

Interview

Data Segregation and Algorithmic Amplification: A Conversation with Wendy Hui Kyong Chun

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Introduction

Wendy Hui Kyong Chun¹ is Simon Fraser University's Canada 150 Research Chair in New Media in the School of Communication. She is the author of several books on new media and currently runs the Digital Democracies Group at Simon Fraser University. Professor Chun was also the June 2019 CCA Conference keynote at the University of British Columbia. We—Anne Pasek, Rena Bivens and Mél Hogan—took this opportunity to meet with her and ask questions about her latest book project, *Discriminating Data: Individuals, Neighborhoods, Proxies*.

Professor Chun began her talk at the 2019 Congress by outlining the five-step program that defines *Discriminating Data*:

1. Expose and investigate how ignoring differences amplifies discrimination, both currently and historically. (The dangers of hopeful ignorance.)
2. Interrogate the default assumptions and axioms that ground algorithms and data structures. (Eugenics and U.S. segregation as embedded within current network axioms.)
3. Apprehend the future machine-learning algorithms put in place, focusing on when, why, and how their predictions work.
4. Use existing artificial intelligence (AI) systems to diagnose current inequalities; corraling discriminatory predictions as evidence of current and historical forms of discrimination.

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5. Devise new algorithms and new ways to verify machine-learning programs that displace the disturbing eugenic and segregationist histories that haunt our current network structures.

Professor Chun spoke about a number of compelling examples that demonstrate the widespread discrimination built into networks and algorithms. From Amazon's Rekognition, which the American Civil Liberties Union investigated to reveal how people of colour were disproportionately identified as people arrested for a crime by this facial recognition technology (FRT) (Snow, 2018), to Google's decision to resolve racist search results by merely deleting gorillas as an entire class (Vincent, 2018), and the use of software such as COMPAS to predict recidivism under the false presumption that the results will be more accurate and thus less likely to discriminate based on race than decisions made by judges or even non-experts (Yong, 2018). Chun went on to probe a question that sparked her interest in this topic: If we can show that almost any correlation can exist, which ones matter? And how does the discovery of correlations affect the reality of what they uncover? After a fascinating look at the work of Sir Francis Galton, the father of eugenics and the developer of linear regression, as well as Karl Pearson's work on correlation coefficients, Chun made an important link to Cambridge Analytica's use of big data and psychographics (Nix, 2016). She pointed to the thinking behind Steve Bannon's theory of social change (Cadwalladr, 2018) and the belief that, as she puts it, "to build hegemony, you need to maintain angry segregated clusters." Ultimately, Chun argued that it is possible to use examples of prediction and models of the future as diagnostic tools of discrimination. They are always indicators of the past because they are built from past data and, as a result, they can help us discover what we ought to challenge.

This project has many connections to the work of communication and media studies scholars in Canada, especially feminist interventions and scholarship in areas such as critical data studies, software studies, and digital politics and policy. By welcoming Professor Chun back to Canada and to the pages of the *Canadian Journal of Communication*, we encourage readers to see themselves in this conversation.

June 5, University of British Columbia, Vancouver, BC.

Rena Bivens (RB): Thank you so much for your talk. I'll start with this question because I was left with it at the end. Given that so much about predicting the future is emphasized by all of the different examples that you showed us, and how it's so problematic because it, like you said, is tied to past data, is there any value in trying to predict the future at all?

Wendy Chun (WC): Yes, and this is why global climate change models are so important. They reveal to us the most probable future: through their predictions, we understand what could happen if present trends continue. At the same time, though, they don't endorse this future. They show us the most probable future so that some other possible future might emerge. Their predictions are calls to action.

RB: So, it's more a way to change the future, ideally, than predict it.

WC: It's important to remember that these models usually predict the past rather than the future. Their reconstructions only become predictions if we assume that the future can be no different from the past. They're trained and tested using past data. This means that, if the past is racist, they will only be verified as correct if they make racist predictions. Further, their reconstructions will become the future only if their often-biased "recommendations" are accepted as truth (think here of how judicial and financial risk assessments are operationalized). If this happens, the very purpose of history is perverted. We are told to study history in order not to repeat the mistakes of the past: we learn from history if we avoid past errors. In contrast, these models, if left unchecked, automatically transcribe past mistakes into the present and future. It's a really weird and disturbing erasure of history in the name of "machine learning."

