



MONASH University

**Librarians Matter: A New Materialist Perspective on the Professional
Expertise of Liaison Librarians**

Barbara Anne Melles

Bachelor of Arts in History (Massey University), Master of Applied Science in Library and Information
Management (Charles Sturt University), Postgraduate Diploma of Education in Literacy (Monash
University)

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Abstract

Changes in the technologies of searching and accessing scholarly literature are a shift in the production of scholarly knowledge and a transformation of the site of scholarly communication. Power over decisions about the preservation of the scholarly record, access to research, measurement of the value of scholarly output, and the future shape of professional and academic work in universities increasingly resides within the platforms which provide access to databases, indices and academic search engines.

Liaison librarians in university libraries play an important role on the margins of academic endeavour as experts in scholarly communication and the use of library platforms. They teach students to find and access scholarly literature, and they advise academics on the platforms that provide research metrics. However, in library and research information studies and platform studies research, limited attention is paid to the everyday practices of liaison librarians when they teach and advise. Investigating the education role of liaison librarians is important because these platforms, like all library technologies, enact differences, which privilege some groups and exclude others. How these differences are enacted and how they matter is the focus of this study.

This thesis employs Karen Barad's (2007) agential realism and Sara Ahmed's (2019) rethinking of use to examine liaison librarians' teaching practices through a new materialist lens. A diffractive methodology, based on this approach, focuses on how librarians and their professional expertise are *produced* discursively and materially within the intra-activity of pedagogical encounters. Research for this project was conducted in the library of an Australian university. Data generated includes observation of liaison librarians' classes, librarians' meetings with research students and academics, maps librarians drew of their movement through the library building, and intraviews (Kuntz & Presnall, 2012) with the librarians, library staff, academics, students, and other university staff.

This study contributes to library and information research in its use of observation, an underutilised method in the investigation of the work of library staff. Through a focus on the mundane details of teaching, agency is reframed as capacity for action within intra-activity rather than a possession or attribute. Liaison librarians negotiate the boundaries of professional expertise and in/visibility as these are iteratively reconfigured in classes and meetings. The library technologies they teach are not fixed objects but are enacted together with professional expertise, scholarly knowledge, university policies, international rankings of universities, the spaces of the library, assessment topics, research questions, and library users.

This study builds on and contributes to research in platform studies. Library technologies are conceptualised as platforms, which not only provide access to knowledge but produce knowledge. The measuring mechanisms of library platforms have material consequences for academics and students, enacting some as valued and excluding others. University libraries are implicated in this measurement as they face the challenge of shaping an ethical path within the platform university.

Declaration

This thesis is an original work of my research and contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Barbara Anne Melles

6 August 2023

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Chapter 1: Introduction: The Thesis as a Becoming

Introduction

Cuts are agentially enacted not by willful individuals but by the larger material arrangement of which 'we' are a 'part.' The cuts that we participate in enacting matter. (Barad, 2007, p. 178)

This new materialist, diffractive research project reframes the long-standing question of what constitutes the professional expertise of liaison librarians who work in university libraries¹. I employ a new materialist, diffractive approach to examine how this expertise is performed and what it performs. The epigraph to this chapter, taken from the work of feminist philosopher and quantum physicist, Karen Barad (2007), sets out concepts that I have adopted as the basis of my approach. The first is that the world is not composed of individual components, human or otherwise, awaiting my attention as a researcher. Boundaries and characteristics are not innate possessions of objects and bodies but are agential enactments. As Barad notes, “there is no discrete ‘I’ separate from the intra-active becoming of the world” (p. 392). Liaison librarian professional expertise is instead understood as phenomena, the primary ontological unit of agential realism (p. 141)². Thus, librarians and their expertise are lively and iteratively reconfigured materially and discursively.

Just as liaison librarians are not “willful” (Barad, 2007, p. 178) subjects of my research, so too am I “always already entangled” (Renold, 2017, p. 3) in my research. I am an apparatus³, a boundary-making device, within the larger research apparatus. As a doctoral candidate, a former liaison librarian and supervisor of a team of liaison librarians, and someone currently working in a university library, I am entangled in this project in multiple, (sometimes hopeful, sometimes

¹ In library and information research, and within the library profession, university libraries are also known as academic libraries and librarians who work in them are called academic librarians. As these terms sometimes causes confusion outside the profession, I have chosen to not use them in my thesis.

² See pp. 31 and 37

³ Apparatuses are “specific material reconfigurings” (Barad, 2007, p. 142), which enact boundaries through agential cuts. For further discussion of apparatuses and agential cuts, see pp. 38-39.

challenging), personal ways. My research is coloured by my personal experiences: teaching students and researchers, reading policy documents that chart the aims of the university library, answering students' questions, providing advice to researchers, listening to discussions at staff meetings, and reading library and information studies literature. I become together with the liaison librarians with whom I have worked, practised lunchtime yoga, shared long conversations about the future of our profession, attended conferences, and shared friendships. This becoming has changed as I have moved into a new role in another division of the library, with the cuts mattering in different ways.

The second fundamental understanding that Barad identifies in the epigraph is that these agential cuts⁴ are part of the ongoing becoming of the world, with material consequences, and therefore of ethical and political significance. They matter. As I elaborate in Chapter 2, I am accountable for the cuts I enact (Barad, 2007, p. 184). This accountability is both in maintaining ethical dealings with the liaison librarians who generously allowed me to be part of their classes and meetings and also in paying attention to differences that make a difference (p. 36).

This focus on emergence means that I pay attention to the "fine detail" (Barad, 2007, p. 92) of the intra-activity of liaison librarians' teaching to understand how expertise, bodies, technologies, time, and spaces are enacted. Searching for and accessing scholarly knowledge are "practices of knowing" (p. 185), not only because they are about the communication of scholarly knowledge, but because they produce knowledge—knowing and being cannot be separated (Barad, 2007, p. 185). The knowledge produced has material consequences and is entangled with the measuring mechanisms of library platforms (see Chapter 4B). In the everyday teaching and provision of advice by liaison librarians, possibilities for action and exclusions from these possibilities are enacted: some bodies matter more than others.

In this chapter, I discuss how my experience working as a liaison librarian led to an interest in liaison librarian professional expertise. I then expand on how a new materialist approach informed

⁴ See footnote 2

my research. This is followed by a discussion of how the COVID-19 pandemic impacted my research and an outline of the significance of the project. In the final section of this chapter, I list the research questions and explain my thesis outline.

The Mattering of Liaison Librarians

This diffractive project derives from and intra-acts with my longstanding professional interest in how the education role of liaison librarians has been articulated in library and information studies literature and in the workplace by colleagues and management. The liaison librarian role (see Chapter 4A) is a relatively new one in the long history of libraries, evolving from subject specialist roles and changing over time. Liaison librarians are often aligned with particular faculties, disciplines or subject areas, teaching search skills, and providing research and scholarly communication support. As the name suggests, librarians in this role are an important intermediary between the library and members of the university community.

Changes in the liaison role reflect changes in university libraries. The future of university libraries, their buildings, and the librarians who work within them, have been a source of debate and professional anxiety since the move from centralised print collections to online decentralised collections (Gunapala et al., 2020; A. D. McAllister, 2021). I understand these changes as more than the introduction of new formats and means of accessing scholarly literature⁵. Rather, I conceptualise them as fundamental shifts in the scholarly communications landscape, disrupting the activities and significance of liaison librarians' work and the production of knowledge in the academy. These changes are part of broader changes in higher education. In this thesis, I draw extensively on the literature about platforms (Carrigan & Fatsis, 2021; Nichols & Garcia, 2022; Seaver, 2018; Selwyn & Gašević, 2020; Srnicek, 2017a; Williamson, 2020) to situate the remaking of university libraries as a result of political, social and technical changes wrought by the adoption of platforms in academia.

⁵ In my thesis, I use the term *scholarly literature* as a broad term to cover literature used by students and researchers for scholarly work from student essays to research articles. It does not include archival material; there is a substantial body of work on that topic from digital humanities and archival researchers.

Platforms are “digital infrastructures that enable two or more groups to interact” (Srnicek, 2017a, p. 43). I use the term *library platforms* to designate infrastructures that provide access to scholarly literature (Robertson, 2019). As I elaborate throughout this thesis, many of the large companies that dominate the library technology industry, those that supply library management systems and those that provide access to scholarly literature, operate as “evaluative infrastructures” (Kornberger et al., 2017), which extract data and insert themselves as intermediaries between different groups of users (Srnicek, 2017a). The notion of the “platform university” (Carrigan, 2020; Perrotta, 2021; Williamson, 2019b) is key to my research and indicates the extent to which these infrastructures are embedded in the work, research and study that takes place in universities.

In library and information studies literature, new technologies of scholarly communication are portrayed as alternatively a threat or an opportunity for liaison librarian roles. The consequent push to maintain the library’s legitimacy in universities centred on promoting the role of librarians as experts and teachers of information literacy. In these discussions, liaison librarians are performed as in/visible (see Chapter 2) in the university. My understanding of the performance of in/visibility here is Baradian with the boundaries of librarians and their expertise enacted into being (Barad, 2007, p. 135) with shifting visibility. In the workplace, concerns about academics’ and students’ lack of understanding of their role materialised in wistful comments from colleagues, “If only they realised what we did!”.

The library in which I worked as a liaison librarian met the changes in scholarly communication by developing librarians’ teaching roles in collaboration with academic skills advisers, whose formerly independent academic unit was moved into the library (L. Smith, 2011). We spoke about moving from a service model to a teaching model, and indeed words such as *support* and *service* were removed from our vocabularies and the website. We were colleagues, not assistants, echoing calls in the literature with titles such as *Not at your service: Building genuine faculty-librarian partnerships* (Meulemans & Carr, 2013). Claims of the indispensability of librarians

at conferences, in the workplace, and in library and information studies literature were almost uniformly based on the importance of the framework of information literacy (see Chapter 4A) or one of the frameworks built upon it. These assertions sat uneasily with me as they often framed the lack of recognition for information literacy as a problem for librarians to solve. Liaison librarians were simply urged to try harder.

Information literacy appeared to me to be “a phrase in quest of a meaning” (Foster, 1993, p. 344); that is, a device for legitimising the librarian’s role (O’Connor, 2009a) rather than a means of explaining how libraries were used for scholarly research and how this use mattered. There are ongoing calls for an exploration of other ways of understanding libraries, such as library historian Wayne Wiegand (2003), and for a more critical approach to information literacy, such as librarian Maura Seale (2016b). However, this research remains “on the fringes of librarianship, rather than at the heart of it” (Seale, 2013, p. 40). I was left with questions. If not information literacy, what then were we teaching that was so important? Were liaison librarians just training people on how to use the software? What was the particular professional expertise of librarians—what did we teach that others were not qualified to teach? Was I incorrect to be unconvinced about the value of information literacy? How, I wondered, did librarians matter? Did they matter?

As my research project progressed, I adopted a new materialist approach (Gamble et al., 2019), largely based on feminist and philosopher Karen Barad’s (2007) agential realism, which I discuss further in Chapter 2. This adoption reconfigured rather than answered the questions listed at the end of the previous paragraph. I use Barad’s work on relations as a way of understanding the use of library databases, indices, and academic search engines⁶ not as interactions between objects and people, but as material-discursive practices (pp. 148–149). What I previously understood as separate objects with predetermined boundaries and characteristics, such as librarians, search boxes, results

⁶ Language used to describe sources for scholarly literature varies and librarians often use simple terms to avoid confusion amongst users. Library databases are online collections of records containing either full-text documents, citations, or abstracts ([glossary](#)). Indices are collections of bibliographic metadata for a published text ([glossary](#)). Academic search engines index scholarly literature on the Web ([glossary](#)).

lists, databases, library buildings, and published texts, I now understand as entities differentiated through intra-activity (pp. 333–334) within the phenomena of liaison librarian professional expertise. Barad’s theorisation accounts for non-human and digital realities in new ways by focusing on what is performed (bodies and subjectivities) when librarians teach students and academics how to find, access and measure scholarly literature.

I explore my colleagues’ concerns, the literature on our profession, and data generated in my research, paying attention to the production of difference, both exclusions and possibilities (Barad, 2007, p. 90). A new materialist approach means that I do not attempt to provide a new definition of the role of liaison librarians and list the elements of their expertise, nor do I argue whether librarianship qualifies as a profession or not (Abbott, 1988; Drabinski, 2020). Rather, I focus on the multiple ways in which librarians matter, both in terms of how their professional expertise materialises, what “territory is claimed in that connection” (Jackson & Mazzei, 2013, p. 262), the ethical consequences of this, and how things could be otherwise. Librarians’ teaching does matter in the university, but this mattering is more than institutional recognition or being seen as useful; it is one part of the world making itself intelligible to another part of the world (Barad, 2007, p. 185).

In my thesis, I think diffractively with Barad’s (2007) concept of mattering, which posits that within the mutually constituted material and discursive consequences of difference, some things come to matter (are held to be of value) and others do not. I also employ feminist scholar Sara Ahmed’s (2019) exploration of use, which frames use and usefulness as both material and discursive. Ahmed’s work is especially relevant to librarianship as the library user is an important figure in library professional discourse and in library and information studies literature. The ‘user’ often provides the justification for changes and the measure of the university library value. Alongside the decades-long calls in the profession for services that meet users’ needs, there are less heeded reminders to examine connections between power and knowledge in the provision of these services (Buschman, 2017; Haider & Bawden, 2006; Wiegand, 1999, 2015).

Ahmed (2019) demonstrates how use is performative and enacts difference, as both a “losing sight” and “revealing” of bodies (p . 21). This provides a link to another diffractive device I employ in this thesis: the notion of in/visibility. I use this term to rethink librarianship’s long-standing preoccupation with its low status and negative stereotypes of the profession (Gaines, 2014; D. Hicks, 2015; Pagowsky & Rigby, 2014; Seale, 2008), and the changes in control of access to scholarly literature (Abbott, 1988). I also explore what is in/visible in the material-discursive practices of using library databases, citation indices and academic search engines, both in terms of how librarians teach use and what is useful, and what is produced by the measurement systems inherent in these library platforms. In doing this, the focus is shifted from individual users and tools, or determinate subjects and objects, to how use is a mattering, excluding some bodies and making subjectivities in/visible. Finally, I diffractively read (Mazzei, 2013, p. 781) Ahmed’s (2019) notion of use as belonging and a housing of ideas, along with Barad’s (2019) exploration of hosting to understand the changes in scholarly communication as part of larger reformulations of the site of educational activity in higher education institutions.

COVID-19 and Platform Power

My project began before the COVID-19 pandemic, which inserted itself as an apparatus into my research, both professionally and academically. The in/visible virus produced material effects. It made visible worldwide inequities and the underlying assumptions of privilege that produced and reinforced them. The pandemic extended the length of my candidature but, unlike others who were forced to completely revise their research projects, the initial data for my project had already been generated. I took leave to help transition our library’s teaching online and manage staff working from home. Then I requested more leave to deal with the personal impact of a restructuring, applying for a role in a different division in the library and setting up a new team through Melbourne’s 262 days of lockdowns (Vally & Bennett, 2021). Throughout the long working days and seemingly endless disruption, work on my thesis provided “material moments of slow time” (Taylor

& Adams, 2020, p. 4), replete with happiness and a means of understanding and resisting the forces of change.

The pandemic brought into clear sight the in/visible ways in which platforms wield power in their control of access to scholarly literature. For a short period, some initiatives were developed to accelerate the sharing of research about COVID-19 and to share this with researchers around the world (P. Anderson, 2020; Elsevier, 2021; JSTOR, 2022b; Open Access Scholarly Publishing Association, 2020). In addition, paywalled scholarly literature in general was made available to people as much of the world moved into lockdown in 2020 (JSTOR, 2022a; ProQuest, 2022). This was presented as a united effort by the world in the face of the virus, for example:

the entire world confronted a new phenomenon, and while scientists turned their full attention to understanding the nature of a new and deadly virus, libraries, publishers, and scholarly societies recognized that they held information that might prove to be useful in the urgent research effort. An amazing number of content stewards announced that they would remove any barriers to access to their materials, and it was not only scientific studies that were included. (Marcum & Schonfeld, 2021, p. 208)

Hopes were expressed for a new university to emerge from the pandemic, “that the promises of growth, efficiency, and commercial digitization from for-profit businesses should not replace the local commitment, physical space, and public good of universities” (Allen & McLaren, 2022, p. 389). Despite such hopeful characterisations, the free access to scholarly literature was selective and an expression of power (S. Moore, 2020, para. 5). The same period also saw limited changes to restrictive and expensive models for accessing textbooks (University of Guelph Library, 2020). The pandemic only intensified the relentless and alarming monopolisation of the library technology space by large multinational companies. This monopolisation is part of a seizing of opportunities by such companies in all other parts of the marketised and digitalised university infrastructure that the “pandemic opening” (Williamson, 2021) afforded. My research sits alongside studies of open access

complexities. While I explore the paywall, my focus is not on the work that is being done in this area, but on the material effects of the platforms in classes taught by librarians.

The “emergency digitalization” (Cone et al., 2021, p. 1) of education during the pandemic brought increased attention to educational technologies (edtech) and platforms. The literature on edtech, media, and platforms gave me the theoretical lens and vocabulary to talk about changes in the scholarly communication landscape in a way that is yet to be fully developed in library and information studies literature. The disruption of traditional relationships within universities from the dominance of platforms (Williamson, 2018) requires different understandings of the user and the usefulness of liaison librarians, as part of “institutional mechanics ... how different parts of a system *work together*” (Ahmed, 2019, p. 13). Therefore, this research not only questions traditional understandings of use in library literature through a material lens, but it also questions the performance of the static figure of the library user.

Finally, the pandemic highlighted the need to work with scholarly knowledge, in particular scientific research, in new ways. By June 2020 over 28,000 articles about COVID-19 existed (Hutson, 2020, para. 2). Researchers were confronted with an impossible task to read and make sense of this research glut in conventional ways. The global and urgent focus on research into the SARS-CoV-2 coronavirus brought this into focus but the growth in the number of journals (Jinha, 2010; Ware & Mabe, 2015) already defied “the natural limits of human researchers’ information-processing capabilities” (Antons et al., 2021, p. 2). The record of how searching is conducted, which this thesis explores, may soon be that of a practice superseded by machine reading of literature. This does not diminish the contribution of this thesis but rather illustrates the suddenness that digital changes disrupt and become part of academic practices, as the recent attention on generative AI demonstrates (Carrigan, 2023; Lund & Wang, 2023; Williamson, 2023). There is value in capturing what is performed in current practices to understand these changes. In addition, as I discuss later,

while new technologies bring new exclusions and create new differences, they also often replicate matterings from earlier technologies.

How this Project Matters

This study's new materialist approach to the professional expertise of liaison librarians is a new contribution to research about knowledge production in academia. Researchers pay limited attention to the role that liaison librarians' teaching plays in the making of the "borders, boundaries, and blockages of academia [that are] constituent of what comes to be known about the world, whose world views are accepted, and whose knowledge is taken to be credible" (Thwaites & Pressland, 2019, p. vii). I argue that teaching students and researchers how to use library platforms is not a neutral activity. Changes in scholarly communication are reconstituting the boundaries of knowledge and enacting difference. There is value in paying attention to this mattering in the work of liaison librarians as they teach students and researchers the seemingly mundane and technical skill of searching. I explore pedagogical encounters from this teaching, moments in which bodies emerge from the entanglement of material-discursive practices. Drawing on platform studies literature, I examine the material effects of the measuring mechanisms of library platforms within these encounters, and argue that university libraries are implicated in this measurement.

I challenge library and information studies literature's discursive focus, in which materiality is given a limited place. It is not that materials are absent from discussions in library and information studies literature. Library spaces and library technologies, both digital and non-digital, are recurring and dominant topics in library and information studies literature. Yet, their agentic nature is rarely theorised (Manoff, 2015). They are central and yet in/visible, often removed in discussions from the infrastructure in which they exist and their historical context. Love and fear of changes in technologies have polarised discussions about changes in technologies and, consequently, the expertise of librarians. Despite significant research into bias in the platforms' algorithms, such as Noble (2019) and Reidsma (2019), library and information studies literature often remains focused

at an operational level, with comparisons of platform performance and best practices in how to use and teach them; that is, a focus on *how to search rather than what search does*.

My research pays attention to materials, spaces and technologies, not as tools used or places inhabited by humans, but as part of the entanglement that is the becoming of the world. Rather than asking how technology is used by librarians, echoing Bennett's (2010) provocation I ask, What if librarians are not the only "source of action" (p. viii) in the library assemblage? By applying a new materialist approach, the teaching of searching for scholarly literature is understood as more than instruction about skills required to find a particular published text, or even helping users understand this as part of the larger, complex context of scholarly communication. It is the intra-active production of bodies of differing value—a decidedly ethical matter.

A new materialist approach provides a different perspective on liaison librarians' work. It gives a place to materiality, and conceptualises materiality as mutually constituted with the discursive. It pays attention to intra-activity rather than seeking generalisable results applicable "across time and space to other places and people" (Hayes et al., 2020, p. 358). A focus on the performative nature of technology offers a way of understanding changes in library technologies and how these matter when liaison librarians teach. A methodological approach that questions how data matters and that understands methods as themselves performative, can illuminate liaison librarians' mundane, daily and quickly-forgotten material-discursive practices. The desire to rethink the professional expertise of librarians and how this is researched led me to the following research questions.

Research Questions

1. How do liaison librarians matter in the platform university?
 - a. In what ways is liaison librarian professional expertise produced within the intra-activity of this mattering?

- b. What types of knowledge come to matter when liaison librarians teach students and advise academics?
- c. What material consequences arise for academics and students from the mechanisms of measurement enacted by library platforms?

Thesis Outline

This thesis is a diffractive exploration of liaison librarians' professional expertise. Each chapter acts as a diffractive apparatus, enacting agential cuts which reveal multiple performances of this expertise within the platform university. In Chapter 2, I discuss further my change of focus from an interest in social practices to a new materialist approach (Barad, 2003, 2007, 2014). The ethical, ontological and epistemological foundations of my research and the implications of these for the key concepts of my project are outlined.

Chapter 3 focuses on the methodological consequences of my new materialist approach. The research apparatus is explored and how choices I made about data generation materialised different knowledges. An overview of East Coast University Library⁷ and my data generation methods follows with an explanation of how these methods are productive, enacting particular realities.

The next two chapters, Chapters 4A and 4B, are diffractive readings of the literature; in particular, literature from library and information studies and platform studies. Two chapters are allocated to this review because its role is not merely a background to the study. A diffractive reading of the literature is a method of investigation; it is an apparatus (Wolfe, 2021, p. 33). The reading is a zooming in and out of research and professional literature to explore multiple and connected enactments of liaison librarian professional expertise and library technologies.

⁷ East Coast University Library is the pseudonym for the Australian university library at which data was generated for my project. I provide a background to East Coast University and its library in Chapter 3.

Following the review is the first of two interludes. These are designed to focus attention on two key technologies of liaison librarian expertise, the search box and the results list, in line with my contention that the materiality of library technologies deserves more attention. Interlude 1 explores the notion of the search box as a site where words matter in different ways together as part of the measuring mechanisms of library platforms. It considers how certain bodies are valued and others are excluded. Searching, although a taken-for-granted activity, is not neutral and is productive of bodies even before words are typed in a search box.

The three chapters which follow, Chapters 5, 6 and 7, explore the materialisation of expertise in the teaching of liaison librarians in more detail. In Chapter 5, pedagogical encounters from a number of classes and intraviews are read diffractively. As discussed in Chapter 3, I use the term *intraview* to distinguish these conversations from interviews and to highlight their productive nature (Kuntz & Presnall, 2012). In Chapters 6 and 7, I explore meetings between a liaison librarian and respectively a student and an academic. In this way the process of zooming in and out, begun in Chapters 4A and 4B, is continued and becomes more focused, leading to the conclusion in Chapter 8.

In Chapter 5, the space of the library is explored, through an “undoing” (Juelskjær, 2013, p. 765) of library walls, those of the physical building and the paywall. I use pedagogical encounters drawn from classes and meetings I observed and intraviews with liaison librarians. The classes are presented as a running sheet of a library class for students and are read through each other. The ebbs and flows of agency are charted, as the spaces of the library building and library platforms materialise as “sites of power” (Jackson & Mazzei, 2012, p. 133), in which liaison librarian professional expertise is both constrained and expanded.

Interlude 2 follows, and its focus is the results list of an online search, including the way it materialises as a means of measuring the success or otherwise of a search and thus the expertise of liaison librarians. This interlude serves as an introduction to the two following chapters that focus more explicitly on the measuring mechanisms of library platforms. These chapters each focus on one

pedagogical encounter. They reflect a progression from the traditional role of liaison librarians teaching students how to search for scholarly literature, which features in Chapter 5.

In Chapter 6, a liaison librarian is helping a master's student search for scholarly literature using citation trails in Google Scholar. This meeting is a bridge between new and traditional liaison librarian roles, in that the tools for measuring the value of published texts are used for finding scholarly literature. The ways in which the measurement of the citation trail enacts the student's topic as having less value and the consequences of this for the student and the liaison librarian are explored.

Chapter 7 is an example of liaison librarians' new roles in research support. It is based on pedagogical encounters from a meeting between a liaison librarian and an academic about the academic's research metrics. The academic's shame at the low number of citations her work has received materialises in the precise and unrelenting numbers on the results list. The citation counts materialise as different demands on the time of the librarian and academic in their fulfilment of separate yet entwined obligations within the platform university. This labour is both emotional work for the librarian and also a move into a new area of expertise, which is highly valued in the university.

In Chapter 8, I conclude that liaison librarians' expertise is entangled with the measurement mechanisms of library platforms. They emerge as experts in their opaque working, as reinforcers of dominant discourses about valuing research, as supporters of the university's expectations, and also as emotional labourers supporting academics. As university libraries, like their parent organisations, concede increasing amounts of power to platforms, the role of the university library and the liaison librarians who work within it, face significant challenges. In the same way that educational platforms are replacing the university as "sites of educational practice" (Mármol Queraltó, 2021, p. 32), so too have the platforms that provide access to scholarly literature become the site on which most aspects of scholarly communication are mediated.

Conclusion

My project grew out of questions I faced as a liaison librarian about my role's value, the skills required to be a liaison librarian and what exactly we were teaching. This interest in the professional expertise of liaison librarians was focused on conceptualising many of the databases, indices, and academic search engines that provide access to scholarly literature as platforms. Using Barad's (2007) notion of material-discursive practices, I explore the mattering of liaison librarians: the material consequences and how value or exclusion materialises. With this focus, I bring an innovative approach to the study of the teaching role of liaison librarians. I also contribute to research on liaison librarians through my attention to the intra-activity of student classes and meetings with students and academics. I investigate the bodies and knowledge produced in these classes and meetings. Library platforms are not simply tools for the retrieval of published texts; they are performative, bringing particular realities into being. In the next chapter, I consider more closely the ethical, ontological and epistemological foundations of my research project, explaining key concepts and how they are employed in this exploration of liaison librarian professional expertise.

Chapter 2: Mattering, Becoming and Knowing

Introduction

My research is a new materialist exploration of the mattering of the professional expertise of liaison librarians in the platform university. I am not an outside observer of this project but am part of it. This project grew from an interest in university libraries' ongoing quest for legitimacy in academia. It developed into the larger question about how bodies and knowledge are produced through the measuring mechanisms of library platforms, and how liaison librarians and their expertise are part of this production.

In this chapter I expand on the key ethical, ontological and epistemological elements of my research approach. These elements are inseparable, so much so that Barad (2007) devised the term "*ethico-onto-epistemology*" (p. 185) to make this explicit. I employ Barad's explanation of their ethico-onto-epistemology to outline the approach to my research, "the intra-activity of becoming, the ontology of knowing, and the ethics of mattering" (p. 36). In the first section, I consider, through my own experiences, how my research project evolved. I discuss how liaison librarian expertise, the practice of teaching, spaces and technologies can be conceptualised for the purpose of this thesis.

In the second section of this chapter, I set out my understanding of diffractive research and its focus on difference and the performance of bodies and subjectivities, including space and time. In the third section, I outline an ontology of knowing and discuss how knowing and being are mutually constituted within intra-activity. I outline how liaison librarians and professional expertise are conceptualised in my project. I also introduce key notions for diffracting data: in/visibility, use (Ahmed, 2019) and hosting (Barad, 2019). Finally, in the fourth section, I bring together discussions of ethics throughout the chapter and consider more fully how I am implicated in this mattering. Through these discussions, I present my ethico-onto-epistemology as not only a useful guide for my research but also as a mattering in itself; the product and producer of multiple agential cuts.

From Social Practice to Diffraction

A diffractive approach to research, with mattering at its centre, was not how this project began. Initially, the focus of my research was based on questions from my professional experience as a liaison librarian. I wanted to define and articulate the unique skills of librarians, to measure and identify these in their teaching, and to prove the value of the work I and others were doing. However, this attempt at definition was “performative” (J. Law, 2009, p. 249) in which librarians were enacted as problems to be solved.

An emerging interest in the intersecting strands of professional expertise, space, and technologies led me to social practice theories. Within this family of theories, practices are broadly understood as “embodied, materially mediated arrays of activity, centrally organised around shared practical understandings” (Schatzki, 2001, p. 11). In particular, the description of practices unfolding in “words and discourses (‘sayings’), in action and interaction in physical and material space-time (‘doings’), and in the networks of relationships between the people it includes and excludes (‘relatings’)” (Kemmis, 2009, p. 23) was compelling. The notion of relatings, especially their link to exclusion and inclusion, resonated with what had excited me in the geographer Doreen Massey’s (2005) conception of space as relational and full of possibilities, and in ethnographer and philosopher Annemarie Mol’s (2002) account of the different ways that a disease is “done”. The potential for these ideas to reframe investigations of librarians’ work offered a way forward from the narrow scope of my initial questions.

I undertook research at East Coast University Library by paying attention to sayings, doings and relatings. These formed a lens for exploring librarian professional expertise. Understanding my place as a researcher was more challenging. An example from my notes on the third day in the Library illustrates how this challenge was not separate but entangled with the sayings, doings and relatings. I did not realise it at the time, but this was a pivotal moment in my research. As I watched a liaison librarian teach a class, I wrote two questions in my notebook: *Has the role of librarian been*

reduced to the subtleties and technicalities of databases? The database as the central material of librarianship?

The use of the word *reduced* in my notes indicates that at the time I felt this was a rather mundane role for librarians, a step down from something more important and substantial, which library and information studies literature and discussions in my workplace claimed it to be. Watching another librarian teach a class similar to many I had taught, the topic seemed to be the rather elementary matter of how to use yet another search interface, for which anyone could gain expertise relatively easily. This seemed far removed from the aspirations in information and library studies literature. Furthermore, it is far from my workplace's hope for the liaison librarian's role to be at the centre of learning at the university. How could librarians claim teaching database use as a particular expertise? The questions seemed to herald a dissolution of my research focus. Was there nothing to report? In retrospect, understanding myself as an apparatus within the research, I see that my research at that time was the quest by yet another librarian for the ingredient that would infuse our teaching with meaning and therefore worthy of respect. I was as much the object of the search for legitimacy and the changes in library technologies as they were the object of my research.

These questions remained during data generation, and they identified areas I needed to understand to write about the data I had generated. I felt compelled to reassess my role as a researcher. I wanted to avoid thinking of practices as reified (Nicolini, 2017, p. 21), objects to be identified by a researcher, but rather explore them as lively, agentic productions of multiple realities (Mol, 2002; Mol & Law, 2002). In addition, research on practices from a sociomaterial perspective, that is the mutual constitution of the social and the material, questioned linear relationships between the professions and their work (Fenwick & Nerland, 2014). They argued that professional expertise is more than codes of conduct, lists of competencies and required knowledge performed separately by individuals (Hopwood, 2016). Rather, "practice and expertise are always embodied" (B. Green & Hopwood, 2015, p. 5) and entangled with spaces, time and knowledge. Particularly

useful was the notion of epistemic objects, “complex problem-knowledge constellations around which practitioners gather and communities form” (Nerland & Jensen, 2014, p. 27), a development of the work of sociologist Karin Knorr Cetina (2001 & 2007, as cited in Nerland & Jensen, 2014, p. 27). It focused my attention on the problems that professional work is trying to solve rather than my initial focus on listing the skills required by librarians. The common thread through the research I have discussed was an interest in the material, how work is done, and what it performs. It is not surprising then that it was through some of these researchers—for example, Davide Nicolini (2012), Nick Hopwood (2016), and Wanda Orlikowski (2010)—that I found a way of bringing together sayings, doings, and relating. Discussions by these authors about the work of Karen Barad (2007) led me to the notion of agential realism, which became the challenging, comprehensive and compelling framework for rethinking my project.

In particular, Barad’s (2007) work on relationality offered a way of understanding that relations were not interactions between objects and people but becomings within intra-activity. Relations are everything, as Barad states, “relations do not follow relata but the other way around” (p. 136). To illustrate this, there is an agential realist study of the materialities of school council meetings by Eve Mayes, an education researcher. Mayes (2019a) argues that previous and current involvement in the school council of family members of one student, Rebecca, materialised “the phenomena of Rebecca as student representative” (p. 513); one who was more prepared for and therefore less daunted by the prospect of membership of the council than others. Mayes notes that this phenomenon “did not precede” (p. 513) its multiple enactments, in which indeterminacy is temporarily resolved.

Applying these ideas to my research meant that what I previously understood as the use of technological tools by people, for example, librarians teaching students how to search databases, academics trying to increase their citation counts or students feeling their topics were not valued, were rather lively and shifting phenomena differentiated through intra-

acting agencies. This understanding shifted my research to a “*study of how things come to be* [rather than] *a study of what is*” (Wolfe, 2017b, p. 729). What drew my attention was not the identification of a list of skills that liaison librarians taught about finding scholarly literature, nor was it placing these skills with the larger, complex context of scholarly communication. Rather it was how skills were valued, used to define librarianship, and materialised through the measuring mechanisms of platforms together with other bodies as part of the phenomena of liaison librarian professional expertise.

The notion of phenomena brought my thesis questions full circle. I came back to a focus on the databases and the teaching of librarians, but this time offering an opening up rather than a closing down of my research. A new materialist approach asks different questions than those asked in much of library and information studies literature (Manoff, 2013, p. 275). These questions shift attention away from librarians as the lead actors and, at the same time, focus a deeper attention on librarians as “agential enactments” (Shotter, 2013, p. 33) within phenomena. As I describe in the following section, this is a rethinking of the notion of agency. This change in my research approach has left material traces through my writing. As I discuss in Chapter 3, feelings of doubt and regret about the implications of this change for my research and the data generated matter in the agential cuts I enacted in the writing of this thesis. In the remainder of this chapter, I elaborate further on how key concepts from Barad’s agential realism inform my understanding of the world and my research.

“The Intra-Activity of Becoming”

In this section, I outline the notions of intra-activity and mattering, both key concepts in my research. I discuss how they are related to difference and ethics. Diffractive research does not aim to merely identify difference, but to examine how differences matter (Barad, 2007, p. 36). The mattering of difference is an ethical matter, “tied up with responsibility” (p. 36). The ethical, ontological and epistemological foundations of my research are “inter-/intra-laced” (B. M. Kaiser &

Thiele, 2014, p. 165). The importance of ethics is made clear in Barad's (2007) neologism, "ethico-onto-epistem-ology" (p. 185). Ethical matters are not able to be disentangled from the "fabric of life" (p. 182). One way my research is an ethical project is because I, like all other bodies, human and nonhuman, are woven into this fabric, the becoming of the world, where "even the smallest cuts matter" (p. 384). It is diffractive not only because I apply notions of diffraction but because it acts as a diffractive device, an apparatus, enacting differences that matter.

My understanding of diffraction draws on the work of feminist science and technology researchers Donna Haraway (1989) and Karen Barad (2007). Haraway's (1989) interest in the interference patterns caused by diffraction (p. 299) prefigures Barad's (2007) exposition of the diffractive movement of waves. When waves are disturbed, pass through an opening, or move around an object, "superposition" (Barad, 2007, p. 76) occurs. If two peaks or two troughs overlap, each is intensified. When a peak and a trough meet, destructive interference occurs, and they cancel each other out.

Barad (2007) builds on physicist Niels Bohr's "philosophy-physics" (p. 24) to argue that diffraction, the interference patterns formed by waves, demonstrate "how science does philosophy" (de Freitas, 2017, p. 741). Diffraction is not merely a helpful analogy drawn from the natural world that can help us understand the social world (Barad, 2007, p. 70), nor an attempt to "'bridge' the humanities and natural sciences" (p. 93), which uses what happens in the laboratory as an analogy for engaging with the social world (p. 70). Rather, questions about being and knowledge in quantum physics are also at play in the social; for example, "the conditions for the possibility of objectivity, the nature of measurement, the nature of nature and meaning making, and the relationship between discursive practices and the world" (p. 24).

Mattering is used simultaneously to describe what is important and what materialises. It signals the inseparability of materiality and ethics, and their centrality to understanding the world. Diffractive research does not merely identify difference, it pays attention to the making of difference

and the effects of these patterns of difference (Barad, 2014, p. 172). As Taylor's (2017) discussion of tables in a higher education setting, this involves more than ascribing "thing-power" (p. 320) to something by asking what it does; rather, it asks us to see it as a "dynamic 'coming to matter' in the space-time of here-and-now" (p. 320). In this research, asking what comes to matter within intra-activity, what "territory is claimed in [a] connection" (Jackson & Mazzei, 2013, p. 262), means that an exploration of librarian expertise not only looks at the subject matter of librarians' teaching. It moves beyond the "pushing and shoving ... contests won and lost" (Abbott, 1988, p. 433) of attempts to legitimise this expertise to which bodies are produced, validated and excluded within the intra-activity of pedagogical encounters.

Exclusions, the differences that difference makes, matter. They are "material and have material effects" (Juelskjær, 2013, p. 756). In this research diffractive approaches make matter "intelligible" (Lenz Taguchi, 2012, p. 267). For example, in Chapter 6, the notion of a gap in the literature, as materialised in results lists and citation trails in Google Scholar, performs a student and their research area as mattering less than other bodies. This mattering is also enacted for the students when occupations are discussed as part of introductions in social gatherings. This example illustrates how concepts are "specific material arrangements of experimental apparatuses" (Barad, 2013, p. 21), and the conceptual and the material are mutually constituted. For the student, matter and meaning are entangled (Taylor & Gannon, 2018, p. 466) in the numbers in the results lists and citation counts on the screen.

Meaning and the material are mutually constituted, so that "the material is always already discursively produced and the discursive is always already materially produced" (Mazzei, 2014, p. 745). Thus, the discursive has material effects and the material is not inert but conceptual. The mutual constitution of the material and discursive means that neither is "ontologically prior" (Barad, 2007, p. 151), but rather they emerge together. Discourse is not synonymous with what is spoken, rather it is what can be said. In this way, it is a boundary-making practice (Barad, 2007, p. 151).

Statements deemed to be meaningful, and subjects emerge together, enacting difference. For example, in Chapter 7, the helpful advice librarians provide to academics and doctoral students about increasing metrics enacts multiple academic bodies, from shameful and poorly performing through to those commanding admiration, according to how high their metrics are. These academic bodies are material-discursive productions, materialised in citation counts in the results lists of searches in citation indexes, and in the language used by the librarians; both in their praise of high citations, and the ongoing assumption of the importance of this measure. Rather than diminishing the librarian and their expertise, this enriches what can be known about librarians and their quest for legitimacy.

It is an emphasis on performativity that marks Barad's materialism from other materialisms (Gamble et al., 2019, p. 122), as "everything is performative" (Højgaard et al., 2012, p. 78). Adopting this approach is a deliberate move away from the focus in library and information studies literature on perceptions of the roles of librarians and recounting of the experiences of librarians teaching. Educational theory and practice researcher, Elizabeth St Pierre (2011), suggests that researchers must do more than recount stories and perceptions, "even though experience matters a great deal, the work of the researcher is not to revel in the swamps of experience for too long but to investigate the discursive and material conditions that constrain what can be said or lived" (p. 44).

Space and Time as Matherings

In my research, I understand the spatial, temporal and social aspects of the library as constituted together. The space of the university library is not contained within the library building. Space is produced within intra-activity (Barad, 2007, p. 179), and both temporal and spatial reconfigurings produce subjectivities. Space is "open, multiple and relational, unfinished and always becoming" (Massey, 2005, p. 59). Based on this understanding, the university library space is more than the library building; it is an assemblage, a "process of arranging, organizing, fitting together" (Jackson & Mazzei, 2013, p. 262). This is more than the notion of an infrastructure, which while

helpful in highlighting the various parts of the platform university does not directly speak to the performative nature of this coming together.

Time is not a neat series of periods, minutes, epochs, hours, or a container within which events happen. The future and past are enfolded as matterings, and therefore the present is “not simply here-now” (Barad, 2010, p. 244). In library and information studies, within the literature about possible new roles for librarians, the future materialises as hopeful while at the same time marking the deficit in current librarian expertise and motivation, which they must overcome. The past is something to move away from, a means of measuring what librarianship is not. This enfolding of the past, present and future has led to privileging of the digital over print; the reinforcement of gendered, ageist attitudes to what librarians can be; and the overlooking of how knowledge is produced. Yet, as I demonstrate in Chapter 5, the material-discursive production of library spaces with their declining number of shelves of print books and Dewey Decimal orderings are not a simple dichotomy of relics of the past and a technology-based realisation of legitimacy. Rather, library spaces are complex matterings of liaison librarian professional expertise, and within this intra-activity, time and space are not fixed entities but productive and produced.

Space and time are not outside the becoming of the world but emerge within its intra-activity (Wolfe, 2017a, p. 67). Barad (2007) uses the term “spacetime mattering” (p. 315) to signal that neither time nor space are containers within which activities occur, or “for matter to inhabit” (p. 180) but are performative and performed. The social is enacted into being and the material world is not a static backdrop or props used by humans, merely offering affordances and limitations, but is similarly enacted and productive of relations.

“The Ontology of Knowing”

In this section, I discuss how a new materialist approach to understanding knowing and being as “intra-active processes from which different phenomena become intelligible” (Nordstrom, 2015, p. 393) informs my research. Such emergent intelligibility means that I am not outside my

research observing and recording reality. Rather, both the observed and the observer, subject and object emerge together as “*different becomings*” (Mazzei, 2014, p. 745) within the intra-activity of my research. The entanglements of mattering, becoming and knowing are “highly specific configurations” (Barad, 2007, p. 74). The nature of this entanglement is explained in the term *phenomena*, the primary ontological unit of agential realism (p. 33). Reality is composed not of things interacting but of “things-in-phenomena” (p. 140). Barad (2003) describes phenomena as “the ontological inseparability of agentially intra-acting components” (p. 815), and as the “ontological entanglement of objects and agencies of observation” (Barad, 2007, p. 309). That phenomena are described not as things but as relations highlights the challenge that this term presents in focusing on the performative and remembering that “materialization is not the end product” (p. 180). I expand on this challenge in Chapter 3.

Key to understanding diffraction is the notion of indeterminacy. Superposition is not a mixture of things with determinate boundaries and characteristics. Barad’s (2003) term *intra-action* (p. 815) underscores this point and signals a break from notions of interactivity, with its understanding of a relationship between distinct objects. It is within intra-activity that phenomena are enacted, indeterminacy is resolved, bodies are performed, and subjects, objects and agencies are mutually constituted (Barad, 2007, p. 197). An example of this is found in a description by one of my study’s participants, “Chris”, a senior staff member at East Coast University Library. Chris notes how changes in the role of librarians has changed and freed up time formerly spent managing print collections, and describes attempts by librarians to take on the role of teachers in the university:

So suddenly, or not so suddenly, over the last 10 years, we have all this time freed up, so now we can start doing things I say we want to do but I think it leaves libraries in an interesting position because nobody’s asking us to do that to a great degree. We think it’s a good idea, I’m sure it is a good idea, um, [slight pause] but it’s interesting the way we’ve

assumed roles that might not have been asked of us, the facilities people, um [pause] aren't knocking on doors saying, what can I fix for you today? (Chris, intraview)

Within the intra-activity of Chris' comments, the phenomena of liaison librarian professional expertise is performed and its boundaries are drawn through agential cuts enacted by those outside the library. These cuts are waves diffracting on the roles that the library attempts to claim as legitimising and useful work. The boundaries of what constitutes librarian expertise shift and are redrawn in multiple conversations and experiments. As Chris points out, merely claiming expertise is not sufficient to ensure legitimacy. Agency is not something possessed by the library or bestowed on it by others, it is enacted in the intra-activity of power dynamics in the "measured university" (Buissink et al., 2017, p. 570; Peseta et al., 2017, p. 453), educational trends, competitions for limited funding in the university, notions of the student experience, opinions already formed about libraries and national and international standards. More than that, the agentic possibilities do for liaison librarian possibilities do not exist outside the phenomena (Murriss, 2022, p. 55) enacted in Chris' description.

Barad (2007) uses the term *apparatus* to describe a measuring device that performs an agential cut. Within this cut indeterminacy is resolved. The notion of measurement is central to agential realism. The measurement enacted by apparatuses cannot simply be equated with counting or numbers, although in some cases this is involved. This is a development of Niels Bohr's contention that in two-slit experiments the method of measurement determines if an entity "behaves" (Barad, 2010, p. 256) as a wave or a particle. This experiment demonstrates that the means of measurement cannot be separated from the final measurement and that apparatuses are not neutral objects or forces causing change (Barad, 2007, p. 148). There is no observation outside the apparatus (Hayes et al., 2020, p. 360). As I describe in Chapter 6, the link to a citation trail in Google Scholar is a citation count. The count acts as an apparatus identifying whether a published text is worth reading, or a citation trail is worth following before any of these are read (another click is required to read the texts). In this agential cut the measuring mechanism materialised on a web page, "both captur[es]

and set[s] standards, it records and produces” (Beer, 2016, p. 45). The prominence of the seemingly irrefutable citation count materialises numerical measurement as the measure of the value of a text.

Apparatuses are “material configurations or reconfigurings of the world” (Barad, 2007, p. 146), enacting agential cuts, each of which “produce different phenomena” (p. 175). An agential cut determines what matters, what is counted and, importantly, what is excluded. It is in these cuts that indeterminacy is resolved and “boundaries, properties, and meanings” (Barad, 2007, p. 148) are enacted, producing difference (Mayes & Wolfe, 2020, p. 422). In an educational context, Mayes’ (2019a) rethinking of the presence of students on school governance councils provides an example of these ideas in action:

What is understood to be a distinct human subject position (for example, a chairperson or student representative), or a physical object (for example, a table or chair), or what we may think of as ephemeral and non-material (for example, an emotion or idea that a person ‘has’ or a decision that a group of people ‘make’), are each *phenomena* that emerge *in intra-action* and that are contingent on the cuts that apparatuses make. (p. 508)

A focus on phenomena means that my research is not the investigation of “nameable ‘things’ that, once they are named, remain the same “while we are inquiring into their nature” (Shotter, 2013, p. 43). Rather, my interest is in how the phenomena of liaison librarians and their expertise are iteratively produced, “not just reporting what *is* but how what *is* has come to be and how *is* could be otherwise” (Wolfe, 2017a, p. 69). The way this approach works is exemplified in a study of school students and their new beginnings by social psychology researcher Malou Juelskjær (2013).

Juelskjær resists focusing on new beginnings and what these look like for each student. Rather she suggests that “the question is not whether Mary and the rest of the students get a new beginning; actually it is an undoing of the question of ‘the new’ and of the willful subject of the new” (p. 765). This is about power and who gets to say what a new beginning is, who gets to have one, and how different bodies are produced within different understandings of new beginnings.

In adopting this approach in my research, I understand liaison librarian professional experience not as a commodity or quality that I determine at the beginning of my research and then seek out in the data that is generated. It is not found in “superior and stable individual performances” (Engeström, 2004, p. 146) of liaison librarian work. Expertise is a material-discursive, agentic enactment, iteratively assembled and reassembled. These performances of librarian professional expertise emerge together with the affordances, algorithmic configurations and “future imaginaries” (Williamson & Komljenovic, 2023, p. 237) of library platforms. The liaison librarian does not predate these imaginaries but emerges together with them.

