DESIGN FOR PUBLIC LIBRARIANSHIP

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Presented to
The Academic Faculty

by

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DESIGN FOR PUBLIC LIBRARIANSHIP

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To Feruza, Samiya, and Sayora.
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<tbody>
<tr>
<td>ALA</td>
<td>American Library Association</td>
</tr>
<tr>
<td>COVID 19</td>
<td>Coronavirus disease 2019</td>
</tr>
<tr>
<td>CSCW</td>
<td>Computer-Supported Cooperative Work</td>
</tr>
<tr>
<td>FCLS</td>
<td>Fulton County Library System</td>
</tr>
<tr>
<td>HCI</td>
<td>Human-Computer Interaction</td>
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<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
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<td>LIS</td>
<td>Library and Information Science</td>
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<tr>
<td>PD</td>
<td>Participatory Design</td>
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<tr>
<td>RFID</td>
<td>Radio-frequency identification</td>
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<tr>
<td>SDD</td>
<td>Staff Development Day</td>
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<tr>
<td>STEM</td>
<td>Science, Technology, Engineering and Math</td>
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SUMMARY

This doctoral thesis examines the present and futures of public librarians in the U.S. and the role this institution plays in community and civic life. The goal of the research is to answer the question: how might we design for public librarianship? First, I propose to describe and explain public librarianship through the lens of infrastructures and infrastructuring to help illuminate the breadth and diversity of the work of librarians. In doing so, I also uncover insights about the politics and experience of futures, specifically that futures are socio-material and emerge at different scales through infrastructural relations. Second, I propose a series of design provocations to suggest opportunities for design that supports public librarianship as infrastructuring. The primary contribution of this work is to the study and practice of civic and social design on the example of public librarianship. The secondary contribution is to the study and practice of futures.
CHAPTER 1. INTRODUCTION

The seven heavens and the earth, and all beings therein, declare His glory: there is not a thing but celebrates His praise; And yet ye understand not how they declare His glory! ...

~ The Holy Quran, 17:44, Translation by Yusuf Ali

It is wheat, they [historians] remind us, that has domesticated people, just as much as people ever domesticated wheat.

~ Graeber & Wengrow, The Dawn of Everything

1.1 Background

This research is about public libraries and the work of public librarians. I begin this introduction with two contrasting stories.

**Story 1.** On July 21, 2018, Forbes.com, a business magazine, published an opinion piece by Panos Mourdoukoutas, a contributor, titled *Amazon Should Replace Local Libraries to Save Taxpayers Money*. In the article, Mourdoukoutas made a series of statements, such as "There's no shortage of places to hold community events", or "Technology has turned physical books into collector's items, effectively eliminating the need for library borrowing services" or "At the core, Amazon has provided something better than a local library without the tax fees." Barely reaching 400 words, the article wasn't significant in its substance or volume. But the reaction among the public and librarians was swift and intense. The outrage and disbelief, expressed in social media and popular press, along with discussions on privilege social and economic justice were so intense that by July 23, the article was taken down (Peet & Yorio, 2018).
**Story 2.** In July 2020, an anonymous user on Reddit, a social media platform, posts the following question to the r/Libraries sub-reddit. “Is anyone else beginning to get the feeling that librarians are expected to be the saviors of their communities? I mean, I work really hard, to maintain my collection, create virtual programming, assist patrons, shelve books, pull hold requests, create displays, come up with passive programs, respond to emails, attend webinars, etc. It doesn’t seem to be enough. I have a manager that appears to one, think we are automatons, and two, believe we should tear our hearts out to do more, more, MORE! Burnout? Yes. Is anyone else experiencing this??” (Anonymous)

This post generated an intense and often emotional discussion among other library professionals using this sub-reddit who seemed to be angry, exhausted, and even hopeless about this situation. Some pointed out that this is a manifestation of a systemic problem, “With the US social safety net being whittled down, the library has taken on roles it was never intended to take. With zero changes in funding or staffing, it cannot sustain itself without losing somewhere else.” – Grumble Grumble

Another forum participant pointed out how administrators continuously increase demands on librarians. “This disconnect is why I’ve become so disenchanted by the field over the past few years. Our system's higher-ups are downright addicted [emphasis original] to all sorts of performative crap and, as a result, have been making ever-increasing demands that all of the workers do things like learn about Narcan, take CPR classes, sit through hours and hours of training about how to safely deal with fights amongst mentally-ill patrons....etc. etc... basically putting everyone through a super-
contrived and inorganic regimen towards becoming 'superhero library staff' or whatever....” – NefariousBlueJay

These two stories highlight a series of paradoxes and contradictions that laid the foundation for my research. Libraries are often perceived as out-of-date and irrelevant as evidenced by Story 1. At the same time, many librarians feel overwhelmed by the demand to do more for their communities, as evidenced by Story 2. It is also emblematic of a broader debate about the role of public services in communities. On the one hand, there are people who believe libraries are simply a service people get in exchange for money collected through taxation and should therefore be evaluated as such (primarily through the lens of return on investment). On the other hand, there are people, including librarians themselves, who believe that public libraries are essential to a functioning democracy. This paradox and tensions are not unique to public libraries. Neoliberal policies of austerity, market-oriented logics, and privatization put into question the very idea of public goods and public service. Gibson-Graham described this problem as “capitalocentrism” which is the idea that discourses about all forms of the economy and other aspects of social life are understood and valued exclusively by reference to capitalism (Gibson-Graham, 2006). In the U.S., public libraries are simultaneously sites of liberation and justice for the patrons, and exploitation of librarians. How might local communities deal with and resolve such conditions of constraint, pressure and even hostility? How might local communities rethink their relationship to public libraries today and in the future? How might these communities design for librarians working under such conditions to support or protect them? What role should or could design and designers play in helping reframe and rethink the challenges of public librarians? These are some of the broad questions that motivated my research.
According to the American Library Association (ALA), there are over 119,487 libraries in the U.S., which include public libraries, academic libraries, school libraries (private and public), special libraries, armed forces libraries and government libraries (American Library Association). Public libraries serve a range of important functions in the community and public opinion surveys have shown that public libraries enjoyed steady support (Horrigan, 2016). However, like many other local government services, their status and role are being challenged by information and communication technologies (ICTs). This phenomenon is not new to public libraries. Weigand's historical account of public libraries in America shows that public libraries do not only serve the culture they are in, but they are also shaped by that culture (Light & Seravalli, 2019; Wiegand, 2015). Today, the public's expectations of libraries, in terms of information, resources and services they provide, are expanding. As ICTs transform the way people access and use of information, they will continue to influence what libraries are and who they serve.

At the same time, over the past several decades, there has been a steady decline in public space and public services due to liberalization and downsizing of government as well as the rise of global capital and its influence on local governments (Banerjee, 2001). Today, public libraries operate under two opposing forces: market principles and the private sector on the one side and as a storehouse of knowledge and a cornerstone of democracy on the other (Alstad & Curry, 2003). Economic hardships, economic instability both in urban and rural areas, along with the rising homeless population, have also expanded the role of public libraries in social inclusion (Hodgetts et al., 2008) and technological empowerment (Ylipulli & Luusua, 2019) while intensifying tensions around what libraries are for. While there is a need to reinvent the library to serve beyond its
original purpose as a repository of knowledge (Chowdhury, Poulter, & McMenemy, 2006), there are also complex questions about whether public libraries are put in an unjustifiable position of serving everything to everyone. Finally, there is a recognition that public libraries, especially those in urban settings, are situated in complex sociotechnical systems and networks, which are constantly evolving and mutually reinforcing (Mattern, 2014).

This research is about the socio-material and political conditions of public librarians and the role this institution plays in community life. Broadly speaking, the goal of my research is two-fold. First, is to document, describe and explain these conditions. To do that, I will use infrastructures and infrastructuring as an analytical lens, which will help illuminate the breadth and diversity of the work of public librarians. Furthermore, this approach will help me examine libraries as public infrastructures including the underlying administrative apparatus, political and ideological commitments as well as economic forces that shape them. The second goal is to articulate opportunities and challenges for design for public librarianship that both reflect their current socio-material and political conditions and attempt to improve them. To accomplish this, I will develop a set of design provocations which suggest a design space for public librarianship in the U.S. In the next sections, I outline the motivation for my research in greater detail, describe the research site and define the research questions.

1.2 Motivation and Setting

1.2.1 Initial Approach and Subsequent Pivot

When I began my research on libraries, I found myself in the thick of an intense debate about the future of libraries. One of my initial motivations in conducting this
research was to understand “how futures happen” in organizations and communities. Since there were ongoing discussions in the librarian community about futures, this topic seemed to be promising. My original hypothesis was that I could engage with a local public library as a design researcher and develop designerly interventions that could help create alternative, more desirable futures, while at the same time learning about the challenges and opportunities of doing such research as a designer. This represented a somewhat conventional wisdom among design researchers, which is that designerly ways of knowing and making have a certain special access or skill to create better futures or to enable various relationships and articulations for those futures to happen. My initial goal was to study the extent to which this is true in the context of civic and social design on the example of public libraries.

As my research progressed, I realized that my initial framing was problematic, to say the least. First, although I encountered narratives about library futures, such as those told by management and other existing power structures, there were other kinds of futures that librarians themselves created in response to and as resistance against those narratives. However, these alternative futures created by librarians did not fit the mold of neat narratives and representations. As I will show in this these, these futures were more hidden, relational, and socio-material. Second, my position as a design researcher and a potential facilitator of positive alternative futures had to be re-evaluated. Based on my observations, I realized that librarians were already inventive and resourceful in creating alternative futures, but in ways that were difficult to articulate from the perspective of design. This put into question the notion that I, a design researcher, could somehow enhance their capacity to imagine and make futures. Furthermore, my role as a researcher constantly entangled
with existing class hierarchies within the library profession. Instead of novel narratives about the future, what the librarians seemed to need are tactics and strategies to wrestle with or possibly resist futures that were already imposed on them. This led me to consider the work of librarians differently and explore alternative design opportunities to support them.

1.2.2 Developing the Research Question

I situate this research at the intersection of two strands of human-computer interaction (HCI) design literature. The first strand focuses civic and social design. This reflects to the fact that public libraries are civic institutions with an explicitly social mission of, among other things, providing open and equal access to information and a safe public space. One reason I use the term civic and social design together is to roughly demarcate the communities with which I want to engage in. Namely, design researchers and practitioners who work on systems and configurations to achieve social or policy goals (i.e. social design) (Chen, Cheng, Hummels, & Koskinen, 2016; Julier & Kimbell, 2019) or to support citizens’ capacity to act in democratic processes and institutions (i.e. civic design) (Vasilis Vlachokyriakos et al., 2016). Another reason I use these terms jointly in the context of public libraries is to gesture towards the indeterminacy of this demarcation and the fact that there are ways that librarians’ work aligns with civic and community-oriented aspirations, but doesn’t fall under conventional, recognizable or even legitimate forms of political action (Asad & Le Dantec, 2015b; Lindtner, Bardzell, & Bardzell, 2018). Like Le Dantec, who identifies social design with community contexts, I don’t use the term social innovation because of the tendency to focus on or valorize breakthroughs rather than the
slow everyday work (Le Dantec, 2016). Thus, my use of civic and social design is more akin to describing two poles of attraction, with various weaker and stronger areas around those poles, rather than distinct focal points with an exact demarcation.

The second strand of literature is infrastructure studies which reflects the fact that libraries constitute a large-scale infrastructure which is in turn part of administrative and political apparatus of local government and public service. My work will engage with the theoretical and empirical research in HCI and computer-supported cooperative work (CSCW) on infrastructures and infrastructuring (Star & Bowker, 2002a; Star & Ruhleder, 1996). Specifically, I will compare and contrast various forms and relational aspects of infrastructuring from existing literature and expand it in new ways based on the results of my research. Furthermore, I will engage with issues of scale in infrastructures. In particular, I will engage with temporal scale and futures (Karasti, Baker, & Millerand, 2010; Ribes, 2014; Ribes & Finholt, 2007) in the infrastructuring work of librarians, based on how the idea of “the future of libraries” is constructed, contested and acted upon in the everyday work and experience of public librarians. Finally, although my research is not intended to contribute to the scholarly community of Library and Information Science (LIS), I will use existing work from that field to inform my analysis, design explorations and conclusions.

In this thesis I will explore public librarianship through the concept of infrastructuring. This will allow me to understand and frame the relational practices of public libraries and the socio-technical systems within which they take place. Using infrastructuring as a conceptual lens has several advantages. First, as mentioned, public libraries are large-scale infrastructures and there is a rich theoretical and empirical
literature from which I can draw to analyze data and develop insights. Second, in the course of my research, there were two significant breakdowns in this infrastructure. Breakdowns tend to make the hidden or less visible aspects the infrastructure open to analysis and understanding. One breakdown was the library renovation, and the other was the COVID-19 pandemic. I will describe them in greater detail in Chapters 4 and 5. Finally, infrastructuring has previously been used to theorize alternative forms of design and co-production in the context of participatory design (PD) (Ehn, 2008) and civic design (Seravalli, Agger Eriksen, & Hillgren, 2017).

This research is based on a series of engagements with the Fulton County Public Library System (FLCS, formerly known as Atlanta-Fulton Public Library System), which took place from 2018 to 2020. My involvement with the FCLS began in 2018 with a set of informal conversations with an outreach librarian through which I began volunteering with this organization. First, in the Summer of 2018, I designed and conducted a series of educational workshops on interactive fiction to teach people about how to use Twine. Throughout this engagement, I developed a relationship with other librarians and administrators at FCLS including the director of the library system. Later that year, I was invited to participate at the annual Staff Development Day (SDD), which is an event during which all library staff and administrators come together to reflect on their accomplishments in the prior year, outline plans for the upcoming year and learn new skills through training sessions. I spoke to the librarians about my experiences teaching Twine in the library. In 2019, I conducted the first formal qualitative study in which I interviewed librarians and administrators. I continued volunteering at libraries helping with shelving and tagging books. During this time, the library was undergoing a comprehensive renovation project.
As part of these renovations, the library administration held a series of public meetings to collect input from the public about the architecture and design decisions. I observed these meetings and interacted with librarians and patrons who attended those meetings. In 2019, I was invited to participate in SDD again. This time, I conducted a participatory design workshop to imagine public library futures. In late 2019, I began a new collaboration with the newly formed Outreach Committee group at FCLS to design a new outreach program called Mobile Seed Library which was to offer plant seeds to library patrons. This collaboration lasted until, March 2020 and involved a series of design workshops, fabrication, program design and other planning activities with a team of seven librarians. The development of the Mobile Seed Library project was interrupted due to the COVID-19 pandemic which forced the FCLS to close all its physical locations. I continued my research using online ethnography methods and focused on infrastructuring in public libraries during a crisis.

1.3 Research Questions

Broadly speaking, the main topic of my research is design for civic and social engagement in the context of public services. As design-driven approaches to framing, understanding and solving various issues proliferate in the public sector and other non-commercial domains such as non-profit organizations, community engagement, municipal services and others, it becomes increasingly important to understand the socio-political and material constraints of the people for whom design is intended. Today, it is common to see design methods rooted in commercial and market logics be adopted in these contexts as “more human-centric”, “more creative” and otherwise superior. It is also common to see
challenges in those contexts be framed as a matter of adopting the right design processes or methods and involving the correct set of stakeholders in them (citizens, public servants, community leaders etc.) in the most inclusive and effective way. While these framings can be productive, as we have seen with the development of PD, which tries to involve impacted stakeholders in the design process, and social design, which tries to expand the design beyond its professional boundaries, designers are still frequently seen as arbiters of design in all its manifestations.

Designers often get to say what is or isn’t design, how it should or shouldn’t be done, and what it should or shouldn’t look like. The problem with this view is that it excludes a whole range of other practices of creating, improving, inventing, and making futures that is not recognizable as design neither by those who engage in them nor by design as a field. Furthermore, traditional intervention-oriented design approaches often presume that there always is a solution, even in cases where solutions aren’t possible. Finally, the political work and commitments of traditional design remains peripheral (Lindtner et al., 2018). As I have demonstrated with the opening stories, the paradox of contemporary public librarianship is that it is an institution that strives for social justice and inclusion in communities, but is also a place that seems to depend on exploitation of librarians. This is not a problem that design is likely to “solve”. However, that is not to say that design has no role to play. Rather, I frame this as an opportunity to explore a different kind of politically and socially engaged design. One that recognizes a whole range of existing creative and inventive practices of librarians and engages with the everyday conditions of librarians, including the fact that they operate in large-scale public infrastructure.
To sum up, in this research I will study the socio-material and political conditions of public librarians as workers in a community-oriented public service institution, in order to uncover challenges and opportunities for supporting public librarianship through design. I aim to articulate these challenges and opportunities and to provide examples of novel systems in this setting. To that end, my main research question is: How can we design for public librarianship? In my research, I propose to answer this question through the concept of infrastructures and infrastructuring which has been extensively articulated and deployed in social sciences and design (including HCI design). I do not contend that this is the only or the best way to answer this question. Rather, the goal of my research is to uncover new insights about the work of librarians by foregrounding the infrastructures in which it takes place, and to define opportunities and limitations for design. Therefore, I propose breaking down the broad research question into the following specific research questions (RQs).

- RQ1: What kind of infrastructuring practices do librarians engage in?
- RQ2: What can the work of librarians tell us about infrastructuring?
- RQ3: What can infrastructuring in libraries tell us about the politics and experience of futures?

In the following sections, I will elaborate on each of the RQs outlined above. It should be noted that while I defined the RQs as distinct and sequential, they relate to and reinforce each other. Next, I will outline the relationships among them and explain how they contribute to answering to the main research question.
1.3.1 Public Librarianship as Infrastructuring and Design

The first component to answering my main research question is to frame the work of public libraries and librarians through the lens of infrastructuring. Recently, scholars in library and information science (LIS) have argued that contemporary librarianship accommodate more diverse epistemologies, including design (Clarke, 2018). However, this view is relatively unconventional. My research aims to observe and unpack the situated relational practices of public librarians. To that end, the specific research question I am asking is: *RQ1. What kind of infrastructuring practices do librarians engage in?* I will demonstrate that the work of public librarians consists of a variety of infrastructuring practices and relate them to contemporary issues management and delivery of municipal services, socio-economic inequality, community relations, urban planning and others. I will elaborate how librarians configure civic and social infrastructures both within and outside the physical space. Furthermore, although libraries are open public spaces that tend to resist profit-oriented market logics, they coexist with market logics that penetrate the tools, environment and everyday management practices. I will use the metaphor of *cracking public space open*, offered by one of the librarians who participated in this research, to describe different dimensions of infrastructuring in public libraries and use it as a provocation for design.

It should be noted that my work took place in the U.S. urban context and my fieldwork took place in the U.S. South. This influences which issues are foregrounded and how. Public libraries in other Western and non-Western societies may have a different
standing and perhaps even different value systems, but such differences are outside of the scope of this thesis.

1.3.2 Expanding Infrastructuring and Design

The second component to answering the main research question is to investigate the implications of the work public libraries and librarians on the concept of infrastructuring itself and by extension on design. Specifically, I will investigate the political dimensions of infrastructuring and design in the context of public libraries with a particular focus on temporal politics. Scale, both physical and temporal, has been an important theme in infrastructuring studies (Star & Ruhleder, 1994) and participatory design (Karasti et al., 2010). Infrastructures are understood to be large systems of systems that can span vast distances and take decades or even centuries to create. One obvious implication is that it limits and even obscures the impact of any one individual or any one stakeholder group on how infrastructures are built and maintained. In recent years, researchers in PD, HCI and CSCW have offered various perspectives on how to view this less visible work (Bødker, Dindler, & Iversen, 2017; Korn & Voida, 2015; Semaan, 2019). Furthermore, they have expanded on the roles and boundaries of institutions in infrastructuring work (Huybrechts, Benesch, & Geib, 2017).¹ In this thesis, I will expand on these and other political aspects of infrastructuring by posing the following specific research question: RQ2. What can the work of librarians tell us about infrastructuring?

¹ See Section 2.1 for a more detailed discussion on infrastructuring and design.
Answering RQ2 will depend, in part, on the insights and analysis from answering RQ1. In posing RQ2, I aim to further develop systematize new insights about infrastructuring, which will inform opportunities and challenges for design in public librarianship.

1.3.3 Socio-materiality and politics of the future

The third component of the broad research question draws from RQ1 and RQ2 and involves articulating connections between the everyday work and relationships of librarians and the wider socio-technical and temporal dynamics of the infrastructures within which they work. My research took place at a time when the debates about "the future of libraries" were particularly intense both in the library profession in general and among the stakeholders of FCLS. Questions such as "what is the future of libraries?", "what are libraries for?", "who are libraries for?", and the like, do not just frame discourse within and around the institution of public libraries. They also shape what futures emerge and how they are experienced by librarians. These processes have broader socio-political implications, because the question of who makes certain futures possible or impossible and who can resist futures is one of power and agency. This is precisely the object of research in the field futures studies (also known as strategic foresight), and I will discuss some of its key theoretical concepts and methods in Chapter 2. In other words, futures don’t just happen “naturally” or “objectively” they happen as a result of specific socio-political and, as I will argue infrastructural, arrangements. While the main focus of this thesis is civic and social design through the lens of infrastructuring, I also want to make a contribution to futures studies. However, this contribution will be secondary and in support of the main research question. Therefore, the third specific research question is: RQ3: What can
infrastructuring in libraries tell us about the politics and experience of futures? Drawing on my primary ethnographic work and secondary research, I will draw insights about the way infrastructures and infrastructuring shape public library futures. These insights will help articulate the relationship between promissory aspects of infrastructure (Appel, Anand, & Gupta, 2018), the everyday practices of librarians, and how various actors negotiate what “the future” is or should be.

1.4 Overview of Thesis

This thesis is organized around three studies, each of which contributes to the overall research question as well as RQ1, RQ2 and RQ3. In Chapter 2, I will present related work on (i) infrastructuring, design and futures research and (ii) work in library and information science. In Chapter 3, I will describe the research site and methods used in this study. These include: a speculative design workshop at the annual Staff Development Day in 2019 (Study 1); the development of a new program called the Mobile Seed Library (Study 2); and a qualitative study FCLS librarians through participant observations and one-on-one interviews (Study 3). Furthermore, in Chapter 3, I will provide a detailed ethnographic account of how my relationship with FCLS developed over time and how it shaped each study, and how it opened opportunities for a variety of engagements and activities.

The next three chapters will discuss findings of each of the three studies. In Chapter 4, I will describe the findings from Study 1, and explore the politics of future making in participatory workshops. In Chapter 5, I will outline the findings from Study 2, the Mobile Seed Library. I will compare and contrast the results of participatory workshops in Study
1 and draw conclusions about the relationship between infrastructures and futures in public libraries. In Chapter 6, I will describe the findings from Study 3, which will help me define two distinct forms of infrastructuring in public libraries. It is important to note that although I have organized the chapters in a sequential order, the methods are related to and co-dependent on each other in various ways and each study contributes to answering all of the specific research questions (RQ1, RQ2 and RQ3). These methods were shaped as much by methodological rigor as by my subjective experience and positionality as a design researcher in my engagements with FCLS.

In Chapter 7, having answered the specific research questions, I will use the findings and conclusions from each study to synthesize answers to the broad research question: *How might we design for public librarianship?* First, I will explore a design space for public librarianship using the metaphor of *cracking public space* open and derive a series of design provocations. Second, I will draw out implications of infrastructuring in public librarians for design and for futures research. Finally, I will outline some key limitations of this research. In Chapter 8, will summarize my conclusions and explore directions for future research.

### 1.5 Contributions

The contribution of this research is two-fold. The primary contribution is to the understanding of design for public librarianship with broader implications for civic and social design and design in/for public services. This knowledge is intended for researchers and practitioners of civic and social design in HCI and CSCW other emerging forms of politically engaged design. Furthermore, it will contribute to infrastructure studies by
expanding the theoretical understanding of infrastructuring in the public sector. This knowledge is intended for researchers in HCI and CSCW focusing on the study and design of large-scale infrastructures. Here my claim is that contemporary urban public librarianship in the U.S. cities can be described as a set of distinct infrastructuring practices which has implications for how we might design for public libraries. I illustrate these implications by using design provocations and that both acknowledge infrastructuring in public libraries and gesture towards socio-technical systems that could support them.

My secondary contribution is to the study of futures. Drawing on existing theoretical work and from my empirical analysis, I claim that futures consist of and are shaped by socio-material relations, in this case, public library infrastructures. I outline the implications of this claim on futures research and practice and propose methodological strategies to account for socio-materiality of futures.
CHAPTER 2. INFRASTRUCTURING, DESIGN AND PUBLIC LIBRARIES

2.1 Libraries and Infrastructuring

My research will contribute to the ongoing research on design for public space and public service with a focus on public libraries as an institution for civic and community engagement. I draw on infrastructuring studies, which has been taken up in HCI and CSCW research, to attend to and articulate socio-technical and political issues of public librarianship. In this section, I present related work on infrastructuring, design and civic engagement. First, I will cover the foundational work on infrastructuring and connect it to the relational and situated practices of public librarians. Next, I will explore the relationship between infrastructuring, civic engagement and community life. This literature will be useful in framing socio-political dimensions of librarian’s work in the community both visible and official as well as less visible and illegitimate. Furthermore, I will discuss infrastructuring in relation to publics and institutions which will help understand librarians’ work in forming novel attachments, as well as extend and reconfigure boundaries of their institutional norms and constraints. Finally, I will discuss prior work in infrastructuring, temporality and futures, which will help me frame the relationship between discourses about the future of libraries and the everyday experience of librarians.

2.1.1 Infrastructuring

In recent years, there has been significant HCI and CSCW research exploring implications of ICTs in public (Dalsgaard & Eriksson, 2013; DiSalvo & Jenkins, 2017; Fox, Sobel, & Rosner, 2019; Howell, Niemeyer, & Ryokai, 2019; Leong & Brynskov,
2009) and semi-public spaces (Jenkins, 2017; Kozubaev, Rochaix, DiSalvo, & Le Dantec, 2019; Shin, Sepúlveda, & Odom, 2019). Researchers have explored how ICTs in public spaces can configure relations with the physical architecture (Crivellaro et al., 2015; Dalsgaard & Halskov, 2010; Fischer & Hornecker, 2012; Leong & Brynskov, 2009) and how they can shape the emotional states and interpersonal relationships of people in those spaces (Howell et al., 2019). The urban environment, with its high density of population and frequent convivial encounters among strangers as well as familiar people, can foster a whole range of emotional experiences ranging from anxiety and danger to friendship and play (Kozubaev & DiSalvo, 2020; Paulos & Goodman, 2004). Furthermore, the library has been explored as a cite for technology adoption (Serholt, Eriksson, Dalsgaard, Bats, & Ducros, 2018), for fostering knowledge co-production (Yoo et al., 2020) and expanding civic participation (Costantino et al., 2014), specifically in the context of participatory design (Dalsgaard, Dindler, & Eriksson, 2008; Dalsgaard & Eriksson, 2013).

