Open Access in Theory and Practice

Open Access in Theory and Practice investigates the theory-practice relationship in the domain of open access publication and dissemination of research outputs.

Drawing on detailed analysis of the literature and current practice in OA, as well as data collected in detailed interviews with practitioners, policymakers, and researchers, the book discusses what constitutes "theory", and how the role of theory is perceived by both theorists and practitioners. Exploring the ways theory and practice have interacted in the development of OA, the authors discuss what this reveals about the nature of the OA phenomenon itself and the theory-practice relationship.

Open Access in Theory and Practice contributes to a better understanding of OA and, as such, should be of great interest to academics, researchers, and students working in the fields of information science, publishing studies, science communication, higher education policy, business, and economics. The book also makes an important contribution to the debate of the relationship between theory and practice in information science, and more widely across different fields of the social sciences and humanities.

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The Theory-Practice Relationship and Openness

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Between us, in the authorial team, we have experience of both theory and practice. We have worked in a number of practitioner information-related roles at different levels and in different sectors. These have included some roles designing and implementing open-access systems and services. We have also, between us, worked extensively on theory. This has focused on Library and Information Science, but also extended beyond that. As researchers and teachers in LIS, we have worked at the interface of theory and practice, to a greater or lesser extent, in our roles over a number of years. All of us have worked with colleagues and students – too many to name – whose insights and encouragement we have valued. We have brought our different experiences and perspectives to bear on this study, we hope, in a rigorous and creative way.

We have learnt a great deal from this research project. We have learnt from our research participants, from our advisory board, and from other colleagues and students, as we have said. We have also learnt from each other, as all good teams should. We have welcomed the opportunity to work together on this study, and we hope that our enthusiasm about our project and our excitement about its findings are clear from this book.

Abbreviations

AI	Artificial Intelligence
ALA	American Library Association
ALPSP	Association of Learned and Professional Society Publishers
ANT	Actor Network Theory
APC	Article Processing Charge
ASN	Academic Social Network
BOAI	Budapest Open Access Initiative
CoLIS	Conceptions of Library and Information Science
CTA	Copyright Transfer Agreement
DOAJ	Directory of Open Access Journals
DORA	Declaration on Research Assessment
EBP	Evidence-Based Practice
EU	European Union
HCI	Human-Computer Interaction
IDT	Innovation Diffusion Theory
IFLA	International Federation of Library Associations
IR	Institutional Repository
JASIST	Journal of the Association for Information Science and Technology
JDoc	Journal of Documentation
LIS	Library and Information Science
LISRA	Library and Information Services Research Australia
NIH	National Institutes of Health
NSF	National Science Foundation
OA	Open Access
OAPEN	Open Access Publishing in European Networks
OLH	Open Library of the Humanities
OpenDOAR	Open Directory of Open Access Repositories
PLOS	Public Library of Science
PMC	PubMed Central
R&D	Research and Development
RCUK	Research Councils UK

RECODE	RECommendations for Open Access to Research Data in Europe
REF	Research Excellence Framework
RG	ResearchGate
RLUK	Research Libraries UK
RoI	Return on Investment
RoMEO	Rights MEtadata for Open archiving
SciELO	Scientific Electronic Library Online
SET	Social Exchange Theory
SHERPA RoMEO	Securing a Hybrid Environment for Research Preservation and Access, Rights MEtadata for Open archiving
SOAP	Study of Open Access Publishing
SPARC	Scholarly Publishing and Academic Resources Coalition
SSH	Social Sciences and Humanities
STIN	Socio-Technical Interaction Networks
STM	Science, Technology and Medicine
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UK	United Kingdom
USA	United States of America
UTAUT	Unified Theory of Acceptance and Use of Technology
UUK	Universities UK
WoS	Web of Science

Introduction

> A correct theory is the most practical thing.
> (Friedrich W. Dörpfeld (1873). *Grundlinien Einer Theorie des Lehrplans*)

> There is nothing as practical as a good theory.
> (Kurt Lewin (1943). *Journal of Social Psychology*, *17*(1), 113–131)

This book is about the relationship between theory and practice in the domain of open access. In writing it we have two aims. First, we aim to cast light on the increasingly important phenomenon of open access (OA) publishing and dissemination of research outputs by focusing on an aspect of the OA phenomenon that has to date received little attention – how theory has been used to understand it and inform activity around it. Open access – where content is "digital, online, free of charge, and free of most copyright and licensing restrictions" (Suber, 2012, p. 4) – has been examined using various theoretical approaches, and we aim to understand more about how this has been done, and why it is important. Second, we aim to explore the relationship between theory and practice, a relationship often characterised as a "gap". OA is examined here, in many respects, as a case study of the theory-practice relationship. We will consider whether there is a gap (or perceived to be one) between theory and practice in relation to OA, and if there is, how it might be bridged. We will also consider some of the implications of this for our understanding of the relationship between theory and practice more generally. However, throughout the book we aim to hold these two issues together – OA and the theory-practice relationship – and to see them in relation to each other. We do so by analysing ways in which OA has been understood through various theoretical lenses and examining how or whether this has made (or could make) a difference to ways in which openness is implemented in practice.

Two examples

Two examples may help to define our focus to begin with. Both examples are studies from 2019 discussing open access. Both discuss aspects of the implementation

of OA in practice. Both make extensive use of theory as a way of understanding what is going on, and as a way of addressing the practical challenges.

The first study is by Rob Johnson (2019), a UK-based consultant working closely with policymakers, publishers, librarians, and other practitioners on research publishing and policy issues. His article is about Plan S, the controversial policy initiative of an international group of research sponsors ("cOAlition S") intended to accelerate OA adoption. Plan S was launched in September 2018 and the guidelines for its implementation released for consultation in the November of that year. Johnson's paper, entitled "From coalition to commons: Plan S and the future of scholarly communication", was first made available as a preprint (that is, in pre-refereed form) to encourage feedback in late 2018, and then published in *Insights* in its first issue of 2019. As the title implies, the article examines Plan S through the lens of Commons Theory, a theoretical framework for understanding the management of "common-pool resources", first developed by Elinor Ostrom and collaborators (for which Ostrom was awarded the Nobel Prize for Economics).

Johnson argues that Plan S is underpinned by "three key assumptions": that "the research literature should be treated as an intellectual commons" (p. 2), that the commons can be created with collective action, and that it can be best managed through market regulation. Johnson explores these key assumptions in relation to the detail of Plan S and the reactions it has prompted amongst stakeholders. He then goes on to analyse Plan S with "reference to the essential questions for any commons analysis, namely equity, efficiency and sustainability" (p. 4), highlighting different perspectives on these issues and a number of key questions that require resolution. Interestingly, in his final section, on "moving from principles to practice" (p. 6), Johnson again draws heavily on theory: in dealing with "myriad implementation questions" that will arise in future, he suggests, the leaders of cOAlition S "may wish to keep two findings from Elinor Ostrom's work on governing the commons in mind". These two findings are first, "the value of polycentricity" – the importance of maintaining some variation to allow for "local actors" to create solutions appropriate for their particular contexts, albeit with an overall harmonising framework; and second, "adaptive governance" – the ability of those involved to adapt to circumstances whilst maintaining the key benefits of the commons.

Johnson's use of theory is striking. He uses Commons Theory as the framework for the entire paper – as a basis for analysis but also to inform real-world practice. He draws on a detailed literature review and analysis of the current debates amongst key actors in the scholarly communication domain (including researchers, publishers, funders, librarians, and research managers), examining them in the light of Commons Theory, and also brings together recommendations for future action, based on explicitly on the theory. His is a high-level of analysis across a broad area of OA policy debate framed by theory. As such, it is an interesting contrast to our second example, a study that also uses theory but now as a basis for collecting and analysing a specific dataset.

The paper entitled, "Motivations for self-archiving on an academic social networking site: A study on ResearchGate" was written by a team of researchers, affiliated to institutions in South Korea, China, the UK, and USA: Jongwook Lee, Sanghee Oh, Hang Dong, Fang Wang, and Gary Burnett (Lee, Oh, Dong, Wang, & Burnett, 2019). The study, first published in the *Journal of the Association for Information Science and Technology* in January 2019, focuses on an increasingly important aspect of OA development: article sharing on academic social networking sites (ASNSs), of which ResearchGate (RG) is one of the most prominent. The article reports the results of a survey of academic authors in which their motivations for depositing their work on ResearchGate are assessed against a set of factors (such as additional time and effort, cost, accessibility etc.) drawn from previous studies combining theoretical models. First their study draws on work by Kim (2010), who identified 11 factors motivating authors to "self-archive" or post their papers on OA sites, based on Socio-Technical Interaction Networks (STIN) and Social Exchange Theory. Second, it draws on earlier work by Syn & Oh (2015), adapting Social Exchange Theory (again) and Social Cognitive Theory, and identifying ten motivational factors for sharing information on social media. The combined and de-duplicated list of 18 factors was used as the basis for designing a survey of authors, which received 226 responses from authors in the top eight US universities by RG score. The responses were analysed using various statistical tests showing that authors were motivated by a combination of factors, the most significant of which was making their work "more easily discoverable and accessible" followed by altruism and reciprocity. From their analysis, Lee et al. (2019) briefly suggest some practice-based recommendations: "this study's findings provide useful implications for the development and improvement of ASNSs that could potentially attract more (active) users" (p. 572). They spell these out to be that ASNSs should design their services to appeal to these key motivating factors, although they do not explore how this might be done. They also suggest that their work can be used for understanding and further promoting OA.

As in Johnson's paper, theory is deeply embedded in Lee et al.'s study, in their case acting as a framework for the design of a data gathering instrument and basis for data analysis. Theirs is an eclectic use of pre-existing, pre-tested theoretical models, combining them to form a useful framework which they then deploy as way of enhancing understanding of behaviours of users of information systems and resources. In some respects, theory is being used here as a shortcut to avoid unnecessary reinvention of ideas. As part of their work, they do, however, produce a new synthesised model for potential future use in other studies, and they also touch on the practice-based implications of their results, albeit cursorily.

Both of these studies use theory. The theories involved are somewhat different. Commons Theory is a framework developed within the field of political economy for understanding how shared resources are managed by communities. It involves a set of generalisations about the actors, institutions, and resources involved, and

the relationships between them (Hess & Ostrom, 2007; Ostrom, 1990). Johnson uses these to map onto the OA context in order to gain insights into OA development. Social Exchange Theory (SET) is a set of insights developed at the interface between sociology, psychology, and economics, aiming to understand the ways in which people interact within groups, examining issues such as motivations and preferences (Emerson, 1976). Lee et al. use SET alongside other related theories to generate a list of factors they can use to assess motivations for using a particular online service, ResearchGate. These theories are used in the respective articles to frame analysis of a particular aspect of OA – in one case a wide-ranging analysis of the current policy context, in another, a focused empirical analysis of user motivations. In both articles, theory is also linked to practice, to a greater or lesser extent. The theoretically informed studies address practical aspects of the work researchers, funders, publishers, librarians, and others, from policy development to systems design.

Ostensibly then, these studies appear to illustrate the famous maxim of Kurt Lewin: "there is nothing as practical as a good theory".

Theory and practice, and open access

Lewin's maxim was an appeal more than a statement of a widely recognised reality. In his field of social psychology and organisational behaviour, in the mid-20th century, Lewin was conscious of a gap between theory and practice, and he repeated the now famous aphorism in a number of publications and speeches between 1942 and 1945 as calls to address that gap (Bedeian, 2016). In a speech from 1942, published the following year in the *Journal of Social Psychology*, Lewin asserted "the value of theory" in addressing problems of practice. He summarised this by reporting, "a business man once stated that, 'there is nothing as practical as a good theory'" (Lewin, 1943). A year later, he repeated the maxim, whilst discussing the "need for close cooperation between theoretical and applied psychology." Without such cooperation, he observed, practice was weakened: "without proper theoretical help, it had to follow the costly, inefficient, and limited method of trial and error". Cooperation "can be accomplished," he argued, "if the theorist does not look toward applied problems with highbrow aversion or with a fear of social problems, and if the applied psychologist realizes that there is nothing so practical as a good theory" (Lewin, 1944, p. 27).

It is interesting Lewin initially attributed his maxim to an unnamed "business man", something which certainly adds to the rhetorical power of the saying, positioning it as an observation of a practitioner, rather than the special pleading of a theoretician. At the very least, it implies Lewin saw his maxim as applying to a range of fields, not just applied psychology or organisational behaviour. Interestingly, Lewin's use of maxim seems to have antecedence in the field of education theory, with the American psychologist and educational theorist, G. Stanley Hall, and the German educational theorist, Friedrich W. Dörpfeld, using something like it in the late 19th century (Bedeian, 2016) – Dörpfeld's

motto is reproduced in translation at the head of the chapter. This once again perhaps illustrates the saying's wider applicability.

Whatever its precise origins, the saying still has resonance in many domains today: there is often a gap between theory and practice. Rather than acting in concert, theory and practice (and theorists and practitioners) are often seen as oppositional. Researchers working with theory are frequently viewed by practitioners as remote and only interested in abstract ideas. Practitioners are regularly seen by researchers as only interested in what can be immediately applied in their own context and unconcerned about a deeper understanding of the bigger picture. Researchers may sometimes be seen as fetishising theory, and pursuing the generation and testing of theory as their primary aims. Practitioners may criticise the work of researchers as being "too theoretical", dismissing arguments about the value of theory. Researchers may in return criticise the work of practitioners as being "under theorised", not realising that many practitioners might regard that as a compliment! Some practitioners might even be accused of valorising a kind of theory-free practice, focused just on "getting stuff done". Counterbalancing Lewin's famous maxim, there are many examples of the opposite sentiment being expressed – Ernst F Schumacher's is a well-known example: "an ounce of practice is generally worth more than a ton of theory" (Schumacher, 1994, p. 25). Underlying this, the whole debate may well be influenced by common parlance, which uses "theory" and "practice" as opposites: "well, that's all very well in theory, but in practice . . .".

In this book, we aim to explore this sometimes fraught, sometimes harmonious relationship between theory and practice, and to do so in one particular domain – that of open access. Examining OA as a kind of case study of the theory-practice relationship is interesting for a number of reasons. First, OA is a concept to which a wide range of theories seem to have been applied. Researchers from across very different disciplines have seen quite different sorts of theoretical frameworks as relevant for consideration in this domain – Commons Theory and Social Exchange Theory are just two examples. Second, OA is an intensely practical problem (or set of problems). It involves the workings of a $25 billion industry, employing an estimated 110,000 people globally, producing 3 million highly crafted outputs per year, serving a global network of over 18,000 educational institutions and the needs of hundreds of thousands of researchers, millions of students, as well as others (Johnson, Watkinson, & Mabe, 2018). Third, OA is particularly interesting in terms of the theory-practice relationship because at its heart is the relationship between theorists and practitioners working together to communicate scholarly outputs. One of the main outlets for theory developed in academic work is publication, and publication is achieved through the work of a variety of practitioners (publishers, librarians, funders, resource managers, and so on) working alongside researchers. Fourth, OA involves a variety of practitioner groups. Unlike many theory-practice relationships in professional areas, where there is a relatively clear relationship between a given set of theories and a particular practitioner group which may be primarily responsible for enacting them, in the OA space there is

a complex set of interrelated practitioner groups interacting as part of the implementation process, making the theory-practice relationship (or sets of relationships) an especially interesting one. Fifth, many of the people working on implementing OA in practice are arguably more open than many practitioners to theoretical insights. Many actors such as publishers and librarians have direct experience of engaging in research and publishing themselves, are based in academic institutions or in the wider academic community, and often have to make a case to senior managers who themselves have academic careers – all meaning they are often willing to make use of theory. Finally, OA, interestingly, has itself been proposed by some as part of the solution to the theory-practice gap. By improving the availability of scholarly publications which develop and use theory, it is argued, practitioners of all sorts (in the commercial, public, and charities sectors) will be able more easily to incorporate the best theory into their practice. All of these factors make the theory-practice relationship in the OA domain an interesting focus for investigation.

Our approach

This book will then look at open access in theory and practice. It will analyse the ways and the extent that theory and practice have interacted (and have been perceived to interact) in the development of open-access approaches to publishing and dissemination of research outputs, and it will discuss what this reveals about the nature of the open-access phenomenon and its future, and the relationship between theory and practice.

In setting out on the research that underpins this book, we wanted to understand more about the characteristics of theory: what it is, how it is used, and how it connects with practice, specifically in the realm of OA. We wanted to investigate how theory is used in published work on OA. We also wanted to hear directly from people working on OA – those carrying out research and those involved in making OA happen – about their perspectives on theory and practice in their roles. This book is the outcome of our research in those areas. Our work has involved engaging with theory itself and exploring how it interacts with practice, carrying out a detailed analysis of theory-informed literature on OA, and gathering and analysing empirical data, drawn from interviews with people who work on OA. We hope that drawing on these various strands of evidence we are able to see the issues from various perspectives of those working on OA, both on theory and practice.

In order to address our aim of exploring open access in theory and practice, in Part 1 of this book we examine the major components of OA, and map out key aspects of the OA landscape. In Chapter 1, we provide an overview of the past and present of OA. We also make some preliminary remarks about possible futures for OA. Here we want to illustrate something of the complexity of the OA domain, with multiple issues being negotiated by multiple actors. This is followed in Chapter 2 by the presentation of a provisional model of the

OA environment – its different actors, key dimensions and how the two relate to each other. This systematic view of the OA environment will be useful in framing the rest of our analysis. In these chapters we define the main practitioner groups that are included in our study: policymakers and funders, publishers, OA service providers, librarians, consultants, and OA advocates.

Our next step is to discuss theory – what it is, and what it does. We do this in Part 2 of the book. In Chapter 3, we interact with different conceptions of theory, including a number of typologies of theory which have been developed in the social sciences and humanities (SSH). We attempt to contribute to this whole area of scholarly discourse by introducing new insights, particularly in relation to OA. We examine the extent to which theory needs to underpin robust research, and how different research approaches have developed "theory", "models", and "frameworks" as ways of analysing and explaining reality, as well as predicting developments or prescribing actions. We discuss theory particularly in the field library and information science (LIS), setting LIS in the wider field of SSH. We do this since LIS is the discipline which studies the whole of the communication chain of recorded information (Robinson, 2009), including scholarly communication, and much of the literature on OA falls into the LIS field. It is apparent, however, that LIS borrows extensively from other fields in terms of theory, particular SSH disciplines. Understanding LIS within that broader context is therefore crucial. Our analysis in Chapter 3 provides a basis for the approach followed in the rest of the book.

In Chapter 4, we go on to discuss the theory-practice relationship as it is seen from a variety of perspectives. We begin this chapter by exploring the concept of "practice" and go on to discuss the way in which its relationship with theory has been understood from various perspectives. Theory is often highly valued in the academic community, and the development of theory often seen as a mark of quality. Whilst at times theory is obviously applied in practice, at other times it can be off-putting to practitioners. We map out the main contours of the debate around the "theory-practice gap", prominent in a range of applied fields (including management, nursing, education, and LIS).

We then go on in Part 3 to consider how theory has been applied to open access. Here we present a detailed content analysis undertaken for this book of the literature. Chapter 5 describes our methods in carrying out the analysis and provides an overview of the results. Chapter 6 gives more details of the outcomes of the analysis. Between them, the chapters explore the different theories used to investigate OA, the specific aspects of OA they have been applied to, and why and how the theories are used. They also explore the nature of theories generated by OA research. Our analysis encompassed a wide range of publications: work in different forms (articles, books, and reports) undertaken by different authors (researchers, policymakers and funders, publishers, OA service providers, librarians, consultants, and OA advocates), using different research methods (quantitative and qualitative), and focusing on various aspects of OA (OA journals, repositories, etc.). The analysis of the literature as

data is carried out inductively in order to identify key issues and patterns that emerge.

In Part 4, we report further research carried out for this book, involving detailed interviews with key actors in the scholarly communication arena about their perspectives on the theory-practice relationship. Chapter 7 introduces our methods and discusses how our participants understand and use theory in relation to their work on OA. Chapter 8 discusses different perspectives on the value of theory to practice. Participants in our interviews comprised practitioners alongside theorists, drawn from the UK and internationally. As well as the researchers, some of the practitioners involved had themselves published on questions of professional practice in general and OA in particular. Some of them had made use of theory. Others had not made use of theory or had not published at all, but were prominent in their professional domains, particularly in aspects of OA implementation. We analyse their views on theory and its relationship with practice in the domain of OA. The findings from the interviews are presented in detail in Part 4 based on use of inductive thematic analysis methods, with major areas of interest relating to OA, theory, and practice being highlighted.

In the final part of the book, Part 5, we bring the different strands of our investigation together. In Chapter 9, we map out and discuss the relationship between theory and practice in the area of OA as it is seen by leading practitioners and researchers. We also discuss the wider implications for understanding the theory-practice relationship, particularly in areas covered by SSH. In Chapter 10, we discuss some of the ways in which our analysis has implications for our understanding of OA and possible views of its future development, especially in the area of theory and its relationship to practice.

The structure of the book, therefore, follows the methodological structure of the research we have undertaken. We first of all lay some conceptual foundations, delineating key components of OA, and then discussing theory and the theory-practice relationship. Next we undertake two inductive analyses – of the OA literature which incorporates theory, and then of qualitative data gathered from our interviews. At the core of this book is an empirical analysis of data we have collected for analysis: the corpus of relevant literature, results from the analysis of which were then used to design and conduct interviews of key actors in the OA domain. We then provide a discussion which integrates our findings and attempts to identify key conceptual or theoretical insights derived from our investigation as a whole.

That is the trajectory of the book, and so we begin in Part 1 by mapping out the current open access landscape.

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Part 1

Foundations

Open access

Chapter 1

Open access

Beginnings and developments

> Afoot and light-hearted I take to the open road.
> (Walt Whitman (1856). "Song of the Open Road")

In this first part of the book we want to make some introductory remarks about open access. Here in Chapter 1, we outline some of the key aspects of the past and present of OA. We also make some brief points about possible OA futures. In Chapter 2, we present a more systematic mapping of the main components of OA. Between them, these chapters will be a useful foundation on which we build our understanding of the theory in the OA domain and its relationship with practice.

Our aim in this chapter is to identify the main contours of the OA landscape. We will do this only briefly, bearing in mind the voluminous literature now available on the topic, including several significant book-length overviews (Anderson, 2018; Bartling & Friesike, 2014; Eve, 2014; Fyfe et al., 2017; Herb & Schöpfel, 2017; Regazzi, 2015; Suber, 2012; Willinsky, 2006). However, it is important we provide an initial summary to set the scene for the rest our investigation. We start this chapter by looking at the beginnings of OA, at its key characteristics, and potential benefits. We then discuss its growth since the beginning of the 21st century. We go on to discuss the market within which OA exists, and the enablers of and barriers to change in this market. We finish the chapter discussing possibilities for the future.

Open access beginnings

At the outset, it is worth reminding ourselves that open access is an approach (or set of approaches) aimed at improving the communication of research outputs in order to improve the research endeavour as a whole. Its advocates believe OA can enable significant enhancements to scholarly communication – the ways in which researchers exchange information about their findings with their peers and others. Communicating the outcomes of research is a critical part of the research process itself, one without which research cannot deliver its value. Researchers need to be able to access, read, test, augment, refine, and refute each other's work – that is

the way research moves forward. Other people beyond the research community can also make various uses of the research literature, not least to inform practice of different kinds. Research communication has traditionally been achieved through a variety of channels, including books, conference papers, and notably, journal articles. All of these different types of research outputs are usually quality controlled in a range of ways, the most important of which is peer review. This process, where experts in a field assess the outputs of others in order to ensure and improve the quality of the work, is not without its problems, but it is still commonly seen as foundational to academic publishing. Peer-reviewed journals, sold to readers (or their libraries) through subscriptions, are the mainstay of traditional formal scholarly communication in most disciplines. Open access potentially disrupts key aspects of that *status quo* but does so in a way which its advocates argue improves the process of communicating research results, and in so doing improves the way research as a whole is conducted.

Open access (under various labels) can be traced back as least as far as the 1980s (Moore, 2019), but it started to gather real momentum at the turn of the 21st century. At its heart was the argument that academic content should be freely and openly available for all users: in a form which is "digital, online, free of charge, and free of most copyright and licensing restrictions" (Suber, 2012, p. 4). Statements, such as the Budapest Open Access Initiative (BOAI), released in early 2002, helped to raise awareness of the possibilities of OA to a wider audience. BOAI is often seen as marking the beginning of OA as a credible mainstream approach to scholarly communication. The BOAI statement (BOAI, 2002) encapsulated much of the then current thinking around OA, and has often been a touchstone in subsequent discussion on openness. The fact that the statement was composed with a certain rhetorical élan meant that it had resonance at the time of its publication and has captured imaginations since. It is still commonly deployed in advocacy and debate.

The BOAI did at least three things. First, it played an early role in establishing the terminology of "open access". Second, it defined the main implementation routes of OA. Third, it summarised some the main arguments in favour of wider adoption of OA.

The first of these (defining OA), like Suber's definition quoted above, built both "free to read" and "free to reuse" into the concept of OA:

> permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers.
>
> (BOAI, 2002)

This bipartite understanding of what constitutes OA is still crucial and has become more important in the last decade as the possibilities of machine-processing of content have increased, widening as it does the potential of reuse. It constitutes

a radically different approach to ownership and control, allowing content to be widely distributed and also repurposed. It has led to a favouring of open licences, such as those offered by the Creative Commons, as the basis of publishing and sharing content, since these licences have access and reuse built into them.

On the second point (the routes to OA), the BOAI outlined what are still seen as the two main "roads" to OA: OA publishing in academic journals (now often called "Gold" OA), and depositing copies of outputs in OA repositories ("Green" OA). The relationship between Green and Gold is still at the heart of debates around OA today. The BOAI called them "complementary strategies", but it was true even then that there were tensions between solutions proposed by Green advocates and Gold advocates. Those tensions have not gone away – quite the opposite, in fact. They continue to underlie much of the OA discourse, and have arguably weakened the leverage of the OA movement, and blurred the focus of OA policy, over a lengthy period.

On the third issue (the benefits of OA), the BOAI sets out the potential of openness. OA, it states, will,

> accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge.
>
> (BOAI, 2002)

These are lofty claims, which identify benefits both within and beyond the academy. Most of the arguments in favour of OA have concentrated on the former, with OA likely to widen access to research outputs, for the broadest possible range of academic institutions and their members globally. The levelling of the playing field (as it is seen), between richer and poorer institutions, within and between countries (including those in the Global South), is often emphasised in the OA discourse (Barbour, Jones, Jones, Norton, & Veitch, 2011). The impact potential of publications is thus maximised, meaning the research communication can become most effective and research itself is improved by, for example, avoiding unnecessary duplication and even speeding up research. Most studies show that open research is used and cited more than non-OA research (SPARC, 2016). Moreover, for the academy as a whole, OA it is argued will fix systemic problems in the journal publishing market, where large global suppliers exercise oligopolistic power in the market, charging high prices and maintaining unusually large profit margins, syphoning money out of the research system.

Benefits are also often claimed to extend beyond the academy. OA has the potential to benefit a whole range of groups: clinicians, commercial research scientists, lawyers, teachers, journalists, policymakers, citizen scientists, amongst others (ElSabry, 2017). The argument is frequently made that academic research is a common good which is publicly funded and therefore ought to be in the public domain. This argument to been developed as a "moral" case for OA (Bacevic &

Muellerleile, 2018; Peters & Roberts, 2012; Willinsky, 2006). Scherlen and Robinson (2008) make the case for OA based on social justice philosophy. Others have argued the case for the economic benefits of OA (Houghton & Sheehan, 2009), although less work has been done actually demonstrating benefits to those beyond the academy than might be expected.

The growth of OA

In the period since the BOAI was launched, and as the arguments in favour of OA have gained wider acceptance, the growth of OA has become apparent. The first major area of growth has been in the number of OA options available to authors. With regard to Gold OA, the number of journals offering authors OA publication has grown markedly. New OA publishers, such as Public Library of Science (PLOS) and Frontiers, have entered the market offering new fully OA journals. Existing publishers have also launched numerous new OA titles. Many OA titles have been based on a new business model, charging fees for publication (so-called, article-processing charges or APCs), rather than subscriptions. A large number of publishers have also introduced a hybrid approach, where particular articles in established subscription journals can be made OA on payment of an APC for that paper. Still other Gold OA journals do not charge an APC at all, but rather obtain funding from other sources, such as sponsorship from institutions and research funders. All of these options, and others, have been developed as publishers have begun to embrace OA (albeit, with varying degrees of enthusiasm). In the period between 2000 and 2009, the number of OA journals listed in the international Directory of Open Access Journals (DOAJ) rose from 741 to 4,767 (Laakso et al., 2011). By 2019, the number of journals on DOAJ was 13,168. For just those journals indexed in Scopus database, which focuses on established predominately English-language titles, the proportions of journals offering immediate Gold OA rose over the short period between 2012 and 2016 from 49% to 60% (Jubb et al., 2017).

At the same time, the availability of Green OA options has also grown. The number of OA repositories has increased substantially. OpenDOAR (Directory of Open Access Repositories) listed 691 OA repositories worldwide at the beginning of 2007 and this had risen to 3,820 at the beginning of 2019. The majority of repositories are run by institutions to house the outputs of their own members. There are also a substantial number of other repositories of different types, notably those run by specific disciplines. Institutional repositories (IRs) vary in size but tend to be relatively small compared with subject repositories. One of the largest subject repositories is arXiv, established as early as 1991, covering a number of sub-disciplines in several branches of physics, computer science, and mathematics, which now contains over 1.5 million papers. arXiv was originally set up to share "preprints" (versions of articles prior to peer review), but has now become a widely used venue for sharing both preprints and "postprints" (the versions of articles after acceptance by a journal). Other disciplines have set up their own repositories over a long period but, interestingly, there has been an acceleration in

the numbers of preprints servers set up since 2013. This apparent second wave of preprints servers is a potentially important trend (Chiarelli, Johnson, Pinfield, & Richens, 2019).

However, populating repositories, particularly IRs, has not always been easy, with the notable exception of servers like arXiv. Depositing papers has become even more challenging as publishers have introduced policies making the conditions of deposit more restrictive. Since 2010 in particular, in an effort to protect the conventional subscription business model, many publishers have imposed increasingly restrictive conditions in their contracts with authors on how, when, and where published articles in their journals may be shared. Such embargoes often mean that articles cannot be made available on repositories until 12 or even 24 months following publication, thus blunting the usefulness of repositories and dampening enthusiasm to contribute to them (Gadd & Troll Covey, 2016).

Despite this, it is evident that take up of OA options by authors has risen in the last 20 years. This is the second aspect of the growth of OA (complementing the first, in the growth of OA options and venues) which has been clearly shown by a number of studies. Different studies use different data sources and methods, but all consistently show a rise in outputs being made OA. In their large scale analysis of OA in all of its forms, Piwowar et al. (2018) found that the proportion of the scholarly literature that is OA has been "growing steadily over the last 20 years". In the most recent year of their study, 2015, the proportion was as high as 45%. In another study focusing on papers indexed in Scopus, Jubb et al. (2017) showed that in 2014, 25% of articles were available in an OA form within 12 months of publication; by 2016, this had risen to 32% (including Gold and Green OA). Looking at Gold OA articles in particular, Wang, Cui, Xu, and Hu (2018) tracked the growth of OA articles from 7.5% in 1990 to 25.4% in 2015.

Adding to the growth of OA options and the growth of take up, the third aspect of the growth of OA is that of usage. Although evidence is a little more difficult to come by on usage, what *is* available shows growing use of OA materials, relative to non-OA materials. Jubb et al. (2017), whose report sets out evidence for these three aspects of the growth of OA particularly for the UK (OA options available to authors, the take-up of those options, and use of OA resources), identify several sources of evidence indicating a clear growth in usage of OA resources. Downloads of OA articles from publishers' websites, for example, are on average between twice and four times higher than non-OA material.

The growth of OA is not evenly spread, however. There are, first, significant differences between disciplines; second, there are differences between countries. Differences across disciplines are marked. A large-scale analysis of articles accessible via Google Scholar in 2014 found 60% in the area of medical and life sciences were available in an OA form, whereas for law, arts, and the humanities it was as low as 32% (Martín-Martín, Costas, van

Leeuwen, & Delgado López-Cózar, 2018). At a more detailed, disciplinary level, the differences were even wider, with astronomy and astrophysics at 88% OA, and literature only 14%. OA for astronomy and astrophysics is mostly Green OA, delivered through arXiv. Other disciplines, such as the medical and life sciences, have been less ready to share versions of papers on repositories, but have historically favoured OA publication in journals, that is, Gold OA (Science-Metrix, 2018). The cultural differences of different disciplines have been used to explain differences in the adoption of OA (Fry, Spezi, Probets, & Creaser, 2015), although there is still more work to do in this area. Some of the disciplinary differences relate to different conventions in publishing formats. Traditionally, for example, most disciplines in the humanities and many in the social sciences have favoured the book as a form of scholarly communication. Books have traditionally been produced using quite different business models compared with journals and may even involve author royalties (which is not the case for journals). Whilst there has been some movement in developing OA models for monograph publishing (Crossick, 2016; Eve, 2014; Lyons & Rayner, 2016), it remains a considerable challenge.