The notion that liaison librarians and their professional expertise emerge together with library platforms expands, rather than diminishes, possibilities for understanding their teaching role. For example, in the following pedagogical encounter, the professional expertise of liaison librarians is entangled with different library technologies, the platform and the search planner, an online or print template used to help students plan a search (see Interlude 1). “Lee”, a liaison librarian, is explaining to an education PhD student, “Aroha”, the importance of including alternative terms for concepts when searching:

Lee: But it’s actually then starting to think about the keywords that you’re searching in and in education that becomes really, um, quite important because we have all these issues like in America, they use different words to what they use in Australia

Aroha: That’s right

Lee: Primary and secondary education

Aroha: Yeah yep

Lee: Um you know there might be particular jargon terms that you have in the education field that in the databases searched they might not match ... and that could be why you’re getting a bit stuck

Aroha: I need to be careful about that, ok

Lee: That's right, it's really important, because often what happens is databases, they, they'll use a specific way of describing a concept

Aroha: Right

Lee: That might be different, it might even be just spelling, or it might be completely different word

Aroha: Right

Lee: To the concept that you're searching for, so

Aroha: Ok

Lee: So this, this, um, planner you can actually start to write down your words but also the words that they might be using ... and then you'll find that one database might use one term for it and another database might even use a different keyword term

This pedagogical encounter provides an example of a recurring theme in my research, the agentic nature of the enactment of liaison librarian expertise in the teaching of search skills. This expertise is entangled with the platforms in material-discursive ways. Firstly, the configuration of search parameters and relevance in databases is complex. In this encounter, Lee uses decidedly nontechnical language to describe the technicalities of how some words come to matter in the search box (see Interlude 1). The language is in fact so vague that when Lee states, "often what happens in databases, they, they'll use a specific way of describing a concept" it is hard to know if this is referring to an author of a published text or the automatic generation of subject headings⁸.

This lack of clarity about who "they" actually refers to is a fitting materialisation of how control of scholarly communication is negotiated within library platforms. This negotiation is a

⁸ See [glossary](#).

matter of the role of authors of published texts. In this passage, the published text is a full-text PDF, which is the end result of a successful search, and the author whose words are searched and categorised is strangely absent. Rather, the database materialises as an inscrutable, wilful object creating searchable terms and determining what counts as a successful search. As I elaborate on later, the boundaries of what counts as scholarly knowledge are enacted within library platforms.

The liaison librarian materialises as the indispensable intermediary between what is often the platform's unknowable algorithmic configurations and those learning to search. As I discuss in Interlude 1, one way this expertise materialises is in the preparation of a search using a search planner template, which Lee refers to at the end of the encounter. The planner does not merely reflect the structure of an advanced search interface in a database, it also enacts the limits of librarian professional expertise enacted by that interface and the internal workings of the platform. This brief exploration of the "fine detail" (Barad, 2007, p. 92) I have engaged in here demonstrates the way in which a relational approach to research decentres the notion of the already formed subject and opens up fruitful explorations of how boundaries are negotiated and agentially enacted.

Liaison librarian professional expertise also emerges as a "specific material effect" (Hayes et al., 2020, p. 358) of power relations within the university, in particular with academics and faculties. Two examples from my research illustrate the different ways in which faculties materialise together with this expertise. In the first, "Lucy", a liaison librarian, describes a cross-disciplinary unit in which she taught and she semi-humorously notes, "there were no students from my school in there, so, the amount of effort and time that went into it, [pause] compared to how much reward I will get from my students being more knowledgeable, mmm pretty small [laughs]" (Lucy, interview). As I discuss in Chapter 4A, liaison librarians are generally aligned with a particular faculty or department and their role is described in terms of this alignment; for example, the liaison librarian for science. In this mattering, Lucy's professional expertise has value when it is expended on students from the faculty to which she is aligned—improvement in the skills of students from that faculty validates her

expertise as a teacher. The connection and alignment with faculty is important and Lucy's expertise cannot be understood apart from it. Lucy's assessment about her work is not arbitrary, it is a mattering of how her work is measured and valued within the library reporting infrastructure. In this intra-activity, the faculty is merely a vehicle for articulating the limits of Lucy's expertise.

In the second example, liaison librarians' work with faculties materialises the unequal relations between the university library and faculties. "Laurie", another liaison librarian, is explaining her work on a large project embedding digital literacy into a first-year course:

Yeah, we're pretty much partnering as they would say with the faculty, which is great, so they include us now, um, so that that first year, that big first-year module sits, they actually count us as part of the unit team, so every trimester there's a team meeting beginning of the next one to work out what's going on, and what we need to improve, so we're always included in those now, which is fantastic. (Laurie, intraview)

The work that Laurie is engaged in with the faculty is a valuable mattering of liaison librarian professional expertise as it is at the "*curriculum level*" and because of the extent of Laurie's participation in the planning work. While Laurie qualifies her use of the term, "partnering" with the phrase "as they say", her pride in taking part in this work is clear. However, Laurie's inclusion is conditional on the extent to which members of the faculty allow her participation. She is "included" by faculty in meetings and "they actually count us as part of the team". In these agential cuts, Laurie's expertise is in/visible, "excluded from meaningfully coming into existence" (Vosselman & De Loo, 2023, p. 10) until enacted in invitations to meetings and collaborative work with members of the faculty as they sit around a table discussing their joint project.

Within these examples, agency is "material enactments" (Barad, 2007, p. 32). This is a significant shift from my previous understanding of matter and agency. Matter is not inert, it is dynamic, "a congealing of agency" (Barad, 2013, p. 17) and relations. In this understanding, that which I would previously have characterised as properties of materials are better described as

“agentic forces” (Lenz Taguchi, 2010, p. 35). Agency is not something that is possessed by a person or thing (Barad, 2007, p. 235) but is better understood as “capacities to act which arise in intra-actions” (Lenz Taguchi, 2010, p. 33) through cuts made by apparatuses. Thus, agential realism recognises no hierarchy of bodies, but rather agency is distributed (Taylor, 2019, p. 42) and “materially assembled” (Mayes, 2019b, p. 1192). This notion is the foundation for asking different questions about liaison librarians and their expertise. Agency emerges with bodies, it “does not precede [the] intra-action” (Mayes, 2019a, p. 512). Thus, in my research, agency is assembled within the intra-action together with spaces and times.

The boundaries and properties enacted by apparatuses are fluid (Barad, 2003, p. 817), including those between subject and object (Barad, 2014, pp. 173–174). Subject and object are “different becomings” (Mazzei, 2014, p. 745), emerging together within intra-activity. The fluid nature of the boundaries of an apparatus marks an epistemological shift. The lines between what is observed or measured, the instruments of observation and measurement, and the observer or measurer are not fixed, and in fact can be said to not exist before the intra-action; they are inseparable (Barad, 2007, p. 33). Apparatuses themselves are not static objects that effect change but rather are themselves emergent, constantly reconfigured and reconfiguring, and “always in the process of intra-acting with other apparatuses” (p. 170).

To make explicit the indeterminate nature of librarian professional expertise, I employ the term *in/visibility*. This term and its variants, such as [in]visible (Davison, 2010), (in)visible (Teixeira, 2011; White et al., 2021), are used widely, usually with the intention of disrupting binaries. In my research, the slash in the term is a materialising of what Barad, in an interview, describes as “an active and reiterative (intra-active) rethinking of the binary” (Juelskjær & Schwennesen, 2012, p. 19). Visibility and invisibility are not “set in opposition” (Wolfe, 2021, p. 129) but are complementary possibilities of the multiple matterings of subjectivity and objectivity (Barad, 2014, p. 175). The times when librarians are not recognised or noticed, when they are in/visible, are not empty but rather are

“busy sites of agency” (Brøgger, 2019, p. 6). I pay attention to the “continuing interference where the patterns are what matter” (Wolfe, 2021, p. 4). Just as old and new waves are indistinguishable (Lenz Taguchi, 2012, p. 271), so the ongoing becomings of the world are “superpositions of many beings and times, multiple im/possibilities that coexist and are iteratively, intra- actively reconfigured” (Barad, 2015, p. 288). This approach provides a means of challenging the notion of the problem librarian and the crisis of professionalism, which I discuss in Chapter 4A.

The Entanglement of Expertise and Technologies

I employ the notions of measurement and mattering to examine the “material conditions” (Barad, 2007, p. 227) of the university library and its technologies, physical and digital, to understand how relations of power are produced. My understanding of technologies is broad, as any “designed, material means to an end” (Agar, 2020, p. 381). This includes technologies for the acquisition, curation, classification, circulation, finding, accessing and valuing of library collections, which range from the library building to reading lists, catalogue cards to algorithmically generated subject headings, or print books to PDFs.

While there are calls for a more critical, theoretical approach to understanding library technologies and technological change in library and information studies research, there has been limited advance in a shared discussion on technologies and materiality. Research in this area finds itself in, “something of an impasse or in a quagmire—it is difficult to tell which (one is a dead end; the other is difficult and entrapping)” (Buschman, 2018, p. 1). The focus in librarianship on technology as the means to solving future problems (Buschman & Leckie, 2009, p. 11) and allure of “the magic of modern technoscience [with its] smoke-filled rooms, and boring lists of numbers and settings” (Bowker & Star, 1999, p. 50) have not been conducive to critical approaches to technology.

Traditional notions of technology still dominate library and information studies literature, such as the assumption that the term *technology* refers only to digital and computer technologies (D. Hicks, 2014, p. 6), and the polarisation of print and digital that is “the dominant paradigm of

library evaluation” (Gourlay et al., 2015, p. 264). Online technologies are characterised as “weightless bits on digital networks” and contrasted with “collections of print materials occupying physical space in academic libraries” (Lavoie & Malpas, 2015, p. 5). Such characterisation does not take into account the materiality of the digital world, as “the information that undergirds the ‘information society’ is encountered only ever in material form, whether that is marks on a page, electrons flowing through wires, or magnetized segments of a spinning disk” (Dourish, 2017, p. 3). The focus on the differences between print and online technologies in university libraries obscures important continuities, and how the past and future are entangled and mutually constituted.

Some of the most interesting research about the materiality of searching employs social practice theories. Library and information studies researcher, Mary Cavanagh’s (2013) study of reference work in a public library challenges prescriptive transactional view of librarians’ work, making visible its “complex and enduring knowing and learning dimensions” (p. 234). This work is entangled and emergent with the furniture, technologies, times and spaces of the library. Cavanagh’s study suggests that focus on practices can help identify how expertise and learning are distributed across technologies, users and librarians. Similarly, library and information researchers Jutta Haider and Olaf Sundin (2019) explore the materialities of search in search engines. They contend that “digital materiality” (p. 55) is continuously remade, spread across devices and locations, and needs to be understood as part of the practices of different communities.

A small number of library and information researchers have explored the production of librarians together with technologies. Library and archives researcher, Marlene Manoff (2015) draws on Barad and others to call for a broader view of librarianship, noting how librarians work at the intersection of cuts enacted by the marketisation of universities, the rise in reliance on metrics, and relentless technological innovation. Manoff argues that library technologies such as databases and discovery tools are not “some pre-existing group of material objects but ... a set of possibilities shaped by social as well as physical constraints” (p. 519). Library and information studies researcher,

Stacey Allison-Cassin (2020) explores the affective production of the “‘good’ librarian” (p. 41) who emerges within technological systems as a helper ensuring a smooth experience for library users. Here the librarian is in/visible and unrecognised. Allison-Cassin argues that search be explored as more than a technical matter but an affective mattering (p. 428). In my thesis, I respond to the calls by Manoff (2015) and Allison-Cassin (2020) to go beyond how search is done to explore what it does by employing a new materialist approach. I understand library technologies as material-discursive practices, enacting cuts that iteratively define the boundaries of liaison librarian professional expertise. I also pay attention to how library technologies are iteratively enacted, the objects of agential cuts, becoming in their use by and with library users.

In Chapter 5, I explore how the library building, itself a technology, and the technologies it contains are alive with agentic becomings, and sites of power (Jackson & Mazzei, 2012, p. 133). The shelves of books materialise the dominance of particular knowledges at the expense of others, they are a mattering of nostalgia for idealised past academic life, and they are also an apparatus enacting the boundaries of a liaison librarian’s role. The librarians forge sites of power in library training rooms. Expertise as teachers in the digital world materialises in this site, expertise that is both limited and expanded by the platforms that provide access to scholarly literature. In each of these pedagogical encounters, in which the education and access role of librarians is reconfigured, agency is not a possession of material or human bodies but a shifting mattering producing material and human bodies.

Usefulness, the Housing of Ideas, and Contradictions of Hosting

To rethink library technologies within the platform university, I “put to work” (Jackson & Mazzei, 2013, p. 262) the notions of use and hosting. In this section, I introduce my conception of use and then discuss the notion of hosting. I employ Ahmed’s (2019) exploration of “the uses of use” (p. xiii) and how usefulness and uselessness are attributed. This reading forms the basis of my diffractive working with data because it provides a link between themes from library and

information studies literature, the user, and Barad's (2007) new materialist approach. The user is a central figure in librarianship, the object in the subjectification of the useful librarian who can no longer rely on expertise centred on the library building and its collections. Ahmed (2019) unpicks how use and usefulness are matterings, "not only in what was being argued – in how use became associated with specific values – but how use was put into circulation, becoming a conversation about the value of things" (p. 14). Ahmed also links them to in/visibility as a "losing sight" or a "revealing" (p. 21) of bodies and knowledge; in other words, the materialising of difference. In this way, the themes of legitimacy, usefulness and in/visibility are entangled in my research. I acknowledge and highly value Ahmed's call to recognise and change the violent "displacements" (p. 229) that common sense views of use materialise and justify. My aim is to amplify her argument that these displacements are ubiquitous, insidious, and systematic, through my examination of how exclusion materialises in the teaching of the use of library platforms by liaison librarians.

Use is a relevant term with which to undo liaison librarian professional expertise as librarianship is centred on the library user. In information-seeking behaviour models, it is the user who recognises an information need and initiates action to satisfy that need (T. D. Wilson, 1981, p. 4). The user is the object of research in innumerable studies in library and information studies literature. In some, the focus is merely library users, an undifferentiated group, and in others, distinct user groups are researched; for example, academics in a faculty, or a particular cohort of students. Studies focus on the usefulness of library spaces, services, software, or systems to users, the value measured often in usage statistics, as well as user satisfaction. In the marketised university "user satisfaction [is] a matter of occupational survival" (Berkovich & Wasserman, 2019, p. 10).

Claims of legitimacy form and compete around the library user, an approach that can be traced back to Zweizig's (1973) critique of research about librarianship as process-driven rather than centred on the people. His description of librarianship as focused on "the user in the life of the library rather than the library in the life of the user" (1973, p. 15, as cited in Wiegand, 1999, p. 24)

has become a mantra for the profession, inscribed in terms such as “user-focused” (Carlsson, 2016), “user centred” (Connaway et al., 2013), and “user-led” (Hillman et al., 2017). It has found renewed importance with the recent interest in “user experience” testing (Priestner, 2020, p. 127), design thinking and participatory methods for understanding library users (Luca & Ulyannikova, 2020).

While this focus on users has helped redress a historical focus on process and limited understanding of the people using libraries (Wiegand, 1999), and the inadequacies of user surveys for gaining feedback on services, users do not directly address systemic inequalities in librarianship. It is salutary to consider the words of Wiegand (1999) who, when calling for a focus on the user, describes librarianship as,

a profession trapped in its own discursive formations, where members speak mostly to each other and where connections between power and knowledge that affect issues of race, class, age, and gender, among others, are either invisible or ignored. One also gets the impression of a profession much more interested in process and structure, than in people.
(p. 24)

This reframing of what it means to focus on users is more than an expansion of the repertoire of methods for researching them. It is a political move, which pays attention to what is excluded, “invisible or ignored” (Wiegand, 1999, p. 24). The profession has been slow to heed this call. Revisiting Wiegand’s article, Buschman (2017) notes that “the [library and information studies] field has not helped (let alone led) in terms of thinking through neoliberal trends or providing a sensible alternative to them” (p. 55). Despite a growing body of literature pointing to lack of diversity within librarianship (Collins, 2018; Ferretti, 2020; Gonzalez-Smith et al., 2014; Settoducato, 2019), library and information studies literature generally assumes the neutrality of libraries and their services (Good, 2008; A. M. Lewis, 2008; Macdonald, 2022; Macdonald & Birdi, 2020; Schlesselman-Tarango, 2017a), at the expense of asking hard questions about race and equity.

Ahmed (2019) encourages an examination of “where usefulness is found but also how the requirement to be useful is distributed” (p. 10). My focus on use is a challenge to the narrow conception of usefulness and “practicality” (Hudson, 2017) in much of library and information studies literature, which is characterised by “positivist social science research, reflective case studies, standards, best practices, how-to guides and ‘cookbooks’” (p. 206). This desire for practicality was seen in the curriculum of Dewey’s library school, which “concentrated on two things - how to manage the library, and what professional expertise it was deemed necessary to develop and exercise in order to help library users get to the ‘useful knowledge’ they needed” (Wiegand, 2003, p. 130). As Wiegand (1996) notes, this emphasis remains in current library and information studies teaching. The arbiters of the usefulness of knowledge were librarians, as Dewey claimed in a speech: “the new library is active, an aggressive, educating force in the community, a living foundation of good influences; ... and the librarian occupies a field of active usefulness second to none” (Wiegand, 1996, p. 130). In this way, use is an “apparatus” (p. 104) in the shaping of bodies that either fit or do not fit.

In my project, I think diffractively with Ahmed’s (2019) notion of the housing of ideas as a form of use and Barad’s (2019) searing evisceration of hospitality in the “nuclear violence visited on the Marshall Islands” (p. 533). This violence is a reference to the detonation of “67 nuclear and thermonuclear bombs” (p. 525) by the United States on the Marshall Islands between 1946 and 1958. Notions of housing invite comparisons with the cumbersome companion of the library building. Therefore, in this thesis, I diffract that obvious connection to play with the housing of bodies in a decentralised, online library. Alongside that, I think with the upending of work and expertise discussed in the literature on the platform university and Barad’s rethinking of hospitality to understand how hospitality is performed in library spaces of all types and the accompanying mattering of librarian professional expertise.

In the same way that bodies and clothing or furniture adapt to each other's shapes over time (Ahmed, 2019, pp. 43–44), and waves diffract as they meet, so too do university spaces become “more comfortable” (p. 44) for some bodies rather than others. Drawing on diversity work in university, Ahmed demonstrates that in spaces designed for and found comfortable by only some people, those excluded materialise as troublemakers when asking for changes or accommodations. They are further excluded by the seemingly reasonable solutions, which reinforce material-discursive exclusion because these solutions are accommodations to a supposed norm rather than reconfigurings to create inclusive spaces (pp. 156–157). In this way, use enacts differences “without necessarily appearing to do so” (Ahmed, 2019, p. 11). Drawing on Ahmed (2010, p. 235), education researcher Carol Taylor (2017) explores how a table “brings into being relations of differential mattering” in the way that it offers only limited options for bodies to be positioned around it. Ahmed links this to the shaping and housing of ideas (p. 144). The knowledge housed in the university library is not confined to ideas contained in published texts in the collection. The library building and other library technologies for ordering knowledge are not merely containers of ideas (Barad, 2007, p. 223), they produce knowledge that has material consequences.

The notion of bodies fitting in and feeling comfortable according to the way a building or institution is designed (Ahmed, 2019, pp. 43–44) raises questions about who designs or owns a space. This resonates with Barad's (2019) question, “who is hosting whom here?” (p. 534). Barad asks this question when writing about the tragic destruction of the land and livelihoods of Marshall Islanders. This act of colonialism was described as the Marshall Islanders “playing host” (Johnston & Barker, 2008, pp. 15–17, as cited in Barad, 2019, p. 533) to the tests. In playing host to the devices that made their island uninhabitable, they became visitors in, and then outcasts from, their homes. In effect, they came to be hosted by, rather than hosts of, the colonisers of their land who destroyed their homes. This tragedy speaks of the violence perpetrated by colonisers and the ways discourse frames the agency of those colonised. In a different, less ghastly, manner I employ Barad's (2019)

question in my research to understand the reconfiguring of relations within the scholarly communications landscape in its colonisation by platforms.

“The Ethics of Mattering”

The ongoing becoming of the world, its remaking, is a matter of iterative and varied intra-activity; “each intra-action matters” (Barad, 2007, p. 185). An ethico-onto-epistemology focuses on sometimes seemingly mundane, daily intra-actions, understanding them to be the “provisional effects of ongoing becomings of specific apparatuses of material-discursive practices” (Juelskjær, 2014, p. 27). The endlessly remade world is not a large generalised/single entity but an iteratively swirling becoming, in which the researcher is implicated, and in which “fine detail” (Barad, 2007, p. 92) enables a view into something larger.

As highlighted in this chapter, mattering and ethics are intimately entangled. Understanding the bodies that emerge to encompass more than human bodies, and with a focus on relations, requires an active rethinking of “human bodies an independent and self-contained and see them instead as multiply entangled and ethically enfolded with(in) other bodies, forces, and materialities” (Niccolini & Ringrose, 2019, para. 9). In this way, agential realism offers more than an account of “humans merely ‘living among themselves’” (Franklin, 2008, p. 41).

An ethical ontology is one for our times, a move away from mindsets that view the world as a resource to be plundered for the benefit of humans. It offers the possibility of a “more subtle awareness of the complicated web of dissonant connections between bodies, [enabling] wiser interventions into that ecology” (Bennett, 2010, p. 4). In this, it is a useful way of challenging the digital and print dichotomy in library literature and the inevitability and superiority of the move to digital resources. The mattering of the infrastructures of the platforms offering “seamless” and immediate access comes with an environmental cost as well—for example, e-waste (Gabrys, 2013) and the enormous energy use of working online (Carrigan, 2022b; Srnicek, 2017a, p. 39). I acknowledge how the writing of this thesis contributes to this cost.

Conclusion

As part of the ongoing becoming of the world, phenomena emerge within intra-activity; they do not precede it. At the heart of this project is the notion that the world is not composed of objects with predetermined boundaries and characteristics. Rather, within the phenomena of liaison librarian professional expertise, library platforms, use, in/visibility and knowledge are agentic enactments—doings rather than things. Intimately tied to the notion of phenomena is the reconfiguring of agency, the move away from the human subject who initiates action and in turn bears the consequences of this action (Barad, 2007, p. 172). I focus on how agential cuts matter, how difference is enacted through them, and the difference that these differences make (p. 72). This approach enables a new understanding of the in/visibility of librarians, the measuring mechanisms of library platforms, liaison librarian professional expertise, and the focus in librarianship on the library user.

In this chapter I have set out the entanglements of the ethical, ontological and epistemological foundations in my project. My implications in the project as an apparatus means that I simultaneously explore “the nature of entanglements and also the nature of this task of exploration” (Barad, 2007, p. 73). In this way, the thesis is an exploration of how agential realism works, the challenges it poses for a researcher, and the ways in which it opens up an understanding of materiality in librarianship. In the following chapter, I describe how agential realism informed the generation of data for my research. I discuss the joys and dilemmas of using this challenging theoretical approach, both as a means of producing new knowledge in my research, and understanding the material consequences of the production of knowledge when liaison librarians teach.

Chapter 3: The Measuring Apparatus of the Research

Introduction

The notion of indeterminacy, and its resolution within intra-activity, is key to my research. In the previous chapter I outlined my interest in the mattering of difference within intra-activity and the diffractive effects of this difference. This ethical, ontological and epistemological positioning reframes data and what it can be. Working with data is therefore not a matter of following a recipe, in which data is “isolated, measured, and transformed” (Weaver & Snaza, 2017, p. 1059) through the application of “scientized” (St Pierre, 2015, p. 92) methods to generate findings. This understanding does not render methodology irrelevant. Rather, it is a call to see methods as performative, “methods are not a way of opening a window on the world, rather they are a way of interfering with it” (Mol, 2002, p. 155). In this chapter, I discuss the methods used in my research, how my views changed about their purpose, and how I have subsequently worked with data and theory.

This chapter was challenging to write because I came to Barad’s (2007) work about mattering, becoming and knowing after, what I considered at the time, ‘collecting’ data for this project at East Coast University Library. I still find it hard to shake off feelings of regret and concern about the value of the data generated when I was at the Library and how this impacts my project. This regret is part of the ongoing intra-activity of the becoming of my research. As such, I acknowledge it here and begin this chapter with how I worked diffractively with the data that I now understand as generated and how my project emerged through this new ebb and flow. I then elaborate on how I understand diffractive methodology in this project. This includes understanding research as an ethical endeavour and myself, the researcher, as entangled within the research apparatus, enacting agential cuts. I then provide background to East Coast University Library, its staff and how I spent my time there. This includes the methodological approaches to generating data (as I saw them at the time), what they perform, and how they were reimagined.

Intra-Acting with Changing Platforms

Initial attempts to describe my conventional research methodology were written before I generated data at East Coast University Library. The methods I originally chose were observation and interviews, supplemented with images I drew or photographed, and documents I gathered. What excited me, and still does, was the observation work. At that stage, I felt confident that I could manage the challenges of observing and interviewing members of my profession. As I wrote in my first doctoral review, “therefore, relationships between the researcher and participants are better viewed not as something to be controlled but rather as something to attend to, and make transparent, as they evolve and change”. I was determined to focus on trying to view liaison librarians’ teaching as if for the first time. My early interest in sociomateriality and practice theories seemed to offer a lens through which to do this.

However, once I was at East Coast University Library, sitting in the staff area with the liaison librarians, walking to classes with them, and listening to them teach, I discovered that the ideas I had previously formulated about a researcher’s role in relation to data did not capture my experience. It took time to work through this discovery and to find an answer (and many more productive questions) drawn from the understanding that knowing and being are inseparable, both part of the becoming of the world (Barad, 2007, p. 185; Taylor, 2017, p. 319). Notions of the importance of “the ‘now,’ the ‘being there’” (Lather & St. Pierre, 2013, p. 630), which I associated with the methods I had chosen shifted. I understood that my observations could not be sanitised into something transparent, but would always be “views from somewhere” (Haraway, 1988, p. 590). I now attend to my role as an apparatus, not to manage and shut down the ways in which I am implicated in my research, but to learn.

With my changed understanding, I turned to the artefacts of my research: notes scrawled excitedly, tensely or perplexedly in my notebook; tidy versions of these notes written up on my computer; recordings and their transcripts; photos I took and drawings I made; and the documents,

numbers and statistics I collected. I was faced with the question of whether the data generated during my time at East Coast University Library was of any use. It was my new approach that also provided the answer. Thinking with a diffractive outlook, I believe that this data is of value and that discarding it would contradict my new understanding of the liveliness of data. It would imply that the data is static, and inert, with set characteristics, rendering it incompatible with anything but the particular mindset with which it may have been generated. I am not retrofitting my ontological and epistemological approaches to old data. Rather, I am “thinking-feeling-making” (Wolfe, 2021, p. 115) with data. These approaches enable me to understand data as generated in cuts made by me at the time and iteratively recut as my knowledge grew, starting with the discontent I felt that led to my changed approach. I “began to think and enact data analysis differently because, once in the threshold, there was no way out” (Jackson & Mazzei, 2012, p. 138).

My new understanding of working with data grew alongside a developing awareness of the politics of searching and accessing scholarly knowledge and how this cannot be separated from the production of scholarly knowledge. My insight that the database was the material centre of the class was the first step to conceptualising searching and the teaching of search as productive and performative. With a more open mind/eyes/feeling/approach I found that search is intra-woven into all aspects of the data. Rather than trying to soften a tough piece of bread dough—trying to shape inadequate data—the data and I become together. The boundaries are fluid as I write, read, listen to feedback, remember, forget, and find again. Old and new are not separate as I am enfolded together with the questions and early notes into the writer of words in an always-almost completed thesis, which will later be erased, winced over, and an object of pride. It will also produce further questions as it intra-acts with future readers.

Diffractive Research, the Making of Difference

The translation of an agential realist onto-epistemology to a diffractive methodology is a challenge (Taylor & Gannon, 2018). There are no detailed explanations of a new materialist

methodology (Lupton, 2019) and Barad (2003, 2007) does not touch on the practicalities of conducting diffractive research. Indeed, the notion of a formula for diffractive research is at odds with what diffractive research is. As St Pierre (2011) points out,

'posts' ... have never offered alternative structures and ... *I do not, and cannot offer an alternative methodology* – a recipe, an outline, a structure, for post-qualitative research – another handy 'research design' in which one can safely secure oneself and one's work. (p. 613)

This research project is a thinking with theory, an "installing" (Jackson & Mazzei, 2012, p. 131) of myself in the data. This installation involved paying attention to "unsettlement, discomfort and uncertainty" (Koro-Ljungberg & Maclure, 2013, p. 221) rather than seeking safety in familiar themes. Although I initially resisted the centrality of the database to librarian's teaching, staying with this discomfort about what I saw as the narrowing of liaison librarian professional expertise, my profession, enabled my research to take a more productive turn. For example, the feelings of powerlessness and lack of professional recognition felt by myself and my colleagues when representatives from database companies visit and tell us that we need to go out and promote their products to academics. Thinking with the literature of platform studies, what I felt as arrogance is a mattering of the power of these platforms; they do this because they can. In this way, the databases became a "threshold" (Jackson & Mazzei, 2012, p. 6) for my research project, a place "in the middle of things" (p. 6), where data and theory come together and are mutually constituted.

Jackson and Mazzei (2012) describe a threshold as a "place through which waves pass" (p. 135). This analogy links nicely to Barad's (2007) notion of waves moving around objects and creating patterns of difference. A "diffractive mode of analysis" (Barad, 2007, p. 73) involves "reading insights through one another in ways that help illuminate differences as they emerge: how different differences get made, what gets excluded, and how those exclusions matter" (p. 30). This focus on difference at the threshold is important for my research. In this way, the database is not merely the

focus of my research but an apparatus enacting difference. The threshold is therefore a productive site where “something new happens” (Jackson & Mazzei, 2012, p. 6); that is, a reconfiguring of the database.

Understanding the database as an enactment, emergent with liaison librarian professional expertise, as a becoming, was an opening up of possibilities for my research. Staying with my earlier questions about the database enabled me to move beyond it as a simple tool for finding literature. I began to think with theory about how a database is both produced with, and is productive of, scholarly knowledge. As Deleuze and Guattari (1984) note, “becoming is the movement by which the lines frees itself from the point and renders points indiscernible” (p. 294). One way of playing with data materialised in my thesis is in the interludes about the tools of the trade of liaison librarianship: the search box and the results list. Paying attention to these in/visible technologies meant that I was not merely observing and describing but also materially and discursively reconfigured as part of this work.

Although this research is about librarians, rooms, buildings, teaching materials, technologies, research questions and theory, these are not objects awaiting my attention but are rather indeterminate until enacted in agential cuts. My interest is how things become through these cuts, how these cuts occur and the consequences of these cuts. In each pedagogical encounter, I wish to understand how, and with what, liaison librarian professional expertise is entangled. I ask what kinds of knowledge are deemed useful and valuable within this entanglement (Fenwick & Edwards, 2013, pp. 57–58). I question how scholarly knowledge is produced when it is entangled with platforms, how/why cuts are enacted in a search for scholarly literature, how spaces within the library assemblage emerge as sites of power, and how some bodies are in/visible—in other words, who is excluded and who matters.

What is Data?

At the beginning of this project, I felt data was “transparent, neutral, independent of theory, *waiting to be analysed*” (St Pierre, 2011, p. 621). However, in a new materialist understanding, data is not just material waiting for a researcher but rather a site of the production of multiple intra-acting subjectivities (Højgaard et al., 2012, p. 74). It is what data does that is important (Lupton, 2019, p. 2000). Furthermore, data is fluid and endlessly becoming, “data is going into many directions at once and data is no longer in one place” (Koro-Ljungberg & Maclure, 2013, p. 222).

St Pierre (2015) questions the boundaries put around some types of methods to legitimise them as the means of producing data as if this sets them apart from other forms of thinking:

The point here is that ordinary practices like talking with and observing people don't have to be scientized and elevated to the status of “the interview” and “the observation.” I'm interested in all the other practices we neglect to disclose. For example, when I'm deep into a project and stuck, I go for a walk or weed my garden and inevitably get unstuck. I have called this the “physicality of theorizing” ... so I suppose I could call walking and weeding research practices—but why would I? And, surely, we could name reading a research practice, but we don't—we call it the “literature review. (p. 92)

Deep-rooted agential cuts enact only some practices as mattering in research. St Pierre's questions argue beyond the inclusion of new definitions of research practices to question the very notion of set research practices that one starts and stops. Similarly, there are calls to rethink types of data; for example, “actual people, fictional characters, dreams, animals, relatives, a novel, a song, recordings of conversations that a reader cannot access, physical locations” (Van Cleave & Bridges-Rhoads, 2017, p. 108).

Data are always in a state of intra-activity, which means they are a lively part of the ongoing becoming of my research. The automatically dated notes on the transcripts made, as I read and

reread them, plot the changes in my thinking with these texts, as material effects of theory and thought. Jackson and Mazzei (2012) describe their experience with this:

In our project, we were surrounded by texts: the data, the theory, our memories of the interview process, our shifting selves as researchers, our current interactions with some of the research participants, our own personal and professional knowledge of being women academics (one of us first generation), and so on. (p. 6)

In my intraviews with academics, including the multiple subjectivities produced as data refused to sit in one place, was the production of the university library in these intraviews. I asked a deliberately broad question, “What interactions do you have with the library?” Each academic’s answer was different, materialising the library, themselves, and me. “Mal”, an academic in business studies answered,

at PhD level, to be completely honest with you, I went to the library [pause] [sigh] a handful of times, um, whether it was because I wanted to physically get a book that I couldn’t get online because it was not in eBook format, and sometimes, you know, I like to get books, you know, physically open them. But I’m really big on journal articles and really big on peer-reviewed stuff and so I would use the library from a virtual perspective, you know, access the resources, go to the databases portal, um Google Scholar, and obviously using the university’s library access, go through there. (Mal, intraview)

If I intended to gather information on Mal’s experience and use of the library, then his answer is very helpful. He provides a detailed overview of his use of libraries and their services as a student and then as an academic, including recognising the work of the library in supplying online sources. But my interest is caught by the phrase “to be completely honest with you”. It “glows” (MacLure, 2013b, p. 661), making me pause and write a comment as I transcribe the intraview, “*note the phrase*”. I feel the focus shift to me as Mal’s words entangle me within the intra-activity of his production of librarians. Mal is not ashamed of using online access but feels the need to soften the fact that he did

not enter the library building often as a PhD student. I materialise as a librarian who attaches more value to someone entering the library to access print books than using online scholarly literature. This data is no longer in one place as it intra-acts with the binary of print and digital scholarly literature, producing again the problem librarian of library and information studies literature who is attached to the past, resisting change, and the library building as the librarian's cumbersome companion.

Data become with my shifting self (Jackson & Mazzei, 2012, p. 6) as I plug in theory with the memories, thoughts, flashes of recognition, affects, feelings, experience of researching, reading, writing and engaging with data. St Pierre (1997) identifies the value of "transgressive data", including emotional data (p. 180), dreams (p. 182), and sensual data (p. 183), which eludes the traditional qualitative methods; that is, "data that I could hardly textualize, code, categorize and analyze" (p. 181). The moments of "disconcertion" (Taussig, 1993, as cited in MacLure, 2013a, p. 172), when data glows and comes to our attention, are to be valued rather than avoided. In taking note of this attention, or moving on and forgetting it, I enact an agential cut. In these cuts some data comes to matter and other data does not. To acknowledge this is not to identify a problem, but rather makes explicit the ongoing iterative becoming of the world through multiple intra-actions, and also my responsibility to sit with this data and consider how and why it glows. Often, I paid attention to the moments which glowed because they spoke against ideas I had already formed, and thus produced disconcertion.

I count as transgressive data the emotions I felt as I watched liaison librarians teaching in less-than-ideal situations. For example, when observing "Lacey" teach a class I wrote in my notebook, "*the lecturer has the roaming mic in pocket, Lacey uses the handheld mic and has to put it down to type*" (Lacey, class notes). Writing that note, and reading it now, I feel sympathy for Lacey teaching under such difficult conditions, not being able to speak and be heard clearly in the lecture room while demonstrating searches using the computer there. I remember texts in library and

information studies literature about the in/visibility of liaison librarians with the text in my notebook as I think about how the academic did not require the roaming microphone when Lacey was teaching but did not seem to notice nor feel the need to address Lacey's predicament. Thinking with Barad's (2007) mattering, I understand how the allocation of material resources materialises power relations between Lacey and the academic. Lacey's inability to teach expertly is a phenomenon that emerges in the intra-activity of her silence about this (she does not suggest a swap of microphones), her host's role as the arbiter of good hospitality (Barad, 2019), and the power relations that keep her silent. Finally, thinking again with Barad (2007), I note the agential cuts I enacted in noticing this, deciding to record it in my notebook, and adding this material-discursive pedagogical encounter to my thesis.

My entanglement and becoming with data is not a failure of the correct process. The "critical and contextual connections between research positioning and the research project" (Hook, 2015, p. 984) are not risks to be mitigated but productive moments of understanding more about the project through the "plugging in" (Jackson & Mazzei, 2013) of theory and texts. My initial attempts to be rigorously removed and detached from the classes and meetings I observed, the librarians I spoke to, to see these as if for the first time, placed me as the "spectator" (Kuntz & Presnall, 2012, p. 734) who could decide what was new and was not new. It also detached me from acknowledging the intra-activity of listening to moments in which a word or action resonated with my own experience or with what I had been reading, and responding to the patterns of difference (Barad, 2007, p. 30) that became visible.

The implications of this understanding are twofold. Firstly, as discussed in the previous chapter, knowing is an ethical matter because we are part of the world's becoming (St. Pierre et al., 2016, p. 101) and "response-able for what materializes in research events" (Mayes & Wolfe, 2020, p. 427). Secondly, working with data is more than just paying more attention to the material. It is

focusing on the ways that the material and the discursive are mutually enacted and productive of “different becomings” (Jackson & Mazzei, 2012, p. 9).

Knowledge-Making Material-Discursive Practices

Methods are not neutral tools, enabling the researcher to simply describe separate realities, rather they enact realities “into being” (J. Law, 2009, p. 239), producing particular views of the world (p. 243). Methods are emergent (St. Pierre et al., 2016, p. 105) and productive. The direction in my methodological approach leads to questions about how best to write about the methods and methodologies I employed during my time at East Coast University Library. I address this by writing about the methods I used at the time but expanding on them to discuss what they became through my research. I begin this section with a description of my research at East Coast University Library and then discuss the material-discursive practice of creating data.

This project is centred on the Gum Tree Library, one of the libraries of the multi-campus East Coast University Library, a moderately sized university on the east coast of Australia. When I conducted research there were only 39 university libraries in Australia (Magnussen, 2018, p. 358), compared to 106 vocational education and training libraries, 869 special libraries and 563 public libraries. There are currently 39 universities listed as members of the peak body for universities, Universities Australia (Universities Australia, 2023). The ease with which a university library and its staff can be recognised made me reluctant to provide more details about the library beyond its location on the east coast of Australia, which encompasses four of Australia’s states, including the island of Tasmania. The ease of recognition within a small sector of a small profession is compounded by the expertise of librarians in finding information and their movement between libraries within the industry. For this reason, I committed to keeping the location as hidden as possible, which means that I provide limited information about the history of the library.

East Coast University Library was not the library at which I was employed during my doctoral candidacy. I worked at a university that was a member of the Group of Eight, an “elite but not elitist”

(Group of Eight Australia, 2017) group containing the highest-ranking universities in Australia. I was keen to conduct research with librarians who worked in a university outside this group to gain a broader view of university libraries in Australia. East Coast University is a large, popular and successful university with a thriving online teaching component. Like most universities in Australia, it offers a wide range of professional courses, which lead directly to employment.

Gaining permission to conduct research at East Coast University Library was disconcertingly easy. I wrote an email to the University Librarian, detailing my research and was invited to a meeting. At the meeting, after a discussion, there seemed to be genuine interest in my project. I was granted permission and invited to a meeting at Gum Tree Campus to talk to the liaison librarians and managers. Interestingly, at this meeting, I was challenged about the word *teaching* in the title I had given my thesis at that time: *The teaching role of academic librarians*. A manager pointed out that their staff did not consider themselves teachers. I substituted *education* for *teaching*, to avoid alienating potential participants, acknowledging the divided opinions about librarians as teachers in library and information studies literature (see Chapter 4A), and I was concerned that my title was “mobilizing a series of assumptions” (J. Law, 2009, p. 246) about liaison librarians. In retrospect, I see the manager’s comments as a mattering of the debates in library and information studies literature about whether librarians are teachers or not. Rather than a potential problem for working with the librarians that I needed to solve, I could have treated it as the beginning of a rich discussion.

My data generation took place between March and October 2017. The first phase was five weeks in March and April and the second phase was from May to October. In the first phase, I took leave from my job and spent every weekday at the Library. I was allocated a seat in the librarians’ work areas and attended classes presented by liaison librarians and meetings they held with researchers and students, which I recorded whenever possible. I also conducted intraviews with library and university staff. I chose this time because it was the beginning of a semester, a time during which librarians are busy teaching classes to a new year’s intake.

During the second phase of six months, I was back at work and paid intermittent visits to the library, attending some additional classes and library meetings. I conducted intraviews with librarians whose sessions and meetings I had observed and some intraviews with students and academics who had requested a meeting or class with a librarian. I timed the intraviews for later in the year when the liaison librarians had fewer classes; however, this meant a gap of months between the classes I observed and the intraviews. During this phase, I did not have a place allocated in the staff area or a swipe card to enter the area. Being only able to enter the public spaces of the library meant that I intra-acted with the library building differently and watched librarians from the library space as a user. One observation in my notes marks this difference as I see library staff on their way back from a lunchtime walk, an activity I had shared as a guest in their workspace:

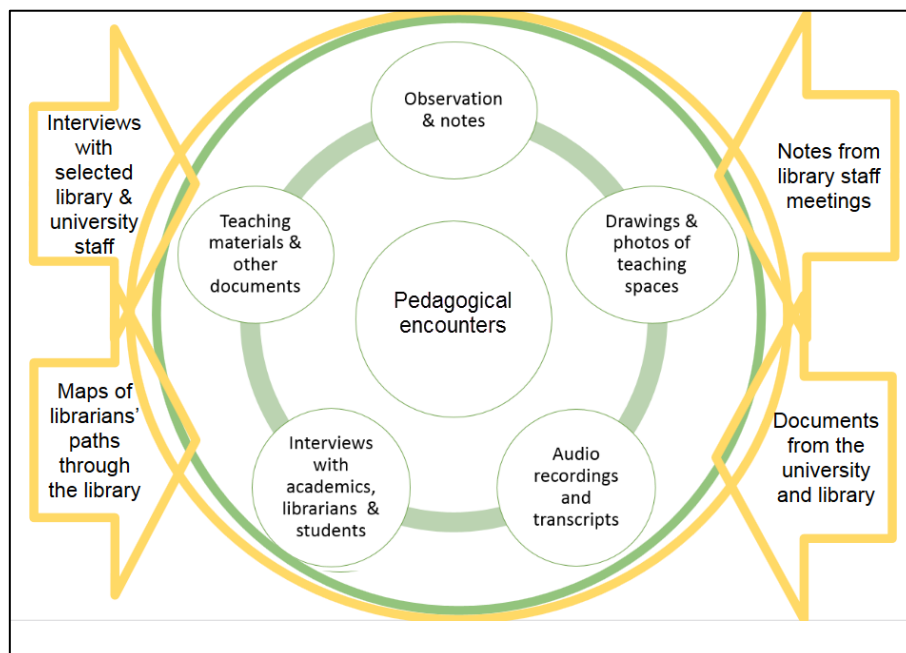
Bitterly cold wind blowing outside and rain threatening. The library is warm inside. The ground floor is a buzz of activity ... I see members of the walking group walk through the library space on their way back to their offices. They don't see me - they're not looking at the students etc but talking amongst themselves. They're part of but not part of the student part of the library. (Lacey, intraview notes)

This observation indicates that although I was at that time imagining myself as the detached observer, I was anything but that. I missed the feeling of being in the office with the other liaison librarians. The swipe card, as an apparatus, enacted an unequivocal cut in which I was reminded that I was not part of that team. In the way that the librarians paid no attention to activity in the library as they walked through, the swipe card also enacted a mattering between the site of action for liaison librarian expertise as the office rather than the public library spaces. This prompted me to think about the way different spaces of the library building are enacted by multiple agential cuts, which I explore in Chapter 5.

Data Generated at East Coast University Library

Figure 3 details the data generated during the two phases at the Library. I use the term *pedagogical encounter* to describe moments in which data glows. Education researcher Carol Taylor (2018) uses a similar term, “pedagogic encounters” to describe a moment when the entanglement of bodies and materials matter (p. 156) and it is in this sense that I use this term here. It draws attention to the deliberately educational focus of the work of librarians in the classes and meetings I attended but also the learning and knowing that is part of the becoming of the world. Pedagogical encounters are not events that have fixed boundaries. Instead, they are shifting and emergent, reconfigured through the intra-activity of theory and data.

Figure 1 Data Generated at East Coast University Library



I placed pedagogical encounters at the centre of the figure, not as pieces of data but to make clear that data is a mattering of bodies within intra-activity. I begin, rather than end, with intra-activity and the production of “subjectivities and performative enactments” (Mazzei, 2014, p. 744). This view makes former static objects of research into matterings, whose boundaries shift. The data in the green circle are related to the classes and meetings I observed and sometimes recorded. Data in the yellow arrows is beyond the immediate scope of the meetings and sessions, but important

aspects of the mattering of liaison librarian expertise. Details of the data generated are set out in this section.

Participants

In my project I now consider participants to be co-generators of research. I recruited participants for my project in three ways. My first priority was to ask liaison librarians who were teaching to take part. After the meeting I attended before data generation at East Coast University Library, some liaison librarians indicated that they would be prepared to take part in my research project. When I began data generation, I was in the staff area and able to have conversations with staff members about my observation of their classes and conducting intraviews with them. Some liaison librarians were enthusiastic. “Lesley” in particular was keen for me to see a variety of classes and meetings. Other librarians let me know or I followed up after hearing about classes. At Gum Tree Campus Library there were eight liaison librarians working and seven of them consented to me observing their classes and conducting an intraview with them. These librarians worked with academics and students in Arts, Education, Health, and Business faculties. One of the classes I observed was also conducted by a research librarian, whose role was the advanced support of researchers; for example, providing advice on publishing and metrics.

The second way in which I chose participants was to work outwards from pedagogical encounters, as indicated in Figure 1. I invited academics who had invited librarians to teach a class or presentation, or who had requested a meeting with a librarian, for an intraview. Six agreed to do so. While I observed three meetings liaison librarians held with students, I was only able to arrange an intraview with one of these students.

The third group of participants I approached with a request to conduct an intraview with were those who were less directly involved in the pedagogical encounters. The first group consisted of team managers and senior library staff working at East Coast University Library, including the University Librarian. To maintain anonymity, I do not identify the role of any of this group, apart

from Liam, and then only in general terms. The second group included staff members at East Coast University, whom I felt would be able to provide additional insight into the library. I approached two directly: Clarissa, the senior administrator in whose portfolio the library was positioned, and Darcy, the head of the unit responsible for student academic support. The other three in this group were people I met while at East Coast University: Kim, a staff member in the unit supporting academic teaching, Jamie, an academic with an interest in university libraries and Charlie, an academic who was formerly a library staff member.

Table 1 *East Coast University Staff and Students Intraviewed and Observed*

Observation and Intraview	
Pseudonym	Faculty/School/Division
Liaison librarian	
Lee	Arts
Alex	Health
Laurie	Business
Lacey	Business
Pat	Science
Lesley	Health
Lucy	Education
Student	
Aroha	Education (PhD)
Academic staff	
Gerald	Science
Harper	Health
Mal	Business
Avery	Arts

Sandy	Health
Margot	Creative Arts
Observation only	
Pseudonym	Faculty/School/Division
Research librarian	
Ainsley	No faculty affiliation
Student	
Syeda	Business (Master's)
Sam	Education (Master's)
Academic	
Sandy	Health
Cameron	Health
Intraviews only	
Pseudonym	Faculty/School/Division
Library managers and senior staff	
Lindsay	N/A
Ashley	N/A
Robin	N/A
Chris	N/A
Liam	N/A
University staff	
Darcy	Academic study support
Clarissa	Academic portfolio
Kim	Academic portfolio

Jamie	Communications
Charlie	Communications

Liaison Librarians Materialising In/Visibly on the Pages of this Thesis

The liaison librarians appear in my thesis as un-fleshed-out figures with limited details provided about them. I deliberately avoid providing descriptions of their appearance and the demographic data, which I did gather. All six liaison librarians identified as female. Four were aged between 40 and 49, and two between 30 and 39. The number of years worked as a liaison librarian ranged between three and 20. Four of the librarians had postgraduate diplomas in library/information studies, two had master’s in library/information studies, and one had an undergraduate degree in librarianship.

