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# ***Feminist Data Practices: Conversations with Catherine D'Ignazio, Lauren Klein, and Maya Livio***

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*Facilitated by Sabine Niederer  
and Gabriele Colombo through  
zoom on July 28, 2021*

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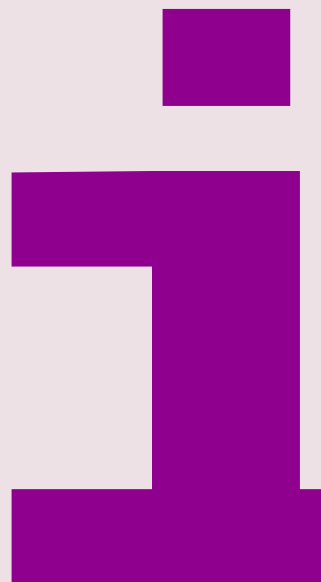
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**Interview**

 Traducción al español aquí

**Diseña**

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Many of the papers and more-than-textual proposals submitted for this special issue included machine vision technologies and other data- and AI- mediated practices. To provide a critical perspective on data-driven (design) research, we decided to explore the emerging field of data feminism through online interviews with three scholars and practitioners who apply intersectional feminist theory and practice to the realm of data-driven work: Catherine D'Ignazio, Lauren Klein, and Maya Livio.

With Catherine D'Ignazio and Lauren Klein, authors of the book *Data Feminism* (2020), we touch upon the idea of data feminism as a way of thinking about (and acting upon) data and data science, informed by intersectional feminist thinking. From examining and challenging power structures in the data collection process to embracing pluralism beyond binaries and hierarchies, they outline a research program that clarifies why and how data science needs intersectional feminism. With them, we discuss how art and (speculative) design practices can make power imbalances visible. We also discuss the limitations and advantages of participatory data practices and the responsibility that lies upon data collectors when making visible an issue through data can cause more harm than good to those affected by it. We discuss how sometimes one needs to reject ground rules of data visualization to pursue higher political goals beyond simple analytical needs. We conclude this conversation with an invitation to embrace complexity when applying feminist principles to data work, while being aware of our personal standpoints and limitations.

With Maya Livio, researcher and curator at the University of Colorado Boulder, we discuss how an intersectional feminist approach to data science can also consider more-than-human beings. We talk about her work on animal interfaces, in which she explores how the contact points between the human and more-than-human worlds are permeated with technology. Maya Livio then takes us through her experiences in feminist labs, explaining how the first step of incorporating a feminist practice is to take stock of and codify the work being done, cultivating attention towards (often unspoken or unwritten) methods and practices. We also discuss how she and her colleagues developed a framework for operationalizing the art of noticing as a methodological contribution. Finally, we touch upon her personal research approach, characterized by a mix of experimental multidisciplinary practices, moving from writing to curating to design and art-making.

## Conversation with Catherine D'Ignazio and Lauren Klein

Sabine Niederer: **Catherine and Lauren, thank you so much for taking the time to talk to us. Gabriele and I would like to talk to you about your book *Data Feminism*, which covers an important body of literature on intersectional feminism to put forth a set of principles for data feminism. Before we discuss the book, could you please briefly introduce yourselves?**

**Catherine D'Ignazio:** I am Catherine D'Ignazio. I am an Assistant Professor of Urban Science and Planning in the Department of Urban Studies and Planning at MIT. There I am also the director of the Data + Feminism Lab, where we are taking the program that Lauren and I outline on data feminism and operationalizing it: we realize projects that use data and computational methods in the pursuit of gender and racial justice. Since I am in the Department of Urban Planning, I am particularly looking at projects that relate to space and place.

**Lauren Klein:** My name is Lauren Klein. I am an Associate Professor of English and Quantitative Theory and Methods at Emory University and I direct the Data Humanities Lab there. This is a lab that I started when I was at Georgia Tech. I recently switched over to Emory, and I brought my lab with me. What we do there, and this also reflects my own research, is we combine computational and critical methods for analyzing data with a particular emphasis on textual data and on the data of early American culture (where 'early' means 18<sup>th</sup> and 19<sup>th</sup> centuries). I sometimes try to trace some of these historical threads into the present as in *Data Feminism*, or in some of my more recent computational work on social movements.

