# Pressing Pause, "Doing" Feminist Mapping

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## Abstract

Maps have long been understood to be embedded within structures of power that differentially privilege and oppress. In traditional workflows, however, considerations of power are often difficult to represent in the map and fail to include considerations of power tied to the mapmaker. As such, we invite mapmakers of all backgrounds and skill sets to "press pause" on traditional workflows to incorporate feminist considerations and representations of power and position. We begin by reviewing reflexivity and exploring the ways it enables deep engagement with systems of privilege and oppression. We then situate reflexivity as the foundation of a feminist toolkit for "doing" feminist mapping, a toolkit that calls mapmakers to explore the multiple planes of the matrix of domination (interpersonal, hegemonic, disciplinary, structural) in the five design justice areas (values, practices, narratives, sites, and pedagogies). In particular, we explore the opportunities afforded by reflexivity taken up in written, audio, and visual practices and highlight the work of scholars and practitioners working through these modalities. It is our hope that a commitment to more holistic considerations of power in mapping lead to the establishment of a more equitable and just world.

## Keywords

Feminist mapping, critical GIS, reflexivity, positionality, feminist methods, toolkit

## Introduction

Maps, spatial data, and mapping technology are being used today at unprecedented rates. Because of this, it is imperative to contextualize these advancements within the histories of mapping as socially constructed tools of colonization, war, and state power (Sparke 1998; Akerman 2009; Rose-Redwood 2012; Lucchesi 2020; Pearce and Hornsby 2020; Rose-Redwood et al. 2020). While maps are not neutral, contemporarily, maps retain their power as persuasive mediums that are easily trusted by members of the public (Tyner 1982; Griffin 2020). Further, they are slated to be important mechanisms for tackling the world's most urgent social and environmental problems (Robinson et al. 2017). Maps, however, cannot be separated from their makers as they present a view from somewhere that materializes and concretizes in/visible power relations.

Feminism and feminist theory are central to considerations of power and position in mapping and have laid the foundation for critical GIS today (Elwood and Leszczynski 2018). Feminist digital geographies, design justice, and data feminism have reinvigorated attention to mapping contexts by grounding feminist principles such as power through situated knowledge and intersectionality—particularly in relationship to systems of oppression—in maps and mapping (Elwood and Leszczynski 2018; Costanza-Chock 2018 and 2020; D'Ignazio and Klein 2016 and 2020). Recognizing the whiteness of existing scholarship in digital geographies and mapping, we, like Elwood and Leszczynski (2018, 7), recognize and expand feminist thought through the amplification of "queer theory, critical race and postcolonial feminism, and Black geographies." We work towards these "new lines of flight" (Elwood and Leszczynski 2018, 7) beginning with reflexivity.

"Doing" feminist mapping situates and transforms ontological reorientations towards mapping as process (Kitchin and Dodge 2007) and mappings as emergent through encounter (Pearce 2014) within axes of domination. As part of this practice, reflexivity guides individuals and groups to articulate and challenge the multiple ways they occupy differential spaces of privilege and oppression in their work, shifting the emphasis from static map artifact to dynamic mapping processes imbued within intersecting power differentials. This shift recognizes the harm and systemic violence produced and concretized through white supremacy, patriarchy, and ableism (among other systems). Without reflexivity, we situate ourselves (knowingly or not) as objective, unbiased producers of knowledge. This is particularly poignant for mapmakers where, as Britta Ricker asserts, "there is an inherent risk to represent a single reality, point of view, set of values of the specific demographic who make maps" (Ricker 2020, 3). Building on Annette Miae Kim's (2015) attention to position and power in the mapping of Ho Chi Minh City's public sidewalks, this paper calls mapmakers to place not only the map, but also themselves and their processes, within power structures through engagements with reflexivity.

To do so, we offer a feminist mapping toolkit centered around *pressing pause* on traditional mapping workflows to make space for feminist informed reflexivity. Following Sara Ahmed (2017), we present the beginnings of a feminist toolkit to subvert conventional mapping practice by slowing down and making time and space for reflexivity in our workflows, our collaborations, and our mappings. We bring together the work of mapmakers, critical GIScientists, data journalists, artists, ethnographers, and anti-racist educators to learn from the individual ways they reflect, articulate, and rearrange power in their work. Each one adds a new tool to the toolkit. Though we are not the first to advocate for reflexivity's incorporation into the mapping process (Kwan 2002; McLafferty 2002; Sheppard 2005), the practice remains tangential to everyday mapping practices. Further, when incorporated into mapping practice, reflexivity is often taken up superficially and lacks attention to intersecting systems of power. One reason folks avoid reflexive practice is that the very expectation of articulating one's positionality is enough to make someone freeze in anticipation of the criticism that one will receive about information that captures such personal reflections of who they are (Sultana 2007). However, reflexivity isn't a shield

and this discomfort is where the generative ruptures occur. Author of the *Me and White Supremacy*, Lalya Saad (2020, 11) articulates, "There is much work to be done. And it begins with getting honest with yourself, getting educated, becoming more conscious about what is really going on (and how you are complicit in it), getting uncomfortable, and questioning your core paradigms." In order to enable maps for the creation of liberated futures, we believe it is necessary for mappers of all backgrounds, interests, and skill levels to get comfortable with being uncomfortable.

That's where pressing pause comes into play. Our toolkit for "doing" feminist mapping creates multiple entry points for mapmakers to disrupt traditional workflows and examine the ways power influences our processes, products, and ourselves. We do so by pressing pause to engage reflexivity through written, audio, and visual practice. The remainder of the paper provides a brief contextualization of feminist concepts, specifically reflexivity, along with topical areas to begin our questioning and specific considerations for these three modalities for mapmakers to take up. While we recognize the multiplicitous lineages of reflexivity as feminist practice (Falconer Al-Hindi and Kawabata 2002; Kobayashi 2003; Faria and Mollett 2016), we do not intend our discussion to be a comprehensive or exhaustive examination of feminist interventions. Rather we work to connect feminist praxis that cartographers, GIScientists, and digital geographers are actively engaged in with achievable practices that can be incorporated into one's own mapping process.

## Feminist Mapping and Reflexivity: A Brief Introduction

Reflexivity is a feminist practice often grounded in what Donna Haraway (1988) refers to as *situated knowledge*. Situated knowledge rejects Western constructs of objectivity and universalizing approaches to the world, or what Haraway (1988) names as the "view from nowhere." Such omnipotent, top-down perspectives are ever prevalent across mapping contexts. Haraway writes that situated knowledge demonstrates the partialities caused by the "transcendence and splitting of subject and object… and allows us to become answerable to what we learn how to see" (Haraway 1988, 583). Put another way, reflexivity works to make "visible" that which was made "unseen" in the traditional research process (Staeheli and Lawson 1995) by prompting researchers to locate themselves in relationship to the power structures that shape knowledge production (Rose 1997; Falconer Al-Hindi and Kawabata 2002). Reflexivity in research asks us to be critical of the localities, privileges, biases, and erasures that emerge through intersectional modalities of identity in ways that enable or foreclose possibilities in the production of our work. Further, reflexivity acknowledges personal, interpersonal, institutional, emotional, epistemological, and ontological influences on our research (Doucet and Mauthner 2002). In short, reflexivity reveals the politics and power of our position.