I also initially resisted providing pseudonyms for them but relented for ease of reading. I do identify ties to disciplines and faculties as this information matters for understanding differences in library services provided. The decision to do this is both practical and ideological. On the practical level, with the small number of librarians working in university libraries, I endeavoured to ensure that the participants and the location of my research remain anonymous. This was something I committed to with the participants, which felt restrictive but that then became a productive way of thinking with the notion of the in/visible liaison librarian.

I play with the notion of the in/visible librarian as the figure in library and information studies literature whose role is not visible to or clearly understood by academics and students (Bickley & Corrall, 2011; Christiansen et al., 2004; Fagan et al., 2021; Polger & Okamoto, 2010; Shank & Bell, 2011). I also use the in/visibility of the participants as a mattering of time in the liaison librarians’ relationships with academics and students that often only consist of a single activity related to a class and, at the most, occasional requests for advice throughout the year. The dominance of the “one-shot” library session (Almeida, 2022; Daland, 2015; Lacey, 2022; Nicholson,

2016; Santamaria & Schomberg, 2022) means that liaison librarians appear briefly in classes, only to disappear again behind website pages or email requests.

The un-fleshed-out liaison librarian is also a move I employ to think more about bodies, regardless of whether they are human or non-human. I employed the absence of a background story for each person as a technique to limit them from being the only “source of action” (Bennett, 2010, p. viii) and to give attention to how “matter comes to matter” (Barad, 2007, p. 210). I wanted to focus on “relations, networks and webs of practice” (Zukas & Malcolm, 2019, p. 265), and how liaison librarians are performed together with their professional expertise rather than them entering the story as fully formed distinct characters. My approach does risk enacting an agential cut that furthers the in/visibility of liaison librarians and I worked to counter this when discussing meetings and classes in detail in the remaining chapters and the interludes.

In the following sections, I provide more details about the data generated, and I set out how I rethought it, understanding the phenomenon of liaison librarian professional expertise “as a doing, not a thing, which becomes meaningful as it is defined by the circumstances required to measure it” (Hayes & Comber, 2018, p. 387).

Intra-Acting with Intraviews

A focus on what is produced within intra-activity was a key aspect of my rethinking of the intraviews I conducted. This focus is based on understanding discourse as “that which constrains and enables what can be said” (Barad, 2003, p. 819), mutually constituted with the material. This means that what is of interest is “‘*what* someone says’ rather than ‘what *someone* says’” (Bonham & Bacchi, 2017, p. 690). It is a wish to reframe interviews that led education researchers Aaron Kuntz and Marni Presnall (2012) to suggest the term *intraview* as a means of highlighting how these are “tellings as enactments rather than descriptions” (Jackson & Mazzei, 2012, p. 127). An intraview “brings bodies to the surface and, in fact treats words as bodies with material effects” (Kuntz & Presnall, 2012, p. 736).

Intraviews produce “differing patterns of mattering” (Wolfe & Rasmussen, 2020, p. 182) and bring into being the phenomena of liaison librarian professional expertise rather than discovering truths in the experiences of already defined librarians. They are an opening up to difference rather than a closing down through the coding of sameness (MacLure, 2013a; St Pierre & Jackson, 2014). Using a diffractive approach, I pay attention to the material effects of what is said and how difference is created. For example, “Alex”, a liaison librarian, explained how academics often expressed strong preferences about which databases were taught in classes. In particular, PubMed, a database containing citations and abstracts of biomedical and life sciences literature and providing links to full-text whenever it is available (PubMed, n.d.), was popular because it contains links to open-access scholarly literature:

Yeah, um, there are some nutrition lecturers that are really, really, really, hung up about using PubMed, that’s what they want all their students to use. Um, part of the reason might be that PubMed will be available to them when they go outside of East Coast University, whereas some of our databases may not be, depends on where they get, you know, where they start working, like in hospitals might, but they may not. So, perhaps their way of thinking, [laughs] I don’t know, but their way of thinking might be well if they start using it now, they’ll be ready for when they, especially if they’re postgrad, when they go out into the workforce there won’t be so many issues because they know how to do it and how to find the information, they are slightly different ways that you search them. (Alex, intraview)

The use of PubMed in the class is an agential cut, exposing the difference between those who can access up-to-date medical research and those who are excluded. As I transcribed these words, I added a note, “students learning tools that they might not be able to use in the workplace – hasn’t anyone thought how strange this is??” The desire to prepare students, which the nutrition lecturers and Alex all felt was important, is a mattering of the paywall (see Chapter 5). However, what “glows” (MacLure, 2013b, p. 661) for me is the way that the paywall is considered an everyday part of

accessing scholarly literature for Alex in the intraview—and for me in my teaching. The note I wrote is not only a question of what I had seen at East Coast University Library but of how the paywall had ceased to be a source of indignation for me as a liaison librarian. When I intra-act with data, further data is generated—intraviews are becomings with possibilities.

Listening to the intraviews I recorded, I can sometimes hear myself constricting rather than opening up discussions in my desire to get particular answers and missing opportunities to ask more. This knowledge, while uncomfortable, provided a useful starting point for thinking differently with this data and how I become together with it. This thinking differently extends beyond paying attention to the materiality of “*what* someone says” (Bonham & Bacchi, 2017, p. 690). It is also a call to re-evaluate the supposedly neutral tools I used in data generation as bringing particular realities into being. Not only is recording a class or an intraview not a neutral act, but what the recording device is or does, how it is reconfigured, differs intra-actively (Nordstrom, 2015, p. 397). Turning it on and off acts as a marker of the beginning and end of an intraview or a class (p. 394), which is an agential cut of what is valued and therefore what matters. Some of the most interesting conversations I had were in the moments outside those recorded, which I initially categorised as outside what I considered the *interview* but I now consider vital parts of the *intraview*.

The notion of the beginning and end of a distinct method being enacted by turning on and off a voice recorder is an enactment of power relations between the researcher and those invited to speak, producing “the enclosed subject” (Kuntz & Presnall, 2012, p. 735). The act of turning the recorder on creates the interviewee:

Anne: I’m just turning this on

Liam: Righteo, it’s on the record now! (“Liam”, intraview)

The recording matters in a way that casual conversations do not. Halfway through recounting a story about the senior figure in the university’s limited knowledge of the library, a senior library staff

member asked, “these will be de-identified, won’t they?” and later further reassurance was sought in a plea formulated as a statement: “I’m glad this is de-identified”. These sentences must not be the last intra-action I have with this vulnerability. It is a convention of research to note this vulnerability and then “move on” (Honan, 2014, p. 11) but diffractive research challenges me to find ways of thinking with the differences that this vulnerability enacts and my responsibility.

Table 2 *Groups of Intraviewed Participants*

Role of person intraviewed	Number of intraviews	Recorded
Liaison librarians	7	Yes
Academics who requested classes	5	Yes
Students who requested classes	1	Yes
Library staff (managers and supervisors)	6	Yes
University staff (including academics)	5	Yes
Total	23	

The questions for my intraviews are found in Appendix 2. I followed set questions for the liaison librarians, academics and library staff. As interviewing Darcy, Clarissa and Charlie was part of my research plan, I include the questions for their intraviews. However, the additional intraviews with Kim and Jamie were more informal conversations and did not follow set questions and I did not use this data.

The Mattering of Observation

Observation is still an underutilised method in library and information research (Aytac & Slutsky, 2014; Baker, 2006; Järvelin & Vakkari, 2022; Ma & Lund, 2021; Ngulube & Ukwoma, 2019).

While there is an growing body of research in which library users are observed, there are fewer studies which use observation to understand the work of librarians (Pilerot & Lindberg, 2018, p. 254). It is usually linked to ethnographic studies of librarians and spaces in university libraries, for example, a study of librarians' "knowing in practice" (Pilerot & Lindberg, 2018, p. 262), and a study of reference work through live chat (Radford et al., 2011). Librarian, Eve Revitt's (2020a) institutional ethnography of the marginalisation of librarian expertise in universities, employed participant and non-participant observation. Revitt's focus was on the academic work librarians performed rather than teaching (p. 111). Revitt notes the problems of arranging observations as a visitor to libraries, and forgetting to take notes when interested in what was being observed.

Observation was an important, delightful part of my research, that encompasses more than the time I spent in classes, and meetings, watching, listening, thinking, and taking notes during my time at East Coast University Library. It is the purposeful mindset of paying attention to, or "noticing" (Bozalek & Fullagar, 2021a) what is happening and what properties and value are constituted within what is happening. I continue to use the term *observation* because it also has value in this thesis as one that is recognisable to librarians and library and information studies researchers; it is a shared starting point for discussing the value of research about libraries that moves beyond the ubiquitous survey (Halpern et al., 2015).

Linking observation and being means that the binaries of "researcher-researched, spectator-watched, interview-transcript" (Kuntz & Presnall, 2012, p. 735) are no longer useful. Rather than trying to "capture, tame, or bestill moving 'data'" (Ulmer, 2017, p. 137), I pay attention to the agential cuts enacted by me and others about what is observable and should be noticed, and also the moments when I notice something that discomferts, surprises, or seems too banal to record yet again. In Interlude 2, I provide an example of the complexities of the agential cuts I made and remade about liaison librarians' use of numbers to describe the value of a search.

From the beginning of data generation, I was confronted by the agential cuts involved in observing activity at East Coast University Library. I was given a seat in the librarians' work area, and it was here that I often sat when I was not attending library sessions and meetings or conducting intraviews. In the familiar environment of the shared open-plan office, with librarians working and chatting around me, I felt exposed and observed in my observing, which seemed intrusive. I discovered that observation was not simply a method I could apply to a separate world. I was confronted with decisions to be made: where to sit during sessions; the ethics, practicalities and mechanics of taking notes (hence a note to myself to bring a smaller, more discreet, notebook); and the arrangement of my (observed) face when listening and participating in conversations. All these decisions enacted cuts of possibilities and exclusion, some registered and noted by me and others not.

I was unsure how to observe people working at computers, not able to see what they were working on. Librarians have lengthy periods of individual work punctuated by moments of activity teaching or meeting people. As I spent time in the librarians' open place office space, I came to realise that librarians' professional expertise as teachers was enacted in the office as well as the classroom. In the office space, I observed liaison librarians asking colleagues for advice, one side of telephone conversations in which students or academics were talked through the navigation of search interfaces, call-outs for help solving problems, exclamations of delight and annoyance, typing on keyboards, debriefs of just-completed classes, the flurry of pre-class or pre-meeting preparation, teaching materials saved onto USBs or to the cloud and even the silence as people worked. The boundaries of this work were materially and discursively produced in the office by the liaison librarians. For example, Lacey's comment about the way some academics would leave preparation for the class to the last minute, "it's not my job to load everything up to the cloud", or Lesley's exclamation "I don't think ProQuest likes us" expressing frustration at how searching works in one of the largest collections of scholarly literature from a wide range of disciplines (see Chapter 4B). ProQuest here is a difficult colleague, arbitrarily making life complicated for the librarians.

The value of observation of classes and meetings for my research was enormous, especially as I recorded these and could listen to them repeatedly. It was in observing classes that I asked the question about library databases that opened up my research (see Chapter 2). Rather than discovering data, I was emerging together with it; nothing was simply there to be found. The notion that observation was the enactment of a “separation between ‘subject’ and ‘object’” (Barad, 2003, p. 815) was profoundly important for my research. It opened up possibilities for understanding how agency worked in the mattering of liaison librarians and their professional expertise as shifting and iteratively evolving subjectivities within the fine detail of intra-activity.

To give matter a place (Barad, 2003, p. 801), I employed other methods of generating data. Ironically, many of the photos I took were of text as I had agreed to not include images of people or surroundings that would enable the library and librarians to be recognised. The library world in Australia is a small one and the world of university libraries within that is even smaller. I found myself drawing the configuration of the rooms and the ways that librarians and students intra-acted with what were often awkward arrangements of furniture and devices. The drawings helped me think about for whom the space was designed and who mattered within it (Ahmed, 2019; Taylor, 2013, 2019). In addition, I printed large maps of each floor of the library and during intraviews I asked liaison librarians to indicate the places in the library that they visited. I also gathered teaching materials, presentations, and class handouts, supplementing what I saw and heard in classes with the matterings of librarians’ work in the office and discussions with their colleagues about best practices, and matterings of searching and accessing scholarly literature.

Details of Classes and Meetings Observed

Classes and Presentations by Liaison Librarians.

I divided these into three groups: classes taught face-to-face, online classes, and presentations at the beginning of lectures. The presentations in lectures were usually only five minutes long and were a brief introduction to library services. East Coast University is a multi-campus institution, with a

large number of online students. Even before the COVID pandemic, library staff regularly taught classes online and had staff meetings online.

Table 3 *Types of Classes Observed*

Cohort	Faculty/Discipline	Topic of session	Recorded
Face-to-face classes			
Coursework Master's*	Health Sciences	Searching for scholarly literature + EndNote	Yes
Coursework Master's*	Health Sciences	Searching for scholarly literature + EndNote	No
Undergraduate*	Science	Searching for scholarly literature	No
Undergraduate*	Science	Searching for scholarly literature	No
Undergraduate*	Science	Searching for scholarly literature	No
Honours**	Psychology	Systematic review	Yes
Undergraduate*	Science	Searching for scholarly literature	No
Undergraduate*	Science	Searching for scholarly literature	No
Undergraduate**	Cross-Faculty	Evaluation of sources	No
Research Master's*	Literary Studies	Searching for scholarly literature + EndNote	No
Undergraduate	Architecture	Searching for scholarly literature	No
Research Master's*	Literary Studies	Searching for scholarly literature + EndNote	Yes

Coursework Master's*	Education	EndNote	No
Coursework Master's*	Education	EndNote	No
Honours	Dance	Searching for scholarly literature	Yes
Postgraduate coursework	Business	Searching for scholarly literature	No
Undergraduate	Accounting	Searching for scholarly literature	No
Online classes			
Coursework Master's	Education	EndNote	Yes
Research students	Multidisciplinary	Literature Review	No
Presentations at the beginning of lectures			
Coursework Master's	Business	Introduction to the Library	No
Undergraduate	Accounting	Introduction to the Library	No
Postgraduate coursework	Business	Introduction to the Library	No

* Designates a class repeated for the same cohort.

** Designates a class not held in the library building.

Meetings Observed.

Table 4 *Observed Meetings between Librarians and Students*

Cohort	Faculty/Discipline	Topic of meeting	Recorded
PhD	Education	Introduction	Yes
Coursework Master's	Health Sciences	Searching for scholarly literature + EndNote	Yes
Coursework Master's	Education	Searching for scholarly literature for dissertation	Yes

Table 5 Observed Meetings between Librarians and Academics

Faculty/Discipline	Topic of meeting	Recorded
Psychology	Metrics	No
Psychology	Data for grant preparation	No

Table 6 Observed Library Staff Meetings

Type of meeting	Number observed	Recorded
Faculty team meeting	1	No
Campus monthly meeting	2	No
Liaison librarians meeting	3	No

Transcripts

Recordings become transcripts, or “inscription devices” (Latour & Woolgar, 1986, p. 51), creating another research artefact, data, in its own right, and representing some stable truth of what was said. This artefact is then divided into “slices” (Kuntz & Presnall, 2012, p. 742) and added to a thesis as separate pieces of data out of context to support a particular point. The sense of security that recordings and transcripts provide is attractive to a new researcher but “taking the isolated transcript as representative of ‘the interview’ ... occludes processes of ‘mattering’” (p. 741).

Understanding pages of typed words as ongoing *becomings* require “attention and intention” (Cannon, 2018, p. 572). When transcribing recordings of classes, I became aware of the intra-activity of this work, in an example that enacted the possibilities and exclusions of librarians teaching in those rooms. It was difficult to hear everything they said as the recording device was placed on the computer desk at the front of the room, and the librarians frequently moved back and forth between the desks, the seats and desks at which the students sat. Less frequently, they moved to the screen at the front of the room on which the PowerPoint slides were presented. This was initially an annoying delay in completing transcriptions but, as I intra-acted with the sounds, the

rhythm of the rising and falling of the librarians' voices were material tracings of the liaison librarians as they moved in this triangle.

4A and 4B, I do not write alone presenting new ideas (Bozalek & Fullagar, 2021b, p. 146) but rather build on and acknowledge those whose work I use. Similarly, the bound, finished thesis of this research will not be fixed but, through ongoing intra-activity, will be “part of the world making itself intelligible to another part” (Barad, 2007, p. 185).

The new materialist focus of my project challenged me to attempt different ways of giving a place in my writing to the materiality of librarian professional expertise. In each of the two interludes, I focus on a technology of search, the search box, and the results list. In doing so, I play with the notion of these in/visible and mundane tools of the trade of liaison librarians, the “search-ification of everyday life” (Sundin et al., 2017, p. 230) and the “mundane-ification of search” (p. 234). Similarly, in Chapter 5 I take the library building, the monolithic symbol of librarian professional expertise, and explore how the spaces of the library building are not fixed but iteratively remade. I bring together a series of pedagogical encounters as an imaginary running sheet for a library class. Then I diffractively read them together to explore how the spaces of the library building, a contested library technology, iteratively materialise liaison librarian professional expertise.

Diffractively Reading the Literature

My review of the literature is a methodological apparatus. In it, I engage with “what ‘what we know’ does” (Sauzet, 2021, p. 94), and what is performed by “different possibilities and insights” (Barolsky, 2021, p. 120) enacted within the literature. This is a diffractive move, focusing on the mattering of liaison librarians and their professional expertise, and the production of boundaries and the exclusions that are enacted. I do not aim to establish “one ‘correct’ reading or understanding” (Wolfe, 2021, p. 14) of liaison librarian professional expertise. In this way, my diffractive reading is an apparatus of investigation (Wolfe, 2021, p. 33), enacting “reconfigurings” (Barad, 2007, p. 93). The knowledge that emerges from this diffractive reading does so together with myself as a researcher and a librarian (Sauzet, 2021, p. 89), as an apparatus deciding what should be included. For this reason, the review is rather lengthy, stretching over two chapters.

In my diffractive review, the boundaries between the past and the future are blurred, the knowledge that emerges is not a “moving beyond ... leaving the ‘old’ behind” (Barad, 2014, p. 168). Time and space emerge together with phenomena – they are not constants that exist outside these (Barad, 2007, p. 383). Therefore, in my diffractive review I do not seek to simply track how liaison librarian professional expertise has changed over time, but rather to understand how the temporal is part of the reconfiguring, and itself is constantly remade within this phenomena. The review is a reworking of time and knowledge. Education researcher Aaron Kuntz, in dialogue with Michelle Wooten (2022), captures this idea, “you’re looking at a landscape that is becoming—it has not yet been determined ... you’re engaged in such an idea that you’re surveying a landscape, ... this idea of standing at our posts not to defend but to engage something that does not yet exist” (p. 5). The notion of not defending, but rather engaging, is similar to Barad’s call in an interview with Malou Juelskjær and Nete Schwennesen (2012) “*to do justice to a text*” (p. 13).

Doing justice in my reading also applies to the selection of texts and citation practices. Citations are an “economy” (Truman, 2022, p. 61), part of the measurement of value in the university, as I discuss further in Chapters 6 and 7. Selecting and inserting citations is not just a procedure in which I extract information; rather, who I cite is part of the house I am building (Ahmed, 2017, pp. 15–16). I am an apparatus selecting literature within the material-discursive practices of library and information studies. In Chapter 4A I expand on this further.

Conclusion

The methods and tools I use in my research are not merely devices to investigate difference but are themselves performative, enacting agential cuts. My entanglement as a librarian and a doctoral student is part of the becoming of my research, intra-acting with data, texts and theory. The period of my data generation at East Coast University Library was critical in changing the course of my research, challenging my earlier conceptions of research, and informing the way that I now work with data. The methodological approach I employed in my research offers new ways of

understanding the work and professional expertise of librarians. It brings into focus the materiality in librarianship, library technologies, expertise, the library building and library spaces, transforming them. This reconfiguring provides a means of going beyond the binaries of past and present, physical and digital, the building with its collections and online access, human and nonhuman, and visible and invisible. Understanding bodies as relational and produced in the everyday intra-activity of pedagogical encounters opens up exciting possibilities for my research.

This is the last of the chapters in which I set out how my project evolved and grew with the adoption of a new materialist approach. In the remainder of the thesis, I put these ontological, epistemological, and methodological approaches to work. I begin with a diffractive review in the following two chapters. In this, I plug in new materialist theory and notions of use (Ahmed, 2019) and hospitality (Barad, 2019), with the literature of library and information studies and platform studies. Doing this diffractively explores the mattering of liaison librarians, expertise, knowledge, power and library platforms in the literature.

Chapter 4A: Liaison Librarian Expertise Mattering in the Changing

University Library

Introduction

Diffractive methodologies focus on the shifting mattering of data. Reframing my reading of literature as a diffractive reading (see Chapter 3) an intra-action in which data is generated, was liberating. Frustrations I felt with the claims of legitimacy of library and information research literature had led to strident criticism on my part of what my colleagues had written. I now understand claims about liaison librarian expertise as material-discursive matterings of subjectivities, the same matterings that led to my research project. I am not standing outside dissecting and ordering the literature, I am implicated in this review. I sit with my feelings about the topics, and how they are communicated, and understand these emotions as data, provocations to stop and explore more. Agential cuts enacted by me led to the works cited here and in the decisions I make in identifying what matters and what I bring to your attention.

This review has two purposes. The first is to provide a brief overview of the changes in university libraries along with the scholarly communication landscape and the accompanying quest for legitimacy. These are important for understanding the current role of liaison librarians. As Barad (2007) notes, “as the rings of trees mark the sedimented history of their intra-actions within as part of the world, so matter carries within itself the sedimented historicalities of the practices through which it is produced as part of its ongoing becoming” (p. 180). The second purpose of the review is to diffractively read these accounts of change to understand how liaison librarian professional expertise is performed in the literature. The review comprises two chapters, Chapter 4A and Chapter 4B, each containing sets of interconnected diffractive readings. These readings, like the action of waves, move over and across the literature, zooming in and zooming out to create diffractive patterns which elucidate different matterings of liaison librarian expertise. The multiple readings replicate the growth in my approach to this project, from a study of liaison librarians using

technologies, to incorporating the performance of librarians and their technologies, accounting for distributed agency, understanding the broader context of the platform university, and finally employing notions of use, usefulness and hosting to understand the political implications of knowledge production in the university.

Chapter 4A outline

Chapter 4A is a diffractive review of changes in university libraries and the role of librarians over the past century. It includes an overview of these changes, a reading of them as changes in expertise, and finally a reading of library and information studies literature about the changes, in which liaison librarians are performatively produced. Literature selected for this review is a mix of research about libraries employing a theoretical basis, mostly by library and information studies researchers, and professional literature capturing reactions to the changes. This chapter has three sections:

- This first introductory section discusses the literature used in the review and how it was chosen, and provides a background to the liaison librarian role, in general, and in Australia.
- In the second section, changes in librarianship since the middle of the last century due to the development of computerised technologies are explored. These changes are read diffractively with the sociologist Andrew Abbott's (1988, 1998) theory of the professions to understand changes in librarian professional expertise as moves to reclaim control. In this section the initial response of librarians, the adoption of information literacy, the accompanying production of librarians as teachers, and finally the development of technologies which enabled independent searching through a single search box are also read through Abbott's theory.
- In the third section, library and information studies literature about these changes is read diffractively to identify the performance of the in/visible librarian and problem librarian within that literature.

Chapter 4B outline

Chapter 4B is a diffractive reading of library technologies of ordering and producing knowledge. In this reading, technologies are explored as agentic enactments, both being produced by and also productive of liaison librarianship. Time and space are enfolded in these matterings as the pull of the past and a desire to move away from it.

- The first and second sections are diffractive readings of the mattering, in library and information studies and other literatures, of two key technologies of ordering knowledge, the library building and the book. The agential cuts enacted by these technologies perform the phenomena of the in/visible liaison librarian, and define the boundaries of their expertise.
- In the third section, the emerging functional role of liaison librarians is described and the way in which it moves beyond traditional expertise centred on the library building and its collections. Expertise in this role is entangled with the measuring mechanisms of library platforms.
- In the fourth section of the chapter, I read concepts from platform studies literature with library and information studies literature to situate technological changes in university libraries as part of the broader reshaping of scholarly communication and professional work in higher education. I close this section by extending Ahmed's (2019) discussion of the housing of ideas as a way of understanding use. This is done by diffractively reading it with Barad's (2019) unpicking of the notion of playing host to understand the location of usefulness, expertise, and power within shifts in the site of scholarly communication.

Library and Information Research Literature

I primarily draw on library and information studies literature in my review. With some notable exceptions, such as sociologist Andrew Abbott (1988, 1998, 2008), the work of librarians has received limited attention outside of library and information studies research (Still & Wilkinson,

2014). I include library and information studies research that is classed as scholarly, written by researchers who work in library and information studies faculties or departments, or by those who work in university libraries. The latter group includes a small minority of librarians working in universities, mostly in the United States (Walters, 2015; Weng & Murray, 2020), who have faculty status and with this an expectation to produce research. Librarians in Canadian universities have academic status but this is a recognition of their role in the academic work of the university rather than an expectation to undertake research (L. Jacobs, 2013).

As the zooming in and out of this review indicates, both opinion pieces and research articles are employed as sources for this production. I include “library-practitioner literature” (Westbury, 2020, p. 3), a wide range of writing from “workaday write-ups” (Buschman, 2022, p. 304) to research undertaken by librarians about their work. There are limited expectations for professional librarians to produce research (Duffield et al., 2018; Ramos-Eclevia et al., 2018). Additionally, some of the research produced has attracted criticism as “glad tidings [and] testimony” (Beals, 1942, p. 165), and “the genre known as ‘how we done it good,’ where ‘we’ is some specific library or library system and ‘it’ refers to whatever program or service is the subject of the report” (Hernon & Schwartz, 2016, p. 91). Prominent in this type of literature are evaluations and comparisons of library technologies, a mattering of the work required by librarians to gain and maintain expertise in a rapidly changing environment driven by platforms. I include this literature because the focus of my review is to understand the mattering of liaison librarians in the literature. In much of the literature, a distinction is not made between literature produced by academics or librarians: “the knowledge-field thus manifest[s] itself as entangled across genres and publication types” (Sauzet, 2021, p. 86).

The search for literature and my decisions about inclusion for this review have evolved as my research approach changed. I have used multiple means of finding literature, including systematic search of relevant databases, citation tracking, author searches, table of content alerts, alerts for search terms, and recommendations from colleagues and supervisors. I employed systematic

searching methods across a number of databases in order to confirm claims about the amount of research about a particular topic, and to find material on a particular topic. For example, use of the search string [Barad OR “new material*”] AND librar* in dissertation and journal databases was one I regularly used to ensure that I was accurate about the extent to which a Baradian or a new materialist approach has been applied to research on librarianship.

A diffractive review is an ethical mattering. In identifying the performance of liaison librarians, I have presented examples of trends, rather than working with the occasional outrageous claims. Decisions about inclusion were therefore based on an attempt to provide a review of the available literature, and also to pause at literature which glowed. For example, later in this chapter, I discuss an article by librarians and a researcher about changes in universities in Texas (LeMaistre et al., 2012). This article is not recent and it is about libraries in one state in the United States. However, it is a powerful article in this review because, without an explicitly new materialist approach, it demonstrates what can be understood with close observation: the power of material configurations in libraries, that are both a mattering of change and also productive of different phenomena. It glows for me as an indicator of the possibilities for research in library and information studies. Searching for the literature, and the choices I made about inclusion, are part of the creation of the “knowledge-field” (Sauzet, 2021, p. 88). Google Scholar alerts about the role of librarians and the future of the profession, created for my earlier research direction, provided an interesting and useful source for diffractively reading the production of the teaching librarian and for the management of the future. In this way, I have grown with the review, been chastened when reading harsh judgements I made in earlier writing, have found gems in discarded texts, and learnt the importance of aspiring to be a responsible reviewer.

A diffractive review also accounts for what is in/visible. Research in library and information studies is dominated by researchers and librarians from the United States, the United Kingdom and Canada. Research about Australian university libraries is published in journals in the United States

and, to a lesser degree, in the United Kingdom. There is currently only one journal on libraries published in Australia, *JALIA: Journal of the Australian Library and Information Association*⁹. To resist the in/visibility of librarianship beyond the dominant producers of research, I actively sought to cite authors from other countries. I also attempted to cite Australian research where possible. The ability to cite is based on the ability to read and access scholarly literature. I acknowledge my privileged position as a doctoral candidate at a university whose library provides access to one of the largest collections of scholarly literature in Australia, being “3.05 million print items, 1.65 million electronic items, including: 139, 000 serials, 1.51 million monographs, 1,879 databases” (Monash University Library, 2022). That this abundance makes large amounts of scholarly literature in/visible is discussed further in Interlude 1.

The recent growth of critical librarianship, a broad term employed to identify the use of theory to identify and confront social justice in libraries and the library profession (Nicholson & Seale, 2018, p. 2), is an attempt to theorise the work of librarians and place it within broader discussions. Theories put to use include “critical race theory, political economy, and queer, antiracist, and feminist pedagogies” (A. Hicks et al., 2022b, p. 121). Despite this growth, there remains a preference in library and information studies journals and conferences for useful and practical information. This includes “positivist social science research, reflective case studies, standards, best practices, how-to guides and ‘cookbooks,’” (Hudson, 2017, p. 206), which materialises and entrenches belief in the neutrality of librarianship and its technologies. Some of the most interesting and theoretically informed discussions in library and information studies are found in theses and, to some extent, blog pieces. Doctoral theses are sometimes the only output from their authors, professionals whose roles do not allow time for research, and blogs contain up-to-date information on the mergers, acquisitions, and developments of library platforms.

⁹ *JALIA* is the 2017 amalgamation of *Australian Library Journal*, and *Australian Academic and Research Libraries*.

Liaison Librarians and the Mattering of Professional Expertise

According to the Australian Library and Information Association (Australian Library and Information Association [ALIA], 2022), a librarian is anyone who holds “an ALIA accredited undergraduate or post graduate university qualification in library and information science” (para. 6). While ALIA has a list of institutions whose qualifications are accepted, librarianship does not have a formal accrediting body nor is the education required legally regulated (Hamerly & Crowley, 2014, p. 3). Membership of ALIA is not a legal requirement for someone to work as a librarian, nor is a lack of a library qualification formally a barrier to gaining a position in a library or one with the title *librarian*. For example, an analysis of advertisements for library roles in Australia in 2021 (Hider et al., 2023) found that half of the advertisements for staff in university libraries required qualifications that enabled membership of ALIA and the other half required only a tertiary qualification.

Within the profession, the preoccupation of librarians with professionalism is sometimes couched in terms of differentiating their role from that of other library staff (Garcia & Barbour, 2018, p. 22). The profession-wide division in library worker roles between library assistants or library officers (paraprofessionals or library technicians with TAFE qualifications), and professionals (qualified librarians) is still firmly entrenched in Australia (Shipp, 2016, p. 283). This division is mattering, enacting boundaries that exclude some whose work is “significantly entangled” (Fenwick & Nerland, 2014, p. 2) but not considered of the same value. In librarianship, it produces “a privileged group, separated and elevated in status, professionals only because some library workers are not” (Drabinski, 2016b, p. 605). In writing yet another study of liaison librarians, I am part of this mattering, reinforcing the central role of the professional at the expense of the paraprofessional. While there is no uniform position description for liaison librarians (Canuel & Crichton, 2021, p. 1), duties are similar around the globe (Kamilova & Yap, 2022; Kim et al., 2022; Nguyen & Tuamsuk, 2021; Okeji et al., 2020; Oladokun & Mooko, 2022). These duties can be summarised as “reference, instruction and outreach” (Martin & Sheehan, 2018, p. 70). *Reference* is an historic term denoting the work of librarians in pre-internet times responding to people’s questions using professional

networks and “common reference tools, such as encyclopedias, almanacs, and bibliographies” (Agosto et al., 2016, p. 177), from the reference collection, which could not be borrowed. Now it denotes any work in which library users’ questions are answered. *Instruction* is teaching, and *outreach* is the development of relationships with key stakeholders. These three aspects of the role are framed as acting as an “advocate and consultant” (Forbes & Keeran, 2018, p. 86). Consultancy aligns with reference and instruction work, with advocacy covering outreach, which includes “a wide range of topics and trends in higher education, influencing and persuading campus stakeholders on important issues, and serving as ambassadors to student and faculty organizations”. This ambitious claim, which I discuss further below, does not always match reality. Liaison work is encompassed in other roles, including “area studies librarians” (Li & Li, 2021, p. 474), often with language expertise in a particular geographic area, and subject librarians (Corrall, 2015; Palumbo et al., 2021, p. 584). The subject librarian role originated in the United Kingdom in the middle of the last century as part of an initiative to rebuild collections after the Second World War (Woodhead & Martin, 1982, p. 95).

The emphasis on subject specialisation in the liaison role has diminished, with the title of subject librarian disappearing from some libraries (Corrall, 2015, p. 224) and the role attached to faculties or departments rather than individual subject areas (Hoodless & Pinfield, 2016). Similarly, cataloguing and collection work, once part of the liaison role (Shelley, 2014), was largely automated. A “functional role” model (Bakkalbasi et al., 2016; Hoodless & Pinfield, 2016) was adopted with liaison work focused less on subject areas and more on particular areas of expertise: for example, teaching, research support, open access or research data management. These roles are a significant shift in the work and expertise of liaison librarians, and they reflect the shift from libraries providing access to a local, relatively limited print collection to managing vast decentralised online collections. While these changes are framed as developing new skills, the traditional liaison librarian, with their close attachment to disciplinary knowledge becomes in/visible in them. As I discuss later, these new areas of expertise create new relationships within the university.

Given the broad definition of the liaison librarian role, the lack of regulatory oversight, and the vague nature of building relationships, measuring success in the role is complex (Hamilton, 2021, p. 13). The lack of a requirement for a qualification to work as a librarian means that librarianship differs from teaching, legal and medical professions. This has led to it being classed as a “sub-profession” (Carmichael Jr. & Shontz, 1997; W. E. Moore, 1970, p. 176) or counted amongst the “minor professions” of the university (Glazer, 1974). Concerns by librarians about the perception of their profession are longstanding (M. L. Bundy & Wasserman, 1968; Gilb, 1966; Goode, 1961, 1969; Hazeltine, 1922; Hughes, 1961; R. L. Simpson & Simpson, 1969). Fenwick and Nerland (2014) define professionals as “members of any occupational group, usually committed to public service, that defines itself as collectively sharing particular knowledge and practices, and that is publicly accountable for its service” (p. 2). Librarians fit within this definition although, as I describe below, public accountability for library services is ill-defined.

For librarians in Australia, the closest to an official articulation of their shared knowledge and practices are set out on the ALIA website (Australian Library and Information Association, 2023). The website has little to say about the accountability of library professionals. While acknowledging the diverse roles in which a librarian might be employed, in libraries ranging from a parliamentary library, a primary school library, to a hospital library, the association claims that “library and information professionals are united in common values, and promote the free flow of information and ideas in the interest of all Australians and a thriving culture, economy, environment and democracy” (para. 1).

This combination of a lack of clear guidelines for accountability in the role with large claims of its importance is reflected in library and information studies literature. For example, *The new librarianship field guide* (Lankes et al., 2016) states that there are three ways to become a librarian: by acquiring a degree in librarianship; having *librarian* as a job title; or, by becoming a librarian “by spirit” and sharing the “same mission, skill set, and service outlook as professional librarians” (p. 74).

In these types of claims, librarians materialise together with the expectations placed on those working in institutions that are seen to be “inherently good and sacred” (Ettarh, 2018, para. 3), and the lack of a legal and professional remit that clearly articulates their expertise. This combination was one of the motivations for questioning my role when I was a liaison librarian. It seemed that some claims in the literature, while pointing out the importance of librarianship, were also frustratingly vague about how this would be realised and how this work could be articulated to others.

The Mattering of the Changing University Library

Library dean¹⁰, David Lewis (2016), concludes his book *Reimagining the academic library* with a prediction of what the university library would look like ten to fifteen years from the date of the book’s publication. The library building would remain, most likely still referred to as *the library*, and it would continue to be a popular place for students to undertake group and individual study. It would contain eating spaces, support services, and activities associated with scholarly communication, including publishing, some of which will be outsourced. The library may even have merged with other university organisational units to present services as one unit. Fewer roles in libraries would be identified with the term *librarian* and a library or information studies degree would not be the sole or even required qualification for obtaining a role in a library. Acquisitions of collections would be largely automated with special and unique collections growing in importance.

The university library described here would be familiar to people working in the sector in Australia and in many other parts of the world. In some ways, it is a library that is very different to university libraries at the beginning of the previous century. Library collections have been transformed; for example, “a typical academic library collection in 1999 included some electronic resources, but it was in most ways more similar to a collection from twenty or even a hundred years

¹⁰ The dean of a university library in the United States is the equivalent of the university librarian, the highest role in Australian university libraries.

earlier than it was to today's collection" (Levine-Clark, 2019, p. 87). Contemporary collections now contain different types of literature, formats, and systems for finding and accessing these (Reidsma, 2019, p. 57). Searches of the collection could involve a wide range of technologies, ranging from "library catalogs, abstracting and indexing tools, and databases, to federated search¹¹, and then to web-scale discovery (WSD) systems" (Jantzi et al., 2018, p. 71).

Lewis (2016) ends his description of the future university library with the claim that "the library will continue to have a credible claim to be the heart of the university" (p. 152). The changes in the technologies of search, described in my review, disrupted the certainty of the library's centrality to the university. The mission to maintain or reclaim legitimacy, depending on the optimism of the writer, has dominated library and information studies literature since the advent of computerised storage and access to scholarly literature. Liaison librarian professional expertise cannot be understood outside this mission.

In this section, I provide a brief overview of changes in university libraries since the middle of last century, reading them through the sociologist Andrew Abbott's (1988) theory of the professions and his case study of librarianship. This is an important work with its application of theory and has been the basis of many discussions of library work (A. M. Cox & Corral, 2013; A. M. Cox & Pinfield, 2014; Jappe et al., 2018; McGuigan, 2011; Namaganda & Walter, 2020; Nelson & Irwin, 2014; O'Connor, 2006; Ohaji et al., 2019; Pamment, 2008; Petersohn, 2014; Verbaan & Cox, 2014). Abbott (1988) questions the idea of an inevitable and desirable path to professionalisation. Instead, he focuses on the work professions engage in, the wider contexts within which this work takes place and the way claims are made for control over areas of expertise, or "jurisdictions" (p. 34). He investigates how ties to areas of expertise are "*established in the processes of actual professional work*" (p. 33). In doing this, his work attends to both the material and the discursive and offers insights for a new materialist study of expertise. One of his contributions to the study of librarian

¹¹ For definitions of federated search see [glossary](#) and web-scale discovery systems see [glossary](#).

professional expertise is his contention that the professions “exist in a system” (p. 33) and cannot be studied without understanding this. Abbott’s (1988) work does not take an explicit materialist approach but his focus on both the material and the discursive aspects of librarians’ claims to legitimacy is a strong starting point for a review of the literature.

Abbott (1988) suggests that in the period of the dominance of print collections, librarians possessed a strong, although not unchallenged, claim to expertise centred on the library building and its collections. This involved providing access to collections and ensuring their preservation, which were sometimes contradictory tasks (Havens & Rosenfeld, 2016, p. 304). As librarian Ernest Richardson (1916) noted, the “indivisible trinity” of any library was “books, building and librarian” (p. 6). Abbott (1988) identifies three approaches to the expertise of managing collections: entertainment, access and education. Entertainment was not relevant to university libraries but the sometimes-competing claims of the education and access approaches have defined librarianship in these libraries.

Lewis (2016) identifies three constants in library work since its inception: the storage and conservation of documents, identifying and ensuring relevant knowledge is accessible to the organisations or communities within which the library is placed, and helping users “in finding and using information” (p. xi). In the first article published about reference work in 1876, by Samuel Green (as cited in Tyckoson, 2012), four components of reference work were identified: teaching people how to use the library and its collections, answering users’ questions, “promoting the library within the community [and] recommending sources to users that fit their needs” (p. 259). In these definitions of library work the access role dominates, with education confined to recommendations from the collection and instructing users on the contents of the collection.

Access provided the strongest claim to expertise in university libraries, with the education approach limited to “bibliographic instruction” (Rosenblum, 1983, pp. 8–9). As universities vied to have “the largest and most comprehensive collection possible” (Mowat, 2006, p. 391), librarians’

attempts to be recognised as teachers of bibliographic instruction were overshadowed by the success of the access role (O'Connor, 2009c, p. 277). Purchasing for collections was largely driven by academics, who “emphatically rejected librarians’ educational pretensions and ... used libraries solely for retrieval” (Abbott, 1988, p. 218). The term *pretensions* suggests that Abbott himself does not find the claim to expertise convincing—not a heartening response from one of the champions of librarian work. Interest in an educational role for librarians stretches back to the beginnings of the Western university in Germany, but once again this role was on the margins of education and related more to providing advice about library technologies and the collection (Drabinski, 2016a, p. 30).

Library buildings, often large and expensive constructions (Kaser, 1997, p. 155), were placed in central locations on campuses. Labelled the “heart of the university” (Leupp, 1924; Shera, 1937, p. 141), they were the focus of scholarly activity, “almost without exception the entire university passed through the doors of the library. No serious researcher, scholar, or undergraduate could work without the collections of the library and the interlibrary loan service” (D. Law, 2010, p. 185). This was an elite service for university students and academics. Books in university libraries were “kept behind locked doors and thick walls” for centuries (Darnton, 2020, p. 13). For librarians, dependence on the collections also signalled a weakness in their claims of expertise. Abbott (1988) uses the example of a doctor’s relationship with a hospital to illustrate this (p. 21). A doctor’s area of jurisdiction is the human body and not the hospital, in contrast to the close connection of librarians to the library building and its collections. It is a profession created to tend collections in one centralised location.

While libraries have a long history, librarianship in Australia derives from the reformulation of United States librarianship by Melvil Dewey, developer of the first library schools (Abbott, 1988, p. 222), and designer of the Dewey Decimal Classification System (Garrison, 1979, p. 115). Dewey is now discredited as a sexual harasser and anti-Semite (Garrison, 1979, pp. 153–156; Wiegand, 2020,

p. 109). His systems are also critiqued for their narrow view of the world, with Dewey labelled “one of the most successful colonizers of Australia” (McKinlay, 1980, p. 131) through the reach of his “white, anglo-saxon and protestant” (p. 132) classification system. Claims of expertise in librarianship are imbued with the “Deweyan democratic purpose of informing and enlightening” (Cavanagh, 2013, p. 214).

As librarian professional expertise was linked to one technology, books in a library building, claims were vulnerable to changes in the technologies of search. Changes that did not disrupt, but rather supplemented, claims to expertise based on the building and its collections were absorbed; for example, catalogue cards (Allison-Cassin, 2020) and microfilm (Mowat, 2006, p. 385). Librarians also demonstrated an eagerness for early adoption and adaptation to advances in computerisation (Manoff, 2015, p. 513). They embraced “automation” (Mowat, 2006, p. 385), with computers streamlining and replacing routine tasks in the acquisition, cataloguing and circulation of library materials (Abbott, 1988, p. 220; Holley, 2013, p. 51).

Computerised technologies of search also initially amplified the education role of librarians. From the 1960s, indexing based on keywords and computerised bibliographic databases, that enabled full-text searching, began to replace the work of descriptive cataloguing librarians, based on detailed knowledge of subject areas (Abbott, 1988, p. 184). Librarians involved in reference work developed expertise using these systems, which had previously been the preserve of computer specialists (pp. 183–84). Librarians became indispensable intermediaries in information retrieval, working with users to craft precise search strings, which were expensive and time-consuming to run.

The basis for expertise in the new technologies of search shifted with these new technologies. Librarians have always relied on commercial companies, often founded by librarians, for the production of technologies of search and access, such as reference books, indices and bibliographies (Abbott, 1988, pp. 222–223). However, computerised and digital technologies are no longer specific to the profession. Card catalogues, subject headings, classification systems, and

library shelves were supplemented by protocols, formats, and systems designed and managed by others. This materialised in library and information studies literature as a feeling of diminished control; for example,

from collection development, to discarding aging card catalogs in favor of OPACs [open public access catalogues], to corporate sponsored symposia for librarians, to installing expensive digital technologies, corporations increasingly call the shots on how libraries do their business and provide access to users. (McDonald, 1993, p. 12)

As I expand on in Chapter 4B, this sense of diminishing control has only increased with time.

Information Literacy Materialising New Expertise

Changes to how scholarly literature was accessed were part of a larger shift in the perception of the importance of information in the United States, which shifted pace during the Second World War (Abbott, 1988, p. 239). Librarians were excluded from the sphere of male-dominated information and computer expertise (A. M. Cox & Corral, 2013, p. 1537) and therefore their attempts to gain control of the narrative coalesced around information literacy. The term was first used by Paul Zurkowski, President of the Information Industry Association in the US in 1973 (Tuominen et al., 2005, p. 331). The call for information literacy had its origins in concerns about the failure of public schooling to produce workers with the necessary skills to participate in the new information workforce (Drabinski, 2014, p. 482). The absence of librarians in discussions in the Education Reform Movement and the preparation of the influential *Nation at Risk* report (National Commission on Excellence in Education, 1983) led to concern amongst school and university librarians (Drabinski, 2014, p. 482; O'Connor, 2009b, p. 499), and a profession-wide move to claim information as a librarian area of expertise. With the lack of inclusion of librarians, the in/visible librarian materialises; "libraries are amazingly invisible to educators. A few years ago, when the newly defined "information society" cried for attention in the educational community ... there was no noticeable recognition of libraries or their potential contribution" (Breivik, 1985, p. 723).

Library and information studies researcher Lisa O'Connor (O'Connor, 2006, 2009a, 2009b, 2009c) employs Abbott's (1988) notion of jurisdiction to analyse discourse in library journals in the United States from 1982 to 1988. She charts how information literacy became the foundation of librarian professional expertise. Information was emphasised over libraries (O'Connor, 2009c, p. 499), in an attempt to "de-objectify [librarians'] jurisdictional claim" (O'Connor, 2006, p. 138). This materialised in job titles (Kennan, Cole, et al., 2006; Kennan, Willard, et al., 2006), doctoral thesis topics (Finlay et al., 2012), the names of the faculties or departments awarding library qualifications (Crowley, 1999), and the names of library buildings (Milewicz, 2009a).

Terms from the *Nation at Risk* report (National Commission on Excellence in Education, 1983) such as "lifelong learning" and "learning to learn" were adopted to describe the scope of the education role, with the 1989 *Final Report of the American Library Association Presidential Committee on Information Literacy* identifying critical thinking skills and lifelong learning as core components (Grafstein, 2017, p. 6). The central concepts of information literacy are communicated through a number of similar standards, the first being the 1989 American Library Association (ALA) Standards (Seale, 2009, p. 221). The higher education branch of ALA, the Association of College and Research Libraries (ACRL) developed its Information Literacy Competency standards for Higher Education (ACRL Standards) in 2000 (ibid). This Standard was in turn the basis for the Australia New Zealand Information Literacy Standards ANZIL (A. L. Bundy, 2004, p. 3).

The integration of concepts such as critical thinking and lifelong learning legitimised calls for information literacy to be treated as a core competency, like reading, writing and maths (O'Connor, 2009c, p. 501), "because information literacy is an important characteristic of lifelong learners, information literacy education is an important part of all educational curricula" (Bruce, 1995, p. 159). To strengthen claims for a role for librarians, information literacy was described "as a primary, not a peripheral, educational outcome" (A. L. Bundy, 1999, p. 235).

