



Episode 3: The City as Platform

The City as Platform project builds on theories developed by Dr. Beth Coleman, which explore how AI systems and algorithms are reshaping the design and function of the technologies that surround us, and the impact this has on our lives, our relationships with the built environment, and our rights as citizens. In this episode, Sara chats with Dr. Coleman about some of the terms and concepts that are central to her important and timely theoretical contributions.

Sara Grimes 0:00

As we shifted to online everything, we've opened our homes, albeit virtually, to an unbelievable array of new visitors: teachers, bosses, your least favorite co-worker, your family doctor, perfect strangers, and various forms of artificial intelligence, or AI. Most of these interactions are positive or helpful or just plain necessary. Others, however, make us uncomfortable; leave us feeling imposed upon or even invaded. Take the problematic examples coming out of some schools and universities relating to their use of proctoring software that surround us. Here, AI is used to monitor students as they write their exams or complete their schoolwork. Not all these systems are only watching what happens on the computer screen. Some use the student's webcams to track their bodies as well to assess their eye and head movements and scan their personal spaces. The implications of these systems for students privacy rights, could very well fuel the next public controversy relating to personal data and digital surveillance. But they're also at the nexus of two much larger colliding trends that have been both facilitated and aggravated by the arrival COVID-19.

Voice1 1:11

Is the Genie out of the bottle in terms of consumers data? I mean, I think about my daughter, no pictures, no anything of her on Facebook or other social media sites. But if you put her name in, there's lots of information about her to be found on the internet.

Sara Grimes 1:24

The first is a mounting public mistrust of how companies and governments use our personal data. The second is a widespread public unease about AI, and letting algorithms monitor, classify, and predict us as we move through our everyday lives. At the same time, applications of both AI and personal data collection are spreading across technologies and sectors like wildfire, fueled by massive industry interest, and even more massive funding initiatives. As users of these technologies, we're all grappling with questions about what constitutes as an acceptable trade-off, or weighing of the risks versus rewards, when it comes to welcoming AI into our lives.

Enter the City as Platform project, led by Dr. Beth Coleman from the University of Toronto, along with her co-leads Dr. Leslie Regan Shade also from the University of Toronto, and Dr. Charles L. A. Clarke from the University of Waterloo. Dr. Coleman's research is focused on understanding how AI systems and algorithms are reshaping the design and function of the technologies that surround us, from mobile phones and smart speakers to the sidewalks and architecture of the very cities we live in. It builds on her landmark book *Hello Avatar*, which explored the multiplicity of identities that we inhabit as we move along a continuum between the virtual and the real. A key focus in City as Platform is understanding how our lives are impacted by the delegation of social, cultural, and political decisions on to AI, in everything from furniture design to the use of biometrics for state surveillance. Dr. Coleman's theoretical contributions to this discussion are groundbreaking, delving into the aesthetic, civic, and human dimensions of a rapidly changing relationship with increasingly ubiquitous AI driven technologies.

So far, this work has been published in several places, including a chapter entitled, *Let's Get Lost: Poetic City Meets Data City*, which appeared in the edited collection *Civic Media: Technology, Design, Practice*, published in 2016. An article entitled *Technology of Surround* which appeared in the 2019 special issue on *Philosophy of Technology of Journalism and Mass Communication Quarterly*, as well as a recent chapter entitled *Bauhaus Generative: Avant-garde to Algorithmic Aesthetics in Three Chairs*, which appeared in *Bauhaus Futures*, a new collection published by the MIT Press just last year. It is also the basis of an upcoming white paper on the Internet of things, co authored with colleagues from Berkman Klein Center for Internet and Society, which will be published in

spring 2021, as well as an upcoming book entitled *Hello Data*, which is under publication contract with the MIT Press.

I'm Sarah Grimes, Director of the Knowledge Media Design Institute at the University of Toronto, and host of the Critical Technology Podcast. Today I'll be talking to the City as Platform co-lead, Dr. Beth Coleman, about her thoughts and theories relating to AI, technology design, and built environments. Before we delve into your theories and work on the City as Platform project, I'd love for you to tell us how looking at chairs helps us understand our rapidly evolving relationship with AI.

