



Open(ing) Silences: Situational Analysis in Practice

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OPEN(ING) SILENCES: SITUATIONAL ANALYSIS IN PRACTICE

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Abstract

As the world around us becomes increasingly digitized, datafied and commodified, so too does education. Seeking to address these realities, educational researchers are increasingly adopting posthuman perspectives, including sociomaterialism. As a feminist onto-epistemology, sociomaterialism considers both how we shape and are shaped through our ongoing interactions with our social and material worlds. Adopting this perspective brings into question many of the assumptions embedded within traditional methodologies and challenges educational researchers to adopt approaches that address the indirect, messy and interwoven nature of our technological, social and economic realms. This article argues that, as an explicitly posthuman approach to research, situational analysis is well suited to grappling with these sociomaterial complexities. It then presents an exemplar in which situational analysis was used to study open education's relationships with scale from a sociomaterial perspective. Drawing from this exemplar, it argues that situational analysis offers a methodological "structured flexibility" with the power to open up silences by making the hidden visible, supporting collaborative research and enabling a form of "crystallization" in increasingly sociomaterial ways.

Keywords: *situational analysis; educational research; open education; digital education; silence; sociomaterialism; posthumanism*

Open(ing) Silences: Situational Analysis in Practice

Introduction

As the world around us becomes increasingly digitized, datafied and commodified, so too does education. It is therefore becoming increasingly important to tell stories of teaching and learning in terms of the tools, technologies and organizations that are shaping them (Watters, 2021). Williamson (2022), for example, described the learning company Byju as "a very complex and tangled techno-economic machinery with political power to change education, whether for better or worse" (p.1). To effectively investigate these types of questions, researchers need to engage with complex social, political and economic forces that surround decisions to build, purchase and support the adoption of digital tools for educational purposes (Selwyn & Facer, 2013). Historically, however, educational researchers have avoided grappling with these complexities, thereby sustaining the silences that surround them (Elias, 2022a).

Many posthuman perspectives, including sociomaterialism, embrace these types of complexity. As a feminist onto-epistemology, sociomaterialism considers both how we shape and are shaped by our ongoing interactions with our social and material worlds. It embraces complexity, relationality and materiality (Barad, 2003). At the same time, adopting this type of sociomaterialist perspective

brings into question many of the assumptions embedded within traditional methodologies. This perspective asks researchers to lean into rather than avoid complexity and challenges them to adopt methodological approaches that address the indirect, messy and interwoven nature of our technological, social and economic relationships.

In this article, I argue that situational analysis, whose fundamental focus is *relationality*, is an emerging research approach that is well aligned with the above sociomaterial realities. Explicitly posthuman, situational analysis is not interested in the search for purity, a singular basic social process or an oversimplified model. Instead, it uses a series of mapmaking techniques to push research beyond the usual scholarly boundaries (Clarke et al., 2018). This article begins with a brief overview of the relevant terms and the current application of posthuman research methodologies within digital education research. Next, it discusses the benefits of extending these approaches to more fully engage with educational technology's entanglements and the silences that surround them in increasingly posthuman ways. It then introduces the situational analysis "theory-methods package" and its three distinct mapmaking techniques which seek to visualize relationality, move beyond the human subject and make silences speak (Clarke et al., 2018). Finally, this article presents an exemplar in which situational analysis was used to study open education's relationships with scale from a sociomaterial perspective. Drawing from this exemplar, I found that situational analysis offers a methodological "structured flexibility" that opens up silences by making the hidden visible, supporting collaborative research and enabling a form of "crystallization" in increasingly sociomaterial ways.

Sociomaterialism, Posthumanism and Post-structuralism

Sociomaterialism is a feminist onto-epistemological perspective that displaces humans as the holders of knowledge and instead embraces "all manner of bodies, objects and things within a confederacy of meaning-making" (Taylor & Ivinson, 2013, p. 666). It treats practice, meaning and matter, the social and the technological as inseparable and accepts that matter is alive, intra-actively flowing being both beings and non-beings (Barad, 2003). As a result, knowledge is understood as *situated* (Haraway, 1991), or co-constructed through continual interactions with this more-than-human world.

Posthumanism is an umbrella term for worldviews that propose symmetry between humans and non-humans (Latour, 1992). Both sociomaterialism and science and technology studies (STS), a closely related field of study, are often considered to be forms of posthumanism. Post-structuralism is an even broader umbrella term for worldviews that generally reject objectivity and consider power relationships. Post-structuralism is typically thought to encompass all of perspectives listed above.

According to Clarke et al. (2018), the development of situational analysis was directly influenced by post-structuralism, posthumanism and STS, specifically the work of Donna Haraway. Drawing from these works Clarke (2003) intentionally and explicitly included the term "non-human" within her work. Although sociomaterialism and other posthumanist perspectives postdate the development of situational analysis, Clarke et al. (2018) noted that these perspectives "offer fresh and useful provocations regarding the study of precisely *how* the nonhuman can be taken into account" (p. 85).

The research presented in this paper adopts situational analysis using a sociomaterial perspective. Moreover I suggest that despite their differences the terms sociomaterialism, STS, posthumanism and post-structuralism as used by the scholars referenced throughout this article consistently demonstrate a desire to "reappraise what counts as knowledge and to re-examine the purpose of

education, these strands shift the focus away from individualized acts of cognition and encourage us to view education in terms of change, flows mobilities, multiplicities, assemblages, materialities and processes” (Taylor & Ivinson, 2013, p. 665). It is within this context that I have used these terms.

Digital Education Research and Posthumanism

Over the past 30 years, digital technologies have often been treated as a set of “ready-made” tools isolated from their broader contexts (Latour, 1987). More recently, digital education scholars have begun to adopt posthuman perspectives. Actor-network theory (ANT), for example, has been used to explore the materialization of knowledge through the use of digital media (Fenwick & Edwards, 2010). Despite this increasing interest in posthumanism, Adams and Thompson (2016) noted that “little guidance has been offered in terms of translating these theories into tangible, theoretically sound research practices” (p. 3). Seeking to address this gap, they developed a research approach that emphasized how objects co-exist, co-relate and co-constitute with humans during discrete learning events. Gourlay (2020) used this approach to explore a series of digital education objects, including a Massive Open Online Course (MOOC) and Open Educational Practices (OEP). Other digital scholars have used similar approaches to consider the subject-object divide within MOOCs (Knox, 2014) and to explore physical place-digital space divides within university learning environments (Rousell, 2016). This research has helped to dissolve subject-object binaries in ways that challenge human exceptionalism. At the same time, by focusing on direct interactions and specific learning events this research tends to overlook the broader social, cultural and economic influences that shape learning, thereby rendering silent the indirect actions and decisions associated with the development and adoption of these digital objects (Elias, 2022a).

