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SFU Public Square

Joy Johnson, Chief Leanne Joe, Wendy Hui Kyong Chun

machine learning, data analysis, homophily, correlation, social media,
privacy

You are live, Chief Leanne Joe.

Thank you. I was having some technical difficulties there. Good evening, everyone. I would like to offer a welcoming to the traditional territories of the Squamish, Tsleil-Waututh, and Musqueam territories. We are the -- Coast Salish people of the greater Vancouver area. I am one of 16 hereditary chiefs. I am the first ever chief -- in my family. I became chief at the young age of 30 years old, carried it alongside my father until he passed, and I want to open up with some groundedness and connectedness to the work that Joy and Wendy are going to share tonight and the discussion around the work and that we open our hearts and minds to this new knowledge and creating spaces of curiosity and transformation moving forward with this knowledge and also be grounded in the fact that my ancestors have roamed the traditional unceded lands of these territories for time immemorial, and those footsteps constantly remind us to walk in reciprocity with Mother Earth.

Thank you for being here tonight. I welcome you to our territory, and I hope there is fantastic discussion and a lot to be learned this evening. Thank you for being with us.

Thank you ever so much, Chief Leanne Joe, for that welcome. I am aware of the fact

that this is a week where we are recognizing what has happened with our Indian Residential Schools. I am wearing my orange shirt all week. I think it's really important for us to stand in solidarity and to move towards reconciliation, so I particularly appreciate your words. I want to acknowledge that I am privileged to be speaking today on the unceded -- traditional territories of the x m k y m (Musqueam), S wxwú7mesh Úxwumixw (Squamish), and s lilw ta (Tseil-Waututh).

This is an event I look forward to on a regular basis. Tonight's speaker is Wendy Hui Kyong Chun. She is going to address us shortly on 'Discriminating Data'. I'm very intrigued and looking forward to this. As you know, the President's Faculty Lectures are part of SFU Public Square. It is a signature initiative and really part of our vision to be Canada's engaged University. I think it's so important to provide opportunities for us to engage and hear from leading researchers, and these lectures really are designed to enlighten us, to help us learn some new things, but also to promote dialogue on important matters of public interest.

There are going to be six lectures in this series, and this is the first. We are exploring the theme of equity and justice from a variety of different disciplinary perspectives. I think it's a really fitting topic for our times, and it's a really great way to share ideas and to connect. I'm really happy to be here in person in the theater and to have people in an audience with me. We are broadcasting live from the World Arts Center at SFU Woodward's in downtown Vancouver, and I want to thank the SFU Woodward's team for -- A/V and technical support.

We don't have much of an in person audience – there are a few people, and I am appreciative. We are hoping in the future that we will be able to increase our neighbors and welcome all of you here as we return to in-person events.

This is a bit of a hybrid format for us, and we are really excited to be experimenting with it. For those of you who are using Zoom, please feel free to introduce yourselves right now, and you can do so in the chat. Let us know where you are joining from. We would love to know who is in the audience tonight. I also want to let you know that using the Zoom chat function, you can type your questions into that at any point in the lecture. I'm going to be scanning those questions and collecting it for our Q&A as we move into that portion of the event. I want to also note that this lecture is being recorded, and it will be available on the SFU Public Square website and YouTube channel.

I would also like to remind you of our community guidelines, which are posted on this slide, as well as in the chat box. Above all, there is going to be zero tolerance for those who promote violence or discrimination against others on the basis of race, ethnicity, national origin, sexual identity, gender identity, religious identity, age, or disability.

Anyone who incites harm towards other participants during the event will be removed at the discretion of our technical team, so thank you for monitoring this for us.

I also encourage you not to assume pronouns or gender knowledge based on someone's name or appearance. People refer to people using their usernames or the pronouns that are provided on Zoom.

So, that's the housekeeping. Let me now move on to the main event this evening, and that is to introduce our keynote speaker for this evening, Wendy Hui Kyong Chun. She is Canada's 150 research chair in new-media, and I just want to say we were so honored to have Wendy join us, and this is a very prestigious chair. It's amazing that you hold this chair and that you have been able to join us at Simon Fraser University. Wendy is an amazing scholar. She is the author of several works, including 'Discriminating Data'. This is a work that is forthcoming from MIT Press in 2021. She has three other books published by MIT Press, 'Updating to Remain the Same: Habitual New Media' and 'Programmed Visions: Software and Memory' and 'Control and Freedom: Power and Paranoia in the Age of Fiber Optics'. These are fantastic titles, I have to say!

