



Dialogue

Conversation: Surveillance / Environment /  
Nature / Sustainability

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## Abstract

One of the key areas that surveillance studies has been conspicuously little involved in, with only a few exceptions (Donaldson and Wood, 2004; Donaldson 2012; Ottinger 2010; Haggerty and Trottier 2015; Archer 2021), has been the environment and nature. As it becomes increasingly obvious that the effects of the climate crisis are already with us, and with biodiversity loss accelerating, and the environmental justice issues associated with these crises and the potential responses to them worryingly unaddressed, it seems clear that surveillance studies should have more to say. In this free-form, wide-ranging discussion, Simone Browne, Francisco Klauser, and David Murakami Wood, three leading surveillance studies scholars who've all been involved in the field and the journal for most, if not all, of its history, discuss the different ways in which their research is dealing with questions of environment, nature, and sustainability and how surveillance studies more broadly could engage. Each starts by introducing their current research direction, before the conversation opens up.

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**SIMONE BROWNE:** I'm continually inspired by the kinds of works that many artists are doing when it comes to surveillance, as they think through a lot of pressing questions. For the moment, I'm interested in land and sea. I think I could put it that way. Think about Amazon's Ring, Echo, Alexa and their entire system of products. As well, Kate Crawford and Vladen Joler's *Anatomy of an AI System* (2018) that traces the lifecycle of an Amazon Echo. A couple of years ago, pre-pandemic, I had this question of "What happens when Alexa goes to Accra?" to explore the electronic waste work that takes place in the various dumping grounds of our end-of-life technologies, from cell phones to small kitchen appliances to large-scale computers. What happens to the workers, in terms of the health effects of dismantling these products that are then sourced for materials? That's one way of thinking through the infrastructure of surveillance technologies and the extraction of labour, time, resources, life, and more.

When it comes to the sea, I look to some of the work of, say, Shoshana Magnet (2021) on biomimicry when it comes to things like drones but also the poet Alexis Pauline Gumbs' *Undrowned: Black Feminist Lessons from Marine Mammals* (2021). I went to Tobago just this past summer, and this trip was inspired by an app that was created by two artists, Tega Brain and Sam Levigne, as part of their *The Sleep Study*<sup>1</sup> investigation

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<sup>1</sup> <https://perfectsleep.labr.io/>.

into the potential of restoration, sleep, and dreaming (Brain, Levigne, and New Circadia 2022). They had me write a dream incubation. I based it on my memories of the glass-bottom boats that I would travel on as a tourist in Tobago. We'd go out maybe about ten miles or so to Buccoo Reef, and also to a sandbar called the Nylon Pool. Often, it's like a party boat where people are partying in the ocean where the water only goes up to their waists. But I was also interested in putting this into a conversation with something I came across just in January of last year, from DARPA's (2020) Biological Technologies Office. It was a call for researchers to work on something they called Reefense. Which was about securing DOD infrastructure, but in terms of what they call self-healing for reefs, and other types of ways to deal with reef decline when it comes to the changes in sea level and so on.

My initial work in Tobago was just exploratory to think about the glass-bottom boat workers and the changes that they're seeing when it comes to reef decline due to reef-walking tourists, environmental issues, waste mismanagement, and so on. But I'm also interested in what marine life and other parts of that ecosystem can tell us about surveillance, by investigating the ways that marine life make use of certain anti-surveillance tactics that I think, in many ways, can be models that we could learn from when it comes to grappling with and challenging surveillance; for example, blue parrotfish who sometimes change genders. I want to think further about DARPA's (2020) Reefense and its plan to engineer reef mimicking systems as a military endeavor, and also think more on what ocean life teaches us about resilience and resistance.

**FRANCISCO KLAUSER:** I really liked Simone's expression that her interests are in the land and in the sea. Of course, as a geographer, my interest is also in the land and in the sea. But actually, I came to the topic of "surveillance and the environment" through my focus on the air and on airspace, because I've been working for a few years now on civil drones. One of the case studies in one of the research projects I conducted together with Silvana Pedrozo and Dennis Pauschinger (e.g., Pauschinger and Klauser 2022), was about drones in agriculture, used for spraying pesticides, but also involving image analysis software, software for autonomous flight, etc. Drones can detect, or at least their users try to detect, plant diseases, water levels in the ground, and so on.

In this context, I came across this amazing estimation, made by the Association for Unmanned Vehicle Systems International back in 2013, that eighty percent of the future drone market will relate to agriculture. That really made me realize that so much of the existing critical work on how digital technologies transform everyday life ignores how this relates to rural space. Just think of autonomous tractors and weeding robots, of underground infrastructures with inbuilt sensors, whole fields that are being managed through "smart" technologies, and of course of the many smartphone apps that provide personalized advice on what to plant, when, etc. What these applications have in common is that they work through the accumulation, transfer, and analysis of data. "Smart" farms are just as fashionable today as "smart" cities. And above all, smart farms are inherently surveillant farms (cf. Klauser 2018).

David and I had this discussion in Rotterdam, a few months ago, whether it actually makes sense to distinguish between urban and rural space, leading back to Henri Lefebvre's famous claim that the whole planet is being urbanized. I think this is an important conceptual question, but moving beyond that particular discussion, I would argue that we often focus exclusively on surveillance issues relating to densely populated areas. With notable exemptions in the fields of rural studies and rural sociology, I am thinking of scholars like Michael Carolan (e.g., 2018) and Kelly Bronson (e.g., Bronson and Knezevic 2016), we very often forget to think about the more sparsely populated areas. Who talks about those peripheral places that are on no tourist map, that are seemingly too unimportant to make up for a fancy case study in a fancy research project? Yet, these places are just as exposed to contemporary forms of data accumulation and analysis. I would even argue that, in some cases, these places are actually at the very forefront of the latest surveillance trends. Think, for example, of what Roger Søråa has called the "CyborGoats," referring to the digitized geofencing systems used in Norway (as elsewhere) for keeping goats within a predefined geographical area without physical fences (Søråa and Vik 2021). The system works through sounds, vibrations, and electric shocks emitted from the collars worn by the animals (with inbuilt GPS and networking technologies) as soon as they approach the preset border of their pasture.