Anne Pasek (AP): I really love the analogy to climate models. It builds on your past work with a hypo-real understanding of what that feat of computer science and math might achieve (Chun, 2015). But it's really interesting that we're in this moment where there are many different conflicting epistemic communities about climate change as it becomes something that is not only forecasted but now something that's also ontologically arrived. There's now a frontline, tangible experiences, and big and small losses. I'm wondering if there's a parallel there with your work on algorithmic discrimination. You ended your talk with a call to build coalitions between different communities—people who might be inspired to care more about racism because they care about AI, but who might be a little agnostic or disconnected with the experiences of people of colour. I'm wondering, how do you do that work of suturing together, of coalition building? How do we get data scientists to not only join in these struggles but to hear people and their experiences rather than just attending to those experiences insofar as they surface in the data?

WC: What's key is starting with questions and concerns that cut across disciplines and sectors. Sometimes, the links are not explicit, and we need to show how these concerns are shared. *Discriminating Data*, for example, brings together two examples that are usually considered to be unrelated. One is machine data-based algorithms that discriminate; the other one is fear of the coming singularity. Almost every computer scientist and everyone in the valley [Silicon Valley] believes that the machines will take over. Even the physicist Stephen Hawking, whose daily life and very ability to communicate depended on technology, warned of a future human extinction. A few years before his death, he both praised his software program's ability to accurately predict his next words and cautioned: "artificial intelligence could spell the end of the human race. ... [Once humans develop AI,] it would take off on its own, and re-design itself at an ever-increasing rate. Humans, who are limited by slow biological evolution, couldn't compete, and would be superseded" (Cellan-Jones, 2014). As Jenny Rhee's (2018) book on the robotic imaginary reveals, robots are classed, raced, and gendered. The very term robot comes from the Czech term for forced labour. The very framing of technology as slaves/servants (your self-driving car as your chauffeur, Alexa as your servant, your computer as running

master/slave processes) drives fears of the coming singularity. This is the classic Hegelian master/slave dialectic (Hegel, 1977)—although you don't need to read Hegel to understand it. Fears of the coming singularity have everything to do with relations of inequality and fears over job security. I was talking with a data scientist recently who said that some of her friends were talking about taking up the humanities because the only jobs left would be for humanists. I think everyone's at this really weird point.

AP: So, to braid that through the temporal lines in your talk, we might say that these people's fears about the future are other people's presents, and that that might be the point of connection where solidarity is possible?

WC: Starting by saying: "We are all anxious over machine learning and the future—rather than us just getting anxious, let's see what we can do." Want to dispel the coming singularity? Tackle existing inequalities in the world and ensure no entity is treated as a servant/slave. Then, there will be no revenge.

RB: So they see inequality as linked to identity?

WC: They don't see inequality. What they see is: "The computers are going to take over the world." They fear this because they treat technology as slaves/servants. This goes back, as I've argued in *Programmed Visions* (Chun, 2011), to the history of computation and the embedding of certain raced and gendered relations.

RB: When you were talking about the example of the HP racist computers (wzamen01, 2009) [in which a Black man named Desi demonstrates the illegibility of his skin colour to a face tracking webcam], which I've loved for a long time, it seems like there's a desire from Desi for recognition. He wants to be recognized. I've thought about this too with Joy Buolamwini's work on AI and misrecognition (Buolamwini & Gebru, 2018). In your talk, you mentioned there are disturbing consequences that come from the inability to recognize. Could you elaborate on that? What do you see as those consequences?

WC: It's interesting because, in response to that example, a lot of White hackers say, "Well, that's a great position to be in because you can't be identified. He should hold on to that." But, if you have self-driving cars that can't recognize Black folks as people, then you're in a very dangerous situation. If you have facial recognition cameras that misrecognize people of colour as criminals, then that's a problem. I think that the solution is regulation—it's no accident that San Francisco, where a lot of valley folk live—has banned FRT. As well, the question of recognition is a complicated one. The fact that Desi can't be recognized goes way back to the development of film and photo stock, which was optimized to White skin colour.