The adoption of OA also differs between countries. Martín-Martín et al. (2018), based on a study of literature in the Web of Science index, placed Scotland as having the highest proportion of material freely available (in 2014), at 73%, followed by Brazil at 72%, and the Netherlands at 71%. These countries compare with Russia at 44%, Iran at 45%, and China at 46%. Studies which encompass a broader range of literatures than those covered in Scopus and Web of Science (which both focus on English-language journals published by Western publishers) have shown widespread adoption of OA in countries in Asia, South America, and Africa, often using national journals and publishing platforms. One 2019 report based on data from the OA service, Unpaywall, put Indonesia, Colombia, Bangladesh, Brazil, Croatia, and the UK as the top six countries for OA availability of their research for 2017 (Van Noorden, 2019). 81% of articles by Indonesian authors were openly available, compared with 60% for the UK. The global average was 41%. In a large-scale study of the biomedical literature, Iyandemye and Thomas (2019) found "a strong negative correlation between country per capita income and the percentage of open access publication", meaning authors from low-income countries were more likely than others to make their work OA.

Such differences point to corresponding differences in national policy environments. In some countries, such as the Brazil and the Netherlands, there have been policies and centrally supported infrastructures in place from government research funding agencies for some time, encouraging and enabling the adoption of OA. The SciELO network in South America, a large-scale publishing platform providing about 10,000 journals, mainly in Portuguese, Spanish, and English, was set up as a pilot as early as 1998, but came to be adopted in the policies of a number of South American funding agencies in the years that followed (Packer, Cop, Luccisano, Ramalho, & Spinak, 2014). Policies were introduced in Europe as early as 2003 by

the Max Planck Society in Germany, which released the so-called "Berlin Declaration" that year, which called for widespread open access to "scientific knowledge" and "cultural heritage" resources (Max Planck Society, 2003). In 2005, the NIH (National Institutes of Health) in the USA also launched an OA policy to accompany their still relatively new OA repository PubMed Central, launched in 2000 (Lasthiotakis, Kretz, & Sá, 2015). In the UK, the Wellcome Trust pioneered OA, establishing a formal policy mandating its grant holders to make their outputs OA as early as 2006. It also sponsored the development of infrastructure, such as the large-scale disciplinary repository, Europe PubMed Central (Lasthiotakis et al., 2015), and more recently, the publishing platform, Wellcome Open Research.

Many funders in other countries have followed suit, with policies and infrastructures becoming more robust over time. Such policies clearly make a difference – rising rates of OA adoption typically follow introduction of mandates (Larivière & Sugimoto, 2018). What this represents is a general trend since 2000 of funders becoming more interventionist in the scholarly communication process, to maximise the value of their investment in research, as they see it. A recent aspect of this has been a more determined attempt to coordinate policies between different funders and even across countries, particularly in Europe, in the form of Plan S.

Markets and models

OA represents a major shift in scholarly communication models, and so any insight of the dynamics that enable such a shift, and the inertias that resist it, requires an understanding of what the movement towards OA is trying to change – the established subscription-based publishing system. Research publishing is, of course, based on the needs of researchers, in their capacity as both the producers and consumers of most research outputs, and so understanding researchers' attitudes and behaviours, and the forces that give rise to them, is crucial. This has been a leitmotif of wider discussion and debate on OA.

Key here is the fact that researchers work in a "reputation economy" (Fecher, Friesike, Hebing, & Linek, 2017). Rather than obtaining any royalties from their work, they accrue recognition from their colleagues, and this in turn leads to status in their subject community and institution, and then, indirectly, tenure and promotion. Bourdieu's work on the sociology of science (which we discuss in more detail later, in Chapter 4) emphasises "recognition" as a key factor in this space (Bourdieu, 2001). The quality of a researcher's work, and therefore the recognition that comes from it, is often judged using proxies, prominent among which is publishing in the most prestigious, selective, and highly cited peer-reviewed journals. The "impact factor" of such journals – essentially, "the average number of citations of the publications of a journal" (Waltman, 2016) – has become a widely used indicator of the quality of articles published by these journals, despite a long tradition of debunking its validity for that use (Larivière et al., 2016; Seglen, 1997). In this system, researchers are strongly incentivised to behave in conventional ways with regard to publishing their results (an activity in

which traditionally they have been given a high degree of autonomy), favouring established high-IF journals which have strong brand recognition amongst their peers. On the other hand, the incentives to make their work OA are rather weak for researchers from most disciplines. One of the widely discussed challenges associated with OA development, therefore, is how to incentivise participation. Although, as we have seen, mandates play an important role, they are for most part a stick, with very little carrot involved.

The incentives in the scholarly communication environment have contributed to what we described earlier as systemic problems in the market in the sale of subscription journals. Journals are unique products – every research article they contain reports new findings, and will normally have been validated by peer review as being a novel contribution to knowledge. That means that any market for journal articles suffers from a lack of substitutability – consumers are not normally able to find alternatives to the particular articles they want. When journals become established as brands of quality, and bearing in mind they are publishing unique content, demand for them becomes relatively price inelastic. Publishers can raise the price knowing the journal will still be in demand. Price insensitivity is reinforced since in this market the consumers of the product (researchers) are not normally the purchasers of the product (librarians). Researchers usually don't care (and are often not even aware of) how much journals cost – they don't have to pay for them. But they do regard using journals as essential to their work, and therefore tend to put pressure on librarians to maintain subscriptions, even when prices are rising. Prices *have* risen in this an environment – journal price inflation is typically much higher than inflation for other consumer goods (Bosch, Albee, & Romaine, 2019).

Rising prices (and profit margins) and such reliable sales tend to cause concentration in a market, and that is exactly what we have seen over the last 40 years in journal publishing. The position of the existing players in the system is strengthened by the fact that in the subscription market there are high barriers to entry – it takes time and investment to establish a respected journal. The journals market is now dominated by four large multinational commercial publishers: Elsevier, Springer-Nature, Wiley, and Taylor & Francis. Although a long tale still exists, Larivière, Haustein, and Mongeon (2015) are right to characterise the market as an "oligopoly". Often concentration comes from acquisition, large commercial publishers taking over smaller ones. However, another trend (at its height in the last two decades of the 20th century) has been small publishers, such as learned societies, outsourcing publication of their journals to large commercial publishers knowing that this will create a reliable income stream for their societies to fund their activities, secure in the knowledge that their title is being looked after by a large player in the market. Learned societies, whether or not they have outsourced their publishing, have often become reliant on subscription income. Whilst it might have been expected that they would be at the vanguard of OA, bearing in mind they usually have a mission to disseminate research in their domain, learned societies have in fact often historically been amongst its slowest adopters.

The oligopolistic characteristics of the market have been reinforced in the digital era. Journals are now usually sold in bundles, so-called "big deals", consisting of large numbers of titles – hundreds in the case of some large publishers, who typically fold all of their titles into a single big deal, something that has been common since the turn of the 21st century (Bergstrom, Courant, Mcafee, & Williams, 2014; Stoy, Morais, & Borrell-Damián, 2019; Strieb & Blixrud, 2014). Such deals have considerably enlarged the numbers of titles available to customers, since pricing models will typically charge a percentage mark-up on previous subscriptions being paid to the publisher for a selection of its titles, but now all of its titles are included in the bundle. However, price inelasticity in these conditions is reinforced, since it becomes almost unthinkable to cancel an entire big deal. Subscribers become locked in. The market is hampered from working with any meaningful competition in the domain since there is a lack of transparency around pricing. Publishers sell their big deals for different prices to different customers based on separate negotiations, but crucially, customers (typically library consortia) are often legally prevented from sharing the amount they are paying with others because of confidentiality clauses built into contracts with the publishers. Unlike most markets this creates the counter-intuitive situation where publishers can actually increase their market share by *raising* their prices. Normally, suppliers increase their market share by reducing prices (or improving their product compared with competitors), but in the journals market, if an already dominant supplier raises its prices, it can squeeze out smaller competitors from the market. Libraries, working with relatively fixed budgets, may have to cancel smaller publishers' titles or packages in order to continue to buy those of the large publishers. Large publishers may then able to buy up titles from other smaller publishers or even buy the whole company. Concentration in the market continues to be reinforced and prices continue to rise.

In many respects, OA was designed to address these systemic problems. Different OA business models aim to lower barriers to entry, create competition, enable transparency, lower prices, and so on (Björk, 2017). The APC business model, for example, lowers barriers to entry and tends to dampen prices through competition (Pinfield, 2013). However, some have started to argue that at least some of the fundamentals of the market in journals have been transferred into the OA environment. For some established publishers, OA has undoubtedly been seen as an opportunity to open up new income streams. The hybrid business model is often criticised as allowing "double dipping", where publishers who already receive income from subscriptions also now receive income from APCs for the same content (Pinfield, Salter, & Bath, 2017). Policymakers and groups of customers have initiated various attempts to address such apparent problems with the market, notable among which are so-called "transformative" or "read-and-publish" deals, where customers pay both OA publication charges and access charges in a single bundle, with the balance between the two shifting over time towards a fully OA model in the medium term (Jisc, 2019). Nevertheless, such approaches have often been seen as

effectively massaging rather than transforming the system as a whole. They do not show any immediate signs of addressing problems of high prices, for example.

This is not a universal picture, however. It applies in many Western countries, particularly North America, Western Europe, and Australasia. It applies especially to the English-language scientific literature and it has been reinforced in recent years by the drive in some countries, notably China, to contribute to that literature as part of its (increasingly successful) policies to grow the importance of its participation in global science. However, even in countries of the Global North there are now numerous initiatives to change the system more fundamentally, from new journals to preprints servers. It should also be recognised that in other regions of the world scholarly communication has traditionally been done differently. As we saw in the discussion on differences of OA uptake and policy development, different models have emerged across disciplines and between countries. The platforms created for publication in South America, notably SciELO, are prominent examples of quite different approaches to OA, and crucially they are based on different pre-existing models of publishing. The predominant model there was based more on institution-supported community-managed journals. These formed the basis of what might now be called a "knowledge commons" approach to OA scholarly communication, as opposed to the Western "knowledge market" model we have seen.

These two models represent different major strands of thought about openness that in fact underlie much of the discourse on OA, although they are often not made explicit in discussions. The first strand of thought is what Peters and Roberts (2012) refer to as the "open market society" model, based on foundations such as Popper's (1945) idea of the "open society", Western liberal democracy (in contrast to "closed" totalitarian societies), and Hayek's (1944) free market society, based on market capitalism and free enterprise. It is this Popper-Hayek idea of openness that prompted George Soros to found the Open Society Institute, the main sponsor of the BOAI. It contrasts with a commons approach, which places greater emphasis on communal solutions and "collective action" in managing common-pool resources (Hess & Ostrom, 2007; Ostrom, 1990). The commons approach, because of its accent on managing the sharing of resources in a sustainable way, has a different conception of private property rights, in the case of a knowledge commons, intellectual property rights (hence Creative Commons licences). Its advocates observe that online information is particularly conducive to sharing as a common good because it is non-excludable (one person's use of it does not prevent another's simultaneous use) and non-depletable (one person's use of it does not subtract from the resource for a subsequent user). In fact, information is cumulative – it improves with sharing, as different items of information can be added to others to enhance their value. In the case of information produced as a result of academic research this is particularly the case since the scientific system needs to be open in a wider sense. Ideas need to be shared in order for them to be tested

and improved. This is fundamental to scientific progress and arguably makes open access to research results even more compelling than other forms of information.

Interestingly, there are some de facto compromises between these models – Wellen (2013) has observed that even neoliberal governments may often promote academic knowledge as a commons in order to maximise the return on public investment in research, ensure unimpeded scientific development, and enable effective knowledge transfer. In this case, an academic knowledge commons might exist within an otherwise essentially market-driven economy. Nevertheless, the two are likely to sit rather uneasily together.

Inertia and change

Changing the traditional system of scholarly publishing is a classic collective action problem (Neylon et al., 2019; Wenzler, 2017). In the case of researchers, changing their behaviour and stepping outside the norms of the reputation economy, when most of the incentives point them in the direction of working within it, is not in their interests. And yet it is clear that that is exactly what many researchers feel they are being asked to do in engaging with OA. This has led to scepticism or outright opposition to OA from researchers as OA has started to impinge on their consciousness, often through funder mandates or OA advocacy in their institutions. It is noticeable that this has often come to be couched by researchers as support for OA "in principle" but opposition to the ways it is being implemented. Many researchers may be concerned that OA threatens the "tried and trusted" system of publication that they value and on which they may have built their careers. There is often a strong association in the minds of many researchers of OA with low quality. This perception is reinforced by "predatory" journals, which have sprung up in the second decade of the 21st century in particular, and which accept and publish articles with few if any quality controls, in order to make money from APCs. Predatory journals are a negative consequence of the lowering of barriers to entry to the market by the APC model.

Regardless of quality concerns, a large number of researchers say that APC-based publishing is unaffordable to them, as they do not have access to funds. Some have gone further and expressed objection to the principle of having to "pay to publish", claiming it is a limitation of their academic freedom. In other cases, researchers have observed that OA business models do not work for certain disciplines (such as SSH) and for certain formats (particularly books). Mandates to deposit items in repositories are often seen as an unreasonable demand on researchers' time as well as on their autonomy. Navigating the complexities of copyright transfer agreements with publishers, deposit embargoes, and repository licences is often confusing. In any case, many researchers just don't like being *told* to do anything!

Despite this, some researchers, albeit a minority, have supported, even championed, OA over a number of years. They have set up new OA journals, they have advocated depositing in repositories, they have made the case for policy

change. Some have worked in all sorts of ways to promote OA, often within their own particular disciplinary communities, and in developing their own favoured solutions. OA was in its beginnings in many respects a "grass roots" movement amongst researchers (Schöpfel, 2015). Many of the original signatories of the BOAI were academic researchers, and it has often been the influence of people like them that persuaded policymakers to engage in OA.

At the same time, of course, publishers have engaged with change, albeit with different levels of intensity and enthusiasm. There is no doubt some publishers have opposed OA: in some cases, openly making the case against OA (or at least particular OA initiatives), or, more commonly, quietly resisting OA developments. As we have seen, in some cases, some publishers have responded to OA by opening up new income streams whilst maintaining much of the pre-existing subscription system. However, there have also been a large number of different publishing and business innovations introduced into an increasingly complex environment in the last 15 years. There has been extensive work done, for example, in the area of peer review: from "soundness-only" peer review (focusing on a paper's technical rigour, rather its novelty, significance, or "interest"), or portable peer review (allowing peer review reports to be ported from one journal to another) to open peer review (making reviews and the review process openly available). Publishers have also experimented with different approaches to preprints, in some cases even setting up preprint services themselves, or working closely with preprint servers.

Academic institutions have also both responded and contributed to an increasingly complex environment of differing funder policies, varying publishing options, and shifting researcher expectations. New systems (such as IRs), new policies (governing approaches to openness), and new processes (including workflows to pay APCs), have been set up by many institutions. Much of this activity has been coordinated by librarians, who have traditionally supported open access, often in response to the ever-increasing prices of journals and the lock-in created by "big deals". Librarians have typically driven OA agendas in their institutions. They have championed new policies, technologies, and processes to support OA. They have also taken responsibility for advocacy to academic colleagues and supporting them through the morass of an ever-changing OA environment. At consortial level, librarians have often been responsible for pushing for new approaches to big deals, many involving offsetting APCs against existing subscription payments, most recently formalised as transformative deals. Such deals are still controversial and their impact still little understood. They are, nevertheless, ambitious since they aim to achieve the "flipping" of journals to OA at scale. At the same time, some institutions and their libraries have also set up university presses or publishing platforms to support new community-oriented initiatives in scholarly communication. In North America and some other globally high-income countries, there has been a rapid growth of mostly small university presses publishing OA books and journals since 2010. They are often hosted in the library. In many middle and lower income countries, there has also been a drive to publish research in an OA form by setting up new or flipping established journals, or establishing new publishing

platforms, often funded separately, making payment of APCs unnecessary. Again, it is librarians often driving many of these initiatives.

Possible futures of OA

Whilst the growth of OA over the last 20 years is clear, the long-term trajectory of scholarly communication remains less so. However, it does seem likely that research will become more open – that OA will become the default, at least for many disciplines, and also that OA will increasingly develop within a broader context of "open science" or "open research". Open research consists of "open content" (published outputs, data, educational resources etc.), "open process" (open peer review, citizen science, open educational practice etc.), and "open infrastructure" (open standards, open repositories etc.) (Corrall & Pinfield, 2014). Such a context is likely to create an environment within which AI (artificial intelligence) technologies can be increasingly deployed, transforming the dissemination, discovery, analysis, and quality assessment of research materials. Network-level content venues are likely to transform dissemination, increasingly personalised retrieval agents will transform discovery, text and data mining are likely to transform analysis, and machine-based quality review is set to transform quality assessment – to name just a few possibilities, all of which become more powerful in an open environment (Priem, 2013). Other developments, such as the creation of a wide range metrics and indicators of quality and impact, and challenges, such as the long-term preservation of the scholarly record are likely to become more apparent.

The artefacts of scholarly publication are also likely to change. The article published in an issue of a journal, the central vehicle of scholarly communication at the beginning of the 21st century is a mode of communication derived from the paper-based world. Its fixedness and flatness look rather outdated. The potential now exists for scholarly communication to become more of a flow, with sharing of outputs at different stages of their maturation and combined with continually updating data, simulations, and visualisations, as well as commentary and interpretation. The functions of scholarly communication, identified by Roosendaal and Geurts and others and commonly said to comprise "registration" (claiming responsibility for findings), "validation" (quality control), "dissemination" (distribution of content), and "preservation" (creating a permanent record) of findings (Priem & Hemminger, 2012; Roosendaal & Geurts, 1997; Roosendaal, Huibers, Geurts, & van der Vet, 2003) are likely to be recombined in different ways and in different venues. There is no reason in principle, for example, that the peer review process (validation) has to be managed by the same agency as the one carrying out dissemination (currently a journal). The idea of scholarly communication being "de-constructed" and its functions being "de-coupled" (Priem & Hemminger, 2012; Smith, 1999) underlie many current experiments in change. Many of the possibilities are only just beginning to be explored, but the potential is enormous.

Part of the flow of scholarly communication is likely to include increasing amounts of interaction, not just broadcast. This is already being seen with developments such as social media platforms and academic workflow support software, enabling scholarly interaction. Social media and social-media-like technologies are becoming more important in scholarly communication, and this shows no sign of abating.

The roles of and relationships between the different actors in scholarly communication are also likely to change. The extent to which publishers will continue to be providers of content as opposed to the enablers of activities is, for example, an interesting question. Many publishers have recently extended their activities (either by in-house innovation or acquisition) into new areas of service provision, such as academic workflow services, as well as new areas of content, such as data (Campfens, 2019; Kramer & Bosman, 2016). As with any market, the extent to which the existing players can adapt to (as well as contribute to) the new conditions in which they find themselves will vary, with some existing providers doing so successfully and others falling by the wayside. The implications for the shape of OA could be profound depending on how this develops. Whether a system in which OA is increasingly prominent is designed and implemented by pre-existing publishers or new entrants is likely to have significant impact on what OA looks like in the future.

Similar challenges affect other players, not least library and information professionals and the services and facilities they support. Once again, a shift towards provision of services rather than custodianship of content is a clear direction of travel for library services, with the interesting question of the optimal locus of services (research group, institutional, consortial, national, network) also creating ambiguity and uncertainty in the future design of library and information services (Pinfield, Cox, & Rutter, 2017).

Conclusion

Open access is then a complex and fast-moving domain. We have seen in this chapter that the beginnings of OA, at least in its current form, were marked by developments such as the BOAI, at the turn of the 21st century. Since then, OA has grown significantly in a number of ways: OA options available to authors have grown, take-up of those options has grown, and use of OA materials has grown. OA has become more widely accepted, including by funders and other policymakers who have developed mandates and other policies designed to promote openness. There are demonstrable benefits for moving in the direction of greater openness, but there are also considerable challenges still. Not least of these is the reputation economy, in which researchers work, and the incentives it creates. At the same time the structure of the market for peer-reviewed journals militates against change (or at least, rapid and radical change). There has also been considerable resistance in the academic community to OA developments – from some researchers, publishers, and learned societies, for example. Nevertheless, all of the

actors in the space have between them engaged in a wide range of OA activities – we have seen the development of new policies, new services, new products, and new ways of working. Such innovation is likely to continue to gather momentum. More transformative change enabled by greater openness is also likely in future, but precisely what it will look like remains to be seen.

Having provided this survey of OA, we now turn in the next chapter to develop a more systematic representation of the environment.

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Chapter 2

Open access

Components and relationships

> We are at times too ready to believe that the present is the only possible state of things.
>
> (Marcel Proust (1919). *À la Recherche du Temps Perdu*)

Understanding the shape of the OA environment is critical for our study. Now we have provided a narrative overview of key developments, we can go on in this chapter to identify provisionally the main components of the OA environment rather more formally. We aim to build on the account in the previous chapter to set out OA in its constituent parts. At this stage, our analysis will be tentative but will be important in establishing some of the key concepts that will provide context for the rest of our study.

Picking out key aspects of the overview of OA in the previous chapter, we can construct a model of the OA environment. This is presented in Figure 2.1, which is designed to delineate in a more systematic way the key components of open access that we have already identified. This analysis will be useful later for identifying the roles of theory in the OA space as well as discussing the practice of OA and its possible futures.

We need to provide some explanation of the different elements in the model and why we have put them together as we have. The model is composed of three layers. First, at the base of the model are actors, the main individuals and groups with a stake in OA. Second, at the top, are what we have called OA "dimensions", the main aspects of OA itself as a form of scholarly communication. Third, are what we have termed "relational factors", which define the ways in which actors relate to the OA dimensions, in terms of attitudes and behaviours. These are discussed in more detail in what follows.

Actors

Firstly, then, are the *actors*. As we have seen, most key OA issues turn on the relationships between the different actors involved in scholarly communication. There are a variety of actors, who in simple terms may be put into two

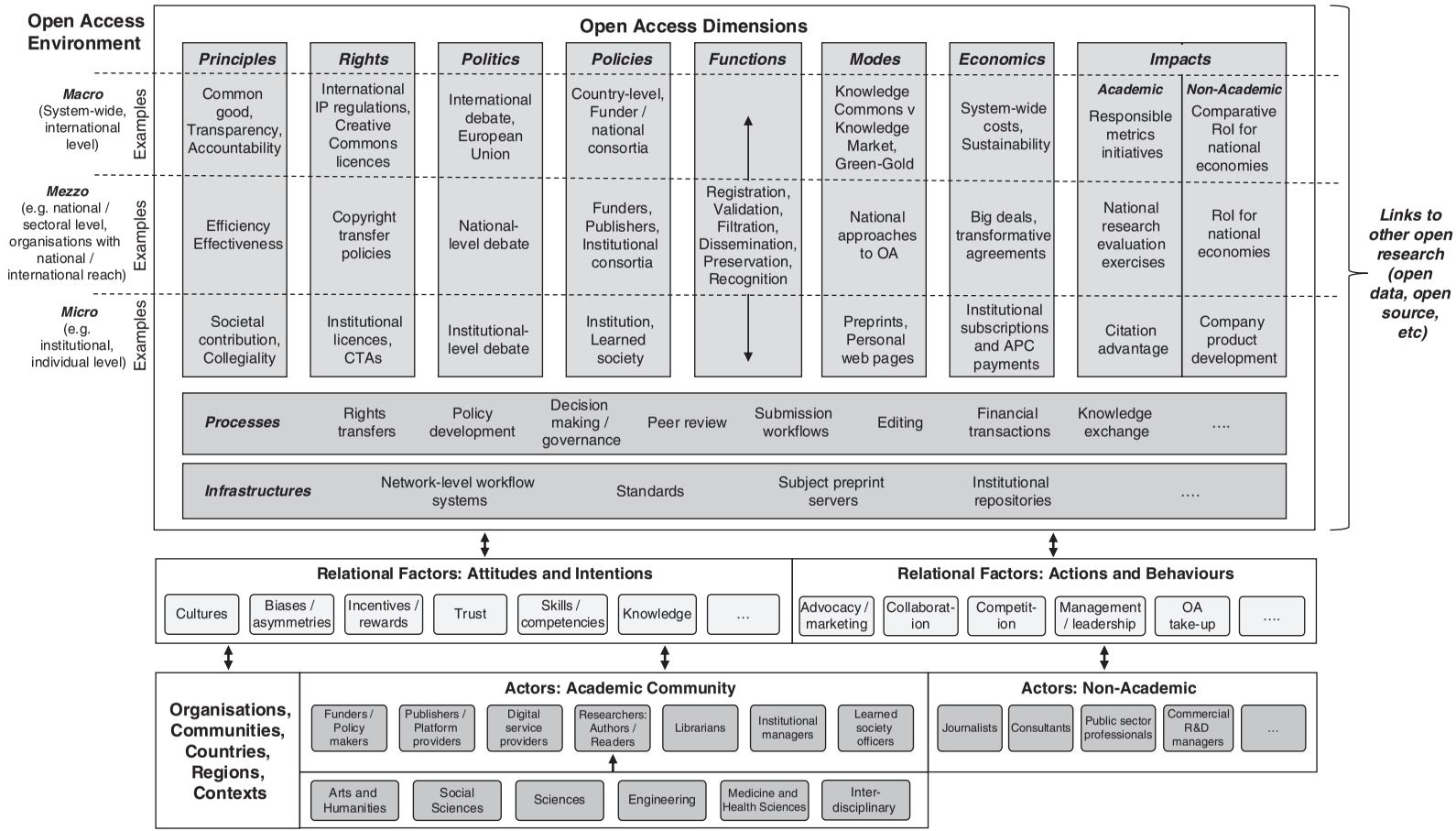

Figure 2.1 The open access environment

groups: those within the academic community and those outside the academy. The academic community, defined broadly, consists of all those who are involved in producing, managing, and consuming research outputs for research and educational purposes. *Academic actors*, as we have already seen, are:

- *Researchers:* from across the main disciplinary areas – arts and humanities, social sciences, sciences, engineering, medicine and health sciences, and those that work on interdisciplinary/transdisciplinary areas – who are the primary creators and consumers of scholarly work. Researchers also act as editors, editorial board members, and peer reviewers of content and so play a central role in selection and quality control of content.
- *Funders and policymakers:* representing government or public sector agencies (including the NIH in the US), as well as charitable foundations (such as the Wellcome Trust in the UK) and commercial sponsors (mostly large corporations with significant R&D activity).
- *Publishers and platform providers:* the former (publishers) represent the range of publishing organisations, including commercial (such as Elsevier and Wiley) and learned society publishers (such as the Institute of Physics or American Physical Society), some fully OA publishers (such as PLOS or Frontiers). Most publishers now offer OA options of some sort. The latter, platform providers, make available alternative scholarly communications channels, including preprint archives (like arXiv or bioRxiv) and other services (such as SciELO and the Open Library of the Humanities).
- *Digital service providers:* this category covers a wide range of actors supporting scholarly communication. Traditionally it would have included abstract and indexing service providers ("secondary publishers"), such as providers of citation indexes, but now includes a wide range of providers supporting scholarly workflows, including providers of academic social media services, such as Mendeley, or infrastructure services, such as ORCID (author identifier provider).
- *Librarians and other information professionals:* most of whom are based in higher education institutions (but who contribute to consortial organisations and similar activities), and may be involved in supporting OA policy, systems, and services, such as institutional repositories.
- *Institutional managers:* who may include those engaged in research support activities, IT provision, financial management or management of academic or support departments in HE institutions.
- *Representatives of learned societies:* officers from learned and professional societies (apart from publishers), which represent certain disciplinary or professional communities.

There are other actors, such as students in universities. Research students we have included in the above category of *researchers*. Other students are consumers of

content for the most part, but less directly involved in the system as a whole, and so whilst being acknowledged here are not included in the model.

As the model indicates, all of these actors operate within social systems (or a number of them), such as particular organisations or institutions (universities, research funding organisations, publishers etc.) in very different contexts, within and between different countries, with very different levels of economic development, technical infrastructure, political systems etc. These social systems often overlap and cut across each other in complex ways. Some of these actors may also play national or international roles, because, for example, their organisation has national or international reach, or because they play a role consortia or supra-organisational groups (university rectors associations are examples of such groups). Crucially, researchers are members of disciplinary communities, and although their salaries may be paid by institutions, their real loyalty is often to their (supra-institutional) disciplinary community, from which they often derive their status in the reputation economy.

We have defined the academic community broadly here, intentionally. There may be controversial elements to this. For example, some people might choose to place publishers outside the academic community as providing services to but not themselves being part of the academic community. This is a moot point, particularly as publishers are not a homogenous group – small learned society publishers may often have a different character from large commercial publishers and are arguably more embedded in the academy. Funders, similarly, may sometimes be categorised as relating to but not being part of the academic community. Here, however, we have spread the net widely, as these are all the actors that directly contribute to the academic endeavour, even though we acknowledge their roles and statuses within that endeavour are different.

In fact, one of the interesting features of the scholarly communication environment is the variety and interrelatedness of practitioner groups involved. Some of the categories defined above are not always distinct. For example, publishers and platform providers may be closely connected with digital service providers, either in terms of roles or ownership of services (for example, Mendeley, a digital service provider is owned by the publisher, Elsevier). Similarly, there is often an obvious overlap between publishers and learning societies (as discussed in the previous chapter). Furthermore, some senior faculty are also officers of learned societies, some library professionals may also provide publishing platforms, and so on.

Also, within certain practitioner groups there are a range of roles and also different perspectives and interests. Publishers are not by any means a homogenous group with regard to attitudes to OA. Even within single organisations, there will be different perspectives on OA. Individual publishers may often include staff with different views on OA and so OA-related policies emerge and evolve after some internal discussion and debate (although this is

often not publicised, of course). Developments in OA are to a large extent shaped by the ways in which these different groups relate to each other and to the other different components in the OA environment.

Non-academic actors, similarly, may be based in a range of organisations with local, national or international reach. They include a wide variety of roles, such as consultants, journalists, clinicians, public sector workers, managers of research and development in commercial organisations, charity workers etc., all of whom may make some use of research outputs.

Of course, the boundaries between the different actor groups, and indeed between the academic and non-academic are not always in reality clear. Some clinicians may also have roles in academia, as might scientists in commercial organisations. Nevertheless, these are, we think, useful categories to work with.

Dimensions

From the actors, we move to the main part of Figure 2.1 which sets out what we have called the *dimensions of OA*. All of the different actors relate to these dimensions of OA in various ways. We have identified the dimensions as, in summary:

- *Principles:* The rationale for OA itself, providing a justification for it, exemplified in documents, such as the BOAI.
- *Rights:* Ownership and control of content determining who can access and reuse content and on what terms.
- *Politics:* Controversies associated the OA environment, often involving conflicting perspectives and interests of the various actors.
- *Policies:* Formalised approaches taken to enact the OA principles and political decisions in organisations or groups of different sorts.
- *Functions:* The purposes or roles of academic journals and other channels of scholarly communication.
- *Modes:* The models or forms of open access systems and services.
- *Economics:* The business and sustainability models relating to OA, and the wider context encompassing finances and other resources, including funding allocations, costs, prices, and pricing models.
- *Impacts:* The affects, particularly benefits, that OA can have in either academic or non-academic contexts.
- *Infrastructures:* The instantiations of the various modes of OA consisting of a set of interoperating systems comprising, technologies and practices, underpinning other dimensions.
- *Processes:* The workflows or business activities usually sitting on and enabled by infrastructures.

We have shown in the model that each of these dimensions works at different *levels*. We have defined these levels as:

- *Macro*: issues applying system-wide or at international level.
- *Mezzo*: applying at national or sector-wide levels, including large-scale organisations, where the organisation has a national or international reach in its core function (e.g. a large commercial publisher).
- *Micro*: applying to individuals or small groups or specific institutions.

Whilst the lines between these levels are often not clearly demarcated, the levels act as convenient distinguishers of the scale and reach of activity. They apply to the key dimensions above in a number of ways, with particular examples given in Figure 2.1. They are particular instances only, since the dimensions will give rise to numerous examples. The *dimensions* at the different levels are discussed in more detail in what follows.

Principles include system-wide broad justifications or rationale for OA, such as common or public good, transparency and accountability (mentioned in the BOAI). At the mezzo level, key principles may often be instrumental ones, like efficiency and effectiveness – how OA should be designed to promote effectiveness and efficiency of particular aspects of scholarly communication. At a micro level, arguments for justifying engagement in OA on the part of individual higher education organisations, such as making a civic contribution. From the point of view of the individual researcher, there are a number of principles that might underpin OA activity, including what might be called collegiality or scientific citizenship – making a positive contribution to the community of scholars with which one is associated in a reciprocal way.

Rights may be applied at international level, as with internationally recognised copyright regulations or licences, such as those of the Creative Commons. At mezzo level, different publishers have different copyright policies in relation to their authors. Authors and institutions experience this at micro level in their encounter with publisher copyright agreements.