Puzzled by these kinds of technologies, I've started asking questions like "is what happens in smart farming the same as what happens in smart cities?" "Are the digital systems used in urban and rural areas functioning in the same way or not?" "Are the issues the same or not?" "What do we learn if we also focus on smart farms and not just on smart cities?" These questions are really where I'm coming from. They've made me discover a number of critical issues, which I think should be explored much more systematically in future years, spanning from the increased techno-dependency and loss of "data" and "food sovereignty" in farming to wider questions of how "smart" farming relates to sustainability, and of how smart-farming technologies change the ways in which agricultural practices and processes are being perceived, lived and conceived, and the implications this has not only for farmers themselves but also for society as a whole.

If we investigate what players are involved in "smart" farming, what companies and what economic interests and forms of expertise are pushing contemporary evolutions in this field, we see that some of the companies that specialize in genetically modified foods also specialize in smart farming technologies. This means that different farming evolutions and markets are coming together, which really highlights the shifting power relations in contemporary agriculture, resulting from the novel ways of managing and organizing everyday farming practices and processes. That's really what I want to focus on and question with my work.

**DAVID MURAKAMI WOOD:** In some ways, for me, this discussion is both something new and pushing forward and also something from the past. Because before I was an academic, I was an environmental activist, I was involved in radical environmental organizations, and I spent a lot of time at environmental protests and all kinds of stuff like that. I eventually calmed down enough to do a Master's of Science in the area of environmental management. I taught environmental management for a while doing my Ph.D. and that was my thing before I got into surveillance studies. Of course, in surveillance studies, I've been very much more involved in urban technological issues. Francisco just mentioned smart cities. My last big project was on smart cities. And I was told right at the beginning of this project that smart cities are over. That's the first thing somebody said to me when I got the grant: smart cities are over. And of course, that's not true on one level, but on another level it actually is. They were already over in terms of what you were able to learn about the world from them. None of that was new: this was really just the same kind of triumphalist techno-utopian rhetoric about how technologies would solve social problems, just in an urban context. We have heard it again and again and again and again. But I started to ask what is going on with smart cities that is really different and what could be different and in doing this kind of way of thinking; I started to ask what if we took the more European way of thinking about smart cities a bit more seriously and dropped the kind of techno-corporate view, the more US view. The European view tends to include a lot more socially positive things within the ambit of what smart cities are about: sociality, conviviality, and environment, for example.

But it turns out that where environmental issues were being dealt with by smart city developers, it was in the really unexpected context of what Mike Davis and Daniel Bertrand Monk (2011) called "evil paradises," these sort of utopian tech-bro creations those that are scattered around the world with people trying to essentially build what you might call "technologically enabled urban lifeboats." So, they are creating smart cities, often in the global South but with massive amounts of global North money, often interfering with the polity of the place in which they are building them to the extent of even separating off the land they were using from the rest of the country in which they exist. A really good example of this is the Prospera (n.d.) platform in Honduras. Honduras passed a law in 2018 allowing basically free cities to be created that would have a sort of semi-independent jurisdictional status. And Prospera (n.d) is one of the first attempts to do this on an island in Honduras, Roatan. Essentially, it's a white global North corporate entity, largely backed by a combination of crypto bros and charter city advocates, people who believe in these tax-free cities from the US, basically colonizing, or re-colonizing, this place.

What I'm really interested in are those kinds of developments that are often marketed as sustainable cities or sustainable smart cities. They are absolutely stacked with forms of surveillance, social credit-like systems and all kinds of monitoring devices. And the technology is embedded in everything from the voting systems to how you get in and how you get out. Absolutely everything. These things are basically little walled

kingdoms, they are lifeboat cities designed to protect these people who buy into them from the shit that's going to go down. No attempt to solve the shit that is going to go down or stop the shit going down. This is "we're going to save ourselves, forget the rest of you." It's no longer "bring me your huddled masses," it's like, "Huddled masses? Keep the hell away!" Right? We're going to just wall ourselves off and save ourselves in our environmentally sustainable smart city. So that's what I'm very interested in right now: those kind of developments. I'm trying to think about them using not just Foucault's (2007) biopolitics but also Achille Mbembe's (2019) necropolitics, because this isn't the politics of life. It's not a politics of saving the environment, it's a politics of death and exclusion. That's what it is about.

**FRANCISCO KLAUSER:** Just to pick one specific point that you mentioned, David, about smart cities and this dominance of the North over the global South. There's a wonderful paper, written by a colleague, Alistair Fraser (2019). He shows how actually the very same process happens in agriculture: we see emerging a range of globally operating companies that are headquartered in the global North but dominate and "grab" the rural spaces of the global South, in that they actually export both the data generated by smart farming technologies (what Fraser [2019] calls "data grab") and the food produced. It's a kind of double domination. I think on this level, there is a powerful analogy between what you've just said from an urban perspective and what we see from an agricultural perspective.

**DAVID MURAKAMI WOOD:** It's true. But we've also got to be careful with saying there aren't any Southern examples. This is one of the weaknesses of an analysis based solely on global South / global North divisions. Look at somewhere like Saudi Arabia, which is developing its own absolutely insane forms of smart cities, like NEOM (n.d.), which are having enormous impact on the environment and indigenous people in the Arabian Peninsula. And, you know, there are these kinds of developments going on in India with Modi's 100 Smart Cities plan (Datta 2015), which is basically building cities for wealthy, tech-savvy middle-class people. And again, walling them off metaphorically or actually from the poor. So, yes, it's generally the case, it is generally the North versus the South, but not only.