Reflexivity has been critiqued for the ways it can be taken up in superficial performances that fail to go beyond the recognition of one's identity (Kobayashi 2003). Simply reporting on identity categories falls short of confronting the intersections of privilege and oppression. Such a practice can also further researcher privilege by silencing outside perspectives (Wolf 1996). However, placing positionality within the broader context from which our research emerges offers a more richly situated perspective on the function of power in practice. For example, it is not enough to simply state that we are both white, educated, non-disabled, middle-class folks from the United States who differ in that one of us is a neurotypical, cisgendered woman and the other is neurodivergent and genderqueer. While our identities reflect lived realities, we recognize that identity categories are, in fact, mutable. Rather, we go deeper and grapple with the ease afforded to us when participating in disciplinary spaces that continue to be a majority white and confront the challenges of being in spaces that privilege men/masculinity while also holding privileges granted to cisgendered/cispassing folks. We contend with our socio-economic positions as those who have benefited from our educational backgrounds and institutions that provided financial support for professional development activities (e.g., national and international conferences)

while simultaneously beholden to student debt. These examples illustrate the types of awareness our work elicits and further demonstrate the need for intersectional considerations in our work. Reflexivity calls us to go beyond the self to ask how our identities relate to intersections of power and privilege over time.

Taking it a step further, reflexivity can enable political action that works towards more equitable futures through the dismantling of these power differentials. For example, in recognition of our identities and privileged positions within this feminist toolkit, we worked towards the goal of expanding our citational practices by sourcing 75 percent of our citations from underrepresented scholars to unravel and disrupt knowledge systems in which we were both indoctrinated (Mott and Cockayne 2017; Guzmán 2019; Gieseking 2020). For cartography and mapmaking in particular (like geography more broadly), this is to move beyond citational "canons" consisting of "straight, white rich men" and reject such metrics and canonization altogether (D'Ignazio 2016; Ahmed 2014).

Transparency and openness are not equivalent to reflexive practice (D'Ignazio and Klein 2020). Recent calls to open data, utilize open source technologies, and make analysis or workflows public are not enough. These reflexive guises, in the words of D'Ignazio and Klein (2020), "locate the source of the problem in individuals and technological systems" as a means to reify and maintain power through some semblance of accountability. Reflexivity calls us to reflect, challenge power structures, and demand change beyond individual actions. In the context of design justice, Costanza–Shock (2020, 96) writes "good intentions are not immune from failure, and can even cause inadvertent harm." Here we argue that reflexivity goes beyond good intentions and is necessary to hold us accountable in our work. Likewise, reflexivity is generative, iterative, and ongoing. We are not static subjects that can be fully known; therefore reflexivity must be a "moving, living practice" (Kobayashi 2009) that is never fully finished.

**Reflexive Practice**

Reflexivity is not a prescriptive practice as there are no specific rules or protocols to engaging with our subjective positions through writing, audio, and visual practice. The examples we provide are in themselves partial starting points, meant to be combined, expanded, and retooled collectively. Together, they prompt us to examine the partialities of all approaches and perspectives, as reflexivity does not offer us a prescriptive model but rather a rhizomatic rupture (Deluze and Guattari 1987) allowing for multiple, non-hierarchical modes of ongoing engagements. As such, our toolkit is adaptable in order to guide and challenge us into action. With that in mind, here we survey elements of our toolkit for reflexive practice.

Reflexive practice requires multiscale and intersectional engagement with both identity and broader power structures. Black feminist sociologist Patricia Hill Collins (2009) provides pathways to explore multiple personal and group identity configurations that produce structural processes and enable "unjust oppression or unearned privilege" (D'Ignazio and Klein 2020, 24). While there are multiple ways identity is constructed, considerations of race, ethnicity, sexual orientation, gender identity, physical or mental ability, religion and spirituality, national identity, and socioeconomic status provide a starting point (see Allen et al. 2012 for discussion of the "Big 8"). Penalties and privileges are experienced in each individual identity category and, when combined, create a complex system of power or "matrix of domination" that are organized across the "structural, disciplinary, hegemonic, and interpersonal domains" (Collins 2009, 21; D'Ignazio and Klein 2020) or, in other words, at personal, cultural, and institutional levels (Costanza-Shock 2020). Importantly, these systems are intersecting and interlocking, meaning an individual can experience multiple systems, privileges, and oppressions simultaneously (Combahee River Collective 1977; Crenshaw 1989; Collins 2009; Nash 2018).

For our toolkit, we invite mappers to examine identity and power within the matrix of domination in five areas: values, practices, narratives, sites, and pedagogies. See Table 1 for more details on the specific lines of inquiries that inform each area. Here, we learn from Sasha Costanza-Chock (2020) and their reflections on the Design Justice framework. While there are certainly other models by which to examine axes of domination, we align with Costanza-Chock (2020) and members of the Design Justice Network because they work not only to name and locate the privileging/oppressive modes of power, but to redistribute power for community liberation. By participating in this realm of reflection, we hope for mapmakers to be able to do the same. In the next section, we examine *how* mapmakers can explore these questions.

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|---|---|
| **Values** | What values do we encode and reproduce in the maps? |
| **Practices** | Who gets to map? How do we move toward community control of mapping processes and practices? |
| **Narratives** | What stories do we tell about how things are mapped? How do we scope mapping challenges and frame spatial problems? |
| **Sites** | Where do we map? How do we make mapping sites accessible to those who will be most impacted by mapping processes? What map sites are privileged and what sites are ignored or marginalized? |
| **Pedagogies** | How do we teach and learn about mapmaking? How do we center power and position in our pedagogies? |

**Table 1.** Adapted from Design Justice (Costanza-Chock 2020), five sites or prompts to begin exploring matrix of domination in relationship to the map and mapper.

### *Written Practice*

Reflexivity appears most frequently in written form. While not routine in mapping contexts, we don't have to look far to find examples that *work towards* reflexivity. Metadata, for example, provides documentation to contextualize datasets, including geospatial data (FDGC n.d.), and while mapmakers are familiar with metadata curation, we look to data biographies in data journalism (Krause 2017), datasheets for datasets (Gebru et al. 2020), #README instructions (Boston Public Library 2021), and structured context for public-facing data (CIVIC 2020) as models that extend metadata to better understand the social contexts that surround data. Krause (2017), for example, approaches data as a human journalistic source, which includes a healthy dose of skepticism and inquiry. Gebru et al. (2019) "propose that every dataset be accompanied with a datasheet that documents its motivation, composition, collection process, recommended uses, and so on." Calls to "show your work" in data journalism have opened datasets as well as analysis processes to enhance accountability through transparency and reproducibility (D'Ignazio and Klein 2020). Feminist reflexivity, however, extends these initiatives by attaching questions of power, privilege, and position to data documentation.