Politics are important since OA has proved to be a highly politicised issue. There are often conflicting perspectives on and interests in the key approaches. These discussions happen at international level (macro) in institutions of the European Union, for example. Politics at national (mezzo) level is most common, with different political institutions debating the contribution of OA to society and the economy. The politics of OA are being played out at micro level, in organisations, such as universities and (perhaps less publicly) funders and publishers.

Policies may be designed at national level (mezzo), by individual institutions and organisations, such as universities or learned societies (micro level). Publishers with international reach also have policies (mezzo) defining their position on OA and its different manifestations (Green and Gold etc.). Most recently, we have seen large-scale international cross-funder policy initiatives at international level, exemplified by Plan S (macro).

Functions include core functions, identified by Roosendaal and Geurts (1997), discussed in Chapter 1 – "registration", validation (which they called "certification"), dissemination ("awareness"), and preservation ("archiving"). To these have been added the additional factors of filtration (selection) and recognition (enabling rewards in scholarly communities). These functions all work at different levels of the system – macro, mezzo, and micro. To begin with, all of these functions play a role at system-wide level, with, for instance, established conventions of peer review (validation) being central to the scholarly communication as a whole, including the OA environment. The ways in which the functions are manifested and their significance may, however, differ between countries or even institutions. The recognition function may differ from university to university, for instance, in terms of how it translates into rewards, the way it is applied to academic appointment or promotion.

Modes include most obviously the Green and Gold routes to OA. At perhaps a more fundamental level is the overall economic model which forms the basis of a scholarly communication system. We have already identified two such models which have been evident in OA developments over the last 20 years – what we call the knowledge market, as against the knowledge commons. The former refers to the model widely practised in North America and Western Europe in which scholarly communication is regarded as a matter for the commercial market (albeit with checks) and is therefore dominated by a small number of large commercial players. This contrasts with the different model developed in South America and elsewhere, most notably in initiatives like SciELO, where there is more of a community-based, publicly funded approach to scholarly communication. At a micro level, individuals or their institutions may practice different modes of scholarly communication, by posting preprints or making copies of articles available on personal webpages, and so on.

Economics at a macro level include system-wide costs for scholarly communication as part of the overall research enterprise identified through various large-scale modelling. These are reflected in business models such as the big deal and more recently transformative agreements, usually implemented at consortial or national level (mezzo). At the micro level are institutional experiences of paying subscriptions or APCs.

Impacts include *academic impacts*, such as at system-wide level various initiatives promoting responsible metrics, such as DORA (Declaration on Research Assessment), that contribute to the environment relating to academic impact. At a mezzo level, national research evaluation exercises assess academic impact, including that of OA. Impacts at micro level are well-known and include, for example, citation advantage from making work available in an OA form for individual authors. *Non-academic impacts* may also be seen at this level with large-scale assessments of the economic or societal impact of OA. Sectoral (mezzo-level) impact may also occur, in areas such as the pharmaceutical industry or charities. At the micro level, individual commercial enterprises implementing findings from an OA study represent non-academic impact on the ground.

Infrastructures underpin the dimensions already mentioned, and also work at different levels. At the macro level, initiatives such as global interoperability standards or system-wide workflow software contribute to infrastructure. Macro-level developments also include services such as ResearchGate or Academia.edu, DOAJ (Directory of Open Access Journals), and SHERPA RoMEO (providing information on rights in relation to self-archiving and related activity). Subject repositories and institutional repository systems are provided by particular communities or institutions, and may support local agendas of different kinds, but are universally available as part of the global infrastructure.

Processes usually operate on the infrastructures and are instantiations of many of the other dimensions. Various processes relate to the policies, functions, modes, infrastructures, and impacts of OA, although not necessarily with a clear one-to-one relationship. The peer review process, for example, relates to the functions of OA (in that validation and filtration are often achieved through review), and modes of OA (in that different models of OA may have different approaches to undertaking the review, including open peer review). Systems of different kinds within the infrastructures dimension include workflows for carrying out peer review. Other processes in this dimension include policy development, submission workflows, and knowledge exchange.

Relational factors

A key issue is how the different actors relate to each other and the OA dimensions. To address this question, we have suggested a range of *relational factors*. We have divided these into two general logical groups. Firstly, there are those factors which relate to *attitudes and intentions*, which include factors such as values and beliefs. Secondly, there are factors relating to *actions and behaviours*, which cover activities being carried out in the space. We give the following examples of attitudes and intentions:

- *Disciplinary and professional cultures:* These shape varying publication practices and norms, in the case of disciplinary cultures; and in the case of professional cultures, shape professional approaches and perspective. They vary within and between different professional groups and organisations (between, for example, commercial and learned society publishers).
- *Biases and asymmetries:* These include biases relating to gender, nationality, or language, and between the scientific systems of the Global North and Global South, all of which may manifest themselves at different points in academic research and publication, including funding applications, promotion and tenure, peer review, editorship or membership of editorial boards etc.
- *Incentives and rewards:* For researchers there are a complex range of often misaligned incentives, as we have seen. Some well-established incentives centre on the "reputation economy", alongside those encouraging open practices.

- *Trust:* This an essential feature of scholarly communication, with actors having different levels of trust in different types of outputs and venues of publications – journal titles acting as trusted brands, and open access venues sometimes being viewed as less trustworthy, for example.
- *Skills and competencies:* These enable the actors to contribute to the scholarly communication environment in various ways.
- *Knowledge of the environment:* An awareness and understanding of relevant aspects of the environment in order that they can determine their contributions, levels of which may vary within and between actor groups.

Actions and behaviours include all activities that actors may carry out in relation to the OA dimensions. There are a number of examples of these which we would highlight:

- *Advocacy and training:* These may be necessary to improve the knowledge, skills and competencies in relation to OA. In this area, we also include training and development, designed to enhance skills and improve competencies relating to open practices.
- *Collaboration:* Research in general and publishing in particular involve collaboration. The extent of collaboration varies across disciplines, but most disciplines within STM (science, technology, and medicine) are collaborative and result in multi-authored work. This is also true of many social sciences, although less so of arts and humanities.
- *Competition:* At the same time, academic research is intensely competitive. Researchers are typically competing for funding, space in publishing venues, and prestige and promotion. In a world that prizes novelty, this can often lead to secrecy or at least limitations on sharing. This is obviously in tension with the collaboration above and means that researchers often have to behave "coopetively" – "coopetition" being a combination of competition and cooperation.
- *Management and leadership:* This is undertaken by different actors in different circumstances. We have already seen example of academic innovators and policymakers initiating new approaches as examples of leadership.
- *Take-up of OA:* The actual take-up of different OA practices is, of course, a key behavioural factor related to all of the others. Such take up involves engagement with the OA dimensions in the model.

The relational factors in the model are important partly because they help illustrate that all of the components in the model are in fact in dynamic relation to each other. They are not static. Each component is itself changing and its relationships with other components are also shifting. The model needs to be understood as an attempt to take a snapshot of a rapidly changing picture.

All of the different components in the model relate in different ways to other open research or open science developments. In our study, we are focusing on open access to research publications and similar outputs, but the relationship

between OA and other opens is increasingly important, with different aspects of OA becoming more integrated with other open strategies and practices.

Finally, it is crucial we say what this model is and is not. It is designed to set out the main components of OA. It is also designed to indicate general relationships. Specific relationships, for example, between different actor groups and specific dimensions of OA, could be further traced through the model, but the model itself does not depict them in the form given in Figure 2.1. The model is not a process diagram. It is not designed to represent a particular workflow from one point to another. Particular workflows – for example, a submissions process undertaken by an academic researcher of a copy of an article to an institutional repository – would require their own process mapping. That is not something we have illustrated in the model, although the model may suggest the main components involved, even if it does not show the details of the workflows between them. Our model accounts for processes as one of the dimensions of OA but it does not map them. Rather, the model is a kind of taxonomy of the constituent parts of OA designed to help to see the different aspects of OA in such a way that can aid further analysis.

Conclusion

The model we have presented here helps to create a systematic picture of the open access environment. It is a complex picture. It involves a broad range of actors, all situated in particular organisations, communities, countries, and regions. These actors relate to the main dimensions of the OA environment via different attitudes and behaviours, some examples of which we have identified. The dimensions of open access themselves are wide-ranging and multi-layered. The layering in the model (both within the dimensions, and between dimensions, relational factors and actors) is important, since it helps to understand the different ways in which OA is often seen and debated – individual, collective; local, national, system-wide; community and cross-community, and so on.

This picture will be helpful to us in the remainder of our study particularly in considering the role of theory in understanding the OA environment. We will return to it later in this book, but first we need to think more about theory itself.

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Part 2

Foundations

Theory and practice

Chapter 3

Theory

Definitions and disciplines

> Theory is grey, but the tree of life is green.
>
> (Johann Wolfgang von Goethe (1828). *Faust*)

In Part 2 of this book we will look first at theory, and second at the theory-practice relationship. The aim of this chapter is to examine different conceptions of "theory" – what it is and what it is for. We then go on in Chapter 4 to discuss "practice", and the ways in which the relationship between theory and practice have been discussed in the social sciences and humanities (SSH).

We will begin in this chapter by discussing different conceptualisations of theory and go on to focus on typologies of theory in SSH generally and their applicability in particular to library and information science (LIS), and associated disciplines. This general area, and this specific discipline, are relevant because open access, the topic of this book, is generally regarded as an aspect of scholarly communication. In turn, scholarly communication, and its transformation in an age of digital information, has mainly been studied by the LIS discipline. This follows naturally from the concern of LIS with the whole of the information communication chain of knowledge recorded in documents (see, for example, Robinson, 2009). LIS is a multidiscipline, though usually located within SSH. Lessons about theory, and about the theory-practice relationship, derived from LIS studies are therefore likely to be relevant more widely within SSH.

The chapter will examine the extent to which theory underpins research, and how different research approaches have developed "theory", "models" and "frameworks" as ways of analysing and explaining reality, as well as predicting developments or prescribing actions. This analysis will provide a basis for the approach followed in the rest of the book and aims to give a robust theoretical grounding to our study. In this chapter, we will begin by considering the general conception of theory. We then go on to consider how the term is used in various academic disciplines and professional domains. Finally, we conclude by focusing on conceptions of theory in LIS.

What is theory?

> "Theory" is a much-used term in science, philosophy and everyday life language. It is therefore strange that it is relatively seldom examined.
>
> (Hjørland, 2015, p. 113)

> It can scarcely be denied that the supreme goal of all theory is to make the irreducible basic elements as simple and as few as possible without having to surrender the adequate representation of a single datum of experience.
> (Albert Einstein, Herbert Spencer Lecture, Oxford, 10 June 1933, 1934, p. 165)

An understanding of theory can best begin with a consideration of the general meaning of the word. Looking at current general dictionary definitions of "theory" suggests that it has three main connotations (with only a few examples from standard reference sources given to illustrate each):

Something which provides an abstraction of reality into general principles

> A contemplative and rational type of abstract or generalizing thinking, or the results of such thinking
>
> (Wikipedia)

> The general or abstract principles of a body of fact, a science, or an art
>
> (Merriam-Webster Dictionary)

Something that explains, or aids understanding

> An explanation or system of anything
>
> (Chambers Dictionary)

> A supposition or system of ideas intended to explain something, especially one based on general principles independent of the thing to be explained
>
> (Oxford English Dictionary)

> A plausible or scientifically acceptable general principle or body of principles offered to explain phenomena
>
> (Merriam-Webster Dictionary)

Something that acts as a guide to practice

> A set of principles on which the practice of an activity is based
>
> (Oxford English Dictionary)

> A belief, policy or procedure proposed or followed as the basis for action
> (Merriam-Webster Dictionary)

It seems reasonable to suppose that all three of these meanings may be applicable to theory for the social sciences and humanities (SSH), as we are surely in need of principles which may increase our understanding and be applicable to practice. The "understanding" aspect is of particular importance, expressed well by Robertson (2000, p. 1): "Understanding is what theory is about: those other attributes of theory, prediction and application, are side-effects only, secondary to the main purpose."

Theory in diverse disciplines and professions

At a simplistic level, it might be thought that the disciplines and professions based on the physical sciences are based solidly on theories of a particular kind, those based on the biological sciences less so, and those rooted in the social sciences and humanities even less so. Although there is an element of truth in this, the situation is rather more nuanced.

Within the physical sciences, there are distinct differences in how theory is regarded. In physics, often as the epitome of the theoretical discipline, theory is held to take the form of rigorous mathematical laws, derived either *de novo* from basic principles or pragmatically to explain experimental or observational data. In either case, the role of theory is to account for existing data, and to predict the results of new experiments and observations; for a classic popular account of this perspective see Feynman (1967), and for a detailed treatment see Penrose (2004), and for a popular and critical account, see Baggott (2013). Theories of this kind, following Karl Popper, must be falsifiable; that is to say, we should be able to specify empirical data which could refute them.

Even in physics, this picture is oversimplified, and when we move to the other physical sciences, it becomes entirely inadequate. Gavroglou and Simões (2012, 2016), in a detailed analysis of the development of the sub-discipline of quantum chemistry, show a strong difference between physicists and chemists as to the nature of theory they regard as appropriate in investigating essentially the same phenomena. The different cultural characteristics of disciplines impose different explanatory demands of their theories. In this case, including the different roles of *de novo* mathematical analysis and of inductive analysis of experimental data in theory creation, and of the preference of chemists for pragmatic "models" rather the rigorous "laws" or "theories" preferred by physicists; see also Chang (2016).

The periodic table of the elements is the best known explanatory model within chemistry (Scerri, 2007). It is a visual presentation of the periodic law, one of the main theoretical frameworks of chemistry, arguably the single most important framework, which states that in elements arranged by atomic number there is an approximate repetition in their properties after regular, but

varying, intervals. The periodic table allows the rationalisation and classification of enormous amounts of information about the formulae and properties of chemical compounds, representing trends both horizontally and vertically; but the theory on which it is based is very far from the rigorous and exact theory supposed to characterise physical science. When Mendeleev presented the first form of the modern periodic table in 1869, the periodicity of properties of the elements was well-known experimentally, and represented in many earlier forms of diagram. The rationale for this was unknown, and was not fully explained until almost 100 years later, with the development of the quantum theory of electronic orbitals and shells. Even today, there is dispute as to whether some detailed features of the table have been fully explained by theory, but this initial lack of an explanatory theory did not stop the periodic table being of great value in the practice of chemistry (Scerri, 2007, 2016).

The same may be said of geology, in which plate tectonic theory and the geological age table have roles roughly equivalent to the periodic law in chemistry as organising principles to which mechanistic explanation have been, to a degree, retrofitted (Molnar, 2015). There is a similar situation in astronomy, in which theory has had a role largely in interpreting and understanding observations, rather than in prediction, and in which qualitative, classificatory models have always been of importance (Dick, 2013).

This is also true of the biological sciences, and associated professions, most notably the healthcare professions. As Shou, Bergstrom, Chakraborty, & Skinner (2015, p. 1) put it: "Theory has long been celebrated in the physical sciences, but the situation is very different in the life sciences [although] theory plays a paramount role in biology". They identify a gap between theoretically minded biologists and their empirically minded academic colleagues, and by implication practitioners, accounted for by the complexity of typical biological systems. This complexity has two consequences. First, the theoretical models necessary to deal with them are equivalently complex, and hence inaccessible to many potential users. Second, the models may have to abstract and simplify reality to such an extent as to be less than useful in many practical situations. We will see some of the same issues arise with LIS theories and models.

We can conclude that even in the sciences, the nature and use of theory is not as straightforward as may often be believed. It is often thought that the physical and biological sciences use, whenever possible, rigorous "laws" and "theories", while the social and human sciences rely on "models" and "frameworks", but matters are not so simple. As Chang (2016, p. 238) puts it:

> In the philosophy of science recently that much theoretical work in science happens by means of models, rather than anything billed as 'theories' or 'laws'. This is very much based on how scientists themselves speak about their work these days.

If we turn now to the social sciences and humanities, we find a still wider understanding of the scope of theory and theoretical entities. For much of this wide academic area, "theory" implies critical theory or literary theory or art theory; loosely defined qualitative, hermeneutic forms of theory building, which has no equivalent, and indeed would not be recognised as theory at all, at the scientific end of the disciplinary spectrum (Bronner, 2017; Cutler, 2011; Freeland, 2003). This is the kind of theory which Cronin and Meho (2009) had in mind, when they rebuked the library and information science discipline for failing to keep up with academic trends.

Beyond this, the range of what counts as theory in SSH is very broad and diverse, as exemplified by the contributions in the volume edited by Corvellec (2013), all addressing the question, "what is theory?". Here, we find such attributions as "theory as beholding", "theory as explanation", "theory as thinking", "theory as disinterestedness", "theory as plot", "theory as hope", "theory as disappointment", and "theory as a family concept". Corvellec (2013, pp. 9–10) sums this up well:

> The wide-ranging answers provided here, which are only a few of a wealth of possible answers, since they come solely from selected disciplines in the social and cultural sciences, clearly indicate that theory is something so elusive and multi-faceted that, if you get an answer at all, it is unlikely to be "satisfying". So many things are labelled "theory", for so many purposes and from so many intractable epistemological perspectives.

There is a clear need for a means of understanding and comparing these diverse conceptions of theory in SSH, and several typologies or categorisations have been devised for this purpose. We can mention two as being of particular significance: those due to Reynolds and to Gregor respectively. For the social sciences generally, the sociologist Paul Reynolds identified four forms of theory (Reynolds, 1971):

- A set of laws, i.e. well-supported empirical generalizations.
- An inter-related set of definitions, axioms and propositions.
- Descriptions of causal processes.
- Vague concepts, untested hypotheses, prescriptions for good behaviour.

Shirley Gregor, an information systems scholar, proposed five types of theory for that discipline (Gregor, 2006). This typology has gained wide use beyond the information systems context. Its five categories are:

- Type 1 – theory for analysing, typically initial descriptive attempts at theory.
- Type 2 – theory for explaining.
- Type 3 – theory for predicting.

- Type 4 – theory for both explaining and predicting, typically described as "grand theories" or meta-theories.
- Type 5 – theory for design and action.

As we shall see later, the theory typologies of Gregor and or Reynolds have been used by several writers on the creation and use of theory in LIS. We will use them for analysis of OA studies in Part 3.

These typologies are quite broad and hospitable, in that they allow the inclusion of theoretical entities which may be termed differently: frameworks, models, and so on. They are certainly in accord with the influential, and deceptively simple, explanation of theory by the philosopher Theodore Schatzki (2005), who suggests that a theory is simply a general and abstract account of something. All of Gregor's categories, and at least the first three of Reynolds', would count as theory on this basis.

There are, however, alternative viewpoints, which prefer to be more restrictive. For example, also from within the information systems discipline, Steven Alter (2017), regarding theories as "conceptual artefacts" – "abstract knowledge objects that can be produced, tested and improved" (Alter, 2017, p. 671) – argued for a rigorous distinction between theories and other conceptual artefacts such as models, metaphors, and frameworks. This seems to be a very narrow, indeed an inappropriately narrow, view of theory compared with that of Reynolds and Gregor, and not so helpful for the consideration of theory in LIS or SSH more broadly.

Finally, in this section, it is worth mentioning that there is sometimes a confusion, particularly in the translation of research to practice, between theory-based and evidence-based research findings in SSH. The latter may involve theory, but may equally, and perhaps more commonly, rely solely on collection and organisation of empirical data although arguably the act of organising and interpreting results can often involve a kind of theorising, even if unacknowledged. This applies to LIS as much as to any other discipline or profession, and will be discussed in the next chapter.

Theory in LIS

We may imagine that ideas of theory of most relevance to LIS will be located within the SSH area: first, because, since LIS is generally regarded as among the SSH disciplines, we may expect its own theories to be so; second, because when using theory from other disciplines, these disciplines will be largely SSH – management, education, economics, psychology, sociology, etc.

We should first recognise that it has been suggested by many commentators over the years that LIS makes regrettably little use of theory. To take one typical example, Lor (2014, p. 30) states "although some use is made of theory from other fields such as psychology, sociology or management, LIS has produced very little theory of any significance". It is also the case that there is very little explicit

discussion of what "theory" means in an LIS context. Authors such as Jack Meadows and Brian Vickery have written much-quoted papers on theory and metatheory in LIS which do not explicitly state what they consider theory to be. No doubt, they assumed that their readership would know what was meant. Hjørland (2015), giving a detailed and well-referenced account, suggests that the same is true for other social disciplines. Further, even when theory is used in LIS, it may go under another name. For example, Thelwall (2016) notes that, although his webometric studies may be fitted within Gregor's typology, he did not consider that he was creating theory, and that, although he rarely cited explicitly named theories, he often used "theoretical insights".

The role of theory in LIS has been a subject for debate for several decades; see, for example, the review by Togia and Korobili (2014). An early definition of theory for LIS was given by Boyce and Kraft (1985), who regarded it as a body of principles: fundamental laws or empirical regularities. This is a rather restrictive understanding, seemingly based on the kind of theories employed in the physical sciences. Michael Buckland (1991, p. 18) took a broader view, seeing LIS theory as "a description or explanation of the nature of things", and with no single definition of theory possible.

This idea that no single definition of theory is adequate for LIS was emphasised in the well-known study of use of theory in LIS by Pettigrew and McKechnie (2001). They noted that,

> although varied definitions appear in the literature, the results from our initial coding [of a set of LIS literature invoking theory in some way] quickly indicated that there was no singular definition that would encompass all the varied uses of the term in the articles ... For example, articles about information retrieval differed vastly in their use of the term from those that focused on information behavior, history, or information policy.
>
> (pp. 64–65)

They therefore defined theory to be present whenever the author used the word, or alterative terms such as "conceptual", "framework", "grounded", or "underpinnings".

This picture of a rather confused situation is well summed up by Hjørland (2013, p. 227), who writes,

> In LIS, different theories, metatheories, "approaches", "paradigms", and research traditions exist. The situation is rather chaotic and it is difficult to get a clear overview of the theoretical landscape of the field as a whole. Even the definition and understanding of such common terms as "theory", "metatheory", and "paradigm" is a difficult task (not just in relation to LIS, but in relation to all disciplines.

In a later paper, Hjørland (2017, p. 1797) returned to this theme:

> The overall situation in information science today is a chaos of theoretical contributions, each paying no or much too little interest in the existing ones.

Similarly, Sugimoto (2016, p. 1) writes that "one difficulty in identifying theories of informetrics and scholarly communication is the diversity of terminology around theories". She notes that contributors to a volume on theory in that aspect of the information sciences use "theories", "models", "taxonomies", "typologies", "frameworks", "indices", "hypotheses", and "principles", sometimes synonymously. For the purpose of that volume, she took "theory" to be an umbrella term, defined as "a set of statements, systems, or principles, used to describe or explain phenomena". Booth and Carroll (2015) also discuss the various connotations of theories, concepts, models, and frameworks in the context of health information provision. This parallels a debate in the philosophy of science, as to the status of these theoretical entities. The assumption that a "theory" represents some aspect of reality pretty much in full, whereas a "model" is necessarily abstract, incomplete, or subjective, and hence cannot fully represent reality, is now under question (see, for example, Chang, 2016). It is wise not to put too much store on terms used to describe these entities.

One particularly notable attempt at defining theory for LIS is due to Marcia Bates (2005) in a paper which has been of considerable influence. That Hjørland (2013, p. 277) wrote of it that it "provided an initial useful survey of such concepts but more is needed", indicates the limited attention given to these issues in the past. Bates (2005, p. 2) begins with a consideration of the definition of theory in standard dictionaries, and reflects on them:

> (a) The body of generalizations and principles developed in association with practice in a field of activity and forming its content as an intellectual discipline (taken from Webster's Unabridged Dictionary) (b) A system of assumptions, accepted principles, and rules of procedure devised to analyze, predict, or otherwise explain the nature of behaviour of a specified set of phenomena (taken from the American Heritage Dictionary) ... Theory, as defined in definition (a), can be thought of as the entire body of generalizations and principles developed for a field, as in "the theory of chemistry". Second ... is the concept of a single theory. A theory is a system of assumptions, principles, and relationships posited to explain a specified set of phenomena. Theories often carry with them an implicit metatheory and methodology, as in the "rules of procedure" in definition (b). However, for most purposes, the core meaning of theory centers around the idea of a developed understanding, an explanation, for some phenomenon.

Bates also notes that models can be of great value in developing theory, as a kind of proto-theory, a tentative proposed set of relationships which can be tested and validated. This echoes Wilson's idea that "a model may be described as a framework for thinking about a problem and may evolve into a statement of the relationship among theoretical propositions" (Wilson, 1999, p. 250). We will return to the importance of models later.

We now turn to a more specific consideration of what kind of theory is likely to be of most value for LIS and, therefore, what kind of theory may be used in a consideration of open access.

Types and typologies of theory in LIS

There seems to a general agreement that the most useful type of theory for most purposes within LIS are the "mid-range" or "middle-range" theories. These were defined by the sociologist Robert Merton as,

> theories that lie between the minor but necessary working hypotheses that evolve in abundance during day-to-day research and the all-exclusive systematic efforts to develop a unified theory that will explain all the observed uniformities of social behaviour, social organization and social change.
>
> (Merton, 1968, p. 51)

It is easy to identify Merton's conception with the numerous conceptual models and frameworks in LIS. Stephen Robertson expressed this well, without using the terminology of mid- or middle range:

> I have been arguing . . . not for a Grand capital-T Theory of or about information retrieval, but for a very much lower level in the scheme of things. The structures of the objects or entities that we deal with in IR, or of collections of these objects or entities, the structures of the relationships between them, and the structures of the situations that we observe or postulate, all provide us with a level of logical argument which has to be basic to our field.
>
> (Robertson, 2000, p. 8)

The importance of mid-range theories for LIS has been noted by Lor (2014), by Hjørland (2015), and by Meadows (2016), and an example given by Lloyd (2017) in the development of an explicitly mid-range model of information literacy. Predominance of this kind of theory in the related area media and communication research has been noted by Schroeder (2018), as well as in other SSH disciplines; see, for example, Ougaard (2013) and Kaidesoja (2019), who points out that such theories often stem from case study research.

If we may take it that this is the general form of theory most likely to be useful for, and to be encountered in, LIS, we can now consider more specifically what kind of theories these may be.

Case and Given (2016, p. 185), discussing theories of information seeking and information-related behaviour, and lamenting the lack of a clear definition of "theory", noted Reynolds typology, outlined above (Reynolds, 1971), and utilised it in their analysis of theory within LIS. Reynolds' first category (laws, meaning well-supported empirical generalizations) is unlikely to be of value for LIS. More appropriate are the second (*an inter-related set of definitions, axioms, and propositions*), encompassing models for conceptual understanding, and particularly the third (*descriptions of causal processes*), encompassing most of the process models for information retrieval, information behaviour, and information literacy. Arguably all too often it is the fourth (vague concepts, untested hypotheses, prescriptions for good behaviour) which comprises much of what is labelled theory for LIS (Bawden, 2016).

The typology of theory proposed by Gregor (2006), and again outlined above, has been more quoted than any other in the LIS context; perhaps not surprisingly, as the typology was developed for the somewhat related information systems discipline. All of Gregor's five types of theory may be found in the LIS literature, although types 1 (theory for analysing, typically initial descriptive attempts at theory) and 2 (theory for explaining) predominate (Sonnenwald, 2016b). Gregor's typology has been suggested as a useful framework for understanding LIS theory (see, for example, Sonnenwald, 2016a; Thelwall, 2016), although (Hjørland, 2017) finds it to be superficial and ahistorical. Thelwall (2016, p. 177) finds that "the taxonomy fits webometrics research surprisingly well", with most theory in this area being of types 1 (theory for analysing, typically initial descriptive attempts at theory) and 5 (theory for design and action). Bawden (2016) notes that his theoretical work has matched Gregor's type 2 (theory for explaining). In a survey of research into information privacy primarily in the information systems discipline, Bélanger and Crossler (2011) found that type 4 (theory for both explaining and predicting, typically described as "grand theories" or meta-theories) predominated, with types 1 (theory for analysing, typically initial descriptive attempts at theory) and 2 (theory for explaining) also significant. In the adjacent discipline of information systems, Gregor's type 4, (theory for explaining and predicting), has been dominant, at least in terms of publications in major journals (Alter, 2017).

Given this outline view of the type of theory most likely to be of value to LIS, we now consider how theory is created and used within the discipline. This discussion will be a useful background to our consideration of the OA literature in Part 3.

Creating and using theory in LIS

Creating theory

LIS theory has typically been developed by, and largely considered and discussed by, academics rather than practitioners, and disseminated only to

a limited extent to the latter (Lewin's maxim often being ignored). Where LIS theory has been developed in a practice setting, it has typically been in a scientific research environment, where research and development in all fields has been supported, and then often in conjunction with academia; see, for example, Bawden (2016). There is no significant body of "practice theory" developed within LIS, of the kind discussed by Van der Veer Martens (2010) developed within nursing, financial, religious, and military communities of practice, although some LIS theory does specifically address practice situations; see, for example, the development of a theory of information literacy practice (Lloyd, 2017).

The most significant collection of material thus far on theory building in LIS is the collection edited by Sonnenwald (2016b). Whilst there is some mention of the methods of grand theory construction, as expressed by Polanyi, Popper, and Kuhn (Meadows, 2016; Sonnenwald, 2016a), the examples of theory construction presented seem to be highly personal and contextual, with little in the way of an overarching and directing metatheoretical approach. This seems a fair reflection of the ways in theory has been created in LIS: bottom-up, and as a pragmatic response to contextual needs.

More specifically, in LIS in general, models have typically been the way into theory building, rather than a metatheory or philosophy. And these are typically conceptual models, expressed as text or diagrams. Hjørland (2015) has emphasised the importance of concepts in LIS theory building, and Savolainen (2019) has analysed in detail the kind of models used in information behaviour research. Use of metatheory, and more formal or general approaches has been strictly limited.

Bearing in mind that background, we now want to go on to discuss four areas of theory creation and use within LIS which are particularly important: use of metatheory; developing models *de nova*; elaborating and extending existing models; and bringing in "pre-prepared" theory from other disciplines.

Using metatheory

Hjørland has argued consistently that library and information science theories should be developed, and existing theories analysed, on the basis of metatheory, and specifically on the application of theories of knowledge (Hjørland, 1998, 2011b). He has given several examples of the analysis of LIS theories, models, and approaches, by applying theories of knowledge and of science to, for example, browsing (Hjørland, 2011b), indexing and retrieval (Hjørland, 2011c), evidence-based practice (Hjørland, 2011a), and informetrics (Hjørland, 2016).

Vakkari and Kuokkanen (1997) applied a conception of sociological theory due to Wagner and Berger (1985), generally regarded as a philosophy or metatheory, to an example of theory growth in information-seeking research. This was a "reconstruction", showing how the actual theory development via models could be interpreted in light of the metatheory. Wagner and Berger's

metatheoretical approach has also been noted by Hjørland (2011b) as relevant to the information sciences. De Araújo and Tennis (2018) have reviewed the application of metatheoretical research in knowledge organisation. These, however, are exceptions. Metatheory has played little part in LIS, and Bates noted its lack of application in 2005.

Developing models de novo

This approach involves the use of a Grounded Theory approach, whether or not it is termed as such. The family of methods included under the Grounded Theory heading, having in common the purpose of developing theory from qualitative data without a prior guiding framework, have been used to a limited extent for theory building within LIS. Often the theories produced in this way are termed a model or a framework, and all involve the identification of concepts and their relationships. To give three examples:

- Burford (2014) presented a framework, in the form of a conceptual model, developed from a Grounded Theory analysis, for the practice of information architecture in large organisations.
- Vassilakaki and Johnson (2015) used Grounded Theory to derive a model of concepts and relations for the search process in a multilingual retrieval system.
- French and Williamson (2016) used Grounded Theory in a qualitative study of the information practices of welfare workers, developing a series of conceptual models.

This general approach may use qualitative methods not necessarily described as Grounded Theory, nor following all of the prescriptions of any of the flavours of Grounded Theory per se, though they may use some of its techniques. Examples are:

- Thematic analysis used to generate a model for evidence-based practice in librarianship (Gillespie, 2014).
- Analysis of the results of a literature synthesis, focus group, and Delphi study, to develop a model for slow information behaviour (Poirier & Robinson, 2014).

Elaborating existing models

This approach involves theory building by the elaboration and improvement of conceptual models.

Stephen Robertson has argued specifically for a kind of theory building for LIS that involves continued improvement of conceptual models, rather than creation of "Grand Theory" *de novo*:

> I believe that the models we have at present can indeed be extended, by theoretical argument as well as by [pragmatic considerations], to cover more ground than they do at present and to be more useful as tools. But when I read a paper (as one does occasionally) which seems to make a claim to represent a Grand Theory, then I shall continue to take it with a pinch of salt.
>
> (Robertson, 2000, p. 10)

In the most ambitious example of such model extension, Tom Wilson (2016) has argued that the incremental extension and improvement of his series of conceptual models of information behaviour now amount to a general theory of that topic, although the term "theory" had never been used by Wilson himself.