The concept of *infrastructuring* understands technological change by focusing away from things (roads, pipes, etc.) towards relations and actions that they enable. Infrastructure is "fundamentally and always a relation and never a thing" and therefore it is ongoing, situated, contextual and contingent. (Star & Ruhleder, 1994) *Infrastructuring* refers to actively attending to these relations, breakdowns, and what infrastructures mean to different user groups (Star & Bowker, 2002b). An important strategy to studying infrastructures and infrastructuring is *infrastructural inversion*. (Bowker, 1994) Rather than focusing on activities that are supported by infrastructure in an invisible way, infrastructural inversion focuses on activities that enable the infrastructure to function (Simonsen, Karasti, & Hertzum, 2020). In design, infrastructuring refers to the notion of
"continuing design" (Karasti, 2014; Karasti et al., 2010) beyond the traditional project in which "the boundaries between use, design, implementation, modification, maintenance, and redesign are blurred" (Karasti, 2014) Infrastructuring is useful in examining public libraries because it helps uncover the rich variety of relations they foster and understand the work of librarians as a kind of socio-material, relational practice. To sum up, infrastructuring is a productive theoretical lens because, as we will demonstrate, the work of librarians is both community-oriented, and therefore loose, creative and heterogeneous (Prost et al., 2019) but also highly structured, power and politics-laden due the fact that it is part of a municipal service bureaucracy.

2.1.2 Civics and Community Engagement

In recent years, CSCW and HCI researchers have focused on issues and concerns of communities (DiSalvo, Clement, & Pipek, 2013; Manuel & Crivellaro, 2020; Prost et al., 2019). Public libraries do not only provide information services, but they also serve as community centers and even engines of democracy and civic life (Penin, Staszowski, Bruce, Adams, & Amatullo, 2019; Willingham, 2008). HCI and CSCW research has engaged with issues of civic life, civic participation, and community engagement through the lens of digital civics. While it often involves questions of citizen-government relations and interactions it also extends beyond traditional power structures such as the nation state, city hall, elections, and includes other less formal and more discursive networks (DiSalvo, Jenkins, & Lodato, 2016) as demonstrated, for example, in the Urban Foraging (DiSalvo & Jenkins, 2017), Division of Domestic Data (Lodato, 2015) and Data Democracy (DiSalvo et al., 2016) projects. Seeing civics in this way highlights how HCI design can
break or push against normative notions of democracy, citizenship, and legitimacy (Asad & Le Dantec, 2015a). Along similar lines, Corbett and Le Dantec argued that affordances of technology in digital civics interventions need to be closely attuned to the unique and contextual practices of civic authorities and institutions, rather than simply responding by user needs (Corbett & Le Dantec, 2018). There have also been calls for new HCI design practices to support policy making in local communities (Manuel & Crivellaro, 2020) as well as providing new resources for action (Johnson, Al-Shahrabi, & Vines, 2020).

Digital civics in the work of advocacy groups can show how social and political actions can exert influence at various scales and magnitudes, all contingent on the specifics of the people and cites in question. Asad and Le Dantec argued that digital civics, specifically digital advocacy, can form attachments across sites through affinities between resources, between identities and between issues (Asad & Le Dantec, 2017). Affinities between resources and between issues are relevant to public libraries because libraries have traditionally been associated with access to resources (books, technology, reference services, etc.) and addressing unique needs of their communities (e.g. technological literacy, serving immigrants, children's programming etc.). But a public library can also be a place that connects and shapes identities. Members of the community can use their libraries to perform their identities, such as a stay-at-home mother, a retiree, a student etc., which in turn imbues the library itself with meaning (McKenzie, Prigoda, Clement, & McKechnie, 2007). Public libraries also help establish civic networks in the community (Stoll, Edwards, & Foot, 2012) by raising awareness about its resources, enabling connections through regular in-person encounters within and outside the library, and by
reinforcing these connections through ongoing activities such as programming, book clubs, used book sales and others.

While digital civics aim to "support citizens becoming agents of democracy with and through technologies" (Vasilis Vlachokyriakos et al., 2016), there is also a recognition that "civics is an ecosystem of institutions where communities, public institutions and private interests are in constant exchange with each other" (Asad & Le Dantec, 2017). This ongoing exchange is manifested in public libraries in how librarians navigate the tensions between private and public interests (Alstad & Curry, 2003). Furthermore, the professional and ethical standards of public librarians put them in a position akin to activists who often have to work outside of formal political and institutional arrangements (Asad & Le Dantec, 2015a).

Another relevant thread in design scholarship is concerned with implicit and explicit political commitments of design itself with one of the key issues being whose interests design serves. Here, we can trace the Scandinavian PD that focuses on the issues of workers (Ehn, 1988) and the later work of Manzini, who helped define social design and social innovation by expanding the circle of those who can practice design and by orienting outcomes towards social goals. (Manzini, 2015). In recent years, there has been mounting critique of design scholarship and practice from other politically engaged perspectives such as decolonialism (Ansari, 2018) and critical race theory (Ogbonnaya-Ogburu, Smith, To, & Toyama, 2020). Other modes of design such as adversarial design (DiSalvo, 2012), value sensitive design (Friedman, 2019), design for the pluriverse (Escobar, 2018), and design justice (Costanza-Chock, 2020) have been proposed as alternatives to the hegemony of
capitalist, extractionist, racist, ableist and otherwise exclusionary and exploitative tendencies of mainstream design. At the same time, some scholars recognize the challenge of theorizing modes of interventions that do not fit familiar forms of political action. Lindtner et al proposed alternative analytical sensibilities of "noticing differently", "walking alongside" and "parasitic resistance" (Lindtner et al., 2018). Tironi problematized conventional forms of participation in design and argued that prototyping can evoke alternative politics through counter-participation, which pushes against solutionist modes of design to more accurately reflect participants’ own experience (Tironi, 2018). JafariNaimi et al, aligning with and drawing on Dewey, argued that values in design arise together as we encounter problem in changing circumstances. Thus, the same value can be productive or problematic depending on the local situation and context (JafariNaimi, Nathan, & Hargraves, 2015). For public librarians, this implies constant negotiation and re-evaluation of their institutional and personal commitments in the face of pressure, constraints, and hostility. These perspectives can be particularly useful in the context of a public infrastructure and institution such as the library, where direct political action against the institution itself is not always a viable option, where boundaries between political commitments are murky, and where values are can often be incommensurate.

2.1.3 Infrastructuring, Publics and Institutions

Public libraries constitute an infrastructure as a network of spaces (branches), as a set of personal and professional relationships that make them work, and as set of laws and policies that support them. The Deweyan notion of publics has been taken by participatory design (PD), HCI and CSCW researchers (Jenkins, Le Dantec, DiSalvo, Lodato, & Asad,
as it has shown to be productive in articulating and addressing issues in socially engaged contexts. The publics are formed through the process of identifying common issues and taking action towards resolving them in a way that crosses multiple boundaries and connects stakeholders (Dewey, 1954). Marres articulated how publics are constituted through attachments of various actors to issues. These attachments act as sources and resources for "the enacting of public involvement in controversy" (Marres, 2007). Another characteristic of Deweyan public is the alignment around trying to achieve a future outcome (Marres, 2007). This orientation is closely aligned with Ehn's argument for design for future use in PD (Ehn, 2008). It shifts the focus of design away from proximate use embodied in a product towards ongoing participation throughout the entire lifecycle of an artifact or a system (Le Dantec, 2012). Ehn theorized design for future using the concept of infrastructuring (Star & Bowker, 2002b). Le Dantec also stressed this orientation towards the future using publics as theoretical framing for social design, where “attachments are the internal mechanisms by which affiliations are created and resources identified, and infrastructuring is the work of building out future capacities for contending with issues built atop existing or newly created resources” (Le Dantec, 2016). Lindström and Ståhl offer another perspective of "publics-in-the-making" where issues are not preset but come out in the process of collaboration and making. This is an alternative to deliberative notion of publics in which continuous re-patterning or patching of connections creates new understanding and knowledge of issues (Lindström, 2014). Seravalli et al argued that infrastructuring along with commoning, can support civil servants in engaged in co-production in their communities (Seravalli et al., 2017).
In recent years, researchers continued to refine and expand the concept of infrastructuring. Bødker noted that it is often the case that infrastructuring work focuses on front stage and highlights the need to "address messy and multifaceted processes that unfold on the backstage" of design interventions and workshops (Bødker et al., 2017). Similarly, Korn and Voida argued that infrastructuring for civic engagement should focus not on the "privileged moments" (such as PD workshops and other interventions) but on the "product residue" of everyday life (Korn & Voida, 2015). Bødker et al proposed the concept of knotworking to account for how agency can be dispersed across people and organizations which helps us understand how backstage infrastructuring work comes to matter (Bødker et al., 2017). The backstage and everyday infrastructuring will become evident in the work of public librarians, much of whose work is invisible and routine. Such everyday and "routine infrastructuring" is productive not just in periods of continuity, but also in moments of disruption such as trauma, significant life events and transitions (Semaan, 2019). Here, infrastructuring practices can become strategies for resilience and care, especially for those who are marginalized and disenfranchised, giving rise to alternative form of infrastructuring such as inverse infrastructuring (Egyedi, Mehos, & Vree, 2012) and guerilla infrastructuring (Vasillis Vlachokyriakos, Crivellaro, Wright, & Olivier, 2018) and unplanned infrastructuring aimed at formation of tiny publics, (Steup et al., 2018). Finally, recognizing the increasingly blurred nature of design work in the public realm (among designers, stakeholders, citizens etc.), Huybrechts et al proposed increased engagement with institutions with a concept analogous to infrastructuring -- institutioning. Institutioning refers to "gradual processes of altering (consolidating or challenging) existing frames of institutions" (Huybrechts et al., 2017). As the work of librarians
continues to extend beyond their traditional realm into new services, technologies and spaces, they are faced with choices that push against the institutional frames of public libraries and municipal services.

2.1.4 Temporality and Futures in Infrastructuring

Temporality has been one of the key aspects of infrastructuring. It figures into Star and Ruhleder's original articulation of infrastructures as a matter of scale, scope and gradual layering of infrastructures (Star & Ruhleder, 1994, 1996) over time. It also figures into continuities and discontinuities (breakdowns of infrastructures) in infrastructures. Scholarship on infrastructuring and PD has subsequently elaborated on how "the long-term matters", differentiating between "project time" and "infrastructure time" (Karasti et al., 2010). In design, infrastructuring pays particular attention to the future due to its interest in what happens "after design", what future user might do, and the open-endedness of design itself (Björgvinsson, Ehn, & Hillgren, 2010, 2012; Ehn, 2008; Reeves, Goulden, & Dingwall, 2016). However, what has been often overlooked is the socio-political and socio-technical nature of temporality, especially when it comes to discourses about the future. The concept of the future is often treated as a given. This has been changing in recent decades, and researchers are engaging with this topic in productive ways. Mazé, drawing from various philosophical and disciplinary traditions, including futures studies, argues that futures are never empty and therefore are inherently political, particularly in design. She argues that to ask the question of “how things might be different?” , which is a common orientation in design practice, endows one (usually the designer) with power and influence that should be critically examined and challenged (Mazé, 2016). Fox et al.’s research on
the deployment internet-of-things (IoT) devices in public restrooms shows how visions of the future defines access and enforces compliance in the present (Fox et al., 2019). This work also attends to the politics of design interventions through temporal alignments, which reveal how temporalities of various stakeholders privilege some design solutions over others (Fox, Lim, Hirsch, & Rosner, 2020). Drawing on research on speculative and critical design (Dunne & Raby, 2013) along its other forms of future-oriented design research Wong et al proposed the notion of "infrastructural speculations" that orients researchers towards "lifeworlds of artifacts-the social, perceptual, and political environment in which they exist" (Wong, Khovanskaya, Fox, Merrill, & Sengers, 2020). While these approaches focus on the relationship between futures and infrastructures, for the most part, they are treated as separate. Such approaches have a shortcoming because they tend to overlook how futures became embedded in and exert influence through infrastructures themselves. To address this, I draw on theoretical perspectives from STS, which can help us appreciate temporality and futures in infrastructures differently. First, Jasanoff has argued that ideas about techno-scientific futures coalesce into sociotechnical imaginaries which are "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology" (Jasanoff, 2015). Michael has argued that futures consist of performative representations which frame what is possible, desirable or expected in the future (Michael, 2000). Similarly, temporality of infrastructures have been described as a kind poetics because of how infrastructures promise futures (Appel et al., 2018). These promissory visions can also come to life as spectacles (Shelby, Barnes, Parvin, & McDonald, 2020) such as the ones in
discourses and practices around smart city infrastructure and surveillance. Public spaces, including public libraries, are often used as staging areas for these spectacles, impacting the most vulnerable people in the community. Moreover, such negative impact of infrastructures can often be framed as “unintended consequences”, absolving decision-makers and designers of social and ethical responsibility (Parvin & Pollock, 2020). Adams et al.'s account of futures helps us further appreciate the governmentality of futures as anticipatory regimes, which are a set of power structures that produce possible futures as felt experience (fear, uncertainty, inevitability etc.) and that mobilize resources to demand a response in the present (Adams, Murphy, & Clarke, 2009). In other words, understanding the felt experience is a way to understand how futures are shaped and contested. This position aligns with the “experiential turn” in futures studies, where futures and their various implications are understood through lived experience as a way to bridge the gap between “the ground of the present and islands of abstract possibility (Candy, 2010; Candy & Dunagan, 2017). Thus, I argue that in infrastructuring, futures are not just distant and abstract, but are also a part of the infrastructures themselves. In the context of public libraries, this argument is pertinent to how the idea of a library is contested and performed in discourses about "the future of libraries" and how embedded socio-technical systems such as management policies, procurement practices and others "manage" the future and uncertainties associated with it.

2.1.5 Relevant Work in Futures Studies

As I mentioned in the introduction, this thesis engages primarily with the field of HCI design, focusing on civic and social design through the lens of infrastructuring.
However, since my secondary contribution is to futures studies, it is useful and necessary to introduce this field and some of its key concepts. Futures studies, also known as strategic foresight, is an interdisciplinary field of study of the future. It is also a professional practice and a mode of knowledge production with its own set of codified methods and intellectual traditions. Its practitioners are often referred to as futurists and the field is colloquially called futurism, although it has no relation to the art movement of the same name. Earliest scholarship and philosophical investigations about the future date back to as early as 2nd to 1st century BCE in the works of Ssu-Ma Chi’en, who argued that the rise and fall of civilizations can be explained by the rise and fall of virtue (Inayatullah & Galtung, 1997). Another prominent pre-modern thinker who attempted to formulate theories of long-term civilizational change was the Arab historian and philosopher Ibn Khaldun (full name Abū Zayd ‘Abd ar-Raḥmān ibn Muḥammad ibn Khalīl al-Ḥaḍramī, 1332-1406) who formulated theories of rise and fall of dynasties in the groundbreaking work The Muqaddimah. The origins of the current, professionalized form of futures studies, is commonly associated with the end of World War II and the beginning of the Cold War. In the early 1960s Herman Kahn, a staff member of the RAND Corporation developed the scenario method to project plausible outcomes of the future. (Rejeski & Olson, 2006) This methodology was later adopted by other researchers and eventually the industry. Futures (or foresight) can be defined as “a deliberate process of expanding awareness and understanding through futures scanning and the clarification of emerging situations.” (Slaughter, 1995) and a “refined sensitivity for detecting and disclosing invisible, inarticulate happenings, or unconscious societal motives, aspirations and preferences so as to create novel opportunities unthought and hence unavailable to a society or organization.”
This expansion of awareness and disclosure is focused on questioning, examining and diversifying existing images (Bell, 2009, p. 82; Polak, 1973), narratives (Milojevic & Inayatullah, 2015), and other dominant frameworks of meaning about futures that prevail in communities. The role of the futures practitioner or researcher is to challenge what is sometimes referred to as “the official future”, which is the most legitimate, accepted, and entrenched view of what future is desirable (Dator, 2009; Inayatullah, 2012).

Ramos frames the evolution of futures studies as a gradual shift from the future as “out there” a distant concept to be predicted understood towards future as “in here”, one that locates futures in current capacity for action (Ramos, 2017). More specifically, Ramos describe this evolution in five nested modalities. The earliest, innermost modality is Predictive and covers the period from 1950s to 1960s and, as the name suggests, was mostly interested in large-scale predictions. The next modality is Systemic, and it emerged in 1970s and 1980s. This modality was focused on studying and articulating complex systems to describe possible alternative outcomes. The third modality is Critical and was developed in 1980s and 1990s. It was influenced by prominent philosophical and critical traditions of the time including post-modernism, post-structuralism, critical theory, and others. Form 1990s onwards, the discipline saw an emergence of participatory approaches. Finally, the most recent modality, according to Ramos is Action. Here, Ramos situates futures research with the action research (AR) tradition. Drawing from Slaughter, Ramos argues that futures can and “inform wise action in the present” and locates futures within human cognitive and social capacities and calls for for a more ethnographic and sociological understandings of futures in communities. This has been taken up by scholars both in futures studies and design. For example, building on Textor’s proposal for
anticipatory ethnography, (Textor, 1985) Candy and Kornet, propose a move towards of ethnographic experiential futures which combines “moves to surface people’s images of the future with moves to deepen the scenarios in play.” (Candy & Kornet, 2019) Similarly, Ollenburg proposes a merger of participatory futures research with research through design (RTD) to create new opportunities for transformative action for more sustainable futures (Ollenburg, 2019).

The confluence of the shift in futures studies towards humanistic, ethnographic and experiential approaches on the one hand and the integration of futures methods in design scholarship and practice are producing new modes of inquiry, material engagement and cultural production, including in HCI design. (DiSalvo et al., 2016; Elsden et al., 2017; Marie Louise Juul Søndergaard & Hansen, 2018; Wong et al., 2020). At the same time, some of these futures-oriented speculative design methods have been questioned for being insensitive to issues of power and privilege, (Prado & Oliveira, 2014) lacking theoretical grounding and an excessive reliance on aesthetic and conceptual language more closely associated with art (Bardzell & Bardzell, 2013). Similar criticisms, especially with respect to issues of power and colonization, have been leveled against mainstream futures studies as well (Nandy, 1996; Sardar, 1993). Nonetheless, these convergent methods offer new generative and reflective opportunities (Kozubaev et al., 2020) both for articulating futures that might be distant and those that are present and situated in lived experience. Furthermore, there are opportunities for these emerging methods to engage with the politics and values of complex socio-technical systems (Forlano & Mathew, 2014) and infrastructures (Wong et al., 2020).
Finally, throughout this dissertation, I will use the term future and futures in different contexts. For purposes of clarity, it is important to make some distinctions. Staley, drawing from philosopher F.R. Ankersmit, proposed distinguishing two meanings in studying the future. There are the events that are yet to come, which he calls future1 and there are representations or narratives about them which he calls future 2. We do not have access to future1 and therefore, to understand it, we use a substitute in the form of future1. (Staley, 2010) In STS, Michael makes a similar claim but goes further. He argues, as I mentioned in the previous section, that representations of future (and the past) are all we have access to. We manage representations of the past and the future. What is important for Michael is that these representations are not passive but performative. They frame futures in different ways, define the subject position of a person, enrollment of various others, valences of the future, relations of power, etc. Furthermore, the performativity of these representations, Michael argues, “do[es] not take place in some abstracted, a-material domain. It is conducted in material settings, where bodies and texts, for example, come into contact or close proximity at least.” (Michael, 2000) Studying infrastructures and infrastructuring ethnographically foregrounds the most mundane aspects of built systems to reveal how values and ethical principles come to be inscribed in them. (Star, 1999) To sum up, infrastructuring as analytical lens connects to the most recent modality of studying the future “in the now” articulated by Ramos. At the same time, it can diversify possibilities of locating futures such that agency to influence them can be distributed among human as well as non-human actors.
2.2 Related Work in LIS

2.2.1 Libraries as Infrastructure

In LIS, the notion of library as an evolving and constantly changing infrastructure has been gaining prominence. One of the most evident of these changes were brought by the publishing industry which made new kinds of digital content such as e-books, audiobooks, online learning, and other electronic resources available through libraries. This was made possible, in part, by the rise of digital lending and collection management platforms such as OneDrive, Hoopla, BibiloTech and others. They weave public libraries into the ever-expanding global, networked information infrastructure. Libraries also provide access to ICTs, playing a crucial role in bridging the digital divide (Bertot, Real, & Jaeger, 2016). Scholars have argued that libraries should be conceived of as platforms, not only providing access information but allowing others to build services on top of it (Weinberger, 2012).

The importance of physical space in public libraries as has been noted both as an amenity providing equitable access to a friendly and safe environment, an important element of community building, (Scott, 2011) and an antidote to privatization of public space (Barclay, 2017). Public libraries are often cited as an exemplar of "a third place", a place different from home and work and an integral part of "infrastructures of human relations" (Oldenburg, 1989, 2002). The on-site collections in libraries create opportunities for communal ownership. This reiterates the fact that a public library is not just an intermediary for dissemination of information to the outside world but a conduit for "looking inward toward the small world to which it is integral" (Söderholm & Nolin, 2015).
Furthermore, in recent years U.S. public libraries have been at the forefront of meeting socio-economic challenges. Public libraries are put in a position to alleviate issues such as urban food deserts (Lenstra & D'Arpa, 2019; Overbey, 2020), the opioid crisis (Real & Bogel, 2019), the mental health crisis (Pressley, 2017) and others. Reflecting the greater responsibilities to meet community needs, LIS scholarship has seen an increased focus on social justice (Jaeger, Shilton, & Koepfler, 2016) and growing attention towards critically examining how librarianship reinforces existing power structures through its practices and infrastructures (Drabinski, 2019). Research has also shown how public libraries can constitute social infrastructures (Klinenberg, 2018), physical conditions that foster social encounters, particularly among strangers, which can improve resilience in periods of shock, such as extreme weather events (Klinenberg, 2015). In other words, there is a growing recognition that libraries need to be understood as social-technical-intellectual infrastructures, deeply connected to community needs and the broader infrastructural ecology (Mattern, 2014). Furthermore, these communities negotiate the various ideologies that come to be codified in the architecture of libraries including ideas about who the library is for and what information and services it should offer (Mattern, 2002). However, despite this recognition and the existing diverse perspectives on public libraries as infrastructure as described above, *infrastructuring* has not been widely explored in LIS literature, especially in relation to the work of librarians.

### 2.2.2 The Work of Librarians

Until relatively recently, ethnographic methods in LIS have rarely been used. A comprehensive survey by Khoo *et al* showed a growing interest in libraries in the late 1990s
and early 2000s. (Khoo, Rozaklis, & Hall, 2012; Lanclos & Asher, 2016) Much of the research that has been done is focused on the information retrieval processes or reference services. However, Boothillier argued that traditional conceptions of service in LIS "provide little understanding of the socially situated nature of service delivery, and of the social mechanisms underlying this activity in a given context. They do not establish relationships between the micro-reality of a library, or the idiosyncratic features of library services, and macro level phenomena such as politics and governmental level of funding in public services" (Bouthillier, 2000). Cavanagh's ethnographic account of an urban public library in Canada, demonstrated how reference desk interactions between librarians and patrons can be sites for rich exchange of tacit knowledge and formation of relationships (Cavanagh, 2006). What some might consider trivial "chit-chat", in fact plays an important social and cultural function, especially in smaller local branch libraries, where interpersonal communication is a building block of a public sphere (Wood, 2020). LIS researchers have also studied the evolving needs and uses of library patrons such as personal information and technology management (Cushing, 2016), development of social capital (Khoir, Du, Davison, & Koronios, 2017), or use as make-shift shelters for the homeless (Giesler, 2017). Social work in libraries is an emerging area of research in LIS (Lloyd, 2020). However, the day-to-day work of librarians outside of narrowly defined contexts mentioned above have been mostly overlooked. This is especially true of the kind of relational and long-term infrastructuring work that is the focus of this research. There are signs that this is beginning to change. Responding to the limitations of the fact that LIS operates under a scientific paradigm, Clarke argued that an alternative way to understand librarianship as a kind of RTD practice. She proposes that "instead of applying scientific
standards, norms, and judgements of quality to a field that is not a science, we need to explicitly acknowledge the design basis of librarianship as its own distinct counterpart to information science, so that these distinct fields can work together symbiotically, as librarianship and information science (L&IS), rather than the traditional notion of the single LIS field” (Clarke, 2018). Another aspect of librarians’ work that has been problematized is how librarians perceive their work as inherently good and the political consequences of that belief. Ettarh referred to this as “vocational awe” which elevates librarianship to something like a sacred calling and requires “absolute obedience to a prescribed set of rules and behaviors, regardless of any negative effect on librarians’ own lives” (Ettarh, 2018). In other words, the socio-material conditions of public librarians encourage social and civic engagement while relying on rigid structures and even exploitation.

In this chapter, I have outlined several strands of research in design, HCI and futures studies that inform this dissertation. I showed how the theoretical lens of infrastructuring has been engaged with in HCI design and outlined possibilities for understanding socio-material relations in public librarianship with broader implications for civic and social design. Furthermore, I traced some of the theoretical relationships between infrastructures and temporality, specifically the experience of futures and imaginaries that these infrastructures create. I also drew on relevant work on LIS to point out key practical and socio-political issues in the everyday work of public libraries in North America. Finally, I outlined a brief history of futures studies, some its key theoretical concepts and terminology, and discussed how infrastructuring can relate to some of the recent moves in futures studies towards studying the future “in the now.” In the next chapter, I will describe the research site and the methods I used in this dissertation.
CHAPTER 3. RESEARCH SITE AND METHODS

3.1 Context and Setting

In many ways, the tensions in American public libraries we observe today are reflective of the historical tensions within American civic institutions, where a stated commitment to liberty and inclusion through knowledge collides with a legacy of exclusion, colonialism, and other kinds of oppression. Wiegand's historiography of early American libraries reminds us of this tension: "Public libraries can certainly take credit for educating their patrons through collections and services, but because these collections and services largely reflected values of locally powerful groups, on many occasions public libraries functioned as obstacles to cultural democracy by perpetuating the racism, sexism, classism, and homophobia their collections supported." (Wiegand, 2015) Another source of tension that is arguably unique to American society is commitment to individualism and free private enterprise, coupled with an inherent suspicion of government overreach. Whereas municipal government is commonly associated with providing services and care for its citizens in the rest of the world (particularly Europe) (Light & Seravalli, 2019), in the U.S., municipal government has been historically tied to and dependent upon private enterprise. Benjamin Franklin, the founder of one of the first American libraries, identified their value not with leisure or civics, but with work and productivity. (Franklin, 1904, p. 172; Wiegand, 2015, p. 8) Until the early twentieth century, the most influential force in the growth of American public libraries has been Andrew Carnegie, a steel industrialist, who funded the construction of 1,679 public libraries in 1,412 communities between 1889 and 1919. (Wiegand, 2015, p. 94)
At the same time, the deep-seated suspicion of government "overreach" has gradually evolved into disdain towards government assistance and service, reflected in cultural tropes such as "the nanny state". These tropes also extend towards people who use such services often resorting to racial prejudice and stereotypes (e.g. "the welfare queen", "the moochers" etc.). In the American South, where a large portion of the population identifies as socially conservative, public libraries can face an attitude that social services of any kind constitutes a "hand-out", another trope intended to stigmatize and delegitimize municipal service and its recipients (Lloyd, 2020).

FCLS spans urban and suburban areas of Atlanta characterized by many of the socio-economic divides common in American metropolitan areas such as gentrification, crime, and others. In addition, Atlanta has long been an epicenter of racial tensions and disparities many of which continue to this day. The 31 branches and the main central library serve neighborhoods ranging from the very poor to the very wealthy. These divides shape how public libraries and technologies within them are used in a variety of ways, often incommensurate with each other. At the same time, the population of the area is rapidly changing like in the rest of the State with non-white share of population gradually growing. This too shapes the work of public libraries in unique ways as various cultural, ethnic and racial groups become regular library patrons.