Given the intersections of mapping and art, another opportunity for written reflexivity is the concept of artist statements. Artist statements situate the artist within the work at hand. Sarah Hotchkiss (2018) poses artist statements as a description of the relationship between the artist and artwork as well as its significance. Hotchkiss expands that an artist statement is simply a conversation between the artist and someone viewing their artwork where the goal is to contextualize the viewer's experience. Stories within *A Cartographer's Story* (Huffman and Nelson n.d.) parallel artist statements inviting mappers to share "personal and emotional relationships" or stories that are embedded within the maps that they make. Entries included in the collection take the reader behind the scenes of the map production process and into the life of the mapper. Relatedly, Peterle (2018, 1) calls for carto-fiction "to let emotional, subjective cartographies emerge and to narrativise maps as mapping practices." Carto-fiction asks mappers to not simply reflect at the end of a process, but to write *throughout* the mapping process, combining creative mapping and creative writing.

Journaling is also a site for intervention providing space to get uncomfortable and interrogate power and position (Saad 2020). While written reflections are also a common pedagogical strategy used to support critical engagement in classroom settings (Elwood and Wilson 2017), they are rarely incorporated into mapping processes outside the classroom. Public-facing reflexivity statements appear in books, journal articles, dissertations and theses, blog posts, and syllabi. These venues are ripe opportunities for mapmakers. Public-facing reflexivity can also guide future work. Laura Pulido (2008), for example, unravels the tensions, contradictions, and power structures within her scholar-activist research in a letter to graduate students offering guidance without prescription. In sum, there are many existing models that work towards reflexivity statements in writing. Reflexivity builds on metadata, artist statements, personal stories, and journaling by situating the mapper and the map within power structures.

### Audio Practice

Although less frequently used, audio practice offers another critical site for feminist reflexivity. Audio recordings have long been used in anthropology and geography as tools for ethnographic research and are appreciated for their ability to capture the dynamics of tone (enthusiasm, frustration, disengagement, ambivalence, etc.), making recordings perhaps more emotionally forthcoming than writing. There are two established approaches in this vein that we highlight: oral positionality, which is used to reflect on the intersectional moments of bias, privilege, and exclusion within a research project (Chatlosh and Kheshti 2018) and voice notes, which is used to reflect on broader research or production processes (Mazanderani 2017).

As noted in the introduction, audience pressure can cause those taking up reflexive practice to develop critical self-awareness, anticipating the ways their work will be interpreted (Kheshti 2015). This can, in turn, influence reflexive work to become superficial and performative. In the face of this anxiety, audio recording can help produce a less regulated, more honest reflection that better captures the messiness of reality. To ensure deep, meaningful moments of reflection, we invite mapmakers to take up the use of audio recording in both moments of personal and process-based reflexivity. The practices that we've identified may not be directly feminist, yet they offer modes to be explored.

First, we acknowledge that audio and sound already have a place in mapmaking as they have been used in a variety of mapping contexts to situate the audience within a time and place (Olmedo and Christmann 2018). Sound increases the accessibility of maps (Lobben and Lawrence 2012; Lobben et al. 2015) but also contextualizes and humanizes spatial stories (Varjacques and Ma 2019; Mapes and Koopman 2020). One way mapmakers connect the use of sound with reflexive engagements is through live and recorded demos. These are commonly used in learning environments like classrooms and

conferences, and often include screen capturing as well as an audio voiceover to describe a new tool or technique in action. Similar to voice notes, Daniel Huffman (n.d.) uses what Huffman calls "Live Carto" to walk through mapping projects "layer by layer, discussing… decision-making and techniques." Huffman's live digital events (with recordings made available afterwards) provide engagement with viewers, inviting them to ask questions and comment in real time. Live recordings embrace the real, unscripted moments by removing any chance for the editing that might appear in writing or prerecorded video. While this example is not explicitly tied to considerations of power and reflexivity, live recordings offer productive ways to engage with maps, mapping processes, and power without perfection.

Audio engagements with reflexivity can also be taken up asynchronously from the mapping process. Like artist statements, audio files could be hosted in conjunction with static maps or integrated into digital maps. Reflexive audio practice can also be used in less public ways and as research tools. While audio recordings may not be as common for mapmakers who often work visually, these examples outline the ways that this approach creates accountability within map production and map research.

### Visual Practice

While maps and visualizations can be multisensory (Lobben and Lawrence 2012; Dooley et al. 2015; Lundgard et al. 2019), vision and visual practice dominate mapping processes, which are largely a series of decision-making moments that are imbued with power. Reflexive practice makes these moments and their impacts knowable. As such, we explore multiple opportunities for mapmakers to situate themselves and their work more fully through visual practice.

One well known moment for creating in/visiblites in mapping work is through data selection and generalization decisions. One way to reveal these processes is through versioning, or tracing the multiple iterations of the map as it developed. Meghan Kelly (in Kelly and Bosse 2019), for example, created a map series using multiple drafts of the same map over time to illustrate her process and debunk the stasis of map artifacts (Figure 1). One additional step towards feminist reflexivity would be a deeper examination of power with each decision, layer, and/or draft. In their work on more traditional terrain mapping, Travis White and Aaron Taveras (2015) in *Making Terrain: Shaded Relief Narratives*—a gallery exhibit—demystify their process by exposing the visual manipulations that "trick" the viewer into seeing 3-dimensional terrain by isolating each layer of a terrain map into its own frame. Such techniques reveal how the seemingly mundane elements of design and symbology assert power. Visual journaling through sketching can also be used to more deeply engage with mapping and design processes (Lupi and Posavec 2016). In her work on feminist icon design, Kelly (2021) examines the depictions of bodies and default assumptions in iconography in mapping. To engage more reflexively with this work, she began redesigning the Maki icon set, one icon at a time, to better understand her own position and relationship to default icon designs (Kelly 2019; Figure 2).

Making the mapmaker visible within the map is another form of reflexive visual practice. In *Framing the Days*, Margaret Pearce (2008) narrativizes the journey of a French fur trader in the Great Lakes region drawing on John McDowell's diary entries. Pearce (2008) uses two typefaces within the map to separate her voice as an outsider from McDowell's voice. This typographic differentiation makes the mapper visible as opposed to the omnipotent mapmaker that leaves no traces behind. Similarly, Levi Westerveld and Anne Kelly Knowles (2019) draw on visual grammar, like hand drawn circles, to highlight the manual manipulation of the map by the mapmaker. They use this technique in the mapping of Holocaust survivor stories to highlight the translation of an individual's recorded story into graphic form and further emphasize the role of the mapmaker's hand in making this translation from story to graphic. Lastly, in a collaborative mapping project aimed at re-envisioning the geographies of policing in Milwaukee, Bley et al. (2021) recount a map made of transparency paper that literally "layers" an