The implications of claiming this area of expertise was significant for the role of librarians. Discourses of collaboration with educators emphasised librarians' new status and role (O'Connor, 2009c, p. 501). Librarians were exhorted to embrace the "subtle shift in emphasis from that of librarians who teach to librarians *as* teachers (and learning facilitators)" (Peacock, 2001, p. 30). However, despite debates about the educational nature of reference work (Rader, 1980), this involved answering people's questions using professional networks and "common reference tools, such as encyclopedias, almanacs, and bibliographies" (Agosto et al., 2016, p. 177). At the reference desk, teaching was "not a distinctive activity" (Austin & Bhandol, 2013, p. 25) and the "helping model" (p. 23) of interacting with users at the reference desk did not transfer well into teaching groups of students (p. 30). Debates about librarians' identification with the teaching role (Becksford, 2022; E. L. Davis et al., 2011; Walter, 2008), the quality of teaching (Omeluzor et al., 2017), and the quality of the preparation received in library courses for the role (Douglass, 2018; Wang et al., 2021) continue in library and information studies literature.

Information literacy fulfils the role of an "epistemic object" (Nerland & Jensen, 2012) of professional expertise. It is a materialisation of professional expertise—the claiming of jurisdiction over the problem of new forms and abundance of information (O'Connor, 2009c, 2009b). It has perhaps meant more in this role for librarians than for those outside the profession; "there remains a danger that by talking of and promoting information literacies we are simply building another silo, a ring-fenced area to which we can claim ownership which no-one else is very interested in disputing" (Brophy, 2007, p. 521). In addition, claiming expertise in lifelong learning and evaluation of information based on the framework of information literacy has induced a well-intentioned profession-wide feeling of knowing best and a tendency to underestimate the skills of library users (R. Green, 2010; A. Hicks & Lloyd, 2020). These assumptions also materialise in collection work as "beneficent gatekeeping" (Patin et al., 2021, p. 8), which is the selection, curation, and "eventual canonization of certain types of knowledge" (p. 8). In this way, information literacy continues the educational mission espoused by Dewey.

The Single Search Box and the Deskilling of Search

The end of the 20th century brought technologies that transformed searching into an activity anyone could undertake and ultimately led to its “mundane-ification” (Haider & Sundin, 2019, p. 11). These technologies changed the nature of liaison librarians’ work and further weakened the claims of expertise, even those formulated on information literacy. The internet was not organised like library databases and new kinds of skills and approaches were required (Elder & Miller, 1998, p. 35). Librarians’ expertise in reference work and specialist information retrieval in databases was eroded with the development of the World Wide Web, web browsers, search engines, and increasingly user-friendly interfaces.

The launching of Google in 1998 signalled an important shift, “with its clear and simple search box, rapid response time and powerful crawling [this] was the inflection point that definitively separated the world of search engines from the world of databases” (Ortega, 2014, p. 2). For the first time, anyone could find scholarly literature outside library technologies. Google search attracted mixed feelings among librarians (Miller, 2005, p. 1), with “public derogation coupled with private adoption” (R. Anderson, 2005, p. 31). In librarians’ claims of expertise in the jurisdiction of search, Google and the web represented abundance and chaos, “often unfiltered, information” (McGuigan, 2011, p. 562), and bad habits such as “Googlitis” (Leibiger, 2011), which is an “overreliance on simplistic search techniques using Internet search engines” (p. 188). Students were characterised as being “spoon-fed by Google” (Newton & Silberger, 2007b, p. 128), unaware of the expertise offered by librarians in evaluating search results to find high-quality sources. Here again, the Deweyan moral imperative overlays librarianship’s existential struggle as a diagnosis of maladies and bad habits, for which librarians alone can supply a remedy. What this discursive production of Google hides is deep concern about how search engines can successfully retrieve relevant results quickly—a direct threat to liaison librarians’ hard-earned expertise in searching.

Inevitably, the success of Google led to university libraries actively aspiring to acquire library search interfaces as simple as a Google search (Reidsma, 2019, p. 58). The value of the single search box has been the subject of much debate in library and information studies literature (Griffiths & Brophy, 2005; Haggerty & Scott, 2019; Lown et al., 2014; Newton & Silberger, 2007a, 2007b). A single search box replaced the advanced search interface, a materialisation of librarian expertise with its layout making explicit the use of Boolean operators, searchable fields, and limiters¹². The development of mobile devices, which enabled the creation of portable personal libraries (Antonijevic & Cahoy, 2014, p. 287), and the long pursuit of “seamless access” (Edwards & Webb, 1999; Havens & Rosenfeld, 2016; Joshipura & Cipkowski, 2022) to online resources further obscured the link between the housing and provision of scholarly literature and library buildings and staff . Alongside these changes, new sales models, such as the sale of large packages of electronic journal and eBooks (see Chapter 4B) led to the invisibility of expertise in the selection, acquisition and curation of online collections. Education researcher Tara Brabazon (2014) labels this a “disintermediation” of librarian expertise because, in comparison to the purchase of books sitting on shelves, the work of liaison librarians in evaluating, testing and improving online databases and indices was neither visible nor obvious. In the following section, I expand on the notion of the lack of visibility of librarian professional expertise.

At the close of the previous century, professional work was changing from occupational groups operating independently to organisations working “across the entire range of expert work” (Abbott, 1998, p. 434). University libraries were always considered drains on, rather than creators of, revenue. Competition for funding at a time of rising costs of databases left libraries with difficult choices regarding expenditure, including staffing. Abbott (1998) suggests that this dependence would increase, speculating that within twenty years most scholarly articles would be only available through online databases, and “and whoever controls them will control much about the structure of

¹² See [glossary](#).

knowledge ... it is hard to see anything in the future but centralization and standardization, both of which will replace important skills in the current librarian's armamentarium" (p. 436). Abbott's prescience is noteworthy. The platform university is an infrastructure of centralization and standardisation. It is interesting to note Abbott's use of the term *publisher* to describe the companies providing databases. Many of the platforms controlling access to scholarly literature have their origins in publishing companies, such as Elsevier (Kohljenovic, 2021, pp. 323–324), and this term remains popular in librarianship still. However, the companies that provide access to scholarly literature are markedly different to the former publishing houses. They represent a "new organizational form" (Robertson, 2019, p. 169), which I elaborate on later in this review when I discuss platforms in Chapter 4B.

Crisis and In/visibility in Professional Expertise

In this section, I explore how the changes outlined in the previous section materialise in particular matterings of liaison librarians and their expertise. In particular, I focus on the mattering of a constant state of crisis, as librarianship is "always already responding to the crisis of Professionalism" (Drabinski, 2016b, p. 606). I examine how the sense of crisis is performed with the problem librarian, one who requires rescuing to, in turn, create a place for the library in the university. The continued crisis is a mattering of a past that is "never finished once and for all" (Barad, 2007, p. 234). As described in Chapter 2, I seek to disrupt the crisis of the disappearing expertise of the disintermediated librarian (Brabazon, 2014) by employing the term *in/visibility*.

How librarians negotiate professional expertise in this mattering is illustrated in a rare observational study of librarians at ten Texas universities (LeMaistre et al., 2012). Although a new materialist lens is not employed, this research captures the different ways in which librarians "intra-act[ed] with the materiality of their world in ways that produce different becomings" (Jackson & Mazzei, 2012, p. 9). In large research libraries librarians had moved into "impersonal, asynchronous, and one to many" (LeMaistre et al., 2012, p. 271) teaching. At smaller universities, the subject

specialist role continued, while at “two-year” institutions librarians worked with individuals in problem-solving technical and low-level information queries. The reference desk once defined the work of librarians (Ober, 1992), but with library users able to search for and access sources independently, it had become a place where library staff answer a declining number of questions, many of which were simple or directional (LeMaistre et al., 2012; Saunders et al., 2015). Librarians working in larger institutions that can afford additional staff were freed from the reference desk to work with academics and develop as teachers.

The different outcomes materialise how in/visibility is a material-discursive mattering. Librarians who spend large amounts of time at the reference desk are seen but their expertise materialises in the technical workings of photocopiers and printing, along with queries about the location of the toilets (Margolin & Poggiali, 2017). Librarians who provide classes are in/visible in different ways. They are visible in a faculty teaching space, or library training room, which are spaces in which their expertise materialises as more valued. Thus, claims of expertise are entangled with new technologies, institutional funding levels, the nature of research and teaching undertaken in the institutions, and relationships with academics.

The mattering of expertise in teaching is complex and entangled with the relationships of professional and academic staff. While it is possible to claim that “there is a history of well-established and effective collaboration between academics and librarians that has been nurtured by the shared space of interdisciplinary conversation” (Salisbury & Peseta, 2018, p. 253), liaison librarian professional expertise as teachers is an enactment that depends on agential cuts made by academics. Librarians depend on invitations from academics to enter into a collaboration to teach students (Julien & Given, 2003, pp. 177–80; Julien, Tan & Merillat, 2013, p. 85; Meulemans & Carr, 2013; Seymour, 2012). In/visibility is a mattering of time. How much time a librarian is allowed in a class depends on an academic. Librarian Karen Nicholson (2016) argues that in the time-pressured and accelerated university librarians are “required to be ‘in time’ with the normative temporalities

of faculty and students” (p. 143), obliged to compress their teaching into increasingly smaller offerings. This mattering of time is entangled with being the other to academics, “a footnote to the scholarly enterprise” (Drabinski et al., 2019, p. 103). As I’ve experienced, the loss of a place teaching in a course, because the course convenor had changed is one of the frequent reminders of the provisional access liaison librarians have to teaching. In Chapter 5, I explore this mattering of in/visible expertise in more detail.

Some librarians situate this precarity as being part of a larger in/visibility, the gendered aspect of which cannot be overlooked. Eve Revitt (2020b), notes “two ideological codes – *women’s work* and *the library* – infuse social consciousness with a particularizing schema that confine librarians’ work to the library, deintellectualize, and render that labour invisible” (p. 32). As “pink-collar” workers (Gaines, 2014, p. 85; Nicholson, 2019), librarians have been grouped with other occupations which were considered the domain of women and therefore of lower status (Garrison, 1972; Harris, 1993, 1999, 2009; Sloniowski, 2016). The tropes associated with a feminised profession have also materialised in negative stereotypes of men working in libraries since the beginning of modern librarianship in the last 1800s (Carmichael Jr., 1994; Dickinson, 2003; Passet, 1993; Piper & Collamer, 2001; R. Simpson, 2009). Librarians have long been portrayed as the shushing, bespectacled, frequently older, spinster (Adams, 2000; Gilb, 1966, p. 71; Jaeger & Kettlich, 2020; Lancour & Rossi, 1961; Leigh & Sewny, 1960; Majid & Haider, 2008; Newmyer, 1976; Pagowsky & Rigby, 2014; Scherdin & Beaubien, 1995). While this figure has control over access, all too often the stereotype materialises the librarian as bitter, “impeding, rather than encouraging, access (Drabinski, 2016a, p. 30). The aging woman is already a form of in/visibility (Ainsworth, 2002; Westwood, 2023). Its opposite, the “hip and sexy party girl” (Adams, 2000), reinforces rather than subverts the stereotype (Hall, 1997). Rather, it is necessary to “dig deeper, to describe the conditions from which the stereotype is made possible” (Radford & Radford, 1997, p. 263) and account how these conditions are maintained. While this is not the focus of my thesis, these stereotypes materialise together with technologies and the liaison librarian.

In library and information studies literature, the limited acknowledgement of the power relations that render the work of liaison librarians in/visible leads to discourses in which the in/visible librarian is a problem librarian. Liaison librarians are not only responsible for their in/visibility but also tasked with solving “our always already impending demise” (Drabinski, 2020, p. 195). Library staff are called upon to “embrace the changes to the higher education sector” (Delaney & Bates, 2015, pp. 30–31), “strive to rethink and repurpose what a library is and what a library does” (p. 32) and “articulate their role for the future and new services that can be developed, particularly by shifting from a service orientation role to one of a partner in learning” (p. 32). The move away from a service role to one of partnership and recognition in the university, is framed as the responsibility of staff and a librarian’s position is the result of choices they make. Little room is left for the complexities and challenges confronting liaison librarians who are performed as subjects in control of their future, and who need to try harder to gain recognition.

In the materialising of the problem of the in/visible librarian, library and information studies literature focuses on the future, one in which in/visibility is converted to institutional recognition. The literature abounds with problems in higher education for which librarians are ideally suited and which will “future-proof the library” (Becker, 2015, p. 230); for example, academic integrity (Gunton, 2022), the reproducibility crisis (Sayre & Riegelman, 2018), intellectual property (Yang & Liu, 2021), or business intelligence (Hamad et al., 2021). Research in library and information studies about new roles has tended to examine them “at the moment of reaching a level of critical mass, rather than at a stage of recognized full maturity” (A. M. Cox & Corral, 2013, p. 1529), reinforcing the idea of a future full of possibilities. This focus materialises an ever-hopeful future for the profession, untroubled by examples of ventures that were less successful, and therefore limiting opportunities for learning from the past.

Hopes of librarians developing expertise in new areas often fail to acknowledge that there are other professionals in the university who are engaged in similar attempts to find a space for

recognition (Whitchurch, 2009, 2018). In these calls to action, the expertise of liaison librarians is enacted by the agential cuts of latest trends in higher education, as understood by managers in the university library. It is translated into requests for tangible outcomes in staff meetings, in a chain of responsibility that ends with the liaison librarian. The enactment of the problem librarian assumes the ability of librarians to understand and implement these outcomes. It also assumes that academics care about and wish to comply with university directives, and their willingness to work with librarians to achieve the university's aims.

Conclusion

The university library finds itself operating in the changed landscape of academia and scholarly communication. The relatively stable claim to expertise based on the library building and its contents have been disrupted and with this certainty about the role of the library. Changes in the technologies of searching for and accessing scholarly literature have materialised users as independent searchers of information and obscured the expertise of liaison librarians. The university library struggled to once again be positioned as the heart of the university, to matter. Key to this positioning was the role of liaison librarians. Liaison librarian expertise was reframed with notions of information literacy and librarians as teachers, reconfiguring users as requiring help to navigate the world of online searching. Within this reconfiguring, the in/visible librarian emerges, expected to forge new means of regaining legitimacy, to be seen. The in/visibility of liaison librarians is entangled with long-held negative stereotypes of librarians, gendered views of library work, vague descriptions of the role of libraries, and the hierarchies of professional workers and academics in the university. In the following chapter, I focus on library technologies—the library building, print books, and library platforms—to explore how expertise and in/visibility are materially and discursively produced in the literature.

Chapter 4B: Liaison Librarian Expertise Mattering Together with Library Technologies and Platforms

Introduction

Librarians' claims of expertise in the university once centred on library buildings and collections. With decentralised online collections, liaison librarian expertise is in/visible and new sources of legitimacy are sought. A teaching role requiring one to be an expert in information literacy was adopted as a means of finding a place in the university. In this chapter, I return to the library building and its collections, to expertise, knowledge, and in/visibility materialise with library technologies associated with these technologies. I then consider the implications of the growth of measuring mechanisms of library platforms, which have offered new roles for liaison librarians. Finally, I read changes in university libraries diffractively with literature from platform studies.

The library building as a technology of knowledge production

I begin this diffractive reading of library technologies with the prominent and highly visible technology of knowledge production: the library building. The wide range of work required of the university library is laid out in library and information studies literature: to act as an embodiment of strategic priorities and the latest pedagogies, and be a place where the university community can experience some ideal of intellectual pursuit that remains of central importance in the university. This approach is intended to “keep the library – physical and virtual – at the heart of the university” (Matthews & Walton, 2014, p. 238). I now explore these further.

As discussed in the previous chapter, when print collections dominated scholarly publishing, the library building materialised the boundaries of access to scholarly knowledge, with librarians as guardians of this knowledge (Abbott, 1988). Despite predictions of its disappearance (Childs et al., 2012, p. 6; King, 2000) and its repackaging as an information commons, learning commons (Milewicz, 2009b) and more recently learning spaces (Turner et al., 2013, pp. 227–228) the library

building remains, often extensively refurbished. It materialises past expertise, which is both a source of nostalgia, something from which to move away, an enactment of the library's value to the university, and a complicated mattering of in/visibility. The library building and its contents (books, shelving, desks, student areas) are entangled agentic enactments in library literature, as both a measure of what librarianship no longer is and as a vehicle for reimagining the value of the library in the university. In this way, the building is a "cumbersome companion" (Marcoux, 2001, as cited in Davidson, 2009, p. 334) to the in/visible librarian and their expertise. It is a device that is, at the same time, something to be moved away from and a hook for a future recapturing of elusive security.

Library buildings in the past were constructed as monuments to knowledge and learning, "ennobling, uplifting students by providing them with opportunities for cultural improvement, whether by studying library books or the building that housed the books" (Gyure, 2008, p. 119). The library building was a pedagogical space because it contained the books students needed for their studies but also because it was designed to inspire. This mattering of visibility and power and usefulness is a symbol of scholarly endeavour that produces measurable results in times of metric dominance, leveraged in claims of the excellence of universities for prospective students. Despite the steadily diminishing number of books on the shelves, this symbolic association remains (Donovan, 2020; Lincoln, 2002, pp. 8–9; Sare et al., 2021; Steele et al., 2015, p. 73). With the origins of university libraries in religious centres (Bales, 2016, p. 7; Kittler, 2004, p. 245; Mutonga & Okune, 2021, p. 191), associations with the sacred and venerable are not surprising. However, Stephen Bales (2016), a librarian and library and information studies researcher, argues that this origin also points to the role of universities and their libraries as bulwarks of the political status quo through the embedding of "culturally conditioned ideas of freedom, individuality, national chauvinism, and the right to private ownership" (p. 13). This sits at odds with championing of information being available to all and open access.

In library and information studies literature, the library building and its spaces are active, supporting the university's goals related to "student learning, student success and the student experience" (Watstein & Ivins, 2019, p. 4), and "student retention" (Haddow, 2013; Hagel et al., 2012; Nkiko et al., 2015; Oliveira, 2017). This is done through activities that take place in the library, the comfortable spaces provided, and the attitudes of staff (Knoff & Hobscheid, 2021). In addition, through the creation of a "habit of mind" (Cartwright, 2016), performing a pedagogical role (O'Kelly et al., 2018; Shoham & Klain-Gabbay, 2019). To support different assessment requirements, libraries provide large spaces for group study. These often conflict with the desire for quiet study spaces (Defrain et al., 2022; McCaffrey & Breen, 2016; Milewicz, 2009a; O'Kelly et al., 2018, p. 858). These narratives about space tend to equate library users with students, failing to consult the academics who are not only also library users but who are responsible for the pedagogical direction of the courses the students attend (Head, 2016, p. 3).

The mattering of staff in university libraries is more complicated in library and information studies literature. Less attention is paid to the experience of staff in the spaces in which they work (Head, 2016, p. 3; Purcell, 2013). One of the few in-depth studies of library spaces that paid attention to the power relations between library users, staff and spaces focuses on public libraries. It suggests that the internal layout of spaces is designed to establish and maintain control. Rather, this emphasis on the structure of the building is a means of demonstrating that space is relational and is enacted as "sites of power" (Jackson & Mazzei, 2012, p. 133) through the agential cuts of specific material-discursive practices (Griffis, 2014, p. 87). Within library and information studies literature, the spaces materialise together with the problem librarian hiding in the library. The in/visibility of librarians is couched in terms of the need for them to move beyond the library building, to "get out of the library!" (S. McKnight, 2010, p. 201), "be visible and confident" (Brabazon, 2014, p. 200) and take the library to students (Barnett et al., 2016). Having teaching "embedded" in faculty courses (Almeida & Pollack, 2017; Sullivan & Porter, 2016) is the ultimate form of in/visibility, becoming visible by being seamlessly part of the teaching for a course. Its correlation, spending time in the

faculty and being “easily accessible to students and faculty” (Abrizah et al., 2016, p. 639), is also valued. The language of being easily accessible to users is identical to that used about the collection.

Books as Material and Discursive Apparatuses

As Abbott (1988) noted, books that library buildings contained were the source of authority and expertise of librarians when print was dominant. It is these books that are part of the cumbersome nature of the library building. Now, dominant voices in librarianship, at conferences and in publications, articulate a desire to be seen as cutting edge through a deliberate eschewing of print collections (Scherlen & McAllister, 2019). A note of urgency, almost panic, pervades this literature; for example, “without a concerted, ongoing communication effort the “library = books” (Cordova & Ramsey, 2019, p. 34) image tends to prevail, much to the library’s detriment in terms of financial or other support. This quotation is found in an article titled “Asserting librarian expertise and value in strategic marketing effort”. It is an example of the mattering of the book as a contested object in the university library’s quest for legitimacy. In a book titled, *After the book: Information services for the 21st century* (Stachokas, 2014), the responsibility is placed on librarians, who “need to change what they know, how they work, and how they are perceived to succeed in a world that increasingly abandons print” (p. 1).

The mobilisation of the user in these discussions is once again that of a younger student and one that can afford and use mobile devices exclusively. Interestingly, there was a push to fill library courses with younger, “tech-savvy” students, in favour of “book lovers” (Carroll, 2016, p. 289). This conception of users often produces confusing descriptions of library work; for example, “it’s not what libraries hold; It’s who libraries serve: seeking a user-centred future for academic libraries” (G. Evans & Schonfeld, 2020).

Debates around the future of print collections are linked to the space that shelves occupy that could be used for other purposes. Before discussing this, it is worth briefly exploring books and shelves in a university library as apparatuses that not only store but enact knowledge. The book

itself is a taken-for-granted technology in library instruction (Hubbard, 1995, p. 450). Yet is an apparatus, both “*enacted and enacting*” (Adema, 2021, p. 2). The notion of the book, along with that of other formats such as journal articles, remains evocative even though these objects have evolved into something completely different. This “stabilization”(de Mourat et al., 2020, p. 105) has allowed institutions such as the university, academic journals and the university library to continue, despite fundamental changes. The use of the university building as a monument, described above, is an active attempt by universities to enact this stabilisation. For de Mourat and co-authors, formats are material and discursive, playing a role in setting expectations and maintaining “a cohesion among all the sociotechnical assemblages that run through scholarly communication” (p. 104).

Within the university, libraries “neatly” (Mol, 2002, p. 154) replicate the division of knowledge in university faculties and conferences, acting as stabilising apparatuses. In libraries, knowledge is classified through decisions to purchase, catalogues subject headings and bookshelves. The act of classification is a “spatial, temporal ... segmentation of the world” (Bowker & Star, 1999, p. 10), a fixing of knowledge in a particular location on the shelf and within a category. As Doyle and Forehand (2017) point out, “one of the impossibilities of library categorization is the premise of fixing knowledge in place by naming and stabilizing ideas, then locating them in space” (p. 41). Although a call number can indicate layers of descriptive information, such as geographical location, a choice must be made regarding the topic, and therefore the location, of each book. In addition, decisions made in classification materialise the values of particular knowledge systems and the categories into which particular bodies are placed have “material force” (Star & Bowker, 2007, p. 3). In this way, the ordering of books on shelves regulates knowledge, making some knowledges in/visible or making them visible in ways that exclude. In discussions about how bodies are produced within classification systems, the mutual enactment of the material and discursive are evident but not explicitly articulated as such. For example, poet and activist, Tatiana de la tierra (2008) writes about being excluded by classification systems which erased a Latina, lesbian body. Similarly, discourses about disability, materialised in catalogue cards and in call numbers, have created a

“hidden infrastructure built upon the once prevailing belief that the disabled body was a defective, dependent, and sick body” (Adler et al., 2017, p. 132).

The shelves constrain and organise the movement of bodies within the library building. Rows of shelves order movement, channelling bodies around and through them. Books matter according to their placement on shelves; books on shelves at eye level are more likely to be borrowed than those on lower or higher shelves (Tingle & Teeter, 2018). The shelves are also at the centre of debates about the management of print collections, the need for more space in library buildings, and the pursuit of what it means to be a modern university library.

These discussions about space and print collections are polarised, often echoing larger discussions about the book outside the library. The imminent demise of print books, and debates about the respective values of print and digital are part of the “myth of the disappearing medium” (Ballatore & Natale, 2016, p. 2380) which accompanies technological change. These myths are more revelatory than useful predictions of the future (p. 2391). Unfortunately, discussions about books in library and information studies literature often adopts a polarised approach to this topic, rather than exploring how such binaries work. An important contribution to this topic is the work of librarian and library researcher, Alex McAllister. Using a poststructural lens, McAllister (2021) unpicks the development of the discourse of false opposition between print and electronic published texts in discussions in library and information studies literature about space in university libraries, and the competing claims of funding for space and print collection development. Within these discourses, library staff are produced as “docile bodies” (p. 137). As liaisons with faculties, liaison librarians are required to weed collections and to promote library decisions to users. Librarian Molly Keener (2019) describes the contradictions that librarians face when explaining the outcomes of such decisions:

despite my inner happiness at knowing faculty use of our print collection remains strong,
these data cause concern too, as I know that we are running out of shelf space ... How, when

data back up faculty claims of 'But I still use books!' do we tactfully, transparently explain our decisions to move collections off-site, to alleviate space constraints, to create more study space for which students clamor? Through conversation. (p. 142)

In the dilemma faced by Keener, the material-discursive production of the shelves emerges together with usage statistics, policy documents, the student as a consumer, the number of seats, and the expertise of librarians as emotional labour or emotion work (Emmelhainz et al., 2017; Garrison, 1972; Sloniowski, 2016). While some library and information studies writers suggest that reimagining access to information is part of "embracing the feminization of librarianship" (S. Higgins, 2017, p. 83), such approaches are not part of the dominant discourses that are performing library spaces and collections in a narrow view of meeting the mission of the universities within which they sit (A. D. McAllister, 2021).

These materialisations of the usefulness of library collections and librarian expertise in library policy documents assume a particular type of library user, one for whom print materials are of no interest, "and are based on arguments that library patrons have evolved into more technological beings, and collection budgets must be appropriated carefully to prevent the library as an institution from becoming irrelevant" (A. D. McAllister, 2021, p. 26). They assume a homogenous user group, loosely based on a scientific researcher whose main interest is recently published articles, rather than one from disciplines in the humanities with different publishing patterns and collection needs (Woolwine, 2014). They also ignore the significant body of research indicating that print is still preferred by many for deep reading by students (Baron et al., 2017; Enakrire & Mostert, 2021; Walsh, 2016). McAllister (2021) notes the "business-like flavour" (p. 26) of the discourse around space, part of the "McDonaldization" of the library (Nicholson, 2015), and one that has less to do with grand themes of access than a continuance of notions of usefulness and practicality (Hudson, 2017). I discuss this further in the section below on use.

In/visibility Reconfigured in the Measuring University

Information literacy focuses on the expertise of librarians as teachers of university students in collaboration with academics. Changes in liaison work have shifted its focus away from “‘individual-to-individual’ to ‘program-to-client group’ activity” (D’Elia & Horne, 2018, p. 11) with less reliance on the individual relationship between academics and liaison librarians. The “functional role” model (Bakkalbasi et al., 2016; Hoodless & Pinfield, 2016) includes many of the aspects of traditional liaison work, “building relationships, anticipating and meeting needs and drawing on specialized expertise” (Hoffmann & Carlisle-Johnston, 2021, para. 4), where the focus is on areas of expertise rather than an in-depth understanding of individual subject areas. The areas of expertise include research metrics, open scholarship (research and data), or research data management. These areas of expertise, reflecting the increasing complexity of scholarly communication, have become an important focus for library programs and teaching, grouped under the broad term, *research support* (Kennan et al., 2014). The complexity and breadth of the expertise required for this role place demands on liaison librarians. The “‘reward’ for successfully managing one’s workload [is] being assigned more work” (Nicholson, 2016, p. 139) and the literature reflects growing discontent with the working environment in university libraries (Acadia & Vogt, 2022; Henry et al., 2023; Kaufman et al., 2022).

The discourse in library and information studies literature about research support is markedly similar to that about information literacy, with it framed as an opportunity for librarians to gain recognition and meet strategic goals (J. Cox, 2018; Hendrix, 2010; Sterman & Clark, 2017; Vinyard et al., 2018). The areas of expertise for these functional roles are measures of university success, in particular research metrics. The rise in the importance of university rankings, and the issues associated with these rankings, are well documented (Brankovic et al., 2018; Chen & Chan, 2021; Hazelkorn, 2015; Shahjahan et al., 2022; Wilbers & Brankovic, 2021). The discourse in much library and information studies literature about the expertise of liaison librarians in this area focuses

on the alignment of the university library with the strategic goals of the university (T. Wilson, 2017), helping researchers to share their valuable research and save time (Sewell, 2020).

The university library is presented as ideal for this role with its trusted brand enabling librarians to “act as honest brokers with academics” (J. Cox, 2018, p. 233) who may have concerns about the purpose of this measurement. However, claiming expertise in this area materialises different relations between the library and academics, and between the library and the university. Information studies researchers Fredrik Åström and Joacim Hansson (2013) identify the move for university libraries to provide support for research metrics as one that is important and that will provide “increased visibility” (p. 320) and prestige. They suggest that it is also a “redefinition” (p. 317) of librarians’ roles, with the “customer of their bibliometric activities” (p. 319) more likely to be university administration than academics, “becoming one with an auditing and monitoring function passing judgement on scholars” (p. 320). This point has not been given the attention it merits. It is a pivotal one on two counts. Firstly, this important shift in the relationship between academics and the university library offers opportunities for being indispensable to academics that teaching research skills has failed to deliver. The institutional focus on research metrics provides a mandate for the value of librarians’ expertise. Secondly, developing expertise in research support means that librarians are implicated more explicitly in these metrics, which “afford differentiations to be created and inequalities to be cemented” (Beer, 2016, p. 18). Measurement is not simply a representation of the world, but it is a making visible of bodies (Wernimont, 2021, p. 579). In my research, I pay attention to how measurement makes liaison librarian professional expertise in/visible in the teaching of search and the use of the measuring mechanisms of the platforms.

The Mattering of Library Platforms and Scholarly Knowledge

In this section, I read library and information studies literature about changes in searching and accessing scholarly literature through the platform studies literature. This literature is broadly spread over many disciplines, including education, sociology, media studies, law and business

studies (Nichols & Garcia, 2022, pp. 211–212). The concept of platforms is used by Nick Srnicek (2017a), a researcher in digital economy, to describe “digital infrastructures that enable two or more groups to interact” (p. 43). These infrastructures are diverse in the types of interactions they enable but share a “common organizational logic” (Nichols & Garcia, 2022, p. 210), being “*organised through the systematic collection, algorithmic processing, monetisation, and circulation of data*” (Poell et al., 2019, p. 3).

The extent to which platforms are embedded in most aspects of higher education, including library systems, learning management systems, administrative processes, email and document sharing, security, and analytics (Williamson, 2020), is acknowledged in terms such as “platform university” (Carrigan, 2022a; Perrotta, 2021) and “platformised education” (Perrotta et al., 2021). Janja Komiljenovic (2022b), a researcher in the political economy of higher education, identifies three categories of platforms found in universities. In the first category are platforms that are not inside the higher education system but are used by students in their personal study alongside the university platforms or by university staff in their work, such as Slack. The second category is those that “almost serve as educational ‘institutions’ in their own right” (p. 9), through which students, administrators, professional staff and academics are connected, with teachers of online courses referred to as “content providers” (Mármol Queraltó, 2021, p. 33). An example of this is Pearson (Hogan & Sellar, 2021). The final category is platforms used throughout the university through enterprise arrangements, such as Google apps for email and document management. Library platforms mostly sit within the second category. This is because although they are available to the whole university community, the terms and use are defined by the platform, and it acts as an intermediary between different groups of users. In this section and the final section of this chapter, I explore the implications of the intermediary role and the control exercised by library platforms.

In library and information studies literature the term *platform* is used as shorthand for *library services platform*, which is “any major product that a library uses to manage some set of its

collections as a resource management system” (Breeding, 2015, p. 6). This use in library and information studies literature is intended to differentiate between prior automated systems based on managing mainly print collections, and as a “vendor-neutral product category” (p. 6) rather than referring to products by their proprietary names. In my thesis, I employ the phrase *library platforms* to refer to the databases, archives, indices, and systems that are usually selected and maintained by library staff, and whose subscriptions are paid from funds from library budgets. I also include academic search engines, which are free and are not maintained by library staff, because they are taught and promoted by librarians and linked to university collections behind paywalls.

In using the phrase *library platforms*, I highlight their evaluative nature (Kornberger et al., 2017) and the deliberate moves by the companies behind them to reshape higher education (Williamson, 2018, p. 1). Platforms are not the same as infrastructures but the distinctions between them are becoming less defined (Plantin et al., 2018, p. 299). Ben Williamson (2018), a digital education researcher, describes the infrastructure of the platform university as “a complex mosaic of people, technologies, standards and policies, all of which are being brought into alignment as the social, political, technical and material substrate to the utopia of a big data-driven, marketized Higher Education sector” (pp. 23–24). Within this mosaic the university library is produced and is also an apparatus with its own “long and ossified genealogically, materially, and discursively entangled history” (Warfield, 2016, p. 6). This history emerges and is reconfigured when liaison librarians teach students and advise academics about the use of databases, indices and academic search engines.

My diffractive reading and my thesis contribute to conversations in library and information studies literature and also the literature of platform studies by examining the intersection of librarians’ teaching and these platforms. Despite a growing interest in algorithms in library platforms (Reidsma, 2019), the platformisation of open access (P. C. S. Andrews, 2020), and the commodification of the information profession and the privatisation of access (Lawson et al., 2015),

the full value of platform studies library and information studies research is yet to be realised. Platform studies research provides a theoretical framework and vocabulary with which to discuss the changes in university libraries and one which connects to other disciplines. Its intentional focus on the materiality of the practices around platforms is useful given the limited investigation in library and information studies research into the materiality of teaching by librarians.

I advocate for a new vocabulary because the terms used to describe the companies that supply databases matters. The continued use of the term *platform* in a neutral, technical manner described above masks the significant changes which have occurred in library technologies. Similarly, the use of the term *publisher* to describe these companies evokes the relationships of the print era. Despite the origins of many of these companies in publishing houses, such as Elsevier (Komljenovic, 2021), they bear little resemblance to them (Lamdan, 2019, para. 3). Rather, they represent a “new organizational form” (Robertson, 2019, p. 169) that are “changing the value economy” (p. 183) of academia.

The connection with other disciplines through the notion of platforms is important for library and information studies research because research about the platformisation of access to scholarly literature (Komljenovic et al., 2021; Robertson, 2019; Swist & Magee, 2017) and library systems (Williamson, 2020) tends to focus on academics and students rather than library staff and activities. The liaison librarian is performed as in/visible in most of the platform studies literature. José van Dijck (2010, 2015), a media researcher in media and digital sociology, calls for training in information literacy but does not address the work of librarians in teaching this. The university library’s diminished status in this literature overlooks its importance as a “*bellwether*” (Quinn, 2022, p. 1) of higher education, and how “access to and profit from scientific publications have become one of the defining issues in contemporary knowledge production” (Bacevic & Muellerleile, 2018, p. 169).

Although Srnicek (2017a, 2017b) is not the first researcher to use the term platform, his outlining of the characteristics of platforms formed the basis for a shared understanding within platform studies. In this section, I employ Srnicek's (2017a) four characteristics of platforms as a guide to diffractively reading library and information studies literature on changes to searching and accessing scholarly literature.

The first characteristic identified by Srnicek (2017) is the role of the platform infrastructure as an intermediary between different groups of users and as the "ground upon which their activities occur" (p. 44). Traditionally, the library building contains and performs knowledge, and scholarly literature is searched using librarian-controlled technologies, such as card catalogues and OPACs. In contrast, platforms became the site of many aspects of scholarly communication activities as well as the storage place of records and content. As the Dean of the University of Denver Libraries, Michael Levine-Clarke (2019), notes "for the first time in their history, libraries are not the primary locus of information content" (p. 87). This change is more than a "disintermediation" (Brabazon, 2014) of the work of librarians, which can be remedied by increased visibility. It is rather a redefinition of the role of the university library and liaison librarian professional expertise as a platform's "socio-technical logic ... shapes the possibilities of participation" (Perrotta et al., 2021).

Platforms operate as "web-based marketplaces for goods and services produced by others" (Muellerleile, 2020, p. 249) and, in academia, they became the site of scholarly knowledge exchange and production. Situating itself as the intermediary, a platform can define what matters. Physical location is disrupted, as seen in the redefinition of teaching by edtech companies as they place themselves as the "site for educational practice, de-localizing educational practices from physical universities" (Mármol Queraltó, 2021, p. 32). The same has occurred with the practice of searching for and accessing scholarly literature. Library platforms are where published texts are displayed for selection and on which they are accessed. Platforms add value to these commodities through connections to additional information about published texts and to further research, such as citation

trails, links to other research by an author or their co-authors, links to related research, and visualisations of research. In addition, library platforms are now also the site of the measurement of the value of these texts through features such as citation counts, numbers of downloads, numbers of views, and Altmetric visualisations.

Here I return to the notion of hospitality as theorised by Barad (2019) and their question about who is hosting whom when an area is colonised. The gathering of data by platforms has been likened to colonisation, “from a data-production perspective, activities are like lands waiting to be discovered. Whoever gets there first and holds them gets their resources – in this case their data riches” (Blinder, 2016, as cited in Srnicek, 2017, p. 98). “Playing host” (Barad, 2019, p. 533) to colonisers raises questions about who is doing the hosting. The hosting of library platforms is a manifestation of “chokepoint capitalism” (Giblin & Doctorow, 2022, p. 9), in this case in the flow of scholarly research. In the professed business of providing access to scholarly literature, and in the lucrative, primary business of gathering data, library platforms have become the host, while professing to be hosted by university libraries.

As hosts, platforms are sites of intermediation, and they “produce and are reliant on ‘network effects’” (Srnicek, 2017a, p. 45). The role of an intermediary also enables and facilitates what has become a principal preoccupation of a platform, which is the collection, analysis, and use of data about the users and their interactions. Sometimes this collection is intrusive, for example, the scanning of users’ hard drives by Adobe Digital Editions, software for downloading eBooks (Hoffman-Andrews, 2018, p. 220), or the sale of data by RELX, the parent company of Elsevier, and Thomson Reuters “to law enforcement, including ICE (U.S. Immigration and Customs Enforcement)” (Lamdan, 2019, para. 2). On a more mundane level, it is the recording of seemingly unimportant information such as “keywords, activity log, date and time, search history” (van Dijck, 2015, p. 788) to create “thick, rich data bodies” (Popowich, 2020, p. 45). These bodies are not merely intended to understand the practices and preferences of platform users, but to “*predict and shape*” (Buschman,

2018, p. 7) practices and behaviours. The use of metrics about the use of published texts is an example of this, with the higher education sector important customers of the data produced by platforms (S. A. Moore, 2020, p. 193)

Williamson (2020) describes the production of librarians in this environment: “librarians’ roles are being reconfigured as they are incited to become data users, whose tasks are increasingly circumscribed by data-driven commercial platforms and publishers” (p. 22). Law researcher, Sarah Lamdan (Lamdan, 2019, para. 16) cautions that librarians need to consider the ways in which they might be implicated in the collection of data. The gathering of this data is not the only concern. Questions have been raised about the quality and usefulness of the curation and oversight of the quality of this data (Lamdan, 2023, p. 17) and the lack of consideration of “how to conceptualise, govern, and regulate value construction and redistribution” (Komljenovic, 2022a, p. 132) of data that students and academics are obliged to share to use the platforms that are indispensable for their study and work.

In libraries, as elsewhere, platforms’ “appetite for data” (Srnicek, 2017b, p. 255) continues to lead to takeovers and expansion. Library technologies are controlled by a diminishing number of large multinational companies that absorb competitors (Robertson, 2019, p. 171). A small number of companies, an “oligopoly” of publishers (Larivière et al., 2015), controls academic publishing. Reed Elsevier, Wiley-Blackwell, and Springer publish forty-two percent of academic articles (Darnton, 2020, p. 17). With seventy-five percent of academic research paywalled (Lamdan, 2023, p. 53), these companies make huge profits. For example, Elsevier’s 2019 profit was higher than that of Google, Apple or Amazon (Lykkegaard, 2021, para. 7), with profits continuing to grow in 2021 (Matchett, 2021). These profits are in part derived from the continuing rise in the cost of academic texts. These increases produce budgetary stress in university libraries, for example the average yearly subscription for a chemistry journal in 1970 was US\$33, and by 2017 this had risen to US\$4773

(Darnton, 2020, p. 17). Rising costs of published texts also lead to decreased access, with an individual article costing approximately US\$30 (Lamdan, 2023, p. 53).

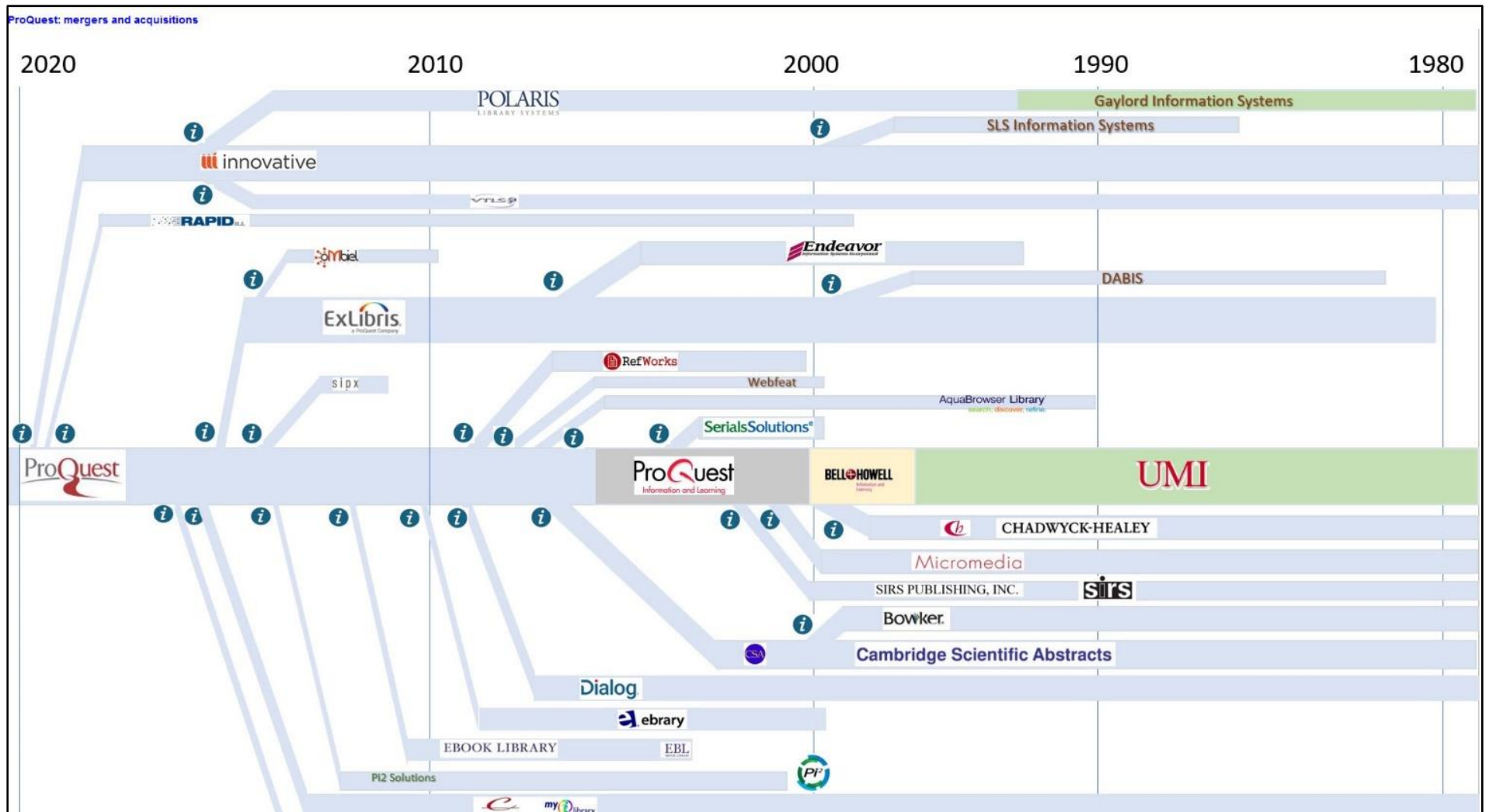
It is not possible to justify these increases based on the cost of production (Lamdan, 2023, p. 54) but rather they are driven by the need to provide increasing returns for shareholders (Darnton, 2020, p. 17). It is also due to the “peculiarities of scholarly publishing” (Larivière et al., 2015, p. 11). These peculiarities are that universities pay academics to provide free goods in the form of academic texts to publishers (except when they are paying the publisher as part of open access agreements), nobody pays the library to use the published texts which it purchases, the library’s budget is set by the university, and library users are “isolated from the purchase” (p. 11) and have little idea of the cost of the item they are using. Authors of published texts also provide “free advertising”(Lamdan, 2023, p. 59) for other published texts in the form of citations.

Platforms further obscure the realities of scholarly publishing as tasks multiply around published texts and their production. Targeted purchases of smaller companies and mergers are attempts for “vertical consolidation” (Breeding, 2017, p. 1) or “full scholarly lifecycle integration” (P. C. S. Andrews, 2020, p. 267); that is, coverage of all segments of the scholarly communication process. This targeted acquisition provides a rich source of data across all aspects of scholarly communication (Breeding, 2017) and all aspects of library work (Breeding, 2016, 2020). This includes “circulation of items, acquisitions of serials, security and access control, analytics and reporting, electronic resources management, reading lists management, institutional repositories, research data management repositories, digital asset management systems, and loanable mobile devices” (Barron & Preater, 2018, p. 87), as well as reference management software and a wide range of scholarly literature full-text and index databases.

The figures on the following two pages, the work of library consultant Marshall Breeding, provide an example of this consolidation. Figure 3 presents the acquisitions by ProQuest before its merger with Clarivate. This merger is interesting as it is the largest one in decades and is between

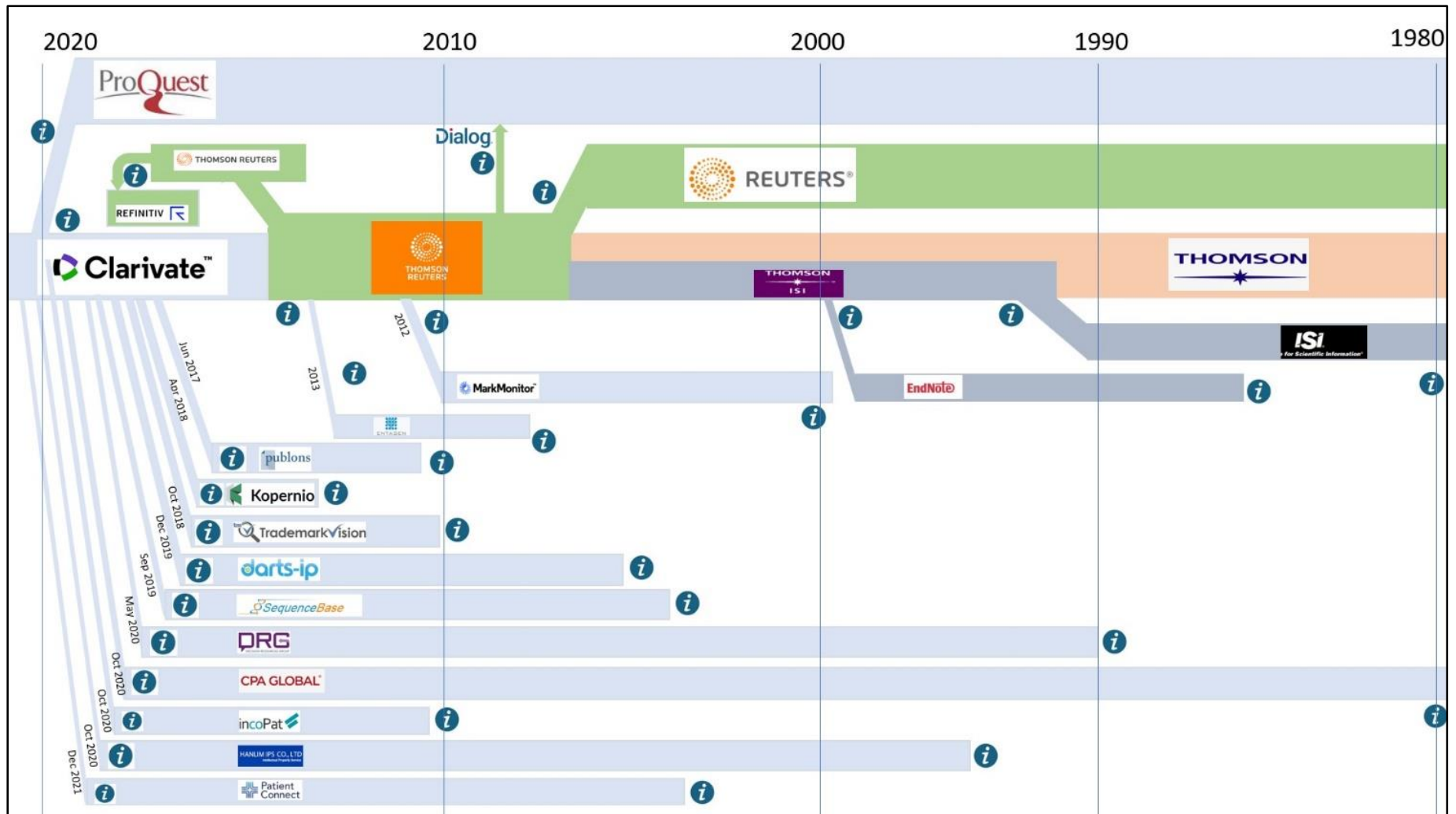
two “intermediaries” between libraries and publishers (Schonfeld, 2021, para. 1). The purchases by ProQuest included abstracting services (Cambridge Scientific Abstracts), reference management software (RefWorks), lending management systems (Ex Libris), student reading list systems (Ex Libris), discovery systems (Ex Libris), serials management systems (Serial Solutions), eBook providers (ebrary), and publishing companies (Bowker). The acquisitions are also aimed at the removal of competitors, for example, the purchase of Innovative, a library management system, by Ex Libris (ProQuest, 2020b). Figure 4 displays the merger of ProQuest with Clarivate. As the figure demonstrates, Clarivate was already a significant force in the scholarly publishing world, with products such as the reference management software, EndNote, the citation index, Web of Science, and the intellectual property company CPA Global (Clarivate, 2020). This narrowing ownership is not always reflected clearly or overtly in the appearance and branding of interfaces of individual products. I provide these details, not merely because of the morbid fascination which librarians feel for these mergers, but because they provide vivid detail of a world that is largely unknown to the writers of published texts and hidden behind non-disclosure agreements (Lamdan, 2023, p. 59). The details also indicate the complexities of extrication from such networks and powerful companies, and the ways in which they are driven by the need for the interoperable, scalable enterprise systems (Schonfeld, 2021) required to manage large corporatised universities.