RB: Yeah. I'm also thinking about recognition in relation to identity politics and the request for state recognition. Earlier today I was returning to Rinaldo Walcott's (2015) foreword in a book called *Disrupting Queer Inclusion: Canadian Homonationalism and the Politics of Belonging*. He discusses a queer politics that "requires no fixed identity and thus no rights-bearing subjectivity—in other words,

one that can lay claim to practices of life without a corresponding identity” (Walcott, 2015, p. viii). He asks whether we can have “life without a corresponding identity” especially given that “state recognition and rights regimes” (Walcott, 2015, p. viii) are all linked to the colonial project. So, is there a way to refuse a manageable identity, to just “be”? The issue of recognition is always complicated from an identity politics perspective.

WC: The work of Édouard Glissant (1997) is essential, for he argues for opacity as a form of respect/recognition. He argues for opacity as a form of recognition that cannot be reduced to transparency and apprehension.

Mél Hogan (MH): Can you say more about that?

WC: Glissant (1997) writes: “As far as my identity is concerned, I will take care of it myself. That is, I shall not allow it to become cornered in any essence; I shall also pay attention to not mixing it into any amalgam. Rather, it does not disturb me to accept that there are places where my identity is obscure to me, and the fact that it amazes me does not mean I relinquish it” (p. 192). “The opaque is not the obscure, though it is possible for it to be so and be accepted as such. It is that which cannot be reduced, which is the most perennial guarantee of participation and continuance” (p. 191). He contends that opacity makes possible relation and equality. He ends his essay on opacity by stating: “We clamor for the right to opacity for everyone” (p. 194). What’s interesting to me is how Glissant has become more and more important. He’s being taken up and sometimes conflated with obfuscation, which is slightly different, because obfuscation assumes something that needs to be hidden, as opposed to opacity, which asserts a fundamental “not-knowing-ness.”

AP: It seems that there’s a way in which that tracks onto the thread you’ve been following with the uses and abuses of intersectionality. As it’s drifted far from women of colour feminism, intersectionality has become a shorthand for a set of data categories, a sort of checklist of identities that help further specify a person’s legible positions rather than to analyze their experiences of oppression through the inadequacy of any single or additive identity category. To speak further on this theme of recognition, would a truly intersectional approach to the risks and harms of someone’s capture by Facebook be incompatible within the operative terms of AI?

WC: Kimberlé Crenshaw (1989) describes intersectionality as being literally at a traffic intersection, with cars coming at you. She writes:

The point is that Black women can experience discrimination in any number of ways and that the contradiction arises from our assumptions that their claims of exclusion must be unidirectional. Consider an analogy to traffic in an intersection, coming and going in all four directions. Discrimination, like traffic through an intersection, may flow in one direction, and it may flow in another. If an accident happens in an intersection, it can be caused by cars traveling from any number of directions and, sometimes, from all of them. Similarly, if a Black woman is harmed because she

is in the intersection, her injury could result from sex discrimination or race discrimination.” (p. 149)

Being at an intersection is dangerous. In contrast, Cambridge Analytica used the notion of intersectionality in order to target a wedge group. They were working on the Ted Cruz campaign during the Iowa primary and wanted to swing conservative White males toward Cruz, so they focused on gun control. They did so using values that they “discovered” were key to flipping/creating a flippable group. They needed to find a polarizing issue, which renders the seeming “inert” mass into an unstable, moveable group.