**SN: Could you introduce the idea of data feminism, and why it was important for you to write this book? Why does data science need an approach that is based on intersectional feminism?**

**CD:** We see our work in a growing body of work that points out the ways in which data and algorithms are reinscribing forces of oppression and social hierarchies: the ways that algorithms are racist, sexist, classist, and so on. There has been a proliferation of that work in the past five to seven years, including a lot of work that has inspired us. I am thinking specifically of work by Ruha Benjamin, Safiya Noble, Virginia Eubanks, Cathy O'Neil, and Joy Buolamwini. And at the same

time, we felt that there was something to add here, especially when you look at the way that the news media has reported about a lot of these systems and products. A lot of the news media reporting continues to be with this element of shock and surprise: “Oh, my God, how come the algorithm is racist?” or “this particular soap dispenser didn’t work for people of color”, or, “this particular health algorithm is discriminating against people, how is this possible, it’s just a computer!” This is still the shock that you hear in the popular press. We found that an intersectional feminist perspective focusing on these intersecting sources of power helps us look instead for root causes. It is not a surprise that our technology is racist and sexist. When you live in a white supremacist, heteropatriarchal society, you get white supremacist, heteropatriarchal data systems. It is a pattern, it should be obvious, and yet we are treating these discrimination cases as special ones. One of the goals of the book was to say, “Hey, actually feminism helps us predict this with a lot of regularity, and not only predict it, but also think about ways to combat it.” So, if we desire to make projects and products that are feminist, anti-racist, and decolonialized, then feminist theory points in that direction. It gives us these really useful tools for moving in that way and to change the status quo of data science practice.

**LK:** I will just underscore the main point: feminism, and intersectional feminism, in particular, know how to intervene in instances of oppression. Intersectional feminism came about because of the instances of oppression that people were encountering in the world. Catherine and I saw a real need for data science to listen and learn from the teachings of intersectional feminism because of these same types of oppression that we were seeing in our data systems. So this brought us to this idea of data feminism, which is a way of thinking about data and data science that is informed by intersectional feminism.

**SN: You just mentioned the shock about all these technologies demonstrating the power imbalances that pre-exist elsewhere. And this is also what you argue in the book, that these technologies don’t produce power imbalances, but that they mimic or maybe exacerbate the imbalances that are already present in society.**

**LK:** Absolutely. One of the main points that we make is that these systems are made by people, they come from human society (and non-human society). And because of that, they are not free from bias, they don’t enter the world as new technical systems, unattached

from social, cultural, political contexts. They are a part of all those contexts. And that is fine: there is no escaping the contexts that inform our work. We are never going to be able to design systems that are totally isolated from people because people are the ones designing them. So, the important thing, and this is something we try to emphasize in the book, is to start from a position that recognizes that inescapability, that tries to think through the potential harms, and that tries to anticipate and hopefully redress the harms that might come about when these systems are deployed in the world. This can also mean *not* deploying a particular system if there is harm detected.

**SN: In your book you discuss many examples of data feminist approaches from the arts, design, and sometimes from data journalism. Could you share your views on the role of the arts and design in the critique of data science and digital technologies?**

**CD:** In some ways, that reflects my background. My background is as an artist and as a designer. And I think that artists have been at the forefront of this for a very long time. Even before we have seen books coming out about big data and its perils, there have been artists interrogating surveillance and maps for decades and decades. And then, following the rise of the Internet, interrogating the culture of surveillance capitalism before that term was even coined. We can see groups like the Critical Art Ensemble that are sort of bending technology, typically applied to varied kinds of capitalist neoliberal circumstances, into artistic circumstances or building communities of care and social justice. Artists have a huge role to play and have already played a big role in this, but their critiques and actions often don't always get out to the larger society. These artistic experiments are extremely important because they posit alternate ways to use technology and alternate values to be mobilized. They ask really important 'what if' questions. They have a speculative role, and I think we need a lot of vision right now. And that was, partially, why we decided to try to see what feminism has to offer, because feminism, as with many frameworks of emancipatory theory, tries to offer the questions of what if it were different, and what would the world look like as a different world. "We could do this differently" is the assertion of the book. And that is very aligned with what artists and some of the more

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speculative design work is doing.