Figure 3 ProQuest before Merging with Clarivate



(Copyright: Marshall Breeding, Reproduced with Permission)

Figure 4 ProQuest-Clarivate Merger



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Monopolisation continues to limit options for university libraries. While some universities, such as the University of California, refused to accept big deals (Maranville & Diaz, 2021; Thornton & Brundy, 2021), these are still the exception. Open access is still scattered (Polchow, 2021), with platforms moving to consolidate control of open access, for example in the use of transformative agreements. This term covers a range of agreements between publishers and university libraries that offer an alternative to the subscription models for academic journals to a form of open access (Farley et al., 2022, p. 298). These agreements have “unintended and undesirable” (Aspesi et al., 2021, p. 29) consequences for university libraries, including favouring larger, well-endowed institutions with high publishing output, redirecting funds that could have been spent on smaller publishing ventures, lack of transparency about individual agreements, and the risk of increasing the monopolisation in the publishing industry (pp. 29–30). They do not represent a transformation of the current publishing infrastructure and are prejudicial to academics in smaller institutions or with limited budgets (Farley et al., 2022, p. 299).

It has been suggested that the dominance of these companies hindered the development of a diverse collection, with smaller publishers unable to compete and less likely to be included in library collections (K. Wilson, 2021). The largest expense in university libraries’ budgets is subscriptions for journals (A. M. Allison, 2019, p. 7). A large portion of these journals are also held in most other universities, “most of what we buy is being bought by everyone” (Hickerson, 2011, p. 6). University libraries around the world have collections that tend to replicate each other (Dilevko, 2008, p. 685) with this replication reinforcing the role of university libraries as “collectors and producers of White heteropatriarchal knowledge” (Jones & Wilson, 2021, p. 57). While there has been a growth in the amount of diverse material available in archives, especially in digitised form, the role of the university libraries in supporting this knowledge is not new, as the earlier section on classification demonstrates.

The third characteristic listed by Srnicek (2017a) is “cross-subsidisation” (p. 46), the provision of some services being free or at cheaper rates to attract and maintain users and their data. For example, the use of reference management software such as Mendeley, owned by Elsevier, is free while journal institutional subscriptions and purchase of individual articles from the same company consume a large portion of university library budgets. Cross-subsidisation is constantly recalibrated, resulting in constantly changing access and use conditions, incomprehensible to users and requiring explanation from library staff. The provision of electronic books is one example, with some available without any access restrictions and others, especially key texts for courses, subject to price increases of up to 500% (Y. Anderson & McCauley, 2022, p. 2), with tight restrictions on the number of simultaneous users.

The fourth characteristic of a platform is that they are designed to attract and maintain users by positioning themselves as empty spaces on which to interact (Srnicek, 2017a, p. 46). This disguises how platforms hold “control and governance over the rules of the game” (p. 47). This control is not merely because platforms act as the site of activities and gather valuable data, but because their business model is a shift from the sale of commodities to the assetisation of services (Birch & Cochrane, 2021; Komljenovic, 2021). Within this model, users a move from ownership of commodities to subscription for the use of assets, with control of the terms of access firmly held by platforms (Komljenovic, 2022b, p. 10). In libraries this can be seen in the difference between the purchase of a print book or print journal, which could be borrowed on terms established by the library, and eBooks, whose terms of access are defined, often prohibitively (University of Guelph Library, 2020)by the platform, as I describe below.

The use of the language of assetisation provides a useful framework for understanding the concerns in library and information studies literature about the shift from ownership of physical texts of scholarly literature to the provision of access to digital items (Dempsey et al., 2014), in effect the outsourcing of “core research infrastructure” (Schonfeld, 2018a). These concerns include the

lack of transparency about pricing and conditions of access to scholarly literature offered to individual universities or library consortia (Thornton & Brundy, 2021) and the “labyrinth of licensing agreements, business models and prices” (Polanka, 2015, p. 5). Control of the rules is exemplified in the “serials crisis” (Douglas, 1990), the relentless rise in the price of journals and the growing number of journals.

Rising costs have been complicated by the “big deal” (Bergstrom, 2010; Gatten & Sanville, 2004), also known as “bundling” (Edlin & Rubinfeld, 2005). This is the practice of offering libraries large packages that contain key journals and a mix of less important or irrelevant ones. Thus, while the cost of individual journals is reduced, the value for researchers does not increase (Shu et al., 2018, p. 796). Libraries are locked into these agreements over extended periods of time (Edlin & Rubinfeld, 2004, p. 121). The agreements initially represent only a modest increase in cost (Schonfeld, 2018b, para. 2), or are capped for a certain period (Frazier, 2001, para. 3), before rising. This practice has benefitted the vendors of scholarly literature at the expense of university libraries (Aspesi et al., 2021, p. 9), diverting funds which might be spent on texts from smaller publishers, and restricting interlibrary loan options (Manoff, 2013, p. 278).

Bundling was particularly important when university libraries still had interest in maintaining print journal collections as well as gaining access to electronic resources (Edlin & Rubinfeld, 2004, p. 121). This was important for libraries as print copies were owned by the library once purchased, as distinct from electronic copies. Many libraries are in the process of “unbundling” (Ivanov et al., 2020) these agreements, as well as discarding past print copies of journals. It is no longer clear who will take “custodial responsibilities over portions of the scholarly record” (Lavoie & Malpas, 2015, p. 11). Perpetual access to online scholarly literature, in particular journals (Enis, 2019), is complex due to mergers and take-overs of companies (Lipinski, 2023, p. 399) and frequently obscured in licensing agreements. Control is also evident in the area Digital Rights Management (DRM), the enforcement and monitoring of access to digital products. Access to movies, eBooks or music are locked,

restricting “what type of device users can read an e-book on, what e-reader software they use, or how many users can read a given e-book at any time” (Hoffman-Andrews, 2018, p. 220). The cost of access rights often bears a limited relationship to the print equivalents (University of Guelph Library, 2020).

The control and governance exercised by platforms have increased rather than decreased the amount of staff required to manage electronic resources in university libraries (Stachokas, 2018, p. ix). These roles often have expertise in a particular platform required in their job descriptions or the product name as part of the job title (Galvan, 2016, para. 10). Yet, at the same time, the systems they work with are “almost always proprietary and closed” (Barron & Preater, 2018, p. 96) and often only knowable in part by reverse engineering. The liaison librarians’ role intersects these new roles in a limited manner with librarians only occasionally contributing to discussions about purchasing and correction of records that vary in quality and consistency, and which are frequently beyond the library’s ability or capacity to change (Garofalo, 2019). As Internet studies scholar, Safiya Noble (2019) notes, “even if we had algorithmic literacy, we still could not intervene in these private, corporate platforms” (p. 26). Noble investigates the way platforms are “situated in intersectional sociohistorical contexts and embedded within social relations” (p. 13), not merely replicating but amplifying inequalities and prejudice. Matthew Reidsma (2019), a web services librarian, records how the materialisations of these inequalities are immediately removed by web discovery providers but are treated as technical rather than ethical issues (p. 19).

Ethical concerns about searching and accessing scholarly literature are often framed in discourses of library values. These values are enshrined in documents produced by library associations, for example that of the Australian Library and Information Association (2018), including the “promotion of the free flow of information and ideas through open access to recorded knowledge, information, and creative works” (para. 4). Seale (2016a), however, points out that often these statements ignore systemic inequalities and are “centred on the idea of individual freedom”

(p. 599). The notion of library values sits uncomfortably with how libraries are themselves infrastructures with significant issues (Collins, 2018, p. 18). The whiteness of libraries has been called out in Australia (Blackburn, 2015; Boyd & McShane, 2021), the United Kingdom, Canada, and the United States (Brook et al., 2015; Crist & Clark/Keefe, 2022; Espinal et al., 2018; Ishaq & Hussain, 2022; Mirza & Seale, 2017; Nataraj et al., 2020; Schlesselman-Tarango, 2017b). White, ableist discourses of library neutrality materialise in library staffing, technologies, systems and approaches to teaching (Berman, 1984; Collins, 2018; Galvan, 2015; M. Higgins, 2016; Nataraj et al., 2020; Pawley, 2006; Prescott et al., 2017; Schlesselman-Tarango, 2017a; Settoducato, 2019). Much of the institutional rhetoric about diversity remains just that or furthers oppression and exclusion. It has material effects. Another librarian, Fobazi Ettarh (2014), points out that issues of exclusion of race, gender, sexuality, disability, and economic disadvantage need to be addressed together, suggesting the term “intersectional librarianship” as a means of reframing attempts at addressing exclusion through “traditional diversity rhetoric” (para. 9).

A focus on the importance of new technologies in reclaiming legitimacy means that ethical matters are not considered. The following quotation is an example of the type of discourse that leaves little room for dissenting voices:

Library professionals must reflect on how new technologies, particularly in the area of cloud-hosted services, may provide an opportunity to redefine the library’s purpose and mission in a truly new way. Taking that opportunity will mean reclaiming the library’s relevance with respect to its parent organization, rethinking and rebranding the services provided to library users, and most importantly, ensuring that the services libraries provide to their communities are understood to be something needed and valued by those communities. (Ohler, 2018, p. 91)

The discourse of the success of new technologies as an existential issue focuses on the affordances offered by platforms in terms of scalability, integration of systems, and the provision of seamless

and faster access to scholarly literature for users. Library success is measured in terms of the ability to provide “systems that support the return on investment of higher education institutions” (G. Evans & Schonfeld, 2020, pp. 5–6). Library leaders are urged to learn more about the companies providing library systems and “assess the strategic directions of vendors and competitors generously (not skeptically)” (Schonfeld, 2017b, para. 16). This a position that ignores the issues detailed above about the significant obstacles that these strategic directions have created for university libraries. It also suggests that opposing views are irrational and emotional, with Schonfeld urging leaders to make their assessment “dispassionately”. Taking issue with Schonfeld’s (2017a) prioritising of system affordances, Leslie Chen and co-authors (2019), researchers in the geopolitics of academic production at the University of Toronto, note that the affordances and benefits of these systems are the very reason they should be questioned, as “it is precisely because of the power to integrate products across the value chain that this expansion should be critically examined” (p. 26). It is naïve to discount the power relations between for-profit companies and those locked into dependency on them. In this situation, university libraries are urged to think of library users’ needs for faster and more seamless access.

At the same time, as discussed earlier, they perform work outsourced from these companies. Who is deemed a user or a customer of search technologies is unclear, a subjectivity performed in intra-activity. Use is a legitimating device for the library and the role of librarians. The definition of user needs and user satisfaction is framed by university targets and strategic goals, the increasing importance of which is part of the marketisation of universities, in which academic and professional work “is valued on the basis of its contribution to economic growth, competitiveness, or application in industry” (Bacevic & Muellerleile, 2018, p. 182). This measurement makes some use of the library being in/visible, as “not all activities appear as uses if not all uses appear” (Ahmed, 2019, p. 46). Interfaces that are easier to navigate, seamless movement between platforms and software, and hidden algorithmic workings that produce useful results easily all place librarians in a new role as mediators of platforms. The notion of the user is co-opted to support changes, such as the

description of libraries moving from being “collection-centric” to “user-centric” (Martin & Sheehan, 2018, p. 67), making particular types of librarian expertise useless.

What is deemed useful and valuable is given space. The smoother, straighter path, easier to use and therefore more used (Ahmed, 2019, p. 167), renders other practices and objects “useless” (p. 38) and in/visible. Thinking with use as “*around and about*” (p. 14) provides a way to understand how the quest for legitimacy (to be perceived as useful) and the adaptation to change (a rethinking of usefulness) are performed within the intra-activity of liaison librarians’ teaching.

Conclusion

The professional expertise of liaison librarians cannot be understood without exploring its entanglement with library technologies, predigital and digital. This entanglement is much more than a simple cause-and-effect relationship—that library technologies changed and librarians had to ensure they remain visible in the university. This entanglement is complex and shifting; library technologies not only order and classify knowledge but also produce it. The professional expertise of liaison librarians is enacted in this production, a mattering of time and space.

The transformation of university libraries is part of a global rearrangement of knowledge production, how this knowledge is communicated, its value, and who has power over its production and distribution. Library platforms have become the site of this production, and the growth of measuring mechanisms of library platforms has material consequences for academics and librarians, producing the relations between them. In the following interlude, I pause to explore further the first of two key technologies of liaison librarian expertise, the search box. In Chapter 5, which follows Interlude 1, I demonstrate how the phenomena of liaison librarian professional expertise is a shifting set of relations in which technologies, students, library staff, and knowledge are diffractively produced.

Interlude 1: The Search Box: “It Will be Covering the World”

How can typing words into a search box – which feels as revolutionary as oatmeal – be a sea change? (Putnam, 2016, p. 380)

Introduction

This interlude is the first of two in which two essential technologies of search are explored, with a focus on their performative nature. In these interludes “material moments” (Taylor & Adams, 2020, p. 4), in which a phrase in the first, and the emphasis on numbers in the second, each serves as a way of rethinking not just how these technologies of search are used and useful, but what this usefulness performs. In this way the interludes introduce, and set the focus for, the chapters which they precede.

In this interlude, I focus on the search box, which, as Putnam’s (2016) question above indicates, is at the same time both ordinary and extraordinary. I explore how matter and meaning are mutually constituted and the political nature of searching. The use of the search box is woven into most aspects of academic life and scholarly communication is almost unimaginable without it. The search box is where most undergraduates start their education about finding scholarly literature. It continues to be important for experienced researchers and is raised to a higher status by those conducting systematic reviews. Other means of finding scholarly literature, such as email lists, alerts, recommendations from other researchers, and reference lists, often require the use of the search box. Its ubiquity and mundanity render it in/visible, largely unexamined by those who use it (Sundin et al., 2017, p. 239). In this interlude, I respond to Putnam’s (2019, p. 380) rhetorical question and suggest that typing words in the search box is a sea change because this way of searching produces scholarly knowledge differently, and also because it continues the agential cuts and exclusions of past technologies of search. It is an everyday technology within which difference is enacted. In doing this, I build on Reidsma’s (2019) call to understand the ethical dimensions of technical issues.

Finding the World in the Search Box—Syeda

In this interlude, I focus on a pedagogical encounter from a meeting between Alex, a liaison librarian, and “Syeda”, a student undertaking a coursework master’s degree in public health. Through the interlude, I diffractively read this encounter with a pedagogical encounter from a meeting between Lee, a liaison librarian, and Aroha, a doctoral student in education.

Syeda’s topic for her project is obesity and is still ill-defined. Before searching in a database, Alex directs Syeda to a search planner (see Figure 5), a template used to help students clarify their topic and devise search terms.

Figure 5 An Example of a Search Planner for an Assessment Task

This is your search plan			
	As stated in your topic description on the reverse.	Similar search terms, using “phrase searching”, truncation (*), wild cards (?), alternate words and alternate spellings etc.	Limits: (eg. population, age group, gender, language, date range, publication type.)
Concept 1		OR	
AND	Concept 2	OR	
AND	Concept 3	OR	
AND	Concept 4	OR	

In this encounter, Syeda has entered keywords for her topic and is completing the section of the planner devoted to limits to the search, such as the date range of sources. Alex explains how to find research with participants from a particular geographical area, using Australia as an example.

Alex: With that question are they only looking for information about Australia?

Syeda: Yes

Alex: Well then, we'll have to put Australia [pause] ... if you are looking at different states, you could actually say Australia or Victoria, if you want to, or Melbourne [pause] most times you will probably say Australia, but if you want to see if there's anything specifically,

Syeda: Mhm

Alex: About you know Melbourne or at least Victoria, then the country -

Syeda: One question

Alex: Yep,

Syeda: If I'm looking for all over the world, all over the whole world, all the world, then I have to write here

Alex: No

Syeda: No

Alex: No, just leave it.

Syeda: Ok

Alex: Because if you're looking for everywhere, then really all you're looking for is this and then whatever comes up in the databases, because they're all international, or a lot of them are international ... it will be covering the world so it's only if you are after specific countries

Syeda: Mm

Alex: Then add that as a separate concept

This pedagogical encounter is more than a story of a student's rookie error and a liaison librarian's attempt to correct it. Syeda's assumption that she should type the word *world* into the search box to find research anywhere in the world and Alex's explanation "it'll be covering the world" are at the same time simple and complex. I return to them as they "exert a kind of fascination" (MacLure,

2013c, p. 228) for me as a researcher and a librarian. In the following sections, I first discuss Syeda's question and then Alex's answer. Both offer an opportunity for reimagining the search box as a place where the material and the discursive are mutually constituted, and properties and boundaries are enacted through agential cuts. I play with data to explore how *the world* is both found and in/visible in the teaching of searching for scholarly literature.

Syeda's assumption about search terms might seem to be simply a beginner's mistake; however, it is not a simple question. Most regular users of databases can see the error in the question but might have a harder time providing a succinct explanation. Alex is faced with the dilemma of how much time to devote to the question and how much information to provide. The mattering of time in the "one-shot" (Nicholson, 2016) meeting or class materialises in the balance between a student finding scholarly literature and leaving with skills to search independently.

Syeda's question has a certain logic to it. Having just been given instructions to type *Australia* in the search box if research about Australia is required, it is not unreasonable for her to assume that typing a term such as *world* would retrieve research on a topic anywhere in the world. Syeda's confusion stems from a misunderstanding about how words matter in the search box. She appears to think that she should use the word *world* to communicate to the database what she wants (i.e., research from anywhere in the world). However, in an "international" database not identifying a geographical location will mean that research from anywhere in the world will be retrieved. The use of a geographical term, especially when this is used to search the appropriate field in the metadata, is only required to differentiate a particular location in the world.

In other words, Syeda has not understood the difference between a keyword signifying an important concept or being a "ratio of signal to noise" (Rosenberg, 2021, p. 129). Words in the search box matter in different ways. They are a powerful, necessary part of life and academic success:

as a vital ingredient in the online search process, keywords have become part of our everyday experience. We feed keywords into Google, Yahoo!, MSN, eBay, and Amazon. We search for news, products, people, used furniture, and music. And words are the key to our success. (Morville, 2005, p. 4)

This search for the right word or combination of words has been described as a “language dance with the computer” (Rosenberg, 2017, p. 281) and also “a Boolean fishing expedition for a set of documents that may or may not exist” (Underwood, 2014, p. 64). Complex topics must be turned into something “searchable” (Sundin et al., 2017, p. 233), something recognised by a term in the full-text or the metadata of a published text. The “revolutionary” (Putnam, 2016, p. 380) nature of finding scholarly literature by placing words in a search box is evident when contrasted with searching in the predigital era, as “first, you had to know that a given publication existed and was worth looking at. This for the most part was gleaned informally from mentions by professors, footnotes, advice from your advisor, and so on” (Bilansky, 2017, pp. 513–514).

Changes in searching take place within the intra-activity of a larger infrastructure of scholarly communication. In an intraview, Alex described the different library technologies that she had used over the course of her career. In this description, the changing material-discursive production of liaison professional expertise is seen in the entanglement of spaces and technologies, from the book to the platform. The databases and indices described here, CINAHL (nursing), MEDLINE (medical science), and APAIS (generalist) still exist today. The familiar names mask the changes that Alex describes:

You see when I did my course, we only had the print, so we had print books, of CINAHL, of MEDLINE, humungous shelves full of, you know, MEDLINE, APAIS, they just went on for ages. We had to go to the print index, look up a subject, find it, go to, find the volume, copy out the articles, that was how I started. During the course, I did a tiny little bit of DIALOG searching, so command searching, so when I finished my course and got into my first job,

CD-ROMs had just come in, so they find suddenly they had finally had, you know, all of CINAHL, MEDLINE on some CD-ROMs. So still a whole lot of CD-ROMs, because they couldn't fit it all on one, so you had to [inaudible] it in and out of the little carriers ... and then round about, somewhere about 92, 93, FTP came in, the beginning, pre-internet, so you could sort of go onto these pre-internet sites and start searching. When the internet came in, so then ... databases went online, so suddenly you could get [inaudible] yeah, I'm the dinosaur, I'm going from the print going to now, they've got these huge databases, type a word in, get thousands of articles, straightaway, there is no going to a subject heading, photocopying it, finding a volume, printing out the articles, finding, then going to a catalogue, looking at the journal, finding that journal, finding the volume, year, volume, issue, photocopy those pages, not that any more. (Alex, intraview)

The change to online searching marks a qualitative and quantitative shift, which seems astounding to Alex as she details it. This is not the view of an amateur searcher. Alex's expertise in information technology is evident in her easy mention of DIALOG and protocols. The change is outstanding in the shift from a frequently lengthy and arduous process, mediated by librarians, to an individual searching in the "unassuming query box" (Haider & Sundin, 2019, p. 2). A search previously produced limited numbers of published texts or objects that could be "held in one's hand, that [could] exist in only one place at a time" (Manoff, 2006, p. 315). Now it results in an abundance of records produced within seconds, "type a word in, get thousands of articles, straightaway" (Alex, intraview).

Alex's potted history is a chronicling of the growing in/visibility of the technologies of search and, with them, the authoritative figure of the librarian. It has a sense of inevitability and librarians appear passive recipients of change. New technologies appear and librarians adapt their material-discursive practices to become experts in the use of each one as it arrives. The expertise of librarians is centred on this adaptation; it is a means of maintaining some element of professional control. The work involved in meeting these "hi(gh) tech(xpectations)" (Stevens, 1983) left limited time or

inclination to question the seeming inevitability of the changes, to ask who is profiting from them, and how this matters.

However, it does matter. Alex describes a shift in the site of scholarly knowledge storage and the activity of searching. The library with its rows of books, indexes, CD-ROMs, and bound journals was a visible reminder of a university library's control of access to scholarly knowledge. This reminder continued through the development of new technologies such as microform, floppy disks, and CD-ROMs. With digital technologies, the search box, and what lies behind it, is the new site for searching for scholarly knowledge. Reading Alex's description, the dominance of "digital dualism" in library and information studies literature (Gourlay et al., 2015) seems unsurprising. The changes in searching for and accessing scholarly literature appear in her story to be a change from complexity for users to seamless simplicity.

To characterise these changes as merely a shift from visible to in/visible search technologies is only part of the story. This is a shift in the site of search activity, from library technologies in a building to the technologies of library platforms, and with it a shift in control and authority over expertise in searching. In Chapter 5 and Interlude 2, I discuss these themes further when I explore the material-discursive production of the paywall and results list in liaison librarians' teaching.

The Mattering of Words

To be effectively searched, databases need to be set up in ways that "flatten and distort complex realities" (Feinberg, Carter & Bullard, 2014, p. 1941). Categorisation suggests the world can be broken down into bits that can be described by agreed-upon keywords, which you then search. "Residual categories" (Star & Bowker, 2007) are created, which do not neatly fit into any particular category or that fall between categories, are subject to "double silencing" (p. 274). While precision is required when searching for a "known item" (Schultheiß et al., 2020), obtaining results in a topic search that are exactly what you were looking for can limit opportunities for thinking otherwise (Underwood, 2014, p. 66):

As we turn parts of worlds into data and databases, we reconstruct these worlds, often materially so, and as we bring into being entities and relations, we change the nature of data and databases tasked with accounting for these novel entities. (Nadim, 2021, p. 183).

As users experiment in the search box, words are not just conveyors of meaning. They have material force. How a word matters in a database depends on its purpose and the value it is assigned by algorithms, in published texts, and metadata (both computationally generated and author supplied) or in the autocompletes suggested. This value could be the identification of a particular field in which to search; for example, with subject headings, author-generated keywords, or abstracts. A word matters differently according to where it is found within a published text or how it is used. Words found in an abstract or title have a greater value in relevance ranking because many databases default to searching only the abstract, title, author names, and author-supplied keywords (ProQuest, 2020a, para. 7; Reidsma, 2019, p. 122). Similarly, the frequency with which a word occurs in a text matters. The amount of times a search term appears in a text is often one of the ways that computer-generated relevance is ranked and therefore what comes to the top of a search results list (ProQuest, 2020, para. 7). Words matter in a very material sense.

Librarian professional expertise materialises together with this mattering of words. The planned search is a good search and saves time, “time spent carefully planning your search can save valuable time later on and lead to more relevant results and a more robust search strategy” (UCL Library Services, 2022, para. 2). As Alex explained in a class for master’s students:

So, before we even start searching the databases, for any of your assignments, you really need to plan your search first, ok? So, this just helps you to maybe think about what your main search terms are, are there any other words you can use, plan it out a bit better so that when you get to the databases, you’re more likely to get more relevant results than just going to the databases trying to plug in a word, find some articles, have a look at them, try

to see if they're relevant, put some more words in, ok? So, this is trying to save you some time. (Alex, class)

The similarity of the layout of this search planner to an advanced search interface in databases and indexes indicates how these platforms became the site for finding and searching for scholarly literature. It materialises some of the in/visible linking of words performed in the database. Its purpose is to impose order on vague ideas and turn them into words that are useful for the calculation of relevance. As librarian Nora Almeida (2022) ironically states, “if you whisper the correct keywords into the algorithm, you will achieve relevance” (p. 833).

The linearity and precision of the search planner materialises a planning and executing approach. It is also one which can “position librarians as rational intermediaries whose role is akin to ‘diagnosing’ people’s information needs” (Polkinghorne, 2016, p. 82), materialised in tools such as the planner. Yet the reality of searching is messier. Liam, a librarian, describes searching as, “not like learning to use a specific tool because there’s so much of, so much of finding information is you know, it’s part science, part art” (Liam, intraview). Similarly, Alex tells a class of master’s students:

sometimes it’s a matter of playing around, ok? It’s not always cut and dried and it’s not always the very first search that you’re going to get the best articles. Sometimes you do need to refine, change, try again, ok? Part of research. (Alex, class)

The search planner both materialises and obscures liaison librarian professional expertise. Knowing how words matter in the search box is a key area of librarian expertise, and it is this expertise that allows Alex to help Syeda. Alex’s expertise materialises in her judgement about how much information to provide, in this case only explaining after it is clear that it is required, and then a very simple one. However, as I expand on in Chapter 5, the lack of transparency about the algorithmic workings that are proprietary knowledge (Barron & Preater, 2018) limits this expertise.

A focus on planning is also a mattering of past expertise of librarians when searching was a complex matter of formulating detailed and precise search strategies, selecting appropriate

databases and indexes, conducting searches, and accessing the results (Kolner, 1981, p. 33). Search planning and implementation was part of an array of visible technologies materialising librarian expertise. The move from the various devices on which indexes, full-texts and searches were visible to the apparent ease of online access, in/visible searching is captured in this description. Along with these changes is the reduction of librarian intervention required to search for scholarly literature. The single search box, a mattering of user freedom and expertise, makes in/visible the work of finding relevant resources. This makes more attractive the systematic review, with its full use of advanced search, subject terms, search history, and combination of searches as the pinnacle of librarian professional expertise; the more so with its endorsement as scientific, replicable, and rigorous.

Finding the World in the Search Box—Alex

I now turn to Alex's answer to Syeda's question:

Because if you're looking for everywhere, then really all you're looking for is this and then whatever comes up in the databases, because they're all international, or a lot of them are international ... it will be covering the world. (Alex, meeting)

This phrase stayed in my thoughts. As I became acquainted with platform studies literature, I returned to Alex's words and I now read them diffractively with this literature as a starting point for thinking about the search box as an apparatus, a site of mattering, where some knowledges and bodies are in/visible and others fit and are comfortable (Ahmed, 2019, p. 44). I explore the world in the search box and ask, "who is housed by [this] world" (Ahmed, 2019, p. 19).

In the previous section, I discussed how a word matters in the search box. However, some words are not able to be found, they matter in their in/visibility. They are not able to be found because they are not prioritised in relevance rankings, are not included in the database or search engine, or have not been written. Even a brief reading of the literature on diversity in scholarly knowledge production provides a bleak picture of exclusion at most stages of the research process,

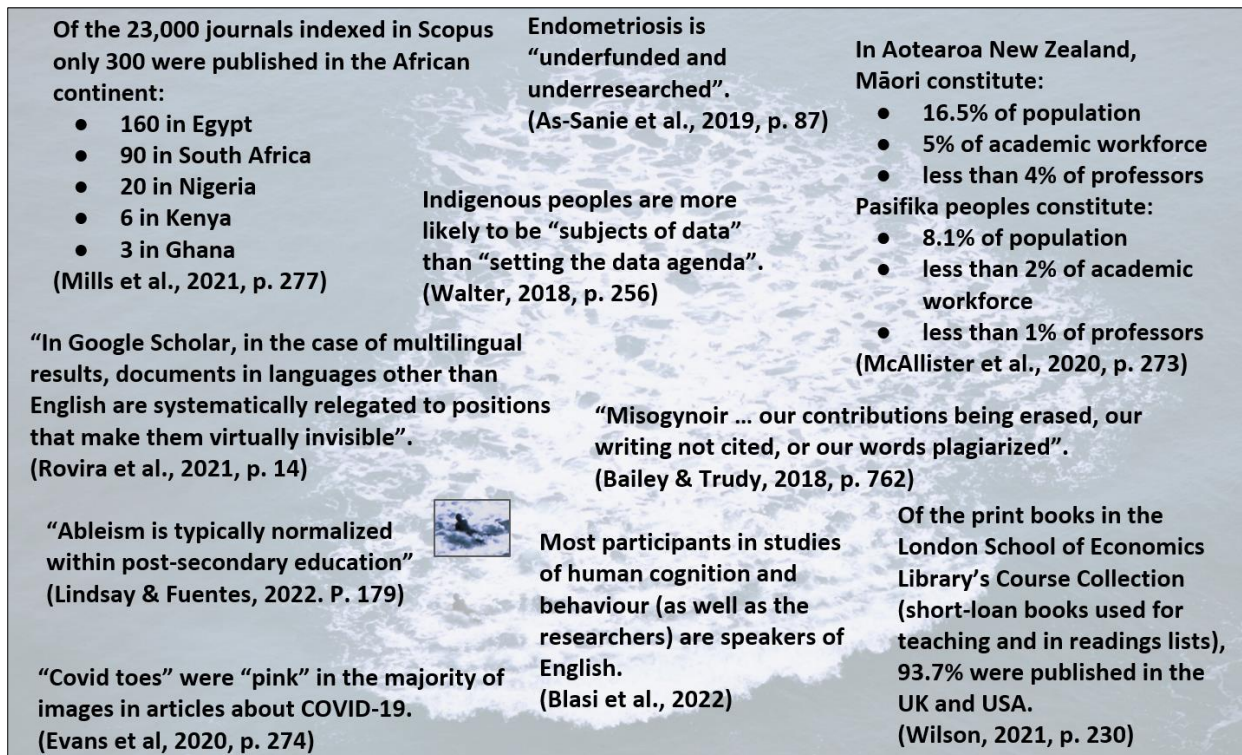
from the hiring of academics to a published text being found in a library. Examples of the multiple and intersecting agential cuts that enact exclusion at the search box include the following. An emphasis in medical research on male medical issues and anatomy (As-Sanie et al., 2019; O’Connell et al., 2005, 2020); a bias towards English language in the choice of research participants and the contents of databases (Bell & Mills, 2020; Blasi et al., 2022; Chanock et al., 2015; Curry & Lillis, 2018; Hyland, 2015; Lillis & Curry, 2010; Luo & Hyland, 2019; Rovira et al., 2021); and the dominance of publishers from the “Global North” (Connell, 2019, p. 111) in scholarly publishing (Mills et al., 2021) and on university library shelves (K. Wilson, 2021). In these cuts there is an erasure of people of colour in research, publications, and curricula (Bailey & Trudy, 2018; Bhattacharya & Atay, 2022; Dahl, 2021; M. K. Evans et al., 2020; Thunig & Jones, 2020); a lack of representation in academia of people of colour as academics (Czuy & Hogarth, 2019; T. G. McAllister et al., 2019, 2020, 2022), and a failure to provide welcoming spaces for academics with disabilities (Ahmed, 2019; Lindsay & Fuentes, 2022; Mellifont et al., 2019).

Kamilaroi woman and education researcher, Melita Hogarth, (Czuy & Hogarth, 2019) provides an example of how this exclusion matters:

as an Aboriginal person, entering academia and the ‘ocean of research’, I quickly found many barriers, and I felt restricted by the traditions held in high esteem within Whiteness, as well as the academy and its very structures. [I was being boxed in]. The space privileged Western worldviews and my own approaches seemed marginalised. (p. 1)

As Hogarth’s experience makes clear, exclusion at the search box is not something unique to digital platforms. Scholarly publishing is “rooted in colonial privilege” (Roh et al., 2020, p. 42). Taking inspiration from Hogarth’s writing, I present in Figure 6 a body emerging within the exclusions in the “ocean of research” (Czuy & Hogarth, 2019, p. 1).

Figure 6 Exclusion at the Search Box



The search box, an in/visible material-discursive practice in the scholarly research process, is a site alive with mattering of the global and the local. Barad’s (2007) description of an online transaction made on an international flight could equally apply to adding words to a search box and pressing the search icon, “with the click of a mouse, space, time, and matter are mutually reconfigured in [a] cyborg “trans-action’ that transgresses and reworks the boundaries between human and machine, nature and culture, and economic and discursive practices” (p. 223). Words matter in the search box as they emerge within the intra-activity of global financial markets, licensing agreements, selection of research participants, employment panel decisions, purchases of books, algorithms in search engines, and images in textbooks.

The search box space is already a site of exclusion and in/visibility before someone starts searching, as the world does not matter equally within it. It has been suggested that “without much exaggeration one could say that to exist is to be indexed by a search engine” (Introna & Nissenbaum, 2000, p. 171). The same could be applied to the mattering of bodies in databases of scholarly

literature. They are in/visible if they are not able to be found or are not elevated in search results. Exclusion in the search box is, however, not just difficulty in being found, but the mattering of what is included and who plays “host” (Barad, 2019) to scholarly literature. The measuring mechanisms of library platforms reinforce “academic imperialism” (Alatas, 2001). Promising initiatives indicate that change is possible and the existence of “significant bibliodiversity” in scholarly communication (Khanna et al., 2023, p. 927); however, Schonfeld (2022) notes that these as yet have had limited impact on the control of the market exercised by the large companies.

Databases on library platforms and, to a lesser extent, shelves in library buildings are the site of the “*world*” of scholarly knowledge. They produce, house and “stabilize” (Ahmed, 2019, p. 170) this world. To illustrate this stabilisation, and to think about possibilities, I end this interlude with a pedagogical encounter from a meeting between a liaison librarian, Lee, and an education PhD candidate, Aroha.

Lee: So, ProQuest, it’s a giant, um, database that’s just dissertations, it’s from around the world, there’s a lot of American stuff in there

Aroha: Yeah

Lee: But there is some stuff from other parts of the world

Aroha: OK

Lee: But there is some stuff from other parts of the world and the beauty of this is hundreds of thousands and a lot of it is in full-text

Aroha: Oh great

Lee: So, you don’t have to go and chase

Aroha: Oh

In this encounter, the exclusion at the search box materialises in ProQuest Dissertations and Theses Global, a large database of theses and dissertations. The database is marketed as “the world's most comprehensive curated collection of multi-disciplinary dissertations and theses from around the world” (ProQuest, 2023, para. 1), offering users *the world* in more than one way. Lee notes it is “a giant”, with material from around the world, but immediately qualifies this to acknowledge the dominance of theses from the United States. In the world of scholarly communication, “global is a place called the US” (Lillis & Curry, 2010, p. 135). The value of the database in terms of practicality, “so you don’t have to go and chase” materialises as whiteness (Hudson, 2017), the acceptance of the status quo, of which we are privileged participants. This approach reflects a profession-wide view of expertise, “a conventional, operationalist emphasis on tools (e.g., databases) and procedures (e.g., click here, then click here)” (Polkinghorne, 2016, p. 82).

As Hudson (2017) points out, the role of librarians often requires attention to the practical over the political, “I suspect even the most ardent critical theorist in library land rarely, if ever, responds to a simple directional question with an in-depth lecture on the nuances of Frantz Fanon’s *The Wretched of the Earth* and its implications for library-as-place” (pp. 207–208). However, silence on the everyday matterings of the political contributes to the continued in/visibility of exclusion. For instance, Ahmed (2019) records how the continued use of the name of a proponent of eugenics at UCL was justified by the president and provost as “my only defense is I inherited him” (p. 167). Liaison librarians inherited these platforms, and they have little input into the purchase of such important repositories, but each time these platforms are treated as neutral, difference is enacted. Lee’s comment about the high proportion of theses from the US is not just information about the metadata and content, that is, the location of the granting institution, but it is a statement about what is valued and the implicit “*requirements for what you need to survive or thrive in an environment*” (Ahmed, 2019, p. 170). It is the building of a house in which only some bodies fit and are comfortable. As Reidsma (2019) notes, “to focus on algorithms as technical artifacts means that

we will be trapped into accepting limited, technical excuses” (p. 20). It is these excuses that materialise houses in which only some people feel comfortable.

Conclusion

With its exploration of the intra-activity at the search box, this interlude demonstrates how a new materialist approach makes visible the materiality of searching for scholarly literature. In the mattering of words in a search box, the material and the conceptual are mutually constituted. This mutual constitution is examined further in Interlude 2. The mattering at the search box is performative, enacting multiple agential cuts that enact exclusions and possibilities. It is not a neutral tool. In the following chapter, I develop the themes introduced here, the materialising of sites of scholarly knowledge in spaces in the library building and within library platforms, and the work of liaison librarians in claiming expertise in these sites.

Chapter 5: Liaison Librarian Expertise Mattering Together with Library

Walls

Introduction

In this chapter, I develop themes from my diffractive reading of library and information studies literature about the library building. The library building materialised in that reading as a “cumbersome companion” (Marcoux, 2001, as cited in Davidson, 2009, p. 334) in the quest for recognition of liaison librarian professional expertise. The building is also a symbol of scholarly knowledge, the prestige of the university, a place that adds value to the “student experience” (C. Andrews et al., 2016; A. M. Cox, 2017) and also a symbol of expertise from which the problem librarians must free themselves. Understanding the library building and other library technologies, both print and digital, as shaping and housing ideas (Ahmed, 2019, p. 144), makes visible their role as apparatuses. They not only order, classify, store, value, and provide access to scholarly knowledge but enact its boundaries, exclusions and possibilities. In the first interlude, I presented an example of this in my exploration of the exclusions in the search box.

These themes are developed in this chapter, which is the first of three discussing the evolving roles of liaison librarians and how they are entangled with the evaluative infrastructures of platforms used to find, access and measure the value of scholarly literature. This current chapter focuses on the traditional role of librarians in teaching students how to find and access scholarly literature. In Chapter 6, I demonstrate that this teaching is infused with explicit numerical measurement, enabled and encouraged by features in the search interfaces of library platforms. In Chapter 7, I explore the work of liaison librarians in teaching academics about research metrics, an example of the evolution of the liaison librarian role beyond information literacy into research support.

Below, I explore the mattering of library spaces by creating an imaginary running sheet of a library class in the library, situating each activity on the sheet in relation to the walls of the library building. The section headings provide list the events on the running sheet as I focus on the library walls. I do this not to suggest that the library space is a container within which events occur and bodies are contained. Rather, I focus on the library walls to explore how they are “done and undone in complex ways” (Juelskjær, 2013, p. 765). The running sheet is not the story of a typical class, nor does it cover all aspects of a class. It is a series of selective pedagogical encounters in which librarians, students, academics, platforms, technologies, and library walls and furniture are “brought ... intra-actively into existence” (Murriss, 2022, p. 9). These encounters are read diffractively with each other and also my intra-actions with the library walls as I generated data. I read pedagogical encounters diffractively to explore how the library’s space is relational, defying the binary of inside/outside the walls of the building. The space is enacted as “sites of power” (Jackson & Mazzei, 2012, p. 133) through the agential cuts of specific material-discursive practices. Past control by the library profession over the classification of knowledge diminished and the site of the production of knowledge is shifting to platforms. Within the reconfiguring of the physical and digital walls of the university library, librarian professional expertise emerges as fluid, both enhanced and constrained by these shifts.

Students Enter the Library Building for a Class

Liaison librarians teach classes for students online, in university lecture theatres, tutorial rooms, and in library teaching rooms. During an intraview with “Gerald”, a science academic, he describes how each year he takes tutorial groups of a foundational first-year science unit into the library building for a library class: “it’s a good way of forcing them into the library as it were [laughs] so that they get to appreciate what the library has to offer for them”. When asked to elaborate on what the library has to offer, he responds:

well, the study spaces, the, um, how to [pause] take out a book, what the library has apart from [pause] the obvious, [pause] just so that they get used to going in there, so that they physically go in there, see what a beautiful space it is for learning [coughs] there are quiet rooms, there are rooms where they can collaborate and talk with other students, there are computer terminals that they can use, there are liaison librarians that they can talk to for help at any time during the degree.

(Gerald, intraview)

This is a description that would please any library director. The list of how the use of the library building meets university strategic goals for the student experience is ticked off: areas for individual and group study, books, beautiful and inspiring pedagogical spaces, devices for students, and helpful staff. Given that the students are entering the library for a class that focuses mainly on searching for online scholarly literature, this would appear to be an example of the successful communication of all aspects of the library's message for first-year undergraduates. For Gerald, the class was an essential first step to becoming a competent scientific researcher to understand the value of scientific communication. This year there were five tutorial groups, and he accompanied each one into the library building for a class.

Most of Gerald's description of what the library has to offer describes the library space, the library matters as a "space ... for learning". It is interesting to consider what is performed by this agential cut enacted by an academic. Both the space and liaison librarians materialise as passively waiting to be used whenever needed, at the disposal of users. The liaison librarians are grouped along with pieces of furniture and there is an assumption of their availability for undergraduates, which was not the case. Liaison librarians were available for appointments, but preference was given to postgraduates and academic staff. Most undergraduate enquiries were answered by paraprofessional staff who worked at the enquiries desk.

The library space enacted in Gerald's description could be any building in the university set aside as a space for students to use for study. The cues to being in a library mentioned by Gerald, shelves laden with books and liaison librarians available to help, have arguably more a traditional and historical link than a role as a measure of the contemporary university library. The links between liaison librarian expertise, shelves of books, and student access to scholarly literature are weakened, due to the prevalence of eBooks and online searching and the removal of reference desks in most university libraries, reinforced by university libraries' campaigns to make these links in/visible. How this plays out in the intra-activity of university funding requests is demonstrated by the comments of a senior university administrator, "Clarissa":

I had people in the library at that point telling me, we need more buildings, we need more space, because, you know, everyone wants to come to the library. Really? Mm, why is that? I don't think everyone does ... what students really want is, um, they don't want books, ah, they want, and not necessarily in this order, they want a place or a space to be connected to information, but they don't need to be in that library to be connected to information because it's electronic. Um, I suppose what I'm trying to get at is the books were the least interesting thing. (Clarissa, intraview)

If Gerald's comments are the realisation of a university librarian's dreams, then Clarissa's statement is their nightmare. In this utterance, voiced with the certainty of someone accustomed to making decisions about the future of buildings and people, the library building materialises as another university space to be shaped by the latest results of student surveys. Clarissa's assumption that all information is available electronically is ironically an echo of the digital dualism of library and information studies literature (Gourlay et al., 2015) and the promotion of online resources by university libraries as a blanket solution for the research requirements of all types of research.

Gerald's insistence that students understand what the library has to offer them and Clarissa's opinions about the wishes of students are powerful and have material consequences.

These consequences range from students walking into the library early in their studies to important decisions about funding and the future of the library. They are entwined; students entering the library become statistics that inform decisions made by Clarissa and her peers. Gerald's recognition that a science student might one day need to borrow a book is a small chipping away at the dichotomy of print and online, even though the mattering of online access in the library session almost overwhelms that diffractive wave. The library building in these encounters is a site of power for both Gerald and Clarissa; they get to decide how it matters. It is in this intra-activity that the library space is iteratively remade.

Librarians Enter the Library Building

The recently refurbished spaces in the East Coast University Library were, as Gerald states, “a beautiful space” for students to study in. Academics and students are welcome and are encouraged to enter the public spaces of the library. The public areas of the library are separated from staff areas by doors with swipe card access, and the liaison librarians spend most of their day behind these doors. Their work rarely involves being in the public spaces of the building—in fact, most of their work does not require their presence in the library building. This is a result of the decline in reference enquiries (Bøyum et al., 2021), the removal of the reference desk in many university libraries (Bunnett et al., 2016; Mathews, 2007) or the move to a single services desk often staffed by paraprofessionals (Frederiksen & Wilkinson, 2016). Formerly, the reference desk, along with the reference collection, materialised authority over scholarly knowledge and librarian professional expertise. With the move of liaison librarians behind doors, their time and value is measured through class bookings or appointments for meetings.

The removal of the reference desk is paralleled by the reduction of the shelving area and the diminished importance of print collections in librarians' work. Yet, when I asked the liaison librarians during intraviews to draw their routes through the library building, all of them identified the shelves as places they sometimes visited. For example, “there's a couple of collections I tend to hover

around” (Lee, intraview) and “yeah, I do have a wander” (Lesley, intraview). The terms “hover” and “wander” evoke time spent in a familiar, comfortable space, and also the absence of a particular purpose for visiting the space. The shelves were described as a place to visit on a walk through the library as a break from computer work.

Sometimes time spent in the shelving area ended up becoming work, “I was wandering the stacks and ended up weeding a whole bunch of things” (Lesley, intraview). The “craft-like work” (Engeström et al., 2013, p. 88) of liaison librarians building print and online collections in their subject areas was largely replaced at most university libraries by automated methods of selecting eBooks. Examples of this are demand-driven acquisition or evidence-based acquisition of ebooks, a “purchasing model in which a library licenses access to a large corpus of eBooks for a set period of time (typically a year). At the end of the term, the library acquires a number of permanent titles with a set dollar amount” (Jacobs & Hellman, 2023, p. 1). An eBook is considered purchased when used, depending on the definition of use dictated by the platform. Weeding, the systematic removal of print shelves from collections (in some cases more an act of deforestation), is a regular practice often associated with repurposing space for student use (Acadia, 2015; D. Allison et al., 2019; Kohl et al., 2017). Lesley’s knowledge of the usefulness of the books in her particular subject area remains part of her professional expertise.

