Interview Transcript

Predictive Policing, Environmental Governance, and the Spatial Monitoring and Reporting Tool: An Interview with James Stinson

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Interviewee: James Stinson
Text has been edited lightly for concision and readability.

Stinson: So, the main research question in this new project is how processes of digitalization, datafication, and automation are changing the political economy and political ecology of conservation. How are digital surveillance and smart technologies changing relations of power and control in and around parks and protected areas and ultimately what types of impacts — social, cultural, economic, or ecological — are these technologies having in the context of conservation, and on the wellbeing of people and the planet.

[Musical intro]

Smith: Welcome, my name is Aidan Smith and I'm a research fellow at the Center for Law, Energy, and the Environment at the University of California, Berkeley. You're listening to the first interview of a three-part interview series where we'll be exploring the effects of digitalization on environmental governance. I use environmental governance as a lens for understanding the actors involved in environmental decision-making. This lens also brings focus to the ways that environmental problems are framed and acted upon and whose interests are prioritized, and whose are marginalized. Digital approaches have become more and more prevalent as a means of addressing the growing concerns of environmental degradation and climate change. I had the pleasure of speaking with three social scientists who are examining these new modes of digital environmental governance. Through these conversations, key themes emerge that can help guide the public and decision-makers as they think about the role of technology in their lives and in their work. So, with that, let's dive in to the first interview.

[Musical interlude]

Smith: Welcome. Today, I have the distinct pleasure of speaking with Jim Stinson. Jim is a postdoctoral fellow in planetary health and education at both the Dadahleh Institute for Global Health Research and the Faculty of Education at York University in Toronto, Ontario. He studied cultural anthropology at the University of Toronto and his research explores the political ecology of biodiversity conservation and development, indigenous stewardship and planetary health, and emerging digital technologies. He joins us today to discuss a research project he's been leading in Belize. The project undertakes a qualitative and ethnographic examination of the country's Spatial Monitoring and Reporting Tool, or SMART for short. This tool became the official monitoring system for terrestrial and marine protected areas in Belize in 2018. Jim and his team explore the social and ecological implications of the SMART tool and the shift it represents for conservation and development in Belize and beyond. His work raises interesting questions

about the role of smart sensors, algorithms, and artificial intelligence within environmental governance. Welcome Jim. I appreciate you taking the time to speak with me today.

Stinson: Thank you very much for the invitation. It's really great and exciting to be able to share a little bit about this project with you and the listeners.

Smith: Let's dive right in. So, could you explain, and provide a broad overview of your research project and the main research questions that are driving it and maybe a little bit about your methodologic approach?

Stinson: So, this research evolved out of earlier work that I had done in the area of what is sometimes called *Nature 2.0*, which looks at the role of *Web 2.0* or social media, in the context of conservation and human-nature relations. One of the major insights of this earlier work was recognizing the rapid integration of conservation and biodiversity protection efforts in the economy of surveillance capitalism and emerging forms of platform capitalism. So, this new project is an attempt to expand on that by looking at ongoing and emerging trends in digitization, datafication, and automation in conservation — specifically by focusing on the role of digital surveillance and smart technologies, which I refer to under this broad term of *Nature 3.0*. I've developed that term based off of earlier discussions and definitions of *Web 3.0*, which was defined as an evolution from *Web 2.0* — which facilitated collaboration between humans via social media, and digital apps, and so forth — to *Web 3.0*, which really uses artificial intelligence and machine learning to facilitate collaboration between humans and machines and automation around different processes. So, the main research question in this new project is how processes of digitalization, datafication, and automation are changing the political economy and political ecology of conservation. How are digital surveillance and smart technologies changing relations of power and control in and around parks and protected areas and ultimately what types of impacts — social, cultural, economic, or ecological — are these technologies having in the context of conservation, and on the wellbeing of people and the planet, or biodiversity? In terms of this specific project, it's in the early phases and, as you mentioned, it's based on an ethnographic examination of the Spatial Monitoring and Reporting Tool, which is referred to as SMART, and it's used both in terrestrial and marine protected areas in Belize. We have a team working on this project including myself, Rebecca Zarger at the University of South Florida, and Lee McLoughlin, who's a PhD candidate at Florida International University. We're primarily using ethnography and participant observation — being on the ground with conservation practitioners and rangers who are using these technologies in parks and protected areas together to analyze data. We're also using in-depth interviews with conservation professionals to get more of an in-depth sense of how these technologies are changing the day-to-day practice of conservation on the ground, in people's jobs, and in surrounding communities. That's basically what we're trying to do. We're in the early stages of the project. It's the first year we've been working on it, so there's lots of questions and still lots of answers to try to get.

Smith: Can you explain how this SMART tool works in terms of the digital technologies that really undergird it and how does artificial intelligence and big data play a role in making this tool possible?