individual's personal experience of the city with historical and structural layers of power like redlining, reflecting Collin's (2002) multi-dimensional, interlocking systems of oppression.
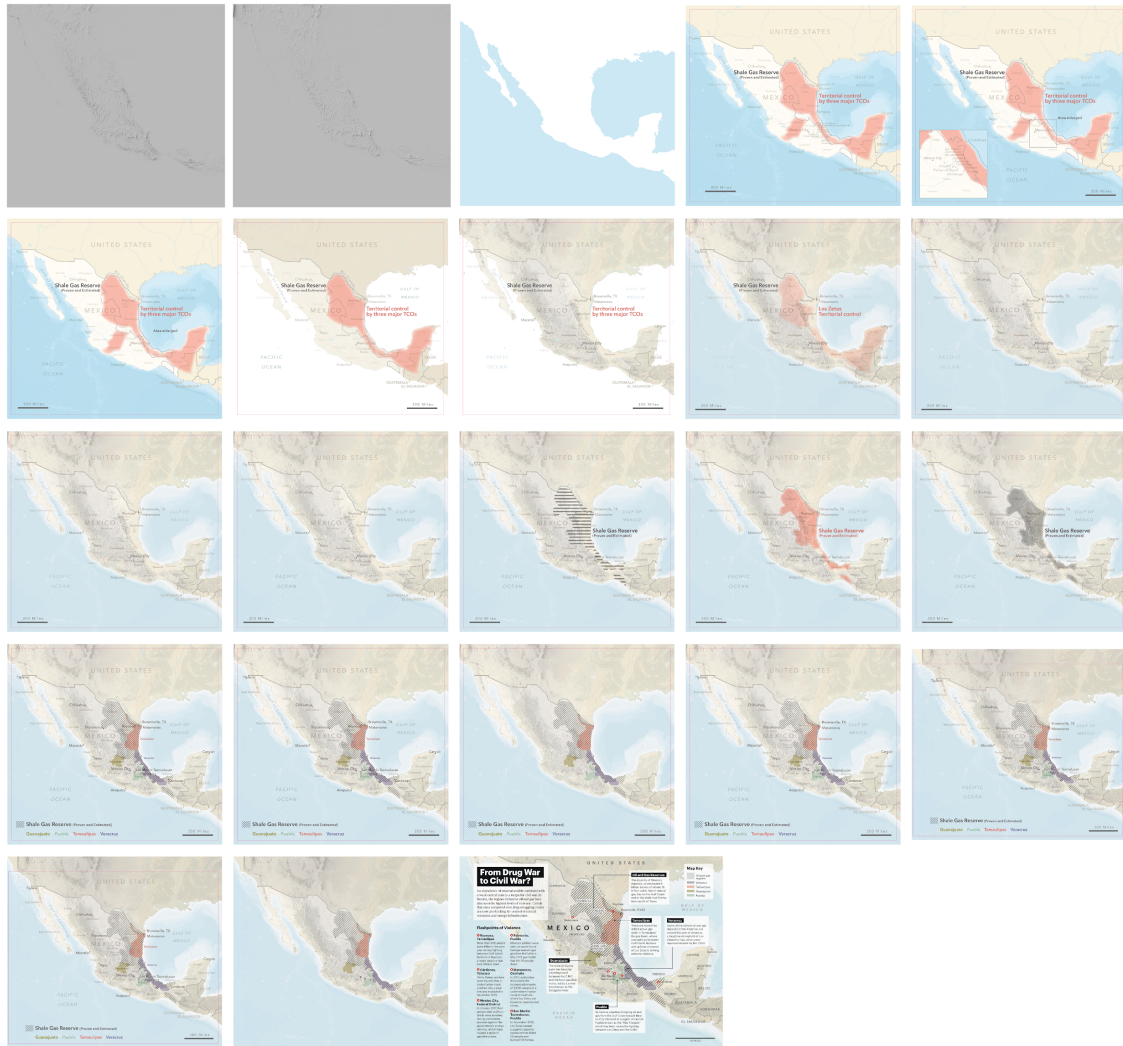


**Figure 1.** Meghan Kelly (in Kelly and Bosse 2019) uses versioning to display drafts of the same map over time, highlighting the overall process instead of the final static artifact.
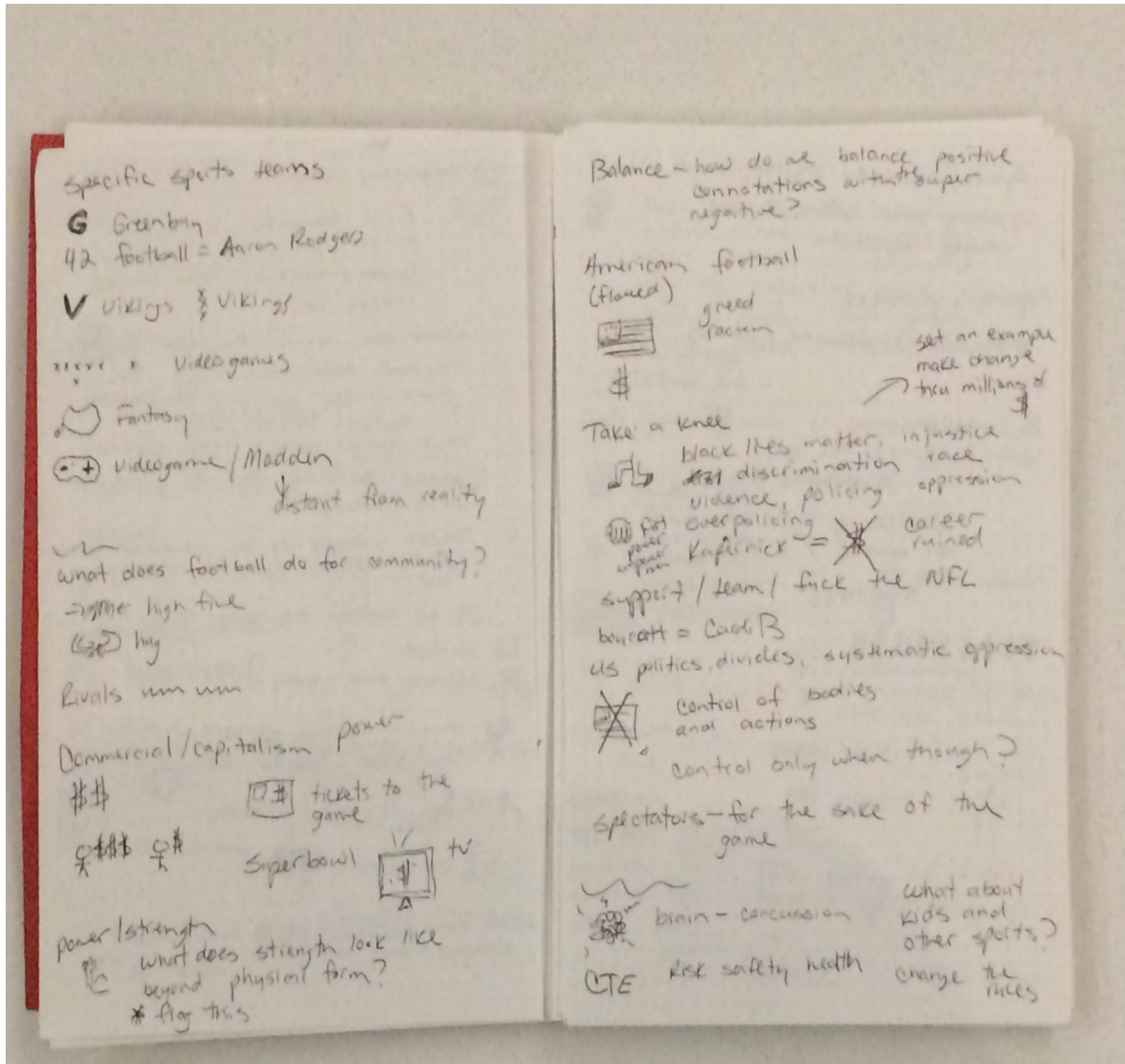
**Figure 2.** In her work on feminist icon design, Meghan Kelly (2019) examines the depictions of bodies and default assumptions in iconography using visual journaling.