When describing her path through the library in the intraview, with a pencil poised over the rows of shelves marked on the map, Laurie noted that she rarely went to the shelves: “I don’t need to, I have no reason really unless I’m looking for something myself, so unless I’m getting a book for myself or for an academic or whatever, I don’t need to go” (Laurie, intraview). She later returned to this topic and said,

It’s a bit sad, it is a bit sad, you’ve got no reason ... Sometimes I will be doing something for an academic and I’ll come down and pick up a book for scanning or digitisation, whatever, um, [pause]... not very often, I don’t need to, that’s what the [lending services] staff do, they

do all that stuff, they pick up, they do the scanning, they do the books and the doc del [interlibrary loan], they do all that, we don't. (Laurie, intraview)

The mild regret with which Laurie talks about the books, "it's a bit sad," suggests nostalgia for the shelves and the collections, for past work and expertise. Laurie's previous role had been one that involved working in the shelving area, and she had fond memories of some aspects of that role. Nostalgia for the shelves in library and information studies literature is also based on longing for what has come to be seen as a secure past with continuity and clarity about roles, and a clear sense of purpose in a noble role performed in grand settings. This vision of "Libraries (capital L intentional) and the greater, grandiose, higher purpose they serve" (Meyers et al., 2021, p. 7) is often used as a foil to calls to confront the racism and inequities in libraries and for staff to do more with fewer staff and less funding.

The "bodily materiality" of the shelves holds "the memories of the traces of its enfoldings" (Barad, 2007, p. 383). In this enfolding, the library shelves are only comfortable spaces (Ahmed, 2019, p. 44) for some library staff and users. Nostalgia for past glories of university libraries is linked to nostalgia for past academic life that overlooks the exclusions on which this house was built, "idyllic times in which *the* university and those who worked within it were unbothered by market forces of the world – tellingly – *below* the ivory tower" (Breeze et al., 2019, pp. 2–3). Nostalgia for the ivory tower was transported to universities and their libraries worldwide, materialising in "veneration of ancient British universities as definitive of academic practice ... [and more recently] the need to excel in those same STEM subjects praised in the UK" (M. Evans, 2023, para. 8). Colonised collections (Price, 2021; K. Wilson, 2021, p. 230) materialise people more spoken for, than speaking for themselves. Special collections in libraries have "a complex material history" (Qing, 2020, p. 64) of acquisition and ownership, that is yet to be fully reckoned with.

In Laurie's encounter, the shelves are not merely inert objects used by librarians. The shelves, and liaison librarian expertise and hierarchies emerge together. Laurie's visits to the shelves

are an agential cut within which her expertise is constituted by not being required to go to the shelves. The work in the collections is someone else's role, "they do all that, we don't". Visits to the shelves, on the rare occasion they are required, are a favour to an academic. The liaison librarian's role is enacted in that they do not work in the public spaces of the library. Nor is their work the routine tasks of maintaining order in the shelves. As Lesley noted, "I don't think anything can really prepare you for the monotony of shelf reading [the systematic checking that shelves are in order] but um most liaison don't have to do that". In this mattering, the bookshelves are "sites of power" (Jackson & Mazzei, 2012, p. 133), apparatus differentiating and measuring the value of bodies. However, this cut is entangled with other cuts in the "ebb and flow" (Barad, 2007, p. 140) of agency.

This expression of ownership of knowledge in their subject areas materialised in the liaison librarians' use of Dewey Decimal call numbers to identify the areas of shelving that they visited, for example, "the 360s", or "the 300s". These call numbers continue to materialise expertise in technologies created and administered by members of the profession. In the intraviews, these numbers signal a familiar signpost for librarians' expertise and one shared with me.

The usefulness of the Dewey classifications cannot be separated from the exclusion they enact. The dwindling number of print books in university libraries and the accompanying diminishing importance of the Dewey system does not reduce the dividing up and valuing of bodies that it materialises. The shelves and their ordering enact cuts about what is searchable, how it is searched, and therefore what is knowable, just as the online search box does. There are no neutral technologies, no matter how quaint and outdated some may seem.

Nostalgia for past practices, current practices, knowledge of subject areas, hierarchies within libraries and the competing demands for space in university libraries are entangled. For the librarians, this is not a mourning for the glories of a bookish past; rather, the past is enfolded into the present as the librarians take control of "versions of their pasts in order to position themselves in a desired present/future" (Juelskjær, 2013, p. 759). However, within this mattering, others remain

excluded. In the next sections, I explore how this desired future materialises together with library spaces.

Students and Librarians Enter and Exit Teaching Rooms

The rooms used for teaching at East Coast University Library are open for student use when there are no classes. Passing through the library, I walk with Lee to the teaching room before her class. A sign on the outside glass wall states the room is booked but some students remain in the space. Lee enters the room and tells them that the room is now needed. As I stand outside writing notes, there's an overpowering smell of salt and vinegar coming from the almost full rubbish bin just near the exit of the room—material traces of university strategic aims to provide spaces in which students feel at home, and of the diminishing importance of maintaining pest-free spaces in libraries to protect precious print collections.

In the room, Lee starts setting up the computer, which is on a fixed desk at the front of the room. She sets up the PowerPoint presentation and checks access to the databases, opening these up on tabs in the browser for use later. Something tested the day before cannot be guaranteed to work in the class. A librarian's class is an assemblage of many different technologies, some compliant and others less dependable. Librarian professional expertise is enacted in between expertise with devices often expressed as a running description to the class, "so again, searching through [typing] [pause] ah, watch the Mac user hit the wrong button, um, [pause] [typing] [inaudible] use the mouse, um, [typing] [pause]" (Lucy, class). The challenge of technological failure is recounted by Liam, a library staff member, who at short notice is covering another librarian's class:

when I gave the session in the morning I got myself pretty confused because I'd never been to the room before, I mixed up the room numbers so I went to [room number] so I was running late for the session, [laughs] and of course the technology didn't work when I got there so luckily I had my laptop, plugged that in, but then I was trying to toss back and forth

between the PowerPoint display and the live searching and it was just a mess. (Liam, intraview)

Expertise is negotiated with software, devices, room set-ups and the expert demonstration of successful searching.

Lee goes to the entrance of the library to escort the students and lecturer to the room as she has booked a different room than usual. This class is for third-year students writing an exegesis as part of a practice-based project for a dance unit. The students must devise research questions and write a proposal. Lee tells me that the class is seen as part of the preparation for students who wish to continue to Honours. She talks about the students fondly as “*shockers*” (Lee & “Margot”, class notes), who focus on their practice rather than research and therefore start Honours ill-prepared. There were library sessions for this unit for several years since it was set up by Margot.

Both Lee and Margot speak highly of each other, with Margot describing Lee as a “tireless supporter” (Margot, intraview), while Lee tells me Margot is “lovely” (Lee, intraview). Lee has worked closely with Margot from the time Lee began her role, “so when I started here, I sat down with Margot, you know, I had a couple of appointments with her where I said, I want to learn, what do you teach here?” (Lee, intraview). The atmosphere in the session is relaxed and focused. Margot sits with the students and comments occasionally, sometimes invited by Lee to do so. This is a shared teaching session; the library section is approximately 40 minutes and then Margot works with the students on their research projects. Lee does not stay for the second session, her absence a cut enacting the boundaries of the usefulness of librarian expertise and the separation of searching and developing research questions and a proposal.

The triangle of teaching that the librarians create as they teach materialises liaison librarian expertise in different ways. Later Lee tells me that the configuration of the room she is teaching in that day is “terrible” and that she “hates” the continual pacing between the students and the computer. She feels that the space limits her ability to engage with the students. However, it is a site

of power in the agential cuts that Margot enacts. A library class often exists because an academic invites a librarian to create it and deems the material useful. Margot's endorsement of the class, her decision to attend the class (not all academics stay for classes presented by liaison librarians), her easy relationship with Lee, and the time and space she gives Lee, enact Lee's expertise as valuable to the students—worth the visit to the library.

In some cases, classes matter in less powerful ways in the time allocated to liaison librarians. Laurie, a liaison librarian, is allowed only five minutes at the beginning of a lecture to tell students about the library, which is hardly an adequate amount of time. In another mattering, Gerald enacts agential cuts that indicate where value and importance are situated. While he starts each class by emphasising its importance to the students, his frequent interruptions of "Pat", the liaison librarian conducting the class with him, undermine her teaching by pre-empting what Pat is about to say and repeating her explanations. Pat is left in the triangle of teaching at the front of the room, attached to the computer console, while Gerald, wandering around the room, holds the attention of the students and takes charge of the direction of the class:

Pat goes live - back to the console and walks students through the webpage. Interrupted by Gerald asking who would rather do topic 8. Pat waits a bit but then continues while Gerald wanders around the room talking quietly to students. (Pat & Gerald, class, notes)

Walking to the second class, Pat tells me that having Gerald in the class adds "authority" to her sessions (Pat & Gerald, class notes), but as I listen in the classes, Gerald's authority seems to be bestowed rather than shared. His added explanations to Pat's teaching also seemed to me to enact his knowledge as more important.

The agential cut I made as I observed the classes Pat and Gerald taught together enact Pat as the object of Gerald's power in deciding when she could speak. This matter was disrupted by the agential cuts Pat made when later discussing the classes. In an intraview, Pat recounts how when she began her role as a liaison librarian, she trialled and then substantially reworked the teaching plan

and presentation of the previous incumbent of the role. She then approached Gerald and “negotiated” with him to attend the classes. Pat explained that the Library was moving away from repeat classes and that she was the only science librarian: “he would go along to all the other tutorials so I had an expectation that he should come along to this tutorial, so he may as well do something if he was going to be there” (Pat, intraview). Not only had Pat negotiated extra classes and Gerald’s input and presence, but she also managed his interruptions:

it ended up working well, the first time we sort of ran it like that, um, I did find it a bit frustrating that he would sort of butt in and say what he wanted to say, because I had my structure in place, like this is what I want to say, and yes I’m going to get to that ... you know, yeah, I’ll talk about Google Scholar eventually. (Pat, intraview)

When I thought with my notes again, what I had viewed as Pat’s lack of power in the face of Gerald’s behaviour was rather a mattering of her indifference to this power as irrelevant to her pursuit of meeting library measures of value. For example, her ability to enlist Gerald as a co-teacher in the class enabled her to run multiple sessions for a large cohort of students. In the classes, Pat did not always wait for Gerald to finish: “*Scopus really big - an index searching principles the same. Gerald talking, Pat keeps navigating while Gerald talking*” (Pat & Gerald, class notes). The reductive discourse of academics versus librarians does not capture the multiple matterings of librarians when they teach.

Librarians in the Library and on the Platform

Sites of power are not only negotiated within the walls of the library building but they are also negotiated on library platforms. The checks that Lee conducts before her class, to ensure links work and databases are available, are part of the painstaking preparation undertaken by most librarians. Most of the librarians tested and retested searches they demonstrate in class produced results, which supported particular teaching points. At one point in the class, Lee uses Margot’s

name in a demonstration of a search for exegeses in the university's repository and decides to try a search that she has tested before the class:

You can also do, um [pause], a search, [pause] [less certain voice] I'm trying to see if it, if it lets you [back to delivery voice] if you do a search for exegeses, [pause] [typing] [pause], it does also bring example ones of that up. (Lee, class)

The phrase, "I'm trying to see if it, if it lets you" was spoken almost as an aside by Lee, directed half to the students and Margot, half to herself. This data resonates with me as I remember similar experiences in my work as a librarian; standing in front of a group of students demonstrating a search: the sound of typing, the pauses in speaking, and the silence of the students as they watch. These are all part of the challenges of trying to address a group of students while typing words into a search box.

In the pedagogical encounter when Lee is demonstrating a search, there is only a small moment of uncertainty (rather than panic or worry), spoken in a quieter voice, before the demonstration and presentation are resumed with assurance and authority. Lee does not say, "If I can do this" but "if it lets you". Will typing particular words into a search box produce what she considers useful results? As I elaborate on in the following chapter, librarians have an important role in demonstrating the usefulness of databases, indexes and search engines. They acknowledge the difficulties of them, but their expertise emerges together with these tools. The phrase "if it lets you" sits within the tensions between a desire to demonstrate the usefulness of the database and the complexity and in/visibility of its workings.

The librarians used homely, personal language to describe the complexities of the databases, such as when Alex tells a class that a database is "not quite as quirky as PubMed" (Alex, class), and Lee spoke about the challenges of a "tricky" database (Lee, intraview). These descriptions mask an unequal power balance between libraries and platforms. Despite the significant claims on their

budgets to gain access to these platforms, university libraries spend an inordinate amount of time sometimes trying to get basic improvements. As one librarian, Angela Galvan (2016) notes:

for all the data they have about our users, you'd think we'd have a beautifully customized product. It would perform and require very little instruction—if nothing else because I think reference and instruction librarians get tired of teaching interfaces which aren't performing.
(para. 6)

These interfaces are sometimes updated with no warning, with teaching materials “rendered irrelevant overnight” (Nicholson, 2016, p. 141). The in/visibility of the expertise of library workers is palpable in these descriptions of the limited power librarians have over their tools of trade.

Platform systems are company property and their “ranking algorithms are almost always proprietary and closed” (Barron & Preater, 2018, p. 96). Librarian expertise is both constrained and enabled by the in/visible workings of the platforms. Within the limitations of what is knowable, liaison librarians are experts in searching for scholarly and other literature. When they teach, liaison librarians like Alex make judgement calls about the level of detail necessary to explain how certain results are produced (see Interlude 1). In these decisions, the liaison librarian is the expert mediator between what is in/visible and the arbiter of what counts as useful information.

The following pedagogical encounter provides an example of how this expertise materialises in a class. Lesley, a liaison librarian, is teaching a group of psychology Honours students how to conduct systematic reviews, an elite form of search, requiring detailed knowledge about how databases work. It is an important class as this is a group of research students, and “Harper”, the academic in charge of the cohort, expects the students to publish their reviews. Lesley and Harper sit with the students around a large table in a beautiful faculty boardroom, with views across the campus. Lesley, who has worked hard to become an expert in systematic reviews, is in her element, clearly relishing the opportunity to share her expertise with a group of engaged students.

Lesley: Now, I sometimes see this [types] don't do that [laughs] just stick a star in and leave it at that ok?

Student: Does it do the same thing?

Lesley: Nah um, [pause] I, I, I, I can get so technical in here, I could do super nerd librarian, but you don't really care, [laughter] it's so tempting to give you the exact answer to that question, but you don't [inaudible] [laughter]

In this intra-activity, expertise emerges as an enactment of the platform, its search box, and Lesley and her decision about what constitutes useful information. The site of this expertise in this encounter is Lesley, not the database.

This expertise is always negotiated and contested, temporary as algorithms improve and change. As a liaison librarian, I liked to find examples of sources that were not easy to find in our discovery system as an agential cut to demonstrate that my class was useful. This involved the use of facets, links in the interface, to bring the item to the top of a results list. This demonstrated the usefulness of the facets. However, the algorithms defeated me. Because they learned from my test searches, the algorithms helpfully placed the record at the top of the results list, as they are expected to (Silva & Silva, 2017), rendering my demonstration of expertise useless. Library platforms provide a less certain site of power for liaison librarians than the library technologies of shelves and classification systems. In the next section, I discuss how deeply entrenched power is in library platforms, outweighing the previous boundaries to scholarly communication that the walls of the library building materialised.

Librarians Teach Students How to Navigate the Paywall

In this section, I examine the material-discursive processes of obtaining access to the full-text of journal articles. The emergent boundaries of access to knowledge enacted by the physical walls of the library building walls and online paywalls are contrasted. Particular attention is paid to

how the paywall both materialises and obscures exclusion and how librarian professional expertise is entangled with this exclusion.

The following pedagogical encounter is from a one-hour class taken by a liaison librarian for master's students in Health Sciences. It takes place in a teaching room that also doubles as a computer lab between classes. The rows of long benches in the room have monitors and screens; however, few of the students use these during the class, as most of them use their own devices. At the front of the room, there is a desk with a screen and keyboard, behind which is a large screen for presentations. During the class, Alex uses the screen to demonstrate searches for the students and to show them navigation paths to online resources. The students are engaged, following along on their laptops or the desktop computers on each desk in the room.

The students ask questions, help each other, and make notes. When students ask Alex a question, the rows of desks sometimes make it difficult for her to see a student's screen. She resorts to leaning over benches or craning her neck. Each question is answered carefully and often turned into an opportunity for the whole class to learn. When a student suggests *ladies* as a synonym for the search term, *women*, her doubts about this materialise as a barely perceptible pause before she adds this useless term to the list. Alex decides to focus on the use of the Boolean operator, OR, because *ladies* is a term that is unlikely to appear in the database and will therefore not affect the results hugely.

Having demonstrated searching, Alex leads the students through options for accessing the full-text of articles that appear in the results list. Figure 7 is a transcription of my recording of Alex's instructions about how to find full-texts. I present it in a box because I wish in this section to focus on the materiality of her instructions and, by extension, the materiality of the paywall. After discussing the initial transcription, I play with the instructions to explore what is materialised in these seemingly mundane words. In doing so, I develop the themes outlined in Interlude 1.

Figure 7 How to Find the Full-Text of Articles in a Database (Alex, class)

So, if you click on an article, right, so I said, it will give you an abstract, or a summary of what the article's about. And then on the top right-hand corner, you'll have the links to the full-text. Now, if you're coming in on campus through the library, because of the library's subscription to lots of different databases, you might find that there's already a link there, and, in this case, we've got a link to PubMed. But when you're doing this from home, it may not come up with these ones. But if you click on that [link resolver¹³] you'll get links coming through. Now, if this, so when you go into here, always try the first full-text link. If there's more than one and the first one doesn't work, just keep clicking your way through, ok? If it doesn't have a full-text link and none of the other links work, sometimes you will see that there's one that says X university library has print copies, because we still have some journals in print. None of that works, it is still worth having a go and putting the article title, ok? Into Google. So, because a lot of research is funded by public money, so through government, taxes and public money, they're starting to ask for that research to be made publicly available. So, if people have published articles regarding that research, they're asking for it to be made available through research repositories, through universities and institutes, or it also may be available through the author's own webpage or other sites, ok? So sometimes if you put that article title into Google, you may find there's a link to the full-text through somewhere else, ok? So, like I said, worth having a go [pause] um, you may still find that there are times when nothing is available, ok? Um, in that case you might have to see if there's any other articles um, you can do an interlibrary loan but that can take at least two weeks and you may not have enough time depending on your assignments, ok? So hopefully there's enough with everything else that you can find.

The phenomena of access to scholarly literature materialises on this page as twenty lines of instructions. Even presented in double spacing, the pedagogical encounter is a dense and complex

¹³ Software which links users to full-text, See [glossary](#).

monologue. Compared to the amount of time in class that Alex devoted to instruction about preparation for the search, the time spent on teaching accessing full-text is short, yet it feels long. When transcribing this encounter, I was surprised to find it was only three minutes long. Alex's work in compressing these details into three minutes, something she developed over many years as a librarian, is impressive.

In part, the complexity of the encounter is because Alex is not merely demonstrating how to link to the full-text in a particular database. She is attempting to provide students with skills to access full-texts in general, across many databases, many with unique interfaces and vocabulary, and sometimes with complicated levels of access options. There is much to remember with many instructions dependant on a user's location or the option for access selected. In Figure 8, I inter-act with the encounter to make the contingent nature of the material moments of access to scholarly literature visible. The encounter is dense with keyboard strokes and cursor movements. To indicate this, the terms *link* and *click*, and instructions associated with them are in pink font. Text in blue font indicates where access is or may be possible including use of print formats or access through interlibrary loan. The words circled indicate conditionality and red font indicates a block to access.

Presented in this way, the encounter is a material-discursive enactment of the privileged nature of access to full-texts. The abundance of words circled, indicating conditionality, such as *if*, *may*, and *might*, reinforce both the uncertain nature of access and also the options available to students who study at East Coast University. The collections at East Coast University are generally sufficient for the needs of most undergraduates but nothing is certain in the changing world of access to online resources. Sometimes, options are available and, in some cases, it is "worth having a go". This is not the case at all university libraries. Within this text, there is a story about how conditional and complicated access to scholarly literature is.

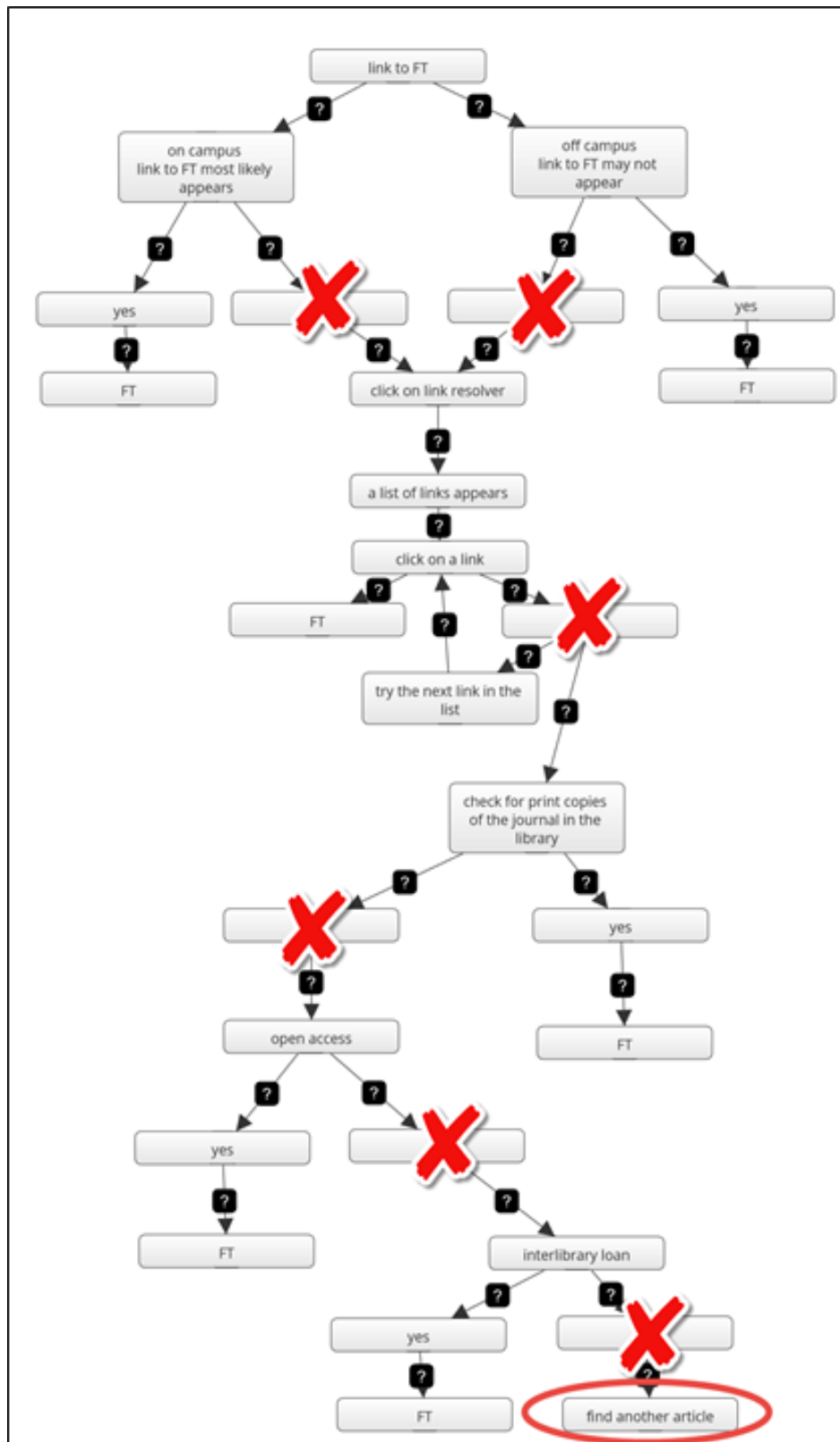
Figure 8 The Provisional Nature of Accessing Full-Text Articles

so, if you **click** on an article, right, so I said, it will give you an abstract, or a summary of what the article about and then on the top righthand corner, you'll have the **link** to the **full-text** now if you're coming in on campus through the library, because of the library subscription to lots of different databases, you **might** find that already a **link** there, and, in this case, **we've got** a **link** to Cochrane library but when you're doing this from home, **it may not come up with these** but if you **click** on that find it at X, you'll get **link** coming through now, if this, so when you go into here, always try the first **full-text link** if more than and **the first doesn't work, just keep click your way through**, ok? if it doesn't have a **full-text link** and **none of the other links work**, sometimes you will see that that says X university library has print copies, because **we still have some journals in print**. **None of that works**, it is still worth having a go and **putting the article title, ok? into Google**. So, because a lot of research is funded by public money so through government, taxes and public money, they're starting to ask for that **research to be made publicly available**. So if people have published article regarding that research they're asking for it to be made **available through research repositories, through university and institutes, or it also may be available through the author's own webpage or other sites**, ok? So, sometimes if you **put that article title into Google**, you may find a **link** to the **full-text** through somewhere else, ok? So like I said, worth having a go um, **you may still find that there are times when nothing is available**, ok? Um, in that case **you might have to see if any other article**. Um, **you can do an interlibrary loan** but that can take at least two weeks and **you may not have enough time** depending on your assignments, ok? so, hopefully enough with everything else that you can find.

As Alex concedes, students may not be able to access a particular article. Figure 9 is a flowchart I developed of this pedagogical encounter to make clearer the mattering of the paywall. I use red crosses to indicate a “chokepoint” (Giblin & Doctorow, 2022, p. 9), where full-text is not available. The last red cross at the end of this figure identifies the point at which legal options for accessing full-texts are exhausted. The only choice remaining is to use another text, as Alex notes, “in that case you might have to see if there’s any other articles”.

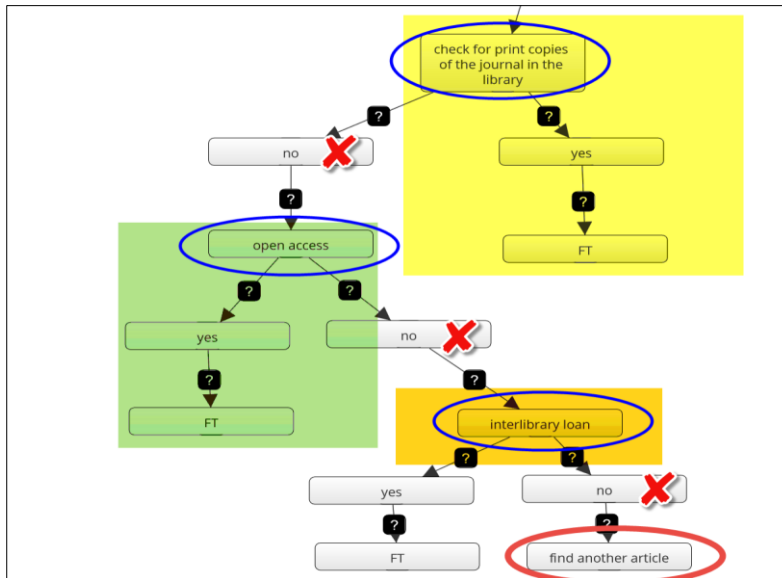
To understand what the paywall performs, I think with anthropologist, Tim Ingold’s (2007) description of different ways of moving across a landscape. Ingold distinguishes between wayfaring, a means of inhabiting a landscape while moving across it (p. 80), and being transported, moved from place to place without engaging with the landscape (p. 81). Alex attempts to provide some context of the landscape, for example, providing the reasons that some research is open access. However, the technical details of clicking, and the different options that demand attention, transform their movement into a transport route that is focused on the paywall. The landscape of scholarly communication is in/visible to students as they are transported across it.

Figure 9 The Paywall as an Apparatus



Access is an act of privilege. With the click of a link, both those excluded and those who have access to a text emerge. East Coast University is a reasonably sized university in an affluent country and the cuts that are enacted for others are in/visible. The options highlighted in Figure 10 for circumventing the paywall also diminish in less affluent institutions.

Figure 10 Options which circumvent the paywall



In every instance of accessing full-texts, the local and the global are enacted together as multiple trajectories come together. In this encounter, librarian expertise emerges together with the paywall. The full-text link both regulates this mattering and also obscures it—materialising it as the simple matter of not being able to access a PDF.

The complications of the paywall (involving lots of different software communicating with each other) mean that librarian expertise is required to smooth the barriers away (in the background) and also to explain it in classes. As university libraries move towards seamless access in which some of this work becomes in/visible, it is worth noting that as historian and hacker Tim Sherratt, (2015) points out, “seams are not simply obstacles to a smooth user experience, they’re reminders that our online services are themselves constructed” (para. 17). This is the expertise of librarians, helping to make palatable the surface realities of difficult ethical problems while

encouraging the idea that library databases are useful and easy to use. It both hides and makes visible their expertise.

The paywall is not merely an inconvenience. It is an apparatus within the phenomena of liaison librarian professional expertise, enacting the value of the university library. Thinking with Sara Ahmed's (2019) notion of how ideas are "shaped by where and how they are housed" (p. 144), what are students learning in these classes about the housing of scholarly knowledge in the library? What is deemed useful and what is made visible? The paywall materialises as a feel-good story about how librarians can help students access what they need. In this encounter, neither the term, *paywall*, nor the realities of the paywall are mentioned. None of the liaison librarians mentioned the cost of access, either in terms of the free labour supplied by academics or the large amount of the library's budget that was spent on the collection.

Alex mentions "the library subscription to lots of different databases" as a benefit because if the article is not found in one database, it may be in another. The large number of databases is a contribution by the library to students' successful studies and a materialisation of the usefulness of the library. While the work of getting around the paywall is very much seen, the paywall remains in/visible in the focus on processes rather than systemic inequality. Ahmed points out that people are "depleted by an encounter with a wall that is not even perceptible to others" (p. 155) and that depletion, or exclusion, is enacted in the same agential cut in which others gain access. Research on barriers to access of journals in university libraries in Zaria, Nigeria, (Hamisu et al., 2023) provides a picture of how exclusion materialises, including lack of funds to purchase serials, erratic power supply, inadequate staffing, and removal of all or sections of print journals by library users in the competition for scarce resources. Considering that seventy-five percent of academic research is behind a paywall (Lamdan, 2023, p. 53), the material consequences of this exclusion are enormous.

The focus of library discourses about access on practical, applicable advice (Hudson, 2017) maintains an aura of neutral, mainly technical, usefulness. When teaching Honours students how to conduct systematic reviews, Lesley alludes to the monopolisation in library platforms:

ProQuest and EBSCO are like the Mac and the PC of the database world. They're the big platforms and what they do is eat little databases, they buy them, and so you can get really used to the ProQuest look of searching databases or the EBSCO look (Lesley, class).

Lesley here uses the term *platform* in its non-theoretical, non-political sense. In 2017, when data was generated at East Coast University Library with the liaison librarians, the literature about platforms was in its infancy, so this use of the term is understandable. However, the implications of commercial ownership and control of the scholarly record are not discussed in classes and meetings. The information is presented, and it matters, as a means of justifying a search strategy for the systematic review, rather than as essential knowledge for anyone using the database. As Lesley concludes, "it's just one of those things, so you need to know which platform you're using and you need to state that somewhere" (Lesley, class). Knowledge explained this way is not power.

In information and library studies literature, "information privilege" (Hare & Evanson, 2018; Powell, 2020) is recommended as a topic in which to educate students, "as librarians, it is professionally responsible and ethically imperative to raise undergraduate student awareness about the disparity in information access" (Hare & Evanson, 2018, p. 727). Information privilege is identified in the ACRL Framework (American College and Research Libraries, 2015). It aligns with the profession's championing of open access and espousal of the "free flow of information" (Australian Library and Information Association, 2018, para. 1) and is perhaps the most comfortable political issue of knowledge production for liaison librarians to address in classes. Nora Almeida (2022) provides a cautionary note illustrating the realities of trying to educate students about the political economy of knowledge production in her "re-enactment" of the one-shot class: "Not just anyone can read this stuff...is what I'm saying. Without the login. Questions? I'm sorry but I don't know your

username or password. After our library session you can visit the understaffed help desk downstairs” (para. 10).

Almeida’s attempt to educate students on the realities of access to knowledge is unsuccessful as it encounters the same focus on accessing full-texts, which drives Alex to provide so much detail about navigating the paywall. It is not unreasonable for students to be concerned about the practicalities of accessing full-texts. However, the ubiquity of the “one-shot” library class, in which librarians try to provide as much information as possible, is practical, leaving little time or appetite for discussions of ethical issues surrounding obtaining full-texts. As Nicholson (2016) points out, “by virtue of its brief, episodic nature—one that can result only in a superficial, skills-oriented approach—the one-shot is in perfect sync with the accelerated, fragmented ‘corporate time’ chronos of contemporary higher education” (p. 27).

The one-shot is an agential cut enacting library education as less important than other topics. Liaison librarians are grateful for the time they are allocated, as Lacey explained to me:

yeah, and it cuts into the lecture and in fact Mal that day was quite generous to give me half an hour because I’m very conscious as well as the time it takes to cut into his lectures ... so I tried to make it um straightforward and succinct, um, and I guess it worked because we got invited a second time for the next trimester. (Lacey, intraview)

Significantly, the most powerful discussion about the politics of search was recounted by “Avery”, an academic. Avery collaborated with library staff to develop a cross-disciplinary, semester-long course teaching “the skills that university students need across their entire degree” (Avery, intraview). Lucy gave a lecture as part of this collaboration and introduced the CRAAP checklist. CRAAP is an acronym for *currency, relevance, authority, accuracy* and *purpose*. The checklist was devised by a librarian to help students evaluate resources, particularly on the internet (Blakeslee, 2004). One of the criteria on this checklist to verify the usefulness of a website is whether the URL contains .edu (an educational institution) or .com (a business address). Later in an intraview, Avery described how

students pointed out that the URLs of the databases indicated that these were commercial enterprises:

So, some of these sites that hold the journals they're commercial sites and the students notice that and they questioned it. So, when they're doing the evaluation, this is a dot com site, Elsevier or Springer, it's a dot com, it is a, they are commercial businesses, they're hosting these journals. Does it impact on the objectivity of the journal article itself? They're difficult questions, students are picking up on this. And, I say, yes, this is the commercialisation of research and you do need to ask questions about whether it actually affects how knowledge is generated and how trustworthy it is as a result of commercialisation of these platforms. And the students who pick up on this are like yes!
(Avery, intraview)

It is significant that in all of my time at East Coast University Library, this was the most robust description of the politics of searching and production. As I discuss in the rest of my thesis, this can be related to questions about whether it is the role of liaison librarians to engage with ideas, with the assumption of neutrality of the delivery of knowledge, and the need to promote the use of library databases, indices and search engines. Regardless of the reason, the separation of the skills in liaison librarians teaching from the complexities of knowledge production in the search box materialises expertise that is constricted.

Conclusion

This chapter takes up themes of the library building and platforms from my diffractive reading of the literature and puts them to work with Barad's (2007) notion of mattering to diffractively engage with a range of pedagogical encounters. The running sheet of a library class presents the diverse, sometimes contradictory, iterative becomings of library space and time as it becomes with liaison librarian professional expertise. Library space, time and the expertise of librarians are not static. Their boundaries, and the possibilities and exclusions that emerge with

these, are never still. The library building is iteratively remade in the claims of its value by an academic and a university administrator. In these claims, the expertise of liaison librarians is not articulated or it is in/visible. Library spaces are inhabited by librarians and are places where power is forged and contested. Considering the almost uncontested power of librarians in the past, these may seem like small victories. However, within this fine detail, what can be said about their expertise matters. This mattering is not produced using library technologies but rather the technologies that emerge together with it. The library building is a site where liaison librarians' expertise is disrupted by the increasing dominance of library platforms. Within this change, expertise is in/visible—both obscured and made evident by the hidden algorithmic workings of the platform.

As these enactments are agentic, not everything is possible, but everything is an ethical matter. The power relations within the university measuring infrastructure define what is possible. It is within this definition that liaison librarians negotiate “sites of power” and forge what is possible. The liaison librarians described in this chapter negotiate their way within the boundaries of scholarly knowledge enacted as physical walls or paywalls. This negotiation leaves little opportunity for them to engage with the differences that these boundaries enact. In the following interlude, I further discuss the tension in liaison librarians' teaching practices between the demands to demonstrate their own usefulness through the usefulness of library platforms, the constraints of time and expectations, and the differences and exclusions these useful tools produce.

Interlude 2: The Results List: “That’s a Really Great Search”

There’s nothing natural or inevitable about a list of search results. (Sherratt, 2015, para. 11)

Introduction

This second interlude explores another key technology of searching: the results list, and forms an introduction to Chapters 6 and 7. This technology has received less explicit theoretical attention in library and information studies literature than the search box. Its function is often more as one of the means of measuring the quality of a search in terms of the number and the relevance of results (Gusenbauer & Haddaway, 2020; Louden, 2018; Norch & Adzakpa, 2022). The performative nature of the results list has attracted less interest. Yet, as the epigraph to this interlude suggests, a results list demands attention in itself. It is an iteratively reworked production of algorithms, knowledge, citation counts, interfaces, search terms, published texts and bodies.

The number of results generated by a search is usually found at the top of each page of the results list in library databases, citation indices, discovery layers, and academic search engines. Sometimes each record is numbered. This is a “resolutely mundane” (Taylor, 2013, p. 698) and often in/visible feature of online searching. In this interlude, the deliberate making visible of the number of results by liaison librarians in their teaching is explored. The number of results is reimagined by paying attention to how it acts as an apparatus, enacting both liaison librarian expertise and what counts as success in searching for scholarly literature. In doing so, this interlude expands on the notion of the platform as the site of liaison librarians’ teaching that is emergent with librarian professional expertise. I pay attention to how that knowing is “produced in the entanglements between the material and the discursive” (Jackson & Mazzei, 2012, p. 116).

The Results List Enacting the Librarian/Researcher

As a librarian and researcher, I am entangled with this numbering of lists of results. When I transcribed, read, remembered, and thought with the recordings of librarians’ classes, the numbers

of the results for each search liaison librarians conducted glowed (MacLure, 2013b, p. 661). I noticed how frequently they were mentioned by the librarians. The numbers leapt from the pages and recordings, and I wondered why I had not noticed them when I attended the classes and meetings. However, when reviewing my notes on the classes and meetings, I was surprised at how often I had recorded the number of results for searches that the librarians demonstrated, sometimes when these results were not mentioned by the librarian taking the class.

The numbers I recorded were exact and rarely rounded up. The agential cuts I enacted in recording these results demonstrate how the numbers mattered to me in a very specific way. They mattered long before I had made the supposedly profound discovery of the way they mattered to the librarians. I, as a knower in different and entangled ways, am implicated in the research (Wolfe, 2017, p. 427). The practice of naming the number of results is not there awaiting my attention. Rather, I am “cutting together and apart the residue of [my] research and giving it a specific material configuration” (Hayes & Comber, 2018, p. 392). My drawing attention to the number of search results enacts the phenomena of liaison librarian as expert together with the platforms measuring mechanisms, within the superposition of waves created by the disturbance of my research.

The pedagogical encounter examined in this interlude is from a library class for undergraduates. Laurie is teaching a class of first-year students how to find scholarly literature and other sources for an assessment task, demonstrating a model search she had earlier prepared. Laurie is using advanced search for this. The data presented in Table 7 is from notes I made during the session. It includes descriptions of what Laurie added to the search boxes (in square brackets), phrases spoken by Laurie (text in italics and within quotation marks), and the number of results each search retrieved, precisely noted down by me at the time. Additional information provided by Laurie in between these comments was removed for clarity.

Table 7 *Creating a Manageable Results List*

Actions	Discourse	Materialisation of success
[adds terms in the search box]	<i>"if you put in project management"</i>	53,204
[adds quote marks around project management]	<i>"narrowed it down a bit"</i>	40,004
[adds more terms]		699
[shows list of results]	<i>"don't know if you need to use peer-review all the time"</i>	
[edits date range]	<i>"going to narrow it down a bit"</i>	
[adds another term]	<i>"that's a little bit more manageable"</i>	85

This table tracks how Laurie made explicit the importance of reducing the number of search results. Adding more terms in the search boxes or clicking the peer review checkbox are the means to “narrow” the results down to a “manageable” amount. When Laurie later discusses this class in an intraview, she uses the term “refine” to describe the production of a “manageable” number of results: “stuff I’m sure you’ve done many times before, do a search, help them refine it” (Laurie, intraview). Her comments enact our shared experience of teaching similar classes and invite me to understand both the actions of her teaching and the reason behind them.

This practice was repeated in most of the classes and meetings I watched and also identified as important when discussed during intraviews. In Figure 10, some examples are listed, divided into numbers that require more work (in red boxes) and those that the librarians feel are a good result (in green boxes). There is not one point articulated at which a number of results move from

unsatisfactory to satisfactory, but there is a clear identification by the librarians of numbers that require attention.

Figure 11 Measuring the Results List

Numbers requiring more work		Acceptable numbers	
60,000	Alright, so 60,000's a lot (Alex, class)		
30,000	When you're searching, you go ok, oh I've got 30,000 results, ew, what am I going to do? (Lucy, meeting)		
18,000	And I said, well, that's not really useful is it? You don't have time to go through 18,000 hits. You need to find a way to get that number down ... (Liam, intraview)	... so, that's a brilliant search, like 429 results (Liam, intraview)	429
2,038	2,038, you can just pop another word up in the search box, um, and, I'm going to do [pause, typing] ... (Lucy, class)	... see, ok, chopped it down to 176 results just by searching for a keyword in those citing articles (Lucy, class)	176
		Not a bad number (Pat, class)	112
		And that's a good result (Alex, class)	70
		And that will bring it down a bit, yeah, to 63, there you go (Lee, meeting)	63

I recognised the articulation of the number of records in the results list from my teaching but could not adequately explain its purpose. A rereading of my notes for the transcripts of classes and intraviews provided a limited explanation. In an intraview, Alex notes:

so then some of the skills that you're teaching is how to, how to use the limits, to try to make it a more manageable, how you would then narrow your search to make it more manageable, if you do have a huge amount. (Alex, intraview)

However, this does not address what exactly is unacceptable in a large number of results. Like Laurie, Alex assumes that I understand.

The best explanation for reducing the number of searches in the results list is one Liam gave when describing a class he had taught:

when you do the search like that you get 18,000 hits and I said, well, that's not really useful is it? You don't have time to go through 18,000 hits. You need to find a way to get that number down. (Liam, intraview)

This explanation seems to make sense because no one does have time to go through 18,000 results. However, the number of results that Liam felt was useful, 429, would still require a reasonable commitment of time, especially for undergraduates, who rarely go beyond the first or maybe second page of results (Asher et al., 2013, p. 474; Kliwer et al., 2016, p. 571; Rigda et al., 2018, p. 256). Even in a recent study in which approximately half the students went beyond the first page, the results found did not lead the researchers to suggest that this would be a useful action: "it may be that this behaviour is not as desirable as librarians imagine, or that it is only useful in certain circumstances" (Dahlen et al., 2020, p. 8). Considering the exclusion at the search box discussed in Interlude 1, the perceived need to not venture beyond the top results (those on the first two pages) intensifies the in/visibility of marginalised voices.

The Results List Producing and Obscuring Expertise

My interest in this interlude is not to render this practice "*explicable*" (Maclure, 2013, p. 169), but to focus on what it performs. However, it is interesting to consider how the number of search results came to play such an important role in the identification of a good search and the material-discursive production of liaison librarian professional expertise. One reason may be the shift from finding a small number of sources after sometimes lengthy searches to large numbers of records appearing almost instantaneously, described by Alex in Interlude 1 as "thousands of articles, straightaway". The notion of "information overload" (Bawden & Robinson, 2009, 2020; Goulding, 2001; Lauri et al., 2021) is an important part of the framing of the need for information literacy training by librarians. Information overload is perceived as a problem associated with the digital age,

but research indicates that it was noted in premodern times and different cultures (Blair, 2010, p. 11).

New skills such as “restricting search strategies by date ranges, by language of original publications, and by type of literature ... length of article” (Tenopir, 1990, p. 63) are critical for combating “information glut” (Connaway, 2015, p. 36) and “online information anxiety” (Tenopir, 1990, p. 62). The practice of librarians reciting the number of results as they expertly reduce them is a mattering of the traces of the university library’s quest for legitimacy. In the material-discursive enactment of the results list and librarian expertise, the decreasing value of the number of results is a mattering of liaison librarians’ expertise with platforms, as evidence of skills required to find scholarly literature. The problem of too many results is solved by the application of liaison librarians’ knowledge features for reducing results lists, such as date of publication, and search box fields.

The Obscuring of Librarian Professional Expertise

However, while demonstrations of how to reduce the number of results materialise librarians’ knowledge of the databases, they also obscure librarian expertise. In the class, Laurie provides information about database searching, such as quotation marks for phrase searching, how to limit searches to peer-reviewed sources and whether this is always necessary, and how to define the publication date range of literature in a search. When the students in the class were searching for their topics, Laurie provided valuable help with rethinking search terms; for example, using broader terms when a very specialised term did not produce results. This advice is important in itself rather than merely as a means to reduce the number of results. However, the number of results is entangled with the advice and becomes a measure of the value of the advice for librarians.

Some of the most considered comments about the expertise of liaison librarians were provided by a former liaison librarian working on education projects in the library, before taking on a role as manager of liaison librarians at the end of my research at East Coast University. Liam and I shared an interest in both the technicalities of search and also the conceptual issues of the teaching

of librarians. I recorded two intraviews with Liam, one in the second phase of my research, and the other when I was working in the librarian's office. Liam returned from teaching an introduction to search class for first-year students, to cover for a colleague who was unable to attend work. He offered to talk me through the class and demonstrate the searches. Following his colleague's lesson plan, he began the class by asking students to identify the keywords from their essay topic. The students suggested *transition*, *education*, and *employment*. Liam recounts what happened next as he searched again:

so, I say, ok, that's great, let me do a search for transition education employment [pause typing] when you do the search like that you get 18,000 hits and I said, well, that's not really useful is it? You don't have time to go through 18,000 hits, you need to find a way to get that number down, so I said what can we do to that? And they said, well, what if we add impact in? Ok, great, good suggestion, let's see what happens when you add impact [pause typing] so that brought us down to 2,400. So that, that's a little bit better but it's still kind of a lot. Um, so then I got down here and I thought, ok, how can I get it down even further?

(Liam, intraview 1)

Liam articulates the expertise that is often in/visible in liaison librarians' teaching. The addition of a term to the search did reduce the number of results, but this is not the only, nor the most important, change it affected. The addition of the keyword *impact* adds meaning to the other search terms, *transitions*, *education*, and *employment*. The term *impact* begins the more complex business of working out the relationship between the three terms already in the search box. It opens up opportunities for the students to understand what the assessment task is asking them to discuss. In this way, the results list is not so much a numerical validation of a good search, but a means of exploring the question being searched, which "itself may shift as new relationships are illuminated" (Swanson, 1986, p. 116).

In making the skills to help students understand what they need to search for in/visible, the liaison librarians enact and reinforce an agential cut. This cut is a division between academic and librarian work. In the cut between this work, although searching is seen as embedded in disciplinary practices, the skills taught are separate from academics' intellectual work. In an intraview, Lacey spoke about teaching students, saying that the skills she taught were transferable between topics. She debated whether it was more effective to demonstrate a search unrelated to the topic of their assessment task, or one which was based on the task:

Lacey: It's really interesting, so sometimes I don't know whether it's better to show them a generic search or you make it too customised that they can't seem to see the, I guess, you know, they can't seem to see how it can be transferred

AM: Mm

Lacey: Maybe that's a thinking thing, which it's not our scope, it's not our role to teach them how to think in that way, if you know what I mean? (Lacey, intraview)

Lacey's differentiation between "a thinking thing" and the skills that librarians teach is an agential cut that constricts liaison librarian professional expertise to something on the margins of academic endeavour, yet at the same time central to it. It enacts the practicality and neutrality of the skills being taught, resisting the calls of critical information literacy that the use of library technologies is embedded in structural inequities with which librarianship must engage (Ferretti, 2020; Tewell, 2015). This cannot be framed as a simple choice by librarians. "Charlie", an academic at East Coast University, who formerly worked as a research librarian at the University, spoke of the need for students to learn critical thinking, but placed this outside the remit of liaison librarians:

so the role of the academic is much more in that space and that is always an area that I've seen the liaisons struggle with because that is really not what they're trying to achieve when they're engaging with the student or an academic. That person needs to learn critical

thinking somewhere else so, it's really how to, so the environment is for the liaison is really about how students can access, find, allocate, evaluate the information that they're accessing through the library space whereas for an academic it's like, you've got to access that, but you've got to critically think about the content, the thing within the object, and that's what the student themselves really has to go through. (Charlie, intraview)

For Charlie, evaluating scholarly literature as taught by liaison librarians has a "crossover" with the interpretation of the content, but it is different to engaging with the content intellectually. This is the same distinction that Lacey has adopted in her differentiation of different types of thinking.