Wendy was the professor and chair of the Department of Modern Culture and Media at Brown University and held numerous visiting chairs and fellowships at institutions such as Harvard University, the Annenberg School for Communication at the University of Pennsylvania, and the Institute for advanced studies in Princeton, New Jersey, and The Guggenheim, the American Council of learned societies, and The American Academy in Berlin.

I think you have a sense of how lucky we are to have Wendy in our midst. Tonight, we are excited to be hearing her presentation, 'Discriminating Data'. Please join me. You can clap using m e n m a z i n

(Applause)

Hello, everybody! Thank you so much for the introduction. I feel really lucky to be here, and thank you Chief Leanne Joe for welcoming us. So it's amazing to be here in the SFU Woodward's building even given this altered format. Right now, I am imagining you all in the seats as opposed to these little squares in front of me. Thank you to my wonderful colleagues for being here. It's especially amazing to be part of this series that takes on questions of equity and justice, and I can't wait to hear the other speakers. This series, this conversation couldn't be more timely. The challenges we face today in terms of equity and justice feel overwhelming. So every day, we read another news item, we hear another story, and we seem at a loss. This all seems so

social media and of predictive algorithms on equity and justice.

So... A lot of people have blamed the internet for the mess we are in. They blame social media for misinformation, polarization, for spreading conspiracy theories, and -- hate. A recent popular Netflix docudrama filled with remorseful Silicon Valley executives, 'The Social Dilemma' for example, argues that the challenges social media presents are new and unprecedented. They are new and unprecedented because recommender systems, they have argued, have hacked the human psyche. Personalized machine learning recommender systems have been made as lab rats, manipulated like marionettes by evil tech dudes and algorithms that evolve faster than us. So, it's game over for humanity.

At the same time, though, other folks have pointed out that this isn't new. Hatred, fear, racism... They have been around for a long time, and blaming tech for everything keeps us from taking on fundamental issues. What's key is that it's not an either/or. If both of these seem persuasive, it's because they are part of the same chorus. This experiment isn't new. This history isn't over. How we treat humans can't be separated from how we treat and imagine machines. Through social media networks, we habitually relive this history. Social media networks and predictive programs as they are currently formed and implemented embed within themselves past mistakes. Past mistakes, such as segregation, internment, and eugenics. By doing so, they make it really difficult for us to imagine and live a different future.

To make this clear, I want us to engage in a collective thought experiment. First of all,

imagine what we call an image of a mythic yet flawed past. I will supply a few. Here's the so-called "Perfect white and suburban nuclear family" living in a segregated plan community in which everything is the same. Here is Lanna, the Playboy centerfold image that people argue lies at the heart of image processing. Here are US celebrities, which are the training set -- for many facial recognition systems. Here are Japanese American children being educated in internment camps during World War II. Imagine that this deep fake past became the only past, that images of civil rights activists and protests.OK, so there should be another image. This is what thought experiments are about, right? This is the image that you were supposed to no longer see, which is the image of civil rights activists as well as integrated schools. Imagine a world in which nothing can change from this deep fake past. Imagine a world where nothing can change from the steep fake past, as indeed this Prezi is trying to do.

'Discriminating Data' explores how data analytics and machine learning create agitated clusters of comforting rage by encoding legacies of segregation, eugenics, and multiculturalism. By taking on these issues, 'Discriminating Data' is in dialogue with other books and articles written by Kathy O'Neill, Safiya Noble, who won the genius grant today. Kate Crawford, Virginia Eubanks, and so many others. 'Discriminating Data' does five basic things. First, to expose and investigate how ignoring differences amplifies discrimination. So, how ignoring race ignorantly promotes racism. And every day, we hear a new story – what Kathy O'Neill has caused weapons of -- mass destruction. From discriminatory predictive policing and risk assessment programs to unfair hiring practices.

The classic example of this, which almost everyone mentions, is Compass. Compass is a software program used by some US courts to predict the rest of recidivism – to determine how likely someone is to commit another crime. Inmates and law enforcement are asked to fill out questionnaires. Compass then spits out a number based on the answers. This score is used within sentencing and parole. Now, the problem is that Compass has been shown to discriminate against racial minorities. Here, you see the cover of an award-winning article on Compass. Compass has actually been sued for discrimination, although not yet successfully, in part because it's algorithm is proprietary. It's a trade secret.