Finally, visual approaches can also support mapmakers when examining their processes more broadly. Drawing on design justice heuristics (Costanza–Chock 2020, 91), Meghan Kelly (2020) visualizes participation across the planning and implementation of a mapping workshop for social justice to better reflect on the power dynamics within collaborative work (Figure 3). Overall, visualization grounded in reflexivity stretches our capacity to be critical in our practices by producing new visual vocabularies for understanding the power of both the mapmaker and the map itself.
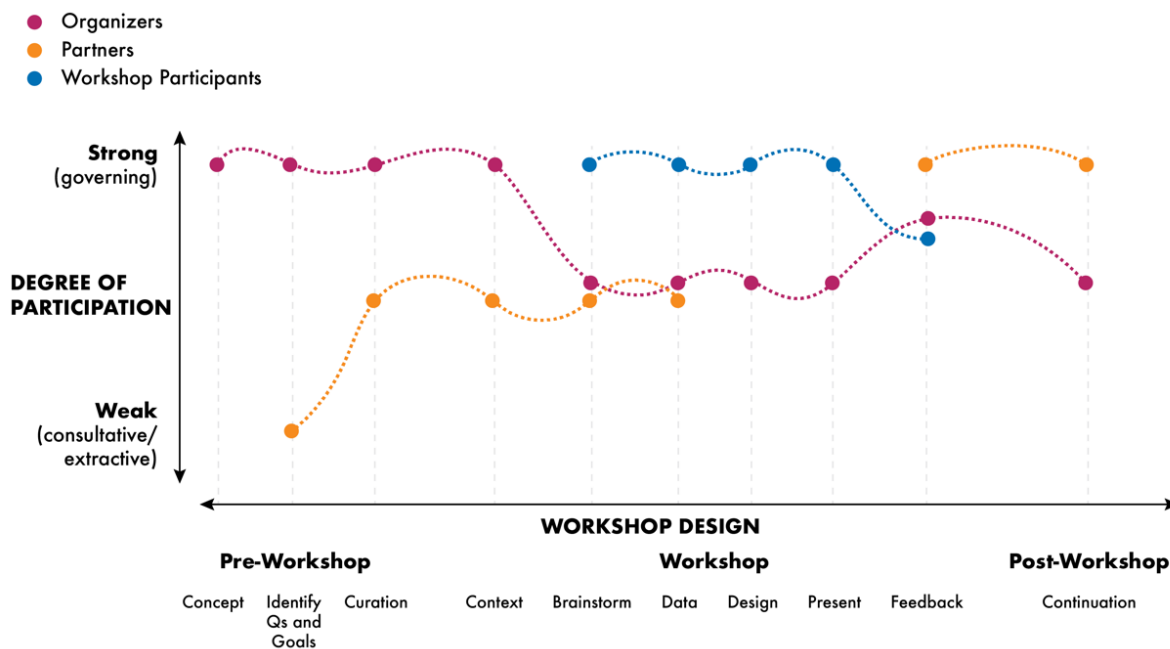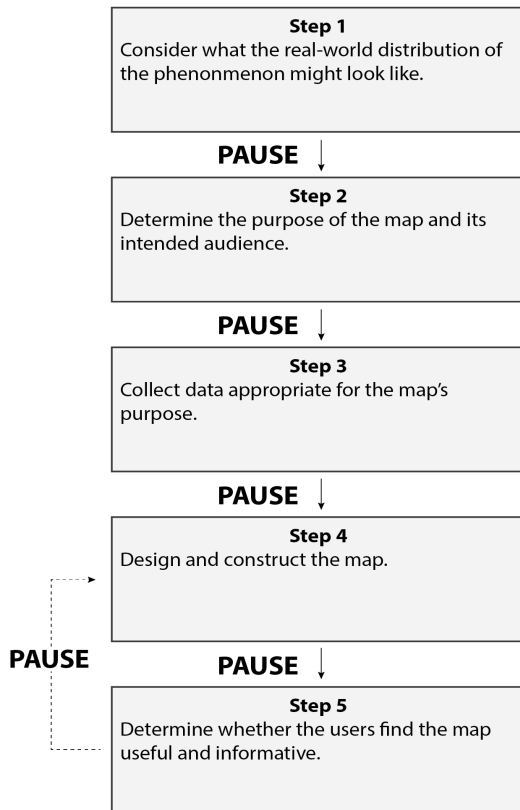
**Figure 3.** Drawing on Costanza-Chock (2020, 91), Meghan Kelly (2020) visualizes participation across the planning and implementation of a mapping workshop for social justice to better reflect on power dynamics within collaborative mapping.
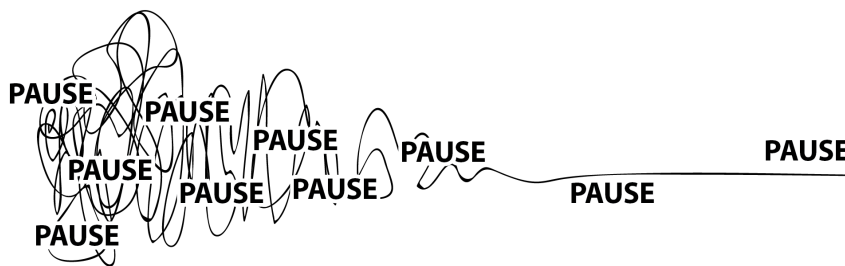
### When to Press Pause?

As has been discussed, there is no "one size fits all" rubric for engaging the multiple approaches to reflexivity we have traced. Each approach makes available a particular set of possibilities by recognizing and naming intersectional modes of power and privilege in the process of map production. Integral to the question of "how" to take up reflexivity is the question of "when." "When" is contingent on a variety of factors like time, sites (e.g., academia, non-profits, newsrooms, government agencies), pressure to publish, and access to resources (e.g., data, technology, and personnel). While these factors materialize in differential ways and are themselves largely dependent on multiscale power structures, pressing pause can happen across temporal demands, sites, pressures, and resource access. Extending recent literature on "slow scholarship," we argue for pressing pause regardless of pace (fast or slow) and at any speed necessary (Myerhoff and Noterman 2017).

Here we present task-based and time-based prompts for pressing pause, each with their own opportunities and challenges, as starting points. Task-based approaches follow more linear considerations of mapping workflows where the process is divided into discrete steps (Figure 4). Reflexive engagement could be taken up at the beginning and end of each stage as a series of checkpoints. However, we recognize and embrace mapping processes as non-linear and often messy design squiggles (Figure 5). As a result, time-based prompts may be more reliable.