**SN: You have already touched upon the importance of the first principle that is also about making power imbalance visible. In the second principle, 'challenge power', which is closely related to the first, you discuss that there is sometimes a risk in collecting or making data visible, as it could possibly put people in harm's way. Could you elaborate on that tension of when to collect and when not to, and the tension between visibility and invisibility?**

**LK:** Sure. One of the points we try to underscore in the book is that data is a tremendous form of power. But also, and this is another metaphor that we use a lot in the book, it is a double-edged sword. Data, and big data in particular, is often trusted over and above personal experience, even as we know that the richness of personal experience cannot be represented by even the biggest data set. So, there is an important caution that, as we can use data to advocate for certain issues and interests, we also need to remember that the data is not giving us the full picture, and it never can. There are perspectives and people that are left out.

The second part of this argument has to do with who is being counted and how those people are being counted, and to what ends they are being counted. We talk about this in the book in terms of something we name the *paradox of exposure*: the idea that even if you heed the warning that you cannot capture the richness of lived experience with your data collection efforts, and even as you do your best to represent that particular issue or the perspective that you are trying to bring to light, bringing to light that particular issue or perspective may do more harm than good. This is particularly true with vulnerable populations, for whom being made visible in a dataset or a data system could make them even more vulnerable to, for example, violence or political oppression. And with that comes a tremendous responsibility on behalf of people like us who are collecting and analyzing the data related to these populations. Especially in academic contexts, we don't think about this responsibility enough: the idea that our research is connected, either directly or indirectly, to people living actual lives, and with impact beyond citation counts: impact on actual lives.

One of the examples that we use in the book is of data collected on undocumented immigrants. In some contexts, this data can

be used to provide services and aid, or financial support. But the same data used by another institution or agency can make them very easily locatable and subject to deportation. The larger point is that when you think about the potential for good in one context, you also need to be thinking about the potential for harm, even if it is not done by you, or even if it is inadvertent. That is always a possibility.

**Gabriele Colombo: One of the other principles you talk about in the book is ‘embracing pluralism’, incorporating as many perspectives as possible when working with data. There are many attempts in doing this with participatory data practices, such as counter-mapping, collective interpretation of maps, and so on. What are your thoughts about this type of participatory data work? And also, what are the limits, if any, in these kinds of activities?**

**CD:** You are always limited by time and money. Time and money are always limited and especially limited with participatory work. If we are talking about a map or data visualization, those artifacts can travel and reach thousands of people, especially digitally, but are you going to build a personal relationship with 10,000 people to work on your map? No. So time and money are always in the midst. Another reason there are limits is that when funders are supporting these projects, often they will not invest in the sort of relationship-building that it takes to build a solid, trusting relationship between communities, groups, and whoever the designers, academics, or organizers are. That is often not seen as work that is worthy of investment. Funders are usually very project-focused or product-focused versus being process and relationship-focused.

But that said, there are still ways to carry out impactful and participatory work with data, recognizing that you cannot bring everybody to the table. A feminist perspective on this issue is to ask: if we cannot bring everybody, whom can we bring, or whom do we try to bring to the table? And the feminist answer to that would always be the people in that particular context who are the most impacted, have the most to lose, who stand the most risk of being harmed by whatever artifacts or systems are being designed. Those would be the people you want to bring to the table (or maybe they bring you to the table: it is not a one-way thing). Those are some of the limits that come to my mind. There is a lot more of a tradition of participation in mapping, cartography, and



geographic information systems than in data science, AI, and statistics. But the more technical disciplines in computer science or statistics stand to grow a lot by learning more about participatory methods and working in an interdisciplinary way.