**SIMONE BROWNE:** It seems like they have their precursive formations, although they're not entirely similar, with things like export processing zones, the role of Del Monte, Monsanto and the World Bank, and these other figures that still play quite heavily in agriculture and in capitalist extraction of people's labor and land and fruits....

**DAVID MURAKAMI WOOD:** Absolutely. This is entirely true. One of the reasons I mentioned the Mike Davis and Daniel Bertrand Monk (2011) book is precisely because they also make that link right between this longstanding lie that goes right back to the East India Company and all those sort of deniable corporations, those examples of what Jairus Banaji (2020) calls commercial capitalism, that were sort of actually state capitalist projects but have a sort of deniability based on being disconnected from the state from which they come. And Del Monte and Dole (the United Fruit Company) are classic examples of a clientalist sort of company from the US. UFC created a US client state, right? The actual "banana republic," the original one. I mean, so these are certainly precursors of these modern neocolonial projects. A certain kind of colonialism, which, operating on this very clever infiltrative model and returning to Francisco's field of agriculture, you see this now with states and corporate fronts for states buying up land in the global South, whole big tracts of land, in the Amazon and in Africa and so on. You can buy land on the open market. But if you buy enough land, essentially you've got a big chunk of a country, and big finance and sovereign wealth funds in particular can easily operate like this.

**SIMONE BROWNE:** I'd be interested to hear more, David, about the crypto bros you mentioned and the ways that those crypto-currencies are creating something different than those earlier formations we were discussing.

**DAVID MURAKAMI WOOD:** I don't know if it's different or not. I think these crypto bros, they're all very young and they don't know anything about history, but mostly it is because they are the kind of latest incarnation of this hyper-libertarian colonial formation. They think that what they are doing is this pure

expression of will, that will benefit everybody. Ultimately, they have an absolute faith in this future that's going to be driven by what they are doing, by their innovation and their entrepreneurialism. But at the same time, they seem to have this sense—and I base this mostly on what is happening in El Salvador with the crypto bro president there, where everything is up for sale—that everything *should* be up for sale. It doesn't matter as long as it's done through Bitcoin or through whatever cryptocurrency. It's almost that you can do anything as long as it's cryptocurrency-based, it moralizes everything, or bypasses morality.

But what's really ironic is this sometimes goes along with some kind of social credit model. There's often some kind of internal assessment where people are ranked and, you know, graded and given scores. And that's also part of this somehow. We talk about China, but I think there's a lot of people waiting for that to happen more generally, and they're not getting their way in wider societies yet. So, they want to live in a society somehow like that, which I find doesn't seem to fit the conventional libertarian political angle but rather something much authoritarian—that's all I can say.

**FRANCISCO KLAUSER:** In my empirical work with Swiss farmers, I've found that digital technologies like farming-related smartphone apps, computers programs for data management, etc. have become very established tools in everyday farming practices. I've also seen empirically that farmers actually know quite well how far they want to go in their use of digital technologies, how much of that they really want to use, and how they want to use it. This leads back to the debate we've had so many times in surveillance studies, relating to how to acknowledge both the structural inequalities created by the contemporary world of Big Data and the individual agency of particular individuals and social groups to actually resist surveillance or even to appropriate specific technologies for their own purposes and empowerment.

Also, some farmers are very well trained in their use of “smart” technologies, and they really benefit from them in that they extend the range of tools they already have. There's always this challenge for us critical scholars, on one hand, to question the power dynamics that produce and are being produced by surveillance systems, and on the other hand, to also acknowledge how in some cases these technologies can help and facilitate things. I mentioned initially the example of automated spray drones, used in Swiss agriculture. This has proven to be rather efficient and rather cheaper and less environmentally damaging than spraying by helicopters, for example. So, in some cases new digital technologies can also bring benefits with them. As I've said, for me, one of the challenges is how to acknowledge both the chances and the problems implied. Saying this, I'm just trying to complement the more sinister, domination-focused account of what's happening right now.

**DAVID MURAKAMI WOOD:** That brings up an interesting issue, this idea of the benefits of surveillance and digital technologies. Some of us started to think about this in the mid-2000s and that resulted in a workshop and then a special issue with Torin Monahan and David J. Phillips (2010). One of the fundamental questions I'm trying to wrestle with is thinking about surveillance, the environment, and global questions, the ones that Simone was talking about, but also thinking about things like climate change and surveillance and thinking in the aftermath of the COVID-19 pandemic; what amount of surveillance “for our own good” are we prepared to put up with? It's not just about whether it's effective, whether it works, but also that we're entering an era in which there's going to be massive and systematic surveillance supposedly to deal with the effects of catastrophic climate breakdown and global migration, for example, and other things, too. For surveillance studies, we're going to have to really wrestle with this question of how much surveillance for our own good is okay. And is it for our own good? What does “for our own good” mean and whose good? There will be a whole list of new and interesting questions, and one of the reasons why I was quite interested in platform cities is that their developers essentially seem to recognize that this debate is never going to play out well for most people. That it's going to end up being repressive and authoritarian. And so, they're basically buying themselves out of it. Lifeboats. I know Simone's work is also starting to get into this....

**SIMONE BROWNE:** When you were talking about that, I was thinking not only about the precarity of life with climate disasters and decline but also disease monitoring like the Ebola outbreak now in Uganda. I read

with my class Foucault's (1977) chapter (in *Discipline and Punish*) on the management of a plague-stricken town. And each year, particularly in times like these of multiple crises and pandemic times, there is always some student that comes up and says this sounds good or, with a lot of students that are in the military, that this sounds exactly like how we take over a town. And to think about when you ask that question, David: how much are we willing to and, of course, aren't even willing to put up with when it comes to the management of a population in these pandemic times. I think that's going to be more and more of a big question. Like, I was listening to an interview this morning on CBC (Canadian Broadcasting Corporation) where they were discussing Uganda and they were asking whether they were going to quarantine and contain these folks in the city so that movement can't happen to the coastal cities, like Mombassa and so on (see Thomson Reuters 2022). These are questions that will, I think, more and more pop up when it comes to who has the right to move, the rights to have rights, and the rights to remain a healthy populace, whatever that might look like.