**Step 1**
Consider what the real-world distribution of the phenonmenon might look like.

**PAUSE** ↓

**Step 2**
Determine the purpose of the map and its intended audience.

**PAUSE** ↓

**Step 3**
Collect data appropriate for the map's purpose.

**PAUSE** ↓

**Step 4**
Design and construct the map.

**PAUSE**                **PAUSE** ↓

**Step 5**
Determine whether the users find the map useful and informative.

**Figure 4**. Based on Slocum's et al. (2008) basic steps for map communication, this diagram illustrates moments to press pause through a linear workflow.

PAUSE PAUSE PAUSE PAUSE PAUSE PAUSE PAUSE PAUSE PAUSE PAUSE

**Figure 5.** Based on "The Process of Design Squiggle" by Damien Newman, thedesignsquiggle.com, this diagram illustrates moments to press pause throughout the design squiggle

Time-based prompts invite an allocation of a certain percentage of working hours to reflexivity deliverables, an approach that is similar to citation audits where analysis is done to achieve a particular threshold of citation counts towards historically underrepresented voices. For example, if we estimate that a project will take us 50 hours over the course of two weeks of working days (M-F) to complete and we commit to allocating 5% of our time to documenting reflexivity exercises, we could fulfil our commitment by pressing pause 15 minutes every day. A technique that could be a further breakdown of this calculation or taken on its own: one could commit to dedicating 5 minutes of every three hour sprint to press pause. Regardless of the approach taken, just like other tasks in the design process, moments of

pressing pause can be tracked through documentation of time/date, duration, modality, and additional notes on any productive articulations.

The logistics of "when" speak to the scalability of reflexive processes. Opportunities for engagement come when we are "zooming in" to consider how power is entangled with seemingly minor decisions or tasks. Similarly, reflexivity can also "zoom out" to consider not only ourselves, but the broader projects, collaborations, disciplines, and institutional systems we find ourselves working in. Audrey Kobayashi (2003) argues that reflexivity's utility stems from its ability to go beyond the confines of the individual, to articulate the challenges produced by systems that cause marginalization to effect change. Who is included and excluded from our professional organizations, workplaces, or even our Twitter conversations? How do these spaces enable or advocate against the multiple intersections of oppression, be it via a combination of racism, sexism, homophobia, transphobia, xenophobia, ageism, ableism, or any other form of discrimination? By recognizing the situated, partial perspectives of ourselves and our institutions, we can more closely examine the politics of participation and relationality of our work. Learning from scholars and practitioners in the Design Justice Network, it is imperative to question the values, practices, narratives, sites, and teaching moments that surround our work (Costanza-Chock 2020, 24) and, where possible, to share our reflections through written, audio, and visual practice. Doing so enables the emergence and sustainment of social movements within mapping on which liberated futures depend.

Our call to *press pause* reflects the contemporary mapmaker's current toolkit, mirroring what are considered legitimate acts to include in the process of map production. The goals of this toolkit are twofold. First, we must press pause for feminist considerations of power to our data, maps, as well as ourselves and our collaborations throughout our mapping processes. Such an approach generates maps and relationships that are imbued with and reflect self-awareness. Second, reflexivity through written, audio, and/or visual practice creates accountability alongside transparency. This shift from ontologies of maps and mappings to maps as mappings of power is an emergent research branch that requires collective negotiations (e.g., when do we *not* share reflexivity publicly and who has access for how long?).

In order to be reflexive and consider the broader entanglements in which maps and mapmakers are located, we press pause on the traditional workflow and commit time to using materials from the feminist toolkit. Boston Public Library's #README instructions (2021) reflect a commitment to pressing pause in spatial data contexts by emphasizing step-by-step process reflections as well as questions of data integrity (i.e., missing data and data limitations). Such an approach expands the conversation of "data sheets" in data science (Gebru et al. 2019) to spatial context and "scales up" the possibilities for reflexive metadata as an institutionalized practice. As such tasks become normalized and naturalized, the toolkits of mapmakers of all experience levels will become interwoven and feminist considerations of power will not require a pause. Rather, following in the trajectory articulated by Elwood and Wilson (2017) in relation to pedagogy, we urge that feminist considerations not be siloed, singular moments, but integral throughout the broader process. In failing to do so, mapmakers run the risk of continuing to reinforce normative constructs in society and neglect issues of power, equality, equity, and inclusion. New tools require practice.

In closing, we return to the words of Layla Saad, as she articulates the landscape of radical possibilities that becomes available when we take on the task of self-examination. She explains "If we are all committed to doing the work that is ours to do, we may just have a chance in creating a world and way of living that is closer to what we all desire for ourselves and one another." (Saad 2020, 11). In order for maps to be leveraged to address the world's most urgent social and environmental challenges, it is imperative that mapmakers become accountable to intersections of power that are both foreclosed and enabled by their own positionality. It's not easy work, but it's work worth doing.

# References

Ahmed, Sara. 2014. White Men. *feministkilljoys*. https://feministkilljoys.com/2014/11/04/white-men/.

———. 2017. *Living a Feminist Life*. Durham: Duke University Press.

Akerman, James R. (ed). 2009. *The Imperial Map: Cartography and the Mastery of Empire*. The Kenneth Nebenzahl, Jr., Lectures in the History of Cartography. Chicago: University of Chicago Press.

Allen, Evette, Bryan Hubain, Cerise Hunt, Star Lucero, and Saran Steward. 2012. Race Matters: Implementing Racial Identity Development Theories into the Classroom. 2012 Diversity Summit. https://www.racialequitytools.org/resourcefiles/Race%20Matters_%20Implementing%20Racial%20Identity%20Development%20Theories%20into%20the%20Classroom.pdf.

Kallista Bley, Kela Caldwell, Meghan Kelly, Jenna Loyd, Robert E. Roth, Tanya M. Anderson, Anne Bonds, Jenny Plevin, Darrin Madison, Christofer Spencer, Trevonna Sims, Chris Archuleta, Zach Ellner, Taylor McDowell, Chelsea Nestel, Elsa Noterman, Nick Smith, Stepha Velednitsky, Nick Underwood, Robert Darlington, Yuqi Gao, Adrian George, Laura Miller, Tim Prestby & Jamp Vongkusolkit (2021) A Design Challenge for Transforming Justice, GeoHumanities, DOI: 10.1080/2373566X.2021.1986100

Boston Public Library. 2021. #README Instructions. https://cartinal.leventhalmap.org/guides/readme-instructions.html

Caquard, Sébastien. 2015. "Cartography III: A Post-Representational Perspective on Cognitive Cartography." *Progress in Human Geography* 39/2, 225–35. https://doi.org/10.1177/0309132514527039.

Chatlosh, Kelsey, and Roshanak Kheshti. 2019. Interview: Sound Recording, Oral Positionality, and Audio as Ethnographic Object. *Items: Insights from the Social Sciences*. https://items.ssrc.org/parameters/interview-sound-recording-oral-positionality-and-audio-as-ethnographic-object/.

CIVIC. 2020. CIVIC Structured Context Program. https://civicsoftwarefoundation.org/posts/structured-context-data-feminism.

Collins, Patricia Hill. 2009. *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment*. Routledge Classics. New York: Routledge.