Stinson: So, SMART is ultimately a digital platform. It's been developed by a range of conservation organizations, international organizations, including the World Wildlife Fund, Peace Parks Foundation, the Wildlife Conservation Society, among a range of other organizations. And this technology has three broad components to it, or functions, including data collection, data storage, and data analysis. So, in terms of data collection, there's what's called SMART Mobile, which is a digital app that's used on mobile devices by rangers as they patrol parks and protected areas and come across signs of illegal activities — human encounters, wildlife or biodiversity sightings, and so forth. And this app allows them to input the data into their device for automatic and digitized data collection. This platform also allows for data to be input and

collected from a range of other digital sensors, including digital trail cameras, acoustic sensors, drone images, satellite imagery. So, it has all of these different input capabilities. In terms of data storage, it utilizes what's called SMART Connect, which is a cloud-based data storage system, which runs on Amazon Web Service, and in theory allows for the real-time input and analysis of ranger data from the field, or near real-time. The idea is that rather than rangers having to go on week-long patrols and input the data into computers when they get back, this data is input into their app and it's entered into this cloud-based storage system basically in real-time, for the most part. Then, finally, there's SMART Desktop, which is a desktop application that allows for automated analysis and reporting features based on the data that's being collected. And a relatively new feature of this data analysis component of SMART is the use of artificial intelligence and machine learning to take the data that's being collected on information from patrols, combine it with a broader set of information, including geographic information about the parks and surrounding communities, weather patterns, and so forth, to basically predict where the hotspots of illegal activity are going to be in protected areas and ultimately to even automate ranger patrol routes based on that data. So, that's a relatively new feature that's just being developed at the moment. It's being developed in partnership with researchers from Harvard University and supported by Microsoft's *AI for Earth* program.

Smith: Can you put in perspective this SMART tool, because my understanding is it did not originate in Belize, but has a longer history. And so, I was hoping you could maybe speak to the significance of SMART as a tool — its geographic scope, its history, what other trends contribute to its growing prominence. Can you explain to us why we should care about SMART?

Stinson: I really see SMART as being connected to two broad trends within conservation. One is increasing digitization of conservation through the use of new monitoring and surveillance technologies and digital platforms to store and analyze this new data that's being collected. The other trend is a growing concern about species extinction and related efforts to combat and police the illegal wildlife trade, internationally. So other researchers such as Francis Masse have noted growing emphasis on what's called, "green policing," or "conservation policing," both inside and outside protected areas in order to combat the illegal wildlife trade. And I see these two trends coming together in the context of SMART conservation, where we see the adoption of approaches to policing, which have become much more common in urban contexts, that are now being transferred into the field of conservation. So, in the context of urban policing, we've seen the development of what's called, "platform or predictive policing," which uses a range of digital surveillance technologies and artificial intelligence to predict where crime is going to happen in urban areas and to facilitate the efficient prevention of that crime from happening, or to stop it as quickly as possible. And I see that trend in urban policing being transferred into the conservation context. We could say that predictive policing is now becoming predictive conservation, and it's oriented toward using big data and these new digital tools and platforms to predict where illegal activity is going to be happening, such as poaching in protected areas, and allowing conservation organizations to respond as efficiently and quickly as possible to prevent that from happening.

In terms of the sort of global significance of SMART, SMART began to be developed around 2011, and quickly emerged as a global standard for protected area monitoring and reporting and enforcement. It's been adopted in over seventy countries and over a thousand protected areas around the world, and a growing number of countries, including Belize, have adopted SMART as a national standard monitoring tool that's used nation-wide in all protected areas. So, this represents a significant movement toward the digitization and datafication of conservation monitoring and enforcement and it's really important that we work to document and analyze the impact of this process, especially because we have seen in urban policing contexts there's been a lot of research, for example, that's shown some of the issues and problems with this, including biases and algorithms that lead to racial profiling of communities and so

forth. So, that's one of the things that we need to keep in mind as these approaches get adopted as well in a conservation context.

Smith: And there's a lot around fortress conservation. I don't know how that fits into this kind of broader history, but obviously this is an important factor, an important trend, toward this shift in conservation. Now, while this tool has been, as you said, used in, or deployed in, over seventy countries and a thousand protected areas, there's something that's very unique about Belize as a case study for land and wildlife conservation. And I've been fascinated by the history of conservation and development practice in Belize. And so, while this is a global trend, obviously something drew you to Belize. I was wondering if you could speak to the history of, and the motivation for, bringing SMART to Belize. Why Belize? Why was this tool brought to Belize? To solve what problem? Could you speak to the history of conservation and development in Belize and how SMART is maybe a departure from that history?

Stinson: The unique history of conservation in Belize is one of the things that drew me to Belize as a research site originally. There's a couple of factors relating to Belize and conservation and technology that make it a really interesting case study. So, earlier you mentioned the concept of fortress conservation. When this global movement to create parks and protected areas first started in the late 1800s, fortress conservation was a dominant model — creating parks and protected areas that had restricted borders and the emphasis was on policing and trying to eliminate human activity within those parks and protected areas. But one of the things that happened in conservation, especially in the 1990s and into the early 2000s, was a significant movement toward what was called *community-based conservation*, which was an effort to change the paradigm of conservation toward integrating peoples and communities in conservation — involving them in their management and trying to provide economic and social benefits from protected areas to people in surrounding communities. And Belize was at the forefront of that movement and in a lot of ways became one of the, I don't know if symbols is the right word, but it became one of the countries that was really known for that, and specifically for promoting ecotourism as a way to provide benefits to communities surrounding protected areas.