This shows how factors such as race and employment are linked...Some of these are not as important as others. It's really stuck here. (Laughs) OK! Age and dirty data play a

larger role than these proxies, which doesn't mean that Compass isn't racist. If you consider the over and under policing of certain neighborhoods in Canada and the United States, dirty data and age of first arrest, like education and employment, are proxies for racism if not race.

It's really crucial that we understand the difference between the truth, because Compass was originally sold as solving the problem of racism by eradicating individual lives. It was introduced during the Obama administration, and "because a program can't see race, it can't be racist." This stems from the idea that racism stems from visual markers of race, and pretending that visual markers don't exist somehow solves the problem of racism. We shouldn't be surprised that things have turned out so poorly. Rewriting political and social problems, as one's that technology can and should solve, never goes well. This ignorance isn't you, and the failures of this hopeful ignorance isn't new. These failures also drive fears over the AI apocalypse. So, AI is threatening right now because AI and surveillance is sold as modern-day servants or slaves. This framing, with all of its baggage – so, what could go wrong in a society ran by servants or slaves, right? – Provokes fear of them as our masters. These fears and dreams are, as Jenny has pointed out, profoundly raced and gendered.

One thing I do is to address the effect of hopeful ignorance. The best way to avoid the NAI apocalypse is to treat everyone and everything with respect, to follow the call to treat everyone as a lovely human, and to follow Jason Edward Lewis and others' call for us to make kin with our machines. For freedom is only freedom if it is freedom for all.

Anxieties over artificial intelligence and discriminatory algorithms actually open up opportunities for action. Right now, civil rights and civil liberty activists are coming together and successfully, as you can see, to the challenges against facial recognition

So networks magnetize and disintegrate masses and then consolidate these angry clusters of sameness around a common enemy. So now, we come predictable not by following a mainstream or by following a norm, but rather by deviating slightly from the norm with others. In other words, learning is parsimonious repetition. The problem is not that it's solely trained on dirty or selective data. Again, Hollywood celebrities lie at the heart of many facial recognition training sets. In here, you see so-called "Deep fakes" produced using this dataset. The problem isn't simply, as this example makes clear, at a profound level ground truth equals deep fakes, but that these so-called predictive programs are verified as true only if they reproduce this data.

So Compass, like all predictive programs, wasn't actually tested on its ability to predict the future. It was tested on its ability to produce the past. So, past that was hidden during the training phase or out of said data. In these models, truth equals consistent repetition, and this matters because these programs just don't predict the future, they also put it in place. The decisions that Compass makes actually cement and amplifies any inequalities. These programs are disruptive – and Silicon Valley is all about disruption – not because they offer new and unforeseen features, but rather because they close the future. They close the future to repeating the past so that they automate the past mistakes so we can no longer learn from them. If this is so, what can we do? Step 4 is to use existing AI systems to diagnose current inequalities. To keep the future open, I argue we need to be a little perverse. We actually need to read these predictive

programs against the grain as evidence for past discrimination.

So, consider this. Recently, there was news that Amazon scrapped its secret hiring program because it was shown to discriminate against women. If you had "women" anywhere in your CV, you lost a point. Rather than simply discarding these programs, what if we use them as evidence? Almost every hiring decision Amazon made within a certain program was used to train this program, so what if we thank them for meticulously documenting their discrimination? And think again of Compass, right? Compass presumes that racism stems from individual bias, and as many of you are aware, I'm sure, sentencing actually varies with a judge's circadian rhythms. That's why a good trial lawyer will get your trial after lunch, when the judge is happier. If you go before lunch, you are going to get a harsher sentence. Compass made things more consistent by getting rid of individual bias, but they replaced individual bias with institutional bias. Again, to read against the grain, what Compass shows us that rhythm is an institutional rather than individual problem.

What if we use these programs with all these limitations as historical tools and theoretical probes? In other words, what if we treated them like we treat global climate change models? Like global climate change models show us the most likely future based on the past, not so we will accept or embrace this future, but rather so we will change it. And global climate change models make clear the difference between being true and being correct. The point of global climate change models isn't validation. It isn't to determine how accurate any given prediction is. The point is to act in such a way that

we don't have to verify these predictions. The point is not to produce these graphs. So when a model shows a 2% increase in mean temperature, we try to fix the world rather than the model. And this should arguably be our reaction to Compass. Rather than try to fix the program, we should try to fix the world because Compass shows us how racism works.