Dr. Beth Coleman 4:47

Well, what I look at, in the Bauhaus Generative, is moving through historical and aesthetic frameworks that are also technology frameworks in terms of how we produce objects, and how we produce meaning around those objects. And, you know, one of the frameworks for modernists, and specifically Bauhaus avant-garde is this idea of the designing for the total, total life, a life world. And also, this framework from looking at Le Corbusier that the city is a machine for living. And this is a period of time where industrial production was starting to change how the world around us was produced. So for Breuer to take essentially found objects of illuminating tubing that made bikes so lightweight, and leather fabrication in 1925, and turn this into the B3 Club Chair. And then this chair becomes like the iconic, minimalist, modernist chair. So that was fascinating to me in terms of the materiality of the kind of production around aesthetics, and meaning, and how the artifact of the object speaks to all these different modes of production of the time.

So then when I'm thinking about the Elbo chair, which is the 2017 piece that was made using the Autodesk's Dreamcatcher generative design CAD system. With the Elbo chair, the designers essentially used ML, they used machine learning to teach a system, what chairs work, what chairness was, you know, if we can use that as a word. And there were certain framework, certain constraints, and those constraints had to do with, you know, it had to be able to support up to 300 pounds; it had to be able to stand up; it had to have certain aspects of functionality. But the thing that really caught my attention is the inadvertent or the purposeful framing of producing a kind of generation, meaning

something that continues to build and produce. So that sense of generative, which is also how I use the word “poiesis”.

Sara Grimes 7:44

What is generative design?

Dr. Beth Coleman 7:47

It's this idea of we're in a period, because of advanced automation, which is a signal of advanced computation, where we, we have to stop an object of form in time to say, Okay, that's it, now we're going to print it out and sit on it. So there is this endless generation that's possible, because of the way computers work. So that's kind of a framing of a generative aesthetic. But one of the reasons that I so obsessed to go from this Bauhaus chair to this chair that is essentially an AI-produced chair is for the machine to learn what a chair is, what the qualities are, and what the constraints are, it has to learn all about essentially Bauhaus modernist aesthetic. And already that that is a cultural framing, that speaks to also a regeneration or this ongoing, endless, you know, modernism.

So one of the questions that I ask in terms of design as a critical space is, is there one good design for all? Like is, you know, like, we have this framework of like, the modernist clean space, lots of lights, open windows, you know, particular types of materials, and that is the, that's the aesthetic that gets regenerated with it, with the production of the Elbo chair. So it's two things at once. It's how we are producing essentially endlessly and then we just kind of decide, okay, this is where it stops, which is different than industrial production, but also how histories, aesthetics, politics are brought back in consciously or unconsciously, to kind of this contemporary moment.

Sara Grimes 10:03

This concept is central to some of your other work as well. I'm thinking specifically about the *Let's Get Lost* chapter in *Civic Media*. What are the connections between these seemingly disparate technologies of industrial design software and geolocate of mobile apps? How does generative design manifest in something like social media mapping or big locational datasets gathered by mobile phones?

Dr. Beth Coleman 10:26

What I'm looking at is, as you point out, again, a generative production. And the question I frame is, when we essentially can map out all of the details of moving through a city. And this is not magic, this is literally our everyday use of technology. I opened my phone, I connect to a network, Google Maps tells me how to get from point A to point B. So in this experience, it, you know, this is already the phenomenal world in our experience of mapping cities in such a way that we can't get lost. The question I ask is, what would it mean to get lost on purpose? So in that space, and, you know, I don't know exactly what my obsession is. But there's another kind of European avant-garde tradition, which is the the situation is international frame of the derive of the drift of the drifting through the city. And that was also an experimental practice.