Many posthuman perspectives, including sociomaterialism, emphasize the importance of carefully considering indirect influences. As discussed above, they seek to move towards a practice of “more than human relationality” that continuously troubles the boundaries and reworks the possibilities of what it means to be human (Haraway, 1991; Barad, 2003). As a result, Law (2009) advocated for research methodologies that fully engage with the “messy practices of relationality and materiality of the world” such that they remain at once uncertain, empirically sensitive, situated and passionate (p. 142). Fenwick, Edwards and Sawchuk (2011) further emphasized the need for educational researchers to attend to relationality and to disrupt binaries that would otherwise go unexamined.

Attending to the unexamined, as described by Fenwick, Edwards and Sawchuk (2011), suggests that posthuman research methodologies should further seek to both locate and explore the silences that emerge throughout the research process. Other scholars have addressed the topic of silence within the research process. Lather (1996) advocated for practice that “makes space for returns, silence, interruptions” (pp. 531). Massei (2007) suggested that research methods “should not dismiss silence as an omission or absence of texts to be analyzed, but rather should engage the silences as meaningful and purposeful elements” (p. 663). She further suggested that acknowledging and investigating silence encourages “the reimagination of research boundaries and makes space for the returns, the interruptions, the resistances, the denials, the subtle eliding of text present in the unspoken” (pp. 635-636). These insights suggest that posthuman research approaches should not only embrace complexity and reveal relational patterns, but also lean into the silences, investigating the relevance of what is left unsaid, reimaging the boundaries of research and making space for the unexpected to emerge.

In the next section, I introduce situational analysis. As a research approach interested in

“elucidating differences, making silences speak and revealing contradictions within positions and within social groups” (Clarke, 2011, p. 395), I suggest situational analysis offers new and exciting posthuman methodological possibilities.

Methodological Underpinnings of Situational Analysis

Situational analysis is an emerging “theory-methods package.” Clarke (2003) developed situational analysis to extend grounded theory methodology and, as discussed earlier, to explicitly align it with posthumanism and STS.

Situational Analysis and Grounded Theory

Through her early work with Strauss, Clarke came to appreciate the benefits of grounded theory’s research methods (Clarke et al., 2018). Grounded theory offers a unique approach that concurrently studies action, process and meanings. It further seeks to generate new concepts through abduction, the “research process of talking back and forth between the empirical materials of a study” (Clarke et al., 2018, p. 27). At the same time, grounded theory’s positivist roots have remained problematic. In response, Clarke (2003) developed situational analysis as a hybrid approach that carries forward the valuable practices described above, but extends that to more fully embrace post-structural and posthuman perspectives.

Situational Analysis and Posthumanism

Influenced by posthuman perspectives (Latour, 1987), situational analysis explicitly includes the nonhuman. Clarke et al. (2018) explained:

Having set up a binary—human/nonhuman—we must as poststructuralists immediately destabilize it. Not only are the boundaries between these categories rather leaky, but also there are several other loosely bounded groupings or classifications worthy of note here: hybrids, living nonhumans, cyborgs, discourses, and “whatevers” – everything else.” (p. 89)

Consequently, situational analysis embraces the posthuman perspective that “we are no longer merely human but hybrid assemblages, most often somehow connected—wired even if wireless.” It further acknowledges that because “this alters what being human means, we must figure out how to engage and address this methodologically” (Clarke et al., 2018, p. 90).

The methodological underpinnings of situational analysis further align with sociomaterialism. For example, situational analysis is not interested in the search for purity, a singular basic social process or an oversimplified model. Instead, its key unit of interest is “the situation” and its fundamental focus is “relationality.” It seeks to investigate the power and agency exerted by both humans and nonhumans (Clarke et al., 2018). As a result, in alignment with sociomaterialism, everything within situational analysis is understood to be contextual and interconnected, with *a priori* knowledge and assumptions embedded everywhere (Barad, 2003). Alonso Yanez (2013), for example, used situational analysis to problematize “the taken for granted view that only relations among people constitute the social” while investigating the social interactions between humans and non-humans in South American bioreserves (p. 60). The underpinnings of situational analysis are, therefore, explicitly aligned with posthumanism and implicitly aligned with sociomaterialism.

Methods and Mapmaking in Situational Analysis

Within situational analysis, the situation of inquiry is analyzed via three types of maps: situational

maps, social worlds/arena maps and positional maps. These maps are revised throughout the research process and are intended to stimulate “the analytic imagination” by exploring tentative, partial, experimental possibilities (Clarke et al., 2018).

Situational maps

The purpose of situational maps is to ensure the researcher has “a good grasp of the breadth and complexity” of a situation (Clarke et al., 2018, p. 227). Within situational analysis, the researcher is expected to generate many situational maps. In the early stages of research these are *messy maps* that later become *relational maps* which trace the relationality among the elements of a situation. From a sociomaterial perspective, relational maps help the researcher “decide which stories about the situation – which relations—to pursue” (Clarke et al., 2018, p. 140). The situational mapping process and completed messy and relational maps are presented in the exemplar below.

Social worlds/ arena maps

Social worlds/arena maps serve to situate the situation of inquiry more broadly. *Social worlds* are groupings of assorted sizes that represent distinct yet fluid collectivities (e.g., a mother, a teacher, an open educator). *Arenas of concern* are the space in which “various issues are debated, negotiated, fought out, forced and manipulated by representatives” (Strauss, 1978, p. 122). The social world/arena map assists the researcher in identifying and accounting for different groups whose activities encounter and confront one another within an arena of concern.

Within situational analysis, the researcher first identifies all the social worlds and arenas of concern associated with the situation of inquiry. For each of the social worlds implicated they then seek to answer a series of questions. (See Appendix A for the complete list of questions.) The purpose of this analytic process is to assist the researcher to better understand the broader designs affecting a situation and to interrogate the power, limits and mutability of specific social worlds. Drawing from Barad, I suggest these maps can further help identify collective assemblages of practice through which members have opportunities to “contest and rework what matters” (Barad, 2003, p. 827). As seen in the social worlds/ arena map included in the exemplar below, this map helps researchers to grasp the big picture, something that has rarely been undertaken in qualitative inquiry (Clarke et al., 2018).