Now, the problem with global climate change models, of course, is that we've known them to be true for a long time, and nothing has happened. Which raises the question: do we really need more models? For whom is global climate change or racism news? And how can we avoid producing models that document the obvious and that serve as alibis for action?

Which brings me to the final step, the ultimate step, which is to create different worlds, different algorithms, different relations that engage the richness of knowledge flowing around us. To listen with others, for the poetry, the refrains, and the noise a world is making. In the book, I argue that not only the problem, but the outlines of a solution, can emerge there. Not because technology lives outside of culture but rather because culture and technology are intimately intertwined. The past history isn't lost. It's a space of potential. If only we could unlearn our exploitative relationship to the past and engage those relegated to the past as potential companions rather than as sources of information.

The book revisits and emphasizes the populations that lie at the heart of our networks

and defaults. And here, you see them on the screen. So returning briefly to the housing study that coined the term "homophily", the Columbia Bureau of Applied Sociological Research conducted a study of two public housing projects. Craftown was a project that was cooperatively owned by some 700 white families in New Jersey, and Hilltown was a biracial low-wage project of about 800 families in western Pennsylvania.

They didn't assume homophily to always be true. Instead, they asked, "When do we have homophily, and when do we have heterophily?" They felt that status homophily for race and gender was actually driven by value homophily, the sharing of values. To prove this, they concentrated on the over-selection of white liberals and illiberals as friends, where "friends" equals one of your closest friends. To make this point, they actually throughout the responses of all the Black residents. They argued that there were too few illiberal and ambivalent black residents with friends. "Liberal" meant you believed in biracial housing and thought the residents got along.

term homophily, to produce this network of friends, they ignored the responses of Black residents, but these Black residents and these white ambivalents lie within the white spaces that make network connections possible. Right? They are the gaps that make networks possible.

Here, you see a model that Albrecht, Brilliant PhD student at the Institute, produced. These connections were added back. The history of networks is filled with sociological studies of others who ground our concepts and make connections possible, even as they are made to disappear. Such as Japanese-Americans, who were interned in camps during World War II. Studying these internees was actually crucial to the development of sentiment analysis and techniques for managing people in occupied plants. As many of you are aware, sentiment analysis is actually what's key to behaviorist manipulation in social media now. So, these populations, these connections are still there. They inhabit correlation, homophily, recognition, proxies, and authenticity, and we live in their spaces

There have been all sorts of issues, but the music that we started with was amazing!
This is amazing. Thank you all for making this possible. I know this has been really difficult, so thank you all.

I'm going to start with a few questions, and to everyone who is joining us online, I encourage you to post your questions in the chat as well. I get to start, and I guess I'm kind of struggling with how we protect ourselves from all of this! You have given us some ideas, but for those of us who are engaged in social media or in media as a whole, how do we raise our awareness and start to think about these influences?

What's so fascinating when you think about the popularity of something like 'The Social Dilemma' is that there is a real awareness that something is happening among people,

will cause other recommendations to be put in place. So one thing I always say is that – have you watched 'The Social Dilemma' at all?

I have, yes.

I always say we are not marionettes. We are characters. If you think about how things like even Instagram operate, people know they are characters. They create themselves. One thing is to think of ourselves as characters and to resist some of the rhetoric around simple behaviorist action. The other thing is to say... What I always found fascinating about our networks, because my background is in hardware engineering, is because if you think about how your network operates – right now, you are downloading everybody's traffic.

Yep!

What happens is that your wireless card just erases what's not directly addressed to its wireless card. You actually don't see what your card is doing unless you put it in

promiscuous mode. Promiscuous mode is a technical term.

interview them as if they are fundamentally being in public and then to say, "If we are in public, what we need are public rights. We need to be able to avoid it, be vulnerable, take risks, and be protected." If we view ourselves and that way and take seriously this wonderful – I always think of new media as wonderfully creepy.

It is, yes.

If we take this wonderful creepiness seriously, then what other interactions could open up? The other thing I think we need to do is- You might know people who are heterosexual.

Maybe one or two.

I think a lot of people do. But in the world of homophily, heterosexuality is actually impossible. Gender homophily is supposed to be 100%, but this happens all the time! We might believe in the Ella trustee. Electricity always seems to work and goes from

negative to positive. The whole world is so much richer with these connections than what this gives us, so part of this is just to say, "Let's reach out to this world."

that looks like and to move the conversation away from certain notions.