Other examples of model extension and combination include:

- The combination of models for information seeking and for communication to create a new model, of broader scope (Robson & Robinson, 2013).
- Successive improvement and elaboration of conceptual models of information literacy, leading to the introduction of a new theoretical concept, information discernment (Walton, 2017).
- Consolidation of several models of serendipity into a new process model (McCay-Peet & Toms, 2015).
- Development of a theory of digital media, by comparing three existing theories, identifying deficiencies in each, and developing a new theory to compensate for these deficiencies (Schroeder, 2018).

Bringing in theory from other disciplines

It has often been noted that LIS tends to adopt theory from other disciplines, rather than to create its own. To give just a few examples:

- Sugimoto (2016) noted that a collection of papers on theory in informetrics drew from physics, evolutionary biology, linguistics, psychology, and communication.
- Robinson and Bawden (2014) compared concepts of information, of potential relevance to LIS, drawn from the physical and biological sciences, philosophy, the social and human sciences, and information and communication technology.
- Many of the theories of information behaviour in the comprehensive collection of (Fisher, Erdelez, & McKechnie, 2005) are "concepts, topics, or perspectives from other disciplines" (Hjørland, 2013, p. 227).
- A common viewpoint may be expressed as suggesting that "the information sciences have no theoretical core, but derive theoretical structures from outside disciplines" (Sonnenwald, 2016b).

- Meadows (2016, p. 316) noted that "information retrieval theory is basically mathematical, scientometrics is basically statistical, HCI [Human-Computer Interaction] is basically psychological, and so on. Couched in these terms, it sounds as if the information sciences were a ragbag of theories derived from other disciplines. But this should be no surprise: it is characteristic of an applied field, which is what the information sciences traditionally have been."

This may not necessarily be a bad thing, indeed it may be appropriate and inevitable, but it has raised concerns, typified by Dillon (2016, p. 230):

> by its very nature, information science is an interdisciplinary field and therefore it must draw theory from outside. This is certainly plausible, but my concern is that if we only derive our theoretical analyses from outside, it is even more difficult to demonstrate the process of theory building . . . in the information sciences.

This may be seen as another reason for the lack of any substantial body of knowledge on the creation of LIS theory.

A final method for introducing theory into LIS is to bring in a "pre-prepared" theory from another discipline, and apply it in the LIS context with little or no adaption. Seven typical examples of this are:

- The use of Genre Theory to examine scholarly blogging practice (Kjellberg, 2009).
- Activity Theory applied to study of information practices of medical researchers (Roos, 2012).
- Structuration Theory used to examine use of online newspaper (Larsson, 2012).
- Radical Change Theory used to study the information behaviour of young people (Koh, 2013).
- Innovation Diffusion Theory applied to the study of funding of open access publication (Pinfield & Middleton, 2016).
- Rational Choice Theory used to study unethical scholarly publishing (Xia, 2018).
- Lewin's gatekeeping theory used to examine censorship within library collections (Steele, 2018).

We may note that imported theory may, because of its origins, not be readily understandable by an audience from the library/information disciplines. Examples of this, we identify in this book, are the use of Quantum Game Theory, and of Critical Theory. They are based in concepts and perspectives inconsistent with those common within LIS; different "forms of knowledge" (Walsh, 1993).

In summary, we can say that these four general methods encapsulate the ways in which theory has been developed within LIS over the past two decades. The

most common method has been the generation of new models by elaboration of existing models. Least common has been use of any form of metatheory.

Conclusion

From this limited and selective analysis, we may draw the following conclusions about the kind of substantive theory (i.e. not including Reynolds' type 4) likely to be found in the LIS context. We highlight seven key points which we will revisit in our consideration of theory in relation to OA as our study progresses. First, it is clear that the theory we see may not be called "theory", and its creators and users may not regard it as such. We have seen a whole range of different terms being used, including "models", "frameworks", and "typologies", to name just some. Second, it will be mid-range theory, in Merton's usage. In contrast, "Grand Theory" is very rare, although other low-level theorising (corresponding to Reynolds' type 4) a great deal more common. Third, in terms of the most usual typologies, the theory we might expect to see is likely to be Reynolds' 2 or 3 (conceptual understanding and conceptual process models), and Gregor's 1 or 2 (description and explanation) or possibly 5 (action research). As will be seen later, these typologies, and particularly that of Gregor, provide useful frameworks for the analysis of theories of open access. Fourth, theory used might be expected to be qualitative, even if constructed on the basis of quantitative data. Virtually all theory in LIS is expressed in essentially qualitative, or in some cases semi-quantitative, terms. Fifth, it will comprise either conceptual frameworks for understanding or process models. Such frameworks or models which systematise data or observations, and often represent phenomena diagrammatically, are common in LIS. Sixth, the theory will most likely be built by successive expansion of simple conceptual schemes. It is rare to see use of metatheory, but other approaches to theorising can be seen in LIS, particularly the creation of models *de novo* using a Grounded Theory-like approach, and the bringing in of pre-packaged theories from other disciplines. Finally, the theory we see is likely to be aimed primarily at increasing understanding. Other purposes of theory-building, such as prediction or prescription, are likely to be less common.

We now turn, in Chapter 4, to the relation between theory, understood in this way, and practice, focusing on the LIS context, but illuminating it with insights from other disciplines and professions.

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Chapter 4

Theory and practice

Relationships and gaps

> But although practical men generally prefer to leave their major premises inarticulate, yet even for practical purposes, theory generally turns out to be the most important thing in the end.
>
> (Oliver Wendell Holmes (1899). *Harvard Law Review*, *12*(6), 417–420)

In this chapter, we will review the relationship, often not a good one, between theory and practice. We will begin by introducing the idea of "practice". We clearly need to think more carefully about it before we can address the theory-practice relationship. We will then go on to analyse ways in which the relationship between theory and practice have been discussed in SSH. Theory is often especially valued in the research community and the development of theory seen as a mark of academic quality, but it can be off-putting to many practitioners. The main contours of the debate around the "theory-practice gap", prominent in a range of applied fields (including management, nursing, and education) will be discussed. This will include ways in which the literature suggests the theory-practice gap may be bridged, something that will be relevant in our analysis of our empirical research later.

Practice

Having discussed "theory", and intending to go on to explore the theory-practice relationship, we need to provide a brief discussion of "practice". We have already identified the key practitioners we believe most relevant for our study: policymakers and funders, publishers, OA service providers, librarians, consultants, and OA advocates. In the context of our study, practice might simply be defined as what these practitioners *do*, specifically what they do in relation to OA. Between them, these practitioners carry out a wide range of activities relating to OA, including creating strategies and policies, developing processes and technologies, supporting communication and marketing, designing business and sustainability models, allocating funding and resources, and so on. In most cases, these practitioners will have a wide range of priorities

and responsibilities, only some of which relate to OA. We will be focusing on OA-related practice but it is important to realise that most OA practice is carried out by people who have lots of other things to do as well.

Practice is complex, not simply because practitioners in professional contexts are busy and have responsibility for a wide range of activities, but also because those activities happen within complex social, cultural, and historical contexts. Whilst Hui, Schatzki, and Shove provide an initial very simple definition, "that practices consist in organised sets of actions" (Hui, Schatzki, & Shove, 2017, p. 1), they go on immediately to acknowledge the complexity: "practices link to form wider complexes and constellations," which they call "nexus" of practices, which are the basis of social sciences analyses. The definition provided by Wenger (1998) also starts simply by stating that practice is "doing", but then adds, "but not just doing in and of itself. It is doing in historical and social context that gives structure and meaning to what people do. In this sense, practice is always social practice" (p. 47).

McIntyre (1981), defines a practice as a "coherent and complex set of socially established cooperative human activities" (p. 187). Nicolini (2012) contrasts this definition which emphasises "coherence and cooperation" in practice, implying "stability", against Wenger's which, because of its emphasis on context, implies fluidity and change. Both definitions emphasise complexity, however.

Attempts to understand and formalise this complexity can be found in the work of Pierre Bourdieu (1975, 1991, 1993). Taken together, Bourdieu's work constitutes a theory of practice that sees all individual actions and decisions (both conscious and unconscious) originating from a worldview itself shaped by the structure of society, and an individual's places within the hierarches of that society. At the heart of Practice Theory are four concepts: *habitus*, *symbolic power*, *capital*, and *fields of production*. *Habitus* describes the processes by which elements of the social order (relating to education, history, class etc.) inform our view of the world, and our place within it. The process by which habitus informs our perceptions and actions is not typically conscious: as Hussey puts it, it is "a feel for the game; and understanding of how the world works and how one fits within this working" (Hussey, 2010, p. 43). The social structures from which this perceived world is constructed are built and maintained by *symbolic power* – the means by which dominant actors and groups sustain their position. This power is itself born out of the concept of *capital*, which can take a number of different forms: economic, social, educational, and cultural.

These concepts apply at a societal level, and Bourdieu uses them to understand and critique the nature of social structures. But the theory also extends to domains of practice – or what he terms *fields of production*. These fields do not exist in isolation, but rather "overlap and influence the structure and space of each field" (Hussey, 2010, p. 45). Much as *habitus* and *capital* shape the social world, so too they determine the relationships between and within fields of production. Different fields value different forms of capital, and so each field becomes a "site of

struggles in which individuals seek to maintain or alter the distribution of the forms of capital specific to it" (Bourdieu, 1991, p. 14).

Bourdieu's work has been used extensively as a lens to examine a range of different fields, including various aspects of the practice of librarianship and research. Budd and Connaway (1998) apply concepts from Practice Theory in their analysis of the literature relating to LIS education, for example, while Knox (2014) uses at as tool to examine the role of intellectual freedom as an underlying philosophy for the practice of librarianship. Bourdieu himself applied the concept of Practice Theory to the sociology of science (as mentioned in Chapter 1), arguing that the symbolic capital of science was "built on knowledge and recognition" (2001, translation from Desrochers et al., 2018). Related to this, Cronin and Shaw used Bourdieu's work to frame research into indices of capital in scholarship, noting that "within the political economy of academia, citations are a highly regarded form of symbolic capital" (Cronin & Shaw, 2002, p. 1267). This work is further developed by Desrochers et al. (2018), who in examining the relationship between academic reward systems and scientific communication noted the "highly codified legitimation and consecration mechanisms of the field" (p. 239). Of most relevance to our work, perhaps, is the work of Nicolini (2012), who applies Bourdieu's theories to the question of the relationship between theory and practice. In doing so, he contrasts the profoundly different habitus of practitioners and researchers; the former "intimately involved with daily endeavours", while the latter, "constitute practical activity as an object of observation and analysis" (p. 62). As we shall see, this characterisation of the theorist-practitioner divide underpins much of our understanding of the theory-practice gap. The fact that Bourdieu's work has been used this to understand the theory-practice relationship, and that he has used his theory specifically to examine scientific practice (with its emphasis on "knowledge and recognition"), signals his work's direct relevance to our study. We will return to it later in this book (particularly in Chapter 9).

Defining the theory-practice "gap"

The theory-practice gap may then be crudely expressed as a difference in the typical perspectives and motivations of researchers and academics, who prioritise and value theory, on the one hand, and practitioners, who prioritise and value pragmatism and action, on the other. This presumed gap has been understood in three main ways. First, it has been seen as a knowledge transfer problem, with knowledge gained from research and theory failing to reach the world of practice. Second, it has been understood as a reflection of the different ontological status of theoretical knowledge and practical knowledge. Third, the gap has been characterised as a problem of knowledge production, and specifically of the absence of co-production of knowledge by theoreticians and practitioners (Amara, Olmos-Peñuela, & Fernández-de-Lucio, 2019; Caplan, 1979; Van De Ven & Johnson, 2006).

In many ways, the issues here parallel those of the relationship between research and practice, without being exactly the same. That there is a "theory-practice gap", of much the same nature as the more often discussed, and lamented, "research-practice gap", is not to be doubted. In 1984, the British information scientist Alan Blick wrote a much-discussed paper on the research-practice issue in LIS entitled, "Information science research versus the practitioner" (Blick, 1984). The positively adversarial relation between research and practice could equally have been identified, then and now, for theory and practice. Similar "theory-practice gaps" have been identified a range of applied fields with some similarities to LIS, including management, nursing, architecture, and education. Examples include, Rynes, Bartunek, and Daft (2001) for organizational science, Greenwood and Abbott (2001) for education, Bushouse et al. (2011) for public administration, Tucker and Schaltegger (2016) for accountancy, (Anderson, 2017) for psychology, and Bartunek and Rynes (2018) for business. For LIS, the gap has been analysed by, *inter alia*, Booth (2003), Haddow and Klobas (2004), Roberts, Madden, and Corrall (2013), and Ardanuy and Urbano (2019).

It is necessary, however, to be a little circumspect in claiming too much certainty about the nature and extent of a theory-practice gap. Much writing on the topic is opinion-heavy and evidence-light. Rynes et al. (2001, p. 343) note the "tendency for academics to express opinions about academic practitioner relationships in the absence of data". The same is likely to true the other way round, but arguably academics have less excuse. It is also an over-simplification to assume that there is a binary quality to research or theory, as being relevant to practice or not. The situation is more nuanced, and theory may be relevant to practice in different ways and to a different extent. Attempts have been made to categorise the nature of "practice-relevance"; for a recent example from the information systems context, see Moeini, Rahrovani, and Chan (2019), who develop a framework identifying different dimensions of relevance, based on an analysis of previous studies. It includes factors such as the topics under investigation, the types of analysis undertaken, and the approaches taking to translating research to practice contexts. Attention has also been given to the nature of the gap itself, which is not a single atomistic entity. In the LIS context, for example, Haddow and Klobas (2004) identify no less than 11 types of research-practice gap, which they characterise as: knowledge, culture, motivation, relevance, immediacy, publication, reading, terminology, activity, education, and temporal. We compare their findings with our own later, in Chapter 9.

The nature of any such gap will certainly be altered by the context. For instance, practitioners in "theory aware" settings, such as the libraries of universities or research institutes, may be more ready to adopt theory in their own work than those in, say, public or school libraries. This may be the more so in contexts where information professionals have an academic aspect to their work; for example, in countries where it is the norm for university librarians to be denoted as faculty members. Nonetheless, the

main factors working against practitioner involvement with theory – time, resources, management expectations, and personal inclination – are likely to be common. In English-speaking countries, as was noted in the introduction, there is also an inevitable colouring from common usage: "in theory … but in practice" – gives the impression that theory is abstract, and maybe irrelevant for the practitioner who simply needs to get things done.

In fact, what is meant by "theory" in discussions of a theory-practice gap appears to vary across disciplines. For example, Greenway, Butt, and Walthall (2019) offer an "exploration of the concept" in the nursing context. Based on an extensive literature review, they propose the following definition: "The gap between the theoretical knowledge and the practical application of nursing, most often expressed as a negative entity, with adverse consequences" (p. 1). A few lines later, they characterise the gap as being between, "theory (what should happen), and what occurs (what actually happens) in the clinical environment". The parenthetical elucidation is revealing in that it describes a kind of colloquial understanding of theory, with a meaning closer to "established best practice" or even "evidence" than the more conceptual definitions of theory discussed above. This is encapsulated in a "pragmatic example" offered by Billings and Kowalski (2006):

> Prior to 1996, research had proven that 2% chlorhexadine was 84% more effective in reducing central line infections than was betadine. However, it was not until 2002–2003 that many healthcare facilities began incorporating chlorhexadine in central line dressing change practices.
>
> (p. 248)

Much of the business and management literature appears to share this characterisation of the theory-practice gap as the disparity between research-informed evidence and real-world practice. One paper addressing the gap aims to investigate "the extent to which modern investment appraisal techniques are being employed by the most significant UK corporations" (Arnold & Hatzopoulos, 2000), while another notes, "the alleged gap between the conventional wisdom of the management accounting textbooks, academic/professional journals and management accounting practice" (Lucas & Rafferty, 2008, p. 148). The reference to textbooks, however, is indicative of an important strand of the theory-practice literature, namely the role of education. In many disciplines, it seems, "the principles of practice established in curricula are not well aligned with the principles operating in the workplace" (Ajani & Moez, 2011, p. 3928). Cook (1991) takes this further, relating the theory-practice gap in nursing to a "hidden curriculum" – the ideas and processes to which students are exposed while training that are outside and sometimes contrary to the formal curriculum; a kind of "textbook v practice" dichotomy.

It is not surprising then that there is also a large body of literature in the field of education relating to the theory-practice gap, both focused on specific sub-fields within education – e.g. curriculum development (Klein, 1992), or PE

teaching (Kneer, 1986) – and addressing the problem more generally. Much of this literature echoes points made above – it discusses the relevance (or otherwise) of theory to day-to-day work in educational settings, and the disconnect between what works in the classroom or lecture theatre, and what textbooks advise. It also highlights that,

> the gap between research and practice is most of all a gap between professional cultures and that there is a strong need for researchers and practitioners to build joint communities, bringing together both a research and a practical focus.
>
> (Korthagen, 2007, p. 304)

This difference in culture is perhaps best summarised by Reed (2009), who (in what he acknowledges to be a somewhat stereotyped characterisation) identifies a "state of permanent tension" between the intellectual concerns of the academic research community, and the operational demands of practitioners:

> They draw on competing belief systems and methodological rationales as their core resources of ideological legitimacy. Research is driven by the search for understanding and explanation through the systematic application of theoretical reasoning and empirical investigation. Practice, on the other hand, is grounded in modes of deliberative reflection and judgement that are anchored in direct experience of and engagement with context-specific issues and problems rather than generalizing abstraction and ratiocination.
>
> (p. 685)

This has led some to argue that the value of theory is as a means of perceiving or understanding practice, rather than providing solutions to practical problems (Robinson, 1998).

It is also the case that theory – or at least some ideas or concepts derived from theory – may be used implicitly by practitioners, without an awareness that they are using theory at all. Many practitioners will have used the terminology of "earlier adopters" and "laggards", without necessarily being aware that they are *de facto* using Innovation Diffusion Theory. Moreover, practitioners are liable to use terms such as "guidelines" or "toolkit" to refer to theoretical constructs, again leading to a potential underestimation of practitioner engagement with theory. As hooks [sic] (1994, p.64) puts it: "one may practice theorizing without ever knowing/possessing the term".

Practitioners, of course, do carry out research, some at least of which will involve the use, and perhaps the creation, of theory in many subject areas. There are examples of library and information practitioners explicitly using theory to carry out studies with direct and immediate relevance to practice. For example, investigating e-book usage in an academic library, Smith, Rodriguez, Miller, and Xu (2019) found that survey results produced a model of usage

similar to that expected from the technology acceptance model. Finding some lacunae in the model, these authors suggested further research, itself explicitly drawing from other theories. This is an unusual example of the direct and explicit application of multiple theories to a practical issue of library service. However, it must be conceded that studies of this kind are few in number. We will be exploring some of them in relation to open access later.

Much practitioner research, including theorising, is an integral part of reflective practice, and usually aimed at service evaluation and improvement. Research embedded in a practice context, where the aim of the research is the improvement of practice rather than an objective study of the situation is often called "action research". The term carries some implication that this style of research is not involved with theory, though that is not necessarily the case. The term "use-inspired research" has been applied to information research which is an academic study of real-world problems, producing fundamental understanding, but also benefitting society. Research and theory provide the basis for "evidence-based practice", with practice based explicitly on research results and, to a considerably lesser extent, theoretical considerations. The idea of evidence-based practice has had particular resonance in fields where there is a clear practitioner community, notably health and medicine, and education, and there is a strand of LIS research which takes an evidence-based practice approach (Booth, 2003; Eldredge, 2002; Hjørland, 2011; Koufogiannakis & Brettle, 2016). Evidence-based practice has, however, been criticised as too narrow and mechanical an approach, by those who argue for practitioners to have a fuller understanding of research and theory.

Theory-practice relationship in LIS

Within LIS specifically, the nature of practitioner research, in contrast with academic research, has been debated continuously since Blick's lament, quoted earlier; see, for example, Hall (2010), Partridge, Haidn, Weech, Silipigni Connaway, and Seadle (2014), Finlay, Ni, Tsou, and Sugimoto (2013), Woods and Booth (2014), (Pickton, 2016), and Hall, Cruickshank, and Ryan (2019). These studies show practitioner research to be typically empirical rather than theoretical, aimed at generating results valuable in the short-term in a specific context for immediate practical application, and seeking evidence for best practice rather than conceptual understanding. As previously mentioned, there is no evidence of any significant body of "practice theory" having been developed within LIS, of the kind discussed by Van der Veer Martens (2010) and developed within nursing, financial, religious, and military communities of practice.

Practitioner research therefore is, in LIS as in other areas, of a kind which is less likely to use, and certainly less likely to generate, theory than research carried out in academic settings. Theory is often especially valued in the academic community and the development, and the use, of theory is often seen as a mark of quality in exercises such as the UK's Research Excellence Framework (REF), but can be viewed negatively by practitioners. On the other hand, the increasing

demand by funders for evidence of "impact" of research has placed an onus on academic researchers to develop linkages between the theory which they develop and the world of practice (Donovan, 2017; Martin, 2011).

Numerous solutions to the theory-practice gap have been proposed. In LIS, Roberts et al. (2013) present a set of detailed recommendations. These include a range of tactics to make research more accessible to practitioners, such as involving students and alumni in research to publishing in an open access form. Generally, solutions have fallen in one or more of three categories.

First, there have been suggestions for involvement of practitioners in academic research, and in development and use of theory, going beyond addressing short-term and context-specific problems, and ideally involving the creation of a "research and theory" culture in practice settings, and collaboration between practitioners and academic researchers. Cornelius (1997) typifies those who have made cogent arguments that professional practice should involve research, some of which will be theoretical, as well as reflection and "theorising"; and that research, including theory creation, should be a natural part of practice, rather than something extra to be added on. For Cornelius, reflecting on one's practice, something which all conscientious practitioners are expected to do, involves a degree of theorising. This may, however, be using the idea of theory in a wider, and less helpful, way, than is proposed in this chapter.

Opposite to this idea that, in effect, "practice is research/theorising", is the suggestion that "theory is practice". This involves the concept that theory may be presented as "a form of ontological practice and engagement ... engaged practice" (Corvellec, 2013, p. 22). Stöckelová (2013) and Zundel and Kokkalis (2010) make this case at length. This redefinition of theorising as a form of practice may have merit in encouraging the aligning of perspectives between those who would think of themselves primarily as theorists and practitioners respectively. However, it seems to be ultimately rather unproductive, in appearing to attempt to remove the real problems caused by the theory-practice gap by a redefinition of terms.

The significant problems for a greater practitioner involvement in research which involves theory in some way are multiple. They include resources (put crudely, who has the time, and who will pay?) and divergent timescales (practitioners are likely to expect, and need, results in a much shorter timescale than researchers regard as normal). This is ironic, as one value often claimed for theory is that it helps practitioners cope with change over long timescales. LIS contexts are changing greatly, and will continue to do so, and an understanding of, and application of, theory will help practitioners cope with this. There is also the question of whether many practitioners have, or can acquire, sufficient academic background to engage in theory creation, and indeed the inclination to do so. The co-production of research – academics and practitioners working together on research projects – offers one solution to this. Van De Ven and Johnson term this "engaged scholarship" and emphasise the different kinds of knowledge that researchers and practitioners can bring to a given problem (2006).

The second type of solution to the theory-practice gap emphasises the duty of academia to communicate theory and theory-based research in a way accessible to practitioners, and a corresponding duty on practitioners to become and remain aware of the theoretical and conceptual bases of their profession. This is commonly expressed as researchers not knowing what problems are most important for practitioners, while practitioners do not know what researchers do, and can do; and beyond this issue how theory can best be communicated to practitioners. For example, there is evidence that policymakers respond best to narratives and case studies which show how policies will affect the lives of individuals. It may be a challenge to present theoretical work in this format (Quarmby, 2018). For LIS, Haddow and Klobas (2004) have emphasised the importance of using a range of channels of communication between research and practice.

Third is the development of a function, variously termed "boundary spanning", "translation", or "engaged scholarship", whose remit is to present issues of theory and research in ways which are usable by practitioners. The concept of boundary spanning comes from the organisational development context, and refers to the activity of people, sometimes termed "scholar practitioners", who have sufficient knowledge to operate across boundaries (in this case the theory-practice boundary), enabling the exchange of information and knowledge, and creating a shared meaning. One function of these individuals is to transform theoretical (or theoretically informed) work into direct prescriptions for action – what Alexander terms the "translational" mode of theory-practice communication (1997). This is in contrast to a more indirect "enlightenment" mode that seeks to communicate theory itself, and "implies that the transformation of theoretical insights into action is mediated by actors' understanding and judgment" (p. 5). Much of the literature agrees that this translation is essential if theory is to properly inform practice. Examples of boundary spanning or translational activity in a variety of SSH disciplinary contexts are given by authors of several chapters in the volume edited by Bartunek and McKenzie (2018), and by Starkey and Madan (2001), Van De Ven and Johnson (2006), Hudgins and Allen-Meares (2000), Carton and Ungureanu (2018), Beaulieu, Breton, and Brousselle (2018), Ungureanu and Bertolotti (2018), and Di Benedetto, Lindgreen, Storgaard, and Clarke (2019).

We may note here that, as mentioned above, in all three of these approaches, and in particularly in the translation of research to practice, there may be an undue emphasis on evidence-based research, theory-free, and relying on empirical data alone. It may perhaps be thought that this is more appropriate for, or acceptable to, a practitioner audience. This might even be seen to amount to a fourth additional category of proposed ways of addressing the theory-practice gap: by eliminating or, at least, reducing the importance of theory overall. If the role of theory is de-emphasised, the gap between it and practice does not look so important. Such an approach to "de-theorise" research in an attempt to make it more accessible may, however, be a very unfortunate diminution of the potential value for practice of research which creates or uses theory. There is even a danger that theory

and evidence are almost seen as dichotomous in this perspective, with only the latter being aligned to practice.

Conclusion

This chapter has provided a brief overview of the theory-practice relationship beginning with an outline of "practice" and Practice Theory. Practice is "doing", but doing within complex historical and social contexts. We have seen how Practice Theory conceptualises actions and decisions of individuals and groups working within structures and hierarchies in order to explain practice, say within organisations.

We have also outlined the complex and contested topic of how theory relates to practice, in the context of SSH generally and LIS specifically. We have seen there is general agreement across many disciplines and professions that there is a gap between theory and practice, and a feeling that the gap has a negative impact on those involved. However, the nature of the gap has been defined in a variety of ways. At times, the gap is seen as that between recognised best practice, on the one hand, and real-world practice, on the other – a kind of "textbook v practice" dichotomy. The gap is generally perceived to be there in many areas of practice, but there is also acknowledgement that some practice may implicitly deploy theory without that being recognised by the practitioner. Practice-focused research may also theorise (sometimes again implicitly) in various way in order to characterise current problems and develop workable solutions.

Solutions to the theory-practice gap have been suggested. These include involvement of practitioners in research, and in developing reflective, theorising approaches in their practice. It has also been suggested that academics have a particular duty to communicate their theory-based research in an accessible way. The idea of boundary spanning between communities is also advanced as a solution, allowing for the translation of research for practice. In addition, there is evidence in the discourse of a favouring of what we have called the de-theorising of research, apparently as a way of attempting to make findings more accessible. The rhetoric of evidence-based practice often promotes this.

Having set the scene in this way, we can now turn to the specific question of the relationship between theory and practice in open access. We will begin with an analysis of literature on open access which uses or generates theory (Part 3). We will then go on to explore the perspectives of theorists and practitioners involved in OA (Part 4).

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Part 3

Perspectives

Theory in research

Chapter 5

Theory in open access studies

Scoping and analysing

> Read no history; nothing but biography, for that is life without theory.
> (Benjamin Disraeli (1832). *Contarini Fleming*)

In Part 3, we want to explore in more detail how theory has been used in understanding open access. In this chapter, we set out the approach we have taken to analysing the literature in this area. In Chapter 6, which follows, we discuss the main themes of this literature in more detail. We begin Chapter 5 by setting out the key questions associated with this phase of our research, and the working definition of theory we used in our analysis of the literature. We then describe our methods in discovering and analysing the literature. We finish with an overview of the corpus we identified.

Background

There is a large and growing body of literature relating to open access publishing. A review by Pinfield (2015) identified 680 journal articles on the subject published between 2010 and 2015, and since that study was limited only to articles indexed by Scopus, the true figure is likely significantly higher. Of particular importance to our project was a need to understand the role that theory plays in this research, and we therefore undertook a thorough and systematic review of the literature, designed to identify and formally analyse studies which have used and/or generated theory to address OA-related questions. In doing so we addressed a number of questions relating to the use of theory in OA research: Which different theories have been used to investigate OA? How were they used? Why were they used? What aspects of OA did they investigate? What type of theories have been generated by research into OA?

The review encompassed three forms of research output: short to mid-length publications (journal articles, conference proceedings, and book chapters), grey literature (particularly reports), and books/monographs. The review was not limited to items published during a particular period of time, but included any potentially relevant output published before the end of 2017. Different methods

were used to collect relevant material of each type, and we describe these methods in detail below. We also carefully considered including informal literature (e.g. blogs, social media posts, listserv discussions) in the review, but the lack of an efficient means of searching for and collating such material meant that this was deemed impractical. Such resources were also considered much less likely to make substantive use of theory.

Naturally, a key consideration in conducting this work was determining exactly what constitutes "theory". As Chapter 2 has shown, there are many and varied definitions of the term. For this phase of the investigation we developed and used a broad working definition of theory:

> A generalisation, representation, or abstraction which attempts to describe or characterise a particular context or 'reality', enabling one or more of analysis, explanation, or prediction. It can take a number of forms, including text (such as a set of propositions), visualisations (such as a diagram), or mathematical symbols (such as a formula), or a combination of more than one of these, but is normally explicitly stated or presented, and commonly labelled as a model, framework or conceptual map.

In our analysis we also distinguish between work that *uses* theory, and work that *generates* theory. In both cases, the above definition of theory is used, with the former category referring to work that utilises existing theory or theories in some way, and the latter to work that creates new theory relating to OA.

Method

Articles, conference proceedings, and book chapters

Articles, conference proceedings, and book chapters were identified by a multi-step process utilising both Scopus and Google Scholar. Scopus, operated by Elsevier, is a database of peer-reviewed literature covering more than 30,000 titles, all of which have been deemed to pass a series of selection criteria including their approach to peer review, contribution to the field, and "citedness" of publications (www.elsevier.com/solutions/scopus/how-scopus-works/content/content-policy-and-selection). Scopus was preferred to alternative bibliographic databases (e.g. Web of Science) because it has been found to have slightly greater coverage of non-STM disciplines (Mongeon & Paul-Hus, 2016), something we considered important given the likelihood of OA-related research appearing in social science journals. Google Scholar is a freely available search engine which indexes an estimated 160 million scholarly documents (Orduna-Malea, Ayllón, Martín-Martín, & Delgado López-Cózar, 2015).

Conducting a literature review on the subject of open access offers particular challenges, particularly in query development. This is because the term "open

access" appears in the metadata of many articles that have been made available OA, regardless of whether OA is the *subject* of the article. Scopus's advanced search and filtering functionality allowed us to construct queries designed to limit the number of non-relevant results. Our approach was therefore to use a two-stage process, with broader searches first run in Scopus, and the resulting corpus then augmented with results from more specific searches conducted in Google Scholar.