**DAVID MURAKAMI WOOD:** So, you mean keeping them out of the tourist areas?

**SIMONE BROWNE:** Yes. And then how are these smart cities populated? And then just thinking of this question of air that Francisco was talking about: who has the right to do cloud-seeding, taking rain from somebody else and some other place, so that you can have some rain when it comes to farming. And all of those kinds of extractive logics that I think really underwrite all of these questions might come down again to power dynamics that have already been in place for such a long time.

**DAVID MURAKAMI WOOD:** I want to ask a question of both of you. In the recent book, *Revenge of the Real* by Benjamin Bratton (2021), there's an interesting but arguably flawed chapter about global scale monitoring. I've engaged Bratton on this, and he's really insistent that we should call this "sensing" and not "surveillance." And he really wants to make the distinction between sensing technologies and surveillance technologies. It's not quite clear to me how exactly you do that and what the criteria are. But I wanted to know if either of you have thoughts on what we call surveillance. I'm also thinking here about an attack I experienced on Twitter with some very angry man who told me that I shouldn't use surveillance except for stuff that happened under authoritarian regimes because otherwise I was demeaning all the victims of authoritarianism by calling anything else surveillance. But I just wondered what we do with all these developments that challenge our notion of what surveillance is and whether we have to have new vocabularies even for the fundamental thing that we're looking at. Or is Bratton just wrong?

**FRANCISCO KLAUSER:** David, this was actually one of the questions I also wanted to address in our conversation. I've been discussing this for many years with friends in surveillance studies like Colin Bennett and Anders Albrechtslund, for example. For example, if you speak from the perspective of political science and legal studies, it makes perfect sense to argue for a narrow definition of surveillance, only relating, for example, to humans. But as a geographer, I'd argue that we can also surveil non-humans, like rivers, volcanoes, or the aforementioned "CyborGoats." Then, in the end, the answer I've come up with, which is a relativist answer and maybe a little frustrating, is that we cannot aspire to have one definition that is the right one for everybody and for all of the time, because concepts have to answer to a specific research problem. It's the research problem and the issues around these research problems that invite us to have a narrower or a larger definition of one specific concept. This means I would not try to find the one ultimate and final definition of surveillance, because it depends on what we want to do with it, what we want to say.

Often, I've actually found it very interesting to have a rather large definition of surveillance, precisely because I wanted to stress the analogies between monitoring humans and non-humans, and because the two are in reality often interlinked and interdependent. If we look, for example, at "smart" farming, it's all about, of course, surveilling farming practices and processes, but it's also about surveilling animals, plants, waterpipes, etc. If we want to understand data accumulation and analysis in agriculture as a whole, it makes sense to have a large definition of surveillance. But if we have a different question in mind, if we want to make a very specific point about one particular way and form of accumulating and analyzing data, then we might opt for a narrower definition of surveillance.

For me, one of the interests in opening up new terrains of investigation like that of surveillance and farming, or of surveillance and the environment, is also to then revisit our initial conceptual toolbox and to ask ourselves, for example, what these new terrains might actually tell us about how to understand contemporary data politics and surveillance. Rather than desperately trying to find the ultimate definition of surveillance, I therefore think we should constantly challenge our own understanding of it, make it evolve, whilst letting it guide us as a heuristic tool in our explorations of ever-new thematic and analytical fields.

**SIMONE BROWNE:** For me, at least at this moment, just keeping it simple works. Thinking of surveillance as an operating system. An operating system for what could be, you know, patriarchy, it could be a state, it could be something as simple as a census or vaccine records or anything. And then I think, following something that Francisco said, depending on the problem, then the definition is different. And so, for sensing whether it is, you know, geospatial imagery or some type of mapping technology, remote sensing, whatever the terms are, that is a part of surveillance, because surveillance does not always necessarily have to have a negative valence attached to it. It's what it's for, and how it's put into practice and for the ends and means that we can come to understand, to make those judgments and decisions on it. And that's the work. That's not the fun, but that's the work of theorizing and thinking through these things, that words change meanings depending on context. Just to see it as an operating system, at least for now—it works for me.

**DAVID MURAKAMI WOOD:** I think those are both good answers. I don't know what the answer is, and I don't think I've even thought about what the definition of surveillance is for years until I read Bratton (2021). And it's not because I took it for granted really, but just because it became a really uninteresting debate. You know, that debate that was around for a while where it was whether it included this or that? I had these ridiculous arguments with Gary Marx, who thinks everything is surveillance, you know, even sitting on a park bench and looking at people. I just got really bored of those debates. But I thought, what was the value in this idea of thinking about sensing and surveillance? And there are two different kinds of things, one of which is the intermediary role of particular forms of very large-scale systems, what Paul Edwards (2010) called "a vast machine"—all this kind of panoply of stuff around climate sensing, modeling, and simulation. It seems very hard in that context to talk about the kind of directed systematic form of monitoring with a narrowly defined purpose that David Lyon talks about as surveillance. It's much more diffuse and nebulous. And it's not about the moral intention, the good or the bad. I think that's what some people get so caught up in, that if it's bad then it's surveillance and if it's good then it's sensing. And I don't think that's what Bratton (2021) is saying, but he gets a bit close to it. But I think there are more interesting reasons to think about those words being useful, and I'm trying to use this to play around with them and think about sensing for our own good and surveillance for control and seeing if that can work or seeing whether they overlap. But I don't know. I think it's a fun thing to play with. And I agree with both of you that things change and they're relative and they fit into different categories depending on what we're looking at. And I like the operating system metaphor too; that's good.