**GC: Coming from a design background and, more specifically, a data visualization background, one of the principles in the book that I found the most interesting and the most challenging is to 'elevate emotion and embodiment'. Data visualization is usually taught as a means to be as effective as possible, and that can result in a very dry language. There is this clash in some way between your principle, which I think is very relevant, and the language of data visualization. Do you have any suggestions for designers or practitioners on how to embody emotions into their data visualization projects?**

**LK:** One of the things we talked about, both in the chapter on this principle and throughout the book, is that so many best practices associated with data visualization are simply received wisdom. They are not necessarily informed by research, whether that is user studies or theories of visualization design or any of the ways that we can see whether a visual or interactive object communicates its intended meaning or use. There has been some interesting research over the past decade that has poked holes in most of these basic teachings. For instance, Jessica Hullman has talked about the 'framing narratives' of data visualization: how people tend to think that more scientific-looking visualizations, like bar charts or pie charts, are more truthful than they necessarily are. Crystal Lee has done this really good research recently that talks about how people promoting falsified data about COVID accompany their disinformation by seemingly scientific visualization forms, precisely because they understand their tremendous rhetorical power. There has also been recent work in the field of visualization that even questions efficiency and precision, for example by Enrico Bertini, Michael Correll, and Steven Franconeri. Our basic advice is not to assume anything about the best path forward. The only true rule is: 'never say never', as we say in the book. Sometimes it makes perfect sense to make your visualization minimal and streamlined and efficient, but not always. You should always ask: what are these data trying to represent? What is the context surrounding this particular dataset? What is the goal of my research? What is the impact that I am trying to have with my work? And

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how can I best design so that the answers to those questions are clearly conveyed, or not clearly conveyed as the case may be?

**GC: There is a great example of this concept in the book when you discuss occlusion in geographical maps, which is something that, as data visualization designers, we are taught not to do. We tend to think that a geographical visualization should always show patterns, and the reader should be able to make their own analysis. Can you elaborate more about this specific aspect of occlusion in this context of going against data visualization best practices?**

**CD:** Yes, in fact, there are a couple of examples that we show in the book. We talked about occlusion in the 'Anti-Eviction Mapping Project'. And there is also this femicide map that uses just pins on a global map to depict gender-based killings in Mexico. In those examples, occlusion is bad from a data visualization perspective because, of course, things are all piled up on top of each other, and it is hard to distinguish if a particular spatial region has 10 pins or 1,000. In the case of the 'Anti-Eviction Mapping Project', it is a map of San Francisco, and it is hard to say, "This neighborhood has more cases than this one." You cannot interrogate the map with questions like which area has the highest cases and the lowest. But the point we are making there (and really, that the eviction map is making) is that those kinds of spatial ways of distinguishing within that map space are irrelevant. The point is just this: there are too many evictions. The point is literally just to overwhelm you and, in a way, confuse you and force you to say: "Well, how could this be? Why are there so many points?" That is the takeaway. It is not about analysis of any kind. It is not about distinguishing regions and comparing them to each other. You could imagine a map that is about that, but this particular map is not. In a way, that is a high-level political purpose. And for that purpose, it is a very efficient map. I think there is also something important around using the single icon or the single pin to represent each case and making a really intentional decision to value and depict each of those cases. There is a cost in the sense of legibility because they do get piled on top of each other. Still, on the other hand, each life or each eviction is recognized as its own distinct individual event with its own distinct individual ramifications rather than collapsed into groups, classes, or

categories of some kind. There is an important political underlying motivation there, but it definitely contradicts the received wisdom of “don’t hide things”.

**SN: In your book, each data feminist principle is described in detail and illustrated with strong examples. Now, how would you propose a holistic approach to data feminism? Do you have any advice for researchers and designers who want to take a data feminist approach to their practice and incorporate all the principles you propose in the book?**