That's very interesting. So... I think I might be answering this question myself, but is it possible to have a better internet, or is this just... We have to deal and figure out how to deal with the mess that is the internet and media right now?

what practical advice can you give to them so that the data we have is discrimination-free and the mistakes you see today are essentially not repeated tomorrow or in the future?

I think that the most important thing for undergraduate students is to constantly question and to not accept what's given to you as a default, because there's always going to be biases and always going to be questions, and I was... When I was in engineering as an undergraduate, I ended up doing a double major in English literature and systems design engineering because I... There were so many questions that I had that couldn't be answered in engineering alone, and I think what's really key is to move beyond what's given.

I actually had quite a traumatic experience when I was in engineering. It's when the Montréal Massacre happened, so a man walked into an engineering classroom, separated the men and the women, and started shooting the women. I remember I was writing my exam, the guys behind me were like, "Did you hear what happened in Montréal? All these women were killed..." And this was just another sick engineering joke... It was really traumatic for me when I found out this was true because for me, I wanted to believe that the engineering classroom, which is such a sacred space – it is 80 of us kids that go through five years together, right? That this was a space in which something like discrimination and sexism, even though I saw it and even though I went

to these work terms and felt like a pair of walking ovaries when I was walking around... I so wanted not to see it. It is really important to move out, so I would encourage you to take courses elsewhere, to ask questions, to engage with the knowledge around you, to walk around it many, many times.

Thank you.

That was a great question, wasn't it? I'm really interested in your disciplinary history because it really does present this opportunity to kind of think about both the hardware side and where these things are coming from, as well as the more social side. That's great. We are getting questions online, and I'm going to start to ask them, but I also want to say to everybody – and try to manage this technology. I'm doing pretty well on the whole. You can also raise your hand, and if you want to raise your hand and ask your question in person, you can do that, and I will check that out. I will also check in with some of these people to see if you want to ask the question yourself, and if I don't hear from you, I will ask it on your behalf.

I have a question from B Bogart, and do you want to ask your question? Or shall I pose it for you? It's a great question. Hearing no response, I will pose it for them. Wendy, could you elaborate on the difference between dirá ~~MM~~ R

data collection is always dirty? I.e., it exists in a social context, involves uneven power dynamics between collectors and collectees, and unbiased, i.e. random sample, seems impossible in social contexts of inequity. Is all data dirty to a degree?

That's a great question.

See! I agree.

What is crucial about the question is it actually brings up the fact that "clean" data is actually a verb. "Cleaning" data. If you actually think through how clean operates – and this is a great presentation that Amy Harris gave for critical data studies in the graduate seminar, where she talked about this. What's interesting about the notion is actually what clean data reveals is the fact that cleaning itself is an action that transference data, and it is because we clean data we presume that there is something like dirty data. It's a really weird sort of... If you think of it that way, it actually brings up the fact that, as they pointed out, not only is all data dirty – or as Lisa (Unknown Name) and others have argued, raw data is an oxymoron. We always cook with this data. The data is always prepped in some way. There is always some perforation that goes into it. The cleaning

process is itself a very problematic process, and it is only because certain things have been cleaned a certain way that we presume there exists this other thing called "dirty data".

It's interesting because even the notion of cleaning data is problematic. I guess you are so jesting that to some degree, because he removes outliers or removes...

Exactly.

you remove data you can't explain. Some contractual aspects may be lost, and to shape things into a particular view. That's really fascinating to think about. We are kind of kidding ourselves a bit with this notion of clean data.

Yes.

Good to know. This is a question coming from Keshav, and I will ask if you want to turn

your microphone on and ask the question? But I am also happy to pose it. The question is, "Wendy, could you speak some more about the links you mentioned between sentiment analysis and internment/control of people? And thank you for an amazing talk." That was in regard to the internment camp. How did that sentiment analysis come up?

All internment camps were also sites of sociological study, and there was one in particular in Arizona that was the site of the Bureau of Sociological Research. It was run by somebody named Alexander Layton, who was a psychiatrist, and he wrote a book called 'Governing of Men', which actually influenced the housing study we discussed. It's a really strange book. It starts with a general strike in the internment camps. The idea was... This camp was run by the Office of Indian Affairs as well as the War Relocation Agency. They thought that somehow, these people who were interned were just naturally working for really bad wages and living in really bad conditions and somehow be OK with it, that this would show American generosity.