Figure 5.1 shows this process. The Scopus queries were constructed by combining common OA terms with the term "theory" and potential synonyms. On this latter point we adopted elements of the search template developed by Booth and Carroll (2015) for use by medical researchers seeking to identify

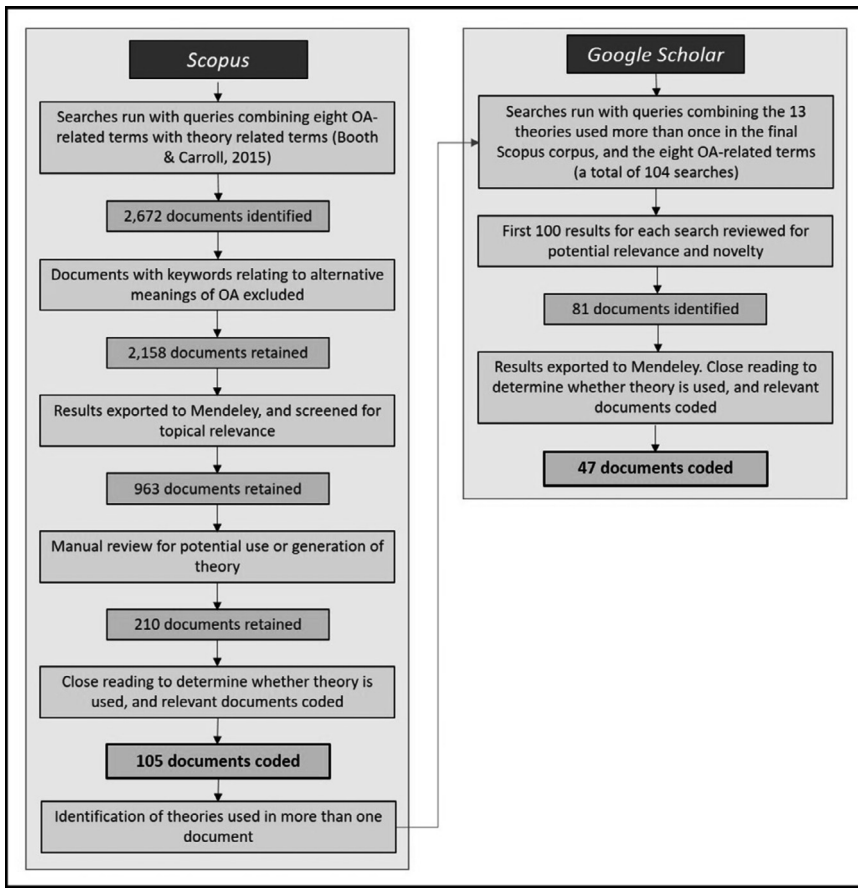

Figure 5.1 Literature search strategy

theory as part of a systematic literature review. Identifying "model", "concept", and "framework" as potentially relevant terms (in addition to "theory"), they suggest incorporating the following string in searches seeking to identify theoretically informed work:

- model* OR theor* OR concept* OR framework*

We combined these theory-related terms with various OA related terms, these being as follows (with search terms used):

- Open access ("open access")
- Institutional repository ("institutional repositor*")
- Subject repository ("subject repositor*")
- Article processing charge ("Article processing" OR "APC")
- Preprints ("preprint*" OR "pre-print*")
- Gold OA ("gold oa" OR "gold open access")
- Green OA ("green oa" OR "green open access")
- Hybrid journal ("hybrid journal*")

In most cases the searches were limited to document titles, abstracts, or keywords. However, the terms "open access" and "preprint*" were found to be extremely prevalent in document abstracts as a means of informing readers that the paper was available OA, or based on a preprint. For these terms, therefore, the search was limited to just titles and keywords. Examples of the final search strings used are as follows:

"Open Access":
((TITLE ("Open Access")) OR (KEY ("Open Access"))) AND (TITLE-ABS-KEY ("model" OR "theor*" OR "concept" OR "framework")) AND (PUBYEAR < 2018)

"Hybrid journal":
(TITLE-ABS-KEY ("hybrid journal*")) AND (TITLE-ABS-KEY ("model" OR "theor*" OR "concept" OR "framework")) AND (PUBYEAR < 2018)

These Scopus searches yielded a total of 2,672 results. It was immediately apparent that a significant number of papers were related to alternative meanings of the term "open access" – in particular those relating to electric power transmission (OA here describing the rights of electricity consumers to choose their providers) and fisheries management (OA meaning that access to a fishery is unrestricted). In order to filter out these results, 514 documents with keywords relating to these uses of OA (e.g. "Electric Power Systems", "Electric Industry", "Fishery Management") were excluded from the search results, as follows:

- Electric Power Transmission
- Electric Power Systems
- Electric Power Transmission Networks
- Transmission Open Access
- Algorithms
- Fishery Management
- Electric Industry
- Power Transmission
- Fisheries
- Electric Utilities
- Algorithm
- Electric Load Flow
- Electric Generators
- Electric Losses
- Software Engineering
- Electric Power Distribution
- Mobile Telecommunication Systems
- Reactive Power

After these exclusions, a total of 2,158 documents were retained.

These documents were imported into the project's online library. All documents were quickly reviewed for topical relevance, and a further 1,195 excluded. The remaining 963 documents were reviewed again, this time to determine whether the article potentially referenced or generated theory. This step was necessary because several of the terms in the Scopus query can be used in non-theoretical contexts. For example, the term "business model" was present in many articles relating to OA, but this use of "model" is not one we consider to be related to theory. A total of 753 documents were excluded at this stage, with the remaining 210 then subjected to closer reading, coding, and analysis (as described below). The result of this final stage was the determination that a further 95 documents were not relevant to the research – because they neither used or generated theory by our definition – meaning the analysis was conducted on a total 105 Scopus-sourced documents.

As discussed below, one part of this process involved us noting which specific theories were used by these 105 articles, book chapters, and conference proceedings. On completion of the coding process these were collated, and we identified all theories which had been used by two or more papers. There were 13 theories found to have been used more than once, and these were used to construct further searches to be run in Google Scholar. The 13 theories are listed below (for more detail about these theories see Chapter 6, Table 6.1):

- Innovation Diffusion Theory
- Unified Theory of Acceptance and Use of Technology
- Solow–Swan Model

- Critical Theory
- Game Theory
- Actor Network Theory
- Disruptive Innovation
- Social Exchange Theory
- SECI Model
- Socio-Technical Interaction Network
- Theory of Planned Behaviour
- Theory of Reasoned Action

Each of these 13 theories was combined with each of the eight OA-related terms used for the Scopus searches, meaning a total of 104 searches were run in Google Scholar. For each search we reviewed the first 100 results, adding to our online library any papers that appeared relevant, and that had not been part of the initial Scopus result set. This resulted in the identification of 81 papers, which were then subjected to close reading and analysis. Of these, we found that 34 did not use or generate theory according to our definition, meaning that 47 were included in the final analysis. In total then the combined Google Scholar and Scopus approaches yielded 152 documents for in-depth analysis.

Reports

We began the process of identifying potentially relevant reports by compiling a list of organisations known to be active in OA research or practice, resulting in final list of 35 organisations:

- Alliance of Science Organisations in Germany
- ALPSP
- Budapest OA Initiative
- Cambridge Economic Policy Associates (CEPA)
- Canadian Tri-Agency (Research Councils)
- CIBER
- EPRIST
- European Commission
- European University Association
- Finch Group
- International Coalition of Library Consortia (ICOLC)
- Ithaka S+R
- Jisc
- Knowledge Exchange
- Max Planck Society
- Mellon Foundation
- National Science Foundation (NSF)
- OAPEN

- Outsell
- Publishing Research Consortium
- RCUK
- ReCode Project
- Research Information Network (RIN)
- RLUK
- Royal Society
- Science Europe
- Simba
- SOAP
- SPARC Europe
- Springer Nature
- STM
- Swiss National Science Foundation (SNSF)
- UK Government
- UUK
- Wellcome Trust

We then consulted organisational websites and web search engines to identify any potentially relevant reports published by these organisations. Twelve organisations were found to have produced no reports directly relating to OA publishing, with the remaining 23 organisations responsible for 51 such reports. On close reading we established that 19 of these reports used or generated theory, and these were coded and analysed.

Books/monographs

We considered a number of approaches to identifying potentially relevant books and monographs. We recognised that the number of books included in the study should be relatively small, since the analysis process would be much more time-consuming than for shorter research outputs. We therefore initially hoped to make use of some pre-existing resource that highlighted key OA texts. Several online bibliographies of open access were consulted, but were found to be either limited in scope (e.g. limited to a single year, or particular OA issue) or of dubious authority. We then experimented with various online union catalogues (e.g. Copac, WorldCat) but found that they either returned too many results to systematically analyse, or too few results, with vast number of books published as OA dominating the search results. Our solution was to develop our own list of 14 books and monographs, drawing on our experience in the field. This list was small enough to allow us the time required to properly analyse their use and generation of theory, whilst also large enough to include an interesting range of theoretical approaches, and to cover a number of different aspects of OA. Of these 14, seven were found to use or generate theory (Bartling & Friesike, 2014; Eve, 2014; Hess & Ostrom,

2007; Jones, Andrew, & MacColl, 2006; Peters & Roberts, 2012; Silva & Vance, 2017; Suber, 2016).

Coding and analysis

All the documents identified through the processes described above were subjected to the same form of coding and analysis. This consisted of us reading the article, report, or book, and analysing and recording a range of information relating to the type of document, the characteristics of its authors, the type and subject matter of the research, and its use or generation of theory. Table 5.1 presents and summarises these elements, and the codes associated with them. Several points merit further explanation. The categories of OA sub-field were largely based on those to emerge from Pinfield's review of the OA literature (2015), with the addition of "OA as concept", which we used to code documents concerned with the principle of OA itself, rather than any specific application of it. The codes developed to categorise different uses of theory were based on close readings of the documents in the final corpus, and like all code schemes were not considered mutually exclusive. All categories require some substantive engagement with theory by the authors of the document: documents which mentioned theory only in the context of describing the work of others were not deemed to merit inclusion in the final corpus. Finally, two elements – "How the use of theory is described" and "Language used to describe theory" – required us to select and record direct quotations from the text, so as to allow us to analyse and compare how theories and their use are presented by authors.

Overview of the corpus

It is important to note that this is not a bibliometric study. By this we mean that our intention was not to conduct a detailed quantitative analysis of a particular subset of the literature – something that to be meaningful would require us to have much greater confidence in the exhaustiveness of our document gathering. While we believe our approach was as robust as practically feasible, we recognise that there are likely to be theoretically informed research outputs that are not included – those published in journals not included in Scopus, for example. However, we do feel it relevant to present the reader with an overview of some key coding data relating to type of documents in the corpus, and their use and generation of theory.

Table 5.2 shows contingency tables detailing the distribution of documents found to use and/or generate theory for each document type. We note that for shorter outputs (articles etc.) our document set contains many more examples of research using theory (120) than generating theory (65). This is not the case for reports, which shows a much more even split (14 and 15 respectively).

Table 5.1 Coding elements and categories

Elements	*Description*	*Codes*	*Source*
General Information			
OA sub-field	Which specific aspect(s) of OA the document relates to	1 OA as concept 2 Research and researchers 3 Policy 4 Repositories 5 Journals 6 Institutions 7 Impact	Pinfield (2015)
Author role(s)	The professional role of author(s) of the document	1 Academic 2 Librarian 3 Publisher 4 Other	Developed for this project
Type of research	The type of research presented in the document	1 Quantitative 2 Qualitative 3 Mixed methods 4 Review 5 Essay/opinion 6 Method paper 7 Prototype/exemplar	Developed for this project
Use of existing theory			
Theory/theories used	The name of any theory or theories used in the paper	-	-
How theory is used	The way(s) in which theory is utilised in the document	1 Cursory reference to theory 2 Theory used to provide background or context 3 Theory used to inform the research method 4 Theory used to infor-manalysis/discussion/ conclusions 5 Theory used to generate predictions	Developed for this project
How is use of theory is described	Language used by the author(s) to describe how theory is used	Snippets of text that describe theory use	-
Theory generation			
Gregor type	If theory is generated, the Gregor type to	1 Theory for analysing 2 Theory for explaining 3 Theory for predicting	Gregor (2006)

(*Continued*)

Table 5.1 (Cont.)

Elements	*Description*	*Codes*	*Source*
	which it corresponds	4 Theory for both explaining and predicting 5 Theory for design and action	
Reynolds type	If theory is generated, the Reynolds type to which it corresponds	1 A set of laws, i.e. well-supported empirical generalisations 2 An interrelated set of definitions, axioms andpropositions 3 Descriptions of causal processes 4 Vague concepts, untested hypotheses,prescriptions for good behaviour.	Reynolds (1971)
Language used to describe theory	Language used by the author(s) to describe their theory	Snippets of text that introduced the new theory	-

Table 5.2 Distribution of documents found to use and/or generate theory

Articles/conference proceedings/book chapters (152)		
	Uses theory	Does not use theory
Generates theory	33	32
Does not generate theory	87	-
Reports (19)		
	Uses theory	Does not use theory
Generates theory	10	5
Does not generate theory	4	-
Books/monographs (7)		
	Uses theory	Does not use theory
Generates theory	1	0
Does not generate theory	6	-

Table 5.3 OA sub-fields of documents in the corpus. Note that sub-field categories are non-exclusive

OA sub-field	*Articles/conference proceedings/ book chapters (152)*	*Reports (19)*	*Books/monographs (7)*
Journals	66	15	1
Research and researchers	63	9	4
Repositories	61	4	2
OA as concept	59	2	6
Policy	24	14	2
Institutions	14	15	2
Impact	11	0	2

Table 5.3 presents the results of our coding relating to OA sub-field. For shorter papers we found that while all sub-fields were covered, the most commonly addressed questions related to journals, research and researchers, repositories, and OA as concept. This is again in contrast to the grey literature, which contains a much greater proportion of work on policy and institutions.

Finally, Table 5.4 shows the number of document of each type (research method/type of non-empirical paper). Essay/opinion papers and articles reporting quantitative research are the most common type of short research output, with only a relatively small number of documents (23) found to use qualitative or mixed methods. The reports in our corpus are primarily reviews (these typically being "state of play" investigations drawing on existing literature on the subject), or documents reporting quantitative results.

Of the 152 articles/conference proceedings and book chapters, 110 were found to have been authored by academics only (i.e. with no collaboration with practitioners), while 18 were authored by one or more librarians, without the involvement of academics. 13 documents were written by other practitioners (most commonly consultants and publishers), in six of these cases in collaboration with academics. Overall, though, instances of collaboration between researchers and practitioners were relatively rare. Of the 178 documents in our corpus, just 26 (14.6%) were found to be co-authored by academics and practitioners. It is notable that reports were something of an exception, with seven of the 19 representing such collaborations. Reports were also found to often have a large number of authors of different types, with around half including contributions by consultants.

Table 5.4 Type of output/research reported

Type of research or output	*Articles/conference proceedings/ book chapters (152)*	*Reports (19)*	*Books (7)*
Quantitative research	54	7	0
Qualitative research	13	0	0
Mixed methods research	10	4	1
Review	9	8	0
Essay/opinion/non-empirical	56	0	6
Method paper	3	0	0
Prototype/exemplar	7	0	0

Conclusion

In this chapter we have presented our working definition of "theory" that we developed in order to examine the literature. We have also set out the stages we went through to identify different types of relevant literature. Overall, this has given us a useful working corpus of theory-informed literature about open access. It comprises 152 short-form publications (journal articles, conference papers, or book chapters), 19 reports, and seven books. Most of these use pre-existing theory but a significant number generate theory as part of the engagement with OA. In the next chapter we undertake a detailed analysis of that corpus.

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Chapter 6

Theory in open access studies

Using and generating

> The world, which in truth is the sum of all reality, is revealed in its glory only by theory. The joys of theory are the sweetest intellectual pleasures of life.
> (Ludwig Feuerbach (1841). *Das Wesen des Christentums*)

In this chapter we want to set out in more detail our analysis of the theory-informed literature on open access which we identified following the methodology explained in Chapter 5. We talk in detail of how studies in this area both use existing theory and generate new theory. This chapter begins by delineating different existing theories used in the literatures which analyses OA. We go on to explore how theory is used – the part it plays in the different studies in the literature. Finally, we analyse theory generated by studies of OA.

Use of existing theory

Our analysis of the literature identified a diverse range of theories used by authors to address OA related questions. Table 6.1 shows all theories used in more than one document, noting the disciplinary origins of each. It also includes a brief descriptive summary of each theory.

Perhaps the most striking feature of Table 6.1 is the diverse nature of the theories. Most obviously, OA researchers have utilised theories originating in a wide range of fields including sociology, psychology, LIS, mathematics, education, economics, and business. There is diversity too in the scope and purpose of the theories. Some – for example those originating in social psychology – are intended to inform an understanding of the motivations and actions of individuals, while others serve as lenses through which to investigate and analyse at systemic (for example the Scholarly Communication Life-Cycle, and STIN) or societal (Critical Theory, Academic Tribes) levels.

It is apparent that two approaches to understanding the impact and spread of innovations – Rogers' Innovation Diffusion Theory, and Christensen's Disruptive Innovation – rank among the most used theories. Our reading of the documents using these theories suggests several reasons for this. As a relatively

Table 6.1 Most commonly used theories ranked by number of instances in the corpus

Theory	*Original reference(s)*	*Description (from Wikipedia, unless otherwise stated)*	*Disciplinary origin*	*Articles/conference proceedings/book chapters (152)*	*Reports (19)*
Innovation Diffusion Theory	Rogers (1962, 2003)	"a theory that seeks to explain how, why, and at what rate new ideas and technology spread. Four main elements influence the spread of a new idea: the innovation itself, communication channels, time, and a social system."	Sociology/ communications	16	0
Solow–Swan Model	Solow (1956, 1957); Swan (1956)	"an economic model of long-run economic growth set within the framework of neoclassical economics. It attempts to explain long-run economic growth by looking at capital accumulation, labor or population growth, and increases in productivity, commonly referred to as technological progress."	Economics	8	6
Unified Theory of Acceptance and Use of Technology (UTAUT)	Venkatesh, Morris, Davis, & Davis (2003)	"The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. The theory holds that there are four key constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions."	Information systems	11	0
Scholarly communication life-cycle model	(Björk & Hedlund, 2004)	the major focus is on modelling the publishing and indexing of traditional peer reviewed journal articles, as well as the activities of readers to find out about them and access them." (Björk, 2015)	Library and information studies	5	5

(*Continued*)

Table 6.1 (Cont.)

Theory	*Original reference(s)*	*Description (from Wikipedia, unless otherwise stated)*	*Disciplinary origin*	*Articles/conference proceedings/book chapters (152)*	*Reports (19)*
Disruptive Innovation	Christensen (1997)	"a disruptive innovation is an innovation that creates a new market and value network and eventually disrupts an existing market and value network."	Business and management	10	0
Game Theory	Von Neumann & Morgenstern (1944)	"the study of mathematical models of strategic interaction between rational decision-makers."	Mathematics	6	0
Critical Theory	Horkheimer & Adorno (1972)	"Critical Theory is a social theory oriented toward critiquing and changing society as a whole, in contrast to traditional theory oriented only to understanding or explaining it."	Sociology	6	0
Actor Network Theory	Law (1992), Latour (2005)	"a theoretical and methodological approach to social theory where everything in the social and natural worlds exists in constantly shifting networks of relationship."	Sociology	5	0
Social Exchange Theory	Homans (1958); Thibaut & Kelley (1959)	"a social psychological and sociological perspective that explains social change and stability as a process of negotiated exchanges between parties. Social exchange theory posits that human relationships are formed by the use of a subjective cost-benefit analysis and the comparison of alternatives."	Social psychology	5	0

Socio-Technical Interaction Network	Kling, McKim, & King (2003)	"designed to give social informatics and other researchers a tool for understanding socio-technical systems in a way that privileged neither the social nor the technical." (Meyer, 2006)	Information systems	4	1
Theory of Reasoned Action	Fishbein (1967)	"aims to explain the relationship between attitudes and behaviors within human action. It is mainly used to predict how individuals will behave based on their pre-existing attitudes and behavioural intentions."	Social psychology	3	0
Theory of Planned Behaviour	Ajzen (1985)	"a theory that links one's beliefs and behavior. The theory states that attitude toward behavior, subjective norms, and perceived behavioural control, together shape an individual's behavioral intentions and behaviors."	Social psychology	3	0
Academic Tribes	Becher & Trowler (2001)	"a thesis that the knowledge structures of disciplines (the academic territories) strongly condition or even determine the behaviour and values of academics. In this account academics live in disciplinary tribes with common sets of practices, at least as far as research practices are concerned." (Trowler, 2014)	Education	3	0
SECI Model	Nonaka & Takeuchi (1995)	"a model of knowledge creation that explains how tacit and explicit knowledge are converted into organisational knowledge. The SECI model distinguishes four knowledge dimensions – socialization, externalization, combination, and internalization"	Knowledge management	2	0

new development in scholarly communications, OA can clearly be characterised as an innovation, and both theories provide authors with frameworks against which to evaluate and predict the speed and impact of its emergence. In other words, both theories are directly relevant to important and pressing aspects of OA research. In the case of Innovation Diffusion Theory, we found it most often used to explore specific aspects of OA, particularly institutional repository development (Bamigbola, 2014; Campbell-Meier, 2011; Dorner & Revell, 2012a; Kingsley, 2008; Pinfield et al., 2014; Stanton & Liew, 2011a; Swanepoel, 2005; Xu, 2008), OA journal development (Ayeni, 2017; Greco, 2016; Sanni, Ngah, Karim, Abdullah, & Waheed, 2013), and the availability and use of central OA funds (Hampson, 2014; Pinfield & Middleton, 2016). Other uses were broader, with the theory applied to the diffusion of OA in general terms (Costa, 2006; Xia, 2012). Application of Disruptive Innovation Theory was also found to be used in this broad sense.

With the exception of one article which uses Innovation Diffusion Theory to inform the development of interview questions (Dorner & Revell, 2012b), all documents using the theory do so in the context of analysis of survey or interview data, or during general discussion of OA growth. Several authors highlight how well Rogers' ideas match their findings: as Kingsley notes, having summarised the key aspects of Innovation Diffusion Theory, "the implementation of repositories into the academic community fits neatly into these definitions" (2008, p. 208). That the book in which Rogers first presents his theory, *Diffusion of Innovations* (1962), has more than 98,000 citations in Google Scholar is indicative of the perceived value of the theory as a means of understanding innovation diffusion patterns in a huge range of contexts. It also suggests that the theory is very well known – something the common usage of terms coined by Rogers (such as "early adopters") attests to – and this is the primary reason perhaps why it has been chosen by authors ahead of other theories relating to innovation adoption. Wisdom, Chor, Hoagwood, and Horwitz (2014) identify 20 such theories, but of these only Rogers' work is used by papers in our corpus.

Another striking finding from our results is the relatively limited use of theories requiring a purely quantitative approach. Of the theories shown in Table 6.1 only two – Game Theory and the Solow–Swan Model – incorporate mathematics in the formulation of the theory itself. Although all papers using Game Theory address slightly different OA-related questions, and use somewhat different technical approaches, they are ultimately concerned with the same problem, namely how the behaviour of actors in the scholarly communications landscape responds to different incentives and rewards. Use of the Solow–Swan Model is concerned with system-level cost and benefit calculations for different potential OA systems, usually particular countries. It is notable that this theory is the one most commonly encountered in the report literature.

Looking specifically at the report literature, we note that aside from the Solow–Swan Model, and Björk's Scholarly Communications Life Cycle, no other theory is used by more than one report. While other theories are used in isolated documents – for example theories relating to the economy of attention in the Finch Report (2012), and Public Interest Theory in Jubb et al. (2017) – in general our perception of the report literature was that it was more likely to utilise high-level conceptualisations or mappings of either processes or landscapes, than formal academic theory. Examples of this include the use of the Open Data Institute's Data Spectrum by Hamilton and Jacobs (2017), and the Publishing Cycle presented in Ware and Mabe (2015). While we consider these figures to meet our broad definition of theory, it is not unreasonable to question whether they truly represent theory in any grander sense.

In some cases, it is clear that the use of a certain theory to address an OA question originates from a single source. For example, Christensen's notion of the Disruptive Innovation is first used to address issue of scholarly communication, including OA, by Lewis (2004, 2012), and then subsequently by a number of other authors. Eight of the ten papers published after Lewis' work which utilise Disruptive Innovation cite Lewis, and in several cases make clear the influence of his earlier work. Here then is a clear example of one researcher's use of a particular theory inspiring other researchers to extend and enhance the work, or apply it to related problems: Lewis stands as a common point of reference for much of this subsequent effort. This is in clear contrast to the use of other theories in the corpus. None of the six papers that use Game Theory, for example, cite each other, and indeed of the 247 items cited in these six papers only eight are referenced by more than one of the six, and none by more than two. That papers addressing similar problems, and using similar techniques to do so, should have such little common ground is undoubtedly surprising. One revealing point here is the journals in which these articles were published, which include *Theory and Decision* (a multidisciplinary journal of decision science), *Advances in Library Administration and Organization*, *European Journal of Law and Economics*, and *Physica A: Statistical Mechanics and its Applications*. It seems that the authors of these papers, despite the common subject matter and methods, come from quite different disciplinary communities, and are disseminating their work to quite different audiences. From this an interesting question emerges: to what extent are the potential benefits of different disciplinary approaches to OA questions undermined by the siloed nature of the outputs?

These examples of different relationships between research that uses the same theory – Disruptive Innovation with a clear lineage and frequent cross-citation, and Game Theory with its apparently independent uses – both contrast with a third model to emerge from our analysis. That is the case of a single researcher producing multiple outputs using the same theoretical approach. The clearest example of this is the use of the Solow–Swan Model – the second most commonly found theory in our corpus. In fact, of the 14 articles and

reports which use this model, all but three are authored by the economist John Houghton with different co-authors. We note therefore that while Table 6.1 might at first glance suggest widespread use of the model, in reality it reflects the prolific output of one researcher.

A further point, and one hinted at by the above list of journals in which Game Theory informed OA research has been published, relates to the use of what we might call "disciplinary-specific" theories. As researchers with a long-standing interest in scholarly communications and open access research agendas, it was particularly striking for us to discover a significant number papers with which we were not familiar, and which address OA questions using theories from disciplines in which we are distinctly non-expert. Generalising somewhat, we suggest that our results indicate two distinct strands of theoretically informed research about OA. First, there is the literature relating to OA that is published by scholarly communication researchers and practitioners, and published in the journals read by those communities (by which we mean primarily titles relating to library and information science, publishing, and to a somewhat lesser extent business and management). The theories used in these articles – e.g. Socio-Technical Interaction Networks, UTAUT, Innovation Diffusion Theory – are typically drawn from practice influenced social sciences, and, importantly, appear often to be communicable to readers without recourse to highly technical language. The second strand is research that originates from outside the scholarly communications community, coming instead from researchers working in other academic disciplines. The results of our coding for author role show these academics in fields as diverse as physics, computer science, anthropology, sociology, biology, law, philosophy, economics, and history. Unsurprisingly, these authors frequently apply theories and concepts from their own disciplines to questions of OA. Many of these theories are found only once in our corpus, and so do not appear in Table 6.1. There are more than 20 such theories, including the social justice theories of John Rawls and David Miller (Scherlen & Robinson, 2008), the COM-B Model (Weckowska, Levin, Leonelli, Dupré, & Castle, 2017), colonial mimicry (Bell, 2017), and the feminist philosophy of technology (Wittkower, Selinger, & Rush, 2013).

This second strand of OA research, authored by academics working in apparently unrelated disciplines, raises some important questions. To illustrate we present two examples, taken from either side of the positivist/constructivist divide. Figure 6.1 shows a section of the article "Academic copyright in the publishing game: A contest perspective" by Feess & Scheufen (2016) . Published in a law and economics journal, the paper applies Public Choice Theory, and particularly the Tullock-contest model, to the scholarly publishing "game", and models the behaviour of authors competing for limited journal space. While the article establishes the problem in relatively plain language, and similarly includes a narrative summary of the findings, the bulk of the paper could only be properly understood by a reader familiar with mathematical notation, and aware of at least some of the mathematical foundations of Public Choice Theory.

The socially optimal effort levels are given by maximizing SW with respect to e_L and e_H. We get

$$e_H^f = \frac{\left(r^k\right)^2 \theta \beta^2}{4}; \; e_L^f = \frac{\left(r^k\right)^2 \beta^2}{4}; \; \frac{e_H^f}{e_L^f} = \theta.$$

This shows first that the high type should exert higher effort due to her higher (marginal) productivity in research. This could also be interpreted in the sense that universities should assign lower teaching and administration loads to highly qualified researchers which is the case in some universities and countries, but not in all. Second, due to higher readership ($r^O = 1 \geq r^C$), socially optimal effort levels are higher under open access.

In Shavell's seminal analysis, the private quality incentives can never be inefficiently high as research entails no rent-seeking motive. Recalling that

$$e_H^C = e_L^C = \frac{r^C \theta}{(\theta+1)^2}; \; e_H^O = \frac{\theta(1-g)}{(1+\theta-g)^2}; \; e_L^O = \frac{\theta(1-g)^2}{(1+\theta-g)^2},$$

the relation between privately and socially optimal effort levels in our model is given by the following Lemma.

Lemma 1 *(i) Assume closed access. Then, the high type's (the low type's) effort is too low iff* $\beta > \frac{2}{\sqrt{r^C}(1+\theta)}$ $\left(\beta > \frac{2\sqrt{\theta}}{\sqrt{r^C}(1+\theta)}\right)$. *(ii) Assume open access. Then, the high type's (the low type's) effort is too low iff* $\beta > \frac{2\sqrt{1-g}}{1+\theta-g}$ $\left(\beta > \frac{2\sqrt{\theta}(1-g)}{1+\theta-g}\right)$.

Figure 6.1 Example section of Feess & Scheufen (2016). The paper applies the Tullock-contest model to analyse the scholarly publishing "game". Image sourced from the preprint version of the paper available on SSRN (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1793867), and reproduced with permission from the authors

Our second example is a chapter titled, "Power, emergence, and the meanings of resistance: Open access scholarly publishing in Canada" by Price and Puddephatt (2017), published in the book series *Studies in Symbolic Interaction*. The chapter reports the results of interviews with a number of Canadian OA journal editors and librarians, and "explores the meanings of resistance held by the editors of open access journals in the social sciences and humanities in Canada, as well as the views of university librarians" (2017, p. 95). The research is heavily informed by theory, drawing on Meads' Theory of Emergence, Athens' radical interactionist account of power, and Chang's concept of extended rationality:

> The perspective of radical interactionism (Athens, 2015) helps attune us to the fact that open access editors experience asymmetric relations of power in their scholarly fields. Such fields favor those who adhere to traditional publication routes and, especially, those who control the major mainstream publications. Open access editors experience these fields of power in

> a very direct way, and orient their actions accordingly. They attempt to bring justice to fields of academic publishing by making use of a publically accessible medium, according to emergent norms surrounding open access that continue to evolve. What is considered possible and desirable is itself undergoing a process of negotiation and flux, just what we would expect from emergent processes. The battles narrated in this chapter are happening within a wider institutional and governmental context, in which the rules requiring open access, and the amount libraries will continue to pay for subscriptions, is far from settled.
>
> Clearly, power is an important part of this story, and a radical interactionist approach helps focus our attention to the meanings of resistance in relation to the external forces of power that actors on the ground envision and actively strategize against. Yet we believe that resistance as a sociological concept also requires the notion of emergence (Chang, 2004; Mead, 1938). Without the continual and creative reassembly of human and nonhuman worlds, and technological and social systems (Latour, 2005), new forms of resistance could not be generated in the first place, nor would the extended forms of rationality they make possible. By carefully considering how the unexpected interaction of emergent social forms provides new opportunities for resistance in particular sites of struggle, interactionist studies of power may yield even greater insights into the dynamics of oppression and resistance.
>
> (Price & Puddephatt, 2017, p. 113)

While the writing may appear at first glance to be more accessible to a non-expert than a page of mathematical notation, we suggest that in reality research communicated in this style offers significant challenges to readers from outside the authors' disciplinary community. Indeed, there is a sense in which this article is concerned with what OA can tell us about resistance (in the sociological sense), rather than what understanding the theories of resistance can tell us about OA.

It is important to note that our intention is not to criticise these papers. Having spent time reading and understanding them we recognise that they are both important pieces of work that make interesting and relevant contributions to wider discussions of OA. But that, in fact, leads us to the crucial point. To what extent do these papers, written as they are, effectively add to a general body of knowledge about OA? In choosing to publish the work in this form and in their own disciplinary journals and books, the authors are certainly acting in line with academic conventions and norms. In this sense they are representative of a significant proportion of OA research. But in adhering to these conventions, is the potential impact of the research being limited? We suspect that work of this type published in disciplinary specific outlets will not reach many of the researchers and practitioners actively involved in OA. This is an issue we address later, in Part 4.

How theory is used

The coding process included an analysis of the ways in which theory is used by documents in our corpus, with the categories as shown in Table 6.2.

Some documents were found to make only cursory reference to theory. In reading Table 6.2 it is important to note that many papers used more than one theory, and therefore the use of each theory was coded independently. Thus in fact only 11 documents made only a cursory use of theory, with the remaining 15 documents also using other theories in more substantive ways. The following is an indicative example of what we coded "cursory reference" to theory:

> The body of knowledge for a discipline is codified in a variety of locations: books, journals and researchers' personal documents for on-going work that has yet to be published. It is this codification of knowledge that provides the necessary breeding ground for ideas; the "conceptualising" phase as described by Charles Humphrey's Knowledge Transfer Cycle.
>
> (Fyson, Coles, & Carr, 2013, p. 81)

The reference to theory is meaningful and directly related to the argument being made, and thus is worthy of inclusion in our corpus, but there is no further discussion of Humphrey's work. In contrast, documents coded as using theory "for background/context" engage in more depth with theory, as a means of establishing background to the rest of the research. Hedlund's study of researcher attitudes to OA (2008) is a representative example. She begins a section of the paper entitled, "Theoretical Background" with reference to a particular theoretical framework.

Table 6.2 Results for coding of how theory is used. Note that categories are non-exclusive (e.g. a document can use theory both to inform method and to generate predictions)

	Articles/conference proceedings/ book chapters (152)	*Reports (19)*	*Books (7)*
Cursory reference	26	2	0
For background/context	41	10	4
Informs method	56	6	1
Informs analysis/discussion	90	5	5
To generate predictions	11	4	0

Hedlund begins her explanation:

> For the study on the scientific disciplines represented in business schools we will rely on Whitley's (1984; 2000) theory on the social organization of the scientific fields as our starting point. Whitley's theory characterizes the differences between scientific fields into two main dimensions.
>
> (Hedlund, 2008, p. 16)

She goes on to outline these two dimensions, and link them to applied research into OA questions. Thus the use of theory plays an important role in contextualising the problem, without directly influencing the research method, and without being returned to in a discussion section.