Later, it was mid-century, mid-19th century, but it was framed Guy Debord and collaborators they were framed as in relationship to a resistance to industrialization, commodification... *Society of the Spectacle*, which is Debord's famous text on it. So this idea of eluding some of those frameworks by drifting, so I'm suggesting a similar thing in terms of a poetics, or poiesis of the city, where we take some of these technologies in hand, and we use them to sport, like we play through different environments. So literally, there was a juried app that I used to have my my, like my grad students, one of the first classes that we do if we were meeting at fair weather, sometimes even meeting at not fair weather was, we'd load this stuff up, and you'd get instructions such as, find a crosswalk, or you know, find a flower, or follow somebody within an umbrella and you have kind of, I don't know, I mean, data markers is a silly, silly way to put it, but asking people to reimagine, and relook, since we have developed such incredible habit around a kind of indexical, one to one relationship with how our digital mapping represents the world in front of us.

Sara Grimes 13:34

Another key concept that you use in your work is algorithmic aesthetics. Can you explain what algorithmic aesthetics are? And how this term is different from generative design? Or what role does it play in the experience and spread of generative design processes?

Dr. Beth Coleman 13:53

I mean, I talk specifically of an algorithmic architecture, where you have people like Gary and Greg Lynn, who were able to take the technologies at hand, so 3D modeling, etc, and use algorithmic design methods. So structures that would have been really difficult to imagine and manifest and build, if we were using historical techniques. You can now like take a sketch, take a swirl, and then model it in such a way that it can then become something that stands in the world. So there's the narrow version of the technological affordance of algorithmic production of buildings, of chairs, of objects. But we see a kind of an algorithmic productions throughout, oh my goodness, like, almost every place we look in terms of the world that we're living in, and the greater and greater overlapping between digital networks and what we might have called historically, virtual events, and the events of the kind of embodied geolocation of world. So I'm just trying to think, is there a significant difference between like an algorithmic aesthetic or production? And what I'm talking about with the generative? And I'm not sure, like, there's a huge difference, but perhaps, if pressed, I'd say, you know, algorithmic aesthetics, we could frame more in terms of the, the technique of how we are producing forms and information, where a generative, perhaps, and I have to look to see if I'm linking this up throughout the different publications, speaks more to a poiesis of the creative in the same way that that word holds the poetic in it.

Sara Grimes 16:27

And what do you mean by poiesis, in this context?

Dr. Beth Coleman 16:30

In some of the subsets of cybernetics, poiesis is a really strong signal in terms of how interplay, relays of systems and knowledge are working, but poiesis also includes the poetic. And I guess, you know, in our kind of contemporary language, we continue to understand a fundamental of the, the creative in in the poetic, and also how I'm trying to use poiesis. Part of what I glamorize and seems to really adore and in this idea of poiesis, and the generative is, it exceeds, like, there's something excessive, like it's, it continues to produce more than we can index or have already known about. And some of what I like about that is, you know, there's parts that escape they're there, they're beyond us,

we haven't kind of framed it yet. And for whatever reason, for me, I feel like that's a really valuable trait. In a world that's increasingly indexical, in terms of, we've got data points and everything.

Sara Grimes 17:55

So what is the role of AI in all of this?

Dr. Beth Coleman 18:00

The role of AI is algorithmic production of analysis. So the finding of patterns, and then the translation of those patterns into a framework of analysis, which is largely what AI is doing. So you know, whether it is learning by itself, or whether you give it a very particularly frame dataset to learn about flowers or people's faces, so that training, and then the training is turned to face, you know, essentially things in the wild, because it's not useful until it can be set loose to, you know, analyze, oh, here are all the different faces of the protesters in Hong Kong we're going to identify them, like that's a kind of incendiary example. But, you know, that's, that's what machine vision can do.

I think some of the critical frame and value that I hope this work is bringing to that framework of ML and AI is how do we recognize better, faster, sooner what we're reproducing. And one of the ways that it's identifiable is in the harmful bias, or obfuscation, or erasure is occurring in the use of these systems. That's part of what's embedded in that Elbo chair. And here in some ways, it feels like a safe space because it's, it's a chair, it's designed, it's not particularly political, but it absolutely reinscribe a very specific formal history in terms of what is a chair, what's valued in the chair. And if we try to kind of like, sidestep our way over to some of the research by computer scientists like T. B. and others, we see the demos where, because at a period of time when there was a lot of ML vision, facial identification, development, and people needed just like a zillion bits of data, to be able to rip from Google Images that were free and available; you know, particularly, Google were the engine driving the development.