Here, the study of the U.S. biracial yet segregated housing project in the “ur-homophily” text by Paul Lazarsfeld and Robert Merton (1954), which I address in *Pattern Discrimination*, is key. Lazarsfeld and Merton’s (1954) “Friendship as Social Process: A Substantive and Methodological Analysis” studies friendship patterns within two towns: “Crafttown, a project of some seven hundred families in New Jersey, and Hilltown, a bi-racial, low-rent project of about eight hundred families in western Pennsylvania” (p. 21, 23). Although this text is cited thousands of times because it introduces the term “homophily,” it neither assumes homophily to be a grounding principle, nor argues that homophily is always “naturally” present. Rather, documenting both homophily and heterophily, Lazarsfeld and Merton (1954) ask: “What are the dynamic processes through which the similarity or opposition of values shape the formation, maintenance, and disruption of close friendships?” (p. 28). Homophily in their much-cited but clearly unread chapter is one instance of friendship formation—and one that emerges by studying the interactions between “liberal” and “illiberal” (p. 27) White residents of Hilltown. Mind you, homophily has become so privileged in part because it is the only one relation analyzed in depth in this chapter.

To assert the presence of value homophily, they ignored most of their data. Lazarsfeld and Merton (1954) had this data set of around 450 points. In order to argue that value homophily exists, they first ignored all the Black resident responses, because they argued that Black residents were liberal, where liberal means they believed in integrated public housing and believed that the races get along in Hilltown. Illiberals believed the opposite; and ambivalents believed that housing should not be integrated but that the races did get along. By ignoring the Black responses, they cut their dataset in half. Then they said, “Okay, there are liberals, there are ambivalents, and there are illiberals.” Illiberals are actually a tiny portion. Ambivalents are the majority, and liberals are the next largest group. So the vast majority of the people in the housing project believed that the races get along. To make the value argument, however, Lazarsfeld and Merton (1954) also cut the responses of the White ambivalents and focused on the liberals and illiberals. By doing so, they could argue that these two categories over-selected friends of the same type (even though, for the illiberals, it is not statistically significant, since the category itself is so small). They then stated that the ambivalent position, the mass in the middle, was not simply a majority position; it was the most unstable position. Those in the middle, they hypothesized, must eventually go to either side. They create imaginary scenarios in which the ambivalents do so, stating that their work could not be imprisoned to facts.

For all sorts of reasons, the moves to segregate data via race and to eliminate data in order to make masses unstable are crucial. It is repeated currently, when intersectionality is hijacked to divide populations. Here's the process: figure out a polarizing issue in order (allegedly) to transform the inert into the unstable. Be "creative" in this division and in your claims for what this division accomplishes.

AP: Right, and then oppression is no longer seen to be operative in that theory of identity.

WC: Exactly.

RB: It's interesting. So many times you hear [Mark] Zuckerberg, for instance, talk about identity as something that's supposed to be stable. It doesn't ever change and so that's why we can ask for real names, and why we don't need to shift our software [Facebook] very much to allow for this kind of flexibility. But the same approach also wants instability, but maybe not on the vectors of identity categories, maybe more on values.

WC: Yes. What's really interesting is the relationship between "comfort," safety, and identity. In terms of "real names," it is assumed that people behave better—and thus Facebook is a more comfortable space—when everyone uses their real names. In terms of echo chambers, homophily is accepted as axiomatic, because it is assumed that people are more comfortable with people who are like them. But echo chambers breed strong affects, including hate. Similarity repels. Think of family vacations. When people who are so alike are together, tensions are amplified. Arguably, comfortable in echo chambers = stabilization in terms of one point of view via angry affective feedback and amplification.

RB: Comfort makes me think about critical Whiteness studies. About the desire for insulated spaces, and a low tolerance for any talk about racial inequality and things like that.

WC: Sara Ahmed (2004) has a great reading of queerness as discomfort, and comfort as norms. She asks: what does it mean to occupy norms differently? She also points out that what masquerades as love is often hate.

AP: That also brings me back to the really persuasive genealogy of eugenics that you outline. As someone who worked on the Living Archives of Eugenics in Western Canada, it was really intriguing to see something of an afterlife of all these really disturbing medical records and ads I had spent part of my undergrad parsing.² When we look at the historical practices of eugenics in North America (and later as they migrate to Europe) there's the so-called negative aspect, which is punitive, which is discrimination, which is sterilization—or in the present instance, maybe rejecting all women's colleges from the Amazon hiring pool (Dastin, 2018)—but there's also positive eugenics, which looks like fitter family contests, and more mediated expressions of social value designed to encourage certain kinds of social and reproductive behaviours. Related to issue of comfort, I'm wondering about the affective effects of these algorithms on the internet, since they're intended to

encourage self-segregation and the production of shared anger or shared pleasure around certain political outcomes. Is there an emotional carrot and stick in effect?