**FRANCISCO KLAUSER:** David, you mentioned David Lyon's (2007: 14) definition of surveillance. Personally, I find this definition still very operational. David Lyon's focus on the systematic, the routine, the focused forms and techniques of attention, seems to me to open up a better way to study and differentiate between differing logics of data accumulation and analysis than the attempt to distinguish between good and bad data accumulation. We should all know that it's not possible to distinguish clearly and universally between what is good and what is bad, because this is normative and what is bad for somebody might be good for somebody else, or involve both good and bad dimensions. This is the key message of Berthold Brecht's *The Good Man of Sichuan*. The main figure of that book wants to be good all the time and yet all he does also turns out to be bad. I feel that we cannot have the aspiration to know once and for all what is good and what is bad. We cannot have a definition of surveillance that is based on this kind of normative dichotomy.

So, I think David Lyon's approach is, for me at least, still alright. For example, I've used it in recent years to differentiate between different logics of drone usage: In some cases, drones can be used so sporadically

that they cannot be considered as surveillance—let’s say a family using a drone with imaging capabilities on a Sunday afternoon to take “dronies” from the air. In other cases—for example, if somebody uses a drone in a focused and routinized way to watch his neighbor—it clearly is used for surveillance purposes. David Lyon’s definition allows me to make that distinction, which I find useful because in the two cases, the issues at stake are not the same.

**SIMONE BROWNE:** But is there something to be said about what Chris Gilliard and David Golumbia (2021) call “luxury surveillance”? The idea that just as a family, we’re just going to use a drone to take “dronies,” that there’s something about the authorizing aspect of that, when it comes to those who use this technology, and to the business-end of this drone technology. At the same time, there are planes leaving Djibouti, drones leaving Djibouti, to carry out killing from a distance. I think there is something in their argument like the carrot and the stick, but these are not for the same people, and that in some ways, some of us have no right of refusal when it comes to some of these technologies, while others buy-in for convenience, ease, or a sense of luxury. So, can they necessarily be, you know, split apart to say that something is harmless or not surveillant?

**DAVID MURAKAMI WOOD:** I think that’s an interesting one. I’ve actually talked to Chris a little bit about this because, you know, I came up with a similar idea, separately, but it’s on a different scale (see Murakami Wood 2017). I wasn’t thinking about the kind of individual decisions of that level, but the way in which I tried to deploy Foucault’s (2007) idea of biopolitics, along with Mbembe’s (2019) idea of necropolitics, following on the same sort of lines. Because, on one hand, you had biopolitics as the management for life, to bring people in and to include and to care for people, and the necropolitics is to cast out, to exclude, to keep out: the walling off the subjecting people to the indignities of bare life, as Agamben would say. And those processes involve the same sorts of technologies, it’s the same systems and it’s the same processes and sometimes even the same people working in these systems that are involved in each. And yes, trying to divide it between either what you’re talking about, Francisco, whether something is not systematic and whether it’s systematic, or whether it’s inclusive and good, or harmful and bad. Both of these kinds of distinctions don’t tell us what surveillance is. To me they tell us what kind of politics is operating, what kind of political economy is operating. So, yes, luxury surveillance is exactly that, right? It’s part of a particular kind of political economy that’s operating that allows for certain sorts of sociotechnical actions, that in other circumstances and to other people and groups would be repressive and harmful. I’m not dismissing your argument, Francisco. I still think you’re right that this definition is extremely helpful.

**FRANCISCO KLAUSER:** No, I agree with you, David. It’s just one criterion to narrow it down in one way. But of course, it’s debatable. To some extent, this discussion reminds me of the discussion around Michel Foucault’s conception of power, defined as a capacity to act on other actions. Personally, I find it very fruitful to have such a broad definition of power. But there have been so many debates about this. Some scholars think that Foucault opens it up too much, that power becomes such a large concept that everything somehow becomes power, which means we lose the concept’s analytical prowess.

Again, I think there is no definitive answer to the question of how broad the concept of power should be. But I’m sure that Foucault himself understood power so broadly because he used it as a heuristic tool that allowed him to explore ever-new milieus, new worlds, other rationalities, and techniques of acting on other actions. That’s exactly what I was saying before, regarding the concept of surveillance. We should take surveillance as a heuristic tool that helps us explore new worlds, rather than as a fixed category that is defined once and for all. By the way, it seems to me that we are doing just that in our present conversation about surveillance and the environment.

**SIMONE BROWNE:** Well, I’m just listening to what Francisco is saying and, as we’re talking about the definition of surveillance, I get what David also said that sometimes those conversations kind of bored you. But what is the role of surveillance studies as a particular type of scholarship and what are the demands that we have to make of it when we’re not just talking about the environment in the air, but we’re talking about,

you know, moments of rapid decline: of Florida underwater, and Pakistan underwater. What is at stake for the study of surveillance in these times?

**DAVID MURAKAMI WOOD:** Absolutely. I was thinking with the Pakistan floods in this context. You couldn't get a better illustration of something that should be so utterly visible and yet was so horrifically ignored. People elsewhere, particularly the transnational ruling class, were doing their absolute best to turn away and to not see this happening, even at a time when we have the best possible imaging and sensing systems.