In 2008, Fulton County held a referendum to approve a $275M bond measure to fund the construction of new and renovation of existing libraries in Atlanta. For us as researchers, this presented an opportunity to observe and discuss how librarians and the public understand and deal with the ongoing changes in the library. At the same time the
renovations added to the uncertainty among the librarians because of the disruption in their work (due to library closures) and the changing expectations about their future.

3.2 Overview and Timeline of Engagements

This research is a result of series of collaborations with various scales of complexity and depth of personal relationships. In this section, I will provide a brief overview of how I worked with this organization and the people who work there. My engagement with FCLS started in 2017 and continued through 2020. It began as a small volunteering project and evolved into series of collaborations and partnerships. The activities I chose to engage in were largely driven by opportunities that presented themselves at a given point in time or by people I happened to meet along the way. I did not have a pre-determined plan to conduct this specific set of activities or even a specific topic of inquiry. The activities were shaped as much as by an emergent set of opportunities and circumstances as they were by my own broad interest in design, civic participation, and futures.

I began my relationship with FCLS by approaching one of their public outreach librarians. These librarians work with members of the public to deliver programs and collaborate on a variety of projects related to public library’s broad goals such as literacy, education, and information services. My goal was to develop a partnership project where I could use my expertise as a designer to help librarians and their patrons in some way. This initial outreach led to my first volunteer project with FCLS, which was a series of workshops on interactive narrative and computing. This project eventually led to other relationships and projects. Next, I will the list and provide a brief description of each project and engagement along with the timeline. Only some of the engagements became
formal studies, but it is important to understand the extent of each engagement and acknowledge their unpredictable and interdependent nature.

- **Interactive Narrative Workshops.** A series of educational workshops conducted at FCLS branch libraries to teach members of the public interactive fiction and basics of programming.

- **Staff Development Day.** A series of presentations and workshops during the annual staff development conference in 2018 and 2019.

- **Community Meetings on Branch Renovation.** Observation of nine public meetings held at different FCLS branches, where architects and library administrators presented and solicited feedback about proposed library renovation designs.

- **Volunteering.** Volunteering at a branch library to help with operational tasks such as shelving and tagging books.

- **Librarian Interviews.** Eighteen in-depth interviews with librarians who work at FCLS.

- **Mobile Seed Library.** Participation in and facilitation of a pilot project to design a new seed library program.

In addition to the above engagements, I participated in many other informal conversations and interactions with people associated with FCLS and associated with public librarianship in metro Atlanta area. These include attending FCLS management meetings, informal conversations in different branch libraries conversations, collaborating
on writing a small grant, recording a radio show and many others. The chart below summarizes all the major engagements and interventions.

<table>
<thead>
<tr>
<th>Engagement Type</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
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<tbody>
<tr>
<td>Initial Contact and Planning</td>
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<td>Interactive Fiction Workshops</td>
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<tr>
<td>Staff Development Day (Study 1)</td>
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<td>Public Meetings (Study 3)</td>
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<td>Librarian Interviews (Study 3)</td>
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<td>Mobile Seed Library (Study 2)</td>
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**Figure 1. Summary of Engagements with FCLS**

I will provide a more detailed description of the methods used in Study 1, 2 and 3 in Chapters 3, 4 and 5 respectively.

### 3.3 Key Relationships

This research was shaped not only by the projects and interventions I described above, but also by the relationships I developed with individual people. In this section, I will describe these relationships and how they shaped the way I engaged with FCLS. All names of librarians in this document have been changed for purposes of anonymity.

**The Outreach Librarian**

My very first contact with the library was with an outreach librarian, whom I will call Alice. I looked up her name and contacts in the public directory and introduced myself by e-mail offering to explore a possible collaboration in which I could offer a program to
the library patrons. It was November-December 2017. Over the next few weeks, we met several times to discuss what program would be interesting and useful to the patrons. One of the ideas was an educational workshop on Interactive Fiction, which we ultimately chose to pursue. Over the next few months, we met both in-person and on the phone to plan the workshop time, locations, and other logistics. In each instance, I learned about Alice’s work and unique position at the library. One time we met at the Central Library which was in the process of being evacuated/dismantled to prepare for the upcoming renovations. Alice told me about how the new Outreach Department had been developing new ways of engaging with the public, and me reaching out to the library and audiences is in line with what I proposed for the workshop. She suggested two libraries in different locations that would reach different audiences. One with patrons of a predominantly lower and the other with higher socio-economic status. Alice introduced me to the branch managers of those two libraries. I visited these libraries to meet the branch managers and talk about how we might use the space and what day of the week and time would work best for the patrons. I began learning about the program planning and design, how the librarians think about it and how they have intuitive knowledge about making the program as successful as possible. Together, we wrote program flyers based on libraries templates, which I also shared with Alice. I developed a good relationship with Alice who later became a regular point of contact and assistance in future projects and collaborations.

The way libraries engage with the public and offer programs shaped my relationship with Alice. She was interested in doing new programs at libraries. I was interested in doing public engagement with my research. FCLS had a mechanism and infrastructure in place to take in and deploy people like me who are volunteers. For
example, like all other volunteers, I had to sign a special form in order to be able to provide library programming, meaning I had to become an official, albeit temporary, part of the library itself. The library had a regular publication along with social media presence where they advertised these programs. Thus, from the very beginning, this setting encouraged a mutually beneficial relationship. Alice and my interpersonal skills were conducive to a generally friendly and collaborative approach to the project. The project also helped me establish similar relationships with the two managers of the branches that were interested in hosting my program. This was no accident because Alice knew who would be more open to a program like this based on her own expertise and relationships with these librarians. Although most librarians I came to know, especially branch managers, were generally interested in new programs, they would not necessarily be open to working with someone like me, an outsider without any proven experience of offering programs. Also, the fact that I was representing a very well-respected Atlanta institution, Georgia Tech, gave a certain level of credibility to my activities and they did want to work with me.

**Branch Group Administrator**

One of the participants in the Interactive Fiction workshops an FCLS administrator. Katherine was a Branch Group Administrator, who was in charge of overseeing several branches. She worked closely with Alice, was interested in the program and wanted to find out more about my work. She only came to observe the second part of the session. We spoke briefly at the end of the workshop and exchanged contacts. Over the next few months, Katherine became my main contact for all things related to collaboration with FCLS. She became a conduit between me and the most senior leadership at FCLS. She
eventually introduced me the library director who expressed full support for my research and asked that I work with Katherine on any future collaborations. Towards the end of summer 2018, during one of our meetings Katherine asked me to participate the library’s annual Staff Development Day. The organization of the event is a rotating role among librarians and that year Katherine served in that role. We explored the idea of teaching librarians how to use interactive fiction in their programming. Since she knew I was interested in futures thinking and tools from our previous conversations, she asked me if I would speak to the librarians on that topic. I didn’t have a lot of time between when Katherine asked and when SDD was scheduled to happen, but it was an opportunity to meet other librarians and offer something useful to them. The theme of SDD 2018 was around the future of libraries. I believe one of the reasons Katherine invited me is that she saw the potential in interactive fiction, and she also needed ideas for interesting programming for the conference. At that time, we still didn’t know each other very well, but I found it humbling that she invited me to speak with other FCLS colleagues and had secured approval and encouragement from the library director to do that. At the time, I also did not realize how significant this event was in the daily lives of the librarians.

My participation in SDD 2018 became pivotal in shaping my future research. Through my conversations and observations at SDD, I realized that instead of focusing on library patrons I could focus on librarians themselves. First, I had better access to librarians than to users. Second, this community seemed to be interested in the topic of “the future of the library.” I felt that this might be a better avenue for me to pursue but I still had not yet formulated the research question. Over the next few months, we had some conversations with Katherine during which I brought up an idea to develop a toolkit for librarians to think
about a future in creative ways. Another idea was to write a grant together to explore this topic. During my secondary research, I found that ALA had a program dedicated to the future of libraries. We used it as a reference and an inspiration for doing something similar for FCLS librarians. In one of our conversations, we also explored the possibility of writing a grant together. Since I didn’t have any extra funding for doing design and production, the idea intrigued me, and I started looking up possible grant opportunities through one of Georgia Tech’s resources. One of them was the H.W Wilson Library Staff Development (ALA, 2021). The grant seemed like a good fit for our exploratory project. I was interested in making a tangible tool kit for exploring futures and it met the criteria of the grant because it was aimed at library skill development. Over the next few months (late 2018, early 2019). Katherine, Alice and I collaborated on the grant. I provided most of the content because it was based on participatory design techniques. Alice and Katherine wrote sections relating to the library itself (context, recent developments challenges etc.). In February 2019, after it was reviewed and approved by the library director, we submitted the application. Later, Katherine and Alice told me in person how pleased they were with the submission and that the director complimented on its quality. However, we did not win the grant. In June, Katherine attended the ALA conference which is where the winners of the award were announced. She sent me and Alice an e-mail with a picture of the announcement flyer adding “We are not the 2019 HW Wilson Grant winners, but we are winners!” This collaborative experience strengthened my relationship with FCLS librarians and contributed to the ongoing support and access that I received the subsequent months.
To understand the daily practices and experience of librarians, I wanted to spend time volunteering at one of the branches. I asked Katherine which branch would be suitable and needed volunteer support. Working with volunteers is a well-established practice in many library systems, including FCLS, so I did not need any special arrangements. However, Katherine's knowledge of the branches and her position as a group administrator allowed me to get access to a branch that would be open to working with me. She suggested a few options, based on where they were in the renovation process and based on her relationship with each branch librarian. I chose one branch that was relatively easy for me to get to between the university campus and my home. My thinking was that I needed to choose a location that not only needed help but would also minimize commute time and maximize time spent at the library. Thus, I began working at the Newman branch library (anonymized). I began by spending 1-2 hours there once or twice a week. The branch manager, Abby was very welcoming, and we immediately formed a connection around some of the similar experiences we had. She had spent time in California and her husband was also in an academic career and she had an appreciation for academic research and struggles of graduate school. More importantly, she was very open about sharing her opinions about the library profession in general and the role the Newman branch plays in the community. She introduced me to other library staff members and gave me some background on each librarian’s specialization and passions. I received basic training about the work I was about to do including tagging books with RFID stickers and understanding the Dewey Decimal System so I could re-shelve books that were returned. Over the next few months, I would have side conversations with different librarians depending on who
was working when I came to volunteer. Abby was almost always there so she would see me, and we would chat about challenges of the day or some of the librarians would share stories that they thought I should know. Everyone at the branch was very supportive and it seemed that they wanted me to succeed and offered up different bits of information and suggestions about how to improve the library. I also started using the Newman library more often myself. I checked out books for me and my children and I learned about some of the digital resources for e-books and audiobooks that I had not known about before. By that time, I already knew that higher usage statistics reflect well on individual branches and librarians, and wanted to check out even more books just as a way to give back to the librarians even if I didn’t really have time to read all the books.

These relationships evolved and shaped my future engagements in several ways. First, when I started formal research interviews, most of the workers in the Newman Branch agreed to participate. And since we already had many conversations by the time I interviewed them, the interviews were more open and allowed us to revisit some of the conversations from when I volunteered. In addition, these relationships influenced future engagement with FCLS. For example, Abby the branch manager, was really interested in the Interactive Fiction program and asked to offer it in her branch. We conducted the workshop at a nearby church which offers space to the library for bigger events, since they don’t have their own programing room of a bigger size. Later that year, when I conducted a workshop during Staff Development Day, some of the librarians I had met at Newman were very active in participating in the workshop and shared feedback with me about the activity and the results they saw. Just as before, they wanted to interact with my work and wanted to share their candid feedback about the future of their profession and their library.
**Basecamp**

One of the side effects of my collaboration on the grant with the librarians was that I got access to the FCLS Basecamp, a commercial project management and collaboration software. At the time, FCLS had been using Basecamp for internal communication, document sharing and collaboration. Katherine added me to her Basecamp space so that she could assign and track tasks relating to the grant. It was not a consequential change because we did not use Basecamp very intensively. However, as my collaboration with FCLS evolved access to Basecamp became an important marker of my relationship with this professional community both in symbolic and practical ways. Initially, I did not have access to other announcements and communication at Basecamp. Later, Katherine gave me permission to view other announcements (after the director’s approval) and could see what librarians were working on and what questions they were asking each other. For example, one time I saw a librarian announce that he had recently done a program involving GarageBand, an audio recording and mixing software, and offered other librarians training and help to set this program up. We also used Basecamp when we began working on the Seed Library project. In that instance, the collaboration was more deliberate because we were all distributed and we were creating documents and artifacts that needed to be shared. Although Basecamp never became an official source of research, it gave me an insight into how librarians interact with each other through this social collaboration technology. I became an unofficial member of this community with an outsider visibility that few other people had.
Other Interactions

Over the course of my fieldwork, I had other kind of interactions with librarians outside of formal meetings or studies. For example, after the director of the library announced his resignation, I was invited to a farewell party where I was able to hear stories of the director’s tenure and testimonials about his colleagues about different projects, initiatives and interactions. Another example is a joint interview with a local radio station WREK (affiliated with Georgia Tech). The host of the radio show had seen a paper I had published on libraries as convivial spaces and invited me along with the outreach librarian to talk about conviviality in public libraries and other programs that FCLS offers. In addition, there were informal conversations, training sessions and other encounters. They helped me develop relationships with librarians I already knew, meet new people throughout the librarian community and hear stories and experiences about librarians’ lives in new ways.

It is important to note that these relationships evolved gradually and in unpredictable ways. They played an important role in what research opportunities came about and how I was able to act on them. As I describe the studies, findings and conclusions in the subsequent chapters, my positionality within the FCLS professional community will be a recurring topic of discussion and a crucial piece of evidence for the arguments I make in this thesis.
CHAPTER 4. STAFF DEVELOPMENT DAY

In this chapter, I will argue that (a) futures are constructed infrastructurally and (b) designerly interventions that seek to create alternative futures are bound to entangle with these infrastructures. In other words, designerly interventions are also infrastructural. As evidence, I will use field notes and artifacts from a series of participatory design workshops I conducted during Staff Development Day, an annual training and engagement event organized by FCLS and attended by all employees.

Over the course of my collaboration with FCLS, SDD became an important touchpoint that allowed me to expand my relationship with this community and shaped how I engaged in research activities. I participated in SDD for two years in a row, in 2018 and in 2019, but in different capacities. In both years, the theme of the event was the future of libraries, which allowed me to investigate how futures are performed, contested, and negotiated in this community. The focus of this chapter is SDD 2019. The details of my engagement in SDD 2018 are presented in Appendix C.

First, I will discuss the preparation for the event and how I designed the workshop. Next, I will analyze the results of two activities. Finally, I will examine the conditions of participation of the workshops and discuss how participatory futures and design activities can be simultaneously generative and open yet subject to infrastructural relations in which they are developed and deployed.
4.1 Preparation

During one of my conversations with Katherine, one of my key contacts at FCLS and a branch group manager, I asked if she would be in charge of organizing the Staff Development Day for 2019. She told me that she would not be and named the two library administrators who had taken on that role. I offered help to be involved in SDD and that it we could do an engaging activity with the librarians if I had a little bit more time to prepare than in 2018. She offered to introduce me to the two librarians who were organizing SDD. At the time, it was still very early in the year and they had not started the preparations. This was fortunate for me because it meant I could collaborate with these librarians to shape the agenda together. Katherine made an e-mail introduction to Tom and Emma, who were managers of different branches but worked together on SDD. I learned that organizing SDD was a rotating responsibility and that the librarians who took on this role would be doing so in addition to their regular responsibilities of managing the library.

After the initial introduction I started coordinating with Tom and Emma about what we could do together. They were very enthusiastic about the fact that I offered help. In addition to doing an interactive activity (which was yet to be designed) I offered graphic design skills for their SDD program. One of the key dependencies in this collaboration was the venue. Since Tom and Emma didn’t know where the event would be held, we couldn’t start planning it because speakers and activities would depend on whether, among other things, the venue could accommodate breakout sessions, seating arrangement, etc. This also meant that we could not discuss what kind of activity I could design for the librarians and how much time I would have with them. The venue was finalized in July, 2019. At this
point Tom, Emma and I started collaborating more closely. We first met at one of the branch libraries to discuss the general logistics and the general theme of the event, “Together for the Future”. The theme had already been approved by the library director. The librarians asked me how much time I needed for the activity. I wasn’t sure but asked for at least an hour, even if it would be broken apart into sections. A few weeks later, we went to visit the venue, which was at the Fulton County government center. It turned out that it was a single auditorium, in fact the main venue where members of the council had hearings, and there were no breakout rooms. This meant that the activity could not be done in groups and had to be completed individually. After they drafted the initial line up of topic and speakers, I was offered two time slots of 30 minutes each, which would be during the breaks that participants took from the main session.

Around the same time, my advisor and I started thinking about the longer-term commitment and relationship with the libraries. Up until this point, the relationship had been peripheral in many ways. FCLS certainly provided access to librarians and I was able to attend public meetings, but there was no explicit commitment on their part to implement any kind of change or take any action resulting from my research efforts. I needed to get a sense of how committed FCLS was without having any concrete proposals at that point. I reached out to Katherine to express this and ask her to arrange a conversation with the library director. During the call, we discussed our plans and our desire to follow up after the SDD 2019 workshop with something more concrete. The director was supportive of the idea and committed to helping us with that effort. Thus, my collaboration on SDD 2019 program became a catalyst for my relationship with FCLS and for their commitment to become more formal. We had considered developing a memorandum of understanding, but
the library administration advised against that because that would require a whole host of other approvals and conversations at the county level which weren’t necessary or helpful for our collaboration. Thus, the library director and Katherine mediated the relationship between me, my affiliated institution, and the rest of the FCLS government bureaucracy, allowing me to conduct the activities in a more legitimate and more recognized manner, without getting too entangled with the county bureaucracy.

4.2 Design Intervention

As preparations for SDD 2019 progressed, I continued to explore different techniques and formats that could fit the parameters and constraints of the venue, time and participants. My goal was to design an engagement that produced interesting and useful data about how libraries think about or engage with the future, but was useful for the librarians themselves. This is an important point because at this stage in my relationship with FCLS, I was still building trust and the overall direction of the research was still open-ended. It was clear to me that thinking about “the future of the library” was an important topic to this community. I wanted to design an activity that would help me tease out what that really means and what some of the themes and tensions might be in relation to thinking about and discussing the future in this community. At the same time this activity was also intended to continue building the relationship with FCLS so that I could examine issues related to longer-term systemic change in a follow-on study or activity with a smaller and more focused setting.

Since the engagements were so short and involved many people, designing an activity was a difficult and unique challenge. I also needed a way to document how people
are engaging and what they thought of the activity. That is why I decided to have a film crew that would produce a short documentary or a highlight reel about the event and the activity. Katherine had some budget that she could use for a small film crew, which I found through my previous work. This way, I could focus on facilitating the logistics of the activity itself and the film crew could concentrate on roaming around the venue and interviewing willing participants. Given the size of the crowd and the venue, we decided to spend the budget on two camera operators. I asked some of our lab members to help interviewing the participants and collect signatures on consent forms. The event also had a library volunteer. An FCLS library volunteer coordinator, who I had met previously, introduced me to the volunteer, a young woman in her 20s, who helped me with setting up tables, taping posters on the wall and collect responses.

Ultimately, in collaboration with the organizers, we identified two time slots of 30 minutes each that I could use to conduct an activity about the future of libraries. I designed and conducted a speculative design workshop. Here, I use the term “speculative design” broadly to mean a generative activity that facilitates a discussion and reflection about the future through a combination of making, telling, and enactment (Brandt, Binder, & Sanders, 2012). My approach was informed both futures studies, participatory design, and other modes of speculative design, such as critical design, design fiction, experiential futures, and others. Furthermore, it was informed by my previous interactions with librarians and observations about this professional community. One common approach in futures is to collaboratively develop a range of divergent scenarios or stories about the future using a variety of quantitative and qualitative data (Amer, Daim, & Jetter, 2013). This is a highly generative activity that can take days or even weeks and requires a
sustained engagement over a significant period of time. The engagement often includes discussion between the facilitator and the participants as well as among the participants themselves, where they negotiate stories, implications, and tensions of different scenarios.

Another approach I considered is to make the engagement playful and imaginative. One maxim in futures studies, referred to as the Second Law of Futures, states that “any useful idea about the future should appear to be ridiculous” (Dator, n.d.). This is aligned to other strategies of playfulness and creativity in design in which solutions to potential design problems are stimulated through nonsensical or even fantastical ideas. However, playfulness alone is not sufficient and can even be alienating if it doesn’t connect with the participants’ lived experience. During SDD 2018, I facilitated a playful activity called the Thing from The Future with a large group of FCLS librarians. The activity is a card-based game that introduces some key concept about futures in a playful way. One of the things I noticed in that activity is that some participants were confused and sometimes frustrated because. I did not conduct a formal analysis of this activity, but one reason could be that we did not have the time to engage on how these ideas about the future could connect to librarians’ lives. Another complicating factor was the extremely diverse background of participants. The event it included not only people with the title of a librarian, one that is reserved for professionals with an advanced degree in LIS, but also people who were para-professionals, a cadre of supporting staff often without a formal training in librarianship. There were also other FCLS employees, such as delivery drivers, administrators, support staff, and others. To sum up, given the considerations above, my goal was to create an activity that:
- Can evoke diverse and unfamiliar library futures in a playful way;
- Is understandable and relatable to a diverse group of library professionals;
- Can engage participants in a dialogue or exchange about those futures;
- Involves engagement a physical artifact that represents a distant future;
- Can be deployed to hundreds of participants in less than an hour.

Over the course of several weeks, I designed prototypes of the activity that could fulfill all of the above goals. One starting point from my prior experience as a futures practitioner and facilitator was an activity called Postcard from the Future. The activity involves participants imagining themselves writing a postcard from a location and time in a distant future. The familiar form of a paper postcard with a visual on one side and the genre of a short message on the other, provides an easy way to engage participants in a playful activity. Once completed, the postcard becomes an imaginary artifact, a piece of evidence from the future. As participants share and read each others’ postcards, they experience this piece of evidence in a kind of enactment, which can become a topic of generative conversation.
My goal was to scaffold a similar interaction but make it more specific to the librarian community at SDD 2019. The postcard form is very versatile, but it is also generic in terms of the kinds of stories and modes of participation that it can enable. As I was developing the design intervention I was also volunteering for the organizers of the event and provided graphic design assistance. Specifically, I designed the program brochure for the event given the theme Together for the Future. The FCLS marketing specialist shared marketing assets such as color scheme, logos and fonts, which I then used in designing the program brochure. This project sparked an idea for the design intervention. Since a program brochure for SDD was a familiar object at this event, I decided to appropriate it for purposes of exploring future librarian services and activities. The concept of each page

Figure 2. Postcard from the Future. Author’s Personal Archive
was as a description of an SDD workshop that taught librarians about the benefits of a fictional library program or a service in the future.

Figure 3. Prototype of the Design Activity

A key challenge for the visual style of the artifact was to represent variety of various contexts, technologies, and places, given the time and resource constraints. Taking inspiration from architectural vision renderings, I used combination of line drawings and photographs to create the visual stimuli. In addition, to encourage participants to imagine future implications on different stakeholder groups, I designed narrative spaces from the perspective of librarians as workshop participants, as program providers and from the perspective of future patrons who will have benefited from this future program. Finally, to describe a broader context of this future program, I added labels of indicating a theme of the program along with a potential external partner that would be involved in delivering or
supporting the program. In the initial prototype of the activity, participants would select a worksheet one at a time from a stack or from a workstation. However, to distribute all the variations of worksheets evenly, and maximize the exposure of all the variations of the worksheet to participants, I combined multiple worksheets into a single self-contained workbook. This would also make it easier to distribute the activity in a large auditorium without a dedicated space for collaboration. However, once the workbook was distributed, I needed to design a way for participants to engage with each other’s responses and ideas. To do this, I divided the workshop into two parts: Activity 1 and Activity 2.

In Activity 1, participants interacted with a workbook which represented a program booklet from a future SDD in 2030. Each page of the workbook was designed to convey a description of a workshop that would be offered in SDD 2030 and which would offer skills for the attendants of this workshop. Participants were prompted to fill out pages of the booklet by writing down fictional descriptions of program activities as well as benefits that it would provide for the community and the librarians. Figure 4 and Figure 5 show a page from the booklet that was use an example for the participants to understand how to fill out the workbook. Figure 6 shows participants interacting with the workbook.
Figure 4. Activity 1 - Speculative Design Workbooks
Figure 5. Speculative Design Workbook- Example Page
Activity 2 took place two hours after the first. In the intervening time, I reviewed all the workbooks that were returned by the participants (a total of 22) and selected seven responses which formed the basis of seven posters, which I printed for the next activity. In this activity, participants were asked to react to the posters and provide commentary as shown in Figure 7 and 8. The purpose of this activity was to allow participants to reflect on some of the stories about the future of the libraries that they had created in Activity 1, provide feedback about those stories and begin thinking about their own role about bringing about or preventing these futures.
Figure 7. Comment Card for Activity 2

Figure 8. Staff Development Day 2019 – Activity 2
4.3 Results for Activity 1: Participatory Workbook for Speculation

In this section, I will present the findings about how the method worked. My analysis is based on the participants’ responses to the program of both activities as well as the video interviews. I collected 22 booklets containing 89 representations of future programs (i.e. individual pages with responses). Furthermore, I reviewed 69 response cards and 15 video interviews.

4.3.1 Entry Points and Trajectories of Participation

As mentioned previously, I designed the workbooks in a way that allowed different modes of participation and reflection about the future, given the constraints of the venue and time. First, each section of the page encouraged the participant to think about different aspects of the program.

“I liked how it was broken down into different sections so you kind of had to put yourself in the shoes of a patron or somebody who actually did the program, or as a librarian who is writing the program description. So put yourself in different perspectives. So, I thought that was a good way to do it.” – P12

Second, participants used different strategies to work on the activity. Some focused on one or two pages and provided a lot of detail. Others chose to do as many as possible but provided very little detail, filling out only some of the sections. Some enjoyed creating
their visions of the future from scratch (i.e. using the blank pages without images), while others found it helpful to use the scaffolding I provided in the workbooks.

“[Most challenging part was] trying to come up with my own program. At the end of the packet, they had blank sections. That was the hard part for me, coming up with what my vision for the library was going to be.” – P3

Figure 9 shows an example of a program that a participant designed using one of the pages with minimum stimuli. The participant created a narrative as well as visual representations of the program, in this case an arts and crafts program to help children in low-income housing communities learn valuable skills.
Figure 9. Example of a Completed Workbook Page Without Stimuli.

In another example shown in Figure 10, a participant used the visual stimuli present on the page but only completed a small part of the page, enough to convey what the program should be and how it would benefit the community. In this case the participant is describing a program in which students help the elderly population to work with technology.
Figure 10. Example of a Partially Completed Workbook

These and other examples I have collected, suggest that allowing various entry points for participation can be effective in engaging participants with diverse backgrounds and help mitigate challenges of logistical and time constraints of a large-scale PD encounter like SDD. Furthermore, these entry points set up different trajectories of participation within a single PD intervention which can enrich and diversify the quality of insights. Beyond alleviating the logistical and temporal constraints, entry points and trajectories
could potentially serve as resources to accommodate different values and motivations of participants.