So that there's a very, there's a particular historical reason why George W. Bush and his family are some of the main training images for at least a certain period of machine vision. So when that same system is sent out in the wild, or even just tested for

benchmark, and you've got women's faces, and you've got black men's faces, or you've got Asian women's face, like just their whole bunch of people who it's been demonstrated are hard, if not difficult to identify properly, because of a relatively unconscious framework in terms of how we training this thing.

Sara Grimes 21:30

So you're building this theory of technology, and it traverses all these different technological forms. And I'm wondering how this translates into the work that you're doing with the City as Platform project? How does this manifest in your research and the type of work you're doing with your research team?

Dr. Beth Coleman 21:48

Both the research lab and the research teams that exist in it are foundationally interdisciplinary, because we're trying to wrestle with that beautiful difficulty of where we are right now. So that includes real knowledge about engineering system design, data ontologies, these kinds of things. But it also requires, in my view, the knowledge is that we benefit from in terms of critical data and science and technology studies insistence on an ethics of the contextual, like, the recent controversy around Sidewalk Labs and their exit from Toronto. In a nutshell, people didn't trust Sidewalk Labs and Alphabet company, you know, sister company to Google, to handle civic data, personal data, the kind of data is that we give off when moving through the city, that would be absolutely taken up and turned into production around smart tech, whether it's their smart garbage cans, or streets that don't have any cars, or warm sidewalks, like, you know, whatever the stuff they were talking about. But there was a lack of trust. And that lack of trust is so important and so crucial, and so telling in terms of the issues we're facing are, some of them are exacerbated by technology, or all of them are exacerbated, but the solutions to them are socio-technological. We're not going to fix it just with throwing more tech at it.

Sara Grimes 23:56

So in your work, and even in this conversation, I can see this contrasting of these foreboding, terrible applications of AI versus all this potential and promise. Do you want to talk a little bit more about this contrast? How do these two sides crash together? Or how do you reconcile or navigate that?

Dr. Beth Coleman 24:16

Yeah, I mean, Sarah, I don't think that we're able to take it back. I think that our only way is to move forward, which means accountability. I don't know even know what transparency means in the age of neural nets. But we're at a breaking point around some of these things. And since the technology is not going to go away, we need to move forward to address and shift how the unevenness of being seen, being surveilled without any control or accounting over that, and we see legislatively and also, culturally, with GDPR in the EU, some changes around that. But it's both overwhelming and also exciting to think about pretty much like, at every level, and if we're just thinking about civic and municipal, not even the private. You know, like, Wi-Fi in the city is complicated; it's both free Wi-Fi is the dream that everybody assumed by the mid-90s, this would be easy, and now that it's actually installed, there's all kinds of questions about how does it work, and is your Mac address is automatically being sniffed, and how long is identifiable information being kept. And it's really like, granular, nerdy, pretty much boring stuff. But the granular and the nerdy and the boring is actually super interesting, and engaging to think about how do we want to work this out? It can't be impossible, because you know, like, what are our choices?

One of the questions that I'm asking in some of the, the new work that I'm doing is, what would a generative or speculative AI system look like? So in the sense that what if we are training a system that does not reproduce the normative, but maybe asks different kinds of questions? And what would those, sorry for this language, but what would those data markers look like? So what I'm working with a small group of researchers thinking about, what if we take paradigms, something like *The Three Body Problem*, the science fiction series in that world, there's not binary gender anymore. So what what if that becomes part of how we code identifying, let's say, humans. We're also looking at some of the kind of world building with Octavia Butler, where you have these kind of mashups between like, what used to be human, and what's the future, I mean, I'm gonna say, like, post human, even though that's not a word that I use that much. Once you have these kind of alien interactions, and, you know, this is a speculative, generative endeavor to see what we can learn about how a system learns, if we're not reproducing the normative. Google just gave me a grant to to develop that. So that's, that's cool that they're like, yeah, let's see what will happen.