**SIMONE BROWNE:** I was about to say, sensing, all that sensing technology.

**DAVID MURAKAMI WOOD:** There's no way we cannot see this. And yet, somehow, we managed not to see it. It reminded me of a piece that was published in *Surveillance & Society* a while back as part of the "Surveillance and Authoritarianism" special that we did in 2017. And that was a piece from Pakistan. And the authors of that piece, Mahvish Ahmad and Rabia Mehmood (2017), because we'd set that issue up as being about the global turn to authoritarianism, they just immediately objected to that, even the idea that there was a turn because in Pakistan, in every other country in the global South, they said this has been what you left us with. This is your legacy, as is authoritarianism everywhere in the world. And that doesn't mean no turn, but it's just been colonialism and it's still colonialism. And then the Pakistan floods showed that we're still pretty much in that kind of a space, although it's not an exact analogy. One of the problems of this whole question of surveillance is whether we even look when it's there. We have planetary level, universal, ubiquitous surveillance. Yet the powerful can still choose not to look and not to see. And that politics of looking is absolutely crucial, absolutely crucial when it comes to global social, environmental, and data justice.

**FRANCISCO KLAUSER:** Simone, can I get back to one of the things that you said at the very start, which I found intriguing and interesting, when you gave that example of the fish changing gender. You brought it up as a way of learning from nature to rethink the ways in which we deal with surveillance. Could you elaborate on that a little more? I think it is extremely promising to use these kinds of images and comparisons to move beyond our established ways of thinking about surveillance.

**SIMONE BROWNE:** What can marine life teach us about renewal and resilience? So, these parrotfish, they can be gender non-conforming. So sometimes the female fish can render themselves as male. And they also produce at times of rest, a cocoon—a protective membrane-like sac from other, you know, predators and parasites and whatnot.

So, I wanted to know what we can learn from coastal life and that which is undersea and even not necessarily in the sea. How animals and plant life deal with surveillance. And I know lots of folks have done this work, whether it's through the use of camouflage or various other tactics. This was inspired by Brain and Lavigne's *Sleep Study* where they put climate change and a lack of sleep and the need for restoration as part of the same capitalist extractive logics in order to get us to think more about the need for sleep and resistance when it comes to combating climate change (Brain, Lavigne, and New Circadia 2022). I hope to catalog, to understand and to study the way that animal life deals with, or makes use of anti-surveillance when it comes to predators and other things, because there is something that human life can learn. People have been doing this before. This is nothing brand new when it comes to biomimetic means to test out some of the very large-scale threats that are at stake when it comes to surveillance—drones that look like hummingbirds, for example. So that's the problem with that kind of research as well.

**DAVID MURAKAMI WOOD:** DARPA is a fascinating and disturbing source of these kind of things. I did an overview of their neuroscience research last year, and one of the most notorious things that they did a few years ago was an experiment growing beetle larvae around surveillance equipment. They inserted tiny little sensing devices so that these beetles grew up with the thing inside them. Yeah, it's like so you'd never know, this is something of a notorious one. But they've done a lot of that kind of work by disturbing the

boundaries between technology and nature in various ways. So, the Reefense stuff doesn't surprise me at all (DARPA 2020). It sounds just par for the course for DARPA, right? You can't have anything in the world that couldn't be improved by a military function—and of course, greater economic value.

One of the sad things about the way in which we think about nature in general is that it almost has, you know, whatever we say, it almost has no social value until it's either militarized or commodified. Right? And that the militarization of that thing actually gives it something that makes it worth preserving. You know, otherwise it's just trash, it's just nature. Which is a nice segue... to Simone's work on waste.

**SIMONE BROWNE:** Well, the starting point for that, as I mentioned, was the question of what happens when Alexa goes to Accra, that there'd be no cloud computing and the various infrastructures and hardware of surveillance and AI without all of these technologies that are made for the consumer market but then become useless, or at least ones that can't be repaired—planned obsolescence—and so on. So, what happens when those things, along with bicycles, refrigerators, and whatnot, get shipped to sites like India, Africa, China, and other spaces when it becomes a problem of electronic waste work: what does it mean?

These workers are dismantling, sorting, dealing, breaking apart, and burning these high-impact thermoplastics. What happens to the human body when you inhale a cell phone or you inhale an Echo? With all of that particulate matter getting incorporated into the body, what are the long-term effects not only for the workers and the people that live in these areas: drinking water and food supply contamination, livestock contamination. With this idea of refurbishment that comes with this trashed and discarded debris, there also has to be something said about our responsibility to the laborers and the spaces in which our waste goes to, but there has to be at a, I don't want to say, a political economy—it's an exciting space of research. We have to demand, you know, some type of responsibility or reparations when it comes to extraction of planetary resources so that I can have a new iPhone or a laptop.

**DAVID MURAKAMI WOOD:** You could say “political ecology.” That's often used in geography. And I think it's a pretty good term, actually. It also brings to mind Martin Arboleda's (2020) book *Planetary Mine*. It's a fantastic study of the mining industries in the north part of South America and especially lithium and so on, how these are tied into planetary networks and the things you're talking about right through to the end process from the other end of the kind of equation, with mining.

**SIMONE BROWNE:** Yes. And then it's mining again because this waste is sourced for copper, aluminum, and you know, other trace amounts of precious minerals.

**DAVID MURAKAMI WOOD:** Many of the biggest mining companies are Canadian. Canada has the worst mining companies in the world. Queen's University, where I used to be, is pretty much funded entirely by mining money.

**SIMONE BROWNE:** So how do you contend—how do we contend—with all that as researchers, when the space in which we work, or the technologies which we use to type up our papers and even have the conversations [by Zoom] that we are having at this moment are the product of these systems?

**DAVID MURAKAMI WOOD:** It's like you cannot escape. But then Marxists would say, of course it's just capitalism, in whatever form we're talking about. We can never just abandon everything and become long-haired hermits living in the woods. Then we'd be pure, but then we wouldn't get to do anything or change anything structural. Another alternative is the selfish one from the crypto boys at the beginning of our conversation....

**SIMONE BROWNE:** Or, we can we learn from indigenous peoples thinking through surveillance that remind us to be, you know, stewards of the land and sea through a relationship of reciprocity.