4.3.2 Interpretive Flexibility

The combination of visual and textual stimuli encouraged participants to interpret the future in flexible and open-ended ways. Here, I am describing this by drawing, albeit loosely, on the concept of interpretive flexibility, which forms the basis of Social Construction of Technology (SCOT) theory in STS. In its classic conception by Pinch and Bijker interpretive flexibility refers to the idea that technological artifacts are culturally constructed and interpreted. (Doherty, Coombs, & Loan-Clarke, 2006) Interpretive flexibility shapes how people interpret the artifacts in using as well as designing them (Pinch & Bijker, 1987). Put simply, technological artifacts, especially early in their development and use, mean different things to different social groups. Pinch and Bijker use a vivid example of the early days of the bicycle, showing how the form of the bicycle and its meaning to different people was quite diverse and even incompatible. Over time, this interpretive flexibility diminishes as a result of gradual negotiation among the social groups leading to “stabilization.” More recently, Meyer refined and expanded the concept of interpretive flexibility, arguing that in technological artifacts it can refer specifically to the interpretation of the current usefulness or to the interpretation of future directions for scientific research and technological development (Meyer & Schultz-Schaeffer, 2006). Drawing, in part, from SCOT, Sengers and Gaver argued for HCI design that uses openness of interpretation as a resource for design recognizing that multiple interpretations of systems can all be legitimate (Sengers & Gaver, 2006). The process of social construction
of technology, interpretive flexibility, and stabilization are long and complex processes involving various social groups using actual technological artifacts. While influenced by SCOT, my use of the concept of interpretive flexibility is much more modest and narrower in scope. Furthermore, while I use real technological artifacts, I represent them in fictional contexts and configurations that are non-obvious and that purposefully block expected interpretations of technologies that might otherwise be recognizable (Sengers & Gaver, 2006). Specifically, I used visual representations of hypothetical technological artifacts to elicit interpretive responses both about the use of the artifacts and what it might mean for the future of libraries and its stakeholders.

This narrow moment of interpretive flexibility was most evident in the way participants explained the images. In some cases, they tried to interpret the image as if there was a “correct answer”. Such responses highlighted the fact that participants had pre-existing expectations about certain technologies, and they tapped into these expectations to develop an answer about a possible future. For example, in response to an image depicting a woman meditating position at a transit station wearing virtual reality goggles, one participant described how future patrons could use digital resources to improve their meditation skills. In other cases, participants stretched the meaning of the image and interpreted it beyond what was apparent. For example, one image showed a raised garden equipped with different sensors. One participant invented a new program for library patrons to generate electricity for the raised garden in lieu of paying their late fines.

This interpretive flexibility seemed to produce another productive effect. For some participants, seeing how their colleagues interpreted pages in the booklet was engaging.
“Also, seeing how other people are viewing the same situation and came up with something altogether different. It was nice to see ‘oh, that’s something else, that’s what the other group did.’” – P13. While designing for interpretive flexibility seemed to work in this situation, I am also cognizant of the fact that my design choices of the images and the composition (e.g. VR goggles, garden sensors, etc.) played a role in what issues participants engaged with. My values and biases were very much present in the artifacts, even when I attempt to provide space for interpretive flexibility and open-endedness.

### 4.3.3 Boundaries between Telling, Making and Enacting

Brandt et al proposed a useful taxonomy in the form of a triad that consists of making, telling and enacting (Brandt et al., 2012). Here making refers to “embodying thoughts and ideas in the form of (physical) artefacts.” Telling refers to the use of discussions and narration to engage participants in sharing their everyday experience. Enacting refers to “activities where one or more people imagine and act out possible futures by trying things out (by use of the body) in settings that either resemble or are where future activities are likely to take place.” These three types of interlinked activities represent different combinations of how participation is framed by designers and engaged by participants. While the triad has been very useful for PD practitioners in thinking about different modes of participation, they suggest a certain extent of medium specificity which, in my experience, does not always hold true. For the purposes of this section, I will focus only on enacting. If enacting, defined broadly, is pretending as if something is real (Sanders, 2013), then it doesn’t always require the participant to act out the experience with the body. In the workbook method deployed during SDD, I observed that some
participants imagined future characters and represented thoughts on their behalf via quotes. For example, in describing a program involving a cooking demonstration at an airport one participant wrote: “Mr. John Smith [anonymized] taught us how to make delicious Chinese dumplings” and “as a Chilean man, I was delighted to taste Swedish meatballs for the first time.” – Workbook 7. However, as we have seen, not all participant used every section this section of the page to write full quotes. Those who did, however, engaged with it as if it were a role-play activity, even though their only form of expression consisted of written words.

The visual stimuli can also be interpreted as a kind of pretending. “I really liked the images and they kind of made me think. Because there were some that were line drawings, but then they were actual places. It kind of made me think about things in a different way.” – P12. Here the expression “actual places” is interesting because it suggests that the visual representations enact a future for the participant. Based on this observation, I speculate that making, telling, and enacting are not necessarily medium-specific; designers can scaffold each mode of participation with more flexibility. While bodily enactment may be the most immersive, written words, and perhaps physical objects can frame other kinds of enactment. One thing that is not clear is what triggers a sense of belief and pretense that seems crucial in enactment. This is a question I hope to explore in future research.
4.4 Results for Activity 2: Constructing Scenarios and Collecting Comments

Activity 2 was more rapid and less structured. Participants provided answers to six scenarios that I synthesized based on responses to Activity 1. During a 2-hour period between 2 activities, I selected 7 responses as starting points, edited them, and added more detail. In other words, this involved a level of selection and curation of material, within the constraints of time and space between Activity 1 and Activity 2. The descriptions of each program are listed below:

- **Easy Cooking for Seniors.** Helping seniors plan economical and nutritious meals that are easy to prepare. Uses latest cooking technology and digital devices to control the cooking process to make it easy for the user.

- **Teaching Mindfulness in Public Spaces.** Teaching patrons about self-care techniques and exercises in public spaces, using digital technology such as Virtual Reality, Brain-Computer Interfaces and others. Through mindfulness exercises, people will gain skills to handle tough situations that may come their way, and learn about free library resources to help them on their mindfulness journey.

- **Vet Tech Talk.** Using technology to create a co-learning space for veterans to re-enter society. Use service animals and technology to create interactive experiences that help veterans with various disabilities and special needs.

- **Teaching Life Skills to Prisoners/Inmates.** Working with inmates starting with under 30 population to teach them life skills to survive in society successfully so
we don’t have repeat offenses. This program focuses on mindfulness skills for
former inmates to deal with former trauma and emotional issues.

- **Connected Gardening.** Doing urban gardening with smart technology. Residents
can use a community garden equipped with sensors residents can control water,
nutrients and keep the garden secure from intruders. It also helps distribute work
among the patrons to make sure all plants are taken care of. Local organization
called Urban Sprouts helps set up garden boxes and install the technology

- **Public Safety & Community.** Community and neighborhood development as well
as ownership of public spaces. Fostering a sense of responsibility among patrons
and improving trust in the police. Patrons get to interact with service animals and
understand the use of animals and technology in public safety.

- **Government Open Forum at the Central Library.** Connection between county
and city government and the people at a time convenient to citizens. Officials and
citizens gather at the library to discuss policy issues or for friendly conversations
around a topic. Fosters safe and inclusive space enriches relationships between
local government and residents.

I collected 69 response cards from participants across seven posters, with each
poster receiving 5 to 14 comments. The activity and the prompts were brief resulting in
responses that were also brief, ranging from a single word to one or two sentences.
Nonetheless, the responses reveal two notable themes.

First, the responses seem to indicate a certain degree of resourcefulness and agency
that librarians feel with respect to programs. Out of 69 responses only 10 did not provide
any detail about resources needed for a program. The majority of respondents provided detailed and often inventive ideas about resources and infrastructures that one might need to design and deliver the program of the future.

Responding to the concept on cooking for seniors, one participant wrote: “I could ask a nutritionist if they would do cooking lessons. I would post a flyer asking for a nutritionist or call a health department or ask social services. I would ask my friends group for money.” Another participant commented about a future program for re-education prison inmates as follows: “Using social media would be helpful to build relationships get the word out about the program. Reach out to local rehabilitation facilities and behavioral health for assistance with operating the program.” Reflecting on the program about connected gardening, one librarian wrote: “Make sure the verbiage is written into the partnership agreement, maintain manuals/partnerships with the companies that manufacture the technology. Maintain partnership with various gardening organizations.” Although there were responses with fewer details such as “More money” or “staffing”, the above examples demonstrate how librarians can easily identify resources and relationships needed to create a program, even in cases that might seem outside their area of traditional expertise (virtual reality, gardening, senior care, inmate rehabilitation etc.).

Second, there was an overall sense of positivity about the futures represented in the scenarios. Responding to the question, “Do you want this future to happen”, the vast majority of answered responses indicated “Yes.” Of the 69 responses, there were 7 that selected “Don’t know” and none of the participants selected “No.” This apparent positive attitude towards these particular futures can also be seen in the personal passion expressed
in the comments. Some librarians seemed to be ready to offer their personal experience and commitment to make these programs become a reality.

“Personal experience I have an IT background, and I am also a Veteran. I am willing to help in any way. I also feel using the library meeting space and or labs would help.”

“I would literally switch departments. The criminal justice system is of importance to me and the community work that I do. I mean I could just offer to join them every time.”

“Participate! I'd love to see all the overgrown weedy areas to be turned into sustainable food sources. I was just thinking that on The Belt Line this week.”

These results seem to indicate that the speculative design activities of SDD 2019 were generative, productive, and useful to the participants. However, such positive outcome calls for a closer examination of and reflection on the conditions that may have led to this outcome, which I will do in the next section.

4.5 Examining the Conditions of Participation

One way to explain the results of the speculative design activity in SDD is to challenge the notion of a workshop as intervention which is a common in participatory design and in futures research. Design anthropologists have argued that such collaborative and interventionist future-making can be a distinct mode of knowledge production (Smith & Otto, 2016). Here, the knowledge can be produced as a result of emergent collaboration and participation. While it is true that such activities can be interventions in the sense of unsettling the ordinary and conventional, they are also subject to infrastructural conditions.
Alternatively, we can think of the participatory design and futures activities as a coalescence of different circumstances, resources and constraints that enable specific modes of exchange between a design researcher, participants, and other collaborators. These are shaped not only by material and temporal conditions (venue, time available, number of people etc.) but also existing institutional arrangements. As I have outlined in earlier, the future making activities at SDD 2019 were shaped by my ongoing collaboration with FCLS librarians and by the infrastructural relations of the event itself. Much of these relations were outside my control and evolved over time, as the librarians finalized the details of how and where SDD will take place.

One important factor were the personal relationships that I had developed with the librarians prior to SDD 2019. For example, many of the library workers from the Newman branch, where I volunteered, came by to greet me and returned their workshop booklets. In addition, they shared their experiences and offered commentary in casual conversations and exchanges with me. Some of them also agreed to participate in the video interviews. They seemed to more invested in this activity than others because they had already worked with me and participating in the activity was a continuation of our ongoing relationship. At the same time, there were many other participants who engaged with the activity and never spoke to me either before or after.

During the event itself, there were also unforeseen circumstances that required adaptation. For example, when the director announced the first activity, he misspoke about the instructions, which caused the participants to start leaving the room, instead of waiting for my instructions. The acoustics in the room were such that many participants could not
hear my corrected instructions, as they were all beginning to move around and talk to each other. During the second activity, a member from building maintenance crew interrupted the participants because we mounted posters on the wall, which was not allowed. Even though we used painter’s tape, the official insisted we take the posters down which forced us to create a different solution for the participants to see the posters and provide responses to the prompts. These kinds of disruptions and adjustments shaped how participants engaged in the activity in unforeseen ways.

It is also important to consider the overall socio-political landscape of SDD as an event. First, the general tone and purpose of this professional gathering is celebratory. It is about celebrating achievements and articulating a vision and plans for the upcoming year. Second, it is a disruption in the ordinary course of librarian’s work. For most librarians, this is the only chance to interact with peers from other branches. It’s not only a chance to learn and socialize with other but also, as one librarian told me in a conversation, “it’s a chance to get out,” an opportunity to do something other than working in the library. Given that many of the library workers are compensated on an hourly basis, it’s also important to know that attending SDD is considered as compensated work activity. For some participants being at SDD is just as much about disengaging from their work as it is about engaging with it. Conducting a participatory design activity about the future of a profession in an event that is already celebratory and is focused on disengaging from daily work is likely to frame how participants conceptualize and respond to issues in ways that are not necessarily visible to the researcher.
The socio-politics of the event calls for a closer examination of non-participation and alternative participation that took place during SDD. For example, one unexpected development was that there were several participants (probably 2 or 3) who did not have time to participate in the activity during SDD and asked to take the packet with them. One female librarian told me that she really wanted to spend time with it and think about and asked my permission to take it home and return it to me later. Because of such requests, I asked Tom to make an announcement at the end of the meeting with instructions about where to return the packets if participants wanted to take them home.

The overall celebratory and optimistic nature of SDD is also a reason to be more reflective about and attentive to the nature of participants responses, especially with respect to stories that did not appear or were less visible. As I noted earlier, the participants’ outlook about future scenarios was overwhelmingly positive. However, there were also other voices, albeit less visible and articulate. One such voice emerged in a conversation during Activity 2 with one female librarian, who I had met previously. We were discussing the speculative program for prison inmates, and she expressed some reservations about it. She told me that this program is not for everyone and as a smaller woman, she would not be comfortable working with prisoners on a regular basis. She had some experience in that area and had done programming of this kind. “These are hardened criminals, and you have to really be dedicated to work with them.” Another example of such less visible voices came through the response cards in Activity 2, which was also about the inmate education program. “Stop making librarians be social workers. Hire social workers to do social work.” What is notable about this response is not just its firmness, but also the fact that it was the only response that pushed against a proposed future. Another example of a topic
and a set of concerns that were not reflected in any of the stories about the future was librarian safety. This was a topic that was brought up during public meetings. In some of the smaller libraries, librarians expressed concern about the placement of the back door emergency exit, in case of a shooting or other violence. During the interviews, some librarians also shared stories of routine sexual harassment that they have to endure from customers. Librarian safety was also one of the topics during SDD 2019 in the form of an “active shooter” training session, led by a local police officer. Even though librarian safety was a common topic of conversation among librarians, participants did not bring it up or engage with it as part of the activity.

Mazé argued that because the very act of asking “how things might be different” raises political questions design researchers must rethink their own will for influence and power over the future (Mazé, 2016). In the context of SDD 2019, we can recognize the political dimensions of future making by the way the event itself is organized and delivered, how the agenda is set, and who does the work. These decisions are largely determined through a top-down, management-led approach. It would be tempting to assume that a generative and participatory future-making workshop, like the one I conducted, can disrupt or break away from these conditions or at least offer an alternative. However, the examples of alternative participation, non-participation, and invisible stories that I have presented suggest that the concept of a participatory futures and design as an “intervention” can overlook the socio-politics of the setting in which the engagement takes place. First, the design-interventionist conception of future making can overlook class hierarchies that already exist in a community (Fox et al., 2020). The mere fact that I worked with library administrators to influence the agenda of SDD 2019 implies that I served, at least in part,
the interests of existing power hierarchies. Another perspective one needs to avoid glossing over is the positionality of the design researcher and the influence it has on the design process. Let us recall that the topic violence and harassment in libraries did not come up in the workshop output, even though the workbook included visual and textual prompts on public safety, not to mention open spaces for librarians to bring up any topics of their choosing. One reason for such overwhelming positivity might be that the general mood and setting of SDD 2019 was celebratory and optimistic. SDD is about planning for a new and exciting future and coming together as an organization. But another, equally plausible reason might be that I, as a researcher, did not draw attention to it in the design of the activities. Drawing attention to controversial or troubling topics like librarian safety and harassment in a public setting could have strained my relationship with FCLS administration at a time when our collaboration was still forming. I might have asked the participants explicitly to design artifacts and stories that reflect undesirable futures, which is what most futures methods ask participants to do. But that would require a level of trust between me and FCLS that I did not yet have. This is evidenced by the fact that only one librarian with whom I established trust, was comfortable enough to tell me about the pitfalls of some of the future programs, and even then, she did that verbally and personally to me. Thus, as a researcher and collaborator, I not only needed to collect useful artifacts and feedback, but I also needed to demonstrate a certain usefulness to my collaborators at FCLS. In other words, the development of the intervention method was also subject to my own institutional commitments and infrastructural relations. We can also unpack this observation through the notion of Deweyan publics, which are constituted through attachments of various actors to issues (Dewey, 1954). If these attachments are to act as
sources and resources for public involvement in controversy, as Marres has argued (Marres, 2007), then it becomes crucial to account for how the researcher herself becomes part of the attachment and how it influences what controversies become visible or invisible. Furthermore, this reflexivity around attachments needs to apply beyond the design intervention itself, because attachments begin to form prior to the intervention in ways that the designer may not be aware of. In designing the participatory futures workshop, I attempted to draw together issues of technology, public service, civic engagement, and the work of librarians. I approached this by designing an open-ended generative activity that would help me tease out some of the key themes and tensions about how this community navigates and thinks about the future, in a very limited yet large-scale setting, and also to develop a deeper relationship with FCLS that would allow me to examine issues of longer-term systemic change. But in taking the opportunity to do this work as part of SDD 2019, I also formed an attachment between myself, my research and FCLS administration in a way that prioritized some controversies over others.

One might argue that all design, especially socially engaged and participatory, is accountable to the institutions, stakeholders, and infrastructural resources with which they are working. What I hope to have shown in addition is how temporality can be shaped infrastructurally and that designers who seek to intervene in these temporalities, specifically futures, can be shaped by infrastructures as well. The extent of generativity, creativity, and inclusivity of designerly interventions are circumscribed by the socio-materiality of the setting itself and the positionality of the designer. These socio-material relations shape the method of intervention in subtle ways beyond the act of intervention itself. After all, interventions themselves can be moments of privilege (Bødker et al., 2017)
that circumscribe some futures while opening others. It is indeed important to be reflective about what futures were produced by the designerly intervention and its participants. Much of future-oriented design research is focused on generating and studying these outcomes and making claims about their impact. But it can be equally productive to examine what futures didn’t emerge and what infrastructural conditions may have led to that. This reflection can help provide a fuller account of how futures come to be and help recognize alternative futures that are more difficult to capture through designerly interventions.

To sum up, in this chapter, I argued that futures are shaped infrastructurally and, because of that, futures-oriented designerly interventions are also shaped by infrastructural conditions. Therefore, the design intervention is not only an opportunity for the designer and the participant to generate alternative futures, but also to understand and articulate futures that are already being shaped. Furthermore, the intervention is an opportunity to articulate the socio-material limitations of the designer and the participants to influence these futures. These arguments and implications help us begin answering RQ3: What can infrastructures and infrastructuring in libraries tell us about the politics and experience of futures? Infrastructures can help us locate and articulate futures that are already there. What I am referring are the infrastructural arrangements and the invisible work that maintains current future visions about the library and, at the same time, create possibilities for alternative futures to emerge. In the case of SDD, I accomplished this by means of a designerly intervention which I used to examine socio-material relations that influence on how images of the futures are shaped. However, a design intervention is not the only, and certainly not the most comprehensive way to do that. The SDD project was revealing and insightful in locating infrastructural dimensions of futures in a public and communal setting.
of library professionals. This is an important element in understanding the politics futures and participation in it. However, this intervention was less effective in engaging with the everyday and more private experience of futures by librarians. That is what I turn to in the next chapter.
CHAPTER 5. THE MOBILE SEED LIBRARY

In the previous chapter, I described how designerly interventions for participatory future-making are shaped by infrastructures to support a broader argument about socio-materiality of futures. In this chapter, I will continue advancing this argument but from a different perspective and scale: the everyday experience and work of librarians. My main claim in this chapter is that librarians create alternative futures by routinely engaging with and responding to socio-material conditions of contemporary librarianship. To support this claim, I will use qualitative data from the Mobile Seed Library project.

This project emerged as a result of FCLS’ emphasis on expanding library services within and outside the library. Unlike the participatory workshop at SDD 2019, where library futures were explored in the form of an intervention, the Mobile Seed Library is one particular future that emerged from more local and less visible work of librarians. First, I will describe how librarians drew together people, places, and resources in this project and how I participated in that process. Next, using my experience as a researcher, participant-observer, and designer, I will illustrate how futures are negotiated infrastructurally at multiple levels of scale. As evidence I will use my participation in a variety of design and other collaborative activities with FCLS librarians. Furthermore, I will use my observations from an infrastructural breakdown, caused by the COVID-19 pandemic, to draw insights about library futures at various scales. Based on this evidence, I will articulate relationships between the emergence of futures, infrastructures, and the agency of librarians in shaping those futures.
5.1 Outreach Committee

At the end of my project at SDD 2019, I was walking out of the Fulton County government complex carrying my supplies and worksheets. I noticed that Oliver, a librarian who I met earlier that year, was also walking out ahead of me. I took the opportunity to ask about the Outreach Committee that I had heard about during some of the presentations. Oliver told me that even though he oversaw outreach activities the Outreach Committee was a more grass roots effort where librarians could make their own decisions about what programs to design. It was a relatively new idea and it stemmed from the fact that the centralized outreach department had a different approach and local branch librarians wanted to create their own programs. Oliver said that he let one other outreach librarian just run with the program and make their own decisions on how and what to develop. He introduced me to one of the lead members of the Outreach Committee, Erin. The Outreach committee met once a month in one of the branch libraries. After Oliver’s introduction, I had a phone conversation with one key member of the committee to find out when the next meeting would take place and how it is organized. I offered my help to get involved and by that time, many of the librarians already knew me from the previous events and had an idea the kind of research I was working on. I learned that the committee had already met at least one time before and explored several topics and projects that they could pursue. The next time I attended the meeting, I chose to join one of the teams which had decided to work on the Seed Library Program. In other words, teams formed based on what project they wanted to work on.
We broke into groups and started our first team planning meeting. Our team consisted of seven people, excluding me; two male and five female librarians. Each of us introduced ourselves and shared what they wanted to accomplish with the project and why they joined it. There were two members of the team who misunderstood the “seed program” to mean “seed funding,” but after learning what the program was about, they decided to stay with it. I offered a few of my skills including project management, design, and facilitation. I also notified the team members that I would be conducting research during the project and would bring consent forms for them to sign at the next meeting if they agreed to it. I explained that participating in the research was optional. Other team members also shared their goals and expectations from this project. One team member shared how she wanted to promote native plant life or make a garden. Another team member was interested in providing access to people who don’t have experience with growing food. Erin was interested in the idea of a Seed Trunk, that one team member proposed. The team members also existing mentioned resources and connections that could be useful to the project. One librarian knew a master gardener who could provide useful information. Another librarian had friends who worked in urban farming.

In preparation for this first team meeting, I conducted some background research about seed libraries. I found ideas of interesting interactions such as a traveling suitcase, as well as projects related to seed exchanges and distribution that were done by other libraries. I created and printed a short PowerPoint presentation, which I brought to the committee meeting. The team members built on these examples and offered other ideas such as partnering with a local beekeepers’ association and compiling individual stories from participants at the end of the year. At the end of the meeting, the team members shared how
much time each of us could dedicate to the project. It became clear that the level of commitment varied greatly from two hours a week to a lot more flexibility. This depended not only on how much time each librarian had at that point in time, but also what kinds of relationships they had with their supervisors (i.e. branch managers). We also talked about the best way to communicate with each other and share information between the monthly meetings. We discussed the possibility of meeting between the monthly meetings to make progress on certain aspects of the projects (logistics, prototyping etc.)

5.2 Participatory Design Workshop

Having assigned roles and responsibilities at the first meeting, we began working on various parts of the project. I continued conducting secondary research to collect information about seed libraries. I found and joined an online Seed Library forum and collected examples of seed exchange stations, boxes, and other design solutions that other librarians have tried. I also began developing a design workshop that we would conduct during the next meeting. Since I only had four weeks to prepare, I created a simple design game that would encourage the participant to think about the seed libraries in different ways and generate ideas about what the program could do, what form it would take, and how we would deploy it. It was a card game that could be played by two or three people to prompt ideas about a seed library and a theme. The card deck consisted of two types of cards, blue and orange. The orange cards contained “Why” prompts, which contained different reasons for why one would design a seed library program. The blue cards contained “How” prompts, which explained different physical or logistical aspects of how
the program would be deployed. Participants worked in teams and randomly drew an orange and blue card which they used to develop a concept for the seed library program.

![Image of participants interacting with card prompts](image)

**Figure 11. Participants Interacting with the Card Prompts**

In addition to the Outreach Committee team members, there were two guest participants from outside of the library. One of the librarian’s personal friends worked on a local farm. She invited them to join our workshop and share their expertise about saving seeds. The two farmers also participated in the design workshop. The participants created 17 different concepts by using the prompt cards. After teams shared their concepts, we reviewed all the cards again to make sure no theme was omitted. Next, I asked the participants to create physical models of what the seed library program might look like and demonstrate how it would work by enacting an interaction between a librarian and a patron. These concepts included a rock garden, a seed garden starter pack, and a system that engages participants to share stories about their gardening experience on social media/
Figure 12. (a)-(c) Seed Exchange Kit Prototypes

After completing the design activity, participants reflected on what they did and shared different implications and challenges of how we might design the program for FCLS. These included:

- Whether to give away the seeds or have the patrons return seeds at the end of the season (either surplus, or a new batch of seeds)
- Issues of possible-cross pollination when different varieties of the same species are grown on a garden plot. The farmer participant explained that seed pollination could be very intricate depending on the type of plant
- Seed preservation and refrigeration needs on library premises
- Sources for seed acquisition including local grants, local farmers, and other organizations.
- Possibility of adding digital components/interactions to the system and challenges of maintaining the technology required to do that.

One of the group members, Erin, shared a new development. She received feedback from managers of libraries where each of the team members worked. It turned out that managers were against their employees meeting for this project more than once a month. Erin had gotten this feedback directly from other managers. However, they were not against us meeting for longer periods of time during the monthly meeting. This was a significant limitation for the project team because it meant that we could only collaborate in person once a month. To alleviate that, we discussed how we might collaborate remotely and what the team members’ preference would be. The group decided that Basecamp would be the best option because coordinating a live call would be too difficult given everyone’s daily schedules and responsibilities at the local libraries.

Because of this change, I had to adjust how I engaged with the team, specifically with Erin and with the sub-group responsible for the design of the seed sharing station. This was the first instance when I observed the politics of participation in the Outreach Committee and how it influenced the operation of the project. I had to become more attuned to these dynamics as an outsider, a researcher, and the primary facilitator of the design activities. Another important observation during this stage of the project was the fact that Erin was relatively new to her role. She did not have much experience as an outreach librarian or as leader of a team. I noticed this not only in her communication style but also in the way she was leading the project with a somewhat timid style, deference to the team members, and a general uncertainty about what to do next.
5.3 Prototyping the Seed Library

As the seed library project progressed, I started focusing more on design. I partnered with two other librarians on the team who were interested in this aspect of the project. In the following weeks, I collected secondary data about seed library programs. I found that such programs were very popular in local libraries and there were many kinds of designs of stations. I also found an online forum called UpBeet! ("Up Beet! Seed Libraries Forum," 2020) that was specifically about seed libraries. It was managed by a woman from Northern California, a school teacher and gardener who operates a small seed library and teaches workshops on gardening and seed preservation. I joined this online community to learn more about the issues and challenges they face. I also posted a request to share different designs for seed sharing and swapping stations.