WC: Positive eugenics and negative eugenics are usually distinguished in terms of encouraging the right people to reproduce versus preventing the wrong people from doing so.

AP: Yes, to multiply their traits.

WC: The eugenicist and population geneticist Sir Ronald Fisher is a key figure. He thought that the solution to the British “degeneracy” was to give rich people—particularly of a certain professional class—more money to reproduce. He also thought people should be paid according to what they needed to maintain their position (e.g., a middle-class man with a family of four would need far more than a manual worker with the same size family). Positive eugenics would help the English return to its true barbaric roots: in barbarism, he argued natural and sexual selection coincided (unlike in modern civilizations); on a more negative note, barbaric societies also killed their young in order to help the race survive. The historical evidence for these claims was sketchy at best and relied on anecdotes about the “Oriental Other;” but the legacy of positive eugenics is this idea that, in order to ensure certain desirable groups dominate, you need to give them the means to dominate. Inequality is thus baked into the system. In a certain sense, positive eugenics seems to be everywhere in the media system: certain groups are given the means to reproduce over and over again.

AP: Yeah, and maybe that’s a way of recasting the YouTube algorithm—how it rewards this sort of specific niche communities, which you could think of as an echo chamber or as a statistical multiplier.

WC: Yes, but Ronald Fisher’s system is driven by eugenic values: you want a certain group to multiply for the good of the nation. Youtube and Twitter are driven by controversy. Due to clickbait advertising and surveillance capitalism, they want everyone to multiply—it would seem. So it would be interesting to ask: what if you used the rubric of positive eugenics to analyze what is amplified?

MH: Building off what you said, I’m thinking about how we hear this idea of relevant ads being the endpoint of all this data collection, but then I wonder, what is that covering up? That’s obviously a significant portion of the way that all these platforms either finance or claim to finance themselves, but could that be overextended? There’s got to be something more.

WC: Yes, and a lot of these ads don’t work either.

MH: Yeah, it’s a ruse.

WC: I think this is why Helen Nissenbaum’s AdNauseam is brilliant.² Click on everything—that’s how you take down the advertising system.

RB: Adding noise; it’s great!

WC: This is also where Lazarsfeld and Merton (1954) are so interesting, because the housing project study was undertaken at a time of great income compression in the U.S. (late 1940s). It was also a time when 80 percent of the U.S. public supported public housing. It was before the widespread move to give White Americans publicly insured private mortgages, a move that, as Ira Katznelson (2005) has documented in *When Affirmative Action Was White*, is responsible for the current vast income disparity between White and Black Americans. During the 1940s, something else could have emerged. Lazarsfeld is more famous for the analysis of the Decatur housewives with Elihu Katz, which was published in 1955, as *Personal Influence*. In this study of the effects of advertising, mass media, and selectivity, he linked politics to consumption: they were both decisions that depended on advertising and personal contacts. His Columbia Bureau of Social Research worked for corporations and advertisers who wanted to know under what conditions people changed their minds and made decisions.

MH: I have a question that's slightly different. In 2008 you had the piece (and lecture) invoking the idea that "the future is a memory," (Chun, 2008a, 2008b) and it really resonates with this idea of predicting the past, and I'm wondering if, for you as a scholar, it seems like almost everything is secondary to your exploration of that relationship between past and future. It's a common theme in your work. It's been a decade now. Do you want to speak about that trajectory?

WC: Oh yes, from "The Enduring Ephemeral" (Chun, 2008).

MH: The enduring ephemeral, right. There are so many things—they're slightly different, but there's an interest that you've maintained. It's quite specific to that grappling with past/future issues. I guess in this piece it's more about storage and the ways in which software is memory. Now I think, wow it's been 10 years of grappling with that tension, and I'm fascinated.