**LK:** That is such a good question. One thing that is important to bear in mind, in keeping with a very basic feminist tenet, is to just embrace complexity and understand that the work is never finished. The other more practical consideration is that you cannot do every single thing in equal measure all of the time. The most important thing is to keep focused on your goal and to keep moving towards that goal —and not to just throw up your hands and walk away because you feel insufficiently prepared to do the work, or because you may have tried and failed, or because you don’t think that your work lived up to its best aspirational version of itself. This approach is connected to larger arguments that are made about fragility and white fragility in particular. The work of allyship is hard. The work is messy. People make missteps all the time, especially coming from dominant positions — not just concerning gender, or race, or class, but for example from the perspective of a tenure track faculty member versus a contingent faculty member, or a teacher versus a student. The important thing, as Donna Haraway would say, is to ‘stay with the trouble’, and to recognize that different aspects of the larger project of working towards justice will become salient at different times and that your particular perspective may make your ability to focus on certain principles or methods easier than others. The key is to acknowledge that perspective and embrace it as a strength of your work. What a person’s research can do is to focus on certain meaningful issues, while other people’s research may amplify others.

**CD:** I love the concept of embracing complexity. Some of the more technical fields are accustomed to take the real world and reduce it down to very tractable problems with one or two variables. That is a way of working. I understand the appeal, and it works really well in certain situations. But then it does not work well if you are trying

to address complex social phenomena that have long histories. If you are looking at discrimination and housing, it does not work to break things down into these super simple and abstract models. You have to embrace complexity and to be okay with that, sitting with that tension. And that goes for methodologically speaking and for navigating these forces of oppression and these unequal social hierarchies as they arise in our own professional and personal lives. You have to sit with the tension and live in that paradox of not going to be perfectly anti-racist, anti-sexist all the time in reality. It is more about how do you persist and how do you recover when you have done harm.

But in terms of the principles, I think that different principles become more relevant at different points in time. I am thinking about this exact issue right now. I am writing the next book about folks like María Salguero and activist groups who collect data about feminicides. I am looking at their projects and looking at them in relation to the data feminism principles. In addition, I am myself designing a participatory technology design project, where we are building technology to support these groups, including some AI-driven tools. At every stage of a data science project it is relevant to think about these feminist principles, but in a way, the most important time is at the beginning. Because it is then when you outline your research questions, the scope of your work, and assemble the team. It is also often the time where you secure the funds from different bodies. The decisions that we make at the beginning set up everything downstream.

In a way, the most crucial phase of design is way before you ask: what does the data visualization look like? Or what is the tool that you are going to build? But instead: who are your partners? What is the governance structure? Who do you want to build relationships with? Where does the money come from? And how supportive is your funder with flexibility in case your project needs to change? How product-focused is your funder? All of those are the questions that give you the autonomy to set up your project in a feminist way. It is always worth thinking about the downstream things (How do we clean the data? Which algorithm are we using to generate particular recommendations or predictions?). But everything else is the superstructure that will set you up for really being able to do justice-oriented work or not, and holding yourself accountable in that process.

**LK:** I just want to underscore that point because it is so important. The question of whom you partner with and who your collaborators are requires so much unlearning about how academic work is

structured. We are trained to think of ourselves as experts. Maybe later on in a project, you realize: “Oh, here’s a hole, I’ll bring someone else in as a collaborator to offer advice or expertise.” But Catherine is absolutely right: by that point, if you had been hoping to make your project truly reflective of a particular issue or experience that you don’t know enough about, then you have already headed down the wrong path.

I have been reflecting on this a lot in my work, especially as someone trained in the humanities, at least in terms of my formal academic training. What I am supposed to be doing is produce solo-authored research. But my practice has increasingly become collaborative and design-oriented. And now my work reaches into a lot of fields. But it goes so against the model of independent academic research that I was brought up into. Therefore, it has prompted a lot of reshaping of my research practice as I have tried to build more feminist processes into my work.