Another thing to note about the history of conservation in Belize is that Belize has a pretty expansive system of protected areas. I think thirty to fifty percent of the country's territory is under protected status, and a lot of those areas were created since the 1990s in that movement toward integrated conservation and development and community-based conservation.

And, another unique element of that protected area system is that the government of Belize historically didn't have the capacity to manage a lot of these parks and protected areas that were being created, so they delegated the management of these areas to a lot of non-governmental organizations and community groups. In terms of the management of parks and protected areas in Belize, you had the development of this system that was managed by a patchwork of very different organizations with different skills and capacities and approaches and priorities, which I think makes their protected management system very unique. It includes NGOs that have more of a scientific or educational focus, indigenous groups, and so forth. So, there's just a broad range of organizations and priorities within that field.

What we've seen within the conservation space in Belize and internationally, specifically since about 2010, is a shift away from those models of community-based conservation and trying to balance conservation and development and include communities in conservation as partners. We could, in some ways, think about it as a shift back toward that model of fortress conservation, with an increased focus on policing and monitoring and surveillance, specifically to combat what's become known as the illegal wildlife trade. The illegal wildlife trade has become a prominent concept and buzzy term within the

conservation sphere and a really important issue that's emerged internationally. And, in a lot of ways, that's driving this renewed focus on policing within protected areas. So, we're seeing this shift and SMART is part of that in terms of facilitating the monitoring and policing of the illegal wildlife trade through the standardization of data collection and the collection of data that can be used to address that. And, in Belize specifically, because you had this patchwork of different organizations all taking a different approach to conservation management, they were ultimately collecting information that wasn't necessarily being shared with other international organizations or with levels of government. And I think one of the impetuses behind SMART is both to standardize the approach to biodiversity management amongst organizations, but also to facilitate more effective and efficient flow of information in order to kind of harmonize management systems.

Smith: I want to now shift more towards how SMART as a tool is experienced on the ground — and I know you're in the early stages of your ethnographic work — but could you speak to how SMART has affected the managers and the rangers who actually patrol and manage these protected areas? What has their reaction been to this tool?

Stinson: There's a couple of different elements to this. I think on one level, SMART is a digital tool that is meant to make the work of conservation more efficient and quicker and easier. And, in a lot of ways, it does a good job of that. One of the things that both rangers working in the field and protected area managers working in the office, to analyze data and create management plans and so forth, find is that these tools do make their jobs easier. Previously, rangers working in the field would have had to record observations on pen and paper, bring those observations or logs back to the office, and then input all that data into clunky Excel spreadsheets, that would then have to be used and analyzed by their managers. And now, rangers can input data in their digital device very easily and quickly. They don't have to write anything down. It's all very icon-based and it's simply tapping icons. So, it's very user-friendly. It's very quick. Rangers really like that. And then from the management perspective, that data can be input and accessed almost immediately, either in real-time or as soon as the rangers get back to the field station they can input their device and all the data automatically uploads into, in theory, nice organized databases that can be analyzed.

From the management perspective, SMART allows for the automation of reporting. So, it can take all the data that's been collected on ranger patrols and produce automated reports on the number of patrols, then number of illegal activities that were encountered, the amount of fuel that was used, the ranger hours that were spent on patrol — all that stuff can be automatically input into a report that can then be sent to funders. So, it ultimately makes reporting to funders, and on the use of resources, much easier as well, quicker.

So, on the flip-side of that, SMART is often promoted and thought about as a tool to monitor and manage biodiversity. You know, it's the Spatial Monitoring and Reporting Tool. But one of the things that it does is it also makes human activities more visible. And it's possible for us to think about SMART as a worker management and surveillance tool as well. SMART ultimately makes the activities of rangers much more visible to their direct supervisors, because they're constantly being tracked by GPS while they're on patrol. Their managers can see exactly where they went and what they saw, what they encountered, and so forth. So, there's that new visibility that's made possible through SMART. And that mirrors trends and the digitization of many different types of workplaces and of human activities more generally through social media. But it also makes, in more general terms, the activities of conservation organizations much more visible and transparent to their funders. So, you have these social lines of visibility and, ultimately, as a form of knowledge that's made available to other social actors, there's control that comes along with that. So, it provides greater opportunity for funders to potentially control the actions and the work of

conservation organizations, and for conservation managers to have more control and oversight over the work of rangers in the field. So, you have these dynamics which are emerging, which I think are very important.

In terms of some of the things and comments that we have heard in the field, I was actually surprised that we didn't hear a lot of push back from rangers about this sort of new digital tracking of their activities. It was much more of an emphasis on how the technologies had made their lives easier and their jobs easier. And one of the things that I've thought about in relation to that is, I think there's a lot of similarities between that type of attitude and just the general attitude of people who use social media in their day-to-day lives. We all use these digital tools like Facebook and Google. We know they're tracking us but we agree to that and continue to use them because they provide us with benefits that ultimately make our lives easier in some way. And I think there's a similar dynamic at play with rangers, ultimately, that they have to make that bargain of being tracked in order to use these tools that make their jobs easier in some senses. And I think and say the same thing for protected area management organizations more generally. There is this recognition by organizations that these tools make their work more visible to funders and the funders really want that in order to have a better sense of how the resources and money is being spent effectively. Ultimately, the benefits of this, in some ways, are more beneficial than the costs of it.