So, there was a general strike, and Layton starts by describing the term "strike" and says what is most important about this strike is whether this is right or wrong – should the government do something or not? – But rather, what about this is unchanging in human behavior. Then, he uses the Japanese internment camp to understand how people under stress operate.

Fascinating. I would also say to those of you who are posing questions online, feel free to follow-up if you want more information on any one of the points that Wendy is raising. I will remind you as well that you can put your hand up and ask your question as well, and we will listen to you.

Here is a question from Marcus. The question is, "Wendy, when you talk about the data being used in a different and more purposeful way as a way of articulating the systems that have defined us, who would do that? It strikes me that the majority of those doing this work are doing it within profit-making paradigms. In what context do you imagine that work, as you described it, is taking place?"

Well... SFU.

(Laughter)

I really think universities and other places are where this is being done and thought through. I will also point out Julio, a data scientist and mathematician based in Christchurch, New Zealand, is working on what he calls antifascist data sets. He is also working to create an urban data center that is not only community-led... So rather than

monitoring communities, it is led by communities. Soon, it's going to be actually owned by communities as well.

There are groups doing this! There are people interested in trying to think through different types of relations, and I think that what we need to do is to create a network of folks who are interested in doing this, and this is certainly what I see as part of what the Canada 150 chair is about.

Fantastic. Are our networks starting to crop up during this work at SFU and other institutions?

Yes, I think there are people interested. It is about finding people, and there are people within reparations who are interested about this. I mean, the downside of this is... OK, so places like Google are interested in non-homophilic relations because homophily leads to market stagnation. You know, similarity breeding connection, you are showing the sending all the time, blah blah. They want you to see other things and desire other things, so there is an understanding that heterophily and randomness are important.

Does it really save money? Virginia Eubanks has done a great study called 'Automating Inequality', where she shows all these efforts to save money by using AI systems means that states spend a huge portion of their budget giving money to these proprietary systems that actually don't serve us or help the people they are supposed to. I think one question we always have to ask is, "Do we need this system? Is it going to do what we wanted to do? What are the economic costs of it? What are the economic costs of it? When are they useful?"

I think that is true of all technology, I guess, isn't it? And we often don't ask those questions. Such a good point.

Sue Lee asks: Wendy's idelu

predictive text tools.

Oh... Oh... Those perpetrators of correct spelling and phrases and closing down things.

Yes.

Safiya Noble, who just got the Genius Prize, did a great study of how Google – if you type in Black girls, you get porn and all sorts of things. Looking at analyzing the sorts of biases that are there. Other people have looked at the ways in which this sort of implantation is profoundly affecting people, right? Because what you get as a suggestion is often personalized to you. If you type in "COVID-19" and are in a very different part of the country, you'll get something different than somebody else will get as you are finishing your phrase. And what you get is what people like you or people within your geographic area have, right? So it's a way in which it shapes these networks and restricts thinking and creates these groups, because it makes you think that other people are thinking this too. You are getting what other people are thinking, but what you are getting is what n "COVYs too.

Exactly! They even call it going down. The AI-assisted predictive tool can limit, I guess, what you are searching for and limit the answers you might receive down the rabbit hole. It gives you breadcrumbs or gives you little things that take you down a certain way. One exhibit that is often used as the flipside is something like that is Wikipedia. Imagine if Wikipedia did that. What if Wikipedia, based on an algorithm, gave you what they thought you wanted?

That would be dangerous.

Indeed.

Very interesting. Wow, I am not going to sleep tonight. (Laughs) This is quite frightening! Here's a question from Audrey: "I teach basic computers and mobile devices and adult literacy in English language learning. We spent a lot of time talking about vocabulary, ownership, privacy, along with learning digital skills. What advice can you offer about how to talk about what happens when we go online? I want to know not just to focus on technical tasks but how to gain an understanding about our relationship with data and

not just devices."

I always say never to put something in an email or online that you wouldn't scream on top of your voice in the middle of the city or that you wouldn't feel comfortable putting on a blog. So one thing, again, is to register to people that anything they type in can be easily forwarded. It's not private. They should be very aware of what they are doing as a public act. I think if people understand that immediately, then you don't get lured or sucked into some of these privacy scams.

The other thing around that is there is not always an understanding of how permanent this discourse is. I think a lot of people think it's just communication, and proof! It will evaporate. But it's there. It is searchable, findable, all of it, and it stays with one. I think that's also an important thing to think about.