(a)

(b)
In my research, I came across one simple design for the seed sharing station developed by Eating in Public, founded by Gaye Chan, an artist and researcher based in Hawaii ("Eating In Public," 2021). It was deployed at one of the local libraries and in other locations around the Island of Oahu. One of the appeals of this design was its simplicity and the fact that the designer included dimensions and instructions on how to assemble them. The author had a Facebook page that included pictures of craft parties where groups of people fabricated a large amount of these boxes to be given away and installed in different communities.
I shared this design with the team as a possible option and offered to create a custom FCLS logo for it. During one of the meetings the group selected a name for this program, Mobile Seed Library. Since I already had the design guidelines and fonts from the marketing department (which I had used to design the program brochure for SDD 2019), I was able to quickly design a logo for the seed station. One of the factors that team had to consider is that the seed library program had to be a kind of an outreach program. That is, the program could not just be permanently housed in one of the libraries. It had to be mobile and easily transported from one location to another. This is something Erin brought up during one of our monthly meetings as the group discussed options for the form factor of the seed library. In other words, Erin had her own expectations about what it would take for the program to succeed that was not obvious or transparent to other members of the
group. In fact, as I found out later, each member had their own unique set of motivations to join this group and continue working on the project despite the constraints and difficulties. In this project, these motivations were negotiated during the monthly meetings in an ad-hoc and collaborative manner as they became more evident and demanded attention.

As the project progressed the group continued to identify new and existing resources and relationships to develop the program. During the same meeting in which we discussed the form factor of the seed library program, Erin revealed that the outreach department had large transportable boxes called Pelican Cases, that had been donated by the Georgia Public Library Service, a statewide library advocacy and administrative organization. It was not clear how or why these cases were available, but it was an opportunity for us to use existing material for the program, particularly because there was no budget. One of the most important questions about the program was where we could acquire seeds. One team member suggested applying for local grants to acquire seeds. This team member was interested in developing grant writing skills during the project. Another team member who already had experience writing grants offered to help. Another team member suggested that friends groups at individual libraries could fund the acquisition of seeds, but they could not fund programs that would be held at other libraries. We also discussed the fact that some branches didn’t have friends groups at all so that funding could only be available in limited locations. There were other ideas about how to get seeds including reaching out to local farming communities, master gardener communities and others.
Having divided roles among the team members, I partnered with two librarians, Sheila and Rao, junior librarians (known as associates) from two different branches, to focus on physical prototyping and fabrication. They were interested in physical design and fabrication aspects of the project. Over the next few weeks, we collaborated on the design and fabrication. Since we were all located at different facilities, we had to coordinate our availability and time to be able to meet in person. I usually played the role of a coordinator, asking the other two librarians for available time and proposing meeting times and places that would work for them. Furthermore, in some cases, one or the other couldn’t participate in the meeting so I would be the only person in the group who would attend the meetings and maintain continuity.

The first object we focused on were the Pelican Cases. Rao and I met at one of the branch libraries where Rao was working temporarily due to the fact that his library had been closed for renovation. We asked Erin to drop off the Pelican Cases at that branch so that Rao and I could work on them. Sheila could not make it to that working session so the two of us continued without her and agreed to share our notes and pictures in the next monthly meeting. The Pelican Case was very large. Using some scrap material (cardboard boxes, painter tape, etc.) that was available in the branch library, Rao and I assembled a prototype of a display with seeds. We added small shelves to the lid of the box that could be used to display seeds. We also borrowed some flyers and stands from the branch library to show how they could be displayed with the Pelican Case.
Figure 15. Early Design of the Mobile Seed Sharing Station

Throughout the activity, I was taking notes and pictures of the activity so that we could share them with the rest of the group through Basecamp. I also took the improvised shelves we had made from cardboard so that I could use it as a guide to fabricate a sturdier version using Georgia Tech’s woodworking and laser cutting facilities.

We continued to explore other design concepts for the seed library. One constraint was that we only had one Pelican Case available to use. Another one was the fact that the Pelican Case was quite large and not easy to transport and deploy. We needed another solution that could work in conjunction with the case. I continued to collaborate with Sheila and Rao on the design and we decided to try to make a seed library based on the design from Nomool.com that I had found previously. Sheila was enthusiastic about that idea and offered to meet at her home, because she had some woodworking tools available.
for us to use. I found some scrap wood on Georgia Tech’s woodworking workshop and purchased more at a local construction material reclamation center. Since Sheila couldn’t meet during her work time, we met on the weekends for a few hours at a time. For Sheila, this work was outside of her normal hours and would not be compensated or counted. She later told me that her supervisor was not happy about her participating in the committee and using her time to do this work. However, Sheila was committed to the project and the seed library, and was personally invested in the success of the project. As I found out later, it was she who proposed the idea to the Outreach Committee, even before my involvement.

Figure 16. Fabricating the Seed Library from Scrap Wood
We made our first seed library station after just two meetings. During this time, we also settled on the official name for the program which the team decided to call Mobile Seed Library. After we assembled the first unit, I laser cut the FCLS logo and the new name for the program which we planned to glue to the back of the unit.

During this portion of the project, the engagement and participation of the team members fluctuated based on their circumstances. Rao was initially excited about making the seed library together, but after the first prototyping session with the Pelican Case, he was unable to participate in other meetings. As I was preparing to meet with Sheila, I could not reach him at all. One day, I saw that he was active on Basecamp, the software FCLS used to maintain team communication, and I emailed him again which prompted him to respond. He told us that his car had broken down and he had other projects that he had to work on during the weekends which is why he couldn’t meet. He was very apologetic for
not being able to contribute as much as he initially promised and planned. Sheila’s participation also fluctuated. First, there was a family emergency during which she could not participate. Second, at one point in the project we were notified by the administration that the whole library project was put on hold. Sheila contacted me by text message informing me about this and we arranged a phone call for later that day to discuss what had happened. It turned out that it was not the entire project but rather the grant writing element of it. In other words, the library administration had limited who could participate in grant writing and put an indefinite hold on existing grant writing projects. It was not clear to me who had made the decision or how it was made but we needed to adjust our plans of how we could continue with the project with no other external financing. This was also a time where I began questioning how much support this project really had and whether it was even possible to accomplish. Part of the reason was the recent leadership change. The previous director empowered librarians to design new programs and act independently. I did not yet know what the policy of the new director would be, but this was an early indication that expectations and support for the project were changing. This conversation highlighted how much of this inventive work was not entirely legitimate and precarious in the sense that the workers who try to create new programs and systems are met with resistance and are sanctioned in formal and informal ways. Creating programs like this is a matter of personal and professional challenge and risk. They are unique to each librarian’s position in the organization and are difficult to recognize in official and public settings such as SDD, which I described in the previous chapter.

Throughout the project, this sense of uncertainty persisted. All members of the team worked on this project in their free time, around the edges and in some cases against the
wishes of their superiors. The central administration was interested in librarians engaging in inventive practices and programs, but this often clashed with the daily reality of individual librarians who had unique and situated constraints and conditions within which they had to work.

5.4 Meeting with the Director of Urban Agriculture

Between the monthly meetings with the Mobile Seed Library team, I continued to conduct background research and attended other meetings with FCLS that weren’t directly related to the project. Some of these meetings were opportunistic and unplanned. For example, when the director announced his/her departure from the library, there was a farewell party at one of the branch libraries. I attended the party which gave me an opportunity to meet other librarians I had not met before. Other times, these meetings were more targeted and intentional, for example the library administration had a monthly meeting during which they shared major updates on the construction and other projects. During one of such meetings, I presented my research activities including the ongoing Mobile Seed Library project. It was during one such meeting that Alice, the outreach librarian with whom I have interacted before, informed me that she knows the Director of Urban Agriculture with the City of Atlanta, and offered to introduce me and Erin to them. She also mentioned that such a program had been attempted before and that the Director of Urban Agriculture might know about it. Over the next few days, Alice made an introduction to me and Erin by e-mail and we arranged a meeting.

We met the Miguel (name anonymized), the Director of Urban Agriculture, at his office at the City of Atlanta government building. In our conversation, he shared the details
of the prior incarnation of this program which were new not only to me but also Erin. It
turned out, that the program was not just a concept. In fact, the previous librarians who
worked on the project had collaborated with Miguel to produce seed packets, a logo, a
promotional video, and other material. The reason this program was initiated, as Miguel
explained, was that it was part of a sustainability initiative launched by Atlanta’s previous
mayor and because constituents had asked for it. There was a need to access seeds and they
looked for different partners to launch this program. In addition, Miguel shared that the
current mayor had set a goal of providing access to fresh food to at least 85% of the
residents by 2022. Public library was the most aligned with the City’s mission of local
sustainability which led to the partnership. There were also other initiatives that were
aligned to urban sustainability. One of them was declaring Atlanta as a “Bee City,” which
meant that the city would dedicate resources and programming to support local bee and
pollinator populations. There were other programs related to local food production
including community gardens, farmers markets and an annual sustainability conference.
Miguel expressed willingness to share resources to support this project including help
secure seeds. He made it clear that the project was very important to him personally,
because of the potential impact it could make on the community. He also suggested other
potential partner organizations that could be interested in this project. At the same time
Miguel suggested that there are limitations to how his office could support the program.
For example, they could not support individual libraries, but rather the seed library program
as a whole. On the other hand, since our program was being developed at a grassroots level,
it could only be designed and launched by librarians for specific branches. When this
apparent misalignment of scope and the level of support that Miguel was willing to provide
became evident, we did not have to resolve it immediately. Instead, it was something that Erin and I had to take note of to share with the team and find ways to modify the program so that we could take advantage of the support that was being offered. In other words, we needed to align the design of the program to the resources that were available to us and negotiate the different institutional goals of FCLS and the City of Atlanta. As we will discuss in the next chapter, negotiating institutional goals and frames, is one of the ways librarians engage in infrastructuring and our interaction with the City of Atlanta is one example of that.

In addition to discussion of the overall program goals and possible ways to collaborate, we discussed the timeline for the program launch. This was an instance where I played a more active role in the conversation by suggesting that we develop a timeline together and use Miguel’s experience in urban agriculture and program management to tell us when we should be launching the program. I offered to facilitate this planning conversation by drawing out a Gantt chart on a white board and asking Miguel to share the dates for key milestones such as press releases, packaging design, and program launch. Although this was not the first time, I was leading a conversation or facilitating an interaction among librarians, this was the first time another city official, outside of the library system, was involved. I needed to be careful not to dominate the design process, but at the same time I was filling a gap in skills or knowledge that I felt the project needed. We were also uncovering information and insights that was new to the entire team. It was a learning process for all of us.
At the same time, as a researcher, I was also trying to define the scope of my research and align my own timeline and constraints with the program. As I was learning more details about the participants, resources and relationships that shaped the Seed Library program, it shaped possibilities about how I could contribute to the project and what research questions I could ask. This was not a completely transparent or linear process. The project unfolded in unpredictable ways and with every milestone, new insight or new relationships, the parameters of my participation changed. As was the case with SDD, while I was co-designing the project with the librarians, I was also designing my own research agenda as a graduate student. This required a constant negotiation and rebalancing of my role in the project. In some instances, I needed to be more assertive in leading a conversation or extract more clarity in the project (e.g. the timeline conversation with Miguel). Other times, I needed to be more passive and focus more on listening and observing. My role was also influenced by how close my relationship was with individual participants. I spent a lot more time with some of them than the others and conversations with people with whom I developed a closer relationship tended to be deeper, more open and provided deeper insight into what was going on the project and the wider context of the Outreach Committee.

5.5 Planning for the Launch

During a planning call with the members of the Mobile Seed Library project, Rao expressed interest in organizing the launch of the program at his local branch. He also wanted to host a farmers market as part of the launch. Over the next few weeks, as we worked to design and fabricate the seed library stations, Rao worked with the branch
manager to secure necessary approvals and started reaching out to different contacts to organize the farmers market, which we planned to do in March of 2020. This date was based on a combination of factors including how much time the team members had to work on the project, our secondary research about the growing season in the Atlanta area, and other logistical considerations. Another consideration was availability of space. Rao worked in a branch that had plenty of space outside of the building and sufficient parking space for visitors. He also worked at a branch where the manager was supportive of the project and offered help if needed. Just like with the rest of the seed library project, the plans for the launch of the program coalesced as a result of one librarian’s personal interest and initiative along with institutional relationships and support mechanisms that were available at that particular time. These mechanisms seemed to always be in a fragile state which made the day-to-day work feel unpredictable and risky. At each stage of the project, progress and success hinged on availability of any one team member, which were contingent not only on their supervisors’ approval but also on their personal circumstances. Rao’s availability changed later as his personal circumstances changed. Sheila’s engagement has also evolved due to the changing circumstances of the project, when she could no longer work on writing the grant.

5.6 COVID-19 and the Aftermath

In March of 2020, the COVID-19 pandemic has reached the U.S. and many public places of business, government offices began to close. At the time, closures seemed to be indefinite. Very little was known about the virus and how it worked. Out of an abundance of caution, public institutions and business decided to close. FCLS closed during the week
of March 15, 2020, as the State of Georgia declared a public health emergency. The Mobile Seed Library project, and many other projects, were put on indefinite hold. In the subsequent weeks, my relationship to FCLS changed to a point that I was no longer able to conduct any research activities or collaborations.

Initially, there was a lot of uncertainty around what work librarians would continue to do and how they would continue to serve the community. Since I was outside of the organization, I was not privy to any discussions or plans about how FCLS would continue to operate. I reached out so some of my contacts in the organization to see what I could do to help or get involved. One of the first things many libraries, including FCLS, started doing was “streaming story times”, which was an adaptation of traditional story time programs broadcast over social media. Much of this work fell on the outreach department who were already doing this kind of work for different audiences. Weeks earlier, Erin had asked me to participate in a Facebook story time to read to children. I had agreed but we never scheduled time to do that. I had offered this to my contact at the library along with any assistance with digital technology that they may need to set up equipment.

One of the ideas I discussed with my contact at the library is collecting stories and practices relating to COVID-19 and libraries. This idea came to me as the librarian described some of the stories he was hearing and reading in e-mail distribution lists and forums he was a part of. For example, some libraries made sure to leave their Wi-Fi signals on or even extended their signals so that they could be accessible from parking lots even if the library itself was closed. I suggested that it might be useful to start documenting these examples. This was not a planned research activity, but a way to start engaging with the
community and find ways to participate. I composed a message and my contact agreed to send it to e-mail lists.

Dear public library professionals. I am a PhD student at Georgia Tech. For the past 2 years, I have been studying how public libraries do their work and meet the needs of their communities. During the COVID-19 pandemic, many institutions, including public libraries, are closed. However, I know that the work of public libraries is still ongoing. I am in the process of collecting stories, examples, cases of how public library workers are coping with this new reality. Specifically, I am looking for examples of public libraries trying new things/solutions/services to help their communities and each other. These can be scaled and sustained projects like streaming story times on Facebook, or one-off experiments addressing a need of just person in the community. Furthermore, these examples don't have to be success stories. You can share stories of what you tried to do but couldn't (or you failed), because of technical, administrative or any other reason. My goal is to document and analyze all the different ways public libraries are mobilizing during a crisis. It's important to document these stories in real time so we can appreciate the value of public libraries in new ways and communicate it to the public. Please feel free to contact me at xxx@gatech.edu or post responses here. If you're willing to speak with me about your experience, please include your contacts as well.

I also asked my contact to post a similar message on FCLS Basecamp. As I would find out later, this action led to an eventual termination of my relationship with FCLS. Almost, immediately after posting the message, I received an e-mail from the FCLS director, which included a forwarded message, an announcement to everyone in the FLCS
library, instructing to not to participate in this request and that any such request should be pre-approved by library management.

While this was a significant disruption to my research project and my relationship with the organization. The extent of the disruption to the lives of the librarians was even more serious. I was not able to conduct any more formal interviews. All I could do, was gather data through informal conversations and secondary research. After the initial lockdown, libraries throughout the country closed physical premises and gradually started implementing alternative programs. However, who gets to participate in delivering these programs became both an obligation and a privilege. It was an obligation because librarians needed to solve the technical and logistical challenge of designing programs and making them available, either online or safely in person. In the first weeks of the pandemic-related closures, it was not clear what procedures were or weren’t safe so delivering programs that involved physical contact carried a lot of risks and uncertainty. At the same time, delivering programs remotely required a certain level of training and in some cases qualifications and title. For example, through informal conversations I found that FCLS library workers below a certain grade, including some from the Mobile Seed Library project, were furloughed without pay. Thus, continuing to work on certain kinds of programs became a privilege that was distributed based on professional gradation, which itself heavily depended on other infrastructural barriers such as credentialing. For example, to hold the title of a librarian, one has to hold a master’s degree in Library Information Science, a privilege that isn’t easily or equally attainable, and carries a significant economic cost in the U.S.
After the initial “cut-off”, we tried to re-engage with the library leadership and propose several options for continuing the Mobile Seed Library. At first, it appeared that the leadership was amenable to try the program in a new format. However, we were later notified that the library could not support the program.

Between the beginning of the pandemic closures and the final determination that the Mobile Seed Library project could no longer be offered, there was a period of uncertainty where multiple outcomes could be possible, including a possibility of some librarians who were ready to continue with the project outside of FCLS, just as a hobby or a volunteering activity. The final outcome, a kind of a future, coalesced as a result of socio-technical arrangements in this particular library with this particular group of people. In other words, it wasn’t simply because it was objectively impossible or improbable. It was a result of particular socio-technical and socio-political arrangements in this community. As I will show in the next section, other libraries and librarians shaped the future of their seed programs in different directions to adapt to COVID-19 conditions.

5.7 Scales of Futures and Agency in Infrastructures

The Mobile Seed Library project shows how alternative futures are shaped by librarians. In comparison to how these processes came into play in SDD 2019 the Mobile Seed Library project highlights a striking contrast. First, the project is at a much smaller scale, both in terms of how many people were involved in it, and how it fits into some of the grand narratives about the future that I was beginning to see in this community. One of such narratives, which I will describe in Chapter 6, was about how the variety of services at FCLS will continue to expand. While the project is part of this broader narrative, the
Seed Library Project team did not seem to consider it as such. On the contrary, the project is much more tentative and contingent. One might recognize this project simply as design, although libraries rarely call it that and do not necessarily follow a pre-established or recognizable process. Another distinction with SDD 2019 is that the Seed Library Project did not happen as an event or an intervention. Its emergence and development were more drawn out, and less visible or visible only to a very small group of librarians who were part of the Outreach Committee. One member of this committee suggested the idea based on her own interest in the topic, and a team of other librarians formed around that idea to try to bring it to life. This kind of everyday and routine infrastructuring (Semaan, 2019), can help us recognize and appreciate that futures can emerge socio-materially at multiple levels of scale. Furthermore, they emerge in ways that cannot be easily described as a conventional narrative, because infrastructures consist of a web of relations, rather than a sequence of events. It is certainly significant that a single member of the Outreach Committee was the first to suggest the idea of a seed library, which then was taken up by the rest of the group as a project. But what may be more significant to understanding how futures are shaped by infrastructures, is the socio-material position of that librarian at the time and place when she proposed it.

There are also some similarities between the Mobile Seed Library project and SDD 2019, specifically in how infrastructures shaped futures. First, the very existence of both projects relied on a particular arrangement of bodies of librarians. The librarians had to come together for the project to emerge, but their socio-material position within the library system allowed it to happen only in a certain way. For example, librarians’ working schedule did not allow the group to meet outside of the sanctioned monthly Outreach
Committee meetings. Even when we did meet in person, it was in different locations for
two hours at a time. The teams had to bring all the working material and take it with them
after the meeting was over. In other words, the emergence of this future was completely
distributed among the people, places, and time. While the Outreach Committee was an
official initiative authorized and supported by the library administration, it operated more
akin to a grassroots organization, whose activities were not always clearly legitimate (Asad
& Le Dantec, 2015a) Each librarian volunteered to participate in the Outreach Committee
and had to negotiate her own unique socio-material arrangement and position it. Some
librarians could easily find time and permission from their local branch manager to attend
these meetings. For others, it was more difficult. They may have a supervisor who is not
as amenable and for whom the Outreach Committee has little value or meaning. Or they
may simply be based in a branch library located on the periphery, furthest from where the
Outreach Committee meets, making the commute more difficult. When one team member’s
car broke down, he simply could not participate in the project for several weeks. Thus, the
outreach committee formed various attachments across issues of concern, both individually
and as a team, to form a very local, situated in some ways temporary publics or, to borrow
a term from Steup et al, tiny publics (Steup et al., 2018). In this case tiny publics have a
potential to grow into larger attachments and issues of broader concern, for example for
the entire FCLS system. But at the level of the Mobile Seed Library project, the publics are
tiny and only transparent and meaningful to the members of the team who create and
navigate these attachments. Furthermore, these publics are stretched over time in a
discontinuous manner. The Mobile Seed Library, just like the Outreach Committee itself,
is constantly in-the-making (Lindström, 2014) as librarians encounter new infrastructural
constraints and opportunities through their work. That is not to say, however, that the Mobile Seed Library project is isolated or insular. In fact, it is very much outward-facing and socio-politically engaged. The seeds themselves are meant to positively influence the local food ecosystem by making it more accessible. Moreover, much of the librarians’ outreach activities that librarians engage in, including computer literacy programs, language classes, go well beyond just providing access to information, and actively engage in socio-political issues in the community, thereby shaping potential solutions to them. I will discuss this further in the next chapter.

Another aspect of infrastructure the Mobile Seed Library project helped illuminate is the institutional and class privileges of the Outreach Committee and the public library as a whole. (Fox et al., 2020) For some librarians it is a way to do more fulfilling and interesting work. For others, especially para-professionals without a graduate degree in LIS, this is an important opportunity to advance one’s career, develop experience and raise one’s profile. These class hierarchies also mobilize and often exploit librarian’s “vocational awe”, the belief that that the work of librarians is inherently good and the way it causes librarians to overlook their own well-being (Ettarh, 2018). Librarians participating in the Mobile Seed Library are willing to go the extra mile to advance the project even if it causes unreasonable burden, uncertainty and even adversity. These dynamics are exacerbated by managerial practices adopted from market logics which are often driven by efficiency and productivity. Even though the library is a community-oriented institution, the workers are assessed, measured, and managed in ways similar to industrial production (e.g. book circulation, program attendance, customer satisfaction etc.) To sum up, class hierarchies shape socio-material relations of librarians which in turn influence their agency over
futures at various scales, both in terms of capacity to think about alternative futures and to shape them.

Finally, while the Mobile Seed Library project showed how library futures can be bound to local infrastructures, the emergence of COVID-19 pandemic showed the limits of librarians’ agency at this scale. The impact of the COVID-19 pandemic is beyond the scope of this thesis. However, the effect of the pandemic was instructive in my engagement with FCLS as a moment of infrastructural breakdown. Few, if any, public institutions were completely isolated from the impact of COVID-19, even at the very beginning of the pandemic. But even in a time of crisis, different futures emerged in different libraries and communities. In FCLS, the Mobile Seed Library project did not get sufficient support due to safety and other concerns. It was no longer part of the officially sanctioned future. In other libraries around the country, seed libraries became even more important (Cardine, 2021), as gardening grew in popularity and as libraries began reinventing how they provide programs to their patrons with minimal contact. For example, some libraries began using take-home kits (including for gardening), online streaming story times, and asynchronous programs, as a way to continue to serve their communities in new ways. While I cannot provide a complete explanation of why FCLS management chose not to continue supporting the Mobile Seed Library, the infrastructural breakdown caused by the COVID-19 pandemic exposed how future-making activities of librarians, meaning creating conditions that are alternative to and distinct from current realities, can be both hampered and amplified in times of crisis.
To sum up, the Mobile Seed Library, this project is a vivid illustration of how futures are negotiated infrastructurally at multiple levels of scale. These observations and insights help us further understand the answer to RQ3: *What can infrastructures and infrastructuring in libraries tell us about the politics and experience of futures?* At the scale of individual librarians working in branches, there is a constant negotiation for alternative futures to emerge within the bounds of officially sanctioned futures and infrastructures. This negotiation involves bodily experiences and position of individual librarians as they mobilize resources, interpersonal and professional relationships, as well as formal and informal networks of expertise to open up small, localized opportunities for alternative futures to arise. At the scale of the entire FCLS system, the city, and public library as an institution, the officially sanctioned futures are enacted through institutional arrangements and class hierarchies. At the same time, these futures are themselves subject to infrastructural conditions, including breakdowns, shocks, and political fluctuations. Between these two levels of scale, the body of an individual librarian and the FCLS as a system, there is a variety of ways futures are shaped, contested and negotiated. The key to understanding them is to locate and describe infrastructuring practices of librarians in all their richness and variety. This is what I turn to in the next chapter.
CHAPTER 6. INFRASTRUCTURING IN PUBLIC LIBRARIES

In the previous two chapters, I used the concept of infrastructuring to explore how futures and their emergence are shaped by socio-material relations on the example of two design projects. Next, to understand how we might design for public librarianship, the central question of my thesis, I will describe infrastructuring practices of librarians in broader terms. To that end, in this chapter, I will shift my focus away from futures and temporality towards infrastructuring in public libraries. I will argue that contemporary librarianship involves a variety of infrastructuring practices, some of which are distinct and unique to this institution. As evidence, I will use data collected from interviews with individual librarians, as well as participant observations from community meetings and my own experience as a library volunteer. First, using this data, I will describe five key themes relating to infrastructuring in public libraries. These themes illuminate (1) how libraries can be sites for political activity and controversies, (2) how collection management influences and reflects community identity, (3) how librarians design programs and services, (4) how library work is entangled with market logics and (5) how library futures are socio-material and are entangled with infrastructures themselves. Using these themes, I will then define two distinct forms of infrastructuring in public libraries: civic and social infrastructuring and infrastructuring publics with and along market logics. (Kozubaev & DiSalvo, 2021a) The five themes and two forms of infrastructuring I describe in this chapter help answer RQ1: What kind of infrastructuring practices do librarians engage in? and RQ2: What can the work of librarians tell us about infrastructuring?
6.1 Research Method

In this section, I will describe three methods used to gather data about the work and everyday experience of librarians. These methods are: participant observations as a library volunteer, participant observations in community meetings and in-depth interviews with FCLS librarians.

6.1.1 Volunteering at a Branch Library

In early 2019, I started volunteering at the Newman (anonymized) branch of FCLS. At this time, many of the library branches were preparing for the upcoming renovations. As a result, in addition to regular duties, librarians were engaged in logistical activities such as de-cluttering, weeding and tagging books with new RFID tags. Tagging was the most labor-intensive project which I spent most of my time helping with that activity. I volunteered once or twice a week for 1-1.5 hours at a time for the period of approximately three months. I also helped with re-shelving books. FCLS has a formal volunteering program. This helped me greatly because there were existing procedures and mechanisms that allowed me to be in the space and interact with librarians on a regular basis. As previously mentioned, to be able to work as a volunteer I had to fill out an application and go through volunteer training. Like many public libraries, FCLS relies on volunteers and their labor is an important part of library operations. Local high school student work as volunteers to complete their social service requirements. Sometimes, non-violent criminals also work in libraries as part of their requirement to complete community service.

I chose the Newman library based on the recommendation from my contact at FCLS. The location was chosen on the size of the branch, where help was needed, and how
convenient and practical it was for me to commute to this library between Georgia Tech campus and where I live. Working at the Newman branch gave me an opportunity to meet and interact with library staff and become familiar with some of the systems, protocols and issues that are relevant to librarians. Figure 18 and Figure 19 below is an example of a cart used to process and tag the books. It was put together by the Newman branch librarians and I had to learn how to use this set up to do the work.