Smith: And does this tool actually alter or structure the work that a ranger does on their patrol? I imagine that they will input certain data into the tool, and does that change the focus of what they're looking for when they're doing their patrol? Can you say a little bit about how it structures the work itself in new ways?

Stinson: So, I mentioned earlier that there is a diversity of organizations that participate in protected area management and monitoring in Belize. Historically, they all would have had their own approach — things that they would be focusing on. And also, within that earlier approach to conservation in the 1990s with community-based conservation, one of the major points of emphasis at that time was integrating local knowledge, and specifically indigenous knowledge, into park management plans and monitoring efforts in order to really operationalize that local knowledge and make it useful in a conservation context. And one of the things that we see with SMART is a shift away from that emphasis on incorporating local knowledge and really trying to value diverse knowledges and world views and perspectives, and attempts to standardize that through these tools. And we can see that specifically in the promotion of standardized data models. So, in Belize, there's an effort to standardize the data model that's being used by all conservation organizations so that all rangers in the field are basically looking at collecting data on exactly the same things. And that ultimately reduces opportunities for local knowledge and diverse perspectives and objectives to really play a key role, because the priorities are set within the data model and in some ways determined by organizations that are higher up, in this case government. And I think there is a potential drawback to that.

Smith: Is there a shift more towards like calculable, measurable data, in general? As so often is the case with digital tools, we see this focus on things that can be measured, calculated. Are there forms of knowledge or information about the protected areas that don't fit that kind of model?

Stinson: I think the thing that we see with the efforts to implement a standardized data model in Belize is that the emphasis of the data model is specifically on collecting information about illegal activities. So, there's this reinforcement that the primary objective of rangers is really to look for, and to attempt to intercept and collect data specifically about, illegal activities. And that has the effect of moving priorities away from other areas, specifically like biodiversity monitoring. And it also has the effect — and this is a broader implication — that there's a shift in the way that people in communities around protected areas

are seen within this new model. In the past, communities were seen as sources of knowledge and being worthy of the benefits of conservation. Within this new approach they really become potential targets of surveillance and are seen primarily as potential threats to be surveilled. That's really the main issue that I have with the data model or concern that I have with the data model. It really does emphasize this policing approach — the identification of people in communities as threats. And that's really a major shift from the past where communities were seen as really important sources of information about the park and partners in its conservation.

Smith: I'm very interested in how the relationship between community members to each other and to the parks themselves has shifted with the application of this tool. So, how might an interaction in the park between a ranger and a community member who's enjoying the park look? Or how does that unfold now with this new tool?

Stinson: I guess there are some subtle differences. In the past, a ranger patrolling a park or protected area might have come across another community member in the park and there's a couple of things that could have happened. They could speak to them. Give them an informal warning. Explain the rules of the park, if they weren't aware of it. It would be more of an informal interaction. And it's kind of up for debate in terms of whether that interaction would even be recorded. It might be when they go back to the office, they would write down in their notes that that had taken place, but in some cases that may not have happened.

With SMART, there's a couple of important differences. So, one is that interaction would be logged in SMART and information about the person would be collected: their name potentially, where they live, what they're doing. There's information that's collected in SMART digitally — photos that could potentially be taken of a person. If they've hunted an animal, photos of what they have on them. And there have been legal changes in Belize that allow for this digital information to actually be used as evidence in court.

So, there's this digital collection of information that would take place that hadn't taken place before and, significantly, with SMART, that information is more available to other organizations. So, the SMART database in Belize, for example, is managed by the Wildlife Conservation Society. They have access to the entire database that all of the conservation organizations in Belize are feeding data into. So, that means that all that personal data is potentially available to that other organization, and if that information was shared with government could be available to those organizations and institutions as well. So, information about those types of encounters is much more available. And there's a lot of privacy issues that ultimately come into play around that, which I think are really important to think about. And SMART has policing tools and surveillance tools built into it to allow for the profiling of social networks. So, as rangers collect information about more and more people, the database can start making connections between people and identifying certain people as greater threats, and so forth. And that's where you get into a lot of issues around privacy, digital surveillance, potential biases, algorithms, and the potential incorrect identification of people as threats, and the ways they might be treated in the future because of that. So, with SMART, you get into a lot of these issues around digital privacy and surveillance.

Smith: These are obviously questions and concerns that arise when it comes to digitalization. I did want to take a step back. It's my understanding — and you may have mentioned this earlier — that SMART was originally deployed in the African continent. Is that correct?

Stinson: Yeah, I would say it was originally deployed and developed for use, specifically, in Africa and Southeast Asia.

Smith: So, I would imagine that the impacts of digital environmental monitoring schemes vary across social, political, and cultural contexts, and ecological contexts. How do you see the SMART tool being deployed in Belize and a Latin American context? How well does this model of conservation fit within Belize and Latin America?