WC: Yes, I have been trying to understand the relationship between machine repetition and cultural repetition for a while now. Having worked in hardware, I have always been amazed that people think that memory = storage. At first, I asked myself: "How did this ever happen?" Then, I asked: "Okay, what is the effect of this constant repetition? Why do things repeat, why are they made to repeat?" And now, I've been probing: "How can they be made to do something else?" I think one abiding concern, however, has been addressing the disconnect between technical and cultural conceptions of what seem to do the same thing. Control in technical and social systems, for instance, means very different things. This disconnect can be used to open dialogue and to transform these concepts.

There have been so many threads in my career, and it is weird how they diverge and converge. The first article I ever wrote was about the *École Polytechnique* massacre (Chun, 1999). It was based on the first paper I wrote in graduate school. This article was my response to the massacre, which happened when I was an engineering student. I was initially simply shocked—I couldn't believe that this could take place in Canada and in the space of an engineering classroom. Engineering classes

are very tight; we are with the same group of people for at least four years (Waterloo is co-op, so it was five years for me). I turned to the humanities because I needed answers that engineering could not give me. I have been increasingly turning back to engineering because we need to work together to face the really hard problems that face us right now.

MH: So what are some of the other threads? I know that that's one: the future/memory/past tensions. Are there other ones that come to mind?

WC: There's race and gender: the ways in which technology has been raced and gendered, and the relationship between technology and discrimination. This again comes from my experiences in engineering—in particular my work term after the massacre. During this work term I was working on implementing IEEE802.310BaseT, and I was very happy. I was soldering (you get high off the fumes). I was helping to prototype board (in particular, to determine what resistance is optimal) and one of my co-workers/supervisors explained to me how you remember resistor codes: “Bad Boys Rape Our Young Girls But Violet Gives Willingly.”

AP: Yikes.

WC: Yeah, but I remembered it. There is an even worse version: “Black Boys Rape Our Young Girls, But Violet Gives Willingly.” Gender and race aren't “added” in via cultural analysis, they are embedded in sociotechnical systems.

Another recurring theme in my work is the conviction that we need to engage these technologies, not in order to “master” them but to realize the limits of human mastery and understanding. The more we engage technology, the more we realize that we can't completely understand it. This does not mean, though, that we cannot and do not intervene in and through them. The example I always give is of my laptop. I am trained as an engineer, and I can tell you technically what happens at every level on it. I can't, however, tell you what's happening at any particular moment, but I can still use it. Being comfortable with opacity, again, is key. When people say, “I don't understand these algorithms or these technologies and therefore I can't intervene or act on them,” they assume, as Taina Bucher (2018) has argued, that when they talk to humans, they understand how humans operate biological and psychically.

RB: If I could go back to, for a moment, the idea of machinic repetition and cultural repetition that you said was at the heart of your work, do you see that in relation to performativity? Is it sometimes performativity, sometimes not?

WC: Yes, Judith Butler's (1990) early formulation of gender performativity is absolutely key. She argues that if things repeat, they can also repeat differently. That repetition makes difference possible (a point made, of course, by Jacques Derrida [1978]). That repetition opens us to difference is also well known in engineering. Every transmission generates noise; signals degenerate as they travel. To “correct” the noise/degeneration, you need a system of repeaters. Let's ask: what sort of political possibilities are opened or closed by that?

RB: Especially when there's so much pressure to repeat in a certain way and you

may not even really realize how you're repeating, in terms of identity and performativity.

WC: Yes, and there's also pressure to repeat slightly differently. The whole move toward authenticity, to encourage people to be slightly outside the norm, is amazing to me, because it's become a way to police people. Certain deviations are encouraged because it makes people predictable: it places them within a close sub-group. It's no longer, "Follow the norm so we can predict your next actions." It's "Deviate in a certain way, so we can do so." To people who say, "I'll just get off the grid. That's how I'll save myself" I respond, there's a whole category of "people who go off the grid." This category is pretty well established and geographically concentrated (Colorado, Montana).³

MH: That deviation, going off the grid, is presumed to be from something unsaid. So where is that deviation from? What is the unsaid in that deviation?