Positional maps

Within situational analysis, positional maps are intended to support a specific type of analytic work that involves laying out all the major positions taken on an issue. Their purpose is to identify “topics of focus, concern, and often but not always contestation” and are at the core of “making situational analysis a fully post-structural approach” (Clarke et al., 2018, p. 165). Clarke et al. (2018) further explained,

The goal is to represent all the major positions articulated in the materials on their own terms. These are *not* the terms of the researcher, but rather the researcher’s best effort to grasp and represent the positions taken in the discourses *by those who produced those materials*. Thus positional maps of discourses are based in a more insistently democratic theory of representation. (p. 166)

These maps seek to represent a richness and heterogeneity of ideas while also seeking to move beyond the human subject. This exercise does not ascribe objectivity, but instead seeks to rebalance strong, mainstream sentiments with more marginal thoughts and concepts. Positional maps further serve to identify both positions taken and not taken which assist the researcher in

locating missing positions and silences within their research data. As previously discussed, leaning into these types of silences can support posthumanist researchers in their efforts to investigate what has been left unsaid, reimagine the boundaries of research and make space for the unexpected.

Situational Analysis and Digital Education Research

Situational analysis is an emerging theory-methods package that offers a systematic and explicitly posthuman approach to research. McKinney and Sen (2016) used situational analysis to study reflective writing practices. They concluded:

Situational analysis invites the researcher to consider the non-human actants that have agency, that “matter” in the situation being investigated... It was evident that the tools that students use and the particular software applications that students use are important actants in the situation of group work. (p. 390)

Moreover, they found that situational analysis helped to identify “sites of silence [that] gave rise to reflections on the ubiquity of wireless networks” (pp. 27-28). As a result, it appears that although they did not position themselves as posthuman researchers, their adoption situational analysis identified sites of silence surrounding technological tools and shifted their thinking in increasingly posthuman ways.

Despite its potential, situational analysis has yet to be widely adopted within the context of educational research. To demonstrate its potential more tangibly, in the next section I share an exemplar of a research study using situational analysis conducted within the context of digitally enabled open education.

Situational Analysis in Practice: Open(ing) Scale-Related Silences

This section presents an exemplar that applied situational analysis using a sociomaterial perspective to the study of the mechanisms and implications of scale in open education that I completed as part of my doctoral studies (Elias, 2022b). Unable to present all of its findings here, this section focuses on its research design and methodological conclusions.

Introduction to the Study

Since the advent of the internet, the term “open education” has been defined as a broad umbrella concept encompassing a variety of both existing and emerging digitally enabled education initiatives (Weller, 2014). Throughout the literature, I found extensive positive claims had been made regarding the ability of these emerging initiatives to increase global access to learning through digital means (Edwards, 2015; Gourlay, 2015; Knox, 2013). Moreover, I found that the notion of unlimited scale up within open education has typically been treated as either inherently positive or innocuous (Moe, 2015; Stewart, 2013). The purpose of my study was to explore why the mechanisms through which this scale up was expected to occur and their possible implications have received so little critical attention.

Situational Analysis and Sociomaterial Research

Within contemporary open education the topic of scale is, however, not a simple matter. Big tools can be used to support small numbers; big funding can have little results; open education initiatives often start small but hope to have a big impact. I needed a research approach that could attend to these complexities and the silences that surrounded the topic of scale within the literature, silences

that I suspected would persist as I undertook my research. Situational analysis met these needs. The social worlds/arena maps seemed uniquely suited to grasping the larger social, political, economic and cultural patterns influencing the trajectory of open education and its relationship with scale. In addition, positional maps which included both positions taken and not taken, suggested a path through which to navigate the silences.

I had one additional requirement. Seeking to move “beyond traditional notions of rigor” (Hamon et al., 2015, p. 8) and to reimagine the boundaries of research in sociomaterial ways, I sought to draw into my research design several participatory open educational practices. Although situational analysis has typically been described as the work of an independent researcher, I found that its theoretical underpinnings were amenable to the drawing in of practices to support enhanced collaboration and non-linear thinking (Bali et al., 2015). In particular, I felt that Clarke et al.’s (2018) usage maps to urge “people to clarify, to question, to argue, to (re)think, to keep on with analysis” (p. 359) offered an invitation to extend situational analysis in these increasingly sociomaterial ways.

I proceeded to design a research study that approached situational analysis from a sociomaterial perspective. All elements of my research were approved by the University of Calgary Research Ethics Board.

Qualitative Survey

Drawing from earlier participatory open educational research (Mackness & Bell, 2015), I began my research with an anonymous online qualitative survey to gather diverse ideas and opinions from self-identified open educators. I recruited participants by sending a call to participate in the online survey via my Twitter and Mastodon social media accounts in the fall of 2020. The qualitative survey included background information about my research in the form of an infographic (See Appendix B). According to Twitter, my survey invitation was retweeted 42 times which resulted in 8,041 views. Similar statistics for Mastodon are not available. I received 20 completed responses that included just over 6,000 words.

A series of optional, open-ended demographic questions provided an intentionally incomplete picture of the research participants on their own terms. For example, eight respondents identified as female, six as male and two as non-binary/diverse. Of the respondents who indicated their race/ethnicity, 11 identified as white/Caucasian, one identified as a “mix European with Cree background” and one responded that they “don’t fit into any of these categories. Not white or Black or Indigenous or whatever.”

Defining Open Education

The survey invitation included the following definition of open education which was aligned with the findings of my literature review (Elias 2022b):

The meaning of “open education” continues to lack a consistent definition. For the purposes of this research, the definition is broad. It includes work involving the use of Open Educational Resources (OER), Massive Open Online Courses (MOOCs), Open Educational Practices (OEP) and Open Pedagogy. It also includes novel, experimental, connected and digital pedagogy and learning across both formal and informal educational settings.

Since COVID-19 disruptions, most educators and their students have experienced education that might be considered “open” in one way or another. I invite you to

share those experiences, focusing on the implications of scale, both big and small, on the learning experience.

Not everyone agreed with this expansive definition. One survey participant expressed frustration:

I am having trouble not feeling frustrated with the *fuzzy* definition of open education. Openness in education has a notable and detailed history - e.g., the OPEN universities of the world (e.g., the Open University of Hong Kong, the UK, Athabasca University.) Openness in education is very closely tied to the commodification of knowledge through copyright - yet your survey doesn't seem to reflect this foundational aspect.

This response highlighted the value of initiating my research with a qualitative survey which made space for research participants to share their divergent viewpoints. I used these inputs to generate a robust initial data set that included ideas not necessarily aligned with my own.