Combahee River Collective. 1977. The Combahee River Collective Statement.

Costanza-Chock, Sasha. 2018. Design Justice: Towards an Intersectional Feminist Framework for Design Theory and Practice. *Proceedings of the Design Research Society*. https://ssrn.com/abstract=3189696

———. 2020. *Design Justice: Community-Led Practices to Build the Worlds We Need*. Information Policy. Cambridge, MA: The MIT Press.

Crenshaw, Kimberle. 1989. Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics. *University of Chicago Legal Forum*, 139.

Deleuze, Gilles, and Félix Guattari. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press.

D'Ignazio, Catherine, and Lauren F Klein. 2016. Feminist Data Visualization. *Workshop on Visualization for the Digital Humanities (VIS4DH), Baltimore*. IEEE.

D'Ignazio, Catherine, and Lauren F. Klein. 2020. *Data Feminism*. Cambridge, MA: The MIT Press.

Dooley, Matt, Jake Coolidge, and Caroline Rose. 2015. The Tangible Map Exhibit. *Cartographic Perspectives*, no. 82: 25–36. https://doi.org/10.14714/CP82.1344.

Doucet, Andrea, and Natasha Mauthner. 2002. Knowing Responsibly: Ethics, Feminist Epistemologies, and Methodologies. In *Ethics in Qualitative Research*, edited by Tina Miller, Maxine Birch, Melanie Mauthner, and Julie Jessop, 123–45.

Elwood, Sarah, and Agnieszka Leszczynski. 2018. Feminist Digital Geographies. *Gender, Place & Culture* 25/5, 629–44. https://doi.org/10.1080/0966369X.2018.1465396.

Elwood, Sarah, and Matthew Wilson. 2017. Critical GIS Pedagogies beyond "Week 10: Ethics." *International Journal of Geographical Information Science* 31/10, 2098–2116. https://doi.org/10.1080/13658816.2017.1334892.

Falconer Al-Hindi, Karen, and Hope Kawabata. 2002. Toward a More Fully Reflexive Feminist Geography. In, Pamela Moss (ed), *Feminist Geography in Practice: Research and Methods*., Oxford: Blackwell, pp. 103–15.

Faria, Caroline and Sharlene Mollett. Critical Feminist Reflexivity and the Politics of Whiteness in the 'Field.' *Gender, Place and Culture* 23(1), 79-93. https://doi.org/10.1080/0966369X.2014.958065

Federal Geographic Data Committee. n.d. "Geospatial Metadata." n.d. https://www.fgdc.gov/metadata.

Gebru, Timnit, Jamie Morgenstern, Briana Vecchione, Jennifer Wortman Vaughan, Hanna Wallach, Hal Daumé III, and Kate Crawford. 2020. Datasheets for Datasets. http://arxiv.org/abs/1803.09010.

Gieseking, Jen Jack. 2020. Citing You on Behalf of an Other Digital Geographical Imagination. *Dialogues in Human Geography* 10/1, 41–45. https://doi.org/10.1177/2043820619898896.

Griffin, Amy L. 2020. Trustworthy Maps. *Journal of Spatial Information Science* 20, 5–19.

Guzmán, Rigoberto Lara. 2020. How to Cite Like a Badass Tech Feminist Scholar of Color. *Medium*. https://points.datasociety.net/how-to-cite-like-a-badass-tech-feminist-scholar-of-color-ebc839a3619c.

Hanson, Susan. 2002. Connections. *Gender, Place & Culture* 9/3, 301–3. https://doi.org/10.1080/0966369022000003914.

Haraway, Donna. 1988. Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies* 14/3: 575-599. https://doi.org/10.2307/3178066.

Hotchkiss, Sarah. 2018. How to Write an Artist Statement. https://thecreativeindependent.com/guides/how-to-write-an-artist-statement/.

Huffman, Daniel. n.d. Daniel Huffman - YouTube. *Live Carto*. n.d. https://www.youtube.com/channel/UCqdKhw-PVDm6i6DxjYdaXPg/playlists.

Huffman, Daniel, and John Nelson (eds). *A Cartographer's Story*. https://acartographersstory.com/.

Kelly, Meghan. 2019. Feminist Cartographies: Theory and Practice for Map Design. Paper read at the Doing Critical GIS Workshop, University of Maryland, Baltimore County, Baltimore, MD. https://doingcriticalgis.umbc.edu/program/.

Kelly, Meghan. 2020. "Feminist Mapping: Content, Form, and Process." PhD diss. University of Wisconsin–Madison.

Kelly, Meghan. 2021. Mapping Bodies, Designing Feminist Map Icons. *GeoHumanities*, 7:2, 529-557, DOI: 10.1080/2373566X.2021.1883455

Kelly, Meghan, and Amber Bosse. 2019. Mapping and Positionality: A Call for Reflection and Action. Paper read at the North American Cartographic Information Society Annual Meeting, Tacoma, WA.

Kheshti, Roshanak. 2015. *Modernity's Ear: Listening to Race and Gender in World Music*. Postmillennial Pop. New York: New York University Press.

Kim, Annette Miae. 2015. *Sidewalk City: Remapping Public Space in Ho Chi Minh City*. Chicago: University of Chicago Press.

Kitchin, Rob and Martin Dodge. 2007. Rethinking Maps. *Progress in Human Geography*, 31(3), 331–344. https://doi.org/10.1177/0309132507077082

Kitchin, Rob, Justin Gleeson, and Martin Dodge. 2013. Unfolding Mapping Practices: A New Epistemology for Cartography. *Transactions of the Institute of British Geographers* 38/3, 480–96. https://doi.org/10.1111/j.1475-5661.2012.00540.x.

Kobayashi, A. 2009. Situated Knowledge, Reflexivity. In, Rob Kitchin and Nigel Thrift (eds), *International Encyclopedia of Human Geography*. Elsevier, 138–43. https://doi.org/10.1016/B978-008044910-4.00517-4.

Kobayashi, Audrey. 2003. GPC Ten Years On: Is Self-Reflexivity Enough?" *Gender, Place & Culture* 10/4, 345–49. https://doi.org/10.1080/0966369032000153313.

Krause, Heather. 2017. Data Biographies: Getting to Know Your Data. *Global Investigative Journalism Network*. https://gijn.org/2017/03/27/data-biographies-getting-to-know-your-data/.

Kwan, Mei-Po. 2002a. Introduction: Feminist Geography and GIS. *Gender, Place & Culture* 9/3, 261–62. https://doi.org/10.1080/0966369022000003860.

———. 2002b. Is GIS for Women? Reflections on the Critical Discourse in the 1990s. *Gender, Place & Culture* 9/3: 271–79. https://doi.org/10.1080/0966369022000003888.

Lobben, Amy, Megen E. Brittell, and Nicholas A. Perdue. 2015. Inclusive Cartographic Design: Overcoming Ocular-Centric Cartographies. In, Claudia Robbi Sluter, Carla Bernadete Madureira Cruz, and Paulo Márcio Leal de Menezes (eds). *Cartography - Maps Connecting the World*. Cham: Springer International Publishing, 89–98. https://doi.org/10.1007/978-3-319-17738-0_7.