Figure 18. Cart Used to Process Books and Attach RFID Tags
I also observed and had direct experience with how the ongoing renovations are impacting the work of librarians. Volunteering helped me develop rapport with librarians and learn about their language and local practices. This experience would help me explore and develop ideas about what research questions I could pursue.

6.1.2 Community Meetings on Branch Renovations

In the beginning of 2019, the library started the second phase of branch renovations. As part of this process, the management conducted a series of public town hall meetings. During these meetings, the library management, architects and, in some cases, local government officials, unveiled the initial architectural drawings and renderings. Members of the public had a chance to learn how their input, provided in the first set of public hearings a few months earlier, had influenced the design. Although I did not participate in
the initial meetings, which were conducted months prior to this research, I were able to document the issues that were brought up in those meetings. Meeting participants had an opportunity to ask questions and raise concerns. In some cases, as I found later, community members were able to influence the design decisions when they didn’t like them. In total, we attended nine such public meetings. Each meeting lasted approximately 90 minutes and consisted of a presentation projected on a screen (approximately 30 minutes) followed by public discussion. Both members of the public and branch librarians asked questions, because it was usually the first time the branch librarians had had a chance to see the proposed designs. Attendance in meetings ranged from 3-5 people to over 30, depending on the size of the branch library. I took notes and, in some cases, had an opportunity to speak to the architects, patrons and branch librarians about the renovations and any questions that were brought up during the meeting.

Figure 20. Architects Presenting Renovation Plans to the Community at Ponce Library Branch
6.1.3 Qualitative Study: In-Depth Interviews

After the first few engagements with FCLS, I conducted an exploratory qualitative study of the librarians by conducting in-depth interviews. The goal of the interviews was to understand the daily experiences of librarians and identify key themes and issues that could help understand infrastructuring in public libraries. In the spring of 2019, I conducted 18 interviews with employees of the library system. The interviews were voluntary and anonymous. Each interview lasted approximately 60 minutes. The demographic description of participants is presented in the table below. The term staff refers to library workers who are not part of the management. Some of them have the title of librarians (i.e. they have a professional degree) and others don't. Administration includes people who are part of the library management and don't work in individual branches (e.g. IT, marketing, management, etc.), and branch managers, who are part of the management but also have responsibilities in individual branches, including desk duties, shelving, answering patron questions, etc.
The interview guide used for this is presented in Appendix A. In the following sections, I will describe five key themes relating to infrastructuring in public libraries. I will then use these themes to describe infrastructuring activities in public libraries in broader terms and formulate an answer to RQ1: What kind of infrastructuring practices do librarians engage in? While these themes were developed from the interview notes, some of them relate to other experiences and observations that I described in the previous chapters. There are also themes that I had not encountered in SDD 2019 or in the Mobile Seed Library project, because they relate to the more traditional everyday work of librarians today rather than in the future.

6.2 Theme 1. Collection Management as Nurturing and Fostering Community Identity

Managing the library collection is one of the core activities of the profession. In the last decade, few other activities have transformed as significantly as collection
management. Among our participants, there were many experienced librarians who recalled using physical card catalogues and all the labor associated with it. But despite the advances in cataloguing methods and technology, it remains a practice firmly grounded in local context. Furthermore, libraries are still associated with physical books, and both librarians and patrons strongly believe in the value of physical books. As one participant stated “I mean it’s still the only reading device that has its own power source. Encoding is right there on the page. You just need a light source. Unless it’s a Braille book then you don’t even need that. Books are a great piece of technology.” – P3.

For librarians, collection management is a constant negotiation between the constraints of the physical space, available financial resources, and the unique needs of the communities they serve. On the one hand, much of this work is automated and streamlined. The library has recently started using a product called Collections HQ, which claims to predict what books readers will be interested in down to a Zip Code, and automatically order them to that branch. The library director noted that using this data allowed the library to save $600,000 in a single year, by eliminating books that aren’t used, so called “Dead on Arrival”. (Morley, Cooking, & Scott, 2019) For any library system constantly under threat of funding cuts, this is a significant financial advantage. It also frees up librarians’ time from administrative tasks of ordering the books.

On the other hand, for librarians, the process of managing the collection is an inherent part of attending to the unique needs of the communities they serve. This was especially evident given the socio-economic disparities and cultural differences across all the different locations which FCLS serves.
In one branch, which served a predominantly African American and lower socio-economic status (SES) community, a participant told us about the importance of reading literature that is reflective of the community itself. “You’ve got a lot of people [and], they like fiction about themselves. We’ve got a lot of people who check our urban fiction. Um, not so much the bestsellers... They, most of them are familiar with the authors, but um, I also have a list because we would, we did that at one of the branches I was at, we pulled it together. So, we can just give you a list and say, this is a list urban fiction authors that you might want to check. But surprisingly, they already know who they want.” –P7

This illustrates how mainstream reading lists like the New York Times bestsellers, aren’t always sufficient to identify what would be relevant to the audience in a particular community. We heard a similar story in another branch, located in a more affluent and older community. “It's funny because we've had a few author talks and I thought that we would get a better crowd for one of them, because it was a war book and our patrons are interested in history and wars and this and that. Nobody came in! Nobody was interested because it was the Vietnam War. I was like, okay, I'm really didn't anticipate that thought. You know, I didn't think like that. The people who read about World War II [would be interested in the Vietnam War]. But I mean, it kind of makes sense. I mean, they’re such different wars.” –P14.

Branch librarians have a strong sense of responsibility for knowing the community they serve and even a certain sense of pride. As such, centralization and automation of this activity can be met with reluctance and suspicion. “I know that, you know, it is a, a slightly older demographic and a fairly conformist one. But I also know the ages, I know the, the
races, religions, creeds, all of those things here. And not to say that the automated ordering doesn't pay attention to those demographics, but it definitely does it in a colder, more sterile way.” – P10.”

Librarians do appreciate some of the benefits of efficiencies of automated and centralized collection management. What librarians refer to as “weeding”, the identification and discarding of books that are deemed unnecessary or out of date, is a constant and time-consuming maintenance challenge, given the physical constraints of each branch. But they also highlight the limitations of using algorithms. “This [software] kind of takes some of that guesswork out of it, but at the same time... For example, you know, this book about all that Cassini's designed for Jackie Kennedy. I think it's interesting, like it hasn't circulated a long time and you think, well... In two years, do you think it will? Has it not circulated because it's been hidden amongst other garbage? ...so, here's still some questions that you might have about an item that even though the computer's identified it as it should be gotten rid of, you think, well, will Jackie Kennedy's style and the designer ever really go out of style? I mean, should we keep this book?” – P1.

What these examples shows us is that collection management is not just a logistical activity, but a way for the librarians to connect with their community and help the members of the communities perform their identities (McKenzie et al., 2007). Furthermore, books are not just interchangeable consumable objects. Rather, they are situated in a particular place and shape relations among the community members. Therefore, in certain cases, a librarian is in a unique position to ascribe a subjective value of the book in a collection,
based on their own experience and interactions with the members of the community they serve.

6.3 Theme 2: Library as a Site for Political Activity

A public library is not only a site to receive books and services but also a site rich with political activity. Librarians themselves tend to be very politically aware, due to their professional standards and commitment to open access to information and library space. In addition, the different local social networks that the library builds enable different kinds of civic engagement.

6.3.1 Professional Political Awareness

A notable theme in our conversations with the librarians the high level of political engagement. This stems from the commitment of the profession to keep the public space as open and free and a certain egalitarian aspiration. “It makes it kind of an even playing field for people. If you're wealthy [or not wealthy], you can come. – P18”

Some librarians deliberately chose the profession because of their disillusionment with capitalist values or, at the very least, a passion for public service. “The idea that public libraries are holding space for people just to be, for everyone to be in that space just really fit for me. Like politically, you know, the idea that I'm providing accurate information, access to information and public space. I think those two things are, and not to be dramatic, like the foundation of democracy, you know. This is the most radical work I've ever done in my life.” – P9
“It's just the way I have always been. You know, I've never liked capitalism. Don't want no part of it.” – P10.

Librarians are also aware of the influence of privatization and elimination of public space and see their role as defenders of that space. “I think the struggles are going to be defending the physical public space [from privatization]. I think [about] elimination of public space. I mean you've got libraries are being privatized in Florida right now. – P9.”

But it does not mean that librarians are always engaged in direct activism or openly discuss their views with the public. In fact, talking politics can be somewhat of a taboo in daily interactions with patrons. “Um, politics is a no, no, that surfaces a lot, but that's not a good place to go. You don't want to talk about politics but clothes and sports [are acceptable].” – P15. Nevertheless, political awareness and professional standards seems to drive their commitments in their everyday work.

6.3.2 Navigating Controversies

In part because of the political commitment of libraries and librarians, the institution can be a site of controversy both on a national and a local level. For example, the issue of patron privacy has gained prominent attention among librarians. “Public libraries have consistently been a place that protects patron privacy. The American Library Association was the very first organization to come out in opposition to the Patriot Act

3 The Patriot Act (officially, officially the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act) is a law in the U.S. that was enacted after the September 11, 2001 terrorist attacks. It gives broad surveillance powers to domestic law enforcement agencies and is
because they didn't want to turn over patron records." – P9. Libraries have historically been sites for cultural controversy as well. Debates about what literature the public is “supposed to read” and what books to ban, goes back all the way to the beginning of public libraries. Furthermore, cultural debates in the U.S. libraries are intertwined with its racial history and segregation. (Wiegand, 2015) Today, such controversies take new forms. One story we heard from several librarians (which was unfolding at the time of our interviews) was about Drag Queen Story Time. This is a program where a performer, usually dressed in drag, reads a book to a group of children. It is a variation of a common program called Story Time, usually performed by a children’s librarian. A local performer was scheduled to deliver this program in one of the branches, was unexpectedly cancelled, reportedly due to the involvement of county management (Sturgeon, 2019). After public outpouring of support, the program was put back on the calendar as a private event (libraries have reservable spaces for the public), but not as an official program offered by the library. Even then, local reports suggested that the event was met with some hostility. Eventually, the city mayor got involved in the controversy and showed support by inviting the performer to do a story hour in the City Hall (Evans, 2019) This example highlights not only how librarians can get involved in controversies, but also how they can be unequipped to deal with them. “If you've heard about recently the Drag Queen Story Time debacle at [anonymized location]. That had nothing to do with the library. That was the county that was pure politics. The library's getting blamed. The library's getting bad PR [and] the

often criticized by civil society as too intrusive and easy to abuse without any checks and balances. (US Department of Justice, n.d.)
library cannot defend itself. Because of a politician.” – P14 The fact that this librarian refers to this incident as “pure politics” is also illustrative of the fact that librarians see themselves outside of politics and, in some ways neutral, even though the institutional position and their daily engagements can be inherently political.

6.3.3 Volunteering and Organizing

Another kind of political activity that takes place in the library is through the ‘friends of the library groups’ organizations (commonly referred to as “friends groups”). A friends group is a loosely affiliated group of people who volunteer for the benefit of the library. It can be either an informal group or a separate legal entity such as a non-profit organization. The most common activity for friends’ groups we observed is to conduct regular book sales for fundraising. The group collects books (both discarded by the library or donated by the community) and holds books sales, usually onsite. The friends group is an important source of community support and funding. Since they are volunteers and the funds they raise are not tied to the local county or city budget, they can support library needs in a more flexible way. In one branch, a friends group funded a shadow puppet performer for the entire summer to provide programming for children’s summer reading activities. Other examples include a group funding a self-checkout machine to make it easier for the librarians to serve patrons and funding the librarians’ attendance to professional conferences.

Friends groups also highlight some of the socio-economic disparities we observed across the communities. “I think that is very dependent on the branch. So like this one has a lot of people that, that come in every week to help sort through books and to, to do things
with that. Um, some of them don't have friends groups at all. Some of them have friends groups, but they're not very active. So, it really just depends on who your members are.” – P16. Thus, socio-economic hierarchies translate into class hierarchies within library infrastructures, where additional resources and support are available to some librarians but not others, depending on what branch library they happen to be staffed to.

It's worth noting that the physical infrastructure of the library is also used for other public purposes of local and national importance. For example, the volunteering program helps high school students earn credit as part of their community service requirement. In some cases, convicted criminals (usually of non-violent crimes) serve part or all of their sentence as community service in libraries. One librarian noted that those volunteers can be especially valuable because they are educated and motivated to do a good job as part of their sentence. In addition, library branches often participate in elections both as polling places and as voter registration stations. They are also crucial in administering and supporting the U.S. Census (the next one being in 2020 at the time of this analysis).

6.4 Theme 3: Beyond Books: Programs and Services

This theme pertains to the growing importance of programs and services in librarians’ day-to-day work and the various entanglements this work creates for librarians and the communities they serve.

6.4.1 Programming

One of the most diverse and creative set of activities we observed is programming, which refers to different services, activities and events that librarians organize or facilitate,
outside of providing access to materials (physical or digital). Programming activities also reflect the expanding and diversifying role of the public library in their communities. Library programming expands uses of the physical space through a variety of activities such as community gatherings, dance classes, STEM clubs, puppet performances, art installations and many others. The Mobile Seed Library, discussed in Chapter 5, is one example of how such programs emerge and what they require from librarians. Programming also forces librarians to be very attuned to the needs of the community and their technological and information resources. Librarians mentioned how in affluent neighborhoods computers are used very rarely since most people have access to their own devices and know how to use them. “We have programs like how to make digital movies for teens using their cell phones. Cause I mean, you shoot 4K on your cell phone. There's movies in theaters now made just like that. We can see that. We know that this will play to this demographic. All of these kids have expensive phones. Bring them in, teach them to make movies, doing something good.” – P10

In lower SES communities, technological access and literacy are in much bigger demand, which librarians recognize and address. The predominant age, ethnic and cultural mix if the neighborhood also shapes what programs will be successful.

“Here when we do something, say estate planning, because we have a lot of older folks here that we know that that's going to work for them” – P10.

“Then with the programs that we plan can be kind of eclectic... we have a Ukulele club, you know, we have, we will talk about, we have death cafes, we have, you know, Drag Queen Story Time. These are all things that I don't think could really exist in any other
branch because the community here is just sort of used to unusual and patient with each other.” – P1.

What is noteworthy about programming is that it consists of continuous and creative activities that require public librarians to recognize needs and opportunities. “I mean we think, we try to think of everything. Like, I don't mean to like brag, but like if, if you have an idea a librarian has also had that idea and probably tried it”. – P13.

“I will do a lot of the old things, the traditional things that I've done all this time, but then new ideas just constantly, that's just, I'm just think I was born to program. So there's this constant, you're going to do everything in a different way.” – P8.

In developing programs, librarians often need to acquire new skills like learning to play a musical instrument or learning about arts and crafts activity well suited for seniors. Furthermore, programming requires establishing new relationships with experts, volunteers, and other members of the community. As I discussed in the Mobile Seed Library project, creating new programs often requires librarians to build new capacities and establish new socio-material arrangements that make the programs possible. This is becoming an increasingly important role as library management is encouraging librarians to engage with the communities outside of the building.

6.4.2 Outreach

Some of the more unexpected programming I observed was outside of the library space through activities referred to as outreach. Outreach, and programming in general is an important part of how FCLS is evolving. The library director has set up a new group
specializing in outreach services which tries to reach out to different populations that either have never been to a library or stopped using it. In addition, all librarians are now encouraged to do more outreach activities “We do more outreach into the community now we set up tables and places would take programming to people and that's always happened. But the push is to do more of that.” – P10.

The term outreach is also associated with the future of the library, both because it is a policy of this library, and because there is an anticipation, even a sense of inevitability, that in the future, there will be fewer staff to do the more routine and traditional work. “I think we'll have fewer staff here. And I think a lot of it will be more outreach things.” – P1. “So I think it's inevitable that moving outside more and more engaging in different ways, not just behind a desk.” – P13.

Outreach services demonstrate how librarians change their relationship to the community outside of the building in unexpected ways. One example is the Library in The Park program. This new program was implemented within about a year of my involvement with FCLS, in part, to serve the community during library closures. In this program, libraries set up small stations in public parks and offer different programs and activities such as story times for children or library cards for new patrons. Implementing the program took some effort, learning and relationship building. One librarian told us that they had to request permission from local authorities to offer this program. Initially there was some resistance to it partly because there wasn’t a precedent for these kinds of programs in parks. They also had to learn tactics of identifying which parks are suitable for these programs to be successful. For example, they learned that if they use pavilions that are close to a
playground, they have more chance to draw children and parents who happen to play there. In addition, they learned to wear more comfortable clothing more conducive to outdoor activities, which in some cases had to circumvent government employee dress code policies. Figure 21 shows a Library in the Park program being delivered in one of the parks in the Atlanta Metro Area.

![Figure 21. Librarian Conducting Story Time at a “Library In the Park” Program](image)

Library in the Park is just one example of how FCLS is providing services and resources to places and people outside of the physical building. Others included working with the county’s Department of Senior Services or Department of Corrections, as well as collaborating with local businesses. It is noteworthy that when delivering outreach services, librarians carry with them the commitment to openness and inclusivity. One librarian
described this as “cracking open the public space”, meaning that even when they work in private or restricted places, they need to adhere to the professional commitments of a librarian, and thus cracking open a public space within the otherwise private space. “When we started providing books for inmates the jail wanted me to censor the material we brought. I explained that I could not censor any material that patrons requested (even if they are incarcerated). I said I could bring the material and if the jail wanted to go through and censor it, they could, but I could not, due to professional standards.” – P20. The metaphor of cracking open became useful to us because it can be used to understand librarians’ infrastructuring work more broadly. It evokes how librarians must operate with and against socio-material conditions to carry out their mission maintain their commitment to openness and inclusivity.

Outreach activities, and programming in general, also encourage librarians to rethink and reconfigure their technological resources. One librarian explained that when providing programming at a senior center, they had to come up with a way to order and deliver books for seniors who are not used to using libraries or didn’t have library cards. Since the library didn’t have an existing system to order and deliver books, they had to design a workaround. Seniors would give consent to librarian accessing their accounts and ordering books on their behalf. On the next visit, the librarian would bring the books with her to the senior center. This kind of ad-hoc problem-solving of technological issues is common among the librarians. Other examples include issuing temporary codes to access library computers that require library cards, waiving library fees when payment systems fail, or making special staffing arrangements to provide access to libraries after hours. The
latter arrangement involves a librarian providing access to the library space itself for special programming such as movie nights or dance classes.

### 6.5 Theme 4: Influence of Commercial Interests and Market Logics

This theme pertains to different ways market logics impact librarians in visible and invisible ways. These logics include profit maximization, various notions of efficiency and measurement along with emerging economics of digital publication.

#### 6.5.1 Vending Machines

One of the new features in the newly renovated libraries will be vending machines along with small tables for patrons to consume food. This is in line with the expanded uses of the library space for programs and activities or simply as social space for patrons. On the one hand, it is a new convenience for patrons to enjoy. On the other hand, this is a vending machine represents commercial interests and takes away space from other possible uses of the library. What’s notable about the vending machines is that they represent the broader city infrastructure, namely the procurement and vendor management systems and all the political and commercial interests that tend to be entangled in them. As a result, each individual branch has little or no influence on who the vendors are and what products are offered. These decisions are often centralized and are influenced by other considerations such as contract terms, supply chains and market competition.

#### 6.5.2 Digital Material

Digital material (also known as electronic circulation or electronic material) refers to various digitally published and distributed content and is increasingly important part of
public library operations. The Public Library Association reports that per capita circulation of electronic materials as percent of total circulation has increased from 3.2 percent to 10.3% between 2012 and 2016 and has continued to grow since then (Reid, 2017). Digital material allows libraries to serve the needs of the community without a face-to-face interaction, which is especially important for patrons who have transportation challenges or simply do not have the time to visit to the library. But the mechanics and economics of digital material influences the notion of the library in interesting ways. First it redefines what it means for a library and patrons to be connected to each other. There is now an entire class of patrons who use the library exclusively for digital material. “We do have, we do have patrons that I know have come over from that apartment complex, come over to set up their library card, and then we don't see them again for two years, um, until they need to renew it. And they're just using the e-books and that's what they want it for. And then of course that's fine. We're happy to do that.” – P14.

This is enabled by emerging digital infrastructures like the services Overdrive and Hoopla, which are specifically designed to provide digital content for libraries. But these same services exist in a broader digital publishing economy that puts commercial pressure on libraries in a way that threatens to upend their entire operating model. For example, the way e-books are licensed to libraries through intermediaries is significantly different from physical books. Once the book is purchased or leased by a library, it can be lent to a patron for an unlimited number of times, or it can be resold. This is known as the First Sale Doctrine, which allows the owner of a lawful copy of a copyrighted work to sell, lend, rent or give it away without the original copyright holder’s permission. (Reese, 2003) With digital material, the library has to pay an additional licensing fee for each instance of
lending, significantly increasing the cost to the libraries (Potash, 2019). Digital rights management for e-books and other digital material tends to be more extractive than their physical counterparts because it focuses on and exerts control over each individual user of each individual copy of the work. This is evidenced by a recent decision of a major publisher, Macmillan, to impose temporary embargoes for licensing new titles to public libraries, which caused uproar among the public and librarians (Wagner, 2019). After a public outcry and numerous petitions the company reversed its decision, but it highlights the ongoing tensions between the commercial publishers and community-oriented organizations such as public libraries.

6.5.3 Market Influences in Everyday Language and Practices

Market-based commercial conventions can also influence public libraries in less direct ways. Namely in everyday language of the librarians themselves and the expectations of patrons. First, librarians often use the term customer service when referring to the quality of their work and performance. “And I will say our customer service is high up there basically because the patrons tell us that all the time. Sometimes they even compares to other branches.” – P12. This framing can also translate to taxpayers as consumers who expect a good “return on their investment” in evaluating the quality of the library and librarians. Another way market mechanisms influence libraries is through perceived competition for patrons as well as patron’s expectations of what a library should offer. “We're going to be doing more, it's going to be just like a Barnes and Nobles. [a major bookstore chain]” – P2. Such framing also suggests that libraries, bookstores, coffee shops and other, so called “third places” (places other than a person’s home or the workplace)
and are all market actors who are in competition for consumers, their attention, time, and money.

These examples, along with many management practices, which also tend to be borrowed from the corporate governance, illustrate the subtle ways commercial conventions penetrate public space and undermine its fundamental values and commitments. Furthermore, they show how blurry the boundaries between profit-driven and public service-oriented spaces can be and how librarians navigate them in their everyday practice.

6.6 Theme 5: Socio-Materiality of Futures

In Chapters 5 and 6, I demonstrated how futures are shaped and contested infrastructurally at various levels of scale. This theme provides more evidence for this in the form of mundane objects. In particular, the discussion about library renovations brought into the focus how visions of the futures are materialized and instantiated in the library space as objects and how they set expectations, direct attention and mobilize resources. In this section I focus on three objects: the stacks, the circulation desk and the self-check machine.

6.6.1 The Stacks

One of the key features of the newly renovated libraries is that the traditional permanent stacks are being replaced by shorter bookcases that are also on wheels. The reason for this design choices is that the library space is supposed to be flexible. Smaller bookcases on wheels allows the staff to reconfigure the space quickly and easily.
Explanations of this decision include “One of the things we tried to do is to make the space flexible” or “All the furniture is on wheels including... There is an opportunity to use the space differently.” The idea of a movable bookcase sets an expectation that this space is not just for books and should be used in many other ways. The second design choice is the height of the bookcases. The height of the existing stacks 90 inches (229 cm) and the new bookcases will be up to 66 inches (168 cm). Architects justify this by increased sense of openness in the library, by the fact that librarians can visually monitor the patrons. It is also a surveillance feature. “The whole space will be much more open. You can look in and see activity in the library.” – Meeting 7. “Again, the idea is to have spaces as open as possible. To give the librarians the opportunity to see what’s going on. We organized the shelves so that the librarian can see all the way down through the shelves.” – Meeting 6.

This idea was not welcomed by everyone. One of the tensions the new bookcases create is between the size of the physical book collection and available floor space. Often, the first question that meeting participants asked was whether and how many books the library is going to lose as a result of the renovation. In most cases, the architects and administration explained that the new shelving is more efficient and in fact the top and bottom shelves of the existing stacks are often unused because they are hard to reach. The new shelving system became a point of contestation among the different stakeholder groups and about the future of the library. There were some who believed that in the future books should play at least as important a role as they have in the past, and thus a perceived reduction of shelving would prevent that future. At the same time, the idea of a library space as “open” and “flexible” suggests that the future of the library is about the unknown and the choice of the new shelving is a coping strategy with that uncertainty. This is
illustrated by remark made by one library administrator at a meeting. “We have to have the ability, if in 2 years if this space doesn't work, we have to be able to adapt without more money. You'll see its flexibility and versatility to meet the changing needs.” – Meeting 3.

In conversations like this we begin to see how specific design choices and objects play a role in shaping futures.

6.6.2 The Circulation Desk

The circulation desk is usually accessible and visible from the entrance to the library. In its traditional configuration the desk is behind a barrier, like a bar stand. A key feature of the renovations is that the traditional circulation desks are replaced by small, movable pods with a single computer. In one meeting one of the representatives explained the reason behind this transition as follows. “The staff gets an opportunity to circulate and be among patrons as opposed to staying in one location. That's on wheels as well. you can unplug it and move it. You can turn it in a different direction.” – Meeting 3. The other reason for this transition is to free up floor space for some of the new amenities like meeting rooms.

But there is a broader narrative behind this move, which is the idea that librarians should be interacting more with people and spending less time on simple transactions like checking out books which are considered not as valuable. Furthermore, circulation desks, it is argued, create a physical barrier between patrons and librarians which is not conducive for human interaction.

However, librarians we spoke to pointed out some of the concerns of this design. First, as we have seen in the discussion on programming and outreach, as well as on
collection management, desks don’t prevent librarians from connecting with their patrons. Second, providing a sense of authority and power can be beneficial to librarians, and being physically exposed has its dangers as well. “Well, you know what, sometimes you don’t want to be down there with them [the patrons]. You need to know what you’re talking about. And especially me as a small woman, there are a lot of people that will push me around and I get pushed sometimes. There are a lot of times when I know what I’m standing on and I know my library work and I know what I’m talking about. And I feel a lot more secure being behind that little desk.” – P15

This last point about feeling secure brings up how design decisions in the library can be based on certain gendered notions like “openness” and “being connected to the patrons” that overlook some of the dangers of a profession the majority of which are women. Our participants noted that working behind a small pod in the middle of a room can leave them exposed. “It's mostly women here that we'll have someone come up and touch us on the arm or to be frank, look at our a**es all day from wherever they're seated. But having something that keeps you at bay, not at bay, but keeps the eyeballs from looking at you all day or people coming up behind you [sights], this is going to be stressful.” – P6.

6.6.3 The Self-check Machine

The renovated libraries would feature new self-check machines that allow patrons to check-out several books at ones. They are considered an important tool in relieving the librarians of task that can be easily automated and therefore not valuable. “Typically, it's just transactional. The sort of interactions that we want staff to have with the public are higher value interactions than that. So rather than, um, checking an item out, we would
want a staff member to show the patron how to check on their own. To walk with them in the stacks to an item that they are asked about, to have more face-to-face interactions because they don't feel like they have to be at the desk to check an item out” – P3

Librarians are not only encouraged to teach patrons to use self-check machines, but the library as a system sets a target on what percentage of such transactions should be automated. But using self-check machines present unique challenges in each community. Indeed, in some cases and for certain demographics, using self-check machines without every interacting with a librarian is convenient. But for other, more technologically challenged audience it will be an obstacle. “A lot of my time will be spent explaining how to use self-checkout because again, the digital divide, people are not that comfortable with computers.” – P5 So librarians use strategies to both comply with the management vision and to ensure that their patrons are served well. One librarian told us that because her branch has an older demographic, in that branch they are planning to station one of the most experienced and most popular librarians next to the self-check machine so that older patrons don’t get intimidated by it. In other words, this arrangement would replicate the experience of a traditional check out desk while at the same time complying with the management directive.