These differences are evident in an article written by a librarian and an academic about the grading of a reference list, which was part of an assessment task for students in a course they taught together (Pickard & Sterling, 2020). Both identified the same student work for the highest and lowest scores and both used criteria such as the range of journals and formats cited; however, there were clear differences in the criteria each used to grade the lists. For example, the criteria used by the librarian, but not the academic, were the variety of databases used and the number of peer-reviewed sources, based on the identification of this in the database used (p. 87). The academic, but not the librarian, used the criteria of "topic specificity", the quality of the use of the referencing style, and the significance of the journals in the list (p. 87).

The differing importance of the criteria used by the librarian and academic materialise their different levels of knowledge of the subject area, one being deep and the other only having a broad understanding. It is noteworthy that librarian professional expertise materialises together with the databases in a very specific way in the grading of these assignments. On one level it is not surprising, searches are performed in the databases, but on the other hand, how the database enacts agential cuts about quality is striking. For the librarian, the database explicitly identifies a peer-reviewed journal and the variety of databases used indicates a good reference list. Using the latter criteria required considerable commitment by the librarian to check the database in which each journal was

found, indicating “how important she felt that information was” (p. 97) as a criterion for understanding the research landscape of the topic. The reference list, like the refining of the results list, matters as an apparatus for determining a good search. As the authors conclude, “the students’ search process was, at a deeper level, the focus of [the librarian’s] assessment” (p. 97). Within the intra-activity of the use of these criteria in grading the reference lists, liaison librarian professional expertise is inextricably entangled with the databases.

The interest that the librarians took in the research in their area materialises the discipline as understandable through search and being able to enhance their ability to teach search techniques. Lacey describes the benefits of her interest in the disciplines she worked with:

I’ve found for me it helps because I have a personal interest as well, in the disciplines I support ... so I do read up on that and sometimes, you learn from when you are helping to create assignment resources, um, or when you’re helping students to search for things or when you are reading ... so it helps to be very familiar with the assignments, the assessments, and that comes with supporting the departments, with the schools, ah, it helps to understand how the assessment’s done, what the expectations are, so a lot of the assessments require the use of peer-reviewed journal articles and writing essays, learning how to support um your, your analysis with quality, with resources, um, knowing how to find, find, and how to use, yes and you need to be familiar and that comes with the discipline, knowing how, um, digital literacy, the find, use, it’s relating to the discipline and how to contextualise it. I find it’s important, because [pause] um, it’s important to contextualise it to the discipline. Because, like I say, when you do a generic search, it just doesn’t work. (Lacey, intraview)

In Lacey’s explanation, the teaching and support she provides within the disciplines she is associated with is a material-discursive practice. Understanding the subject areas that she works with is not

something static; rather, her expertise is an ongoing becoming together with search boxes, assignments, articles and teaching.

The distinction between critical thinking about the content of a source and evaluating the provenance of that source is not a useful one. To search is to engage with content intellectually. It is a distinction that has led to the creation of checklists, such as the CRAAP test (Blakeslee, 2004). I do not suggest that librarians have or need to have the same depth of disciplinary knowledge of academics, but rather that the lines between “content” and searching are enacted in each intra-activity and not firmly set. As Abbott (2014) points out, searching and researching “support each other, because finding by itself is just random surfing. The two processes much support each other” (p. xii).

A good search is not measured solely, if ever, in the number of results in the results list; “‘relevance’ is not a one-dimensional concept that can be captured by a list of [a user’s] favorite keywords” (Nardi & O’Day, 1999, p. 94). In our second intraview, Liam describes this work in terms of “expertise” (the only liaison librarian to use that term):

I don’t want to disrespect academics and say like, you know, I know how to teach, you know, despite the fact that you have years of experience and training that I don’t have, but at the end of the day librarians have a lot of expertise that they bring in, simply because it’s what they do day to day. They help students out, they figure out ways to help the students find what they need to do their assignments, you know, in an efficient manner, and yep, to me it’s kind of, I don’t, I probably wouldn’t use the word ‘training’ as much simply because I don’t think, it’s not like learning to use a specific tool because there’s so much of, so much of finding information is you know, it’s part science, part art. It’s basically what you can, what you can do with it. (Liam, intraview 2)

For Liam, the educational role of librarians' teaching is not simply how to find scholarly literature but that work of understanding the value of the sources based on engaging with the content.

Conclusion

Within the material-discursive mattering of librarian expertise in the reduction of the number of results, the multiple levels of expertise that Laurie and Liam bring to their teaching are made in/visible. Within this mattering, the boundaries of liaison librarian professional expertise are established by multiple agential cuts. These cuts are enacted by the enthusiasm for quantification in library and information science as a source of legitimacy, the limits enacted by academics and librarians to liaison librarian expertise, and the features on interfaces that materialise the measuring mechanism of library platforms. This interlude demonstrates the power of numbers that “are shaped by, and in turn shape, practices” (Piattoeva & Boden, 2020, p. 3).

The use of numbers is also an agential cut leveraging the power of numbers as “an important and persuasive public pedagogical force” (Piattoeva & Boden, 2020, p. 1), irrefutable evidence of the usefulness of search strategies taught by librarians. In the pedagogical encounters in this interlude, numbers produce knowledge. The platform emerges in this intra-activity as the site for judging the value of a search. Listing the number of results retrieved creates a problem, which the numbers, expertly managed by librarians, then solve. The numbers are alive, agentic and visible matterings of expertise in the material-discursive production of liaison librarian expertise. In this way, in this agentic enactment, the “outsourcing of much of the evaluation [of what is relevant] to the search algorithm itself” (Asher et al., 2013, p. 474). In the following chapter, these themes are developed. I focus on the knowledge produced and the material consequences for a student of the measuring mechanisms of citation trails.

Chapter 6: Liaison Librarian Expertise Mattering with Well-Used

Citation Trails

Introduction

The measuring mechanisms of library platforms enact and determine the value of bodies. Liaison librarian professional expertise is intimately entangled with this precise numerical measurement, rendered in/visible and enhanced. In this chapter, I investigate how other bodies materialise and knowledge is produced in this mattering of expertise. I explore pedagogical encounters from a meeting in which a liaison librarian, Lucy, explains the usefulness of citation trails in Google Scholar¹⁴ to a master's student, "Sam".

Students and novice researchers are introduced to searching for scholarly literature in classes and meetings with librarians. For some students, this may be their first introduction to citation trails. This teaching is not a simple transfer of skills. Rather, it is an agentic enactment of the boundaries of knowledge. Debates within scholarly literature suggest that tools such as citation counts and citation trails are not neutral and instead posit them as performative practices. In this chapter, I add to this conversation by contending that teaching by liaison librarians about citation counts is implicated in legitimising and promoting discourses that marginalise those excluded by the cuts enacted by these measuring devices. In doing so, I also contribute to discussions about the neutrality of libraries by demonstrating how the tools for measuring value through citations enact difference.

This chapter is based on one pedagogical encounter, which I discuss in two parts. I first provide a short overview of teaching about citation counts and then I discuss the encounter. I pay attention to the fine detail of the encounter's intra-activity to argue that citation trails are not only features of library platforms but are actively used by platform providers to maintain control of

¹⁴ See [glossary](#) entry for academic search engines.

scholarly communication. Finally, I discuss how citation counts could be matterings of possibilities in university libraries by looking at how students can be challenged to think beyond the immediate usefulness of citation trails to engage with how they reproduce dominant voices.

Directing Students to Well-Used Citation Trails

The use of citation trails, or citation tracking, is taught by librarians as a technique for finding scholarly literature and for following ideas or arguments over time. As a supplement to keyword searching, it is an important component in library education for students writing a literature review. The practice of following citation trails was enabled and transformed by citation counts in large citation indexes and academic search engines, such as Google Scholar. On university library websites, and in library literature, citation tracking is most often presented as a neutral tool for finding literature and placing it in context. The use of these lists of citing texts, together with reference lists within published texts, is known in library literature as following a “citation trail” (Ragains, 2013, p. 5), “citation tracking” (Mavodza, 2016) or “chaining” (Shields & Cugliari, 2017, para. 12). Laskin and Haller (2017) differentiate between a “backward citation trail” (p. 237), the use of reference lists, and a “source network” or “forward citation trail”, which focuses on texts that have cited a particular publication.

The use of citation trails is a standard feature of literature searching classes and is valued by librarians as a supplement to a core area of librarian expertise: keyword searching. As one library and information studies student explained after attending a class about citation indexing, “never before had I made the connection between doing citation research and helping library patrons ... how else to help when the initial resources found on a topic might be scarce?” (McLaughlin & Tucker, 2017, p. 238). This statement is an example of the value attached to the “practicality” (Hudson, 2017) and usefulness of tools in the quest for a good search.

Citation trails are presented in librarianship as sources of authority, as quantitative and visible recognition by peers of a researcher’s work. The use of them enables researchers and

students to “trace the roots of scholarly conversation” (Keener, 2019, p. 141), follow “research trends” (Mavodza, 2016, p. 6), and understand how ideas change and are developed (Shields & Cugliari, 2017). “Scholarship as conversation” is one of the six frames of the *Framework for Information Literacy for Higher Education* (Association of College and Research Libraries, 2016). Identification of relevant conversations and the citing of past research are listed as key practices for those wishing to develop “information literate abilities” (p. 21) in this area. A note of caution was raised that there are conversations that are closed to some and that authority is constructed, but the nature of these exclusions is not explored in depth in the Framework (Battista et al., 2015).

Citation counts in Google Scholar are not simple representations of authority, they are also productive. They matter in Google Scholar in in/visible ways, influencing the content and ordering of the results list (Gusenbauer, 2019, p. 183; Pasquale, 2015, p. 64; Rovira et al., 2019, p. 2). The exact nature of this influence is not fully understood due to the “opacity” (Sugimoto & Larivière, 2018, p. 35) of the search engine’s workings and relevance ranking algorithms. However, the reverse engineering of Google Scholar results indicates that the number of citations of a published text, along with other weighting, have a significant influence on which texts appear in the results list and how they are ordered (Beel & Gipp, 2009, p. 239; Rovira et al., 2019, p. 15; van Dijck, 2010, p. 580). As Van Dijck (2015) points out, popularity in Google Scholar is based on the number of clicks on the link to a published text, “ranked by an algorithm measuring the relative weight of sources as they are mentioned by random users” (p. 785), rather than the quality of the text.

Citation trails are therefore not just about the discovery of scholarly literature, they also render certain types of literature in/visible, as “we see what we have trained Google to show us and what Google gradually conditions us to expect” (Pasquale, 2015, p. 79). Citations are, “a rather successful reproductive technology, a way of reproducing the world around certain bodies” (Ahmed, 2013, para. 3). The power of this technology is in part due to the power of quantification and the undue authority attributed to algorithmic measurement (Pasquale, 2015, p. 8). The world

reproduced by this technology has layers of in/visibility. Not only are published texts with lower citation counts less likely to be found and read, but they are also read with less attention than highly cited articles (Teplitskiy et al., 2022, p. 10). Furthermore, patterns of citation are also reproduced, “even well-cited pieces of research tend to be cited for the same reasons” (Fuller, 2016, p. 82).

In Google Scholar, measurement matters in obvious and in/visible ways. The list of citing texts for a published text is accessed by clicking on a hyperlinked *Cited by* citation count. This link to a citation trail is a mattering. The value of the published text at the centre of a citation trail is clear before the link is clicked and is likely to be a deciding factor on whether the link is clicked or not (Teplitskiy et al., 2022). Larger citation counts entice those searching for scholarly literature both for what they offer in the number of texts that might be useful, but also for suggesting that these texts are authoritative, useful, and of a higher quality.

The ways in which Google Scholar prioritises highly cited material led Beel & Gipp (2009) to warn that if Google Scholar were to become as highly used as Google Search, then “there would be an even higher incentive for researchers to influence their article’s citation counts; for instance via self citations or citation alliances” (p. 239). Over a decade after their prediction, there is a proliferation of citation misdemeanours including, “citation cartels” (Phelps, 2022), “citation clubs” (Marar, 2022, p. 822), “citation stacking” (Heneberg, 2016), and “coercive citation and padded citation” (Fong & Wilhite, 2017, p. 2). Some of these, such as assessing articles for “citation potential” (Riley, 2022, p. 997) and “coercive citation” (Heneberg, 2016), is a result of pressure on journal editors to improve the metrics of their journal, demonstrating the power of these numbers to enact difference. In the following chapter, I examine citation counts mattering for an academic concerned about low citation counts, but in this chapter, I focus on how the apparently neutral use of citation counts, as the gateway to citation trails, enacts difference in an unexpected manner.

“I’m Very Personally Involved”

Sam, a master’s student in education, requests a meeting with Lucy, the liaison librarian for her discipline. Sam’s literature search is not progressing well, and she has a deadline approaching for completing her literature review. Sam and Lucy meet in a small meeting room in the library, which has one door into the library’s public space and another into staff work areas. It is a halfway space between the two, a type of isolation chamber, which is prioritised for meetings with students. The room contains a small desk with a PC and a table, at which Sam and Lucy sit side-by-side, looking at Lucy’s computer.

At the beginning of the meeting, Sam produces a mind map, which Lucy greets with enthusiasm. Immediately, however, Sam starts listing the challenges that led her to request the meeting. She is having trouble narrowing down her research question: “well, I’m, I think I’m pretty typical in that I’ve got such a broad-brush approach and I didn’t know how to hone it down”. She is also having trouble finding literature: “I kept thinking, what am I going to do with this subject because there’s not a lot of information out there”. She summarises her search requirements:

but what I want to resource was I want to work out what it is that’s supposedly unique about family day care, that may or may not be seen as a strength or a weakness. But, if we can’t, if I can’t identify what it is that’s quite specialised. (Sam, meeting)

Sam is researching her profession, family day care, about which she cares passionately. She frames this as a problem: “and the other problem I’ve got is that I’m very personally involved ... because I’m a family day care educator”. Sam’s absorption in her desire to justify her vocation drives the questions she asks and enacts search results as a mattering of the value of her profession. Each text matters in a deeply personal way, a source of ideas and the means of developing a focus in her research question, as she and her research become with them in this thinking work.

When describing the findings of an OECD reports, she notes, “we got two out of ten, ten being the highest number for quality childcare”. The use of “we” in this description materialises Sam

as both object and subject of her research; she is doubly implicated as a professional and student. The irony of me, a professional researching my profession, enacting agential cuts about another student researching her profession, is not lost on me. As I describe later, my experiences searching for literature on my topic and of teaching search created conflicting diffractive waves of impatience and sympathy.

Sam recounts her most recent attempts at searching:

um, so last night I started looking up some different ways of looking up family day care and putting some words after it ... and I came up with, but it wasn't a family day care one, but I took a copy of it on my USB. (Sam, meeting)

Sam is not a passive consumer of the published texts she finds using library platforms. The gathering, management and storage of the texts is part of the intra-activity of her becoming with her research questions. Sam rarely mentions a text she has found without articulating the material-discursive nature of these items in a results list. Later she describes a book she found: "but I've got this book, I found that online and I got it sent over from [campus] and it's the past, so it's helped me understand some decisions that were made by the government in 2009, which was a relief." Each text, and its safe storage, materialise a material-discursive triumph in the quest for professional legitimacy.

Sam's attempt to find "different ways of looking up family day care" shifts the focus of the meeting from the mind map and her loosely defined question to the question of search terms. She asks Lucy, "so, if I put in family day care unique possibilities or something like that, it's not going to be smart is it?" to which Lucy responds "unless the author has used that particular phrase to describe it". Just as Alex acted in Interlude 1, Lucy makes a quick decision about how much information she should provide Sam. Lucy keeps the explanation simple and then shepherds Sam towards discussing and testing alternative search terms.

“Why Do you Think That they Do That?”

Lucy and Sam make slow progress in finding literature. In an attempt to broaden the search for articles, Lucy demonstrates citation trails in Google Scholar as a “more rich way of searching rather than keyword searching.” Halfway through the meeting, when searching for books in the library’s discovery system, she returns to Google Scholar to demonstrate that the search engine can also be used to search for books. In the following section, the ensuing discussion about Google Scholar’s citation trails the first part of the pedagogical encounter is set out.

Lucy: Yeah and also too If that proves to be a useful book, don’t be afraid to use Google Scholar to see who’s read it and used it since

Sam: Ok [incorrect name], why do you think that they do that? But I guess that you need to be able to track what researchers are doing in a way that’s clearly defined

Lucy: And they need to track what, how people are using their work because that’s how they measure [inaudible] research performance, how many people are reading and using your work

Sam: Really?

Lucy: Yes

Sam: And that’s important for their academic

Lucy: Standing

Sam: Yes

Lucy: Yes

Sam: Ok

Lucy: So, um, yeah, so, it's used for lots of different things but it's very helpful for people who want to track how something has changed over time, or how that things are sort of, where a fork's occurred, where people have gone one way or the other so --

Sam begins to answer her own question and Lucy's answer is an attempt to clarify that point and to point out how citation trails could be useful to Sam. Her explanation is a textbook description of the usefulness of citation trails as described in library literature. It has two parts. Firstly, citation trails provide both qualitative and quantitative measures of research performance and prestige. For academics and those measuring academic performance, this takes the form of knowing, "how people are using their work" and "how many people are reading and using your work". In this description, citation numbers identify published texts and ideas that are both "well used [and] used well" (Ahmed, 2019, p. 142). It is this use that bestows recognition and authority; authoritative voices have "academic standing". Secondly, citation trails are a means of understanding the flows and direction of arguments in scholarly conversations. A "useful book", one that Sam can use in her literature review, was used by others, and the citation trail will enable her to understand this use.

Lucy's description uses organic, collaborative, and collegial language. The terms she uses evoke movement down paths of knowledge: citation trails enable someone to "track" changes in ideas, to see "where a fork's occurred". This discourse evokes movement across the landscape and enacts citation practices as reflections of what is happening rather than as performative. The traditional library definition of citation trails being neutral and natural matters, both in what is said and what is not said. The absence of a discussion of what is excluded in citation practices performs and sediments "citational privilege" (Ahmed, 2017, p. 150). Ahmed (2019) interrogates the idea of the organic, natural authority of citation trails and the consequences of such a view:

you are asked to follow the well-trodden paths of citation, to cite properly as to cite those deemed to have already the most influence. The more a path is used, the more a path is used. The more he is cited, the more he is cited. (p. 167)

The exclusion enacted at the search box discussed in Interlude 1 is reinforced in citation trails, with dominant voices further amplified.

The Interruption

Lucy's description might have been enough to help Sam understand how Google Scholar citation trails could help her in her literature search before they moved on to other topics. However, Sam interrupts Lucy and provides a powerful expression of what it feels like to be on the other side of the popularity ranking of Google Scholar (van Dijck, 2015). Below is the second part of the pedagogical encounter, including Lucy's last statement from the first part of the encounter to provide context.

Lucy: So, um, yeah, so, it's used for lots of different things but it's very helpful for people who want to track how something has changed over time, or how that things are sort of, where a fork's occurred, where people have gone one way or the other so --

Sam: -- Yeah, and interestingly enough you know what I've read all through this is that part of the reason that, um, family day care, um, you know scholars haven't taken it up, they haven't seen it as being important enough

Lucy: Yes

Sam: So, there's a gap because of that, which is fine for me, it just happens to be my personal interest

Lucy: Yep

Sam: And I'm you know sick of being demoted by people because oh you know is that what you do?

Lucy: Yes

Sam: I go, well I'm really good at it [laughs]

Lucy: [laughs] And it does require a qualification

Sam: Yes

Lucy: No, so it's um, yeah, it's worth, um, having a dig through and if you have someone who is working in that area um or if someone who has written a lot or done a lot of research in that area, or even a little bit [laughs]

In this part of the encounter, Sam relates Lucy's explanation about citation practices to her topic, which she feels is neglected by academics because, "they haven't seen it as being important enough". This is a simple explanation; the measurement enacted in Google Scholar equates a topic not highly cited with one not read and discussed because it is perceived by academics to have less value. However, this does not capture the multiple agential cuts enacted in the measuring of citation trails. Earlier, I labelled Sam's comments about the exclusion of her profession and her topic as an *interruption*. During the meeting, Sam's words seemed to me to be just that. I felt frustrated that Sam did not see that the skills Lucy was trying to teach her would enable her to change what she saw in the search results. Lucy also seems to think this as she shepherds Sam back to the purpose of the meeting: learning particular skills.

However, I now use the term *interruption* in a different way. Sam's interruption is a *disturbance*, not just because it stops Lucy mid-sentence, but because it creates a diffraction pattern, which "maps where the effects of difference appear" (Haraway, 1989, p. 300). It is a stone cast into the pond of the neutral, aspirational institutional discourse about citations, creating diffraction patterns that disturb and expose. Ahmed (2019) notes that "those who are not quite at home – in a body, a discipline, a world – have much to teach us about how things are built, that is to say, have much to teach us about the uses of use" (p. 19). In the following section of this chapter, I explore what we can learn about librarian professional expertise from how Sam and her topic are not comfortably housed in the library and the university.

Sam as “Family Day Care Educator”

Sam links the way she is perceived in social settings as a body of less value, a person with a profession of lower status, with the value of her topic as it materialises in citation trails. This is evident in the literature on early childhood education and care, with concerns raised about the low value of the sector. Issues in Australia include a rapid turnover of staff, low levels of morale and pay, and high levels of stress (Karaolis & Little, 2022; L. McKnight & Robertson, 2022; Thorpe et al., 2020). It is an in/visible and female-dominated profession (Rogers, 2022), whose work with very young children is misunderstood and undervalued (B. Davis & Dunn, 2019, p. 252).

Some of the issues above are related to perceptions about the relative value of education and care in early childhood work, something particularly relevant to family day care workers. The distinction between caring duties and education in policy documents about the sector over the years as part of the “edu-quality” push (Hunkin, 2021, p. 202) reinforced the binary. Caring is perceived as separate from, easier, and less professional than education (Redman et al., 2021, p. 2119) and discourses of love and happiness are muted (Rouse & Hadley, 2018, p. 167). Research indicates that this is not an issue confined to Australia (Rentzou, 2019; Schachter et al., 2022).

The change from designating workers as *educators* instead of *carers* was part of the professionalisation and marketisation of family day care (Cook et al., 2013; Cortis et al., 2022). The competing discourses about levels of professionalism, education and the nature of the work “produce and reproduce tensions between ‘women’s work’ and ‘masculine professionalism’” (Cook et al., 2013, p. 122). This is a privileging over what can easily be measured with what falls between these measures; that is, “the “masculine”, or what is serious, scientific, rigorous, rational, measurable, finite, cleanly defined, standardised, programmable, instrumental and technical is valued above the messy, woolly, grubby world of the so-called ‘feminine’” (L. McKnight & Robertson, 2022, para. 7). Interestingly, the former attributes listed here are the same notions that are found on the well-trodden citation paths, particularly amongst “citation laureates” (Clarivate, 2021).

Sam describes herself as a “family day care educator” and laments the loss of the “educational bits” that the pursuit of profit can cause to be lost. She and her profession are not merely objects of research, they are part of a pattern of “citational privilege” (Ahmed, 2017, p. 150), entangled with other exclusions, which are structural rather than individual. It is not simply a matter of Sam learning more and trying harder, as “we cannot cite our way to equality” (Carlier et al., 2022, para. 10). My expectation that Sam learns the rules and skills to win at the game only reinforces the exclusion. There is long-standing interest amongst librarians in meeting the needs of the diverse cohort of students coming to universities, but if this involves merely teaching the rules of the game it risks isolating rather than helping students.

I emphasise here the institutional nature of this exclusion. Lucy was proactive about gender, race and disability issues in her teaching and intraview. In my role as a librarian, I am part of this exclusion too. As Ahmed (2017) points out in a discussion of whiteness, not being intended is the point of how citational privilege operates and flourishes:

citational privilege: when you do not need to intend your own reproduction. Once something has been reproduced, you do not need to intend its reproduction. You have to do more not to reproduce whiteness than not to intend to reproduce whiteness. Things tend to fall how they have tended to fall unless we try to stop things from falling that way. An intending is required given this tending, given this tendency. (p. 150)

The neutral playing field assumed in discussions of citation trails ensures that the exclusion enacted in scholarly communication is in/visible. It is based on “a goodwill assumption that things have just fallen like that, the way a book might fall open at a page, and that it could just as easily fall another way, on another occasion” (Ahmed, 2017, p. 149). However, as Ahmed notes, a book often opens at the pages most read. The more a citation trail is used, the easier it is to use without considering alternatives. The more a neutral story is told, the harder it is to imagine how things could be otherwise.

When faced with tepid or disdainful reactions to her profession, Sam responds “well I’m really good at it”. Similarly, her response to her topic’s citation trail is, “so there’s a gap, which is fine for me, it just happens to be my personal interest”. Here Sam emerges as different subjects, both within and without the measuring apparatus, at the same time hopeful and defiant. There seems to be a note of bravado in both of these responses. The cut that enacts a lack of value also materialises Sam’s research as filling a gap. In this case, finding a gap, the quest of many literature reviews, materialises less as an opportunity for research that will astound the world and more as a consolation prize for exclusion. Published texts that Sam may produce could suffer the same exclusion as the texts she is searching for, as a further reinforcement of exclusion.

Lucy attempts some form of reassurance, a tidying up of the enactment of exclusion, before returning to the business of searching, by adding “and it does require a qualification”. The cut enacted by this comment brings the boundaries of an acceptably qualified professional within the measuring apparatus of the early childhood and care sector. The cut also measures the success and prestige of the university and its library through the categorisation of “its apprentices, as well as its dropouts and those that never attended” (Bales, 2016, p. 13).

Lucy then returns to Google Scholar, summarising the usefulness of citation trails:

no, so it’s um, yeah it’s worth, um, having a dig through and if you have someone who is working in that area um or if someone who has written a lot or done a lot of research in that area, or even a little bit [laughs].

Lucy’s qualification of the standard discourse about citation trails, “or even a little bit”, is a reminder for Sam of how her topic places her outside regular research practices. Citation trails are not a solution to exclusion, but another reminder of how pervasive exclusion is. This mattering emerges in the low citation counts and low numbers of search results, not only despite Lucy’s determined efforts and encouragement but also as part of those efforts and encouragement.

In both the humour and the encouragement, Sam's topic, its low numbers of search results and the low citation counts on the screen in front of them, materialises as hard work. As Lucy later says, "so it might take a little bit of playing around, but if you can find a few good ones". The "little bit of playing around" is the extra work required of researchers whose knowledges and bodies do not fit within the citation trails of recognised authority. Travelling a path less travelled, "you can be dissuaded by perpetual reminders of how hard a route would be" (Ahmed, 2019, p. 45). The material-discursive entanglements of the meeting are an invitation to give up and move onto well-used paths.

Useful Knowledge and Knowledge-Producing Usefulness

In this section, I expand on the measuring of value in citation trails by revisiting the theme of the explicit measurement of results introduced in Interlude 2. Not only is this measurement of citation trails enabled by platforms, but it is also encouraged and enabled by them, which is part of the production of the "measuring infrastructure" (Kornberger et al., 2017) of the university. In the meeting, this measurement matters as a validation of the usefulness of what Lucy is teaching, and therefore her expertise and the usefulness of the university library.

Earlier in the meeting, when searching Google Scholar for articles, Lucy struggled to find articles with large enough citation counts to demonstrate the Google Scholar feature, *Search within citing articles*, which enables keyword searches of articles and books citing a particular text.

Lucy: Yep, so I'm just going to search for that article, cause underneath it, ok so that wasn't that rich, but [laughs] ... you can see, cited by two

Sam: Right

Lucy: So, you can see who has written about it since, which is not many people, um but this one was cited by six ... um, and if you get, usually there's more than six popping up, so um

[pause] depending on what your focus is in family day care, you can also do a quick tick and search within citing articles. If there was more than six, if there was, say, 600 ...

Lucy describes a citation trail as not “rich” because it only contains two citations. Another trail only has six citations, being “not many people”. Lucy points out, “usually there’s more than six popping up” and speaks wistfully of a citation count of 600, alongside which six is clearly inadequate. In this material-discursive entanglement, librarian expertise is mutually constituted with prestige, authority, usefulness and understanding of searching for scholarly literature. Lucy’s wish for large citation counts in the search results is understandable. *Search within citing articles* is at its most useful with high numbers of citing texts. The abstracts of six articles can be quickly scanned to decide whether a particular text will be useful, rendering the feature less obviously useful. The ability of academic search engines and databases of scholarly literature to search and retrieve vast numbers of texts and bibliographic data invites, reinforces, and requires particular views of searching for literature and the value of that literature. Features created to enable searching within large numbers of texts normalise these large numbers, materialising lower numbers as some sort of failure. As described in Interlude 2, the application of librarian expertise to narrow down or refine large numbers of search results is an important feature of liaison librarian professional expertise.

Within the intra-activity of librarians’ classes and discussions with students and researchers, power, authority, stability and quantitative conceptions of value are sedimented down and reinforced. University libraries materialise and reproduce dominant discourses about citation counts. In considering how librarian expertise is entangled with these conceptions of knowledge and the affordances of platforms, Ahmed’s (2019) notion of useful knowledge shifts the view from an individual to larger infrastructures: “useful knowledge was not simply an idea that was in circulation, it involved organizing and administrating” (p. 108).

Within the intra-activity of Lucy’s description of citation trails, librarian expertise in searching is an apparatus. This apparatus is the citations as foundations of authority in academic

conversations, enacting prestige in university rankings and success for students in their (hopefully successful) quest for sources. These sources are incorporated in a literature review in yet another thesis or article, which one day might be listed in Google Scholar as a well-cited published text. Ahmed (2019) emphasises that none of this is random, as “we are reminded that ideas do not travel by themselves: ideas are picked up, put into papers, passed around, as an effect of work” (p. 108). The work of liaison librarians is part of the administration of citation trails as sources of authority, the “maintenance work” (Ahmed, 2019, p. 40) of keeping governing infrastructures “usable” (p. 42). Citational privilege is maintained both by what is said by librarians in classes and meetings and what is not said.

Thinking Otherwise about Citation Trails

It is worthwhile to imagine what library instruction could become if educating library users about the information landscape was understood to include the politics of scholarly communication. Overgrown citation trails are a materialising of the challenges facing early childhood in general, and family day care in particular, which were outlined earlier. Citational politics are central to Sam’s research rather than a limitation to her search for scholarly literature.

As the meeting is closing, Sam tells Lucy about a conversation with a visiting professor from the United Kingdom:

I went up and introduced myself because I just ordered a book from the UK written by her because I was interested in it um, and I just said to her, I’ve used it a lot in my work and I just started talking about Australia. And she just looked at me and said you know, it hasn’t improved much and I don’t see it improving much because of, it’s because of that neoliberal, you know US privatisation standard where it’s profit and you know, with profits, you start thinking, well how important are these things, these educational bits as opposed to how much money I’m going to make ...

For Sam, the texts she finds, owns, and reads are “academic bricks ... the materials through which, from which, we create our dwellings” (Ahmed, 2017, p. 16). Each one matters, producing the activist family day care educator. The book written by the visiting academic, which in a small list of results materialises a topic not “taken up”, matters in the company of its author as a token of a shared struggle.

In Sam’s recounting of the meeting, vague entities such as “neoliberal”, “US privatisation standard”, and “profits” are responsible for the exclusion of her topic. Both neoliberalism (Sims, 2017; Sims & Tiko, 2016; Sims & Waniganayake, 2015) and the marketisation and privatisation of family day care (Bauters & Vandebroek, 2017; Cortis et al., 2022; Penn, 2014) are identified in the literature as drivers of change in the early childhood sector. These ideas have come to host early childhood education, magnified through the value placed on quantified research and measurement. Family day care finds itself an uneasy visitor in this space. Such ideas could have been useful starting points as search terms. The literature Sam found could have provided vocabulary and ideas to focus her research topic.

The question Sam starts the meeting with, “what it is that’s supposedly unique about family day care, that may or may not be seen as a strength or a weakness” is vague. However, unpacking how strengths and weaknesses are measured, and by whom, could have provided a starting point for searching. It would be a means of discovering research about the larger issues of gender, professionalisation, and marketisation earlier in the meeting, rather than as a side note at the end of it. In his work about research using library collections, Abbott (2014) notes, “the central problem in library work wasn’t so much finding things as it was knowing what to look for” (p. xii). Lucy’s exploration of the mind map, deflected by Sam’s question about keywords, could have enabled more discussion about what Sam was looking for. The agential cut enacted by Sam’s question meant that most of the meeting focuses on “finding things”.

Lucy is a dynamic liaison librarian to observe, as she is confident, relishes engaging with ideas, and moves beyond the technicalities of searching to talk about how library technologies could be integrated into students' current practices. In a class for master's students, I watched her discuss a student's topic to draw out the central ideas. However, what I am focused on here is not a critique of an individual librarian's teaching, but rather how librarian professional expertise emerges within the intra-activity of these pedagogical encounters. As identified in the interludes, there is a tension between the two aspects of searching identified by Abbott (2014) in liaison librarians' teaching. The understanding that librarians' work is primarily helping people find information, and that this is a neutral, technical activity, leads to tools-focussed discussions.

The boundaries of liaison librarian expertise in searching are enacted within the agential cuts of the affordances of library technologies, how they are used, and how their usefulness is taught. In the pedagogical encounters in this chapter, Lucy's expertise in teaching how to search for scholarly literature and her willingness to engage with ideas are entangled inextricably with, and limited by, material-discursive practices. That is, the practices of precisely measuring value through citation counts and their citation trails. The numbers are both an enactment of, and productive of, the value of published texts and their authors: "the design of the metric is itself a product of the boundary-setting practices and the configurations embedded in it" (Madsen, 2021, p. 78). Lucy's expertise is enacted within understanding of the use and interpretation of these numbers. The certainty that numbers bring, and the reassurance of following established, authoritative paths enable them to make authoritative statements as experts.

Librarian Maria Accardi (2010) suggests that the in/visibility of information literacy and the "marginal status" (p. 252) of librarians who teach within the university affords them a unique opportunity to resist some of these practices. It also allows for experimenting with the introduction of ideas that question commonly held assumptions about citation practices. In some universities, librarians and academics collaborated to create citation guides for students to ask some of these

questions; for example, at the University of Maastricht (FEM, 2021). Liaison librarians can also point students to the work done by citation clubs, such as *Feminist Educators Against Sexism* (Feminist Educators Against Sexism, 2021), and movements such as *Cite Black Women* (Craven, 2021; C. A. Smith, 2018).

Similarly, introducing undergraduate students to citation and referencing skills is not only about the placement of a comma in the right place in a reference but also as something embedded in epistemological practices (Russell et al., 2022, p. 66), as a starting point. While small moments of resistance may be made by librarians, the structures remain. As Ahmed (2019) notes, “in order to craft new knowledge, we might have to cite differently: citation as how we can refuse to be erased” (p. 212). In this call to action, the possible activities listed in this paragraph seem small, but Ahmed’s analogy of the path of citations reminds us that a path becomes and remains well-worn over time by the action of many individual steps. This is both a reminder that business-as-usual approaches to citation “are normative practices that perpetuate a system of exclusion” (Craven, 2021, p. 121) and also a challenge for university libraries to think of ways to join moves to forge new citation trails.

Conclusion

In this chapter, I explored the material-discursive and agentic nature of liaison librarian professional expertise. Within the pedagogical encounters, multiple cuts are enacted. Focusing on the ebb and flow of agency within intra-activity provides a picture of waves diffracting, sometimes reinforcing and other times cancelling each other. The material-discursive nature of citation practices is evident. “The common practice of displaying status signals like citation counts alongside papers in search and discovery contexts” (Teplitskiy et al., 2022, p. 10) means that they are inescapable. Yet, having this explicitly discussed as a part of knowledge production in the university acknowledged what matters and produces a different type of success in searching.

I also expanded on the ethical dimensions of the results list, introduced in the second interlude. I explored the intra-activity of the meeting between a student and a liaison librarian in

which the politics of citation disrupted the normal materialising of citation trails in library classes and meetings. The performative nature of the measurement of citation trails enacts Sam and her topic as less valued than other bodies. The focus on keywords, initiated by Sam and reinforced by online searching, means that her half-formed research topic remains exactly that. The exclusion that is enacted is not connected to other “academic bricks” (Ahmed, 2017, p. 16) so that, despite Lucy’s expertise, goodwill, and determination to find scholarly literature, Sam is not housed in the library.

The pedagogical encounters in the meeting between Lucy and Sam materialise the performative nature of scholarly communication. Citation counts that link to citation trails in academic search engines, citation indexes, and databases are not neutral and nor are they simply gateways to additional scholarly literature. Liaison librarians’ teaching, focused on helping students how to find scholarly literature, is not separate from what is enacted by these citation counts. Perceiving them to be neutral makes in/visible effects on access to published texts, as seen in Interlude 1, and the matterings and exclusions enacted by citation practices. Useful knowledge, measured by success in finding scholarly literature, is only partially useful if questions about how this literature came to be found are not addressed. The question of usefulness needs to be reconfigured to ask, “who and what am I affirming through citational practices?” (Truman, 2022, p. 25). In the following chapter, citation counts are explored in more depth.

Chapter 7: Liaison Librarian Expertise Mattering in the Measuring University

Introduction

The measuring mechanisms of library databases materialise bodies of differing value. They make some in/visible and others are given prominence and matter more. The material consequences of this mattering are powerful and liaison librarians are entangled in these consequences. The previous two chapters and interludes explored the role of librarians teaching students and researchers how to find scholarly literature. In this chapter, I focus on the work of liaison librarians in providing research support. As discussed in Chapter 4B, research support is a general term covering the provision of advice to academics about the complexities of scholarly communication. The pedagogical encounters I discuss are from a meeting in which a liaison librarian, Lesley, provides advice to an academic, Sandy, about research metrics.

This chapter expands on the exploration of citations begun in the previous chapter, by focusing on the use of citation counts in citation indices¹⁵ to measure value in academia. The performative nature of citation counts, the shame they produce, and issues with reliance on citations to measure academic productivity have all received considerable attention (Cannon & Flint, 2021; Mayes & Wolfe, 2020; L. McKnight, 2020; Pardo-Guerra, 2022; Staunæs & Brøgger, 2020; Wolfe & Mayes, 2019). The part that liaison librarians play in this measurement is in/visible. In this chapter, I explore the ways in which librarian expertise matters together with the material effects of the measuring metrics of the citation counts.

I begin with two pedagogical encounters from a meeting in which a liaison librarian assists an academic with the use of citation indices. These encounters are read diffractively. In them

¹⁵ See [glossary](#)

in/visible and useful librarian professional expertise and academic shame are iteratively reconfigured. I discuss how in these encounters the academic's shame at the low number of citations her work has received materialises in the meeting. I then explore how citation indices materialise the value of the labour and time of both the liaison librarian and the academic in their fulfilment of separate yet entwined obligations within the platform university. I then discuss how this labour is both "emotion work" or "emotional labor" (Hochschild, 2012) for liaison librarians and also a new area of expertise, which is highly visible, and valued by the University. I conclude by bringing the themes of all three chapters together by arguing that platforms are changing the relationship between academics and librarians, disrupting notions of who is hosting whom (Ahmed 2019).

The Mattering Power within Arrangements of Bodies

In this chapter, I intra-act with data from pedagogical encounters that occur in a meeting between Lesley, a liaison librarian, and "Sandy", a researcher in psychology. The purpose of the meeting, which takes place in Sandy's office, is for Lesley to provide technical support for problems Sandy has encountered using citation indices. The two previously discussed some of these issues by email, but this is their first meeting. Before the meeting, Lesley sent Sandy a checklist and most of this was completed. They work through particular problems that Sandy was unable to solve alone. Much of the problems involve ensuring that the information in the citation index is accurate and up to date. Lesley is experienced and knowledgeable, largely self-taught in her areas of technical expertise, and clearly enjoys this work. In our intraview, she described her role as "my dream job".

Lesley's expertise emerges with and is "produced through ... material, structural, temporal apparatuses" (Mayes, 2019a, p. 514). In contrast to other meetings I observed, Lesley does not use her laptop to demonstrate how the indices and search engines function but watches Sandy work on her own desktop computer. The seating arrangements for the meeting materialise the power of Sandy to be the arbiter of what constitutes useful advice. The desk is an L-shape, with the computer

monitor and keyboard placed at the interior corner of its two sections. This means that Sandy has her back to Lesley most of the time, who perches rather awkwardly behind her on a chair, peering over her shoulder.

The arrangement of bodies matters not as a fixed background upon which the discussion of Lesley and Sandy plays out, nor simply as a reflection of hierarchies in the university. Rather, it is part of the iterative, agentic enactments in the “ongoing process of differential mattering” (Barad, 2007, p. 180) of bodies. These bodies cannot be divided neatly into humans who are placed around furniture and the tools they use. Bodies materialise together with the “resolutely mundane within everyday pedagogic practice” (Taylor, 2013, p. 689) in in/visible ways in the use of citation indices, and the devices upon which they are modified and viewed. As Carrigan and Fatsis (2021) note:

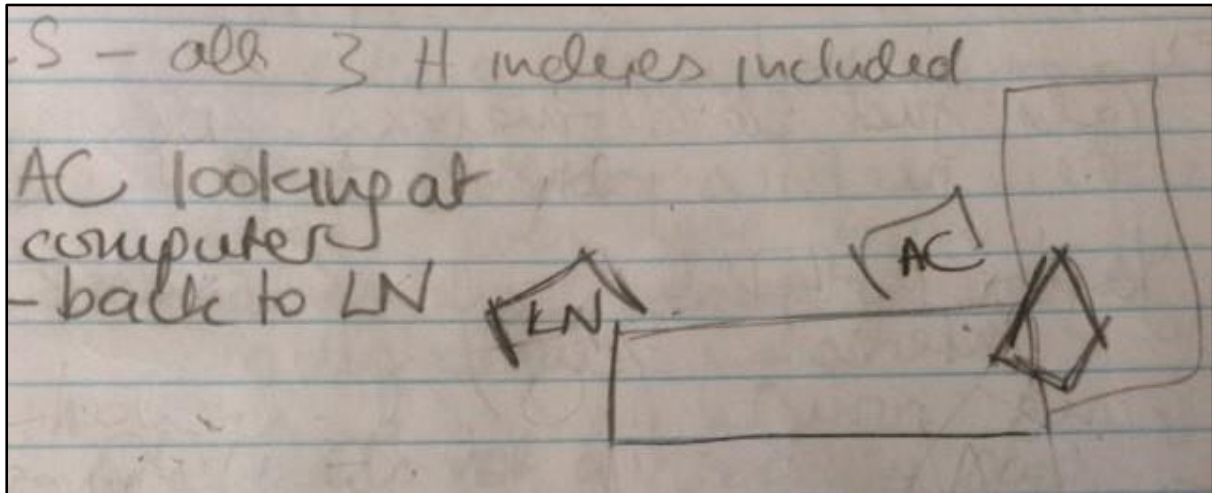
there is a profound mundanity to matters like working email, reliable Wi-Fi, the capacity to print or access to journals. But this mundanity is the ground on which the achievements, realized or otherwise, anchoring our life as a whole begin to take shape. (p. 133)

The arrangement of bodies around Sandy’s monitor materialises the limited options for two people to easily look at one medium-sized screen in Sandy’s office configuration. It is also a mattering of the limits of access that another person has to Sandy’s personal account in the indices and search engines. The setup of the desk, and the absence of any concessions on Sandy’s part that might provide Lesley with a better view, matter.

As I watched the meeting, I felt empathy for Lesley left sitting in such an awkward position. So much so that I drew the rough sketch below of the arrangement of the furniture and noted down “AC [academic] *looking at computer, back to LN* [librarian]” (Lesley, Sandy meeting, notes). Lesley and Sandy both had their backs to a large window, and I was seated in front of Sandy’s desk facing the window. In this position, I am unable to see the screen, but this shifts my focus to the phenomena of Sandy as academic and Lesley as librarian, produced together with the screen within this intra-activity. It is a different view and one that changes the cuts I make generating data. Unable

to see the production of numbers on the screen and how each interface is used, I listen. In my listening, Lesley's professional expertise matters less to me in terms of how the numbers are produced and more in the bodies these numbers produce.

Figure 12 *Bodies Materialising within Intra-Activity*



Sandy's cordiality at the end of the meeting, "you've been incredibly helpful", seems poor compensation for the work Lesley expended managing Sandy's behaviour. It is hard to not see status and entangled with the arrangement of bodies. I wonder if Sandy would have behaved in the same way if the Dean or a colleague were in Lesley's place. Similarly, I wonder if Lesley would have accepted without comment such an uncomfortable and less-than-powerful position in a meeting with an undergraduate.

The setup is in marked contrast to Lesley's other meetings and classes that I observed. In these, she is in control and offers genial yet authoritative instructions. In another meeting with an academic, "Cameron", about metrics, Lesley explicitly directs the flow of events, "I'm going to get you to do this after me so you get some practice" (Lesley, Cameron, meeting). She later gives the academic permission to try for herself, "so, I'm going to hand the reins over to you" (Lesley, Cameron, meeting). This meeting takes place in a library meeting room, in which Lesley and Cameron sit side by side at a table. They both have their own devices and can view each other's screens with reasonable ease. Teaching a class of Honours students, Lesley sits beside the academic

leading the cohort and the two share easy exchanges, clarifying and answering each other's questions. In our intraview later, the academic is clear about, and grateful for, the expertise that Lesley brings. The seating arrangements and ownership of the keyboard both materialise and are matterings of power.

Within the mutual constitution of the material and discursive, the arrangement of bodies in the meeting has "discursive consequences" (Barad, 2007, p. 225). Unable to influence the direction of the action, Lesley resorts to offering prompts to Sandy's back, trying to direct her actions at the keyboard; for example, "if we go to Scopus now, we may as well". Here the second phrase is an attempt to encourage Sandy to action, as she has not responded to the initial suggestion. Sandy does not always heed these suggestions, sometimes acting as if Lesley has not spoken as she jumps between the multiple open tabs in her browser.

As I elaborate through this chapter, the positioning of bodies is not only a materialisation of the configuration of devices and furniture and the positioning of bodies with the hierarchies of academia. It is also the mattering of bodies within the measuring mechanisms of the platform within the institutional requirements, which are enabled through the citation index. Citation indices are colonised by measurement. They were not initially created to measure the value of published texts. The first scientific citation index was based on the legal citation index, Shepard's Citations, which was developed in the late nineteenth century (Sugimoto & Larivière, 2018, p. 22). The purpose of Shepard's Citations was to show connections between legal cases. Eugene Garfield proposed his new index of scientific citations with the same intention, to enable researchers to follow conceptual links and to find relevant research: "the primary intention was retrieval, rather than measurement of research" (Sugimoto & Larivière, 2018, p. 23). Like other technologies in higher education, citation indexes continue to be "politically re-purposed as technologies of performance measurement, comparison and competition" (Williamson, 2019a, p. 2). Belief in the value of this measurement, and institutional requirements responding to the "Provost candy" (Galvan, 2016, para. 9) of numbers

that will improve rankings, emerge together with “the competitive pressure, the vanity and eagerness to perform of each academic” (Staunæs & Brøgger, 2020, p. 435), and the university library’s quest for legitimacy. These aspects position Lesley and Sandy as particular subjects even before the meeting begins.

“No Shame in Front of Librarians”

Digital media platforms thrive on never or rarely forgetting. (Noble, 2019, p. 12)

Sandy is unhappy with some of the citation counts on the screen in front of her. Her disappointment and sense of failure emerge within intra-activity throughout the meeting. This is shame that is open for all to see and not able to be erased, only raised. The encounters below are two of many throughout the meeting in which Sandy’s shame materialises.