Stinson: That's a really good question and also one of the questions that we're trying to look at through our research as well. As I mentioned, SMART was developed by this partnership of organizations specifically to deal with the illegal wildlife trade. And the illegal wildlife trade in places like Southern Africa and Southeast Asia is much more of a focus and issue within the conservation sector — specifically around the poaching of large game animals — than it is throughout Latin America. So, there's a question of how much of a fit is there for this tool that was developed specifically within that context now within a Latin America context.

One of the other things with the illegal wildlife trade is that there's this perception that the illegal wildlife trade is being driven in some ways by criminal organizations that are generating a lot of revenue, through the poaching of wildlife, the selling of wildlife, or parts of wildlife in international markets. And Belize is a relatively small country. There definitely are some issues with the illegal wildlife trade in Belize around particular species, like parrots being one. There's the capture of parrots for selling on pet markets, for example. But outside of that there isn't great data showing that the illegal wildlife trade is a major issue in Belize. And so, one of the things that we're trying to look at through this research is whether this whole shift towards digital surveillance and policing, and a move back towards fortress conservation, in the context of Belize, is maybe not a great fit or an inappropriate shift when other approaches might be more impactful.

A lot of the illegal activity that I have seen and heard about in Belize isn't being driven by these international criminal networks. It's mostly individual people living around protected areas who are hunting for their livelihoods, for food for their families, or fishing to get some food for their families. And there's a possibility that those issues could be addressed more effectively through economic means or development programs or providing alternative livelihoods, rather than this emphasis on policing and surveillance that SMART represents.

Smith: I think in a previous conversation you made the point that the work of development is very much about looking backwards, not in a pejorative sense, but looking back at the root causes — what are the root socio-economic issues at play here? And, when we move to a more predictive model, or a more predictive policing model, that isn't so much focused on those socio-economic factors, that it shifts where we're looking when we think about these issues.

Stinson: One of the theoretical ways — and I don't want to get too deep in the theory in this — but one of the theoretical concepts that we have been framing this project through is *ontopower*. This is a concept that was developed by Brian Massumi to describe a shift in global security in politics in the post-9/11 world, where he describes it as a shift away from *biopower,* or attempts to promote life and wellbeing, to emphasize what he calls ontopower, which is this attempt to eliminate threats to security and to wellbeing by identifying these threats and risks before they happen and taking preventive action.

Bram Buscher is another scholar from the Netherlands who has applied that concept of ontopower in conservation, specifically in the African context, to look at how there have been more militarized and violent approaches to conservation that have been about eliminating threats to biodiversity. In certain countries, in Southern Africa, for example, there are shoot to kill policies, where people who are thought to be poachers in parks can be shot on sight. And so, there's this approach to predicting and trying to

eliminate threats particularly in the context of the illegal wildlife trade that we see going on. And I refer to one of the concepts that I've been developing through this work as *algorithmic ontopower,* because it's taking this attempt to take preventative action and using big data and algorithms to identify these threats in order to facilitate this predictive or preventive action to protect the environment.

Smith: And all of that really would not be possible without digital tools and the digitalization of conservation more broadly, right? It's hard for me to imagine, as you say, this more algorithmic ontopower approach without that trend in digitalization.

Stinson: Yeah, I think the digitalization is one of the things that's really facilitating the predictive component, right? It really is using that information to predict where threats might materialize and who might be a potential threat and to produce predictions of where those things might be. If we think about these technologies and what they're doing, you were mentioning earlier there's been a bit of a shift away from looking at the underlying root causes of these things toward using technology to simply address them more quickly. And I do think that's one of the things we see happening.

Big data can be used to identify the location of potential threats, whether it's a geographic location or a potential person that might be a threat. You can use data to identify those things, but I think it's still much harder to use data to figure out what the root causes of these things are. So, in some ways these tools and the affordances or the abilities of these new digital tools are in some ways driving conservation and policing towards particular solutions rather than others because it's really what these technologies can do.

Smith: And there's also this theme that I've come across, looking at this type of work and other work related to digitalization and environmental governance, which focuses on this idea of real-time, algorithmically-driven decision-making. And you point out that digitalization can direct us away from maybe looking at these root causes, but there's something about the speed at which algorithms work and the ways in which maybe they circumvent messy social and political questions, right? Because the decision-making is happening so instantaneously and everything is sped up in a way. And I'm curious if you have any reflections on the element of speed and this real-time component.

Stinson: I think there's a connection between the speed of the technology and the way that it allows for real-time response and preventative action. And there's a changing political climate in which efforts to think about and debate the underlying causes of these things have become much less politically acceptable. There's much more of a political climate to simply label people as enemies or targets and as people that are doing something inappropriate and eliminating them, arresting them, or punishing them, rather than getting into all these questions around, why are they doing it? What are the underlying drivers? What systems could we put in place to help eliminate that? And the data allows us to not even have to think about that, because we have this data that can allow us to just eliminate these threats before they even take place. And it's a quick, technical, easy solution that totally avoids any of those other questions that gets into more ethical and philosophical issues that are much more complex. Whereas this is just about using data to identify targets and eliminate them.

Smith: In your research you also have this term called *intimate governance* and, as I understand it, that's perhaps what was in place before this more algorithmic mode of governance came about through tools like SMART. Can you say a little bit about what you mean by intimate governance as the mode that existed prior?