The survey asked participants to describe a specific previous experience with open education and then asked a series of additional, open-ended questions related to that experience. (See Appendix C for the qualitative survey questions.) The research participants shared a wide array of open education experiences both in formal post-secondary and informal settings. None referenced to K-12 schools. I classified their responses into one or more of four experience types: participation, teaching/facilitation, resource creation and community/ policy development (Table 1). For example, Respondent 11 wrote, “I am a music teacher, now an OER librarian, and have incorporated open practices throughout my over 15 years of teaching,” so I categorized their experience as both teaching/ facilitation and community/policy development. The experiences they described suggested that my survey participants had a diverse and relatively deep level of involvement with open education.

Table 1: Survey Respondent Areas of Experience

Respondent	Participation	Teaching/ Facilitation	Resource Creation	Community/ Policy Development
1				X
2				X
3				X
4	X			
5		X		
6		X	X	
7				X
8	X	X		
9			X	
10		X	X	
11		X		X
12				X
13			X	X
14	X	X		
15			X	
16	X	X		
17			X	
18		X	X	
19	X			X
20		X	X	X

Generating the Messy Map

From each response I drew out as many concepts as I could translate into a word or short phrase which I used to generate 150 provisional open codes. These open codes referred to processes, tools and technologies; human and non-human actors and actants; feelings, thoughts, and concerns; motivations, behaviours and consequences; and other concepts and ideas associated with the open educational. For example, from the survey response included above I identified the open codes “university”, “commodification” and “copyright.” I then used these codes to populate an initial messy situational map (Figure 1). Using this approach, codes that I would not have identified on my own were included in the initial messy map, including commodification.



Figure 1: Messy map containing the initial open codes generated from the online survey

Collaborative Relational Mapping

I then invited six people to participate in the next stage of my research. All six participants had been engaged in at least two of the four open educational categories identified in Table 1 for seven years or longer. They represented a variety of professions and locations as described in Table 2. I have given these participants pseudonyms.

Table 2: Phase 2 Research Participants Information

Pseudonym	Profession	Employer Type	Location	Status
Jonah	Educational technologist	Independent Contractor	Saskatchewan	Active
Charles	Educational administrator/ Instructor	University	British Columbia	Semi-retired
Kathleen	Librarian	University	Alberta	Active
Tracy	Learning Designer/ Instructor	University	Ontario	Active
Tess	Professor	University	Ontario	Active
Sara	Professor	University	Egypt	Active

These six research participants participated in a collaborative relational mapping activity. Although Clarke et al. (2018) described the relational mapping exercise as the independent work of the researcher, they also explained that “maps and mapmaking provoke all kinds of engagements, operating as... liftoff devices raising the level and intensity of exchanges” (p. 359). Building on this idea, I asked participants to draw lines between the elements of the messy situational map and

to annotate these relationships (Figure 2). Over a three-month period, they engaged asynchronously with the relational map by adding lines to connect elements, comments, colours and shapes. In that time, they connected 73 codes and added 45 annotations that provided additional context and insight into the relationships that they identified.

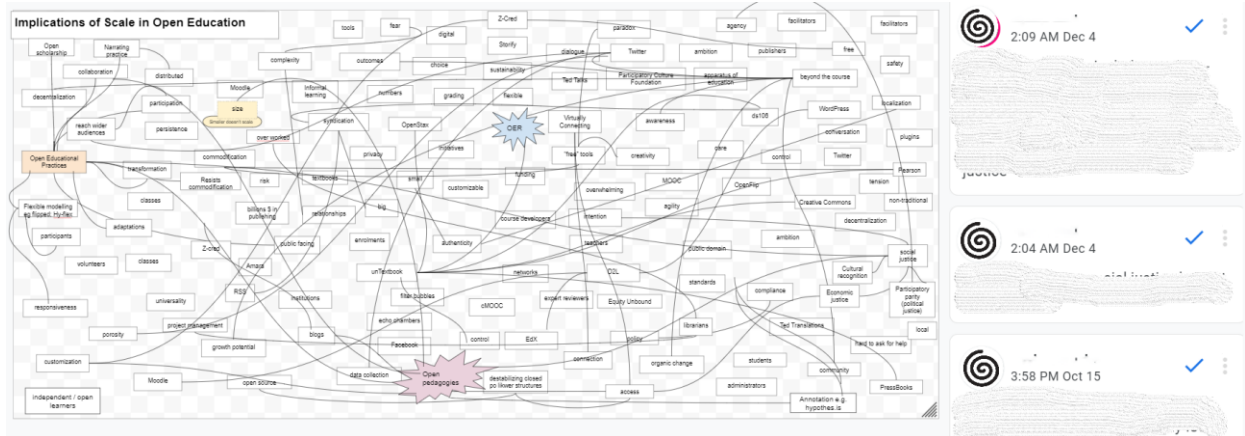


Figure 2: Image of messy map with connections and annotations added by research participants.

Through the collaborative mapping activity more interesting data emerged. For example, the annotators made only one relational connection to the term OER and no connections to the code MOOC. As a result, the two initiatives most often associated with open education by those outside the field did not figure prominently in the relational map. Moreover, although all of the participants were aware that the focus of my scale, and more specifically big and little approaches to open education, the codes “big” and “small,” garnered little attention among the annotators, with both being only tangentially connected to open pedagogies (Figure 3). Given the findings of my earlier literature review (Elias, 2022b), their reticence to engage with these scale-related codes was not a surprise but this exercise did help to locate and confirm these scale-related silences.

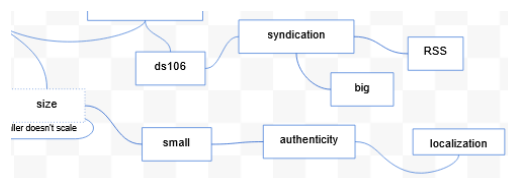


Figure 3: Concepts of big and small within the relational map

The annotations generated other interesting data. For example, Charles noted that “it is unfortunate that Twitter is a private tool that collects data that is used for so many purposes inimical to education. The potential value of a tool of this scale is that it promotes porosity outside of the course.” In response, Jonah suggested that the open-source tool Mastodon¹ should be included in the analysis. Put together, these types of annotations began to suggest a nuanced awareness of the relationship between scale, specific technological tools, the power wielded by big technology companies and data collection.

Collective analysis via semi-structured focus groups

The same six research participants then attended a one-hour online focus group guided by four

¹ Mastodon is an open-source and decentralized Twitter alternative.

open-ended questions (See appendix for focus group questions.) In these focus groups, I used the relational map as a “pushy device” from which to engage in a more nuanced discussion about the mechanisms and implications of scale within open education. Interesting conversations ensued. For example, discussing online tool usage Sara suggested that educators should “just use the free stuff... and let them take your data. It doesn’t matter.” Charles disagreed. He said, “We’re paying for a lot of the things that seem, so-called free, because we’re paying for it with our attention and by allowing all this advertising to colonize our inner space, and our lives, and our brains and our souls. We’re paying for it in different ways. The economy always demands payment.” These conversations and their transcripts generated a rich source of data from which I drew while completing my in-depth analysis of each map (Elias 2022b).