The utilisation of theory to inform the research method was the second most common use of theory in our corpus. This use of theory most commonly related to the development of survey instruments, with Venkatesh's Unified Theory of the Adoption and Use of Technology (UTAUT) in particular used by a number of authors to inform the design of questionnaires intended to explore aspects of institutional repository use (e.g. Khalili & Singh, 2012; Rifai & Hasan, 2016; Singeh, Abrizah, & Karim, 2013; Wirba & Abrizah, 2010). Social Exchange Theory was found to be used in a similar way (Kim, 2007; Lwoga & Questier, 2014; Stanton & Liew, 2011b). In these cases, theory provides researchers with a robust and validated set of components by which to organise their investigation, and as well as informing the method, the theories provide a framework for interpreting the results.

In other cases, theory was found not just to inform the method, but actually to constitute the method itself. The use of Actor Network Theory – which Latour, its originator, described in part as a "how-to book" (2005) – falls into this category, with Kennan and Cecez-Kecmanovic (2007) and Kennan and Cole (2008) building their studies of IRs on the development of emerging actor-networks. Theory as method was also found in more quantitative papers, particularly studies using the Solow–Swan Model (e.g. Swan, 2010). Here the model represents the tool through which results are produced.

The most common use of theory was to inform analysis and discussion – well over half of all documents in the corpus used theory in this way. Empirical papers were typically found to introduce theory in order to interpret results, situate findings within an established framework, and enrich the scope of the discussion. The language found in Antelman (2006) is typical of this approach: "There are several conceptual models that can help frame these findings" (2006, p. 92). For non-empirical papers (what we consider essays or opinion pieces) or reviews, we found two broad types of theory use. Some papers use a single or primary theory as a lens through which to examine or evaluate OA (or a particular aspect of it). Examples of this include Lewis's (2012) use of Disruptive Innovation, Xia's (2011) use of Lévi-Strauss's culinary triangle model, and Klang's (2006) use of Commons Theory. Other non-empirical works, typically similar in form to the arts and humanities essay, incorporate multiple theories in order to build and progress an argument.

A clear example of this is Herb's article "Sociological implications of scientific publishing: Open access, science, society, democracy, and the digital divide" (2010). This essay develops an argument drawing from Bourdieu's theory of scientific capital, Foucault's discourse analysis, and "several concepts from the philosophy of sciences".

The final type of theory use – to generate predictions – was found to be relatively rare. The 11 documents coded this way all related to either economic analysis (particularly cost benefit projections based on Solow–Swan modelling) or Game Theory (which quantifies likely outcomes based on different initial conditions).

As indicated by the results of the coding, in reviewing the use of theory we encountered huge variation in the extent to which theory was integral to the research. This is best illustrated with examples of two papers which utilise the same theory – the Theory of Planned Behaviour (TPB) – to markedly different degrees. In their paper, "Factors influencing faculty attitudes towards open access institutional repositories", Tmava and Miksa introduce TPB as the theoretical foundation of their research:

> The major assumption behind this theory is that human beings are rational and make systematic decisions based on available information. The TPB developed by Ajzen provided a useful framework to examine more closely the factors affecting faculty intention to participate in OA IRs.
>
> (Tmava & Miksa, 2017, p. 520)

While the authors do explain how components of TPB influenced the development of a survey, there is no further discussion of the theory, and it is not referred to in the results and discussion sections. In contrast Moksness and Olsen (2017), who apply TPB to the question of researcher's intentions to publish in OA journals, embed references to the theory throughout the paper:

> This study employs an integrated and extended theory of planned behavior (TPB) framework within a cross-sectional survey design … Within this specific stream of research, and based on the more general reasoned action approach (Fishbein and Ajzen, 2010), this study includes a two-dimensional construct of social norms (injunctive and descriptive norms) and PBC (capacity and autonomy) in order to obtain a broader understanding of the basic model in explaining the intention to publish OA.
>
> (Moksness & Olsen, 2017, p. 1149 & p. 1156)

It initially appears that these two pieces of research use theory to very different extents. But a more detailed comparison raises several interesting questions. First, we note the difference in length of the two documents – Tmava and Miksa's work being a four-page conference paper, and Moksness and Olsen's a 17-page journal article. Given the limitations of space, it is possible that

Tmava and Miksa made a conscious choice to report their use of theory in less detail. We also note the publication venue. The ASIS&T annual meeting, at which the Tmava and Miksa paper was given, is typically attended by a mix of academics and practitioners (primarily librarians and publishers). It is possible, therefore, that the authors prioritised communicating the practical results of their work so as to be of most interest to a practitioner audience. The findings and conclusions of the paper could potentially have been derived from an application of theory, but with the role of theory not communicated. In contrast, the Moksness and Olsen article appears in the *Journal of Documentation*, a title with the stated aim of providing "a unique focus on theories, concepts, models, frameworks and philosophies related to documents and recorded knowledge." It seems reasonable to infer that any author preparing a manuscript for submission to this journal would be inclined to report in full any use of theory.

This point is illustrated even more clearly in one further example. A journal article by Jubb (2011) describes work done to determine the costs and benefits of various transition routes to OA. In this paper, discussion of the growth modelling techniques is almost non-existent, limited to the following: "The increases in our two access measures were used to estimate a range for potential UK economy-wide benefits using the 'Solow–Swan' economic growth model." If we consult the report on which this article is based, however, we find four pages of detail regarding the development of the model. Our conclusion here is that constraints of form and intended audience mean we cannot always be certain from a given article how theory has been *used*, only how that use has been *reported*. This raises the possibility of what we might call tacit use of theory, whereby the role played by theory in the conception, undertaking and analysis of research is not represented in the disseminated output.

Theory generation

As noted previously, fewer documents in our corpus were found to generate theory than use it. Assessing these theories against Gregor and Reynolds's typologies, we found the results shown in Table 6.3.

The most obvious conclusion from this work is that most theories generated by research into OA are of the most limited types – either what Reynolds terms "vague concepts, untested hypotheses, prescriptions for good behaviour", or Gregor's "theory for analysing". No examples of what we might term "grand" theories (Gregor's "theory for explaining and predicting", and Reynolds's "set of laws") were found.

While the Gregor and Reynolds typologies offer a helpful way of understanding the scope, aims, and applicability of theories, they do not help us understand the aspects of open access about which theory is being generated. Based on our analysis we propose a typology of theories generated in relation to OA, and suggest that all the theories generated by literature in our corpus fit

Table 6.3 Classification of theories generated in OA-related research according to the Gregor (2006) and Reynolds (1971) typologies. Note that some documents were found to generate more than one theory, in which cases each theory was classified

	Articles/conference proceedings/book chapters (65 documents generating theory)	*Reports (15 documents generating theory)*	*Books (1 document generating theory)*
Gregor typology			
Theory for analysing, typically initial descriptive attempts at theory	38	15	1
Theory for explaining	9	1	0
Theory for predicting	8	6	0
Theory for both explaining and predicting	0	0	0
Theory for design and action	16	0	0
Reynolds typology			
A set of laws, i.e. well-supported empirical generalisations;	0	0	1
An interrelated set of definitions, axioms, and propositions;	17	2	0
Descriptions of causal processes;	15	4	0
Vague concepts, untested hypotheses, prescriptions for good behaviour.	44	15	0

into one of four categories, which were developed inductively from a careful analysis of the theories themselves. Table 6.4 presents this typology.

Theory for evaluation and development describes attempts to provide formal structures for the assessment of particular local service or solution (e.g. an institutional repository), consisting of technologies or processes, or the actions required to grow or improve them. The vast majority of theories of this type relate to institutional repositories, although some are also applied to journals (e.g. Graziotin, Wang, & Abrahamsson, 2014; Haux et al., 2016). The theories are typically described by the authors using terms such as "evaluation framework" (Kim & Kim, 2008) or "best practices framework" (Campbell-Meier, 2011). Most theories

Table 6.4 Typology of theories generated in relation to OA

Type of theory	*Description*	*Examples*	*Articles/conference proceedings/book chapters (152)*	*Reports (19)*	*Books (7)*
Theory for evaluation and development	Theory provides a formal structure for the evaluation and/or development of a technology or process. The theory is typically suitable for application in a localised context	Campbell-Meier (2011); Kim & Kim, (2008); Hyun & Yong (2006)	11	0	0
Theory of attitudes, relationships and processes	Theory provides an analysis or explanation of the attitude of actors, and/or the relationships between actors, or maps the processes with which they engage	Kennan & Cecez-Kecmanovic (2007); Kim (2007); Lwoga & Questier, (2014)	22	8	0
Theory of systems	Theory addresses a system as a whole (e.g. the scholarly communications system) and proposes or defines models for that system	Fuchs & Sandoval (2013); Fyson et al. (2013); Gherab Martin & González Quirós (2014)	15	2	1
Theory as method	Theory developed as a tool to facilitate investigation. Includes instances of existing theory being significantly adapted for this purpose.	McCabe, Snyder, and Fagin (2013); Houghton (2011); Campbell (2015)	18	6	0

of this type are built on relatively small amounts of empirical data, and can be categorised within Reynolds's typology as "prescriptions for good behaviour".

Theory of attitudes, relationships, and processes relates to theories which present, analyse or explain the relationships between actors, their attitudes, or the processes with which they engage. Within this type of theory, we again

find a significant number of studies relating to open access repository use, although in contrast to theories for evaluation and development the focus of these papers is less directly oriented to action (i.e. prescriptions for how the IR can be improved), and more towards understanding the motivations and concerns of users. Other key theories of this type relate to scholarly communications more broadly, and seek to map the high level processes within which various actors engage (e.g. the Scholarly Communication Process model presented by Jisc (2015). We also find this type of theory applied to questions of scientific resource discovery in the private sector (Schonfeld, 2016), adoption rates of e-publishing (Sanni et al., 2013), and the use of pre-print servers (Meyer & Kling, 2002). Theories of this type are the most likely of any to be considered "theories of explaining", since when developed rigorously they offer not just a representation of the status of relationships and processes, but of their underlying causal effects.

Theory of systems describes theories which propose fundamental changes to a broad system. In the context of OA these theories typically present structured analyses the existing scholarly communications system, or new approaches to scholarly publishing and dissemination that represent radical changes to the status quo. These include new business models for journal publishers (Fuchs & Sandoval, 2013; Gumieiro & De Souza Costa, 2010), conceptualisations of public participation in science (Ferpozzi, 2017), and technical solutions to publisher disintermediation (Barbera & Di Donato, 2006).

The final type, *Theory as method*, is something of an exception, in that it describes not the scope or focus of the theory, but its purpose. Theory as method describes instances where we recognise that theory has been generated, but for the purposes of developing a tool, method, or model to support further investigation or discovery. There are several quite distinct examples of this in our corpus. Documents that undertake economic modelling to determine the cost and benefits of OA approaches are both using and developing theory, and represent this type. While an underlying theory (e.g. the Solow–Swan Model) is used, to produce meaningful results it is necessary to adapt the model to the particular circumstances of the scholarly communications market. This in turn requires the identification and operationalisation of various relevant factors – this process essentially representing theorising. A similar process is employed in other contexts, specifically the use of Game Theory (e.g. Hanauske, Bernius, & Dugall, 2007), and modelling of citation networks (Bernius & Hanauske, 2009). A quite different example is found in the use of Actor Network Theory (Cana, 2010; Rieger, 2008), which as discussed above constitutes both a theory of interaction and a research method. For authors using this theory the mapping of networks within the space under investigation constitutes both an application of the method and a model of interaction between actors, and thus can be said to constitute both method and theory generation.

Table 6.5 Labels used by authors to describe their theory

Model	"research model", "conceptual model", "conceptual research model", "business model", "theoretical model", "cost-benefit-model", "process model", "network model", "mental model", "structural model", "regression model", "theoretical model", "synthesized model", "landscape model", "management model", "simulation model", "contest-model", "economic model", "cost-benefit model", "evaluation model", "working model", "cooperative model", "research model"
Framework	"impacts framework", "theoretical framework", "evaluation framework", "best practices framework", "usability framework", "conceptual framework", "integrated framework"

One final area of interest in conducting this analysis was the language used by authors generating theory to describe their work. By capturing snippets of text that describe or name the generated theory, we were able to compare the terminology used by authors, finding that the vast majority of theories we identified were labelled as frameworks or models. A sense of the variety of terms employed can be found in Table 6.5, which lists the various prefixes placed before these two terms. Our perception in conducting this coding was that there appears to be little consistency or standardisation in the terminology used.

In undertaking this phase of the research we encountered a large number of papers, many of which did not ultimately become part of the corpus, that presented findings in a form clearly intended for practitioners. These included concepts like "guidelines", "checklists", "toolkits", and "route maps". In reviewing many of the papers in our corpus, particularly those presenting frameworks for evaluation and development, it became apparent that while the presentation and accompanying narrative was often, the meaningful content was often quite similar to that found in the papers using more practitioner-oriented language. To give an example, Mamtora, Yang, and Singh (2015) present a series of guidelines relating to repository management based on findings from interviews conducted with repository staff at three institutions. Published in the *IFLA Journal*, the paper communicates its findings and recommendations in direct language, and seems unambiguously intended for a practitioner audience. For example, guideline 4 reads as follows:

> Position your library at the frontline of responsibility for the OA development, administration, coordination and publicity.
>
> The development of IRs and the promotion of OA have been led by the library at all three institutions, but it is notable that the more the library is involved, no matter the level, the more successful the venture. The library

> is naturally enough involved in the development stage, and in the subsequent administration of the working system; but to be more effective, the library also has to take the lead in promoting and advocating for OA.

Taken together the guidelines represent an empirically grounded analysis of factors influencing repository development. It has a "theory-like" quality but does not follow the same formal structures as literature which is clearly using or generating theory. It is not difficult to imagine, however, that in the hands of different authors this work might have been presented in a different form, with the guidelines repurposed as a "development model" or similar. This leads us inevitably to some significant questions. What value, if any, would a more recognisably theoretical form of presentation have? And would academics and practitioners judge value in similar ways? We look at these and other questions raised here in Part 4.

Conclusion

The theory-informed literature on OA both uses and generates theory, although the former is more common. The number and range of theories used in studies of OA are striking. Use is made of theories derived from a variety of disciplines, including sociology, psychology, LIS, mathematics, education, economics, and business. There is also evidence of disciplinary-specific theories being used, such as Game Theory, in the literature of those specific disciplines. Theory can be core in the design and implementation of a study, or might be referred to cursorily. It is not always clear, however, why certain theories are being used in the way that they are or how these theories are chosen by the authors – a question we address in the next part of the book.

Of theory generated by studies of OA, we have identified four major types: theory for evaluation and development; theory of attitudes, relationships and processes; theory of systems; and theory as method. All of these make contributions to understanding different aspects of OA. OA in practice is also reflected in what might be called "theory-like" literature usually produced to inform practice. This does raise an important question about how theory is used in practice – a question to which we now turn in Part 4.

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Part 4

Perspectives

Theory in action

Chapter 7

Theory in open access practice

Theorising and acting

> Science is a river with two sources, the practical source and the theoretical source.
>
> (Alfred North Whitehead (1929). *The Aims of Education and Other Essays*)

> It's a sort of willed effort of mind to examine reality. But it's also the generation of ideas about what could be.
>
> (Participant in this study)

The preceding chapters of this book have raised some important issues about theory and practice in relation to OA. We have discussed competing definitions of theory, and offered our own. We have also reviewed the work that has been done to develop theory within LIS, and established the relationship between theory and practice, as found in the academic literature on the subject. In Part 3, we presented an analysis of the theoretically informed literature relating to OA, establishing the most commonly used theories, and the OA issues to which they have been applied.

A number of questions have emerged from this work. To what extent are practitioners working in OA aware of theoretically informed research, and how do they view its usefulness? What motivates researchers to use theory, and are they attempting to communicate with practitioners? Is there a divide between theory and practice? In this part of the book, we report the results of a series of interviews with more than 30 practitioners and researchers specifically focused on the relationship between theory and practice in the domain of OA. In this chapter, we describe the methods we followed in undertaking our interviews, and we go on to discuss how our participants kept up to date on their work, and how they regarded theory. In the chapter that follows, we continue our analysis of the interviews, looking at the value interviewees place on theory, the challenges associated with engaging with theory, and perceptions of the theory-practice gap (and how it might be bridged).

Method

This stage of our research was based on the outcomes of the content analysis stage, reported in Part 3, as well as our foundational work analysing the OA environment (Part 1) and the theory-practice relationship in the literature (Part 2).

Although other methods were considered, we felt that interviews were the most effective means of engaging in detailed discussion about this complex subject with people working on and researching OA issues. In identifying participants, we attempted to gather the views of individuals in a range of roles, both practitioner and researcher, and to include authors of OA-related research as well as those who have not published. In total, 41 individuals were contacted by email and invited to participate, of whom five were unwilling or unable to take part. Table 7.1 provides an overview of the 36 interviewees (11 female, 25 male), and summarises the distribution by role and location, as well as whether participants have published on the subject of OA, and have done so using theory. It is worth noting here that although none of our participants are currently located in Africa, one interviewee works extensively on African OA issues, both in terms of research and practice.

We were concerned when planning the interviews that participants might find it difficult to address relatively complex questions relating to theory without having given the issues some prior thought. At the same time we were reluctant to provide participants with the full interview schedule in advance, since this risked us receiving scripted answers and losing potentially interesting spontaneous and candid responses. Our novel solution, which we have not seen used elsewhere, was to ask participants to complete a very short "micro-survey" in advance of their interview.

Table 7.1 Interview participants

		Location							
Role	*Total*	*UK*	*North America*	*Europe*	*Australia*	*South America*	*Asia*	*Published on OA*	*Used theory*
Researcher (R)	12	1	6	2	3	-	-	12	12
Practitioner	24	18	2	1	-	2	1	13	7
Consultant (C)	2	2	-	-	-	-	-	2	2
Librarian (L)	9	6	2	-	-	-	1	5	4
OA provider (Pr)	3	1	-	-	-	2	-	3	1
Policy maker (Po)	3	3	-	-	-	-	-	1	
Publisher (Pu)	7	6	-	1	-	-	-	2	
Total	36	19	8	3	3	2	1	25	19

This consisted of four or five statements (the number varied depending on the participant's role) relating to theory and practice in an OA context, with which participants were asked to agree or disagree on a ten-point scale. The survey was delivered online using the SmartSurvey site, and the statements were as follows:

- Theory has been important in my understanding of open access.
- The way in which I use theory in producing research is of relevance to practitioners [only given to participants who had used theory].
- Theory generated by academic research is often useful for my practice [only given to practitioners].
- All academic research should have a strong theoretical basis.
- In my experience, the relationship between theory and practice is usually harmonious.

Participants were sent a link to the micro-survey once they had agreed to take part in the research, and were asked to complete it before the interview. Our intention was that participants would be required to consider briefly their perspective on the relationship between theory and practice while undertaking the survey. This also offered us a way of raising these complex issues in the interviews. For example, rather than ask the rather intimidating question "what is theory?", we were instead able to ask participants how they had interpreted the term when completing the micro-survey. The results of the micro-survey themselves were not analysed as part of this purely qualitative phase of research.

The interview schedule was designed to cover issues that have been highlighted in a previous study phases. It covered three main areas. The first was background about the participant and their role: their experience with OA, how they keep abreast of developments in the field, and the extent to which they make use of the academic literature. The second area related to theory: what they understood the term to mean, its relationship to academic research in general, the role theory has played in their understanding of OA, and their experience using or generating theory (if applicable). The final section focused on the theory-practice relationship: the extent to which theory informed their practical work (if applicable), the broader relationship between theory and practice, and how that relationship could be improved. The full interview schedule can be found in Figure 7.1.

Wherever possible, interviews were conducted face to face, but this proved impractical for a significant number of interviewees (particularly those based overseas). In total 15 interviews were conducted face to face, with the researchers travelling to meet participants, while 18 were carried out using Skype, and three over the phone. All interviews were audio recorded and subsequently transcribed.

Thematic Analysis was used as a framework for organising and interpreting the interview data, following the principles outlined by Braun & Clarke (2006). To ensure a collaborative coding process each member of the research team was assigned a set of four transcripts, two of which were common to all, and two unique to each researcher. We each then carefully read the transcripts

R = researchers
PP = practitioners who have published research
PNP = practitioners who have not published research

- Tell me about your current role and interests
- How do you keep informed about open access? What kind of information do you use?
- Is that typical of your work in other areas? If not, in what ways does it differ?
- Do you use peer-reviewed research publications to inform your practice-based work on OA? Do you use peer-reviewed research publications for other purposes in your practice?
- What are the pros and cons of using peer-reviewed publications?
- What is theory? [Related to the microsurvey (MS), "what did you interpret 'theory' to mean?"]. What does theory do? What is it for? Give examples.
- Is theory a necessary part of all sound academic research? [Related to MS Q4, "You responded 'x' to Q4, could you elaborate on what you meant?"]
- [R] Do you feel any pressure as a researcher to use theory in your publications?
- [R + PP] Give some examples of how you have used existing theory in your publications.
- [PNP only] Why do you think authors use theory?
- [R + PP] Give some examples of how you have generated theory in your work?
- [PNP] Why do you think authors generate theory?
- [R + PP] Are you aware of any ways your publications involving theory has been used by practitioners? Give examples, particularly related to OA.
- [R + PP] To what extent is your work that involves theory produced with practitioners in mind?
- [R + PP] Have your publications involving theory included practice-based recommendations or consideration of practice-based implications? Give examples, particularly related to OA.
- [PP and PNP] Has research incorporating theory informed your practice? If so, how?
- [R] How do you think practitioners regard 'theory'?
- [PNP] How do you think researchers who use theory regard 'practice'?
- [PP] How do you think practitioners regard 'theory'? And how do you think researchers who use theory regard 'practice'?
- Has theory helped your understanding of open access? If so, how? If not, how might it do so? [Related to MS Q1, "You responded 'x' to Q1, could you elaborate on what you meant?"]
- What is the relationship between theory and practice? [Relating to MS Q5, "You responded 'x' to Q5, could you elaborate on what you meant?"].
- Do you believe that academic research in the area of OA strikes a good balance between theory and practice? If so, why?
- How might the theory-practice relationship be improved?
- Is there a problem with practitioners not having access to theory-informed research?

Figure 7.1 Full interview schedule

before meeting to discuss the emergent themes. This resulted in an initial version of a codebook, which was used to code four additional transcripts. Further refinements were then made to the coding scheme before all transcripts were coded using NVivo qualitative analysis software.

A final note regarding the reporting of our findings. As per the ethical approval granted by the University of Sheffield, participants were promised full anonymity on an individual and organisational level. For this reason, we do not identify any names or organisations in this book, and provide only very general information when attributing quotations. The quotations themselves have been very lightly edited for readability and to remove identifying information, but are otherwise presented verbatim.

Keeping up to date with OA

Commonly used sources of information

The first substantive questions asked during the interviews related to how participants kept abreast of OA-related news. While the interviews revealed interesting detail about the types of information sources and channels that are used to monitor OA developments, which we report below, the most striking aspect of these discussions was the picture that emerged of the challenges faced by practitioners working in this area, and the extent to which certain forms of communication about OA issues were most valued. Practitioners described themselves as time-poor, and appeared often to struggle to navigate the abundance of new information relating to OA. Given these circumstances, it is perhaps not surprising that conversations with colleagues and other members of informal networks were highly valued, and often constituted primary drivers of changes to practice and policy.

Almost all respondents indicated that monitoring OA developments was challenging. Primarily this was not because of a shortage of information, but rather the opposite: the amount of new material relating to OA made following developments a formidable task:

> I'm overwhelmed by it, the number of things ... you just can't keep up with everything.
>
> (R6)

> The difficulty is just keeping up with it all as you say, because there's so much that just comes into my inbox on a regular basis.
>
> (L8)

Many participants, most of whom hold senior positions, also described the lack of time available to them for monitoring and reflecting on the multitude of new OA activities, policies, and perspectives. Interviewees suggested two main challenges associated with this – identifying the most relevant material amidst the vast amount available, and keeping track of developments happening outside their immediate geographic region. When asked about which sources they used to keep up to date, participants generally identified four major channels:

- Twitter.
- Email lists.
- Conferences and events.
- Colleagues.

Twitter was the most frequently mentioned source for all types of interviewee, with more than three quarters of all participants saying that it was an important tool for monitoring developments. It was valued particularly for its currency, and as an aggregator of news and views from a large, shifting and highly active community:

> Yes, it has to be Twitter. Everything is going on everywhere in so many different spaces. Publishers, libraries, researchers; there's no comparable medium where you can get access to the thoughts of all those people in one place. And if there's a good idea or something interesting, it's easily propagated into my sphere of interest via Twitter.
>
> (Po3)

Those participants who professed not to use Twitter typically suggested that this was because of challenges they had previously faced filtering out irrelevant material, or because they had never engaged with the tool at all.

Email lists were also mentioned by a large number of participants. Lists mentioned by name included a number run by Jisc and the ALA (American Library Association). Several participants spoke in detail about the different characteristics of the various groups, with tone, level, and subject matter varying from list to list. There was a sense from some that this made the selection of which lists to subscribe to somewhat challenging. However, there was also a recognition that content frequently overlapped:

> I find the listservs … extraordinarily useful. And I'm not on a huge number, I'm only on about four or five, but it is enough. If something's worth finding out about it will come up. And if it's really worth finding out it will come up a few times.
>
> (L6)

While email lists were undoubtedly seen as useful by many participants, others suggested that they are somewhat "old fashioned" (L6), and that communication has moved on, particularly to Twitter:

> It used to be certain listservs I would subscribe to, where those conversations were happening. That all went away and what's replaced it is much more ad hoc.
>
> (L10)

It was clear from participant responses that conference and event attendance is a common activity in the fields covered by our participants (particularly librarianship and publishing), and were seen by many as important venues for learning more about OA developments. Conference attendance was frequently described as the norm: "the usual conferences" (Pu4), "the regular mix" (Pu1), "we go, obviously, to bigger industry conferences" (Pu2). Several participants described how conferences were useful as a means of developing informal networks and building personal relationships, although many of the specific conferences mentioned were recognised to be relatively narrow in terms of the type of delegates (i.e. practitioner or researcher). Interestingly, some individuals, particularly consultants, described deliberately attending conferences of different types as a means of communicating with different stakeholder groups:

> I make quite a point of going to different events and moving between communities, and I think that's one of the things that we try to bring as an independent consultancy. We're not wholly aligned with libraries or with publishers or with funders or with institutions, and I try to get exposure to those different groups and hear what they're saying.
>
> (C2)

Many participants emphasised the importance of colleagues and other individuals as information sources. In a few cases (usually senior publishers) these colleagues were subordinate staff members with a specific responsibility for monitoring and communicating developments:

> I've got a team of people whose job it is just to keep up to speed on what the policies are of different funders and different intuitions and what think-tanks are saying, you know, who is influencing who? ... I rely on them very heavily because, actually, you do need a filter because otherwise you drown.
>
> (Pu5)

Typically, though, participants described informal networks, often developed over many years. An advantage of these personal networks over broader channels such as Twitter appeared to be the extent to which they serve as a natural filter, with only particularly relevant material being shared. An overriding impression from these discussions was the sense of an active and relatively coherent OA community who openly share information and best practice despite, in many cases, there being significantly different perspectives on OA and its future. Overall there was a general acceptance that communicating with individuals (rather than through email lists or in public over Twitter) "is usually what gets you more insight" (Pu2).

In addition to these four commonly mentioned sources of information, several participants described using blogs, with the Society for Scholarly Publishing's

Scholarly Kitchen the most often mentioned. In fact, this blog drew both positive and negative comments. Some highlighted its usefulness as a means of understanding publishers' positions on key issues, while others characterised it as producing "propaganda". Other forms of social media such as Facebook and LinkedIn were mentioned by small numbers of interviewees, as were press releases and corporate/organisational statements. Several larger publishers and funders described how they had commissioned research to get up-to-date and reliable information, while several academics mentioned editorial boards as a means of monitoring current thinking and as fora for discussion.

The role of the academic literature

As might be expected, academics were the most likely to engage substantially with the formal academic literature. Indeed, some highlighted the academic literature as their primary means of understanding OA: "As a researcher, I tend to pull from the published literature over what's going on on the ground" (R5). Other researchers saw the role of the academic literature as complementary to other information sources:

> It's just another source of information to a very large extent. It's not an insignificant one, there's quite a lot of useful stuff.
>
> (R2)

Practitioners, however, were much less likely to engage significantly with academic material. Typically, they did not mention the formal literature in their initial responses, and subsequent discussions were the result of prompting on the part of the interviewer. In most cases they described it as playing a small role in their monitoring and understanding of OA developments. It was notable that practitioners very rarely described deliberately or systematically consulting academic research. In most cases they discussed how they were directed to potentially useful research via other media (typically Twitter or email). Those practitioners who said they did engage with the academic literature often acknowledged that their use often did not extend to reading articles in full, with consumption of the abstract or skim-reading the most common approaches. At the extreme end of this scale, one participant described "using" the academic literature without really engaging with it at all:

> When I say I am using academic research, I could take a headline from a news service that's quoting from an article extract and use that as my data point.
>
> (Pu5)

Rather than engage with the academic literature for the purposes of keeping up to date with OA, as some academics said they did, practitioners often had

a specific purpose for consulting research, namely for inclusion in formal reports or papers they had been charged with writing. As one participant put it:

> it's maybe happened two or three times that I've actually had to write a paper for a university committee that has made reference to the published literature. And it's been useful to do that, because of course when you are writing for an academic committee they do expect that there will be a degree of rigour there, so you will be expected to cite the scholar literature.
>
> (L8)

Participants spoke about the pros and cons of using the academic literature. A commonly mentioned strength related to the reliability and quality of the underlying research and data. There was also a belief that academic research sometimes presented deeper thinking about the key issues of OA, and that this can inspire practitioners to "reflect on the broader issues rather than the day-to-day tactical kinds of things" (L7). Given the use of the academic literature as a means of buttressing reports and papers with formal citations, it is interesting to note that some participants spoke of the usefulness of academic research in confirming what they already knew or did: "I suppose it's helpful because it reinforces your view. You know, so that . . . it's quite comforting, in that respect" (L5). One interviewee, however, noted "an advantage which is sometimes a disadvantage", arguing that:

> sometimes all people are waiting for is a peer reviewed publication that they can cite. Because they already believe the conclusion, but if they believe it on their own hunch, or believe it just from anecdotes, that's not strong enough. And so if they have something they can cite, then they can persuade other people. The reason this is sometimes a disadvantage is that publishers do the same thing and they have what I think are sometimes cynical misrepresentations of OA. And as long as it's just them speaking for themselves, we can dismiss it as cynical misrepresentation, but as soon as they have a peer reviewed article they can cite on behalf of their misrepresentation, they will do it.
>
> (R11)

The notion that some academic research is agenda driven, with potentially negative consequences to the OA movement, is striking, and perhaps at odds with a general view of this literature as more objective than much practitioner/advocate discourse:

> I think any vigorously conducted study in OA highlights a lot of interesting insights. And I think often also bring a more sane element to the debate. I think tempers sometimes flare over the principles of certain

> things, but I think what data can really achieve is to at least provide an insight into people actually doing what they say they're doing.
>
> (Pu2)

As well as these positives, a number of negatives or weaknesses of the academic literature were noted. The most significant of these related to its timeliness. The relatively long lead time of the scholarly publishing process, many argued, meant that the research presented in journal articles was often out date by the time it was published, and "just too late to be particularly helpful" (C2). Others disagreed with this view, noting that some research (particularly that published in reports) was produced in a timely enough manner, and that researchers working on OA issues usually endeavoured to publish quickly:

> One nice thing about academic studies on OA is that they tend to become published relatively rapidly. And people choose venues that don't take three years to process a paper.
>
> (R1)

Another commonly mentioned weakness of the academic literature related to the types of article commonly published, and their quality. Specifically, some practitioners described a proliferation of relatively small scale "case study kind of stuff" (L6), which they often found not to be useful. A theme related to this was the lack of relevance of academic research to interviewees' day-to-day work. Indeed, this was often the point of the interview at which participants first highlighted an explicit dichotomy between research and practice:

> There's a certain point at which I tend to stop reading because my focus at the moment is on trying to make practical change.
>
> (Pr2)

> I don't find research particularly helpful, because we're doing it.
>
> (L6)

What theory is

Before looking in detail at the ways in which the term theory was understood by our interviewees, it is interesting to note how challenging many of them found it to articulate a definition. Participants described themselves as "out of my depth" or "struggling". In the most extreme cases, interviewees explicitly stated that they simply weren't able to answer our questions about theory:

> Now I've retired, I could probably tell you I don't know what theory is. I honestly don't know what theory is. Twenty years of being a professor wasn't enough. I don't know
>
> (R7)

While the micro-survey was clearly useful as a means of priming participants for their interview, several emailed the research team after completing it to ask us what precisely we meant by "theory". This was echoed in responses to the question during interviews – it is revealing that a significant number of participants' initial response to the question of "what is theory?" was a variation of "I was going to ask you what you meant" (L4). This uncertainty was also revealed in the form and coherence of answers. There was often a stark contrast between the polished responses given to more general discussions about OA, during which participants were almost always able to immediately articulate a firm position, and the more faltering responses to questions about theory. It appears clear that many participants had not reflected on these issues before, or if they had, then they had not considered some aspects of the discussion. A number of interviews included instances of participants admitting to changing their mind, or apparently working out their views in real time as they responded:

> So I assumed it would be, I was taking it to mean, how can I express this, that there was like, you know, someone had, like in any sort of science experiment, sort of like a hypothesis to the experiment, and like theorise that this would lead to this.
>
> (Po2)

> Well, I think prior to this conversation I wouldn't have considered it so, but I've reflected on it now. I'm thinking, okay, I can see that. Maybe I shouldn't be quite so conservative about that.
>
> (R5)

> That's a good question. So I suppose I would ... I need to think about this. Just a second.
>
> (L5)

Participants offered a wide range of definitions of theory, ranging from the technical to the philosophical:

> It's a sort of willed effort of mind to examine reality. But it's also the generation of ideas about what could be.
>
> (L3)

The vast majority of definitions, however, fit into one of three categories: *Hypothesis* (i.e. a theory is an idea or notion that can be tested), *Principles* (i.e. the underlying arguments and concepts that define and support OA), and what we have termed *Conceptual Theory* (i.e. some variation of the definition used in Chapter 5 – a stated model or framework with the aim of improving understanding). Each of these is dealt with below. It should be noted that these

categories are not mutually exclusive – several participants believed that more than one of these interpretations were valid.