Stinson: So, intimate government, or governance, is a term that was developed by Arun Agrawal. He's an environmental resource scholar based in the U.S. and he did a lot of research on community-based

conservation and integrated conservation development. And he uses that term intimate government to talk about forms of protected area management that aim at involving communities directly in the management of protected areas, so community-based governance approaches. And the idea behind intimate governance and community-based conservation in general is that you operationalize social connections within a community, and lines of visibility and power within a community, in order to promote conservation. So, you make a number of people within a community responsible for conservation. You make them like community-based rangers or whatever, and those people are embedded in the community and they use their social relations and their influence in order to educate others and to monitor and surveil others within their own community. And it operationalizes social dynamics within the community itself as a mechanism to promote conservation and enforcement. And so, one of the things that we have talked a little bit about in our research is the shift away from that model of operationalizing these social ties within a community, and these lines of visibility of community members watching what each other are doing, towards this new model of what we term algorithmic ontopower, where instead of using community members to enforce conservation you're using these new digital technologies, which in a lot of cases are meant to be invisible and undetectable. And so, rather than having community members that are park guards walking around your community and walking around parks, you simply have this diffusion of surveillance devices throughout an environment that have the ability to detect illegal activity in real-time, and then conservation organizations can simply respond in real-time. And so, you have this change in relations of power, surveillance, and control from community members who would be visible symbols of park monitoring and surveillance and the thought that you might be spotted by a fellow community member would be a deterrent. You have this new situation where surveillance becomes much more total. It's not embedded in individual people. It's dispersed throughout an entire environment. So, you have the creation of these new surveillance environments that are monitored by cameras, drones, rangers, and satellites, that are monitoring a situation twenty-four-seven, not to deter activity, but to detect it as quickly as possible.

Smith: That's a helpful explanation of kind of this paradigm shift that you are seeing in conservation and it sounds like when conservation is more based on these social pressures within a community and these figures that are visible to community members, you maybe don't have to have that same level of coverage — the surveillance doesn't have to be as comprehensive — because the risk of potentially being caught doing something that is against the community norms, for example, that is enough to potentially deter activity. Am I understanding that correctly?

Stinson: Yeah, I think one of the ways of thinking about it is in terms of power and control within conservation. With more intimate government you have a situation where these symbols of monitoring, or power, are visible and the idea that you would be spotted by them is meant to act as a deterrent on the illegal action. Whereas with this new system the idea — and I guess with that previous system, rangers obviously wouldn't be able to know everything that's happening at all times, but the idea that they could potentially be anywhere would prevent people from from doing illegal activities. And it had to be really visible in order to be a deterrent.

With these new technologies you have the opposite situation where the technologies themselves are meant to be almost invisible or undetectable. So, they're not meant to be a visible deterrent. They're simply meant to be total in their coverage to detect activity as quickly as possible. So, they're really not meant to be a deterrent at all. They're simply meant to be always collecting data to detect illegal activities and to stop it before it happens. So, you have a very different system, where before with systems of intimate government it's more about using surveillance as a deterrent. Whereas with this new system it's about using surveillance to facilitate real-time intervention. And the implication of that is, it's about arresting people, more people, and generating data on that that you could present to funders and so forth.

Smith: I really want to emphasize that point because I think sometimes we assume that with the application of digital tools they merely make existing processes more efficient or effective. But, I think what your work points out is that it's not just about more efficient forms of conservation, it's actually fundamentally reshaping what conservation means and is. And so, I think that's a really key point.

I want to shift a little bit to a very important question, and we've been talking a lot about power and different actors involved in this space, but I want to hone in on this question a bit more. With new data infrastructures and digital tools, inevitably those tools require new forms of expertise, and that expertise is oftentimes supplied by new actors. And so, my question is, does SMART bring in a new constellation of actors into the conservation space or alter the role of existing actors within that space? Can you speak a little bit to the relationships, dependencies, or power dynamics that have formed between actors as a result of SMART's implementation?

Stinson: I would say, yes, there's definitely a new constellation of actors we see in conservation related to SMART and the proliferation of digital tools and technology in conservation. One of the major changes that was witnessed in conservation through the 2000s was a shift towards neoliberal conservation and business-oriented conservation. You started to see a lot of partnerships between conservation organizations and big corporations like Coca Cola, McDonalds, even oil companies, creating these partnerships.

And one of the changes we see now within conservation is a lot of tech companies, Big Tech companies, all becoming involved in conservation, becoming really interested in supporting biodiversity conservation efforts and efforts to address global warming, and stop species extinction. Companies like Microsoft, IBM, Google, they're all investing a lot of money and tools to support conservation efforts. They're funding a lot of new hybrid startup organizations — organizations that are part-tech company, part-conservation organization, like these new conservation organizations that are developing artificial intelligence tools. There's a company, for example, called Wildbook that's a conservation tech company that's developing artificial intelligence to identify individual members of a species. There are key species, for example, that have identifying markers on their body, like zebras have stripes, giraffes with spots, even whale sharks. They're developing this artificial intelligence tool to identify individual members of that species because they're all unique and you can use this new tool to basically create a species census of all the zebras in Tanzania, for example, and to know exactly how many there are.