Lobben, Amy, and Megan Lawrence. 2012. The Use of Environmental Features on Tactile Maps by Navigators Who Are Blind. *The Professional Geographer* 64/1, 95–108.

Lucchesi, Annita Hetoevėhotohke'e. 2020. "Spatial Data and (De)Colonization: Incorporating Indigenous Data Sovereignty Principles into Cartographic Research." *Cartographica: The International Journal for Geographic Information and Geovisualization* 55 (3): 163–69. https://doi.org/10.3138/cart-2019-0022.

Lundgard, Alan, Crystal Lee, and Arvind Satyanarayan. 2019. Sociotechnical Considerations for Accessible Visualization Design. http://vis.mit.edu/pubs/sociotechnical-vis-access.

Lupi, Giorgia, and Stefanie Posavec. 2016. *Dear Data*. London, UK: Particular Books.

Mapes, Jen, and Sara Koopman. 2020. Mapping May 4 | Kent State University. 2020. https://mappingmay4.kent.edu/.

Mazanderani, Fawzia Haeri. 2017. "Speaking Back" to the Self: A Call for "Voice Notes" as Reflexive Practice for Feminist Ethnographers. *Journal of International Women's Studies* 18/3, 80–94.

McLafferty, Sara L. 2002. Mapping Women's Worlds: Knowledge, Power and the Bounds of GIS. *Gender, Place & Culture* 9/3, 263–69. https://doi.org/10.1080/0966369022000003879.

Mott, Carrie, and Daniel Cockayne. 2017. Citation Matters: Mobilizing the Politics of Citation toward a Practice of "Conscientious Engagement." *Gender, Place & Culture* 24/7, 954–73. https://doi.org/10.1080/0966369X.2017.1339022.

Muehlenhaus, Ian. 2012. If Looks Could Kill: The Impact of Different Rhetorical Styles on Persuasive Geocommunication. *The Cartographic Journal* 49/4, 361–75. https://doi.org/10.1179/1743277412Y.0000000032.

Nash, Jennifer C. 2018. *Black Feminism Reimagined: After Intersectionality*. Duke University Press.

Olmedo, Élise, and Mathilde Christmann. 2018. Perform the Map: Using Map-Score Experiences to Write and Reenact Places. *Cartographic Perspectives* 91, 63–80. https://doi.org/10.14714/CP91.1486.

Pavlovskaya, Marianna E. 2002. Mapping Urban Change and Changing GIS: Other Views of Economic Restructuring. *Gender, Place & Culture* 9/3, 281–89. https://doi.org/10.1080/0966369022000003897.

Pearce, Margaret Wickens. 2008. Framing the Days: Place and Narrative in Cartography. *Cartography and Geographic Information Science* 35/1, 17–32. https://doi.org/10.1559/152304008783475661.

———. 2014. The Last Piece Is You. *The Cartographic Journal* 51(2), 107–122. https://doi.org/10.1179/1743277414Y.0000000078

Pearce, Margaret W., and Stephen J. Hornsby. 2020. "Making the Coming Home Map." *Cartographica: The International Journal for Geographic Information and Geovisualization* 55 (3): 170–76. https://doi.org/10.3138/cart-2019-0012.

Peterle, Giada. 2019. Carto-Fiction: Narrativising Maps through Creative Writing. *Social & Cultural Geography* 20/8, 1070–1093.

Pulido, Laura. 2008. Frequently (Un)Asked Questions about Being a Scholar Activist. In, Charles R. Hale (ed), *Engaging Contradictions: Theory, Politics, and Methods of Activist Scholarship*. Global, Area, and International Archive. Berkeley: University of California Press.

Ricker, Britta. 2020. Review of "Cartography. A Compendium of Design Thinking for Mapmakers." *International Journal of Cartography* 6/2, 263–66. https://doi.org/10.1080/23729333.2020.1715547.

Robinson, Anthony C., Urška Demšar, Antoni B. Moore, Aileen Buckley, Bin Jiang, Kenneth Field, Menno-Jan Kraak, Silvana P. Camboim, and Claudia R. Sluter. 2017. Geospatial Big Data and Cartography: Research Challenges and Opportunities for Making Maps That Matter. *International Journal of Cartography* 3/1, 32–60. https://doi.org/10.1080/23729333.2016.1278151.

Rose, Gillian. 1997. Situating Knowledges: Positionality, Reflexivities and Other Tactics. *Progress in Human Geography* 21/3, 305–320.

Rose-Redwood, Reuben. 2012. With Numbers in Place: Security, Territory, and the Production of Calculable Space. *Annals of the Association of American Geographers* 102/2, 295–319. https://doi.org/10.1080/00045608.2011.620503.

Rose-Redwood, Reuben, Natchee Blu Barnd, Annita Hetoevĕhotohke'e Lucchesi, Sharon Dias, and Wil Patrick. 2020. "Decolonizing the Map: Recentering Indigenous Mappings." *Cartographica: The International Journal for Geographic Information and Geovisualization* 55 (3): 151–62. https://doi.org/10.3138/cart.53.3.intro.

Saad, Layla F. 2020. *Me and White Supremacy: Combat Racism, Change the World, and Become a Good Ancestor*. Napreville, Illinois: Sourcebooks.

Schuurman, Nadine, and Geraldine Pratt. 2002. Care of the Subject: Feminism and Critiques of GIS. *Gender, Place & Culture* 9/3, 291–99. https://doi.org/10.1080/0966369022000003905.

Sheppard, Eric. 2005. Knowledge Production through Critical GIS: Genealogy and Prospects. *Cartographica: The International Journal for Geographic Information and Geovisualization* 40/4, 5–21.

Sparke, Matthew. 1998. A Map That Roared and an Original Atlas: Canada, Cartography, and the Narration of Nation. *Annals of the Association of American Geographers* 88/3, 463–95. https://doi.org/10.1111/0004-5608.00109.

Staeheli, Lynn A., and Victoria A. Lawson. 1995. Feminism, Praxis, and Human Geography. *Geographical Analysis* 27/4, 321–38. https://doi.org/10.1111/j.1538-4632.1995.tb00914.x.

Sultana, Farhana. 2007. Reflexivity, Positionality and Participatory Ethics: Negotiating Fieldwork Dilemmas in International Research. *ACME: An International E-Journal for Critical Geographies,* 6/3, 374–85.

Tyner, Judith A. 1982. Persuasive Cartography. *Journal of Geography* 81/4, 140–44. https://doi.org/10.1080/00221348208980868.

Varjacques, Leah, and Jessia Ma. 2019. To Stop Border Crossings, the U.S. Made the Journey Deadlier. *The New York Times*, May 29, 2019. https://www.nytimes.com/interactive/2019/05/29/opinion/migrant-crisis.html.

Westerveld, Levi, and Anne Kelly Knowles. 2018. I Was There. *Visionsxarto*. https://visionscarto.net/i-was-there.

White, Travis, and Aaron Taveras. 2015. Making Terrain. *Visual Variables*. https://visualvariables.com/portfolio/back-to-basic/.

Wolf, Diane L. (ed). 1996. *Feminist Dilemmas in Fieldwork*. Boulder, CO: Westview Press.