In Chapter 5, I discussed how infrastructures shape emergences of futures on the example of a single project that developed over time, the Mobile Seed Library. The above examples demonstrate how techno-scientific visions of future can also be materialized in objects and embedded in the everyday interactions of librarians with those objects. Visions of ubiquitous automation, openness and flexibility in public libraries shape the librarians’
and the public’s expectations about the function and role of the public library. Some of this shaping takes place in explicit ways such as, for example in the assignment of expected value to human and non-human activities, much like Michael described futures as textualized performative representations (Michael, 2000). But it also takes place in implicit, less representational and more relational ways, in which objects act on everyday lives of librarians, encouraging them to respond to new socio-material conditions, as I described above.

### 6.7 Infrastructuring in Public Libraries

Each of the above themes reveal insights about how the evolving work of librarians is entangled with civic, social, and material infrastructures. Next, I will discuss how we can understand librarianship as a distinct type of infrastructuring and what implications it might have for HCI design in this professional community.

#### 6.7.1 From Public Service to Civic and Social Infrastructuring

The role of libraries is associated with the notion of providing services to their patrons. However, as we have seen, providing services is not just a matter of access to resources. Rather it is an active engagement in and reconfiguration of infrastructures (Le Dantec & DiSalvo, 2013). In FCLS, this process increasingly takes place outside of the physical bounds of the library. Librarians reach out to different populations that either have never used or stopped using library services. In this process, public librarians identify potential resources in the community, foster new relationships and configure these resources and relationships into accessible, and legible programs for the patrons, assembling these elements into a public-in-the-making (Lindström, 2014). Furthermore,
through the process of collection management, librarians develop personal connections with patrons. This work also constitutes social infrastructuring (Klinenberg, 2018), which help establish social encounters among strangers thereby increasing the capacity for resilience. Finally, as we have seen with the example of friends groups, libraries assemble civic infrastructures around themselves in the form civic networks and affinities (Asad & Le Dantec, 2017; Stoll et al., 2012), which can act as forms of self-governance and mutual support. Furthermore, when the library becomes a site for a controversy, like in the case of the Drag Queen Story Time, it stimulates activist interventions both on the part of librarians and patrons. In other words, libraries create centers for civic and political engagement and power. These engagements are local, situated, and can be both formal and informal (Asad & Le Dantec, 2015b). They also reflect how librarians construct and participant in digital civics both by maintaining the openness of the public space and by responding to controversies.

Seeing libraries as social and civic infrastructuring opens up new paths for design in public spaces and public services that explore notions of resilience in the community (Semaan, 2019), support interpersonal relationships between municipal service workers and the public, foster various forms of self-organization and mutual support, and enhance the creativity and agency of librarians. We can imagine systems that make such opportunities more visible to librarians and more readily available to act upon. We can also imagine better and more sustainable systems that can account for the inventive and open-ended work of librarians, without resorting to neoliberal management practices focused on efficiency and return on investment. Such systems can refocus the library’s efforts on recognizing and rewarding richness and depth of relations rather than pure output (e.g.
book circulation, membership growth, etc.). They could be especially beneficial in accounting for routine infrastructuring work (Semaan, 2019), which Seeman described as the work of using technical systems to build resilience in prolonged states of disruption and marginalization. Such work, especially in the context of precarious labor of librarians, resists standardization and requires tolerance for ambiguity. This will become increasingly important as public libraries are challenged with addressing issues of social justice (Jaeger et al., 2016). Along these lines, we see design opportunities for systems that can accommodate institutioning which is a “gradual processes of altering (consolidating or challenging) existing frames of institutions” (Huybrechts et al., 2017). Systems for institutioning can help librarians interact with other professions such as social workers, in ways that current institutional arrangement cannot accommodate. Such systems could connect the rich community knowledge of librarians to professional practices of other communities that are better equipped to deal with issues such as mental health, homelessness, and drug abuse. As we have seen with projects such as Library in the Park, and the Mobile Seed Library, in cases where librarians are tasked with developing new services, existing institutional frames often put the majority of the burden on the shoulders of individual librarians. It is the librarians who then try to overcome challenges on local, often quasi-legitimate basis, by aligning institutional goals of the library with those of other institutions. Beyond professional practice, systems can be used to create platforms of care (Light & Seravalli, 2019; Semaan, 2019) within libraries which could mediate novel mutually supportive relations. Such systems can become crucial in supporting infrastructuring work of librarians which takes place beyond the physical and institutional boundaries of libraries. As they form new attachments among issues and communities and
institutions (Asad & Le Dantec, 2017), they will need new ways to interact with and navigate them. More broadly, we envision systems that support other relational practices of librarians such as co-production (Seravalli et al., 2017), construction of publics (Le Dantec, 2012; Steup et al., 2018) and form attachments around broader community concerns and controversies (Marres, 2007). Finally, systems that support civic and social infrastructuring work of librarians can help address, or at least alleviate, the burden of class hierarchies of the profession itself, by distributing the work, making it more institutionally visible (and therefore rewardable), (Fox et al., 2020) and mobilizing new sources of community support to bear.

These design opportunities help us recognize that systems that aim to merely optimize or automate the work of public librarians are bound to interfere into or disrupt intricate, highly localized patterns of social and civic infrastructures. Furthermore, recognizing the work of librarians as infrastructuring helps us reframe the institution of a library as a set of relational, long-term commitments between librarians and patrons rather than merely a resource for common use. This, in turn, could help change how communities fund and support local libraries and other public service institutions.

6.7.2 Infrastructuring Publics with and along Market Logics

Privatization of public space is indeed a real concern for libraries and their mission (Alstad & Curry, 2003; Chowdhury et al., 2006). But as we have seen in our analysis, while librarians are motivated by their professional standards and political commitments, which makes them suspicious of market institutions, they also integrate market-based mechanisms with their public function. This happens in subtle and often invisible ways.
Faced with evolving expectations of patrons about the usability of public space, along with constant budgetary pressures, libraries bring in new services like vending machines or cafes into the space. They are increasingly reliant on commercial sponsors for additional sources of funding. Furthermore, proliferation of digital lending, while opening opportunities to expand the reach of public libraries, impose economic and legal burdens. As we have seen digital publishing models disrupt the economic model of libraries predicated on community ownership of physical objects (books, DVDs, recordings, etc.) (Söderholm & Nolin, 2015). In that sense, librarians are engaged in constructing publics and attending to issues of common concern to limit the impact of market logics (Dewey, 1954). However, rather than simply resisting these logics, libraries integrate them into existing infrastructures thereby expanding what it means to be a public space and what it means to serve a community. While digital lending might be helpful for libraries in expanding their reach, it also introduces market logics in how patrons relate to their libraries. For a patron who uses the library exclusively for digital content, the relationship to the library becomes almost entirely consumer-oriented. There is no interaction with a physical space, with the librarians or with the community. Furthermore, interactions with the digital collections is taken over by the commercial platform, which manages the lending process and algorithmically recommends other relevant content. The role of a librarian and the book in constructing and performing a community identity is almost entirely removed (McKenzie et al., 2007).

To navigate these tensions, librarians employ different infrastructuring tactics. For people who are regular patrons of the library and who do borrow physical books, digital lending becomes an opportunity to expand services and, in some cases, improve
technological literacy. This work is distributed among librarians at each individual branch. Librarians need to learn about digital lending platforms themselves in order to recommend these resources and be able to help patrons if needed (set up user accounts, troubleshooting etc.) Not all librarians are comfortable with that task because it requires a certain level of technological fluency. In other words, the work of a librarian is very much present in the attachments created by digital lending (Asad & Le Dantec, 2017). For some library patrons, digital lending can become a way to use the library remotely and the librarian becomes less visible. We can also make sense of this work through the lens of relational agency and knotworking (Bødker et al., 2017). In other words, it is not the case that digital lending simply replaces or supplements physical books. Rather, librarians have to make connections and form knots so that digital lending becomes meaningful within the context of their existing relations, commitments, and labor practices.

These observations highlight the challenge of designing systems for solely public/civic or solely private or commercial use in the contemporary neoliberal conditions under which public libraries operate. It challenges designers to consider how public librarians can better negotiate the constant exchange among public, private and commercial interests, (Asad & Le Dantec, 2017; Vasilis Vlachokyriakos et al., 2016) while maintaining their professional commitments to openness and accessibility of public space.

I propose several design implications for collaborative systems in public libraries, in light of the entanglement of market logics and budgetary pressures that are continuing to intensify under austerity politics of neoliberal times. First, in digital lending, we see a potential benefit in systems that can counter the consumer-oriented logic of current DRM
systems, fostering more communal and convivial interactions between librarians and patrons and among the patrons themselves (Kozubaev & DiSalvo, 2020). There is a rich area to explore collaborative borrowing, communal owning, lending, and reading practices that could create new attachments among readers. Given the institutional role and bureaucratic entanglement of librarians, there is a need for alternative and unfamiliar types of political engagements and resistances (Lindtner et al., 2018), without resorting to conventional activism advocacy, which is not always available or sustainable for librarians. Furthermore, we can imagine novel rights management systems that would benefit publishers but would also allow the owners of copyrighted works to recover some economic benefit to help community and library needs. As the size of physical book collection shrinks, public libraries will need alternatives to traditional book sales to raise funds to support their programs. We can also imagine systems that would enable community ownership and co-production (Seravalli et al., 2017) of information in other domains such as local history, environmental data, public safety, public works and other. Such systems could be aimed at enabling community-oriented economic activity that integrate market logics in a bracketed and mutually beneficial manner. They could also reduce or re-distribute the burden of precarity, and uncertainty associated with inventing and delivering new services. More broadly, there is a need for systems that enable alternative civics in public space that foster closer cultural, economic and political exchange (Alstad & Curry, 2003; Asad & Le Dantec, 2015b, 2017) using the public library as a caring platform (Light & Seravalli, 2019).

Defining librarianship as distinct forms of infrastructuring, specifically (i) civic and social infrastructuring and (ii) infrastructuring publics with and along market logics has
theoretical and practical benefits. First, they foreground specific kinds of activities that allow infrastructures and institutions to function and problematize these activities. In the context of public libraries, it allows us to shed new light to some of the defining characteristics such as free and open public space, access to information, benefit to the community, and others. Furthermore, these forms of infrastructuring help us understand how values arise and evolve as a result of changing circumstances (JafariNaimi et al., 2015) and how they are negotiated by different user groups, especially when some of these values are incommensurate. As I discussed in the previous sections, this allows us to imagine and design systems that address the socio-materiality of public librarianship that appears to be common in urban America. In the next chapter, I will develop broader implications for civic in social design as well as implications on futures research and practice.
CHAPTER 7. CRACKING PUBLIC SPACE OPEN: PROVOCATION FOR DESIGN AND FUTURES

This chapter is different in form and content from what I have presented and discussed thus far. My goal here is to begin responding to some of the findings and themes I developed in previous chapters. To that end, having articulated two distinct types of infrastructuring in public libraries and having explored some design opportunities, I will turn to public librarianship as a potential space for civic and social design. First, I will develop implications for design. Here, I will use the metaphor of cracking public space open, offered by one of our participants, as a design provocation. This metaphor is useful because it reflects socio-technical and political complexities of public librarianship today. I will use these design provocations to gesture towards potential socio-technical systems for public librarianship. However, I will not define or design these systems in this thesis. Second, I will develop implications for futures research and practice. Drawing from all three studies, described in the previous chapters, I will articulate what public librarianship as infrastructuring means for futures practitioners and researchers.

7.1 Design Provocations

In this section, based on the themes I derived in Chapter 6 along with two distinct form of infrastructuring in public libraries, I propose three provocations for design in this context: (i) Designing for Everyday Heterogeneity and Contingency, (ii) Designing for Quasi-legitimacy, and (iii) Designing for Longevity at a Small Scale. (Kozubaev & DiSalvo, 2021a)

7.1.1 Designing for Everyday Heterogeneity and Contingency
Cracking public space open is heterogeneous and contingent. This quality speaks to the idea that dealing with cracks requires resourcefulness, risk, and tolerance for lack of control. The everyday experience of a public librarian is extremely unpredictable and constrained. Librarians rotate from one station to another depending on who is available at any one time. Between the circulation desks, customer requests, shelving, running programs and other activities, librarians have to constantly adapt to the changing environment. Furthermore, libraries have to attend to the growing needs of vulnerable populations such as the homeless or mentally ill, and they have to constantly be ready to deal with a potential volatile situation such as a rude or aggressive patron. The physical space itself is subject to this contingency and contestation, as we have seen with the example of Drag Queen Story time and the use of restrooms by the homeless population. When developing programming and outreach activities, librarians often experiment by forming new attachments between resources (Asad & Le Dantec, 2017; Marres, 2007) people and institutions. These attachments can be formed through simple objects like books and other information objects, or they can come together through a service that draws various members of the community like the friends group, or the Library in the Park program. Recognizing such heterogeneous and contingent everyday practice of public librarians, I propose design that:

- Supports, relieves, or redirects the burden of heterogeneity and contingency of librarians’ work.
- Makes the work of public librarians more open to public engagement, support and novel attachments to humans and non-humans.
- Helps public librarianship be more present and recognizable outside its physical and institutional boundaries.

- Improves emotional and physical well-being of librarians arising from heterogeneity, uncertainty and contingency.

7.1.2 Designing for Quasi-legitimacy

This design provocation draws from the idea that cracks don’t belong in a structure, and we don’t want to see them. On the contrary, they are expected to be hidden, filled in or otherwise eliminated because they pose threats to the integrity of existing structures. In their research on designing ICTs for activists, Asad and Le Dantec drew attention to how the unpredictability of activism work requires an underdeterministic design that allows flexibility in dynamic and emergent environments (Asad & Le Dantec, 2015b). This approach works well when we think about activism work as oppositional or alternative to the existing power structures. The work of librarians is different from activism because it is a hybrid of legitimacy and illegitimacy. I tentatively describe this work as quasi-legitimate meaning that their activities and relations exhibit characteristics of both. On the one hand, libraries are institutions with longevity and legitimacy, enacted through laws, physical structures, and funding mechanisms. Librarians have a significant authority and agency in the space itself through the work they do and the positions they occupy. At the same time, this work is constantly undermined at various levels. This is evident, for example, in how librarians negotiate the emergent demands of programming and circumvent institutional and technological constraints (e.g. the employee dress code, library card issuing protocols, etc.) as described earlier. In the Mobile Seed Library project,
we observed how librarians negotiate institutional constraints and face professional risks and uncertainty in doing this work. While programming activities are needed by communities, they appear to be extractive on librarians, because librarians are expected to do more with less, often causing them to spend their personal money and time. Since the work of developing programs is often disparate, small scale and invisible, librarians also need to make this work legible and legitimate to the institution, through administrative mechanisms such as monthly narrative reports, in which a librarian describes all the significant and valuable activities he/she has done over the past month. Finally, we observed libraries bringing together resources and assets with incommensurate values in their infrastructuring with and along market logics. Following this line of thought, I propose HCI design that:

- Supports quasi-legitimate interactions and exchange among humans and non-humans in public space.
- Helps negotiate relations between objects, people and places with incommensurate goals and values.
- Reshapes librarians’ quasi-legitimate practices into legitimate ones and vice-versa.
- Helps bring together quasi-legitimate resources to deal with spontaneously arising community needs.

7.1.3 Designing for Longevity at a Small Scale

Cracking public space open focuses on small scale action that is repetitive and continuous. Some cracks advance very slowly, their impact is felt not immediately, but after progressing in multiple, unpredictable directions. Cracks cannot be reversed, only
patched over. The work of librarians, even in cases where they create something new, is localized and small-scale. Their impact on the community comes from longevity and a kind of permanence that can be afforded by large-scale institutions. Within this permanent structure, programs, services, and things are constantly appearing and disappearing. Books are weeded out, new books arrive. Programs are offered on and off, year after year. Drawing on Bødker et al again, we can characterize these activities through the notion of knotworks, which are more fluid than networks. Knotworking focuses more on long-term sustainment rather than privileged moments of interactions such as design workshops (Bødker et al., 2017). One example of such knotworking are thematic book displays. These objects, which are usually in a form of a small shelf or a more substantial display, contain small, featured collections of books that libraries change every month according to a theme. For example, in the U.S., February is Black History Month, and it is common to see displays feature books on African American history and authors. Other times, the book displays can reflect something more specialized or be inspired by an individual librarian’s personal interests. One participant designed a book display with elaborate thematic decorations to commemorate the 80th anniversary of Batman graphic novels. This shows that librarians can incorporate their own forms of expression into displays. What is interesting about displays is that their impact is small in scale. Most people who come to the library may ignore them completely, or glance at them briefly before moving on. At the same time displays allow patrons to participate in the life of the library in small-scale, unprivileged ways. The book display is always there, in the background, always changing every month. Other examples of such knotworks include art exhibits, reading circles, craft stations, pet corners and others. These incremental, barely visible practices of librarians,
challenge interventionist and solutionist sensibilities of conventional design. Rather design helps create interactions between librarians and the community situated in a particular time and place, a kind of tiny publics (Steup et al., 2018) that fosters convivial encounters among strangers in libraires (Kozubaev & DiSalvo, 2020). Along these lines, I propose HCI design that:

- Creates non-interventionist interactions in public libraries and public space.
- Operates at the smallest yet longest-lasting scale in the public library.
- Makes small-scale interactions in the library more visible and meaningful over time.

In response to these design provocations, we can imagine socio-technical systems that support public librarianship as infrastructuring and help librarians cope with the growing scope and expectations to serve their communities. Such systems could be deployed within existing institutional arrangements and power structures, but not necessarily so. In fact, these provocations gesture towards a design space and practice in which tactical, heterogenous, and perhaps even short-lived systems are preferrable to those that are permanent and transparent. Furthermore, designing for public librarianship as infrastructuring complicates the relationship between the designer, the librarian, members of the community, and socio-material relations within which they interact. Librarians, as de facto experts in infrastructuring, are in effect continuously designing and re-designing socio-technical systems. From the perspective of civic and social design, one might argue that that librarians’ mode of engagement in designing these systems is participatory. Indeed, they are workers who have a certain degree of agency in configuring their own
labor conditions. This is in alignment with the worker-oriented tradition of PD. However, as we have seen in the examples, and as highlighted by the two distinct mode of infrastructuring above, the work of librarians is also akin to counter-participation (Tironi, 2018). For instance, when a librarian works on a new program line the Mobile Seed Library, she participates in the design of the program in ways that suits her professional and personal interests and mobilizes existing resources and infrastructures to do so. At the same time, she works against those same resources, infrastructures, and forms of legitimacy because they burden and circumscribe how the work should be done and by whom. This negotiation of shifting and incommensurate values and goals characterizes design for cracking public space open, much of which happens backstage (Bødker et al., 2017) and becomes newly visible in moments of breakdown and trauma (Semaan, 2019).

These design provocations, and the design orientation that they suggest, has a broader set of implications for civic and social design, specifically on the role and limits of professional and academic design practice in addressing social issues in neoliberal times. Julier and Kimbell problematized this question and argued that current social design practice is “destined not to tackle the causes and consequences of inequalities, even while being enrolled in social and policy change-making.” This aligns with the findings of this research in how existing infrastructural relations can frame and motivate the researcher’s or practitioner’s actions. Julier and Kimbell offer potential directions to deal with this problem, including developing greater processes of accountability and reflexivity for social design practice in relation to their publics (Julier & Kimbell, 2019). Building on this thought and drawing on my findings, I suggest that part of this reflexivity needs to be understanding and perhaps even embracing the limits and boundaries of what design
practice can accomplish in neoliberal times and within neoliberal institutions. On implication is that design practitioners and researchers should continue to expand the range of relationships between civic and social design and their conventional counterparts. Oppositional and adversarial positions are not the only options and they set a very high bar for civic and social design practice to make meaningful impact. Lindtner et al, drawing on Tsing (Tsing, 2015) proposed alternative analytical sensibilities of "noticing differently", "walking alongside" and "parasitic resistance" to help recognize and articulate "spaces of hope in the gaps and fissures of global capitalism, even if fleeting and incomplete" (Lindtner et al., 2018). What the work of FCLS librarians shows is that these spaces and practices can emerge in the most precarious of situations. The opportunity for civic and social design practice and research then is to continue expanding the conceptual and methodological capacities to recognize and relate to them. These capacities may include interventionist and solution-oriented modes of design, but they may also include other modes in which designs’ goals is to not solve a problem or even to improve the situation in any way. “Keeping the system going” as Julier and Kimbell put it, may mean sustaining existing inequalities and exploitation, but it may also mean sustaining the spaces of hope where they already exist, with all its imperfections, contradictions, and compromises. Nothing more, nothing less.

7.2 Implications for Futures Studies

In this section, I will develop implications for futures studies based on the key arguments of this research which is that futures are socio-material. Furthermore, I will offer
strategies for futures researchers and practitioners for foregrounding socio-materiality (Kozubaev & DiSalvo, 2021b).

7.2.1 The Official Future

At this point in my analysis, I would like to revisit the term “official future” which refers to a set of statements and beliefs about what future is most desirable and most legitimate. In public policy and economic planning, it often refers to specific and measurable outcomes (e.g. unemployment rate, growth in Gross Domestic Product, population growth, etc.) that will bring about a better and more prosperous future. Examining the “official future” helps reveal underlying assumptions and values in a community about what’s desirable and for whom (Dator, 2009; Inayatullah, 2012). Here, I will now summarize various characteristics of the “official future” at FCLS. These characteristics are based not only on explicit statements made and expectations set by FCLS leaders, (Lee, 2020) but also implicit expectations and everyday experiences of librarians. In the “official future” of FCLS:

- The library will provide access to more and different technology to patrons;
- Librarians are going to offer more programs services to patrons;
- Librarians will offer more programs and service outside of the physical boundaries of library buildings;
- Compared to other new activities, the relative role of physical books in the library will diminish;
- The role and function of the library will be completely and immediately flexible and responsive to the needs of the patrons;
• As a result of the above, the library will become more relevant and attractive to more people;
• This future will be brought about, in part, by the renovation of the physical space, furniture and technology.

These characteristics of “the official future” are invoked an inscribed in various ways and at different levels of scale. They set expectations for the librarians and for the members of the community about the role and goals of this institution about. At the same time, the authority of this “official future” is not monolithic and absolute. Rather, it is fragmented, situated, and bound by the infrastructural relations in which it is deployed. Similarly, librarians’ agency with respect to “the official future” is a mix of tactics and strategies ranging from compliance to various forms of resistance. Infrastructuring practices of librarians, such as the ones I described in the previous section, can help enact “the official future” as well as create alternative ones.

7.2.2 Alternative Futures and Infrastructural Temporalities

A key aim of futures studies is to challenge dominant or orthodox frameworks of meaning and generate alternative possibilities (Bell, 2009, p. 75). The discipline generally sees itself as critical of existing power structures, although some of its practices, such as corporate futures, are often entangled with and benefit from them. For example, Milojevic and Inayatullah argue that the notion of “alternative futures” can be seen as fundamentally transformative, and capable of bringing about social change (Milojevic & Inayatullah, 2015). Thus, the very act of conceiving and representing alternative futures, affords a certain kind of agency to change one’s condition, at least potentially. However, my
experience with FCLS has also shown that alternative futures are contingent upon and emerge from the infrastructures in which they originate. First, there is the question of power relations which determine who gets to propose and legitimate the future and what becomes “the official future.” For example, the library director sets the vision of the future which is enacted through administrative mechanisms and policies. Second, the socio-materiality of infrastructures shapes what futures are possible and how they unfold. What does it mean to study and propose alternative futures when the present socio-material conditions already generate futures in both visible and invisible ways? This calls for a closer examination of the claims of futures studies (both academic and professional) regarding its capacity to challenge existing power structures and dominant narratives. One methodological challenge for futures studies is the propensity to emphasize futures as a set of ideas (beliefs, narratives, images, expectations, etc.) prevalent in communities. However, as I have demonstrated in this thesis, futures can also be socio-material, and existing methods often do not offer a way to recognize and deal with them.

One implication is that futures practice and research need to develop methods that help locating existing futures embedded in infrastructures. This requires a more nuanced understanding of socio-material relations in a given community or place and how they shape temporality. A distinctive trait of infrastructures is the fact that relations are layered over time and become gradually less visible. An important aspect of locating the temporalities of infrastructure is tracing those complex histories that determine or otherwise influence temporalities in the present. Bowker proposes that mapping temporalities of infrastructures can provide “ways of escaping the dead weight of progressivist historiography” (Bowker, 2015). From the perspective of futures studies, this
can be useful in identifying temporal trajectories that were set in the past and that continue today.

Another aspect of locating existing temporalities is mapping how infrastructure orients actors towards the future. In other words, identifying how infrastructure promise particular kinds of futures and foreclose others through socio-material relations that they enable. This kind of analysis sets up a different role for futures studies where the aim is not to forecast and describe distant alternative futures, such as by representing it or by making open to experience (Candy, 2010), but to describe the futures shaped by the infrastructure in the present. Once this is achieved, we can begin to examine the extent to which alternative futures can be produced by engaging with those temporalities rather than breaking away from them. It is not just about generating alternative futures in the distance, but about exploring the limits and opportunities for human and non-human agency for producing alternative futures within existing socio-material relations. Since it is difficult, if not impossible, for any one actor to completely change infrastructures, shaping alternative futures in infrastructures implies creating adjacent futures that co-exist and interact with futures that are already there.

Finally, locating futures within infrastructures necessitates another, perhaps even more fundamental skill for futures practitioners and researchers: attending to objects. That is to say, in order to articulate socio-materiality of futures, as I have described above, one needs to recognize and account for objects, including their materiality and agency. Futures studies and its closely related fields such urban planning, has a tradition of engaging with objects to communicate visions of the future and experience parts of that future today. But
objects that are present today also create or even impose futures, as we have seen with the circulation desk, self-check machines, and movable bookshelves. Thus, a key question is: how can a futures practitioner or researcher attend to objects in the present and what methodological tools are necessary to do that? This is where some of the existing methodological resources in design and infrastructure studies can be a useful starting point. For example, much like futures researchers have already embraced ethnomethodology (Candy & Kornet, 2019; Ramos, 2017), they can begin adopting methods such as infrastructural inversion (Bowker, 1994), to begin addressing some of the issues I have discussed here. But there are also opportunities to develop new methodological strategies and concepts as I will describe next.

7.2.3 Diversity in Temporal Representation

One of the frequently used techniques in futures research and practice is the use of temporal representations. They form the foundation of some of the classic methods and frameworks such as the Futures Cone (Voros, 2017), Three Horizons (Sharpe, 2020), Futures Wheel (Glenn, 2009), and others, are based on visual representations of the relationship between the past, present and future. One reason for that is that time is an inherently abstract concept and representing it visually helps understand and discuss it. Another reason is that it helps frame issues at larger temporal scales. This approach aligns with construal level theory of psychological distance, which suggests that framing issues at a greater temporal distance has an impact on how people understand and act on those issues (Liberman, Trope, McCrea, & Sherman, 2007). Looking at a time horizon such as centuries or millennia allows one to frame challenges in a way that include larger systems
and broader implications (societies, continents, entire planet etc.). However, while systematizing and representing temporality in such ways can be useful, it tends to privilege certain kinds of knowledges. It highlights how certain ways futures emerge, while obscuring others.