WC: The unsaid is you should be connected.

MH: Okay, so we're deviating from connection.

WC: There's a constant attempt to figure out how you deviate from the norm like others. This is why correlation is key. Correlation does not reveal the majority of a person's likes, etc. It reveals the likes that divide. If things are highly correlated, they increase and decrease together. Another method that's used in machine learning is SVM: support vector machines; SVM stems from linear discriminants, which were developed by Sir Ronald Fisher, to discriminate between races based on skull sizes. Linear discriminants seek to create boundaries between two continuous classes. SVM takes this literally to (an)other dimension(s), but the principle is still the same. Linear discriminants and SVM both ignore most of the data and just focus on what lies at the boundary.

RB: Is it always on a binary?

WC: In terms of trying to discriminate between?

RB: Yes, between two things.

WC: No, it was famously developed to read handwriting. To determine what letters and numbers were actually put in place in terms of a zip code. It's used to figure out and recognize the differences between objects.

AP: So wild that it comes back to the zip code, isn't it?

WC: Yes, it is wild. It's amazing that things get repeated over and over.

MH: I'm thinking also of Susan Lindee who has done a lot of work on genetics and DNA. She was in conversation with Kim Tallbear recently in Calgary, actually.⁴ She talked about how she has a postdoc who's tracking down—the following of the footnote—to *the* Caucasian skull—the one that's supposed to be this beautiful long, large skull. It was remediated and represented and brought around as an image, or proof, of this "superiority." But he checked on the skull and it's a little insignificant

skull. It's just a skull. It's not particularly nice. It's not shaped in the way it's been represented. So I was thinking about this, how, at some point, what emerges from the data won't matter so much as the belief and the predictions sold from the data, as a step removed. Is that a fair extrapolation?

WC: Yes, that's why it's so important to go back to these sources. Now, some people will say, "Lazarsfeld and Merton got it wrong, but they got it right: homophily exists." Perhaps, but part of the reason why we're looking at both its impact and its relationship to urban studies is to reveal that—if this work seems correct, even though they ignored most of their data—it's because segregation is still with us.

MH: In your slides, you bring up a lot of the sources and things that you draw from, but I wonder, what is your method? I know there's a trajectory, so some of it must be a continuation, an exploration of things that are threading all of these things together. When you set off on a new project, what's your approach? How does it unfold?

WC: I do a lot of research. In terms of the network science work, I read a lot of textbooks and articles that all stated that homophily is a fundamental axiom of society. I thought, "This is really weird," and then started following the footnotes. Following the footnotes is crucial. The Lazarsfeld and Merton (1954) article is cited thousands of times, but clearly almost no one has read it. If you do read it, it's amazing. Having read it, I went to the archive to try to find the data that was never published. My method is: read closely, ask questions, figure out what seems strange to you, and then follow it restlessly in theory and in practice.

MH: I really like that, yeah. I'm so excited that you're back in Canada. I wonder if that in any way orients your research differently. Are there different possibilities here?

WC: I'm thrilled to be back in Canada. The U.S. has become unliveable. Brown University is a fantastic institution: I taught really smart and engaged students; I had great colleagues; and Brown also has a really decent labour policy, without the usual exploitation of adjuncts or graduate students. It became increasingly clear to me, however, that if I was successful it was because other people were not. You could not, in any way, live in the U.S. without understanding that many other people don't have healthcare, that a safety net does not exist. Brown could be its own thing: a private liberal arts institution (with problems) that nonetheless seeks to diversify its student body and provide financial aid to a large number of students. Private institutions in the U.S. have power and sovereignty in ways that public institutions in Canada or the U.S. do not. Leaving for this reason was hard, and I'd been there for almost 20 years. Again, it was becoming untenable to be there. Not just because of the current political situation, but also because I was turning 50 and I thought: what do I want to do for the rest of my life? Trust me, I'm not naïve about Canada. I grew up in one of the most racist neighbourhoods in Mississauga. People wrote, "Chink," on my driveway. But there is, however flawed and unequal in practice, a commitment to universal healthcare and public education. This is not

true in the U.S. You have to decide where you want to fight for equality. Given everything that's happening around the world and everything that still has to be done in Canada, we all need to work together in Canada.

