Bretton Rodriguez, Chris Stancil, dozens of fantastic panelists like these, uh, throughout the year. Um, I guess moderators are texts, uh, Tim here, um, for year one of Thought on Tap. I'm Carlos Mariscal. Thank you. And good night.

END.