Finalizing the relational map and selective coding

After the six participants completed the collaborative relational mapping and focus group activities, I undertook the remainder of the mapping and analysis processes independently. I began by sorting, organizing and colour-coding the relational map. Within the relational mapping activity, research participants tended to focus on, make connections between and annotate codes aligned with their interest. Therefore, I dropped from the map the codes that were neither connected to other items within the map nor annotated. I then organized the remaining elements, preserving their relationships and annotations. This analytical exercise resulted in a set of 75 selective codes and five themes (Figure 4).

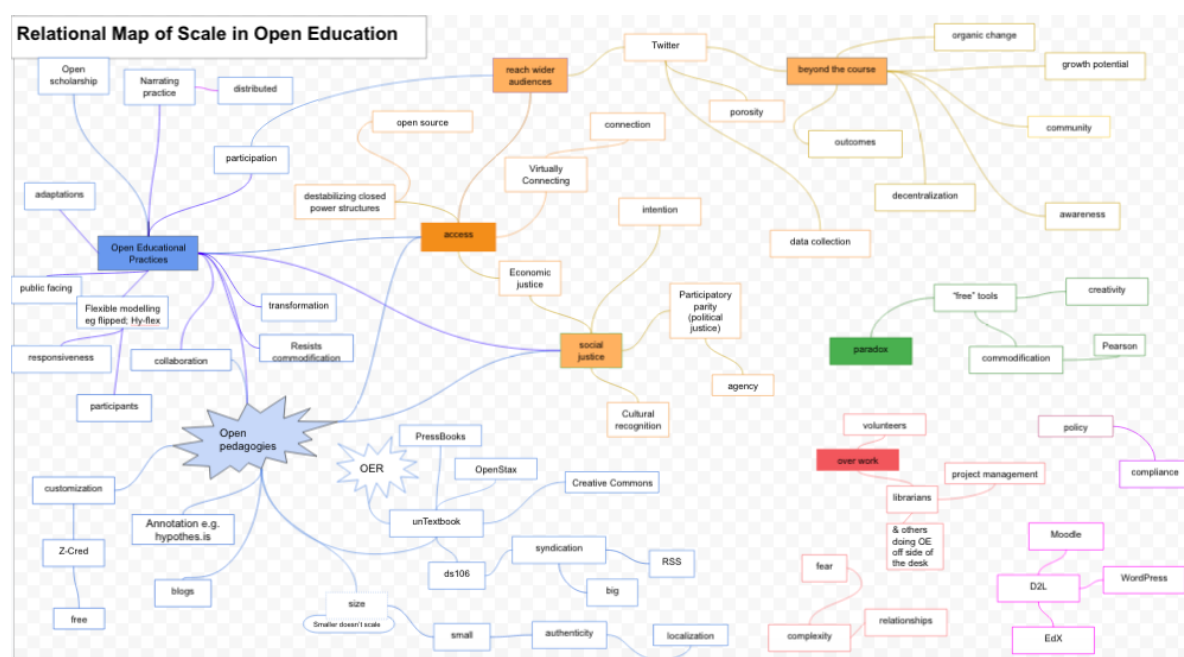


Figure 4: Relational map of scale in open education

The resulting relational map traced a situation of open education centered around: Increasing access, enacting social justice, moving beyond the course, reaching wider audiences and overwork (Elias, 2021).

Social worlds/ arena mapping

Struggling to understand the relevance of a relational map that barely mentioned scale to my scale-related research, I turned my attention to developing a social worlds/ arena map. This map type is intended help better understand the current broader design surrounding the situation of inquiry.

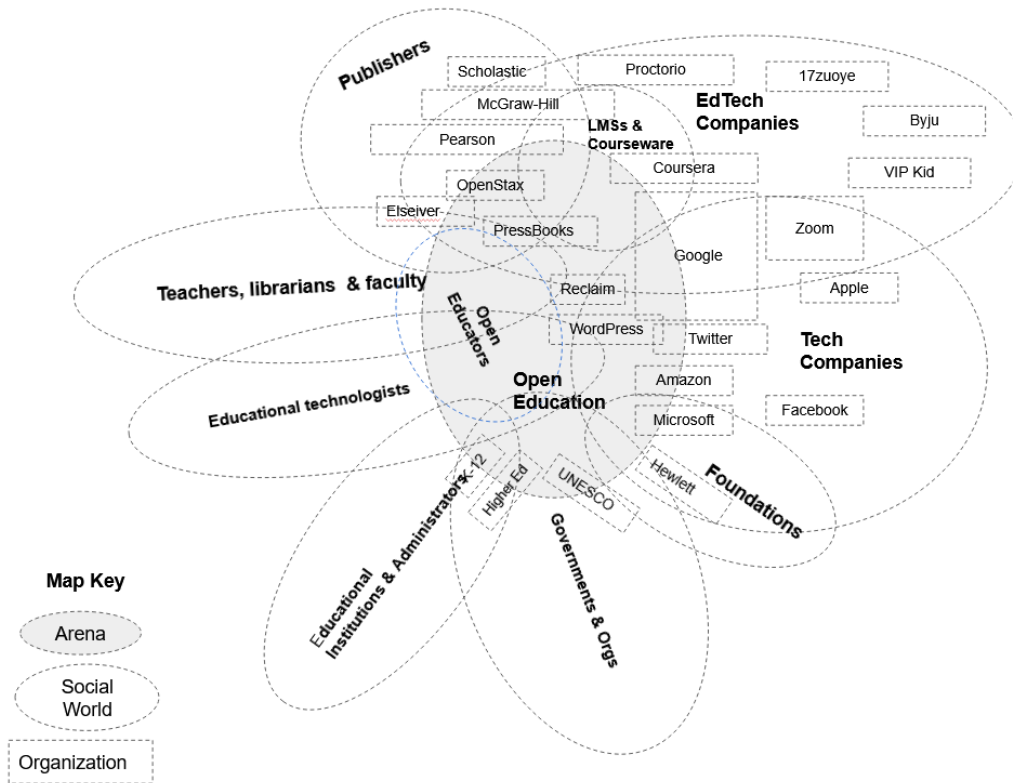


Figure 5: Social worlds/ arena map of open education

Starting with the 75 selective codes identified during the relational mapping exercise, I mapped a series of social worlds active within the arena of open education. For each social world, I then conducted additional research to answer a series of questions posed by Clarke et al. (2018) (See Appendix A for questions). The output was a social worlds/ arenas map that emphasized the involvement of massive corporations and their foundations, governments, and institutions within the field (Figure 5).