## Conversation with Maya Livio

*Our next conversation is with Maya Livio, a researcher and curator at the University of Colorado Boulder. We talk to her about her feminist data practice and her work on feminist labs, and the research she does on studying technological interfaces for more-than-humans.*

**Sabine Niederer:** **Maya, thank you so much for taking the time to talk to us. Could you briefly introduce yourself and your work?**

**Maya Livio:** I recently finished my Ph.D. at the University of Colorado Boulder in a program called ‘Intermedia Art, Writing, and Performance’, which is a funny title because it does not quite encapsulate what I do. But what it maybe points to is that it is an interdisciplinary and practice-based research program. There, I also worked on various projects at the Media Archaeology Lab. My work is interdisciplinary in the strongest sense of the word; it draws from STS, from environmental humanities, particularly environmental media, and from various creative research practices. My dissertation, titled *Interface Animal*, was specifically looking at the interfaces between humans, the non-human (or more-than-human) world, and media technologies. I have also done quite a bit of work in the space of feminist methods. In that context, I have worked with Lori Emerson and Thea Lindquist on the ‘Feminist Labs Project’, which had a symposium and some publications and resources. I would

generally say that feminist methods inform my work, even when the work is not explicitly about feminism.

**SN: Could you introduce your work *Interface Animal* and the interfaces between more-than-human worlds and new technologies?**

**ML:** The 'interface' is a term that has been debated to death in computational terms, but it actually originates from physics and looking at the natural world to describe the boundary between fluids that have different properties. The interface moved from there into spaces of design, not just graphical user interfaces, but other kinds of computational interfaces. But then it also has moved back, in the sense that the term 'human-animal interface' or 'human-animal-environment interface' has been taken up by epidemiologists as part of the *One Health* movement, which is a transnational epidemiological movement that insists on the interrelationship between human health and more-than-human health. So, the human-animal interface, or the human-animal-environment interface is the boundary between humans and the more-than-human world. I would argue that the original meaning from physics, where it is a fluid boundary between unequal entities, has been maintained in its other uses.

And meanwhile, technological interfaces have increasingly become infused into the human-animal-environment interface. In conservation, this includes things like camera traps and sensor technologies, and all the ways that scientists observe the more-than-human world. It has moved into agricultural spaces with everything from pedometers on cows to systems of precision agriculture, the quantification and optimization of agriculture. It has even moved into consumer kinds of spaces with things like pet cams or apps for plant identification. All those kinds of points of interface between the human and the more-than-human have been permeated with technological interfaces.

**SN: In your work, a lot of different ways of knowing come together, by looking at science, technology, and the environment, and by making a case for feminist practices. Could you tell us more about your approach?**

**ML:** I will start by saying that practice is central in my work and in the *Interface Animal* project. It consists of chapters, as well as practice-based research projects. *Doing* has been central also in my work curating at the Media Archaeology Lab and curating a media arts

festival at the Boulder Museum of Contemporary Art (BMOCA). I have been very interested in doing and practice as ways of applying theoretical knowledge and connecting the academic with the public realm. Public scholarship has been important to me. And so, in that practice, I have been keenly aware of and attentive to how methods can exacerbate inequities in various ways, both in terms of social and multi-species justice. I have been the curator of the Media Archaeology Lab for the last six years, and there I have been invested in looking at protocols, which can sometimes be boring or bureaucratic, and ensuring that those take equity into account, to make the lab more accessible both internally in terms of participation and externally in terms of who is accessing the lab's output. And that has also translated into my work with non-human beings in the sense that I am thinking a lot about the ethics of working with non-humans informed by eco-feminist ethics and indigenous knowledge ways. For example, things like 'ethical foraging practices', or not instrumentalizing non-human beings in our efforts to get to know them.

**SN: If researchers, designers, artists, curators, or others who read this want to incorporate such feminist practices into their work, do you have any advice for them?**

**Where to start?**

**ML:** The first step is to start to codify the kind of work that is being done, whether that is in a lab or as an individual researcher. A lot of times, many methods and practices are unspoken or unwritten. They are implied, they are passed along orally, or they are embodied, which is great. But oftentimes, that means that they are opaque, and it is more difficult to cultivate attention to them. So, I would say that the first step is just to start to break them down. What are the practices? What are the methods? And those encapsulate a lot more than may initially be obvious. It includes things like funding streams and budgeting, where is the money coming from, where does the money go? It includes the basic tools and supplies that are available in a space if you are in research space. So just doing basic accounting of that already surfaces a lot of problems.