To illustrate this point, I will draw from the work of Stewart Brand and the Long Now Foundation, of which Brand is a co-founder. The goal of the Long Now Foundation is “to provide a counterpoint to today's accelerating culture and help make long-term thinking more common.” (Brand, n.d.) The key premise of this approach is what humans perceive as “now” is a very narrow temporal scale, ranging from this very second to a few days. According to Brand, the challenges of our time stem not from mere selfishness but from a myopic view of time itself. Brand and his collaborators proposed extending “the now” to a much longer time scale, namely ten thousand years, so as to expand our capacity to tackle issues of greater societal and planetary concern. One of the strategies LNF uses is to change cultural representations of time. For example, members of LNF represent the year of a date with an added “0” at the beginning (e.g. the year 2020 would be 02020) drawing attention to the fact that how we represent time is a matter of cultural convention and convenience and that there are longer time scales. Another project of LNF the 10,000 Year Clock, a clock built into a mountain in west Texas. It is designed to work for 10,000 years without human intervention. Aside from being a unique engineering, design and fabrication challenge, it is intended to make a cultural impact “to be a symbol, an icon for long-term thinking.” (Bezos, n.d.)
Implicit in this approach to temporality is the belief that there are multiple levels or layers of temporality that one can organize in a hierarchy. To frame and solve problems at the appropriate scale one has to, in a way, match the temporality of that scale. Brand calls this pace layering.

Figure 22. Pace Layering Model

In this mode, the outermost layer is Fashion which operates on in the most rapid temporality. Fashion tastes change rapidly and unpredictably. The innermost layer is Nature and has the slowest (or longest) temporality. According to Brand, the relationship between the layers is that of reinforcement and sustainment. “In a healthy society each level is allowed to operate at its own pace, safely sustained by the slower levels below and kept invigorated by the livelier levels above.” (Brand, 1999, p. 36) Pace layering can be
useful in thinking about longer and shorter temporalities and can be applied in a variety of contexts. For example, Brand applied a variation of the pace layering model to demonstrate how temporalities in a building nest into each other from the level of an individual object to the site on which the building stands. This approach can be useful in thinking about objects and systems that are difficult to describe and perceive at a human scale of temporality.

However, in light of my argument that futures are socio-material, there are also some shortcomings in this model. First, pace layering and other similar approaches to representing temporality, tend to treat it as a given and, in some way, inherent to a specific scale: nature is long term, fashion is fast, infrastructure takes a long time, and so on. In addition, it systematizes temporalities in a fixed hierarchy that doesn’t reflect everyday experience and depends on the nature-culture duality that is also problematic. Recalling, Star and Ruhleder, “infrastructure is fundamentally always a relation and never a thing.” (Star & Ruhleder, 1994) While a bridge is indeed a material object and, once built, has a long-term impact over many decades, it is the relationality between the bridge and its various actors (human and non-man) that makes it infrastructure. And those relations, including temporal ones, are shaped on an ongoing basis and in many different ways. In other words, as I argued in the previous section, multiple temporalities can be embedded in and framed by the socio-materiality of infrastructures. FCLS infrastructures impose and promise certain futures encouraging, and sometimes forcing librarians to be and act one way or another. At the same time, librarians intervene into these temporalities and create pathways for alternative futures to emerge by attending to socio-material relations and creating new ones (i.e. infrastructuring). Therefore, a more productive way to think about
infrastructures is not as marker of a distinct temporality, but as a set of relations that can orient us to different temporalities at the same time. Nature can be experienced as fast, slow or even unchanging, depending on the infrastructures through which actors relate to it. The same could be said about fashion. In other words, temporalities are infrastructure-dependent and, like infrastructures themselves, they are relational. We have seen this in the work of librarians. Librarian’s everyday experience can be fast-paced and overwhelming through the market-oriented logic and management practices that tend to extract more from their labor. At the same time, these infrastructures can be slow and resistant to change. The Dewey Decimal system of classification, despite its many shortcomings including lack of versatility and a cultural bias ("Advantages and Disadvantages of DDC", 2016), remains the most common system of organizing information in public libraries. Furthermore, while public libraries are part of a local government bureaucracy that take years, if not decades to change, librarians’ infrastructuring work can create conditions for alternative futures to emerge within and along the existing infrastructures. Therefore, it is important for futures researchers and practitioners to represent temporality in more diverse ways that account for the socio-materiality and socio-politics of futures more comprehensively than established cultural conventions (Kozubaev et al., 2020). Taking temporality as a given, either by using some of the common methods and concepts that I described here or by not attending to it at all, undermines the very openness and generativity that futures research aspires to achieve.
7.2.4 Revisiting (Some) Futures Methods

The relationship between temporality and infrastructures has several implications on some of the foundational methods of futures studies. A common conceptual and theoretical concern for futures scholars and practitioners is “the image of the future”, including some of its equivalents, such as hopes, fears, anticipations, expectations, and others (Bell, 2009). Scholars such as Fred Polak, ascribed a significant explanatory power to images of the future suggesting the following: “the primary question then is not how to explain the rise and fall of cultures, but how to explain the succession of shifting images of the future. How do virile and forceful images of the future arise, and what causes them to decline and gradually fade away? Furthermore, how do the successive waves of optimism and pessimism regarding the images fit into the total cultural framework and its accompanying dynamics?” (Polak, 1973, p. 19) We can trace this commitment in many of the classic futures methods still in use today, including the Double Uncertainty model developed by the Peter Schwartz, who was a collaborator of Stewart Brand’s (Schwartz, 1996), the futures archetypes developed by Jim Dator (Dator, 2009), the futures wheel developed by Jerome Glenn (Glenn, 2009), and others. In some of the more recent orientations of futures research, Ramos articulated an epistemological shift from conceptualizing futures as “out there” to futures that are close to everyday experience “in here” (Ramos, 2017). However, even in this orientation, futures are primarily mental constructs such as assumptions, expectations, and of course, images (or more broadly, representations). Thus, a common characteristic of many futures methods is that they organize information and people in a way that fosters the creation of alternative representations of futures in a justifiable, believable, and engaging way. These
representations are often, but not always, textual and narrative. Much of the progress in futures research methods in recent decades has been in increasing the sophistication of these representations and their impact on practical decisions of today. This is also where speculative and critical design practice has contributed to futures research by offering new ways to create representations and forms (Dunne & Raby, 2013). However, to the extent that temporality is infrastructure-dependent, as I have suggested here, futures methods that rely so heavily on representing distant and unfamiliar futures miss an important aspect of how futures emerge. That is not to say that traditional futures methods are completely divorced from present conditions and experience. They do, in fact, draw from current experiences and knowledge of participants. However, much of the methodological concern is to develop visions of the future that defamiliarize and break away from the present. Jim Dator’s Second Law of Futures encapsulates this methodological concern quite well: “any useful idea about the future should appear to be ridiculous” (Dator, n.d.). Thus, the usefulness of these representations of the future hinges on how successful they are in creating a separation with the present. If we reconsider futures as socio-material and relational, as I observed in the work of librarians, then we must challenge ourselves to rethink some of the common orientations in current methods. Like Ramos, I propose to focus on futures “in here”, but I also argue for expanding their conception from mostly mental and social constructs to include socio-material relations.

What strategies might futures researchers and practitioners need to foreground the socio-materiality of futures and how might such strategies impact the epistemic stance of futures studies more broadly? In the previous two sub-sections, I have suggested some strategies for dealing with the socio-materiality of futures. The first was attending to the
infrastructures in which futures emerge, including accounting for the role of objects in shaping futures in everyday experience. The second was to diversify ways temporality is represented and used in futures research. Here, I propose two additional strategies. Third, draw from and account for futures as emerging from everyday experience and socio-material relations. I have previously referred to them as futures that are already there, meaning tactical everyday practices, often invisible, that create alternative ways of being and acting in the world. This will require revisiting some of the classic methods of futures studies, their reliance on narrativity (particularly Western narrative conventions) and separation from the present. Furthermore, focusing on futures that are already there, challenges researchers to expand what it means to study futures, and include not just those that are distant and with broad implications, but also those that are proximate and local. Fourth, develop new conventions and ethical standards for documenting and communicating the positionality and infrastructure-dependence of the futures researcher and her methods. This will require repositioning the futures researcher not just as a facilitator, expert, or even as an equal participant, but as an active agent who interacts with and responds to the socio-materiality and socio-politics of the communities in which she works.

7.3 Limitations and Future Research

I conducted this research in a particular time and place. While some of my claims have broader implications in HCI design and futures scholarship, it is important to reflect on its limitations and some of the questions for future researchers to explore. First, my choice of infrastructures and infrastructuring as a theoretical lens to examine public
librarianship opened opportunities to expand the bounds of civic and social design, albeit in the context of a unique professional community. However, it is by no means an inevitable choice and one that foreclosed other ways of looking at this professional community. For example, focusing on the everyday work of librarians meant not focusing on the everyday experience of patrons. Although I was exposed to the views of patrons and community members when attending public meetings and working as a volunteer, I did not interact with them at the same level of depth as I did with the librarians. To the extent that patrons and community members also participate in the infrastructuring work as volunteers, fundraisers, subject matter experts, activists, etc., those experiences are not reflected in this research and that is a gap that hope future research will fill.

Another potentially useful perspective relevant to civic and social design, and librarianship in particular, is design for services. In her historical analysis of service, Kim argued that a cornerstone concept for service design is that of participation, “the collective action of parts being connected to a whole” (Kim, 2018). This is view is an alternative to common understandings of service that tend to reduce it to objectified labor. Indeed, the expanding range of services offered in public libraries, as I have discussed in the previous chapters, makes this theoretical lens very relevant. However, service-oriented theoretical approaches necessitate taking into account the experience of both the service recipient and service provider. Furthermore, it has been argued that traditional conceptions of service in LIS have limitations because they "provide little understanding of the socially situated nature of service delivery, and of the social mechanisms underlying this activity in a given context." (Bouthillier, 2000). Future researchers could apply service design and service-oriented approaches to understand alternative conceptions of civic and social design.
I conducted this research at an urban library system in the American South, which makes it distinct from public libraries from other states and regions and from libraries in rural areas. Many issues faced by public librarians in urban areas, such as economic inequality, homelessness, violent crime, austerity politics, along with the rising expectations of public libraries to expand its programs and services are common and well documented (Mattern, 2007; Pressley, 2017; Real & Bogel, 2019). As such, much of the findings about librarianship as infrastructuring could be applicable in other urban public libraries in the U.S. However, my research was conducted at a unique time in FCLS’ history having to do with a large-scale renovation. In her work on the renovation of Seattle’s Central Library, Mattern showed how the design process of public libraries is a series of negotiations in that inscribe certain values into the architecture, and how library managers can use this process to materialize their visions of the future in the library space (Mattern, 2007). Indeed, as I have described in the previous chapters, the renovation process can make these negotiations uniquely visible both to the librarians and to the public. But such renovations happen rarely, sometimes once in a century. In public libraries where the last renovations happened a long time ago, one might need different research methods and conceptual frameworks, although infrastructuring may still be a useful theoretical lens. This is challenge I hope future researchers will take on.

Finally, I proposed some methodological opportunities for futures research. I elaborated potential directions and strategies for developing research methods that could account for socio-materiality of futures. I did not attempt to develop these methods in greater detail, nor did I critically examine the limitations and practicality of these methods. Furthermore, there may be methodological strategies that are better suited to address issues
of studying futures that I raised in this thesis. These are some of the questions I hope to explore in future research.
CHAPTER 8. CONCLUSION

In this thesis, I have examined the work of public librarians through the theoretical lens of infrastructuring and argued for a design space that supports librarianship as infrastructuring. U.S. public libraries as an institution face a set of conflicting forces. On the one hand, librarians’ professional and institutional commitments strive to provide free access information resources, services, and space for community members. On the other hand, market-oriented logics that influence and shape those same professional commitments, along with the politics of austerity and the growing reliance on digital products and services, undermine the locally situated relationships and values that libraries foster. Thus, imagining alternative library futures calls for a different conception of librarianship, one that recognizes the socio-materiality of their work in the community. In this chapter, I will summarize the key points and contributions that constitute the answer to my general research question: How do we design for public librarianship?

First, in my analysis of two participatory projects conducted with FCLS, namely SDD 2019 and the Mobile Seed Library, I drew attention to the socio-politics and socio-materiality of futures. In SDD 2019, I examined the possibilities and limits of participatory design speculation by drawing from findings form of a large-scale workshop and showed that while such events can be generative, they can also obscure or ignore unfavorable futures. The project highlighted how the act of asking “how things might be different?” (Mazé, 2016) in a public forum can be entangled with existing power structures and politics and that participatory design methods are limited in their ability to meaningfully challenge or influence them. Furthermore, I examined the socio-material conditions of my
own participation as a researcher and how it shaped the librarians’ engagement with futures, how they formed attachments across issues (Dewey, 1954) and what controversies were they willing to voice or challenge. This connects to some criticisms of designerly interventions as moments of privilege (Bødker et al., 2017) that circumscribe some futures while opening others. While SDD 2019 helped understand the politics of future-making in a public setting and at a large scale, the Mobile Seed Library project, showed how futures could emerge at a much smaller and less visible scale. Here futures emerge in the course of routine and everyday infrastructuring (Semaan, 2019) and often push the boundaries of legitimacy (Asad & Le Dantec, 2015a) and operate by creating tiny publics (Steup et al., 2018) visible and legible only to those who are involved in the everyday work. At the same time, the project highlighted how existing class hierarchies (Fox et al., 2020) shape the work of the librarians, ascribing value to their work and mobilizing their bodies across time and space. Ultimately, SDD 2019 and the Mobile Seed Library projects helped answer questions about the politics and experience of futures. Namely that (a) futures are socio-material and emerge at different scales of infrastructures and (b) librarians’ participation in making alternative futures are both enabled and circumscribed by their unique socio-material conditions, motivations, and their embodied experiences.

Second, I examined the work practices of the librarians and the evolving nature of the librarian’s working environment and conditions, which helped me identify two distinct types of infrastructuring practices in public libraries: (i) civic and social infrastructuring and (ii) and infrastructuring publics with and along market logics. Civic and social infrastructuring frames librarians as active agents of publics-in-the-making (Lindström, 2014) assembling resources and configuring novel relationships to serve local
This process often involves altering and challenging institutional frames of librarianship (Huybrechts et al., 2017) which, among other things, help connect rich community knowledge of librarians with other networks. This is becoming increasingly important as public libraries are forefront of several socio-economic crises (e.g. homelessness, substance abuse, etc.) which require skills and resources beyond their expertise (Pressley, 2017; Real & Bogel, 2019). Infrastructuring publics with and along market logics helps us deal with the results of ongoing privatization of public space (Alstad & Curry, 2003; Chowdhury et al., 2006) and what it means for librarians to serve communities with resources and institutions of incommensurate values. In the context of civic and social design, this form of infrastructuring directs our attention to new kinds of resourcefulness, opportunism and political awareness (Lindtner et al., 2018) that is less confrontational than advocacy or activism. The two forms of infrastructuring I have proposed in this thesis help further clarify the socio-materiality of librarian’s work and the relationships they foster in local communities both within and outside the physical boundaries of a library. They also challenge researchers and practitioners of civic and social design about the limits of interventionist and solution-oriented design. Finally, the two forms of infrastructuring have implications on the politics and experience of future-making. If futures are socio-material and infrastructural, then then one productive way to understand the emergence of futures is to locate distinct forms of infrastructuring in a particular community. This is where we might find futures that are already there and already in-the-making, not just as a socio-technical imaginary (Jasanoff, 2015), but as a practice of attending to and forming socio-material relations.
Third, based on the arguments above, namely that librarianship involves distinct set of infrastructuring practices, and that futures emerge infrastructurally, I proposed a series of provocations for researchers and practitioners of HCI design and futures. For researchers and practitioners of design I used the metaphor of cracking public space open and proposed three provocations: (i) design for everyday heterogeneity, (ii) design for quasi-legitimacy, and (iii) design for longevity at a small scale. While these provocations emerged in the context of public librarianship, they can be useful in advancing new forms of civic and social design and recognizing people who already design. For researchers and practitioners of futures, I drew out methodological implications based on the concept of infrastructuring and the socio-materiality of futures that it implies. These include (i) recognizing and locating infrastructural temporalities, (ii) diversifying temporal representations, and (iii) revisiting some of the classic futures methods. The implications for futures research build on recent developments in the field that focus on futures “in here” (Ramos, 2017), closer to everyday human experience, but also expand the notion of agency in shaping futures to include both human and non-human actors. To sum up, this thesis makes the following contributions:

- Using infrastructuring as a conceptual lens for examining futures as network of socio-material relations at various scales, contributes to the study and practice of future-oriented design including the emergence, contestation, and experience of futures. Furthermore, this conceptual frame expands our understanding of the limits of designerly interventions in shaping alternative futures. The secondary contribution is to the methods and practice of futures studies.
- The two distinct forms of infrastructuring, (i) civic and social infrastructuring and (ii) and infrastructuring publics with and along market logics contributes to the study and practice of civic and social design by complicating the boundaries between profit-oriented and civic/social motives of institutions as well as the people who work there. These two forms of infrastructuring further clarify the limits of designerly interventions in designing with and for communities.

- *Cracking public space open* and the more specific design provocations of (i) design for everyday heterogeneity, (ii) design for quasi-legitimacy, and (iii) design for longevity at a small scale, contribute to the practice of civic and social design by articulating opportunities for supporting public librarianship as a form of infrastructuring.

To conclude, I would like to return to the two stories with which I began this thesis. The story of the library as an obsolete and inefficient institution that needs to be privatized on the one hand, and the story of the library as a vital source of community support, openness, democratic participation, and unrealistic expectations that librarians face on the other. As I write this conclusion, public libraries and educational institutions are under intense partisan political pressure and racist attacks that, among other things, are forcing them to ban certain literary and history books (Strauss, 2022), making these expectations even more difficult to meet. What I have shown in this thesis is that design for librarianship as infrastructuring means contending with both narratives at the same time. It means supporting a set of activities, practices, and communities that exist at the nexus of contradictory, often incommensurate, values and commitments. These are the conditions that most forms of civic and social design faces today and are likely to continue to face in
the foreseeable future. I hope that the findings and conclusions of my work will challenge researchers and practitioners of design to rethink their theories and practices of designing for communities and public institutions.
APPENDIX A. INTERVIEW GUIDE

Participant ID:

Introduction

We are conducting a study about library workers. We are interested in personal experiences of librarians in how they do their day-to-day work. The interview will last about 1 hour. There is no right or wrong answer to any of the questions and you are free to not answer any of the questions I ask. Before we start, do you have any questions?

[Ask for permission to record audio]

Overview

- What is your title and what do you do?
- How long have you worked in this line of work?
- How long have you worked in this library?
- Why did you get into this field?

Daily Activities

- Can you describe your typical day?
- What technologies or tools do you use?
- Can you think of a technology or tool that makes your job easy?
- Can you think of a technology or tool that makes your job difficult?
Space

- Can you describe the space of the branch library in which you work?
- What is unique about it compared to other branches?
- What is your favorite place in this library? Why?
- What is your least favorite place in the library? Why?

Patron Interactions

- What kind of people use this library and what do they use it for?
- In what ways do you interact with library patrons?
- What kind of interactions are your favorite and least favorite? [ask for examples]

Working With Others

- Can you describe how you work with other library professionals both within and outside the branch?
- Who do you work with most and least frequently?
- What is most challenging about working with your colleagues? [ask for an example]
- What is most rewarding about working with your colleagues? [ask for an example]

Library Renovations

- What do you think about the renovations in this branch (or in other branches as the case may be)?
- Have the renovations impacted your work in any way? How?
• How do you think the renovations will impact your work once they are complete (or if they have already been complete ask how)?

**Library Work In the Past**

• How does your work today compare to what it used to be 5 to 10 years ago?

• What is different and what is the same? [make sure to cover the following]
  
  o Daily activities
  
  o Space
  
  o Technology and tools
  
  o Interactions with patrons
  
  o Working with colleagues
  
  o Who comes to the library and why they use it

**Library Work In The Future**

• How do you think your work will compare to what it might be in 5 to 10 years from now? There is no right answer, just your opinion.

• What do you think might be different and what might be the same? [make sure to cover the following]
  
  o Daily activities
  
  o Space
  
  o Technology and tools
  
  o Patron interactions
  
  o Working with colleagues
Who comes to the library and why they use it

- How confident are you that what you described will actually come true? Why?
- How do these ideas about the work in 5-10 years make you feel?
- Where do you think these ideas come from? [as for specific examples]
- Do these ideas impact what you do in the library today? [ask for an example]

Do you talk about such ideas with your colleagues or anyone else? With whom and how? [ask for an example]
APPENDIX B. DESCRIPTION OF ENGAGEMENTS

My involvement with FCLS started in 2017 and continued through 2020. It began as a small volunteering project and evolved into series of collaborations and partnerships. This appendix summarizes the engagements that did not constitute formal studies and therefore did not materially contribute to my thesis. However, because they were crucial in developing relationships with FCLS, it may be useful for the reader to describe them in detail.

B.1 Interactive Narrative Workshops

In the summer of 2018, I conducted a series of educational workshops open to the public and hosted by the FCLS. This was my first serious engagement with the organization. I designed the workshops to achieve several goals. First, I wanted to develop a working relationship with the librarians and offer something that was valuable but at the same time something the librarians could not do themselves. Second, I wanted to explore alternative representations of the future of libraries through design in a participatory setting. Third, I wanted gain experience in doing the work of librarians, which would later be invaluable in my field work. I proposed several workshop ideas to my partners in the library (the Outreach Department) one of which was a workshop on interactive storytelling using Twine. Twine is an open source authoring environment for interactive narratives and text-based computer games. ("Twine," 2020) The goal of the workshops is to uncover connections between how representing the future helps participants makes sense of it. Storytelling has been used in PD as a method in a variety of ways. Stories can be effective in sharing subjective experiences with others (Clarke, Wright, & McCarthy, 2012). Digital
tools have been used both to create novel modes of participation and alternative narrative forms. Arguments have been made to use digital storytelling as a distinct PD method (Ekelin, Elovaara, & Mörtberg, 2008). More recently, designers have turned to interactive narrative to explore ways of collaborative design practices such as co-creation (Song & Jun, 2017). There has also been some research that focused on subjective experiences in participatory representational practices, including PD (Selvin, 2011). In this project I drew from these approaches to PD and storytelling and applied them to understand sensemaking and participation with respect to socio-cultural dimensions of the future.

Based on the input from my library collaborators and their experience in conducting educational library programs, I designed a workshop to teach the participants the basics of storytelling, the basics of Twine and interactive narrative, and developments in recent digital technology (smart technology and internet of things) that participants could use as inspiration for their interactive stories. In addition, the workshop needed to allow sufficient time for the participants to build an interactive prototype. The initial workshop design is presented in the table below.
Table 2. Interactive Narrative Workshop Agenda (time in minutes).

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:00-0:05</td>
<td>Introductions &amp; Set Up</td>
</tr>
<tr>
<td>0:05-0:10</td>
<td>Discussion of stories</td>
</tr>
<tr>
<td>0:10-0:15</td>
<td>Introduction to Interactive Narrative</td>
</tr>
<tr>
<td>0:15-0:45</td>
<td>Introduction to Twine</td>
</tr>
<tr>
<td>0:45-0:55</td>
<td>Introduction to Smart Technologies</td>
</tr>
<tr>
<td>0:55-1:00</td>
<td>Break</td>
</tr>
<tr>
<td>1:00-1:20</td>
<td>Design Iteration 1 (participants build a prototype)</td>
</tr>
<tr>
<td>1:20-1:30</td>
<td>Feedback (participants share prototypes with each other)</td>
</tr>
<tr>
<td>1:30-1:40</td>
<td>Design Iteration 2 (participants improve their prototype)</td>
</tr>
<tr>
<td>1:40-2:00</td>
<td>Close (additional time for discussion and questions)</td>
</tr>
</tbody>
</table>

Figure 23. Discussion with Interactive Fiction Workshop Participants (Metropolitan Branch Library)
Figure 24. Participant Interacting with Twine (Ponce Branch Library)

This experience taught proved to be very useful in understanding the logistical, emotional and economic labor that it takes to create a new program. In addition to planning the workshop itself, I worked with branch managers to identify appropriate days and times for the workshops, designed flyers to promote the workshops both within and outside libraries (social media, nearby public spaces etc.) I also worked to secure other resources necessary for the workshop that FCLS could not provide. I applied for supplemental funding from the Digital Integrative Liberal Arts Center (DILAC) at Georgia Tech for purchase supplies and snacks. I worked with the IT team of our school (School of Literature Media and Communication) to secure several loaner laptops and associated peripherals and pre-load the Twine software on the laptops.

Over the course of several weeks in the summer of 2018, I conducted 4 workshops. Each workshop had mixed success in terms of attendance. One workshop had no attendants
at all. Other workshops had between two to four attendants. From the perspective of engaging with FCLS and understanding librarians, the workshop provided other benefits to me as a researcher. First, I developed close relationships with library branch managers and the staff. Second, I used the workshop to socialize my work in later engagements with other librarians (such as staff development meetings, management meeting and others). Later in my work, another library branch manager will ask me to conduct a similar workshop in a different branch. Third, one of the workshop attendants was an FCLS library administrator who will subsequently become one of my key advocates and allies in continuing to engage with FCLS.

B.2. Staff Development Day 2018

In 2018, I was invited by one of the FCLS administrators to participate in the annual Staff Development Day (SDD). SDD is an annual meeting of all FCLS employees where they share experiences, reflect on the results of the past year, celebrate each other success and outline goals for the following year. They also conduct educational workshops to teach librarians new skills. SDD is an important event for FCLS. The event is usually held in September or October and a significant amount of time and resources is spent planning and holding the event. It is the only time the entire organization of over 200 people gathers in one location. In 2018, the meeting was hosted at the Auburn Avenue Research Library and the theme of the year was Building Libraries of the Future Today. At the time, FCLS was ramping up planning and execution of library renovation, and the Central Library located in downtown Atlanta had already been closed. After consulting with my contact at the library and the director of the library Dr. Gabe Morley, I offered to participate in two ways.
First, I conducted a training workshop on interactive fiction and shared my experience about planning and delivering the Twine program over earlier that year. Approximately 15 people attended the workshop. Second, I conducted a workshop for the broader group of librarians about futures studies, in which we played a design game called The Thing for The Future. (Candy & Watson, 2012).

Figure 25. Staff Development Day 2018 - Participants During the Lunch Break
Figure 26. Staff Development Day 2018 – Workshop on Thinking about The Future.

Figure 27. Workshop on Thinking about The Future - Participants Interacting with the Game
At the conclusion of SDD 2018, I attended the manager's meeting as they discussed plans for upcoming library closures and how renovations will change library practices and interactions with the patrons. By participating in SDD, I expanded my network of librarians and administrators. This was the first time I met with FCLS director, who was very enthusiastic about the future of the library system and who later became a key stakeholder in promoting and enabling our collaboration. The experience also showed me glimpses of how librarians talk about "the future of libraries" and highlighted some issues and tensions related to the upcoming renovations.
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