My additional research confirmed that the interest of many of these powerful social worlds in open education tended to be business oriented. For example, I found that educational technology companies had raised an estimated \$7 billion worldwide in 2019 (HolonIQ, 2020). In addition, I found that traditional publishing companies are also converging within this space to increase profits through massification (Figure 6).

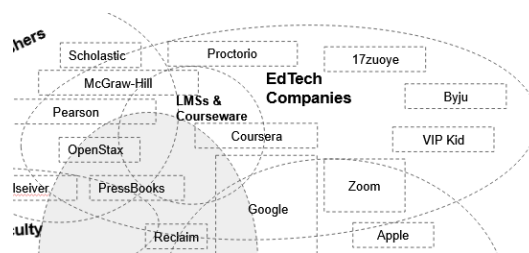


Figure 6: EdTech Companies as a social world

The resulting social worlds/ arena map presented a dramatically different view of the situation of open education than the relational map generated by my open educator research participants, one governed by corporations and their foundations, governments and institutions eager to achieve efficiencies through scale.

Theoretical Concepts and Codes

As I continued my analysis, I noticed that the selective codes generated by my research participants did not fully explain the emerging contradictions seen in my relational and social worlds/ arena maps. Early in my analysis I did not seek to solve the “messes and confusion in the data or situation,” but instead focused on “describing them carefully and analyzing them as far as possible in the moment, as is reasonable for the project” (Clarke et al., 2018, p. 163). Later, I adopted a process of *theoretical coding* through which I imported concepts and codes from outside my data for use as analytic tools and lenses (Thornberg & Charmaz, 2014). Haraway (1997) further explained the value of theoretical coding in research:

The point is to make a difference in the world.... To do that, one must be in the action, be finite and dirty, not transcendent and clean. Knowledge-making technologies, including crafting subject positions and ways of inhabiting such positions, must be made relentlessly visible and open to critical intervention. (p. 119)

Engaging with theoretical codes can, therefore, support the generation of knowledge but the relevance of those theoretical codes must be made clear.

My theoretical codes emerged from an accidental encounter with the work of Ursula Franklin (1999). I found a path forward by drawing in her concepts of *prescriptive production* and *holistic growth* into my analysis. Prescriptive production involves a process in which “something is broken down into clearly identifiable steps” (Franklin, 1999, p. 11). It focuses on efficiency, control, standardization and maximizing gain. In contrast, holistic growth involves artisans who “control the process of their own work from beginning to finish... they draw on their own experience, each time applying it to a unique situation” (Franklin, 1999, p. 9). Holistic growth is defined by reciprocity, direct experience and minimizing disaster.

To validate the relevance of these theoretical codes, I returned to the literature and sought out specific references to prescriptive production and holistic growth. I found references to these concepts in early open and distance education literature that then disappeared from the contemporary open education literature. Conducting a close reading of this literature and using a process of abduction through which I moved back and forth between the empirical data gathered during my study, my emerging maps and the literature, I concluded that in the early days of the internet many open educators believed that the internet would render these traditional mechanisms of scale irrelevant (Moe, 2015; Stewart, 2013). This realization helped me to understand the ambivalence of my research participants with respect to scale and led me to draw these “lost” concepts into my research.

Equipped with these additional theoretical concepts, I manually sorted my qualitative data using post-it notes and spreadsheets. Where my analysis led new codes to emerge, I returned to my raw data to see if I had accidentally removed them during the open coding in my early analysis or if they represented silences within my research data. For example, when the concept of “efficiency” emerged in relation to prescriptive production, I first went back to my initial open codes and then to my raw survey data to search for the code. Through this process I confirmed

that the word had not been used by any of my survey respondents and, therefore, had not been included in the relational map. As a result, I found that theoretical coding was an important tool when seeking to make silences speak.

Positional Mapping

Developing positional maps involves identifying an issue of debate and then defining two major dimensions that serve as the x-axis and y-axis. Next, the researcher plots each position taken in the debate on the chart. To develop my positional maps, I first went through all the data generated by my research participants and additional independent research to identify the scale-related positions taken. I then mapped them in terms of the size (from small to large) and level of standardization (from low to high). After a few mapping attempts, I mapped these positions on two separate maps aligned with the theoretical concepts of prescriptive production and holistic growth. Using this process, I developed two positional maps (Figures 7 & 8).