So, we see these new tech companies, these new hybrid conservation-tech companies emerging. You also see new academic actors becoming involved in conservation, specifically academics that are involved in the development of digital tech and artificial intelligence. And, in the case of SMART, people who have been involved in the development of predictive policing tools for urban policing are also involved in the development of artificial intelligence tools for SMART to promote predictive conservation.

So, definitely there's this changing constellation of actors and a really significant changing of political economy in terms of new sources of funding that's becoming available. All this new funding that's becoming available, flows from these tech companies into conservation to promote technical solutions. And I think one of the reasons we see this significant shift towards emphasizing technology as a tool is simply because that's where a lot of the funding is. Significant new sources of funding within conservation are driving that work.

It's also important to think about the implications of that because these organizations in a lot of cases are not just investing in conservation altruistically because they want to do good. Ultimately, these tech

companies have a financial interest in promoting the digitalization of environments and generating data that can be incorporated into new economies of data surveillance and the monetization of that, and so forth. All these data flows can ultimately flow back and be used to train their own artificial intelligence algorithms that are then sold to other actors. So, there's those types of financial benefits.

Smith: I think that point is really important to make, because this large amount of data that's collected by tech companies ultimately is valuable to them in many different ways. And I feel like with the history of conservation, a lot of times you'd have wealthy philanthropists who wanted to protect a certain species, for example, but now if you can create a business model around it, if you can develop a technology around it, then you can actually monetize conservation in a way that maybe was not possible previously.

Stinson: Yeah, there have been cases of that. In the case of these new conservation tech companies like Microsoft, for example, they have a funding mechanism called *AI for Earth,* where they're funding start-up companies that are using AI to promote conservation-related issues. But, then there's been some recognition that there's efforts to then monetize that later on, either by buying the companies or monetizing it in different ways.

In the case of SMART, SMART's really been developed by conservation organizations as a non-profit tool. It's a free downloadable tool that's not sold to conservation organizations. Whereas with urban policing a lot of these predictive policing tools have generated huge revenues by selling them to policing companies. SMART is actually given away free. But I think there's still questions about how that data could be used or monetized later on. And also, in the case of SMART, Amazon Web Service is used for the cloud computing component of it. And you see examples of Amazon advertising their support for SMART, as a form of green advertising, more or less, for their business. And a lot of people have been critical of Amazon, in that sense, because they support a lot of other industries that are horrible for the environment. And then on the other side, they are using their support for SMART in some ways to greenwash their business.

Smith: Would you say a little bit about the role of the Belizean government in all of this and sort of what are they hoping to get out of SMART and the data collection aspect of this?

Stinson: So, Belize is one of the countries where SMART has been adopted nationally. One of the events in Belize that we participated in when we started this research — the fieldwork component, just this last spring — was a national SMART conference that was hosted by the government, specifically to promote the development of this national, standardized, data model, that would then feed into — not just the overall database that's run by the Wildlife Conservation Society — but that would also flow to the government into this national, real-time dashboard. The dashboard would allow government management organizations to see exactly how many patrols are being done in parks and protected areas around the country in real-time, the number of arrests being recorded, the number of illegal activities that are being found within protected areas.

So, there seems to be a desire on the part of government institutions to take advantage of this new digitalization of conservation in order to create this new national, real-time database or dashboard for conservation. And part of that is a recognition that this is a growing trend within conservation — that funders are really interested in having access to these types of data in order to support new projects. And also, recognition that we've emerged into an economy where data is the primary raw material that has value, and because of that there's growing struggles by funding organizations and government organizations to get access to all this data that's being generated, so that they can use it to access other sources of funding and to get projects and so forth.

The internal economy of data within conservation is interesting. It's not so much monetizing the data to sell it to advertisers, as you see within the context of the internet, but it's monetizing this conservation data and having access to this data in order to access new pools of conservation funding.

Smith: All these groups want to be the locus of this information gathering, but maybe there's some tensions that arise there given that previously you had a more dispersed, fragmented model of conservation, where perhaps different groups had control over their own data, and now, with this standardization, it sounds like this is a new battleground of who controls the data. And, obviously, the Belizean government has some interest in that as well.

Stinson: There's definitely issues arising around control over data and concerns by different organizations about having control over their own data and not necessarily wanting other institutions, like government institutions, to have their data, or even other organizations like the Wildlife Conservation Society having access to their data. There are data agreements that are put in place through SMART, in order to protect that data. But, obviously, any agreement like that relies on actors conforming to those agreements and operating according to what those agreements say they should do, and that doesn't always happen. There is concern, for example, around other organizations being able to access the data, and what happens if there's corruption within those organizations and this real-time conservation data could be shared with people who are doing illegal activity in the government sphere or the non-government sphere, or private actors, or whatever? So, there are a lot of issues emerging around data privacy, data security.

Smith: And in terms of the actual expertise that's required to use this tool, can you speak to some of the effects that this tool has had on rangers, in terms of the training that they're required to do, and how does it affect the labor side of all this?

Stinson: From a ranger perspective, there is training that obviously goes into it, but the ability to use SMART by a ranger is not all that different from the ability to use a smartphone. It's very much a similar type of thing as using an app on a smartphone, so it is pretty user-friendly from that side of things.