The other question is, are there forms of surveillance we can use to actually control some of this stuff? I mean, that's the thinking about how surveillance could be a good thing. I mean, one of the reasons why processes, like in Accra, happen is because not everyone sees it from the outside. Meanwhile, we can quite happily go about our business pretending everything we're consuming is being recycled, that all the surveillance technologies end up being recycled, and we never have to confront the reality of the outcome of those processes. Could we make it more visible in other ways? Would there be ways of deploying forms of surveillance? And what would that do? What would we be trying to reveal by that? Who would we be trying to benefit?

**DAVID MURAKAMI WOOD:** We have to be careful too. I suspect there's a lot of people that make their living through this right now, they might be poisoned themselves, but they're probably better off than some people in the same area. There are so many examples of well-meaning people from outside going into places and saying, "You shouldn't be doing this stuff. This is really bad." And the response is, "Yeah, yeah, but that's the only job I can get."

I am struck by how people are being treated with Prospera (n.d.), the weird tech bro city I mentioned earlier—which is in big trouble by the way, I don't think it'll ever get built, hopefully. The proposal was that they just "incorporate" all the existing people living in the area into the city. How would they do that? They couldn't actually live there. They would just be given jobs above the minimum wage. They'd be incorporated in the sense that they'd have to work there as a servant class, essentially. And nobody asked those people whether they actually wanted this thing to be built and to have all the land taken. They just assumed that above minimum wage sounds great. That they would be grateful, but they would be surveilled and excluded like the day-laborer populations of Singapore who come in at the border every day, show their passports, and go again back to Malaysia in the evening, or the semi-permanent, shifting migrant worker populations in the UAE and Qatar and so on.

**SIMONE BROWNE:** And then what about the people that do that gig work, where they might drive an Uber and Lyft and then go work as content moderators for, you know, some subsidiary or third-party working for Facebook? I think there's something to say about the precarity of labour and all of those spaces that we mentioned, Accra and even the cities like, Austin, Toronto, wherever....

**DAVID MURAKAMI WOOD:** Yes, absolutely, there is. And even in farming, of course, because although what Francisco is saying about farming being high tech is true, it doesn't mean that there's no workers on farms anymore. I know in Ontario there is a temporary migrant worker system, which is a really complex network that involves border controls and surveillance and passes and visas, and it completely collapsed during the pandemic because of the border restrictions, and they are having real trouble reinstating it. And especially fruit and vegetable farming is in enormous trouble in Ontario because nobody else will do this work. And so even though there is a lot of smart technology and a lot of surveillance, they haven't actually managed to eliminate the human yet, despite making them more precarious and disposable. Maybe in Switzerland?

**FRANCISCO KLAUSER:** Well, Swiss agriculture is very fragmented. Farms are run by families or maybe by small companies, but it's all very small. This means that farmers don't really have the capital to invest in huge smart farming projects relating to whole fields that are being equipped with sensors and novel digital infrastructures, as you'd find it in the US or in the Japanese or Brazilian farming systems. In Switzerland, farmers wouldn't have the capital necessary to do that. But precisely for that reason, farmers have in some cases come up with new ideas for collaboration around specific smart farming tools. For example, wine producers together buy a new spray drone or different farmers buy different tools that are then shared collectively.

Although these are very rare examples, I find such initiatives extremely promising, because that's where you realize that technology can also be a catalyst that induces new types of organization and collaboration,

which also brings us back to thinking about the positives of technology, although this is obviously not the whole picture either.

Funnily enough, this also reminds me of one of the key results of my Ph.D., some twenty-five years ago. In one of my case studies, relating to the first police CCTV system in Switzerland used to surveil an area of street prostitution, I could see that the actual benefit of the cameras was not to prevent or to reduce crime, but simply to bring different people together. Actually, the discussions about the cameras created such a buzz that they initiated new debates and exchange between local residents, the police, social workers that helped the sex workers, etc. This is an interesting example to show that technology is always a mediator of new relationships, which can, in some cases, also be productive.

**DAVID MURAKAMI WOOD:** I've been thinking a little bit about that at a different scale, thinking about environmental criminology and how people can start to think about dealing with crime and the environment. And again, there are these absolutely enormously sophisticated systems of satellite surveillance, aerial surveillance. And some of this stuff is publicly accessible—more or less. And you've got increasingly small groups of people using this to pinpoint things that are going on that are bad, not just things like the Amazon being deforested by this much every year but also more specific forms of environmental crime. And of course, we're quite familiar with this kind of work when it comes to things like Forensic Architecture (Weizman 2017) and the work of people who've discovered genocide and attacks on civilians.

I remember a few years ago when George Clooney was involved in fronting an initiative to try to use satellite surveillance to detect where the genocide was occurring in Darfur (Harris 2012). And people laughed at them, right? Because they're celebrities or whatever. And because it didn't seem to make much difference. It's too far to say it's become a democratized activity, but it seems to be an increasingly common sort of activity with a lot of people involved in the crowdsourced and shared information gathering, using surveillance (or sensing!) technologies to try to bring some measure of justice, whether it's social, data, or environmental justice.

But the problem for me is that with most of the technologies we're talking about, very few of them are purely civilian and truly democratic. And so, when it does come to a situation where the people really funding those things want them to be closed off or the bandwidth to be cut, you know, like with a military technology like GPS, that will happen. The bandwidth will be slowed, people will not be able to use it so easily if the US is at war. That's what happens with GPS. It happens with a lot of these systems. So, there's a sense in which, if we're going to have surveillance for good, then we need networks, technologies, infrastructure for good, all of these other things together. It can't just be reliant on the goodwill of some extremely dubious governments or corporations to allow us access.