My work, especially in feminist labs, has been about sites of collaborative research, which I think applies a lot to design and the work that designers do. And so, the other important first step is thinking carefully about who is included and is not included in the lab or the space, particularly with regards to marginalization. And the problem that happens there is that oftentimes, even if one wants to be more inclusive, it can be difficult to know how to be more inclusive. Therefore, it is



about reaching out to the communities that are not included and inviting them to share whether they would be interested in participating, finding out what would make them more interested, and investing in long-lasting, ongoing relationships that support them. It is not a quick fix. But ensuring that there is a diverse population of collaborators and people who contribute to the discussion, and then with that group going through and auditing methods. Those are the two steps I would start with.

**Gabriele Colombo: You co-authored the *Methods for Noticing Workbook*. What was the motivation behind it? Can you say something more about that workbook?**

**ML:** Sure, it was an enjoyable project that came out of an informal reading group that my collaborators and I, who had just gotten to know each other, assembled. I think that Jen Liu, Kristin Dew, SzuYu Liu, Patrycja Zdziarska, and I were all finding ourselves to be the odd ones out in terms of our interest in environmental and more-than-human concerns. We had read many books together, including Anna Tsing's *The Mushroom at the End of the World*, where she mentions 'the arts of noticing'. And she references that a few times, with a sort of brief definition, but she does not quite define it. All of us in the group were either designers or practitioners, so in our discussion we talked about how could one operationalize this? What does she mean by 'arts of noticing'? And how does that translate into methods? And ultimately, both Tsing and we are hoping for one to notice the politics of things and notice the power imbalances that exist as the first step towards action.

And so, we had started with methods that encourage one to notice politics of things and power imbalances: notice labor practices in your surroundings, or notice other kinds of inequities. But then we realized that all that operates from the assumption that you already are attuned to those things, or you already have an implicit understanding of power. Perhaps you don't. And so, how can we sort of break it down even further? We did a workshop and put together this publication around what does noticing look like at its base level, in terms of sensory inputs, or in terms of using technologies to augment or enhance noticing, for example. We deployed the workbook in a workshop and had really nice results with it. And of course, the people who are already oriented towards power also noticed those things. But I think it was helpful to start from scratch in a way as to what we notice and how we notice. I will also say that it was informed by my partner's practice, who is a composer, so there's always multimedia interrelations in my thinking. Pauline Oliveros

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features in that workbook in terms of her approach to sonically noticing. We asked: how to use that for other sensory inputs?

**GC: What I like about the workbook is the fact that some of the methods are very spatial. So, there is panoramic noticing, proximal noticing: it is very related to space. It is geared toward the physical world in a way. Do you think that those same methods could be applied to noticing the digital, or is there a clash between the two?**

**ML:** That is a really good question. Yes, we were thinking about the physical world because we were primarily thinking about more-than-human relations. Of course, as I mentioned earlier, more-than-human relations are also integrated into technological systems. My first gut reaction is simply that the digital is quite heavily visually oriented. The digital has a bias towards the visual. That is not across the board, but I would say it is a bias. And so, in that sense, the kinds of noticing that are possible may be biased too. There is a spatial dimension in the digital if you think about delving into digital space in the sense of hyperlinks, but there is also a flatness. So, I would be interested in thinking through how that could translate into methods for noticing. I cannot say that I have a fully formed answer because I have not considered that yet. As I said, we did think about the digital sort of informing the noticing of physical space. But I would have to think about that a little more. We had thought about putting together a second part to bring in some of the politics after the first one. It would be interesting to think through the digital there. Thank you for that question.

**SN: I would like to connect this conversation on the digital back to what we talked about before, feminist practice. There is an emerging field of data feminism and ethics of care applied to digital work, data justice, etc. What do you find interesting developments in this realm?**

**ML:** Yes, thanks for addressing this. I follow it pretty closely, and for me, the most exciting developments have been the fact that Indigenous peoples are finally receiving more attention in this space. There has been some work on things like Indigenous AI, for example, and how Indigenous knowledge ways apply to technology. These bring in non-Western worldviews and belief systems that are connected with more-than-human concerns and raise really interesting questions related

to, for example, animism and technology. I still have some question marks around how to apply that one because of my general skepticism around the value systems and logics that are embedded into digital technologies, but it is such an important debate and I am excited to see all the work that is being done and to learn more.