Theory as hypothesis

The least common interpretation was the view of theory as hypothesis. Typically, this definition was offered by practitioner participants with a scientific background, but without extensive research experience:

> I would think of a theory as a hypothesis.
>
> (L10)

> I was taking it to mean ... like in any sort of science experiment, sort of like a hypothesis to the experiment.
>
> (Po2)

> My son is one and a half and you can see him building theories all the time. Getting the car keys and sitting in the front of the car and thinking well, dad did something with this key and it did so. Was it in this hole? Was it in this hole? And he's testing. So he's got a theory that if I do this, something's going to happen.
>
> (Pr2)

These brief definitions raise some interesting points. While *hypothesis* and *theory* are clearly not synonyms, at least within the positivist paradigm in which most participants seemed to position their definition, there is clearly some conflation of the terms in participants' responses. One interpretation might be that they are offering a sort of colloquial definition of theory (i.e. "if we do that, in theory this will happen"). But it also seems likely that some interviewees are using the term *hypothesis* as shorthand for the broader scientific or hypothetico-deductive method. It is revealing that several of these participants noted that hypotheses are typically based on a formalised interpretation of prior evidence. The response given by one senior publisher also illustrates how the *hypothesis* definition can relate closely to conceptual theory:

> I think classically in terms of the research process you develop a hypothesis, don't you? And that might be a set of circumstances, or you might create a scenario ... might be itself based upon prior knowledge, and the accumulation of all the research that's come before it. So in constructing a theory a researcher, or a team is perhaps creating a model to test, or perhaps positing something that's new and hasn't been tested in the literature, in the scientific discourse at all in the past, for subsequent evaluation and testing...
>
> (Pu6)

Theory as principles

Perhaps as a consequence of the explicit link between OA and theory in the invitation and micro-survey, a number of interviewees attempted to answer the question of "what is theory?" in direct relation to OA. Since, as we have seen, OA itself is not heavily theorised, these responses are best described as relating to principles. Broadly speaking they can be classified as describing either theories *of* OA, or theories *supporting* OA.

By theories of OA we mean the principles that inform an understanding of what OA is and how it works. As one participant put it: "In terms of open access theory it is the set of concepts, the set of principles, the set of evidences" (Pr1). More commonly though interviewees described theory as relating to the principles and arguments in favour of OA (i.e. theories *supporting* OA). In some cases, interviewees referenced well-known declarations and statements (e.g. the Budapest and Berlin declarations) as the theoretical underpinnings of OA:

> For me, the theoretical underpinning for open access is actually Budapest. "An old tradition and a new technology have come together". I used to read that at ... conferences because it's inspiring stuff. And it's true; we can do it, so why don't we? So, brilliant. That's the theory and I think that whenever I see a situation which is difficult to resolve, it proves its worth as a kind of theoretical statement, as a statement of principle, a statement of approach.
>
> (Pr2)

Many interviewees who did not mention these early documents nevertheless used their arguments, defining theory in the context of OA as the underlying rationale for the movement, incorporating "moral or ethical dimensions" (Pu1) and referencing "the public good" (Pr1). Since our pool of interviewees consisted in large part of individuals who have spent many years working towards the goals of the OA movement, it is perhaps not surprising that many should emphasise the significance of this underlying rationale. Nonetheless, the language and certainty of convictions is striking:

> What do I think theory means? It departs from the premise that open access is a good thing.
>
> (Po1)

> My views are the theoretical justification for open access. I mean, the reason why it's been the most important cause I've been involved in, and the reason why, I hope, I am able to be involved in it in some way ... It's because it's a moral cause.
>
> (L3)

We might reasonably consider this the language of advocacy rather than theory (although it is also fair to note that the two are not mutually exclusive). In fact, since the interpretation of theory as principles emerged relatively early in the course of our conducting the interviews, later participants were asked whether they accepted this definition. Many did not, considering them "arguments", "missions", "principles", or "ideology" as opposed to "theory". Several participants questioned whether there was sufficient evidence to justify considering the principles driving the movement to be theories, or whether advocates were instead actually treating the principles of OA as articles of faith:

> Are they supported by evidence, because my understanding of a theory is something that should be tested and potentially proven? And, I'm not sure if we're there on many of the facets of open access, and I can say that while being utterly convinced that it's a good thing and something we should be pursuing. But, that's a theory without evidence really, which makes it a slightly more, almost an act of faith at this point.
>
> (Po1)

> That's why I used the word movement and ideology because some people just believe it so passionately. It's effectively a faith and I think that treating it as a faith does it a disservice.
>
> (Pu5)

Also relevant here is a point made by several participants, who felt that the OA movement as a whole had, at least in part, lost sight of these core principles. They argued that while the movement began as a force for public good, underpinned by the principles codified in the Budapest and similar declarations, it is now more likely to be perceived "as a business model" (L10). Some suggested that publishers had effectively shaped the substance of OA debates to become narrowly focused on the practical details of delivering and costing various models, and that "some of the ideological arguments have become a bit lost … I think that compliance thing has sort of overtaken the bigger picture" (L5).

Conceptual theory

A number of participants offered definitions of theory that were very similar to the definition we adopted for our literature review in Chapter 5. Notably, all academic interviewees offered this view of theory, as well as a significant number of practitioners. As can be seen, the terms "model" or "framework" were often integral to the definitions:

> I guess it's usually some sort of model, or something that's been … extracted from findings or experiences to turn something specific into

> something general, that is then in theory applicable more widely or in different contexts.
>
> (C2)

> Theory, I think it's kind of the conceptual framework that we use for explaining reality.
>
> (R3)

> frameworks and ... ways of thinking about and understanding and taking any particular aspect of scholarly communications, including open access and trying to figure out ... what is the lens that we want to view that aspect of scholarly communications through.
>
> (R4)

A number of participants referenced existing theories (or disciplinary approaches to theory) either as a means of illustration (in cases where they found articulating their definition challenging) or to augment the definition they had given. Examples included "theories in economics and sociology" (L9), "political economy models" (R2), and "Porter's Five Forces model" (R1). In many cases participants also echoed elements of our definition relating to the purpose or potential utility of theory as an "explanation of reality" (Pr3) or "shortcut to understanding" (C2). Although it forms part of our definition, interviewees rarely discussed theory as a means of generating predictions and in the few cases where it was discussed it was typically in response to interviewer prompting. Interestingly, though, those who did discuss potential predictive power of theory appeared to value it highly: "You would want a model that would have some predictive power if at all possible" (L7).

Working with theory

All participants were asked whether they had used theory, in either their research or practice. This section reports the responses to questions in this area. It should be noted that we include here material relating to the explicit and conscious use of theory by researchers and practitioners. This is in contrast to the unconscious use of theory, which was discussed by several participants, and is reported in detail in the next chapter.

While most discussions regarding participants' use of theory tended to be in the context of authors incorporating theory into their research, there were a very small number of instances of practitioners identifying occasions when they had used theory to inform their practical work. Two South American participants gave the clearest description of how theory had influenced the development of OA systems and services with which they have been involved, and it is striking to note the importance both place on theory as a tool for guiding effective practice. As one participant explained:

> It's also inspiring when you read theory, I read it for inspiration . . . for illumination. It illuminates my views . . . I said we have to find a theoretical context for our position . . . I realised that in my presentations at international level there was a consensus that we had to find a better future for open access from developing regions. But with what theoretical background? So I started doing research in the same ways I do it always. And I found the key in a book written by Charlotte Hess a librarian, and Elinor Ostrom.
>
> (Pr3)

It is worth emphasising just how much this quotation stands out from the views of theory offered by the vast majority of our practitioner participants. Here we have theory embedded at the heart of a practical mission, and a description of a process during which engagement with theory is a conscious and foundational step. This is in contrast to the only other discussions of how theory informs practitioners, during which it was suggested by some participants that practitioners sometimes work with theory "subconsciously": that is, using theories that have become popular enough to enter mainstream consciousness or "been used in common language" (R9). Innovation Diffusion Theory, the origin of well-known terminology such as "early adopters", was cited as an example of this. It was also suggested that some practitioners may use theory without having actively sought it out: "although they do not intend to study theories, they expose themselves to some kind of, to theories to some extent" (L9). One participant demonstrated just this phenomenon during the interview: early in the discussion, articulating the classic theory-practice divide:

> I'm not really a social scientist. That's why I don't understand so much about theories, because I don't tend to think about that so much; I just tend to do things.
>
> (Po3)

Yet later in this same interview the participant named and discussed the relevance of three specific theoretical approaches – Mosaic Theory, the Attention Economy, and Priem's work on de/re-coupling scholarly communications. This apparent contradiction, or lack of awareness, perhaps speaks to practitioner perceptions of theory – what it is, and what it means to use it – that informs many of the results presented in this chapter.

Is theory a necessary part of sound scientific research?

We asked all participants whether the use of theory was a necessary part of sound academic research. Opinion was broadly divided. Those who felt theory was integral to academic research offered a range of different explanations for their position. Some felt theory acted as an essential means of locating research within a disciplinary or field paradigm, incorporating "common and

shared understandings" within a "collective effort" (R4). Others made similar points, emphasising the foundational role of theory as a necessary means of contextualising and guiding research:

> Without some, sort of, theory what are you doing? You're just going out and playing with a piece of string and glue. I mean, it would be . . . You need a theory to guide your footsteps, to know what equipment you need, what thoughts you need, what information you need, what methodology you're going to adopt. You need some, sort of, underpinning rationale.
>
> (Pr2)

Clearly what exactly is considered theory is also important to this question. Several participants pointed out that at their core, most disciplines have a theoretical foundation, if the term "theory" is interpreted broadly enough. For any research involving statistics, for example, "there's still the theory of maths" (R2). Another perspective was that while explicit discussion of theory was not essential in research outputs, researchers "need to be aware of theory" in conducting their research and analysis – in other words that theory plays an essential if sometimes background role in "how disciplines progress, and knowledge advances" (L8). As another participant put it:

> While I think that you cannot do some important work without having a fairly solid theoretical framework behind you, I think you can also tread relatively lightly in, you might say, the erudition of the theory.
>
> (R6)

Many participants, however, rejected the notion that theory was a necessary part of sound scientific research. Most often this was because they recognised the value of purely empirical research outputs: "You can make some really fantastic and valuable observations without necessarily having any theoretical background to it" (Po3). Some acknowledged that theoretical and non-theoretical research contributed to general understanding in different ways, and that theory is more or less important in different research contexts:

> I think when you look at how you would want to develop knowledge in a domain, you would want to work from theory. You'd want to have a theoretical base. But there are clearly other kinds of research that have value.
>
> (L7)

Reasons for using theory

We highlighted this as an interesting question arising from our analysis of the literature in Part 3. The interviews revealed a range of reasons for incorporating theory into academic research, often developing ideas discussed in the previous

section. For some participants, theory played an important role in "guiding the research in terms of what questions you're asking" (Po1). Others spoke about how theory informs their research method. Interestingly, despite us having numerous examples in our literature review of theory being used as method, only the two economists in our participant group discussed this use in detail. One accepted that theory-informed method, but had difficulty separating the two concepts:

> I do use very much methods that are totally derived from a particular theoretical perspective but I have a bit of an issue. I don't know where theory ends and method begins. Because in economics, if you're going to do anything or measure anything, you've already signed up to the theory and you're implementing it or at least trying to action it.
>
> (R7)

The most commonly stated use of theory was as a means of interpreting or enriching research findings or practical developments. This is in line with the findings of literature analysis, which found that theory was most often introduced in discussion sections. Some participants also suggested that they used theory as a means of adding rigour and/or credibility to the research. While linked, there were some subtle differences in the rationales given by participants. For some, as previously noted, theory represents a kind of codification of prior knowledge: "Other people have done the thinking for you to come up with a robust model to guide your thinking" (Pr2). Others emphasised the importance of theory as a mean of establishing the perception that the work is credible: "it's going to give it more weight with academics who read it" (L8).

The role of theory as a means of bestowing credibility on research, and as a "shortcut" to prior work, both speak to a broader and pervasive theme to emerge from the interviews – the use of theory for pragmatic reasons. It was striking how frequently researchers included the perceptions of readers and peers in their rationale for using theory: the use of theory leant credibility to a study for readers and peers. Closely related to this, there were interesting discussions with several participants about whether there was pressure on researchers to use theory in order to meet the expectations of academia – both in terms of the perceived rigour of the research, and the requirements of journals. One practitioner, who has also published research, gave the most explicit description of this latter phenomenon when asked about the use of theory in an early research article:

> Evidently, and I didn't remember at all, I cited some theory in the [journal] piece about social science researchers . . . But honestly, that was probably just one of those things that you do when you're getting ready to send it to a peer review journal. I don't even remember any more.
>
> (L10)

This was echoed by several academics, who frequently highlighted that it was necessary for them to use theory in order to be taken seriously by their peers:

> I do find that for me to be acceptable to my colleagues, I have to speak theory most of the time, otherwise I'm not taken seriously, right? If I'm going to now talk about the political economies of publishing, I have to cite all these people that are working in political economy, the Harveys and all these people, otherwise I'm not taken seriously.
>
> (R8)

Another example of this phenomenon came in the description by an academic of a PhD student's strong desire to generate a formal model from their work:

> he's trying to draw a model of it, and the model just doesn't make sense. What he's found is too complicated, and so when you look at the model, you've got no idea of the complexity of what he's saying, and it just looks not right. And I keep saying to him, you don't need to draw a model. You don't need to have a framework. Just write a paragraph or two summarising everything, and he can't do it, he can't bear to do it.
>
> (R9)

Most academics were in agreement on this point. One disagreed, however, suggesting that as a practice-focused discipline, LIS research was often published without incorporating theory, and that "a lot of journals in the field do not require people to apply theory to practice" (L9).

Selecting a theory

Participants who had published theoretically informed research were asked about the process by which they had selected the theory they used. The responses to this question were generally somewhat vague, and participants seemed to have difficulty articulating precisely how or why certain theories were judged appropriate. One explanation for this is that the moment of realisation that a theory is relevant is an emotional rather than purely intellectual response. Perhaps an aesthetic kind of response. One researcher clearly described this phenomenon when explaining their initial response to encountering a theory that they felt might be useful to their work:

> That's a feelings thing, which isn't much respected in academia. But I did feel that it fit, and then I wrote a justification around . . . I went back and tried to unpack what made me feel that way.
>
> (R9)

Most participants used some variation of "fit" to explain why a particular theory was deemed useful. For many this meant they had to be flexible and "shift, move a lot between different frameworks" (R4) depending on the work being done. Some acknowledged that a "catholic approach" to theory selection (rather than "nailing my colours to the mast of any particular theory or model" (C1)) offered valuable flexibility in linking the most appropriate and effective theories to any given piece of research. Two participants, both consultants, also spoke about the importance of a theory being well known and credible. This links closely to the reasons both gave for using theory in their work (i.e. as a means of establishing the academic soundness of the research). How the theory is perceived by the intended audience of the research was an important factor for both:

> What I'd say is we won't tend to use controversial theories or very new theories. So, usually we're using theory as something that we think most people will get this. Or even if they're not familiar with it, they'll go and look it up and they'll find a big Wikipedia article on it that shows this is pretty well-known stuff.
>
> (C2)

While several participants described the process of searching for a theory to inform research on a particular question, only two participants described a research process in which the theory came first. In these cases, the theory was not something selected to relate to an ongoing research agenda, but instead to inspire one. It should be emphasised how much this approach contrasts with the process typically described by researchers, in which they "kind of fitted some theory around in retrospect" (R2).

Generating theory

Relatively few of our interviewees felt they had generated theory in their research on OA. Interestingly, a number of participants who we had identified as generating theory in our literature review, stated when asked that they had not done so. This was largely due to what they considered theory to mean, and when the interviewer suggested that some of their work met our definition of theory, they remained unconvinced:

> If you talk about models that you generate out of your practice, out of your observations, yes of course as a scholar when I write something, publish something I have to do that, it's quite natural. But I don't see this as a theory.
>
> (L9)

> Frameworks and models, we've done a lot of that. And, yes, typologies, I suppose. So, I think there's levels of theory and when you say do we

> generate theory, I guess in terms of an all-encompassing theory of everything, no. But in terms of just a model that just helps you make sense of things, I suppose we do quite a lot of that actually.
>
> (C2)

This notion of levels of theory was important to discussion in this area. There was a sense from several academics that generating grand or overarching theory represented a pinnacle of academic endeavour, and none of our participants felt they had achieved this. Instead, those that acknowledged theory generation emphasised the incremental nature of their work, typically through "developing or further adding to" (R9) existing theory, or combining theories in a way that is "synthetic rather than necessarily generative" (R2).

Both economists were asked whether their adaptation of existing models constituted generating theory. While one was noncommittal, suggesting it was "mainly method", the other agreed that this was a form a theory generation:

> *Interviewer:* You're using an existing model, but also extending it, and by extending it developing a sort of new form of it. Is that fair to say?
>
> *R10:* Yes, absolutely. You have to be sort of cognisant of the stuff that's of value, and then you have to basically figure out what set of assumptions, and what dimensions are the most important ones, and then you come up with a model, and you see how it works, and you see whether it predicts the right things. It's as much art as science, you know, choosing the right mix, the right recipe to finally nail it in a parsimonious fashion.
>
> (R10)

The intended audience for research using theory

An interesting theme to emerge from the research relates to the intended audience for theoretically informed research. Aside from one participant, who described their work as written for "the mid to long-term. Not people in particular" (R6), interviewees tended to differentiate between practitioner and academic audiences. From some authors, particularly those without a practitioner background, there were sometimes blunt acknowledgements that the intended audience was other academics rather than practitioners:

> I think I'm partly writing it for the people I cite in it, because that's the community. Of course, there's the wider community of researchers whom I haven't cited that ... But I still think they will read that. So, yes, the academic community.
>
> (R5)

> *Interviewer:* As you write [the article] are you thinking; this might be useful to librarians?
>
> *L9:* Frankly speaking, no.
>
> (L9)

Others offered a completely different view, stating that their theoretical work was primarily intended to support practice. There is a stark contrast between the aims of these participants and those targeting an academic audience:

> *Interviewer:* In the publications that involved theory, were you thinking about practitioners when you were generating that work?
>
> *R9:* Yes. I was and that's been my motivation in my open access work. That was my initial motivation, how to understand what is holding this up in practice and how to help practice do this better.
>
> (R9)
>
> *Interviewer:* To what extent is the work that you have produced that involves theory, was that produced with practitioners in mind?
>
> *R7:* Absolutely … the idea was to improve people's understanding, improve policy, improve practice. Yes, everything is that.
>
> (R7)

One participant rejected the idea of a meaningful distinction between researchers and practitioners, and instead described the approach taken as an attempt to "drag a broader audience in a direction" (R2). Strikingly, there was a concession from the same participant that, "the work, at least in part, is not even necessarily being written to be understood". Instead the aim was to catalyse a shift in perspective within the OA community, "and one way of doing that is to have these highfalutin papers that essentially say that in a very complicated way, but at least hopefully justify it" (R2).

How theory has been used in relation to OA

Many of the interviews included some discussion of how theory has been used specifically in relation to OA issues. It was notable that a number of participants responded to questions about this with the view that there was a lack of theoretically informed work on the subject. As one put it:

> In the longer term if we're going to do something that involves application, communication, implementation, then some form of theorising is necessary

> to do that. And I guess in pragmatic terms I would certainly take the position that most of what we've done in the OA space is under theorised.
>
> (R2)

Several participants agreed that while there had been a substantial amount of research concerning OA, "most of it has been this is how it is, or this is how it should be" rather than "delving down into the why or the understanding" (R9). While one participant suggested that "we need more theory, more critical theory of open access" (Pr3), others acknowledged that the lack of conceptual theory in much OA debate and research was in large part due to the difficulties of conducting such work: "anything involving social science modelling is hideously complex" (Pu3); "it's hard to find people who do that well" (L7). A number of participants highlighted specific OA-related issues for which a theoretical approach would be (or would have been) beneficial. These included the setting of APCs during the transition to hybrid models ("where was the theory which actually was able to say, we don't believe that publishers will play the game?" (Pr2)), and the behavioural dynamics of actors within the scholarly communication environment ("the reality is that it's an entirely dynamic environment within which communities of interest, in terms of authorship and in terms of readership, are behaving" (Pu3)).

One participant described a more foundational role of theory in their understanding of OA, explaining how an understanding of Foucault had informed much of their subsequent analysis of the open access movement:

> Michel Foucault's work says two things. One, you focus your mind to power issues very strongly, and two, he insists that everything should be analysed in terms of very concrete things taking place in the world . . . So, I've been very much informed by this intellectual and, you might say, inspirational influence. And, I have spontaneously used it and applied it in trying to understand what's going on . . . One of the things that I was very involved with right from the start, or very concerned with right from the start, was the whole issue of power in OA.
>
> (R6)

Discussions with a number of other participants also moved to the role of theories from outside LIS, although these were typically less foundational, and more often applied to OA questions by researchers working in these other disciplines. Several participants saw the value in these new perspectives informing developments in OA:

> That's the beauty of the grand conversation of research. You have different perspectives and people are coming to object and reshape the object, conceptually, because they come and add it from a different theory. And then, suddenly, something may explode with it, in the right sense of the word,

> with a completely synthetic perspective on a complex problem, in a way which revises, reviews, and reforms our vision of the thing.
>
> (R6)

> I mean, if they're somebody from totally outside the field and they publish something like that, then if some mainstream OA researcher who published in information science journals pick this up, and sort of references that, then I mean, then it becomes very valuable … So I think it's very good that you get these theorists from outside of information science and scholarly communication field, who provide some good theories that can help explain what's happening in this particular field.
>
> (R1)

Others however identified some issues, mostly relating to the siloed nature of academic disciplines. Their main concern related to the propensity of academics to attempt to and interpret diverse phenomena through a narrow disciplinary lens ("I'll go 'what tosh', because you are trying to fit it with what you understand" (R9)), or to assume their domain expertise is transferable to other fields ("there's a bit of a tendency for them to think they can expound about areas about which they know very little. And they seem to lose their critical facility" (Pu3)). One participant also highlighted the lack of cross-fertilisation of ideas across disciplines, noting that that academics from other disciplines publishing OA-related papers are often seeking to communicate with members of their own disciplinary community, rather than the broad OA community:

> Unlike the information science literature on OA that is a cumulative body of literature that is bounded in some way and is moving towards the same goal and each is building on the other, then it's almost atomistic. You've got these other bodies of literature but they're not necessarily talking to each other … There is a lot of activity and interest out there that's going on in these pockets of activity… I think they are communicating to their disciplinary audience, and I don't think they realise that there are 20 other papers sitting across JASIST [*Journal of the Association for Information Science and Technology*] and Learned Publishing and JDoc [*Journal of Documentation*] that are looking at this issue. So, yes, they're more inward facing, which is a bit of a pity really.
>
> (R5)

As another participant noted, "there is a huge disconnect there. That literature just isn't really crossing that chasm" (Pu1). And the chasm was found to relate not only to publication venues but also to the intellectual substance of the theory, which may not be accessible to researchers from other fields (resonating with our content analysis in Part 3). One participant, a researcher but also a prominent OA advocate, who was familiar with the papers identified in our

literature review that used Game Theory in relation to OA, had this to say about the experience reading them:

> Those authors made no effort to make their work intelligible to people outside their field and again, I don't blame them, if you're working at the cutting edge of anything, you want to bring your pebble of knowledge into the pile, without making too many concessions to others that would slow you down. So I get that, on the other hand, I just found it very hard to understand what they were saying. And I wanted to, because I thought there was some potential for turning their work into practical recommendations.
>
> (R11)

Another interviewee argued that it was unrealistic to expect any individual to consume and understand work across many different disciplines: "if we approach that from the perspective of the individual, you can only reach despair" (R6). The point was that the range of expertise and understanding of individuals within the OA community offered the potential for knowledge to be collectively generated from disparate sources. Indeed, another participant echoed this point, and highlighted the potential role of individuals with multi-disciplinary backgrounds to identify and exploit links between different disciplinary approaches. This notion of a boundary spanner or translator is one that we will return to in the next chapter.

Conclusion

Our participants all found it difficult to keep up to date with OA developments. They used a variety of methods, but social media, particularly Twitter, were highlighted as sources of information on which many were now reliant. For most practitioners, the peer-reviewed literature was often seen as "just another source of information". It could be usefully deployed as a source of evidence for advocacy, however.

Defining "theory" was a challenge for most. From the data, however, we did identify three major kinds of understandings of theory: theory as hypothesis, theory as principles, and conceptual theory. The uncertainty and the breadth of responses were striking on this issue, however. The struggle apparent in defining theory was accompanied by the difficulty many practitioners found articulating how theory was used in practice – although, interestingly, there was a consciousness that it *was* used. For some, theory was foundational to their understanding of aspects of OA. For many, theory could enrich analysis of academic research, and it could also act as kind of signal of rigour, amongst other things. Some researchers said they needed to use theory to be taken seriously.

For researchers and practitioners who used theory, there was often a clear sense of intuition in how a theory was selected for use. There was a sort of "fit"; but participants found it difficult to articulate precisely what that meant. It certainly involved emotional as well as purely intellectual responses.

Having established how our participants understood theory and ways in which it was used, we now go on in the next chapter to explore its perceived connections to practice.

Reference

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Chapter 8

Theory in open access practice

Engaging and evading

> Life had stepped into the place of theory and something quite different would work itself out in his mind.
>
> (Fyodor Dostoevsky (1866). *Crime and Punishment*)

> If you understand why something is happening, you are better able to … change it.
>
> (Participant in this study)

In this chapter we continue our analysis of the views of researchers and practitioners on their engagement with the theory and practice of open access. Here we turn to the value our interviewees placed on theory in relation to practice and the challenges they faced in actively engaging with theory. The key question of bridging the theory-practice gap was a concern of our participants, and we begin to address that challenge here. We outline how our participants believed researchers could help bridge the gap, including re-evaluating how they frame and communicate their work. The issue of how researchers identify key research questions in the first place is also raised. We then consider perspectives on actions required by practitioners, and the OA community in general in addressing the theory-practice gap. We go on to examine the key concept of the boundary spanner – an important finding to emerge in our work with OA actors.

The value of theory to practice

Most participants agreed there could be a valuable link between theory and practice, while acknowledging the difficulty of identifying and understanding those links. As one participant put it:

> I do believe there is a golden thread, if you like, between theoretical work and practice. Now that is not to say that all practice is driven by theory.

> Absolutely that isn't the case. But does theory influence and ultimately, shape in some form ultimate practice? Yes, I just couldn't tell you how. I believe it.
>
> (Pu5)

Some participants spoke in general terms about the capacity for theory to "take the conversation beyond the day-to-day" (L5), while others perceived theory as a kind of noble art, noting that the pursuit of understanding might not have immediate short-term relevance, but could later lead to useful discoveries: "that freedom to explore, and to develop ideas, may lead to new breakthroughs which could have societal benefit" (Pu6). Some highlighted more tangible ways in which theory could be important for practice; as a way of avoiding trial and error, or as a "shortcut to understanding and to explaining things to other people" (C2). This notion of theory as shortcut was expanded upon by several participants, their argument being that a named theory offers a link to a robust and developed intellectual foundation:

> In this sort of thing, it's easier to give something a label and put in a reference and almost say, look, if you want to understand what this is all about, go and look at the reference because we haven't got time to spell it all out here.
>
> (C2)

Several interviewees felt that theory had value to practice in terms of bestowing "academic credibility" and authority on research outputs. This in turn strengthens advocacy or policy positions that are supported by the theoretically informed evidence: "because I think it gives it more academic credibility when you're then making the case, when you're then trying to use that evidence" (L2). On a related note, several participants believed that theory acted as a useful tool for understanding issues in a more balanced way:

> Good theoretical papers consider dispassionately both their favourite hypothesis and the counters to it. And so that's really useful because it just gives you a balanced view.
>
> (Pr2)

> You look at a problem in different ways and see it differently and from different perspectives, because theory enables you to do that.
>
> (R9)

However, the most common perceived benefit of theory to practice was as a tool for understanding or explanation. As one participant succinctly put it:

> I do love it when I get some theory that makes sense of things for me
>
> (L3)

The argument made by many participants was that theory can be used to better understand issues relating to OA, and that this understanding can be passed on to practitioners. And naturally, "if you understand why something is happening, you are better able to either change it or make it better" (R9). Some interviewees gave practical examples of ways in which specific theories had helped them better understand particular phenomena. These included Innovation Diffusion Theory, the concept of the Disruptive Innovation (both in relation to Institutional Repository development), and Commons Theory (in relation to OA developments in Latin America). These were theories highlighted in our analysis of the literature in Part 3.

Perhaps the most interesting sense in which participants talked about theory aiding understanding was in its capacity to distil, formalise, and confirm the existing knowledge and understanding of practitioners. It was striking that this practitioner knowledge was often characterised (including by practitioners themselves) as being "unconscious" or "instinctive":

> I'm thinking of the, you know, what was often thought but never so well expressed thing. You know, where it's sort of there in my mind, but in a, kind of, random inchoate way. And I suppose one of the purposes of theory is to round up these sort of stray ideas and say, actually what you think is this.
>
> (L3)

> The sense I get in a lot of things that I do is that there's a lot of bright, thoughtful people in practitioner roles, professional roles with instincts about this stuff. And then there are people who are really good at whichever science or social science or whatever, who if I was in conversation with them they would give me a framework. They would be able to wrap the sketchy understanding I have of things or the emerging thoughts that I have and they would be able to say, yes, basically what you're talking about there is such and such and that aligns with such and such a theory.
>
> (Pu1)

We believe this is an important finding, in that it speaks to a foundational value of theory. There is also a sense in which this view of the value of theory offers a counterpoint to the "tell us something we don't know" argument often used by practitioners about academic research, that is, where theoretically informed work by academics repeats back to practitioners what they already know as though novel. As many participants noted, organising and properly framing that existing knowledge should serve to enrich understanding.