Pedagogical Encounter A

Sandy: It makes, you see, I’ve got articles that have never been cited ...

Lesley: Targeting topics that are going to be cited ... you can see why promoting work is important ... lot of good work

Sandy: Yes, but had no impact ...

Lesley: I have some resources about promoting ... I’ll send some links

Pedagogical Encounter B

Lesley: No shame in front of librarians, we haven’t published anything

Sandy: That’s my job, you would have different KPIs

Both these encounters are redolent with Sandy’s feelings of failure and shame. Citation counts are public measurements of success and failure (Cannon & Flint, 2021; Staunæs & Brøgger, 2020; Wolfe & Mayes, 2019) and judgements about the value of academics and their work are intimately

entangled with the measurement performed by citation indices. In Encounter A, Sandy's expression of her disappointment and concern at the lack of citations for some of her published texts, "I've had no impact", materialises a body without impact. It is not the published texts but herself shamed in the citation counts. Lucinda McKnight (2020) describes the bodily production of shame in the absence of citations:

I had started to feel something when I logged in, an excess of something, beyond surliness, beyond queasiness, but reminiscent of both. Centrally on my screen was an empty publication graph and logging in was becoming a shameful ritual of public humiliation.

Students could see my empty axes writ large on the wall. (p. 508)

Watching the graph update to reflect a win, McKnight reflects on the other side of this shame: validation. Citation counts are "naming-shaming-faming mechanisms" (Brøgger, 2019, p. 4). Their numbers are a "cutting together-apart" (Barad, 2014, p. 168) producing and entrapping bodies (Wolfe & Mayes, 2019, p. 285). Liaison librarians work in this area cannot be considered neutral.

Time and space are reconfigured in the numbers on Sandy's screen. The lack of citations enact the value of decisions she made regarding her career and research topics and reconfigures her usefulness within the university, her past actions, and her future choices (Cannon & Flint, 2021, p. 77) as they "anticipate the academic [she] can become" (Staunæs & Brøgger, 2020, p. 2). Within the intra-activity of the meeting, the numbers enact the material-discursive production of the academic who has no impact, a privately expressed admission of publicly visible shame.

Lesley attempts kindly intentioned, humorous comfort to Sandy's statement, "no shame in front of librarians, we haven't published anything". The response is awkward because this is an awkward situation, there is very little that Lesley can say to repackage this absence of citations that within the university's measuring infrastructure are so clearly valued. Lesley's expertise is entangled with the performance of emotional labour, a mattering of the "helping ethos" (Austin & Bhandol, 2013, p. 23) that permeates librarian work. Emotion work is not an addition to Lesley's role, but an

essential part. However, the labour of “building an invisible lattice of support through emotion work” (Logsdon et al., 2017, p. 164) is in/visible. Discussions about burnout in libraries address levels of work (Acadia & Vogt, 2022; Kaufman et al., 2022), but do not discuss how different aspects of librarians’ role may add to this.

There is no tidy means of measuring the work that Lesley is engaged in. Throughout the meeting, Lesley, “performing authentic enthusiasm” (Logsdon et al., 2017, p. 162), is relentlessly patient and positive, as she encourages and cajoles Sandy to remain engaged. Her technical expertise is negotiated with Sandy’s willingness to accept this expertise: in this meeting, it is in/visible until Sandy enacts an agential cut by deeming it useful and applying it. In addition, Lesley’s role is to promote the efficient use of measurements in the citation indices. The need to ensure satisfied users means that Lesley is more than a technical expert. She must also manage Sandy’s reactions to the measurement and the demands of the tasks she must perform.

Sandy’s less-than-generous response to Lesley’s attempt at comfort is, “that’s my job, you would have different KPIs”. In this comment, Sandy acknowledges the place citation counts have for an academic, as they are part of the ongoing scholarly conversation. They are inscribed in the key performance indicators in yet another platform that the university uses to manage academic performance. In her comment, Sandy also puts Lesley in her place, rejecting the offer of comfort. It is an agential cut enacting difference between her role as an academic producing citable published texts and the work of librarians. However, Sandy’s enactment of the boundaries between the roles of librarians and academics, with the use of business language, *KPIs*, at the same time enacts another cut. This cut materialises the work of both academics and librarians together as “fundamentally computable” (Z. Kaiser, 2018, para. 1) with demands to demonstrate value through citation counts within the regulatory infrastructure of the university.

This meeting is a mattering of both visible and in/visible labour in the measuring university. On an obvious level, it is about two employees in the university getting together to solve problems.

In contrast to the meetings and classes discussed in the previous two chapters, within the intra-activity of these pedagogical encounters librarian professional expertise is entangled with that of another employee of the university needing to meet the expectations of their employer. Librarians and academics both have KPIs related to the measurement of published texts and their citations. In this respect, the meeting could be seen as a mutually useful event with the librarian applying her expertise to help the academic ensure accurate, and preferably higher, citation counts. The work of each of them is a useful contribution to the enhancement of the university's reputation.

The cut enacted by the "assemblages of soft governance" (Brøgger, 2018) of academic life, materialised in KPIs, performs different subjectivities. Within the intra-activity of the meeting, Lesley's expertise is in/visible unless Sandy finds it useful. After the meeting, when other measures are being calculated, the meeting will materialise as a statistic of library activities, mattering as a measure of the value of the library and librarian and their contribution towards larger institutional goals. As a number on a spreadsheet, it makes visible the in/visible librarian of library and information studies literature, whose value is an ongoing negotiation. Expectations within this assemblage are an opportunity for librarians to fulfil their own KPIs and those of the library (T. Wilson, 2017).

The quest for legitimacy in academia demands that university library senior staff pay close attention to the strategic directions of the institution. As described in Chapter 4A, new technologies and the latest educational catchphrase produce affirmations of how well-suited libraries are to support the cause and demand for librarians to learn new skills to prove this. In this encounter, the measuring of the value of Lesley's expertise emerges together with Sandy's low citations and therefore also with the shame of that failure to meet institutional expectations regarding metrics produces.

In the same way that well-used citation trails are frequently depicted as neutral in library discourses, so too are high citation counts presented as independent measures and something to

aspire to. In a class for doctoral students about metrics (Pat and “Ainsley”, class), the profile of an academic from the university is used as an example, and the academic’s citations are described as “huge” and “impressive” (Pat). In the material-discursive practice of citing, difference is enacted, structures are sedimented, and subjects are produced. For the doctoral students, their published texts yet unwritten, such descriptions offer the prospect of future renown or mediocrity. In this enactment of difference, the librarians are entangled in the measurement and judgement of the citation counts and the production of future successful or unsuccessful academic bodies.

Time for Work and Work Time

The meeting is hard work. Learning how to use citation indices proficiently, like any software, takes time, patience and persistence in the face of the sometimes seemingly arbitrary requirements required of users to provide information and follow processes. Within the intra-activity of Lesley’s attempts to manage Sandy’s expectations, time matters differently for each of them. The matterings of time are the peaks and troughs of waves, creating diffractive patterns that often cancel each other out. The meeting materialises Lesley’s time as well spent, validated by Sandy’s gratitude and thanks at its conclusion. The time Lesley spends on this meeting is a materialisation of the expanded area of expertise librarians claim as part of research support.

The time is also well spent for Sandy because many of her questions were answered. However, the demands on her time is resented. Here, time and attention matter as lost not just in solving current issues but also into the future, “with new metrics being developed, new decisions being based on those metrics, and new metrics being developed in response to the consequences of those decisions” (Z. Kaiser, 2018, para. 8). Platforms, university policies, library budgets, and librarian professional expertise are entangled together in these future matterings as new means of calculating and displaying measurements of value in scholarly communication continue to be developed; for example, Author Impact Beamplots, a visualisation of “the range of a researcher’s publication and citation impact in a single data exhibit” (Szomszor, 2021, para. 1). With each new

development, the university infrastructure is reconfigured, along with the roles of academics and librarians.

Lesley suggests submitting a request for Scopus, a citation index, asking them to index a journal in which Sandy has written. When Sandy states that this is not worth pursuing as it is too much work, Lesley responds that it is as “easy as clicking a few links”. Similarly, she informs Sandy that having the persistent, digital identifier, ORCID, will ensure articles are linked to her profile, but “if not every few months, go and check”. Individually, these suggestions are simple and reasonable. However, they require time setting up accounts with each platform, developing varying levels of expertise on multiple platforms, paying attention to sometimes complicated details, and remembering to check the records are accurate. Library and university platforms openly invite participation from academics to create and maintain records of their publications and to correct and add information about themselves. “Typed through the manipulation of researchers’ fingers systematically recording publications, grants, honours, projects and partners in electronic research databases” (Staubæs & Brøgger, 2020, p. 7), this in/visible labour is an investment in the improvement of the performance of the platform.

For Lesley, testing and investigating the capabilities of library technologies are part of the development of expertise, as work in the platform is part of her KPIs. This type of work, testing and improving beta versions and reporting issues, is often unrecognised (Galvan, 2016). For Sandy, the energy and time expended is energy and time she could devote to other tasks, including researching and writing more texts for publication. Each act of administrative tidying up of records and checking completed in the meeting is free labour that enhances the value and usefulness of the platform.

Problems identified within the platform’s measurement are solved within platforms. Work in library platforms leaks into work in social media (Jordan, 2022), enabled by the seamless experience of beguilingly easy invitations to share published texts through icons and links on journal webpages. Discourses in librarianship take a straightforward approach, recognising workload issues but treating

this move as indispensable for academics to promote their research, “although [using social media] may seem like yet another thing to add to their already long to-do list, choosing the right tool can really help to promote them and their work” (Sewell, 2020, p. 82). Later, Lesley suggests that Sandy’s “good work” needs “promoting”. The simple equation between promotion and impact does not account for how platformised recognition produces academics caught between “the allure of narcissistic self-promotion or institutional pressure to ply our scholarly wares online as enterprising brand ambassadors” (Carrigan & Fatsis, 2021, p. 4).

When Sandy debates whether or not adding a particular publication to her profile will improve her H-Index, Lesley replies, “so start tweeting”. Sandy states that she does not even have a Twitter account, and adds, “I hate it honestly, a colleague of mine, he’s like, I’m on LinkedIn every 10 minutes”. Carrigan (2019) describes similar emotions about Twitter, being “a form of (largely) unpaid labour which I don’t enjoy, distracts me from what I do enjoy and permeates into every aspect of my life *as work*” (para. 8). In this description, the boundaries constituting time and work are complicated and fluid. Work on platforms such as Twitter and LinkedIn is both part of, and not part of, the work of an academic, while also spilling over into what was once considered non-working time. This is a deeply personal mattering, an imposition of ownership onto “the individual who then seeks ‘biographical’ solutions – higher citation counts or more steps – to systemic problems” (Z. Kaiser, 2018, para. 5). It is the production of bodies defined, given meaning, and occupied within the measuring infrastructure.

Labourers Together in the Platform University

In this section, the mattering of work, time and shame I explored earlier forms the basis of a broader discussion of the platform as the site of librarian expertise and the measuring of scholarly value. Here, the focus of agential realism on what is performed enables this account to move beyond what was done and said. Instead, the focus is on what can be done and said and how librarian professional expertise is constituted, together with technologies, spaces, and scholarly knowledge in

these doings and sayings. This considers “who is hosting whom here?” (Barad, 2019, p. 534) and “how the requirement to be useful is distributed” (Ahmed, 2019, p. 10) by arguing that both librarians and academics are entangled together as labourers in the university and that these entanglements are both similar and different. The relationship between academics and librarians has shifted and this is part of a more important shift in moving to platforms as sites of scholarly knowledge activity and production.

Although citation indices are the focus of this chapter, this is not a simple story of the citation index operating as an apparatus enacting agential cuts. As noted earlier, the simple explanation of the bad platform is too easy to be useful. Library platforms are pulsating relations with material effects/affects, which do not precede but rather emerge together with what they measure, within the phenomena of measured value in the academy. The measurement of the indices is “not simply revelatory but performative” (Barad, 2012, p. 6).

The platformisation of universities has changed conceptions of employer and employee. This chapter demonstrates how platforms mediate labour in the university (Carrigan & Jordan, 2022) and the subjectivities that emerge within this mediation. When Lesley and Sandy meet to discuss citation counts, there is no simple relationship between user and provider, or customer and client of services provided. Platforms operate as a “shadow employer” (Bucher et al., 2020, p. 4) exerting quasi-managerial power over gig workers and this notion can be applied to thinking about who is performing the hosting in universities. Librarians’ unofficial work in testing and providing feedback about these is rarely recognised and contrasts with their work on library-maintained technologies of the past (Galvan, 2016; Winter, 2009, p. 154).

Traditional understandings of who is the end-user of technologies in higher education have shifted (Selwyn & Carrigan, 2020). Platform technologies are targeted at university administrators rather than students or academics.¹⁶ The measuring mechanisms of citation indices, learning

¹⁶ I am indebted to Neil Selwyn for correspondence (January, 2021) after this webinar to clarify his comments.

management systems, and student lifecycle systems materialise bodies that are “computable and therefore only truly understandable via computation (Z. Kaiser, 2018, para. 10). This mattering has material-discursive consequences as the next section demonstrates.

Shift in the Balance of Power

Lesley’s emotion work and patient helpfulness suggests that power rests with Sandy, and Lesley does need to manage Sandy to achieve the required successful outcome. However, with the move to research support in university libraries, academics are now the objects of librarian expertise in a way they were not when liaison librarians only taught searching. This is enacted by the agential cuts of university policies, which mandate paying attention to citation counts. Liaison librarians teach the use of platforms that are part of what is seen as an intrusion into academic work, “more and more insistently, university policy forces itself upon its teaching subjects. Indeed, institutional policy now penetrates all the assemblages that academics are produced by as becoming-researchers, becoming-teachers, becoming-administrators, becoming-citizens” (Grant, 2021, p. 540). This encroachment is part of the division of academic work into its parts, some of which remain in the university and others are taken over by platforms.

In this agential cut, Lesley is implicated in Sandy’s compliance. The library is part of the measuring infrastructure through necessity:

the library, while often regarded at least symbolically as the intellectual center of a campus, still has limited ability to resist ... libraries are rewarded for falling into lockstep behind chancellors, vice chancellors, trustees, and deans, the figures who control the budget that is the library's lifeblood. (Accardi, 2010, p. 252)

Thus, not only academics but the university library itself is enacted as “computable and therefore only truly understandable via computation” (Z. Kaiser, 2018, para. 10). Within this mattering of the policies and platforms, Lesley and Sandy are enacted as good employees of the university, meeting their respective KPIs.

The site of this enactment of productive and compliant employees is the platform, in this case, the citation index, which generates the data and promotes it as an essential part of an academic's value. Lesley's expertise is measured in terms of her ability to answer Sandy's questions about the platform. This sounds like a straightforward transaction, an annoying addition to an already crowded scholarly communication landscape. But it is more, it is a reworking of scholarly knowledge. Evaluative infrastructures are "not just technical programs but practical relays of policy objectives to reform the sector" (Williamson, 2018, p. 1).

Within this reworking, subjectivities are reconstituted and liaison librarians materialise as part of the evaluative infrastructure of the university, in a role "with an auditing and monitoring function passing judgement on scholars" (Åström & Hansson, 2013, p. 320). A manager of one of the teams of liaison librarians, "Ashley", noted this tension:

"look it has its challenges because we also, um, work, we're under the portfolio, [university administrative division], so they have priorities and also the faculties have their priorities so the library has to, has to align its services and resources according to the university's strategic um, agendas and so sometimes I think, not necessarily a conflict but there's differing priorities between divisional partners and, um, faculty and the library seems to tread very neatly, ah, in between those two." (Ashley, intraview)

These tensions remain largely in/visible in discussions in library and information studies literature about this role. Much of the narrative in library and information studies literature around liaison librarians' participation in metrics remains focused on supporting academics' research to be recognised. Furthermore, as I discuss later, the liaison librarians spoke with genuine enthusiasm about helping promote the research of the academics they worked with.

Embedded in the university infrastructure, library discourses tend to replicate institutional ones. In the class for doctoral students, Ainsley emphasises the reliability and expertise of the citation indices. Journals are described as going through a "rigorous process" to qualify for inclusion

in Scopus' index. The commercial nature of the companies that own the two citation indices is the only hint given by Lesley about ethical issues relating to their provision and content. This explanation keeps the more complex and serious matters in/visible, such as the underlying "symbolic or reputational economics of prestige" (Bacevic & Muellerleile, 2018, p. 177). Professional expertise is a matter of conformity, not questioning. As Ahmed (2019) notes:

norms of conduct – being professional – are tied to protecting the organization from damage. Silence becomes a form of institutional loyalty. Being unprofessional, rocking that boat, not accepting the limits of what you can do, or what you can say, is risky; you risk your own chances of progressing. (p. 215)

The consistent message in library and information studies literature linking survival with demonstrating usefulness based on the university's strategic directions is reinforced in every year's budget. Silence is a very pragmatic form of loyalty.

In the meeting, Sandy's reaction to this self-regulation focuses on the immediate, and not insignificant, demands on her time and energy: "it's just so frustrating". Her interest in the citation index is personal rather than ideological. When Lesley briefly explains the disparity between what Sandy has published and what is listed in an index, she points out that Web of Science and Scopus are "rival companies". Sandy, seemingly unaware of this, replies, "Are they?", but does not ask for more information. Carrigan and Fatsis (2021) suggest that this combination of "cathartic grumbling" (p. 133) and general ignorance of the issues of scholarly communication are widespread among academics, despite the writing of published texts being central to their work. This ignorance is often wilful, characterised by an attitude of "let professionals handle the problem of scholarly publishing" (Kelty, 2014, p. 203). Academics and librarians are both compliant and complicit subjects of the measurement of platforms.

As a liaison librarian, Lesley's role is not to shed doubt on citation practices or the companies providing these tools, but rather it is to "manag[e] expectations about tools" (Logsdon et al., 2017, p.

162). These expectations are both the technical capability and, increasingly, the emotional. Citation indices are expensive tools, constituting, along with scholarly literature databases, a significant portion of the library budget. Use of them, preferably by competent and satisfied users, is therefore highly desirable. Satisfied users are a mattering of the expertise of librarians as teachers, technical experts, and persuaders, and by extension a mattering of the value of the library within the university, as articulated in strategic plans and KPIs.

Nardi and O'Day (1999) state,

we must emphasize that the work of librarians and search tools is complementary – the success of each depends on the other. Librarians and library clients could not succeed in their information quests without powerful tools, and the online tools can easily fall short of delivering the best results to clients unless librarians or other experienced searchers are there to help. (p. 96)

My research suggests that this complementarity has been disrupted by a different entanglement. Lesley is “performing the labour of distributed responsibility for [academic] compliance with the platform” (Perrotta et al., 2021, p. 108). There is little incentive for her to add to Sandy’s negative feelings by pointing out additional reasons to resent these technologies. In this context, it is interesting to consider how Lesley’s liaison work extends beyond maintaining good relations with academics. The obligation to promote the platforms that mediate scholarly communication limits the possibility of critically engaging with what these platforms perform. Lesley’s expertise in this case is to make a judgement that confirming Sandy’s resentment will not be helpful for either of them.

The expertise of the university library in research support materialises in online resources written by other librarians who specialise in research support, “I’ll send some links ... research librarians have a lot of tricks up their sleeves” (Lesley). The research librarians that Lesley refers to

are a team who provide specialist research support for more complex questions. Lesley's mention of tricks suggests collaboration between librarians and academics as they work together to get the best possible result out of the citation indices for the university. Lesley's words here enact librarians as sources of help and reliable allies against the capriciousness of the indices, as they "pacify the algorithm" (Bucher et al., 2020, p. 9). In this mattering, liaison librarians are on the academics' team, where the library is the reliable and understanding source of help for academics to turn to for advice in the "individualised form of competition" (Williamson, 2020, p. 8) of measuring academic performance.

Lesley's comments are not disingenuous flattery nor a glib repetition of institutional rhetoric. In the intraviews, most of the liaison librarians were enthusiastic about being involved in the research work of academics and valued knowledge creation. Lee noted that academics

[are] sort of always reaching for the highest version of things, so hanging out with people like that, that are brainy, and you know, passionate about what they're interested in, is really cool because then you're surrounded by that all the time. And I suppose they're trying to model that to the students as well, so you're in this, higher education institutes are probably cool places to work because you're in this place where everyone is reaching to, for knowledge. (Lee, intraview)

Similarly, Lucy explained, "I like talking to people who are passionate about what they do, especially if they're doing something that is genuinely interesting and, and something I can see is worthwhile" (Lucy, intraview). Liaison librarians dedicate time to understanding the disciplines they support and will know more about the work of academics than the academics will know about their work (Christiansen et al., 2004, p. 118). The liaison librarians' allegiance to the areas they work with materialises in the use of the possessive pronoun by the librarians when referring to the academics they worked with; for example, "I went to see one of my academics" (Lee, intraview) and "so you can always let your staff know exactly what they have access to" (Alex, intraview).

In his exploration of “captivation metrics” used in platforms, anthropologist Nick Seaver (2019) likens the work of algorithms to landscape traps that produce environments where prey are already effectively trapped before the act of capture by a hunter. As he notes, “we are unaware of the infrastructures that have already caught us, which host our thinking and living” (p. 432). It is the “voluntary co-option” (Staunæs & Brøgger, 2020, p. 4) of academics into their own “self-regulation within networks” (ibid.). If academics’ careers depend on becoming “citation-maximizers” (Franck, 1999, para. 7), then it is not surprising if this is what they focus on. As Komiljenovic (2019) notes in her study of the growth of LinkedIn in higher education, a combination of market dominance, fear of the consequences of not participating, and “virtual circuits that enclose” (p. 36) global markets make compliance with the measuring mechanisms of platforms irresistible. In the university infrastructure, this irresistibility is enacted through local measuring mechanisms, such as KPIs and performance discussions. Fear of the consequences of non-participation also materialises in a number of practices such as “citation alliances” (Beel & Gipp, 2009, p. 239) or “citation cartels” (Franck, 1999, para. 8) in agreements between academics to cite each other’s works. It also materialises in attempts to raise a journal’s status through coercion of authors to cite the journal in which they hope to publish (P. Davis, 2012; Fong & Wilhite, 2017), also known as “citation stacking” (Heneberg, 2016, p. 3).

Sandy cannot avoid engaging with the citation indices given the importance of citation counts as a measuring mechanism in the calculation of world rankings and the production of value in academia (Brankovic et al., 2018; Szadkowski, 2016). Librarians are similarly co-opted into this regulation. The need for university libraries to contribute to the reputation and goals of the university in order to survive, performs liaison librarians as more than loyal university employees – they are in effect shadow employees of library platforms. The agentic enactments within the pedagogical encounters in this meeting could be seen as materialisations of the layers of power from international university rankings and large corporations through university administrators down to the academic and then the librarian.

However, as Mayes (2019) points out, there are no simple concentric circles of power relations from the global down to the local, but rather enfoldings of matterings (p. 508). The materialisation of librarian professional expertise in this encounter is shifting and complex. Lesley emerges as a co-worker for the platform with the academic, an expert on the workings of indices and citation indices, an enforcer of university regulations, a helpful ally in collusion with the academic, a contributor to Library KPIs and a sales representative of the platforms. She maintains institutional understanding of citation counts, helps academics manage them, and also engages in the work of the self-regulation work central to this.

The mattering of Lesley's expertise is entangled with the mattering of Sandy because both are subjects of the measuring mechanisms of the platform university—citation counts, citation indices and academic search engines. Sandy emerges as a user (consumer) of the index, a producer of published texts to be cited, a selector of useful topics, a communicator of research, a producer of citations, a worker for the index maintaining and correcting records, a researcher with no impact, a faculty and university employee with KPIs to meet, and a not disinterested contributor to the university's reputation.

This is not the story of naïve librarians, deluded by algorithmic forces, nor is it one of calculating lackeys of the institution, cajoling put-upon academics to win recognition. Rather, this is an account of the complexities of working within the politics of the shifting agentic boundaries of usefulness as they emerge in one meeting, involving the differences that are enacted by the measurement of citation counts in the platform university infrastructure.

Conclusion

This chapter's focus on the complex work of a liaison librarian, as she helps an academic use a citation index, provides an insight into how the differences enacted in citation counts work to produce knowledge. Thinking with notions of use and in/visibility and focusing on how the citation index operates as a platform, made visible the multiple subjectivities and enactments of difference

within the intra-activity of these pedagogical encounters. Citation counts materialise as a complex system of hardware, software, algorithms and levels of access, together with university policies, documents, positions in rankings, job position descriptions, desires, time, and multiple devices with their screens, keyboards, operating devices, and seating arrangements.

Librarian expertise, emerging with the shame of low citation counts, is entangled with the measuring mechanisms of library platforms and evolving relationship between employees of the university. Lesley's mattering as a helper, enforcer and emotional support in the meeting signals that this change is still being established. Beyond the immediate relationship of the two in the meeting, are the equally complex changes in what is considered work in academia, and by whom and for whom this work is performed. In the same way that educational platforms are replacing the university as "sites of educational practice" (Mármol Queraltó, 2021, p. 32), so too have the platforms that provide access to scholarly literature become the sites on which most aspects of scholarly communication are mediated.

Lesley and Sandy are entangled in an infrastructure which dictates where usefulness is situated. High citation counts are one of the contributions to the enhancement of the university's reputation, and individual advancements within the infrastructure. This particular material-discursive practice is not possible without the measurement enacted by citation indices and academic search engines (Szadkowski, 2016). It is also not possible without the compliance, willing or otherwise of subjects of this measurement. For liaison librarians, professional expertise closely aligned to ensuring the smooth functioning of the measuring mechanisms of library platforms. As Ahmed (2019) notes,

norms of conduct – being professional – are tied to protecting the organization from damage. Silence becomes a form of institutional loyalty. Being unprofessional, rocking that boat, not accepting the limits of what you can do, or what you can say, is risky; you risk your own chances of progressing. (p. 215)

This ensures that the platform is the central site of measuring an academic's value and a university's reputation. An ethical rethinking of what scholarly communication could be and how it affects society is overdue. Moving beyond narrow conceptions of what legitimacy in academia looks like is the first step to university libraries gaining true legitimacy and visibility.

Chapter 8: Conclusion: Liaison Librarians Matter

Introduction

Liaison librarians are a part of knowledge production in the platform university. Understanding liaison librarian professional expertise as shifting phenomena, enacted together with local and global matterings, provides a counter narrative to the deficit framing of liaison librarians and the permanent crisis of professionalism. This expertise is a material-discursive practice, produced together with the measuring mechanisms of library platforms. These mechanisms are productive—within them, bodies, published texts and scholarly knowledge are valued and performed. This production is a mattering of the quantification possible in the platforms, the importance of global rankings, beliefs in the superiority of quantified measures, and the internal measurement of performance within the university. It reproduces and sediments the classification and ordering of the world evident in previous library technologies. Using Barad’s notions of intra-activity and phenomena, I explore how, within this mattering, liaison librarians and their expertise is in/visible and how it matters when they teach students and advise academics about the use of library platforms. Below, I set out the key arguments of my research and its limitations. I then outline the contribution of my project and the future possibilities for the professional expertise of liaison librarians, the role of university libraries, and further research in this area.

Key Arguments

Liaison librarians work at the intersection of library platforms’ measuring mechanisms and the creation and use of scholarly literature. What matters and what is possible in the preservation of the scholarly record, access to research, the value of published texts and the future directions of professional and academic work in academia is enacted together with these platforms. The professional expertise of liaison librarians is entangled iteratively with this mattering; it cannot be understood outside it.

In their daily teaching and advising, liaison librarians negotiate their expertise within the library building's walls and the paywall. Past and present are not simply what has been and what will be. Rather, they are enfolded in the pedagogical encounters of their work. Hopes of future recognition are bound up in the search interfaces of library platforms. The unknowable nature of the changing algorithms behind these databases, indices and academic search engines both enhances and obscures the liaison librarians' expertise. They work with interfaces and products over which they have limited control but are experts in what can be known. Expertise once materialised in collections only accessed by entering the library is still entangled with the library building. It emerges with library shelves, which materialise what a liaison librarian's role is *not* and in teaching spaces as agential enactments. Within this intra-activity, the liaison librarians negotiate and forge shifting "sites of power" (Jackson & Mazzei, 2012, p. 133).

The measuring mechanisms of the platforms, which order and value scholarly knowledge, define liaison librarian expertise. The ordering of the world through algorithmic configurations is largely in/visible and stands in contrast to the visible ordering of shelves by call numbers, the presence or absence of books on those shelves, and the enclosure of these materials in the library building. Yet in/visible algorithms continue the performative work of past classifications in measuring and excluding bodies. They are material and have material consequences.

The search box of academic search engines, databases and indices, while promising access to a world of scholarly knowledge, categorises, excludes, and marginalises research topics. This is especially so for topics such as women's health, the voices of Indigenous knowledges, the writing of people of colour, and research in languages other than English. This exclusion in the search box and the results list is a mattering and amplification of existing injustices, stereotypes, and prejudices. The results list and its contents are a mattering of the exclusion in the search box, both in what is present and what is absent or relegated to pages that even the most eager researcher will never visit. The university library and the expertise of liaison librarians are entangled with this exclusion.

Liaison librarian expertise materialises together with a results list's quantification, as the number of results and citation counts are key aspects of their teaching. A results list also materialises the quality of a search. When librarians teach students about searching, this quality is determined not only in the relevance of the results but in the exact numerical measurement of the quality of a search in the number of results displayed at the top of the list. This display, and the perception that a large number of results require managing, provide a focus for materialising liaison librarians as experts in searching. The numbers demand attention and amplify the importance of the database's many features for expanding and limiting the parameters of a search. Attention to these features obscures the expertise that liaison librarians bring to helping students understand the question that they are trying to answer when searching.

Liaison librarians' expertise in the measuring mechanisms of citation counts implicates them in the measuring infrastructure of the university and the materialisation of value in academia. What matters in universities cannot be understood outside this measurement. Within this mattering, the power relations between academics, librarians, and the platforms are iteratively reconfigured. Liaison librarians and academics are workers together in the platform university, their searches and tidying up of profiles improving and training the algorithms of the platforms. They are produced through their KPIs, which materialise global rankings, the privileging of elite institutions, and the marketing rhetoric of the companies providing the platforms. Liaison librarians, while fellow shadow workers of the platforms along with academics, also emerge as enforcers of the production of measured academic bodies. They reproduce the rhetoric of measurement and promotion of research, while also engaging in emotional labour to manage the material consequences of the measurement for students and academics. Platforms emerge as a shared workplace, an authority, a rewarder, and a source of authority for the valuing of academic bodies and liaison librarian expertise.

The liaison librarians I observed rarely spoke about how the structure of and changes in the scholarly communication landscape and library technologies matter. Their infrequent attempts to

explain how academic search engines, databases, and indices operate and what this means for scholarly knowledge production are couched in everyday language that obscured larger, systemic issues. The language used by the liaison librarians does not deny the commercial interest in access to scholarly literature but connections are not made between this interest and the organising and monetising of scholarly communication. There was little incentive for them to do this, given the mantra in library and information studies research of identifying and meeting the university's strategic priorities as the principal means of survival. This silence is part of the accepted role of being a professional (Ahmed, 2019, p. 215) but it sits uneasily alongside claims in library and information studies literature about the role of librarians in the provision of access to information for all users.

Limitations

In my research, I do not address the advances made in the open-access movement, some of which are driven by university libraries. In the classes and meetings I observed, the paywall rarely mattered. Its in/visibility was due to the abundance of sources available to students and researchers at East Coast University and library services, such as interlibrary loans. In 2017, when I was at East Coast University Library, transformative agreements were in their infancy (Farley et al., 2022, para. 1) and did not receive the attention they currently attract. Further research about how liaison librarians navigate the platformisation of open access would continue and extend discussions raised in my thesis.

The change in my project after data generation at East Coast University has meant that in the intraviews conducted then, especially with liaison librarians, I did not include questions about what I now consider some of the more interesting and important aspects of my research. My narrow conception of liaison librarians' teaching, on how it was performed, led to a focus on how liaison librarians prepared and conducted their work. While the answers they provided are rich in meaning and interest, my project would have benefitted from another set of intraviews later.

My research has come to focus more on the exclusions enacted in librarians' teaching in the platform university rather than the possibilities. There are two reasons for this. The first is because my thesis aims to build a case that the changes occurring in university libraries are part of the platformisation of universities. I paid attention to building this case as it is not one that was fully articulated previously in library and information studies literature. The second reason for this focus on exclusions is the change in my research that occurred when I started reading the data with the literature about platforms. This was intellectually exciting but also sobering as I developed an understanding of the extent of the platformisation of university libraries in both my research and linked this to my daily work. The exclusions enacted within the platform library seem to outweigh the possibilities. It is these possibilities that I now consider.

Contribution to Knowledge

My study addresses the limited research on the professional expertise of librarians as workers in the platform university. In this section, I outline my five major research contributions to library and information studies and platform studies.

First, my project contributes to the expansion of methodologies for researching liaison librarians. It demonstrates the power of combining close attention to the everyday activities of liaison librarians' teaching with a robust and innovative theoretical positioning. This addresses the division in library and information studies literature between reports about classes taught by librarians, mostly confined to the professional literature, and discussions about the work of librarians which are theoretical, but do not examine the material-discursive practices of librarians when teaching. The opinions of librarians and members of the university community about the teaching role of liaison librarians have been exhaustively canvassed, and there are many provocations to think differently about library work. Observation, in particular, is currently underutilised in library and information studies research (Aytac & Slutsky, 2014; Baker, 2006; Ma &

Lund, 2021; Middleton & Yates, 2014; Ngulube & Ukwoma, 2019; Turcios et al., 2014), especially as a means of examining the work of librarians.

Second, paying attention to the “fine detail” (Barad, 2007, p. 92) of liaison librarians’ teaching offers a new way of theorising agency in the study of liaison librarians. Understanding agency as the capacity for action, rather than a possession or attribute, is an undoing (Juelskjær, 2013, p. 765) of the figure of the in/visible liaison librarian. This is especially so in the sense of the liaison librarian who needs to try harder to create a secure future for the university library, or the reluctant problem librarian who is unable to leave the past behind. The notion of phenomena challenges simple claims of cause and effect in technological change, in particular the focus on new technologies as the means of providing users a better experience and university libraries the recognition they seek. Instead, my research demonstrates how the overlapping phenomena of liaison librarian professional expertise are agentially enacted and remade, and how within that enactment liaison librarians and those they teach and assist matter. When Alex helps Syeda complete the search planner (see Interlude 1), Lee has a moment of doubt about her untested search (see Chapter 5), or Lesley works to manage Sandy’s discontent (see Chapter 7), the phenomena of liaison librarian as expert is part of the “long and ossified genealogically, materially, and discursively entangled history” (Warfield, 2016, p. 6) of university libraries. This history is entangled with changes in technologies, the arrangement of library and university spaces, online search templates in which assignment topics are reconfigured, world rankings of universities, and relations between workers in higher education.

What I want to underscore is that the expertise of liaison librarians is not merely a matter of learning new skills and following new trends in higher education. Rather, expertise is a material-discursive practice, remade within the intra-activity of teaching, together with the boundaries of library technologies and their users. Library technologies are not fixed objects, with set meanings and characteristics. Nor are they merely the topic of librarians’ teaching. They are enacted within the

phenomena of liaison librarian professional expertise, and within that phenomena, as an apparatus, they in turn enact the boundaries of librarians' teaching. In liaison librarians' teaching practices, library platforms are a means of legitimising their role. They are a source of authority for practices in the university, in which liaison librarian expertise is in/visible, both obscured and valued.

Third, my research contributes to library and information research by responding to calls for methodologies and approaches that account for materiality in the work of librarians (Manoff, 2015). I build on discussions of the materiality of searching (Haider & Sundin, 2019) by framing searching, and the teaching of search, as a material-discursive practice. My research identifies not just the importance of paying attention to the materiality of library work, but how the material and discursive are entangled. This understanding reframes liaison librarians' expertise as not only applied to library technologies, but also materialising together with them. Searching for scholarly literature is performed within the measuring mechanisms of library platforms and, within this enactment, liaison librarians and their expertise are performed, together with students and academics.

Fourth, my exploration of the material effects of the measuring mechanisms of library platforms and the differences that they enact contributes to discussions about social justice in libraries, the decolonisation of libraries, the neutrality of libraries, and the ethics of access to information. This research project is a deliberate reconfiguring of the focus on practicality (Hudson, 2017) and usefulness (Ahmed, 2019) in discourses about library work. In doing so, it challenges the simple framings of user experience that do not account for power relations (A. Hicks et al., 2022a). A focus on the difference that differences make (Barad, 2007, p. 72) and the production of bodies offers a rich theoretical lens for understanding power relations in and between the library and the university. Understanding how library platforms not only provide access to knowledge but produce it opens up different, and more interesting, questions. The measuring mechanisms of library platforms materialise particular views of the world and, in doing so, they produce particular knowledges.

Power over library technologies, both in the past and currently, is linked to the power to decide what counts as knowledge when librarians teach, and beyond.

Finally, my fifth contribution is adding to discussions about the platform university by exploring how the work of liaison librarians materialises with platforms. Surprisingly, limited attention has been paid in platform studies literature to the role of university libraries and their liaison librarians. It is this in/visibility to which I pay attention in my research. The in/visibility of liaison librarians' teaching is, as I demonstrated, an important oversight. These experts in searching for and accessing scholarly literature are pivotal in forming an understanding of scholarly knowledge, as enacted in the measuring mechanisms of library platforms. Focusing on the day-to-day teaching by liaison librarians demonstrates how platforms have colonised the university library. I draw attention to how the university library is a part of the larger "de-localizing [of] educational practices from physical universities" (Mármol Queraltó, 2021, p. 32), the consequences of which are yet to be fully understood for higher education and society.

Similarly, the notion of the platformisation of library work received limited attention in library and information studies research. Attempts to turn the framework of information literacy into an ontological and epistemological position distracted the profession from fully critically exploring the material-discursive practices of the technologies core to their work. This focus diverted valuable attention away from engaging with research from other fields of study that focus explicitly on the mutual constitution of power and technology; for example, science and technology studies and social practices theories. The vocabulary and concepts of platform studies provide a useful lens through which librarians can articulate concerns that currently appear in the literature in a fragmented form or are too easily characterised as resistance by librarians to inevitable technological change. Situating the use of library technologies and the struggle for the legitimacy of the university library within global and local changes in universities offers possibilities not available through library research preoccupied with crises of relevance or championing information literacy.

Possibilities for the Future

How do we disrupt the institutionalisation of corporate platforms while recognising the problems that they solve? Reducing it to an individualised form of ethical consumption doesn't help us build an ecosystem of open alternatives which are accessible, scalable and reliable. (@PostPandemicUni, deleted tweet, November 9, 2020, 5:40 am)

This tweet identifies the tensions between acknowledging the opportunities provided by platforms on an organisational level and responding to the consequences of their colonisation of universities. Platforms offer new ways for researchers to collaborate and share knowledge in ways unimaginable before. Yet, the purpose of the large corporations that provide these platforms is not to protect scholarly knowledge: “big tech is not our friend. Nor is it a friend of democratic rights and institutions” (Prosser, 2021, p. 30). The tweeter recognises that responding to this dilemma is a question of agency. Responsibility for action cannot be placed solely on individuals—the problems and solutions also exist on an infrastructural level. I do not wish to frame another crisis for librarians to solve, drawing on their supposedly endless supplies of “innovation, resilience, and courage” (Meyers et al., 2021, p. 8). Any consideration of library platforms should pay attention to how liaison librarians themselves are produced together with students and academics within the material effects of the material mechanisms. The emotion work performed by liaison librarians working in research support requires further investigation. Possibilities exist for reconfiguring the difference that differences make (Barad, 2007, p. 178) at institutional and individual levels. With this in mind, I conclude with thoughts on how this work might start.

Change requires recognition of how library technologies matter. These technologies, as I illustrated, produce material effects that go beyond fast access for students or simple citation measurement. Attempts to solve problems of scalability and ease of access are not merely technical: “when we see technological possibility and social possibility as distinct from one another, we miss the point” (Eve, 2017, p. 36). Resistance starts from recognising that liaison librarians’ teaching is

“productive” (Wolfe & Mayes, 2019, p. 281). Liaison librarians matter; it is important to interrogate and destabilise notion of the neutrality and objectivity of information provision, as well as focus on the exclusions it produces.

It is vital to consider how the teaching of the use of the measuring mechanisms of library platforms is part of material-discursive practices that reproduce exclusion. Reidsma (2019) concludes his book by asking, “would it be so bad if our users questioned the value of our search tools?” (p. 172). The value Reidsma mentions here is primarily ethical rather than technical. Librarians’ teaching necessarily focuses on how to use systems, but it turns away from explicit engagement with the relations of power these systems produce and how difference is reinforced through these platforms. Librarians are valued when they spend time researching the performance of library technologies in terms of the number and relevance of results. Yet, we cannot only focus on the skills required to perform library (or any) work but rather what this work performs.

If discussions about the wealth of scholarly literature omit reference to the privilege enacted in accessing this literature, unequal power relations are reinforced both materially and discursively. Similarly, if teaching about citation trails only focuses on their usefulness for finding additional scholarly literature, an opportunity is lost to consider alternative trails. Liaison librarians, and the libraries in which they work, replicate and reinforce current inequities of participation in and access to scholarly knowledge. This occurs when they promote platforms and educate users about searching for scholarly literature *without pointing to what these platforms produce*. As demonstrated in my research, future topics of librarian expertise should include the scope of the coverage of databases and indices, the ranking of results, the realities of the paywall, and the politics of citation. Conversations within libraries about the value of the technologies that form the basis of scholarly communication are challenging but possible. Listening to researchers’ and students’ descriptions of how the “ocean of research” (Czuy & Hogarth, 2019, p. 1) matters—how they are in/visible within it—is a first step.

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Appendix 1: Glossary of Library Terms

Academic Search Engines

An academic search engine is one that only indexes scholarly literature. It is “neither a search engine nor a database – rather it is a union of the best of both and, unfortunately, the complexities of each as well” (Ortega, 2014, p. 2). A range of material is indexed including presentations and drafts. The most popular and well-known academic search engine is [Google Scholar](#) (Gusenbauer, 2019, p. 186), “the tool most users first turn to when they need to carry out a literature search” (López-Cózar et al., 2019, p. 96). Google Scholar was launched in 2004 (Halevi et al., 2017, p. 824). It indexes both free and paywalled material from a broad range of academic sites, including university and library websites and repositories, and commercial databases and aggregators (Halevi et al., 2017, pp. 824–825). It is free to use, distinguishing it from most of the popular citation indexes and bibliographic databases. Google Scholar is dynamic, its indexes reflecting what is available, which means that new material is indexed rapidly but can also disappear suddenly (López-Cózar et al., 2019, p. 96). This is an important difference between Google Scholar and citation indexes such as Web of Science and Scopus, which are controlled databases offering “focused and reviewed access to a body of knowledge” (Halevi et al., 2017, p. 824).

Citation Index

An index is a collection of metadata about a published text; for example, author, title, source title, date, and, often, abstract. An index does not contain the full-text of a published text but may link to this. A citation index is a collection of bibliographic metadata for published texts and lists of works citing them. The first science citation index, Science Citation Index (SCI), was created in 1964 by Eugene Garfield, a linguist and librarian by training. The Index was based on Shephard’s Citations, developed in the nineteenth century. The intention behind both was to show connections between legal cases in Shephard’s (Sugimoto & Larivière, 2018, p. 22) and scientific ideas in SCI (López-Cózar et al., 2019, p. 95). It was followed by Social Science Citation Index (SSCI) in 1973 and Arts and

Humanities Citation Index (AHCI) in 1978. The best known citation indexes are Scopus, launched in 2004 (López-Cózar et al., 2019, p. 96) and Web of Science (WOS), the current iteration of Science Citation Index formerly known as Web of Knowledge. Other indices such as Dimensions include citations and non-traditional measures, as well as links to a diverse range of data from “publications, datasets and clinical trials to patents and policy documents” (Dimensions, 2022, para. 6). Similarly, OpenAlex is a new, free index of scientific research, which “aims to chart connections between these data points to create a comprehensive, interlinked database of the global research system” (Singh Chawla, 2022, para. 2). Citation information is also available from Google Scholar. In contrast to Google Scholar, a citation index is a controlled database, offering “a focused and reviewed access to a body of knowledge” (Halevi et al., 2017, p. 824).

Database

A database is “a collection of related data organized to facilitate swift search and retrieval” (Nadim, 2021, para. 1). In university libraries, the term *database* is commonly used informally to refer to any collection of published texts and or indexing data. In this thesis, I distinguish between indices and databases, using the latter to refer to collections of full-text material.

Federated Search

Federated search enabled a single search query to be send independently to a number of databases. These searches were slow, results were retrieved at different times, and the ranking results of each database or index were not consistent (Buck & Mellinger, 2011, p. 160).

Google Scholar

See Academic Search Engines

Limiters

Limiters are features on search interfaces which allow definition or narrowing of the focus of a search before or after searching (EBSCO connect, 2018).

Link Resolver

Link resolver software links bibliographic records in indices or databases to the full-text of a published text available within a library's subscribed content (Munson, 2006, p. 18).

Subject Heading

Subject headings are “controlled lists of terms or phrases used to describe the subjects of items” (Lazarinis, 2015, p. 193). The term *controlled* refers to the use of authority lists of accepted terms, which avoids problems of variations in terminology and spelling

Web-Scale Discovery System

A web-scale discovery systems or discovery systems searches all content owned by a library as well as records from “centralized index of preharvested content” (Buck & Mellinger, 2011, p. 160), which is regularly updated. They are generally characterised by a single search box, with an advanced search interface available through a link.

Appendix 2: Intraview Questions

Question for Intraviews with Liaison Librarians

1. Demographics: age, years worked as a liaison librarian, library qualification/s
2. The class I observed
What was the aim of the class and how did you achieve those aims?
3. Class preparation
Imagine you had a similar session to prepare and for some reason you were unable to do so, what would be the steps for preparation that you would give a person doing the preparation?
4. Being observed
How did you feel about having me there observing you?
5. Class that went well
Could you tell me about a class that you've done when you walked out and thought, "That went really well!"? And why did you think that?
6. Evaluation of classes
How do you evaluate your classes?
7. Training/qualifications for liaison librarian role
If you had to hire a liaison librarian, what are the ideal qualifications you would look for?
8. Highlight of role
What is the part of your job that you enjoy the most?
9. Importance of role
What is the most important part of your role?
10. Organisation of work
How do you organise your days
11. Future of the role
Would you advise someone to enter the profession?
12. Digital literacy
What is your understanding of digital literacy?
13. Paths through the library
Could you please mark on these maps of each floor of the library the places you regularly go
14. Calendar
Could I please have a print out of your calendar for the five weeks I was at the Library?

Questions for Interviews with Academics

1. Overview of the course
Could you give me an overview of the unit for which [liaison librarian] gave a class?
2. Background of the library class
How did the library class for your course come about?
3. Length of collaboration?
How long have you worked with [liaison librarian]?
4. Skills
What skills did you want the students to learn in the class?
5. Outcome of the class
How did the students find the class?
6. Research students
Do you send PhD and Honours students to meet with a liaison librarian at the beginning of their studies?
7. Interactions with the library
What interactions do you have with the library?
8. Digital literacy
What is your understanding of digital literacy?

Questions for Intraviews with Library Managers and Senior Staff

1. What is your role in the Library?
2. What are the qualifications that librarians need now and into the future?
3. What is the core business of librarians?
4. What support is provided for librarians for learning in their role?

Questions for Interviews with University Staff: Darcy

1. Could you please give me an overview of the service that you provide?
2. Do you have a set relationship with faculties or is it fluid?
3. What sort of help would you offer for a new course?
4. What is the size of your team?
5. What do you see as the role of the library?

Questions for Intraviews with University Staff: Clarissa

1. Could you please give me an overview of your role?
2. What is the role of the library and East Coast University?
3. How long have you had the library as part of your portfolio?
4. How is the effectiveness of the library measured?
5. Do you feel there is a need for closer links between faculties and the library?

Questions for Interviews with University Staff: Charlie

1. Could you tell me about your background and how long you worked in academic libraries?
2. How would you describe the librarian skill set?
3. How does the teaching and education manifest itself in the library?
4. How do you think librarians should prepare for the role they have now?