**SN: You just mentioned that you are generally skeptical or critical of the value systems around technology. How do you voice this criticism in your work?**

**ML:** Part of a feminist ethics of working with technology is always asking if we need to use the technology in the first place. I have been finding myself gravitating towards older technologies for a while. Not just obsolete technologies, older technologies that are not yet obsolete but have become *passé*. I have an iPhone 7, and I have been reluctant to update my hardware for as long as possible for environmental reasons. From a media archaeology perspective, we look at technologies that have become de-familiarized because they have become obsolete. The technologies that have become so familiar that almost disappear from view, they don't have the novelty factor anymore, they don't have the shiny appeal, they have become spaces of interest to me as a way of applying a feminist approach to thinking about technology. I am not a person who thinks we should not use technology. But I do think that a healthy skepticism around the 'new new' has been something that I have been moving towards. Which is difficult, because the 'new new' is where the money is, the 'new new' is where the attention is. And it is something that I have had to grapple with quite a bit because the 'new new' has consequences so, of course we need to look at it critically and we need to discuss it. But at some point, the more attention it is given, the more it buys into, ends up serving as kind of advertising for it.

**SN: You mentioned this side effect of critique and how it grants attention to the particular topic you criticize. Have you dealt with this dilemma in your work and perhaps wondered whether you should refrain from a critical study, as you did not want to make a particular topic even more prominent?**

**ML:** Absolutely. One of the projects in the dissertation is on bird conservation datasets. And the project looks at how the problems of human data map onto non-human data. It looks at how bias and other problems that we are familiar with in data collection on humans are

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also found in data collection on birds. Just as an example, bird conservation datasets have been found to have male biases both in terms of their actual bodies in natural history collections and in terms of the birdsong in bird song datasets. So first of all, looking at these datasets was already like looking at old technologies: you don't really think of a natural history collection as a dataset anymore. The practice-based component of that project includes AI, and it uses the birdsong of female birds and birds that are unlabeled by sex as a gesture towards the intersex birds who are also missing from datasets. And I put those birdsongs through an audio generation neural net to generate more sonic material to fill in these gaps of the datasets. But at the same time, I am also being critical about how filling in gaps in a dataset is not sufficient for fixing bias, and I am also being critical of AI in the piece: there are biases in the training sets that the model was based on. So, AI is used, but with these kinds of caveats of being very transparent about what are the problems. I waffled on whether to use it at all, but in the end, I decided it would be good to use it, so long as it is not just glorified as this shiny new thing.

**SN: A lot of things we discussed before come together in this project: your critical approach to technology, the ways in which animals are part of a technological and data realm, and your collaborative practice. How will you present the outcomes of this project?**

**ML:** It should be coming out soon. The work is a multimedia essay that includes the text I have written and the samples I have generated from the AI, together with a composition for flute and electronics and a generative animation that I commissioned. So, it is part of my creative practice, part curatorial practice, part writing. I am working in these kinds of experimental multidisciplinary spaces a lot these days. □

#### **SUGGESTED READINGS**

- D'IGNAZIO, C., & KLEIN, L. F. (2020). *Data Feminism*. MIT Press.
- LIVIO, M., & EMERSON, L. (2019). Towards Feminist Labs: Provocations for Collective Knowledge-Making. In L. Bogers & L. Chiappini (Eds.), *The Critical Makers Reader: (Un)learning Technology* (pp. 285–297). Institute of Network Cultures. <https://networkcultures.org/blog/publication/the-critical-makers-reader-unlearning-technology/>
- LIVIO, M., LIU, J., DEW, K., LIU, S., & ZDZIARSK, P. (2019). *Methods for Noticing Workbook*. First implemented at Designing Interactive Systems Conference: DIS '19. [https://www.academia.edu/45473985/Methods\\_for\\_Noticing\\_Workbook](https://www.academia.edu/45473985/Methods_for_Noticing_Workbook)