Yes, and the right to be forgotten by the EU is really important. Arguably, the right to be forgotten is too late. We need the right not to be stored at all.

And who is going to argue for that?

I remember back in the day, memory was so expensive! That wasn't the default.

I have lost many documents in my life because there wasn't autosave.

You lose things all the time, and yet, we also think these devices remember everything.

Interesting. So Karen Palmer asked a question: "If you had been in charge of advising governments about COVID..." This is very good. (Laughs) "About COVID communications based on what you understand about how we learn and think, what would you have said and done differently?" It's kind of a data question as well, communications...

I think maybe Caroline should be in the room to answer this one.

Yes, it's interesting.

But I do think... What would I have done differently about COVID communication? Um... What was really tough about COVID communication, especially early on, is that the science itself was uncertain, so people were saying things because they assumed similarities between SARS-COV1 and SARS-COV2. They are looking at correlations. I think maybe if the uncertainty could have been thought through and related to people, that would have also helped because then people were like, "You said not to wear a mask, to wear a mask, this and that that was wrong and right in different places. What are we supposed to think?" Somehow, the uncertainty that drives signs and that makes science so important could be related as part of understanding how we react, the need to react to global pandemics and climate change. I think that would be really key to not having this sort of pushback and anti-vaxxers.

It seems to me people don't have a lot of tolerance for uncertainty, that they are going to push us for a certain position. Just saying, "It's going to be uncertain and science is evolving." Some scientists were trying to say that, but it's tough!

You worked on this.

Science communication is very, very interesting. I think in general just around science communications, that's one of the biggest challenges because science does evolve, scientists contradict each other as well, and over time it changes.

We do have time for a few more questions, and I see there is lots to get through, so this is fantastic! "Thanks, Wendy, for the insightful talk. My question is this: what is your observation about academic programs, e.g. data science and engineering, promoting or not promoting the social context and human aspects of data science and data literacy? It seems to me that currently, these programs are focusing on just teaching the technical competencies – algorithmic, AI visualization, etc. – with less consideration about the purposes of these tools and how this affects the people from whom the data is collected." So, a bit of a challenge there about how we are doing our teaching, I guess. What are your thoughts?

This is so important. Usually, there are two week ethics...

Just a little add-on at the end.

"This is ethics." What is absolutely key as we are teaching these concepts is how social sciences and humanities aren't going to save data science. What is important to understand data science is the ways in which some of the problems stem from, how they have already incorporated concepts from social science and humanities which are

outdated or problematic. Like, homophily came from the social sciences and then became instrumentalized within computer science.

It's not as if ethics, social science, and humanities are outside of data science. They are within it. In data science needs to make choices about what humanity needs to embed because they are already there.

How do we help that?

We start when we teach a concept, growth rate, and say, "This is what this relies on."

like Inference Action... We had a logo. We weren't chosen.

(Laughter)

It was really fascinating that all of us were sitting at the table and asking what we could learn from each other... I always say we work across disciplines because we know our own discipline is broken, and if we don't come in with knowing what we can't do and realizing we are working with other people because they do something different, then we can't work together. And disciplines also are contrived, when you think about it. I mean, we have created them and think they are real, but they are contrived and obviously suit us very well, but in the end, that's wh

biologist. When we talk to each other. We are always challenging each other.

That sounds really romantic.

(Laughter)

We met when I gave him my partial differential equations textbook. I take credit for all the work he has accomplished – Harvard scientist working on global climate change. He

We got through it. I want to thank the World Arts Center staff, and of course SFU Public Square. Always a great team! I always feel a credibly supported by them, and you always really bring it and make it an incredible event. Thank you.

I also want to make a few notes. We are going to have another lecture, and this is such a great event this year. I am really excited about it, and our next lecture is November 23. It is featuring Doctor Tammara Soma. Dr Soma is a professor at the school of Resource and Environmental Management, and she's going to discuss Setting the Table for Food Justice: the Role of Community-Engaged Research.

I want to thank everybody for participating this evening, thank all of our online participants as well. It has been a great crowd. There are some connections in the chat for people who want to follow up on some of the citations, and thank you again for an amazing lecture and a great discussion.

Thank you for inviting me, and thank you for bringing me to SFU.

It has been great. Have a great night, everyone. Stay safe, and we will look forward to seeing you at the next lecture!

(Applause)