Sara Grimes 28:02

I'd like to shift gears a little to think about our current situation. Living in a global pandemic that for most of us has led to some pretty significant changes in our relationships with technologies, networks, each other, and our built environments. So many of the safety precautions have to do with the spaces we can access, and how we can access them, in proximity to each other, and so on. So many of our workarounds have involved moving things online, or a heavier reliance on smart technologies and algorithms. What is COVID-19 meant for the issues you address in your research?

Dr. Beth Coleman 28:37

It's just accelerated and exacerbated. All of the kind of like, societal tender spots in terms of food precarity, and employment, access to information, like who has a computer at home, who's got robust Wi-Fi, like, all those things have just been dialed up, because there's been such pressure around re-shifting so, so quickly, how how we live. So you know, we're both talking to each other from effectively home studios. And we both know how to and can pay for ordering food online and having it delivered. So you know, that's one framework and then right now, I'm looking outside at a park occupied with tents, because a whole bunch of people who hadn't been living outside before this are now living outside, because they were on the edge and then they fell off.

So between pandemic and the social eruption and disruption around arrests and deaths and the other issues that Black Lives Matter protests have really brought to the fore. You know, we're just in a level of swirl and crisis that is intense. And some of our tech leading solutions, such as contact tracing apps. Lisa Austin, and I, and a couple other people co-authored a paper in the spring, you know, again, like speeding to the delivery that we presented to the Minister of Justice. And we were talking about that the design of contact tracing and issues around privacy, but also pointing to kind of the prediction around points of precarity. And, you know, the, the Minister was clear in terms of the the communities in Canada, particularly the people who are; his example was in Montreal; you've got a specific community, who are often the people who are assisting in elder care. And it was like the most horrible, vicious game of ping pong where the old people would infect the health, the workers and the workers then go infect the rest of their community. And it was, it was absolutely predictable in terms of where the problems would be, but

yet, we still couldn't get ahead of it. And then if we look at something like the US, contact tracing is almost literally irrelevant at this point, because there's been no controlling of things. And I mean, we're getting from the Trump administration, language like, like, they're saying, "We're not trying to control this. We're just trying to get a vaccine". And it seems to, it seems out of control,

Sara Grimes 32:18

Not to minimize what you've just said, but I was wondering if you've had any time to think about whether any of the shifts we've experienced during this period have created any opportunities for positive change in our relationships with cities and spaces and technologies? For instance, way more people are going out for walks every day. Are we finding time to get lost in the city, or do other things differently?

Dr. Beth Coleman 32:41

I'm so glad that you remembered that we should also talk about these strange kind of beautiful moments that have also emerged, like, for some people, it's like hell to spend this much time with your family. But but but for other people, like our time is, our time is working a bit differently. And I think you and I have both been super excessively busy during this period. And maybe partly, that's our own fault and our own, you know, our own problem. But even within that, taking care of families, elders, students, colleagues, each other, there's also been an opportunity to really enjoy. Like, one of the things that we were able to do with good weather, and certain kinds of potting up was we'd have these dinner parties out in the laneway, with the people who are in our cluster. We would have movie screenings. We shot a short film together about COVID in Toronto, and how it literally intersects with the Black Lives Matter protests, and going down a street like Ossington where the tables are outside and people finally, I mean, it's changing now, 'cause we're going into the cold season and we're in second wave, but people are sitting outside, enjoying, laughing. And, you know, like, Toronto has a very particular frame and footprint in terms of its own industrial history. It's not made so much around the piazza and squares like other cities, and I guess more European cities, but to see people reusing the space, and just the, just the hunger and the great sense of "Ah, so nice to see you". So nice to have somebody cook for me. Haha. So, so nice to sit outside. I mean parks, public spaces, just green public spaces we we have always known that those are literally the

lungs, like the life of cities, and it became even more apparent under the current situation.

Sara Grimes 35:26

A big thanks to Professor Coleman for joining us today. Please follow the links in the podcast description to find out more about the City as Platform project, the publications mentioned in today's episode, as well as the information on where to send any questions or comments you might have about issues in AI and built environments. The Critical Technology Podcast is produced by me, Sarah Grimes, with support from the KMDI. Audio mix, music and sound design by Turner Wigginton. Theme song by Taekun Park. Please subscribe to stay up to date on new episodes and posts as they become available. And thank you for listening.