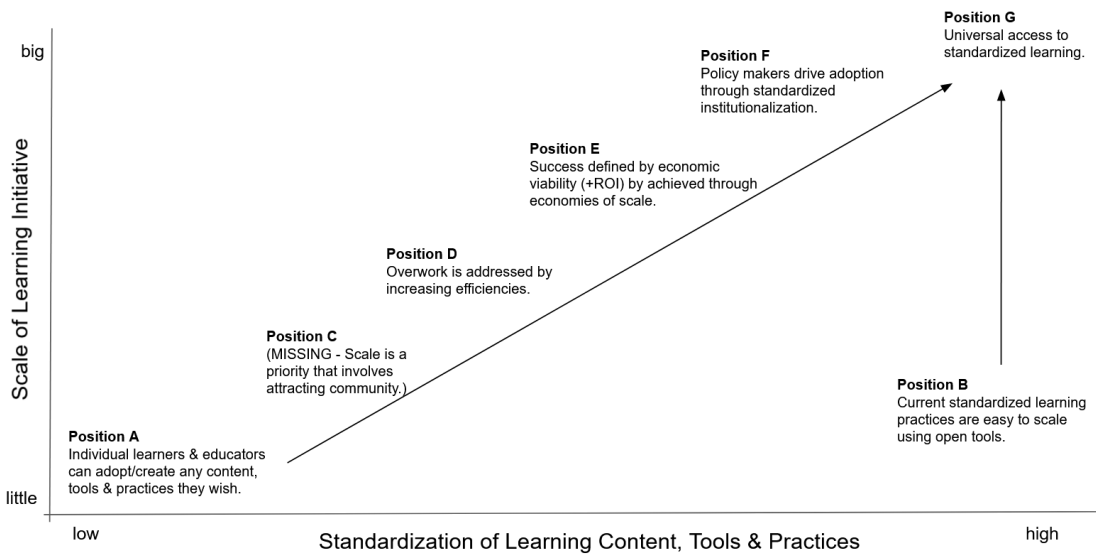


Figure 7: Prescriptive production map of open education

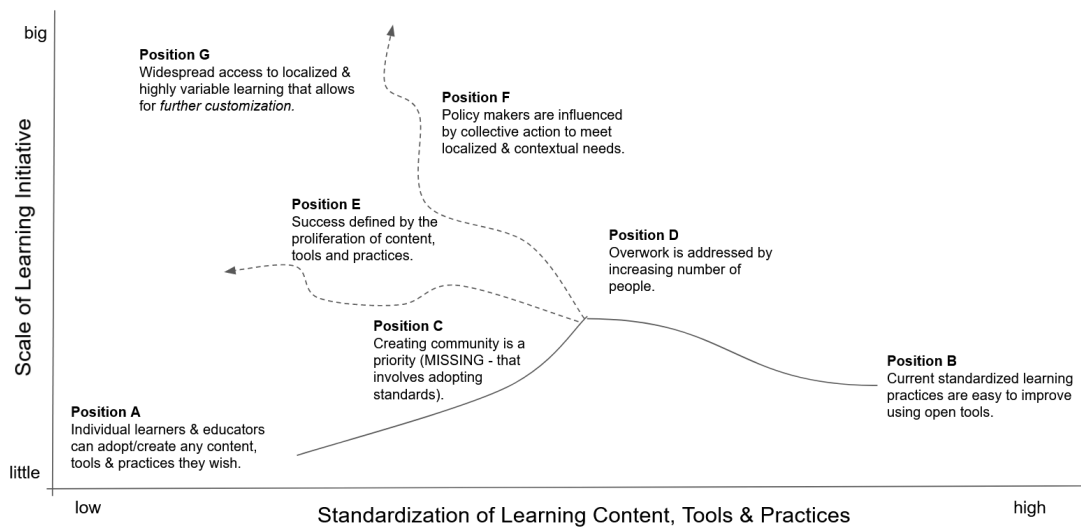


Figure 8: Holistic growth map of open education

Although I mapped these scale-related positions on two separate maps, it is important to emphasize that in many cases, multiple positions from both maps were held simultaneously by individual actors and groups. The arrows on these maps represent the typical trajectory of open educational initiatives that begin small and scale up over time, but they can, in fact, move through the positions mapped in any direction. As sociomaterial analytic tools, these maps are always connectable and modifiable. Moreover, once all the positions taken were located on the See Position C on both maps). These missing positions made visible additional silences to explore.

Where my earlier maps located silences through my positional maps aligned with my theoretical concepts, it was these positional maps that enabled these silences to fully speak. Put together, these maps unearthed a tacit awareness among my research participants of two different mechanisms of scale that as individuals they had struggled to clearly articulate (Elias, 2021).

Scale-Related Positional Pairs

I then carefully compared the positions taken across the two maps using seven “positional pairs.” These positional pairs made visible differences between the positions taken that started small but diverged with size. Moreover, the missing and partially missing Positions C suggested a lack of awareness among my open educator research participants (Figure 9). They appeared to not see that prescriptive production models of scale need to attract people into community early on, only to later leverage community-based vulnerabilities to continue to increase in size over time (Cottom, 2017).

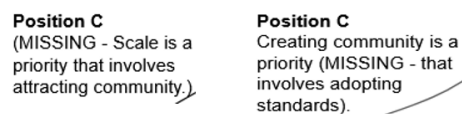


Figure 9: Example of a "positional pair" from the Production positional map (left) and Growth positional map (right)

Instead, my research participants described community-building, as represented at Position C in overwhelmingly positive terms. Moreover, they did not acknowledge the tensions inherent in building online communities and developing community standards (Elias et al., 2020). These missing positions suggest a need for open educators to replace this silence with critical conversations about how, where and why online communities are created. As a result, the positional maps and positional pairs were tremendously helpful in terms of elucidating differences, identifying missing positions and allowing silences to speak.

Structured Flexibility and Sociomaterial Research

Sociomaterialism challenges researchers to embrace complexity and to reveal relational patterns that might have been previously unseen. It further asks them to hear what has been left unsaid within the silences. Moreover, sociomaterialism accepts that everything is empowered with agentic possibility and that matter is alive. It seeks to connect the disconnected and to find the unexpected. It therefore should perhaps not be surprising that there has been little guidance as to how to translate it into methodologically sound research practices. By design, sociomaterialism is infinitely complex!

When I undertook the research presented in the above exemplar, I adopted situational analysis as an approach to navigate the complexity associated with the topic of scale within the context of open education, I was unsure where it would lead me or what I might uncover. What I found in

situational analysis was theory-methods package that did not seek to simplify by building artificial boundaries or arbitrary filters, but instead used three mapmaking techniques to offer the “structured flexibility” needed to explore complexity without becoming fully untethered and lost in its depths. Situational analysis, therefore, is a systematic research approach that offers a surprising combination of structure and flexibility which helps to make the hidden visible, supports collaborative research and enables a form of “crystallization” that supports a fuller understanding of complex situations.

Making the Hidden Visible

Throughout my research study situational analysis nudged me in unexpected ways. As I discussed earlier, there was a point in my research when I did not know where the data that I had gathered were going to lead me. Clarke et al. (2018) explained that “it is difficult to see what one does not expect. It is even more difficult to see what one does not grasp or understand! And it is yet even more difficult to see complexities and hear silences” (p. 173). Keeping those words in mind, I first followed the situational analysis mapping structured processes and developed what appeared to be a series of contradictory maps. I then followed the patterns that emerged from these maps where they led me: first towards Franklin’s (1999) definitions of prescriptive production and holistic growth, and then back to the point when these concepts moved from being visible to invisible within the open education literature (Elias, 2022b).

As Barad and Kleinman (2012) explained, “It’s important to have some kind of way of thinking about change... that doesn’t deny creativity and innovation but understands its indebtedness and entanglements to the past and the future” (p. 12). It was an accidental encounter that led me to Franklin’s work in late 2020, but her ideas predate my work, situational analysis and sociomaterialism. Working through my maps across both decades and disciplines highlighted the sociomaterial relationality of my inquiry through both space and time. By following the patterns first made visible as tracings on my maps, I began to understand a series of complex, scale-related entanglements between open education and other powerful social worlds that are rarely discussed. It was only, however, by connecting ideas from the past and present, by moving back and forth through time that the hidden became visible and I was able to (finally) hear the silences.

Therefore, by adopting a sociomaterial perspective, situational analysis mapmaking techniques have the power to nudge researchers to engage with complex, apparently contradictory research data and/or temporally and spatially dispersed concepts even when they do not (yet) understand their relevance.