You don't actually need to be particularly sophisticated though to have access to some of these systems. There was one famous incident, I think it was in Iraq, during the period of the US invasion in the mid-2000s, and the US discovered that the people on the ground in the area had actually worked out how to hack the high-level US surveillance drones using a \$20 Russian satellite TV grabber (MacAskill 2009). These Russian satellite TV grabbers are what people use to hack into television satellites to get free TV. So, for \$20, these rebel groups on the ground worked out how they could use that to hack American drone streams. So, they always knew what the drones were seeing, where things were going to happen. And it was just \$20. So, it's not just about the legitimate and official forms of collaboration. There are lots of possibilities for forms of hacking and breakage and unofficial use. It's an example of something that's incredibly cheap and very effective. So, why aren't more people aren't doing this kind of thing? I'm not quite sure.

**SIMONE BROWNE:** I was thinking as you were talking, of that Strava running app from a couple of years ago, where you had these military sites, and the folks from these sites using the running app completely outlined all of these black sites (see Hsu 2018). And the app made these activity maps public. There are some moments when these kinds of breakages happen or these exploits happen. And that was a self-exploit,

based on cell phones. It's like this is what the system is meant to do. It's not broken. It's just nobody anticipated that this would happen. But it seems obvious in retrospect.

**DAVID MURAKAMI WOOD:** So, things that remain unseen or that we refuse to see can be made visible by these kinds of inadvertent functionalities of technologies sometimes.

**SIMONE BROWNE:** Exactly. And that information's there forever now. I mean, they're not going to shift that site! They can take those maps down, but people will have kept them. Published them. They'll be around. Or they will be blurred out on, you know, Bing or Google Earth or so.

**DAVID MURAKAMI WOOD:** During my Ph.D. research about secret NSA bases, there was a program called GetMapping. It was a British, pre-Google Maps program and they didn't blur, instead they systematically replaced secret American bases with innocuous looking fields. And I'd been there. I knew there was something there. It's so obvious. And it did this for a lot of sites. It was really, really strange. But the conventional paper Ordnance Survey maps did not do this. This particular NSA base, Menwith Hill, the biggest NSA base outside of the US was actually built into the British telephone system, a thing called Backbone, which was this massive telecoms infrastructure that goes down the middle of Britain and then this base taps directly into that through a nearby telecommunications site, Hunters' Stones. So, it can basically suck up everything that passes through Britain by cable, telephone, email, everything. Using the basic OS map, it's really easy to see the link between this weird little telephone site and Menwith Hill. Top Secret status is undone by the very same visualization and surveillance technologies created by those same states and corporations.

But even within these organizations they still pretend that things are secret that are not, and they go to absurd lengths to maintain that fiction, and then make a big fuss about Edward Snowden and Reality Winner and others. It's theatre. And then all these amazing planet-spanning surveillance systems, they're not joined up, right? I talk about ubiquitous surveillance or planetary surveillance, but in one way, it's so far from that, so fragmented, so fractured, so poorly joined up. And a lot of that is not because it couldn't be. It's because of this kind of stuff, you know, distrust, military politics, military intelligence doctrine, as the Americans would call it. But it's often got a lot to do with marketplace competitive advantage for the corporations that produce these high-tech national-security surveillance innovations.

**SIMONE BROWNE:** So, something like the Five Eyes—or is it the Seven Eyes? Or is it just a branding opportunity?

**DAVID MURAKAMI WOOD:** Well, they share some stuff with each other. But the Five Eyes treaties, the chain of command, are pretty careful about how it works. The US is the first party, as it's called. And then Britain, Australia, Canada, and New Zealand are the second parties. Second parties have an obligation to pass everything to the first party. But there is no reciprocal obligation. The US can give to those second parties what it chooses to. And the third parties, now dozens of them, they're basically subservient, they just get whatever.

**SIMONE BROWNE:** I'm thinking about, you know, the ways that fusion centers got understood on the local level, at least city spaces here in the US, where there's seemingly no actual fusion and what you're talking about with this operational dynamic here, but it's more like your description of the way information gets moved in a more... old school way.

**DAVID MURAKAMI WOOD:** If you read Priscilla Regan and Torin Monahan's stuff (e.g., Regan, Monahan, and Craven 2015) and more, even in those fusion centers there's immense distrust and some of the people working in some particular units don't get to see things other people have. And even though they're supposed to be sharing this information in common, they're not. They're in the same room but they may as well be back in the offices they came from.

But the other bad side of this is that we do need some of these systems to be joined up, and we want to gain control of them if we want to actually deal with some of the global problems that we've got. It would be so great if an accountable civilian authority had real control of most of those satellites that are up there. And was able to use those, you know, and able to crowdsource stuff with people. It would be amazing. But that's not going to happen at all.

**SIMONE BROWNE:** But maybe it could. You know, when we think back to, like, demands for public audits when it comes to something like encrypted messaging apps or various VPNs that if we could scale it up to satellite imagery, so that when Pakistan is underwater, it doesn't remain unseen even by those that choose not to look.

**DAVID MURAKAMI WOOD:** That's probably true of some of the truly civilian satellites. But most are military or privately owned ones. Take Elon Musk: he's just putting up these little relay stations ready for his StarLink system, which he basically uses as propaganda. One of our colleagues, Azadeh Akbari (2022), was talking about this in a Guardian article recently because Musk made his usual StarLink promise about the Iranian protests. But she pointed out that like there's no way that means anything in the Iranian context because people don't have the dishes, and because of sanctions, there's none of the permissions from the ITU that are needed. None of it can happen except maybe for very small number of people who might be able to smuggle things in. So, it's just a kind of propaganda. And meanwhile, he's filling the sky with this with trash. Each of these satellites is going to turn to trash within ten years or so, floating around up in low orbit or falling back into the atmosphere, and in the meantime ruining astronomy.

\* \* \*

The conversation finished on this reference to the space trash produced by surveillance capitalism, which seemed both directly material and symbolic of the contribution of surveillance capitalism to the environmental crisis. There is much work to be done!

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