Also, it's exciting to work across disciplines and these Canada 150 Chair positions make many things possible, including expanding the influence of Canadian academia. I'm becoming increasingly aware of the difference being in Canada makes, as well as an exciting openness. Canada is recruiting great international scholars that cannot get their H-1-B visas renewed, or who are just terrified by the U.S. visa/political system or Brexit. There's also an insularity and at times an odd defensiveness. Canadian research is excellent and engaging in an international dialogue with other scholars is wonderful. I don't know if you all experience that at all.

MH: I spent four years in the U.S. You, Rena, did a stint in the U.K. The academic relationship to Canada is just something that comes up I think.

AP: The question of winnable fights is, I think, an important one—a kind of tactics of intellectual work and collaborations, of where we put our time. This may be a strange echo, but for me, the way that you described Canadian scholarship as very, very eager to recruit from afar but somewhat nervous to offer localized contributions back to an international fora, or at least an international fora that's predominantly American, I wonder if that also holds true to Communications to a degree. We pride ourselves in being an extremely interdisciplinary set of conversations. But, at the same time, it seems like the work that you're doing—directly being in the room with a biostats person—that's a bit cutting edge by our standards. What is it like to open up those fora for discussion and how are you able to take the conversation we're having here today and move it into new places?

WC: You find people who are interested in the same issues; that's key. You find people who care about these issues, but approach them from a very different angle. One of the data scientists, Giulio dalla Riva, I'm working with is based in New Zealand. He came to talk I gave earlier at SFU and read my work on homophily. He said: "I want to work on heterophily and I also bring to the table an interest in Indigenous forms of data ownership." He also contacted me after the Christchurch massacre happened and argued: "Data science has to intervene in order to stop the spread of White supremacism." By discussing our mutual interests, we've made each other's research program stronger. To create this kind of cross-disciplinary work, we need to focus on the problems we're all interested in solving, but that we can't solve alone. What's so great about Canada is that we're small. There aren't that many institutions. We should be able to do this really well.

MH: Let's do it!

WC: Please become affiliated with the group! I'd love it.

Notes

1. Wendy Hui Kyong Chun is Simon Fraser University's Canada 150 Research Chair in New Media in the School of Communication. She has studied both systems design engineering and English literature, which she combines and mutates in her current work on digital media. She is author of *Control and*

Freedom: Power and Paranoia in the Age of Fiber Optics (Chun, 2006), *Programmed Visions: Software and Memory* (MIT, 2011), *Updating to Remain the Same: Habitual New Media* (Chun, 2016), and co-author of *Pattern Discrimination* (Apprich, Chun, Cramer, & Steyerl, 2018). She has been Professor and Chair of the Department of Modern Culture and Media at Brown University, where she worked for almost two decades and where she is currently a Visiting Professor. She has also been a Visiting Scholar at the Annenberg School at the University of Pennsylvania, a member of the Institute for Advanced Study (Princeton), and she has held fellowships from the Guggenheim, ACLS, the American Academy of Berlin, and the Radcliffe Institute for Advanced Study at Harvard. She has been a Visiting Professor at AI Now at New York University, the Velux Visiting Professor of Management, Politics and Philosophy at the Copenhagen Business School, the Wayne Morse Chair for Law and Politics at the University of Oregon, Visiting Professor at Leuphana University (Lüneburg, Germany), and a Visiting Associate Professor in the History of Science Department at Harvard, where she is an Associate.

2. See <http://eugenicsarchive.ca/>.

3. See <https://adnauseum.io/>.

4. For more on this topic, see Sharma, Sarah. (2017). Exit and the extensions of man. *Transmediale Online Journal*.

5. *The Cultural Politics of DNA: CIH Annual Community Forum 2019*, 3 May 2019, University of Calgary.

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