Supporting Collaborative Research

Beyond its ability to make the hidden visible, within situational analysis’s underpinnings I found an invitation to experiment with collaborative research methods that further extended the sociomateriality of my work and the situational analysis methodology. Where Clarke describes situational analysis as the work of an individual researcher, I used an anonymous survey to welcome 6,000+ words from unknown participants to populate my early maps which redirected my work in unexpected ways.

I further extended the participatory nature of my work by engaging my research participants in a collaborative relational mapping activity. The results of this experiment were mixed. The asynchronous nature of the relational mapping activity allowed participation according to participants’ own schedules. The distributed and asynchronous design of the collaborative mapping activity transcended time and space, thereby allowing participants to engage in their own

time and enabled global participation (while much of the world was locked down). This flexibility was critical to my ability to complete my research which took place during the pandemic, a period during which many open educators found themselves supporting colleagues and, in some cases, entire institutions suddenly required to teach online. Moreover, the relational mapping activity supported an elevated level of reflection among participants. Tess noted, “I became quite aware of my bias and my own particular interest in magnifying some of the connections” and Kathleen said that the activity “definitely forced me to reflect.” Working together, concepts like “overwork” emerged as critical to the map and our conversations in ways that I had not anticipated.

At the same time the map quickly became overwhelming, especially for late-arriving participants. Charles noted that it was an activity best done “in small bites.” The protracted period during which the annotating took place made it difficult to generate interaction and sustain engagement between participants. Despite these challenges, this participatory approach to situational analysis succeeded in drawing research participants into a rare process of sociomaterial sensemaking. The output of this process was a contextual, personal and relational map of open education created by a small group of open educators, one that reflected their relationality with open education, with the mapping process and with one another (Elias, 2021).

If I were to repeat this collaborative mapping activity, I would seek out a tool that more easily organized the information. One focus group participant suggested the use of a more dynamic mapping tool that would reconfigure the map as connections were made. In addition, I would sort and organize the map and re-share with the participants in advance of the focus groups, something that would have served to better focus those conversations.

Of course, from a sociomaterial perspective through the practice of mapmaking the map’s meaning and matter and the participants created an inseparable assemblage. Any changes made to the mapping processes and tools would also cause the research matter, including the maps, the conversations, the data and the findings to change in unpredictable ways. In fact, during a focus group Sara noted that even if the same participants undertook the same mapping activity again the resulting tracings in the relational map might look quite different, recognizing that as research participants that had both shaped and been shared through collaborative relational mapping. Although some researchers may struggle with these fluidities, drawing from Law (2009), I suggest these types of collaborative activities provide opportunities to further extend situational analysis such that its methodology might become *more* uncertain, *more* situated and *more* aligned with sociomaterial perspectives. There is much more to explore.

Enabling crystallization

Both the structured flexibility of the situational analysis three different mapmaking techniques and the collaborative mapping approach described above continuously challenged me to consider the issue of scale within the context of open education from different angles. The collaborative relational map offered a view of open education as described by educators engaged in the field on a day-to-day basis. These open educators tended to present their work in a positive light, often highlighting its transformational and holistic possibilities. The social worlds/arena map involved taking a step back and carefully situating their work within larger power structures. Considered from this angle, open education appeared deeply entangled with prescriptive realities and the business of education. Comparing these maps challenged me to take a “both/and” approach; both maps represented accurate, though dramatically different, representations of the situation of open education. The positional mapping process then required that I map and treat all scale-related positions taken within my research on their own terms, something that Clarke et al. (2018) described as “a radically democratizing move, a *politics of the acknowledgement of presence* instead of

denial and representing of diversity” (p. 174).

Considering every position as equal, regardless of how often and from where it arose served to rebalance the strongest voices and mainstream sentiments with more marginal thoughts *and* what was left unsaid. The positional pairs further helped me to reconcile the apparent contradictions uncovered in the previous maps. Building and analyzing these maps was far more work than I originally intended to undertake. At the same time, together they generated a robust and multidimensional understanding of the implications and mechanisms of scale within open education. As described by one of my research participants, situational analysis supports a form of *crystallization* (Ellingson, 2014), in which each map requires the researcher to view the situation from a different angle, something that then serves to help them to better understand the complexity and relationality of the whole.

Conclusion

To my knowledge, my study is the first to apply situational analysis within the fields of digital education and open education. This study generated a robust, multi-dimensional and sociomaterial view of open education that described without romanticizing the complexity and relationality underlying the field. Throughout my research, the participants were often reluctant to discuss the topic of scale directly and instead consistently complicated the concept; they often held contradictory perspectives simultaneously. As I had hoped, situational analysis handled these challenges well and supported me in opening up their scale-related silences by making the hidden visible, supporting collaborative research and enabling a form of crystallization. In these ways, situational analysis, from its methodological underpinnings through to its mapmaking techniques, offers sociomaterial and posthuman researchers structured flexibility. This structured flexibility can help weave together data gathered, from humans and non-humans, through both what is said and not said, to tell coherent stories of teaching and learning that bring voice to the technological and organizational complexities and relationalities that are shaping them.

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Appendices

Appendix A: Social Worlds/ Arena Mapping Questions

1. What is the work of this world?
2. What are the commitments of this world?
3. How do its participants believe they should go about fulfilling these commitments?
4. How does this world describe itself—present itself—in its discourse(s)?
5. How does it describe the other worlds in the arena?
6. What actions have been taken by this social world in the past? What actions are anticipated in the future?
7. How is the work of furthering this world's agenda organized?
8. Are there other interesting nonhuman actants linked to this world? If so, why, and how?
9. What other worlds seem to matter most to this world?
10. What else seems important about this world?
11. Do you need to collect further data about this world? If so, what kinds of data?

Appendix C: Qualitative Online Survey Questions

- 1, Describe a specific previous experience with open education.
2. Within the context of the open education experience that you described in the previous question, what elements of the experience might you classify as “big” and what elements of the experience might you classify as “small”?
3. What impacts do you think the big elements had on the learning conditions and practices within the course or project you described for those involved? What opportunities and/or limitations did they create in terms of the learning process?
4. What impacts do you think the small elements had on the learning conditions and practices within the course or project you described for those involved? What opportunities and/or limitations did they create in terms of the learning process?
5. Were there any elements that you struggled to categorize as either big or small? If yes, please describe those elements and why they were difficult to categorize.

Appendix D: Focus Group Questions

The focus groups were guided by the following four questions:

1. How do your personal experiences align with the ideas and themes that have emerged through our collaborative mapping process? Discuss what resonated and what did not and why.
2. What ideas and themes surprised you the most? Discuss why.
3. Were there other issues raised in the mapping process that you would like to discuss more now? If yes, allow the participant to lead the conversation.
4. Is there anything else you would like to add? If yes, allow the participant to lead the conversation.