I think the biggest change is actually within the realm of conservation management professionals. You see now conservation organizations are having to hire and train data scientists, like data specialists, who are able to manage these emerging databases and to use the more technical and analytical aspects of SMART — to analyze the data, to look at trends in the data, to produce management plans based on the data. I think there's a whole new realm of conservation management, natural resource management training, that's specifically going to focus on data management that is going to have to take place. And I think a lot of organizations in Belize are struggling to find people to fill those roles — that do have both park and protected area management experience, but also expertise in database management, and big data, and data analysis, and those kinds of computer skills. There's a real need for training in those areas.

The other issue with SMART, is that SMART is a system that's being continually updated over time. It's on its seventh iteration now. Every time SMART's updated, each of the different organizations that are using it have to be retrained again on how to use it. So, there's this constant need for retraining because of these digital tools that does create a dependence on the organizations and the people who are going to be training them on how to use it. Those are the organizations that are part of the SMART partnership that are developing the tool. In Belize, it's the Wildlife Conservation Society that's the lead conservation partner that does all the training. But it does mean that there's this constant cycle of training and

retraining that has to take place in order to be able to use the latest version of the tool, as it's continually upgraded and updated.

Smith: What is the appeal of SMART for foundations? What is the motivation there in terms of their involvement and promotion of this tool?

Stinson: There's a really clear appeal. One of the things that funding organizations want to see is that the money that they're investing in conservation — whether it's Belize or any other country — they want to know how their money is being spent and whether it's being used efficiently and effectively. And SMART makes the work of conservation organizations very visible. And that's one of the useful things that SMART does for organizations. It allows them to visualize the work they do and produce these cool and technical visualizations of all the patrols they've done, the amount of fuel they've used and the cost of that, the hours rangers have spent on patrol, the number of people they've encountered in protected areas. It allows them to visualize that information for funders in a clear way. And for funders it's appealing to be able to see that, to know, like, okay, I can see clearly exactly where these organizations are patrolling and where illegal activity is happening, and it makes all this much more visible and transparent.

Smith: So, it sounds like, while you've expressed concerns or words of caution around the deployment of this tool and how it's ultimately implemented, there's clearly some advantages that it provides to funders, and, as you said, in some ways it makes the work of rangers and managers more efficient.

As we wrap up the conversation, I want to turn to the question of, what do you hope will come out of your research? What are the conclusions that you are beginning to reach or do you see ways of integrating digital technologies into conservation practice in ways that are just and equitable and thoughtful?

Stinson: One of the main things that we're trying to do through this work is get a first sense of what's working and what's not working for SMART. What are the benefits of the technology for protected area managers? What are some of the potential drawbacks — training and retraining I mentioned, dependence on training organizations. What are some of the drawbacks? What are some of the potential threats, like longer term threats around data privacy, data security, issues around identification of people living around protected areas as threats. All those things are what we're trying to look at, ultimately, to promote a more effective and just form of conservation.

I'm not out to say that SMART's a horrible tool, that nobody should be moving towards digital technologies in conservation. I think clearly digital tech, like SMART, can have really important uses. And the question is how to use these things in an effective way, an efficient way, but, ultimately, also, a just way, in a secure way for people and communities.

One of the concerning trends in conservation for me is this movement towards standardization. As a cultural anthropologist, I'm trained to recognize the value in diversity and cultural diversity and approaches, perspectives of the world, and world views, and SMART, in some ways, is not in line with that. I think a really interesting question is, how can we use these digital tools and maybe make them more compatible to include different types of knowledge systems or different world views?

I do a lot of work in Belize with indigenous Mayan communities that are working to assert more control over their land and territories and to monitor and manage their own indigenous territories. And there's interest by those organizations to use some of these digital tools to help them do that. And one of the things we hope comes out of this work is some insights into how that could be done. How can different organizations use these tools in really good ways to promote environmentally sustainable and socially just

futures for people and the planet? I think it's definitely possible. That's really why we're doing this work and what we hope comes out of it.

Smith: Do you have any other work on the horizon that you would like to highlight? Any other collaborations? Or, is this your primary focus at this point in time?

Stinson: A lot of the research I'm doing right now is focused on planetary health education at York University. So, this is one of the projects I'm working on. I'm also working on a number of other collaborative projects that are focused on promoting education and awareness around planetary health, specifically with youth — both indigenous youth and non-indigenous youth. So, we have partners with indigenous communities and organizations both in Canada and in Belize, where we're trying to promote awareness about climate change and about the links between environmental health and human health. We have projects trying to use digital tools and platforms in order to engage youth in these issues around climate change. We're doing digital film production with youth both in Canada and Belize and other countries as well. So, we have a lot of projects on the go. They're all focused on trying to promote healthy people and healthy environments around the world and also trying to think about ways to use digital technologies to do that.

Smith: It sounds like you're very busy. I want to thank you, Jim. You've been so incredibly generous with your time, and thank you for sharing your research with us today. It's a fascinating look at how digital technologies are fundamentally transforming how we approach conservation and environmental governance more broadly. And so, I want to wish you good luck with your research and thank you again for talking to us.

Stinson: Thank you so much for the opportunity to talk to you guys and to share a little bit about what we're doing.

[Musical outro]