The lack of value of theory to practice

Numerous interviewees discussed the aversion of practitioners to theory. It is revealing that almost without exception, participants who spoke on this subject *reported* the view, rather than stated it as their own:

> there's a lot of practitioners that, I suspect, will say theory is nonsense, we don't need any of it.
>
> (Pu5)

> People often use it in a kind of deprecating way in my world, because we think; oh that's far too theoretical, we basically disparage theory a lot.
>
> (L8)

Those practitioners that did discuss their own reservations about theory tended to use more moderate language, and to emphasise the importance of practical issues:

> How do you get editors to be efficient? How do you get people to get published in a reasonable amount of time? Those are all practical issues and they involve people management as much as they involve any kind of theory. So, that's probably why I'm a bit mixed about it.
>
> (Pu3)

Academics using theory also suggested that practitioners were typically not open to hearing about theory: "I haven't found much acceptance of theoretical discussion in the area of practice that I'm familiar with" (R9). Indeed, that participant, a researcher who had previously been a practitioner, went on to suggest that was a stigma attached to theory which was linked to a wider societal mood of "anti-intellectualism":

> I think that they don't understand theory, because generally speaking they think that theory is book knowledge . . . I do think it's, even in academic libraries, where you wouldn't expect it, there is an element of distrust of theory
>
> (R9)

There were a number of specific reasons given by participants to explain why theory was not of value to practitioners. At the most general level, the work of OA was seen as unsuited to theory: "I think of it more as more of a practical thing" (L4); "It's always worth bearing in mind that publishing is a very practical issue" (Pu3). Others identified the timeliness of theoretically informed work as an issue:

> In some ways, it's just going to move forward anyway even if the academic research is trying to understand why it's happened. It's just I find organisations are much faster in that regard.
>
> (Pu2)

> Is it going to make a difference? Is it going to make a difference in the next two years? Because if it's not going to make a difference in the next

> two years the situation will have changed. So, longer term grandiose theoretical views about what might come, well, no, what's the next step.
>
> (Pr2)

Another striking finding from the interview analysis was the number of instances of participants positioning theory in direct opposition to practice, the implication perhaps being that you can do one or the other. The following quotes are just two of many examples:

> I suppose it's very practical what we're trying to do, rather than theoretical.
>
> (Po2)

> That's why I'm not a theoretician, because I'm too simplistic. I look for, right, what can I do now? What's the practical step forward right now?
>
> (L3)

This also applied to one participant's characterisation of theoretical as opposed to practical problem solving:

> I think some of the differences between theory and practice, by definition, is theory has to be done rigorously, logically checked and is as bias free as possible. And practice is much more about give it a go, see if it works, iterate and try again. And sometimes those things feel at complete odds with each other.
>
> (Pu5)

Closely related to this Manichean view of theory and practice was the suggestion that theory lacked value because it did not relate directly to action. Two librarians described the type of material – case studies and toolkits – that they find useful for their practice, and contrasted these types of output with theoretically informed work. Theory was described as "mood music" (Po1) for the work being done in OA, and characterised as failing to address the "problems that practitioners face on the ground in their home institution" (L8) or lacking a clear description of "how you put it into practice … what you can do to achieve the theory" (L3). Two longer examples merit quoting in full, since they distil the views of many of our participants:

> A person who knows Foucault could write a great book applying Foucault to what we're doing in the OA movement. In that sense, they could bring theory to this practice and maybe illuminate the practice and show that Foucault actually helps us understand it. But I don't think we need that … I can tell when I'm reading something that's aimed at action and when it's aimed at understanding.
>
> (R11)

> I spoke to a librarian last week who rejected the idea that theory was kind of relevant, or important. She was clear in arguing that for her now open access is a kind of practical, economic, technical question of how it can be delivered best. And for her it didn't seem as though any of the grander, to use her language, the grander underpinning theoretical stuff really mattered to where she was right now.
>
> (R2)

Practitioner challenges engaging with theory

Practitioners discussed challenges in engaging with theory. These challenges can be broadly categorised as relating to either encountering (the extent to which theoretically informed work is discoverable through their typical information channels) or understanding (the extent to which theoretically informed work is comprehensible to them if they do encounter it).

Encountering

Perhaps the most significant barrier to practitioner engagement with theory appears to be a broad lack of awareness that theoretically informed research into OA exists. It was notable that almost no practitioner participants were aware of the examples of such work mentioned in the interviews, and many acknowledged that this fundamentally limited the influence that theory has on practice. This lack of awareness was contrasted with the close and active community of practitioners sharing ideas and advice:

> I'm just not really sure who the open access theorists would be and where that work is. And so maybe that really tells the story that I'm so disconnected from the theory that I don't even know who the researchers are and who's publishing in that space and where the discourse is happening. Whereas I feel there is also an enormous grassroots, groundswell practitioner kind of movement.
>
> (Pu1)

The dissemination method for theoretically informed work was considered by many participants to be an important reason for this lack of awareness. Relating closely to answers given to earlier questions about the information sources they used, practitioners typically felt that theory published in journal articles was unlikely to reach them:

> I would not be finding this kind of thing. I don't think … I'm trying to think. I'm not even sure I've ever come across a paper like this, so academic. I just don't think that, as I say, the channels that I have set up

> would expose me to that, really. That's not necessarily a good thing. I'm just saying that's just the way it is, you know.
>
> (L5)

To be clear, the issue here was not generally perceived to be one of access for the communities involved in our research. While a small number of participants did suggest that "if it's locked away in a subscription journal, then yes that's an issue" (R5), the majority agreed that "anybody who's interested in this knows how to get around paywalls, through legitimate ways as well as less so" (Pu1). Instead most interviewees suggested that their consumption of OA information was dictated by their usual means of keeping up to date with OA developments (which as noted earlier are primarily Twitter, email lists, conferences, and colleagues), and the relatively limited time available to them for this kind of monitoring activity. Indeed, it was suggested that a lack of time away from day-to-day operational activity was a major factor in practitioners' inability to encounter or engage with theory:

> Well, we don't have that much bandwidth to be out there reading this kind of literature. It's hard to get in with theoretically based pieces.
>
> (L10)

> Once you give people the luxury and the time then they're probably going to be quite interested in theory. In terms of their everyday work I'm not sure they have the time to look at theory and think about how it applies.
>
> (Pr2)

Understanding

The challenges of understanding theoretical literature emerged as a major challenge for practitioners. As one put it: "We don't feel spoken to, in some ways, when it comes to these papers" (Pu2). A common complaint was that such papers were too technical, and essentially inaccessible to non-experts:

> You know, it can be very challenging for the layperson to understand [theory] sometimes.
>
> (L5)

> Something which went into details on the economic models, I wouldn't read it. I'd read the conclusion, because I just, you know, I just wouldn't have the brain power to do it really.
>
> (L4)

In fact, several participants gave examples of times they had encountered articles that proved too difficult to understand. These vignettes illustrate the frustrations apparently experienced by practitioners who have encountered theory:

> I read an article the other day that was written by an economist in an economics journal, having to do with consolidation of journal publishers and whether or not that led to price increases or not. And on the second page, you begin the mathematical formulas that if you hadn't had calculus make no sense whatsoever. And so, one can understand that that literature is not particularly accessible.
>
> (L7)

> Those authors made no effort to make their work intelligible to people outside their field ... I just found it very hard to understand what they were saying. And I wanted to, because I thought there was some potential for turning their work into practical recommendations ... but in the end, I still couldn't understand those papers.
>
> (R11)

Many of the comments regarding accessibility related to the challenges of understanding mathematical material associated with economic theory. Other participants spoke of the difficulties of engaging with SSH material, although these challenges did not necessarily relate to comprehension, but rather readability. Again these examples speak to the significant barriers practitioners face engaging with academic material:

> Sometimes with the more esoteric social science stuff you, think, okay, there's an overhead here to reading this. I'm just going to get thoroughly frustrated by the end of the first paragraph. Is the reward going to be worth me struggling through this?
>
> (Pr2)

> I actually struggle a bit with them because they tend to be in overblown language. Sentences that go on for about three paragraphs. Personally, I struggle with the seriously academic ... I think it's the fact that the theory that is written as theoretical concepts will not reach the practitioners because people like me will start reading it and just fall asleep on page one.
>
> (C3)

It seems clear that some practitioners are better able to understand and engage with theory than others. One suggested: "I suppose it's a matter of whether you've got the intellectual equipment" (C1). A key to this, of course, is educational background, and while there were obvious exceptions, some

interviewees characterised practitioners as not having the academic training required to engage meaningfully with theory:

> Most practitioners are not academically trained. I'm not academically trained either. I got a master's degree in another subject, before going into librarianship, but I don't have a doctorate, and I wasn't trained as a researcher. Even if people do have that background, like you say, it's in one given area, and these theories are coming from so many different areas.
>
> (L10)

As well as the challenge of understanding the content of theoretically informed work, a related theme to emerge involved the extent to which practitioners were able to understand or appreciate the relevance of a theory to their practice: "People can dismiss it as irrelevant. I think it's the relevance that is the challenge" (C2). Some practitioners argued that they "need to be told how a theory is helpful for our work" (Po1), while others suggested that some theoretical frameworks are themselves not "useful enough for the people who sit in that space, the people who look for evidence in their daily job" (Pu4).

Unconscious use of theory

An interesting theme to emerge from the interviews was the notion that theory plays an unseen or unacknowledged role in practice. One librarian expressed this most clearly:

> There's nothing so practical as a good theory. Every man who thinks he's just practical actually has a theory. The Keynes thing about every man who thinks he understands economics practically is really the slave of some defunct economist. Every librarian who thinks he understands libraries practically is really the slave of some defunct library theoretician ... Practice just doesn't exist without some idea in the practitioner's mind about what they are doing. We're all driven by unconscious theories, aren't we?
>
> (L3)

What is most striking about this argument is the way it undercuts a pervading sense in our interviews, reported above, that theory and practice are separate and distinct. In contrast, acknowledging the foundational role of theory inextricably links the two concepts, and reframes the notion of the theory-practice divide as an issue of perception rather than reality.

Others who proposed this unconscious use of theory idea echoed the notion of the origin of a theory being lost during the process of communication and recommunication: "the citation has disappeared, or the ideas have been filtered and reinterpreted and represented" (L5). It was suggested that

for theories that prove particularly useful to practitioners, the ideas they represent are appropriated as they are passed on, a kind of "seeping influence" (R6):

> The theory itself has been passed to them naturally, and in the future when they talk to other people they use this theory. They believe this explains something, and then they use it; and it becomes their idea.
>
> (L9)

Is the theory practice relationship harmonious?

All participants were asked specifically whether the relationship between theory and practice was harmonious. This question also formed part of the micro-survey, so participants had had cause to consider it prior to the interview. Most participants suggested that the relationship was not harmonious, and it was striking that many used the language or imagery of conflict to address the question, with the relationship described as "a locking of horns" (R2) or a "struggle".

> Some people will say, too much theory. Right. Some would say, not enough theory. Fine. Let them go at each other and in the end history is written by the winners. So the history of open access will recall which group finally took over.
>
> (R6)

This comment is particularly noteworthy, in that not only does it characterise the conflict as a kind of zero-sum game (only one side will "win"), but it also relates the debate to the individuals involved – theorists and practitioners – rather than theory and practice. Numerous examples of this can be found in the interviews:

> there is a gap between these information scientists that study OA, and practitioners who actually have to implement OA.
>
> (R5)

> There is not a harmonious relationship. People that are actually trying to put this into practice are down in the trenches … They're just trying to fill the repository.
>
> (Pr2)

> It's not everywhere with every theoretician and practitioner, but I definitely think that generally speaking there is a gap. I think that it's often seen as, as I was saying, before the practitioners don't get interested in theory, but it's also that theorists and academics aren't interested in practice.
>
> (R9)

It is possible to interpret some resentment on the part of practitioners in these responses. Theorists (and in fact OA researchers in general) are often perceived as remote and removed from the vital activity of OA – they are not "down in the trenches". One librarian made this point most emphatically:

> They always strike me as being a bit sort of ivory-towerish and have never actually had to run the repositories, really deal with a wide range of researchers from different disciplines in a multi-disciplinary university, balance books, do any of these sort of operational kinds of things … they don't see the day-to-day obstacles, because it's like they've never had to work with them.
>
> (L1)

While one academic was sympathetic to this view, noting that "we haven't done much work bringing the implementers, and the pragmatists, and the managers, and the practitioners with us" (R2), another observed that fault lay on both sides, arguing that "If one side were good at breaching the gap or divide, then it wouldn't be there. It's definitely on both sides I think" (R9).

Finally, one librarian provided a unique perspective on the issue, suggesting a more deep-rooted and human explanation for why theory often does not influence practitioners: "because psychologically we already all know the truth, and do not want our view of the truth to be disturbed" (L3).

Geographic differences

A surprising finding from the interviews related to geographic differences in the use of theory, and its relationship to practice. In particular, we found that some participants perceived fundamental differences in approach taken by actors in different geographic regions, and for some participants based outside the UK this appeared to be a significant issue. One OA advocate addressed this in an initial response to the question "what is theory?":

> You see the problem we have is that you, in Britain, want to solve problems. So, you take one problem, you try to solve it, then you go to the next problem, you try to solve it. What we do on the continent is, first establish a set of principles, and then we fit the problems within the principles. And the theory is that you have a mental framework.
>
> (R6)

This perspective received anecdotal support from a Latin American participant, who in describing experiences engaging with practitioners from the "Anglo Saxon world" noted that "they do not go in depth to analyse and to work with the role of knowledge and the translation of knowledge and the impact of knowledge" (Pr1). A UK librarian provided further support for the argument, recalling the approach taken by libraries in the early years of the OA movement.

> I think our view in the early 2000s was if we build it they will come, this is luminously a good idea, it's clearly better than the method of dissemination of scholarly information that we've got at the moment. We had no idea, we were so innocent … Because we didn't have a realistic idea of the motivations and constraints that were operating upon the stakeholders, really.
>
> (L3)

This account stands in contrast to the proposed advantages of the "Cartesian or European Continental approach" outlined by the OA advocate quoted above. The same participant noted that this latter approach "leads to a very slow start and very difficult steps", but that "once this framework is in place then you can move forward very, very fast". This is "what theory does" (R6) the participant commented.

Relationship between theory and policy development

Several of our conversations with interviewees included discussion of the role of theory in policy development. Understanding (or even summarising) this relationship is complicated by the different levels and contexts, as referenced in the model presented in Chapter 2 (repository, library, institution, publisher, funder, national, supranational) within which policy is developed, all of which were covered in some form during the interviews. Each of these levels involves different kinds of decision makers and stakeholders, with different approaches to evidence gathering and analysis.

Several policymakers described the types of evidence they used to inform their decision making. There appeared to be a consensus that the formal academic literature typically played little direct role in policy development, with "news, executive summaries and White Papers" (C3) more commonly consulted. At best, academic research was said to play a background role:

> Policies aren't underpinned by specific research groups with specific outcomes based upon particular projects. But there is that, that's your core sort of knowledge that's developing.
>
> (Pu6)

While some participants emphasised that policymakers preferred focused, digestible sources of evidence, one suggested that other characteristics are important:

> Policymakers don't respond to even, necessarily, evidence that's articulated in a short and punchy way. They respond to storytelling, they respond to imagery, they respond to messages being put in channels where they know the people that they work with look. So if a short article goes in

> a newspaper, that they pick up ... or the parliamentary private secretary picks up first in the morning, then it's more likely that that agenda's going to go somewhere.
>
> (Pu4)

This point links closely to another theme to emerge – the role played by individuals in the policy development process. This is not only in the sense of there being relatively few decision makers to influence, but also the ways in which those involved in the decision making rely on evidence either from or through a small number of people:

> I've seen high-level policy-making, in a number of arenas, but here too, where it's done on the fly actually. And it's done really quickly and really strategically but doesn't necessarily speak to the reams of information, it doesn't pull in citations to say why this is a good thing. It just somebody's got an instinct at a very high level and they're incredibly good at this stuff, they can read the mood music and just go, no, this is it, we're doing it.
>
> (Po1)

> They can't find what they need when they need it. And that's why a lot of them just get on the phone. And they have a cadre of people that are go-to people that they can phone up: oh, this is something on open access; who's the kind of big open access guy? Boom! Get on the phone.
>
> (Pu4)

The interviews revealed almost no evidence that theory (in the academic sense at least) influenced policy. Of the two exceptions to this, one came from a policymaker who mentioned using studies relating to the OA citation advantage – and it is open to debate whether this really constitutes using theory. The other related to a description of a mechanism by which theory could inform policy, albeit via an intermediary: "it's the person on the phone that they'll get to who might articulate some of the theoretical frameworks in a language that this policy advisor might understand." (Pu4). This comment relates to the question of bridging the theory-practice gap – to which we now turn.

Bridging theory and practice: researchers

All participants were asked questions about how the theory-practice gap could be addressed. While perhaps not surprising, it is important to note that every participant agreed with the basic premise of the question – that some sort of action was required. It is also the case that most participants did not answer these questions easily or with much confidence in their suggestions, and many recognised that no easy and obvious solution exists. As one put it:

> See the scholarly community is large. The disciplines are so many, okay. There are totally different ways of doing research, and there are totally different ways of connecting theories to practice. So, if you ask me how to improve this, I would have said I have no idea.
>
> (L9)

In this section we deal with action required of academics and researchers. We then go on to deal with action required of practitioners, action required of the community, the role of boundary spanners, the potential role of policy and institutional support, and tools and services.

Engage with practitioner communities

A common suggestion made by interviewees was that researchers working with theory needed to do more to engage and disseminate their work to those working outside academia. It was notable that many participants highlighted that this was not a trivial process, but one that required effort and commitment, as well as strategy:

> I think you've got to work at it and reflect on it and actively think about engaging with the practitioner audience. The ivory tower now is just no longer valid … We're all under pressure to demonstrate our socioeconomic impact, so I think we should be thinking about ways in which to engage the practitioner audience.
>
> (R5)

Several participants emphasised that the level and form of engagement with practitioner communities was crucial. It should be ongoing, meaningful, and respectful: academics should "embed themselves in practitioner communities" (R10) to gain "a sense of their culture and identity and feeling and place" (R2). One researcher spoke in detail about the importance and value of engaging stakeholders throughout the research process, arguing that while "the content and the results are important", embedding practitioners throughout the research life cycle maximises the practical impact of research:

> The people that you engage really become the champions of it and understand it not because it says the open access benefit cost is 3.6 or whatever. That's like the meaning of life is 42. And a lot of the work I've done, the reports look a bit like that and I'm acutely aware of that. But the engagement process, who you get to be in it, who you get as the steering committee, how you form a steering committee and therefore who you influence at that level before the report, who you engage in the research is where the research has impact.
>
> (R7)

One participant with a professional interest in facilitating the dissemination of academic research spoke at length about typical academic attitudes to the process. They observed that "what is missing from a lot of science communication efforts or engagement, dissemination efforts, is a strategy", and characterised typical efforts as "ad hoc" and "unimaginative" (Pu1). This view was to a large extent supported by our findings, with most academics seeming to limit their dissemination activities to the publication of articles, with occasional conference presentations (sometimes but not always to practitioner audiences) and blog posts. Demonstrating that some academics are thinking creatively in this area, one participant described how external expertise can be used to guide the approach:

> I was on the phone this morning to one of the marketing agencies who we're talking to about building a comms strategy for the project. That's a luxury which is not afforded to very many academics, to talk with high-quality marketing professionals about how to think about communicating effectively.
>
> (R2)

Disseminate in forms other than the journal article

The most commonly identified action required of academics was to disseminate their research in forms other than the traditional research article. Two participants had suggestions relating to what could still be considered the formal scholarly communications environment. One highlighted the role that bridging journals might play. Citing the *Harvard Business Review* as an example, the participant argued that publications with "content from academics, rooted in research but very much aimed at a wider audience" could be a way for academics to "reach a library audience but still have some credibility" (C2). Another interviewee drew on their previous experience as a medical librarian, and suggested a need for aggregated summaries of current research:

> I was a medical librarian when evidence-based medicine was really taking off. And for busy practitioners it was all about synthesising, doing that meta-analysis, putting the arguments very simply, putting the evidence together. And I guess that's what I'm looking for. I can't go, hey, here's all the evidence about open access.
>
> (L2)

The role of summaries was highlighted by a number of participants. Many emphasised the importance of them being "bites" (L6) – short, clear, pragmatic, and accessible: "it's always useful to have a tight summary of findings, either attempting to distil the whole thing or just pulling out particular things" (L3). The suggested fora for the dissemination of these summaries were

essentially the same channels identified by practitioners as their means of keeping up to date with OA developments – principally Twitter and blogs. Several participants recognised that these "bites" could potentially draw practitioners to the underlying formal research output. As one participant put it:

> I think there is always going to be an argument for a blog post or a one pager or a Tweet, or whatever, just that will inevitably simplify it a bit, but you know … Or will inevitably only try to put across a limited number if insights or findings. You know, as Saatchi & Saatchi said, brutal simplicity of thought. And I think what you're hoping is that that hook will then draw them in and they'll want something at a higher level of granularity to see what's underpinning it.
>
> (L3)

Returning to the notion of a strategic approach to practitioner engagement, one participant introduced the idea of "layering" – the process of producing multiple outputs from a given piece of research, with "set layers which are specifically written for specific communities" (C3). Although they did not use the term "layering", other participants echoed the concept of tailoring outputs to different audience groups. One suggested a range of formats that could be used to reach different groups ("simple plain-language summaries, policy briefs, case studies, videos, engagement with social media" (Pu4)), but also admitted that this "is not a simple process".

Existing services designed to facilitate the communication of research beyond academia were sometimes cited – *The Conversation* in particular was mentioned several times – but without great enthusiasm. A perception was that these services typically focused on dissemination to the general public, rather than targeted practitioner audiences. One participant also highlighted the practical limitations of these channels, noting that "the volume of research globally" meant such services "faced massive scalability and expertise challenges" (Pu6).

Make research outputs more accessible

Given the frequent practitioner complaints regarding the accessibility of theoretically informed research, it is no surprise that many participants felt that academics need to do more to make their research understandable by non-academic readers. While most acknowledged and accepted that academic articles required a certain level of technical detail and disciplinary focus, the question of style emerged as significant. Interestingly, it was most often researchers themselves, rather practitioners, who reflected on this issue. One noted that a recent project had involved exposure to co-authors' "different writing styles" that were "perhaps more accessible to practitioners, where the tone is maybe not so dry and heavy, and where the narrative clips along

at perhaps a faster pace" (R5). Another author described how they had moved from an academic, "logocentric" approach to a style better suited to practitioners, with "signposts in the prose, lots of headings and subheadings, lots of bullet points" (C1). From a practitioner perspective it was often social science research that was seen as most in need of stylistic change, with articles characterised as often "obscure and inaccessible" (Pu6). One participant argued that social scientists could learn from stylistic developments in other disciplines:

> In biomedical publishing they've moved dramatically towards the active voice. Short sentences, very punchy and also the length of articles. Now over 3000 words in most biomedical journals is considered very long. Social science, in which I am – God help me. That passive voice, you know it's really long. When you're describing very complex things you need to be really careful about language. I appreciate you can't always make it very simplistic because you lose some of the nuance. Equally there's lot of times where you go, really you just don't need this.
>
> (C3)

Link theory to the real world

A number of participants suggested that academics needed to explicitly explain how theory is linked to the world of practice. An exchange with one participant neatly illustrated this view. The participant acknowledged an unfamiliarity with some of the theories the interviewer had cited as examples, asking the following:

> I don't actually know very much about these different theories, I'd kind of like to know a little bit more about them. Can you tell me what they can do for me?
>
> (Pu4)

Many participants agreed that there should be a clearly expressed relationship between a theory and its influence on practice. As one observed, "I don't think theory is a concern so much, until you make it obvious why it should be a concern" (R9). Some interviewees suggested that theoretically informed articles should include explicit summaries explaining how the theory and findings relate to the real world: "if the article had a little section about practical application, I guess that would improve things" (L4). Another interviewee was reminded of an approach taken by the *British Medical Journal*, which included alongside articles a summary of "what's new about this, and what are the implications?" (L6). Some participants also understood that in order to make the real-world implications of theory clear, academics must have a true understanding of the needs and issues of practitioners. This of course relates closely

to the points made earlier in the chapter, and requires researchers to integrate more closely with practitioner communities. As one put it:

> I think being aware of what the issues are on a typical library director's desk might help them in terms of how they cast their work, or think about their outputs.
>
> (L8)

Apply the right theory to the right questions

Some participants suggested that researchers should consider carefully the type of theories they used, and the research agenda to which they are applied. One interviewee discussed the *level* of theory which most resonated with practitioners:

> Rather than theorising and developing a grand theory of everything, it's best, in many cases, to try and develop stronger or more encompassing concepts at various levels, which will allow people to reinterpret their own action within this thing. And, perhaps, criticise the concepts or criticise their action. So, again, in the spirit of stimulating debate and discussion.
>
> (R6)

Others similarly emphasised the relationship between the level of the theory and relevance to practitioners, suggesting that to be most useful for practitioners the theory should relate "not to something that's so distant that it doesn't have any relevance to them", but instead be "something that's pragmatically useful, and connects with their reality" (R2). This point of course encompasses not just the nature of the theory being used, but the research question it is addressing. While one participant suggested that researchers "have just been following their interests rather than what is really going to make a difference" (Pu2), another was more scathing about the nature of some LIS literature relating to OA:

> There's an awful tendency to write the latest case study on how we've done this, and isn't it interesting? And I . . . Oh come on, we don't need to know how the library of the University of Poppleton has done this, or how the Society for Insignificant Studies produces its journal.
>
> (Pu3)

While many participants seemed to agree that theorists were not always addressing the most relevant questions for practitioners, there were relatively few suggestions regarding the specific areas that theory could be most usefully applied. One participant pointed to a lack of "studies that show the return on

investment in open science", while another highlighted how theory could support librarians in their discussions with publishers:

> I would right now love to see literature on the theory of negotiating, of what works, so how to approach these offsetting conversations with publishers. I think there's probably theory that honestly, the publishers' representatives that are coming to the table know a lot better than we do.
>
> (L10)

Another interviewee, however, offered a counterpoint to the suggestion that theorists were not engaging with the right problems, arguing that theory cannot be applied to every issue:

> I'd say they're not addressing the big problem but they are addressing the right problem. I'm not sure what you can do to change author attitudes, apart from, kind of, advocacy ... But what the theoretical folks very often are doing is addressing the questions they can answer and therefore those are the right questions.
>
> (Pr2)

Bridging theory and practice: practitioners

Among the most striking findings from this research is the very low number of suggestions made by participants that relate to actions required of practitioners to bridge the theory-practice divide. While the next section includes suggestions that relate to practitioners, there were very few ideas that focused solely on this group.

Some practitioners at least considered the possibility that there might be value in them proactively seeking out the theoretical literature, although in most cases this was done without much conviction. Instead, practitioner participants almost universally characterised themselves as time-poor, and therefore focused on the demanding operational requirements of their roles rather than more abstract aspects of the debate. As one participant, who was very active in OA developments, put it:

> I'm looking forward to retirement because then I can understand open access.
>
> (L3)

One other suggestion, put forward by a South American participant, was that practitioners should work to develop the skills they need to engage with theory:

> Doing research about your own working practices should be required. And reading should be required. And I had four or five challenges in those 20 years of implementing open access and I put all my team to work on the challenge. I had to do research and read but it should be a permanent activity. So there we need a big change. And it's a question of practice. If they read regularly during the year it will not be difficult to read. And they need to discuss with theorists so they need to have the vocabulary.
>
> (Pr3)

Bridging theory and practice: community

Engage in dialogue

The most commonly stated action required of the scholarly communications community was that there should be efforts on both sides to develop better communication and closer integration between practitioners and academics. As a participant put it: "The two tribes, if you forgive the language, they struggle to speak to each other" (Po1). There was a widely held view that "the academic bubble and the practitioner bubble are not intersecting at any point" (L5) and that "each side needs to be brought one step closer together" (Pu1). Several participants identified dialogue between the two sides as the most productive means of tackling this issue:

> I mean if there are out and out in their head theorists at the one end, and out and out practitioners who never let a theory or a principle darken their door at the other, they need to talk to each other. The theorists can tell the practitioners there's another way of looking at this. And the practitioners can say, ah, but you need to know how this works in practice, chum . . . One of the things I worry about a bit is that there aren't enough fora where that kind of thing happens.
>
> (C1)

One participant spoke in detail about the potential value of this dialogue, and the form it should take – calling this "productive conflict" (R2). Noting that theorists and practitioners "live in different spaces", the participant argued that there was a need to "create contexts in which they come together" and facilitate a "butting up". The suggestion was that this form of dialogue might be most productive:

> It's exactly that conversation you're having with someone when you're at cross purposes, and you can't understand why you're disagreeing, and then you feel like you've reached a common understanding.
>
> (R2)

Attend each other's conferences

Both practitioners and researchers acknowledged that their conferences were rarely attended by members of the other group. Academics noted that their events were often "missing the people that we're trying to have an impact on" (R4), while a librarian admitted that "we are a little bit insular and a little bit self-reinforcing" (L5). One consultant, who attends both academic and practitioner conferences, described the typical delegates at different events:

> I move a lot between different communities, and not that many people do. So, academics go to academic conferences, publishers go to publishing conferences, librarians go to library conferences. And the publishers are there, but only to try and sell to them but not to talk to them. And, I think, yes, but that costs money and it takes time, so it's difficult to achieve a high level of interaction.
>
> (C2)

In keeping with the general findings regarding bridging the divide, most participants suggested the onus was on academics to attend practitioner conferences, rather than vice versa. An academic stated that "getting practitioners at the table is hard" (R4), and other researchers noted that attendance at practitioner conferences and events offered an important opportunity for them to communicate their ideas to practitioners. Indeed, several researchers stated that they had found this to be the most effective means of reaching practice. Several practitioners welcomed the idea of having "conference presentations on the theory and the data behind it that are more accessible to practitioners" (L7). Some practitioners also conceded that the onus was not entirely on academics: practitioners could and should do more to invite researchers to speak at their events.

Co-production

A natural extension of the idea of improving links between researchers and practitioners, and better relating theoretically informed work to practice, was the notion of collaboration between practitioners and academics on research projects: "I think academics should partner with, have as a co-author, one of the people who were already working in this space" (L10). This was perceived as having benefits for both sides. Academics saw the value of involving "practitioners to help us with research" (L2), since they are able to contribute an in-depth understanding of practical issues to inform the research. This in turn would likely make the resulting research outputs more useful to practitioners. Others saw the potential for this approach to improve practitioner-led research, by "pairing a practitioner with a scholar who can actually speak to the library literature in a reasonable way" (L7). Overall though, while many participants

supported the idea of collaborative work, few were able to offer detailed suggestions about how such collaborations might be initiated or developed: "If I was looking for someone to do that work with right now, I'm not sure where I'd go to find it" (L7).

The role of LIS departments

One means of fostering collaborations between theorists and practitioners suggested by participants involved exploiting the links between LIS departments, and libraries themselves. However, a number of participants expressed some frustration at the apparently weak or non-existent relationships between academic departments and libraries:

> I find when I go to conferences and things . . . there is quite a gap between the library school, if you want to call it that, and the actual library of the institution . . . They don't seem to know much about each other. So how the rest of us are going to know, I'm not sure.
>
> (L4)

> Just in my professional career I've hardly been aware of the academics who are in the information school. They just don't appear in our world, they don't come to the things that we have, conferences. We very rarely see them, I think it's possibly even got worse over the years to be quite honest. The last time I visited to do a PhD viva it just made me feel how stark the difference was between the kind of thing I did every day, and the kind of thing that these academics were doing.
>
> (L8)

It should be noted that this issue appeared to be most keenly felt in the UK, and there was a suggestion by one participant that in the US in particular the links might be stronger, and represent an "environment where you do get the scholarship feeding the development of the practice in a kind of positive, virtuous circle sort of way" (L8). However, this was not supported by the evidence offered by some US librarians, and it seems clear that more could be done to foster these relationships. One participant noted that "there's quite a lot of movement between practitioners and academics in this area" (C2), which it seems reasonable to suggest might facilitate attempts to more closely link LIS departments and libraries.

Translators or boundary spanners

An important finding to emerge from the interviews was the value placed on individuals with the capacity and inclination to act as intermediaries between

theory and practice. A variety of terms were used to describe these individuals, including "translators", "boundary spanners", "transmitters", and "connectors". A number of participants, both academics and practitioners, recognised that they themselves performed this role, and often talked about it in positive terms:

> So, for me that's what has been effective it's just like I straddle north and south. I also straddle the practitioner and academic worlds and so then this gives me the, this is my competitive advantage let's say.
>
> (R4)

> Well that was what I was doing … it is sort of like finding stuff that's relevant and going; oh that's interesting, because that relates to that, so let's put those together and say, you know, a couple of things just happened this week that kind of reflect on each other. And having the overview to be able to see what's going on, and sort of see connections, and do all those sorts of things. That's the thing I like doing the most actually, of all my things in my jobs that I've had, I like doing that.
>
> (L6)

Other participants identified particular individuals acting in this capacity. Aaron Tay (National University of Singapore), and Lizzie Gadd (Loughborough University) were both mentioned more than once for their valuable work translating research for practitioners, with both active on Twitter. It was evident, too, that several of our interviewees were themselves boundary spanners, even if they did not identify as such. Several participants also spoke about the motivations of boundary spanners, and the challenges of the role. Most agreed that "generally people do it because they find it interesting and it's a hobby as much as a job" (C2), with some noting that "often these people aren't paid to do it, and that's a real challenge" (Po3). One participant suggested a more personal motivation:

> Some people are doing that because they want to be seen as the person who understands. They want to build up their own profile, possibly for their career but equally, I think, because they want to be seen, for their self-esteem.
>
> (Pr2)

There was also a view that individuals carrying out this translator role are more than simply communicators. One participant argued that "frequently these are people are not recognised in either of the camps", but that this in itself can represent an opportunity to instigate productive exchange:

> The more difficult it is for them to simultaneously be in two groups, the more interesting the potential is for them to do something important. While at the same time the success rate of that's likely to go down.
>
> (R2)

Policy changes and institutional support

A significant number of participants emphasised that a key reason that academics are not engaging more widely with practice is that they are not incentivised to do so. Many interviewees explained the link between existing researcher incentives and their publication and engagement practices:

> It's partly the system of incentives, isn't it? What you actually want to do is publish in a journal that'll help you to get a four star in REF. And in terms of rational self-interest that's what you've got to do. The system of incentives possibly doesn't give you enough compulsion to actually make those connections with practitioners.
>
> (L3)

> You don't do it, because you receive points for going to the conference, delivering your speech and publishing it in a journal with good impact factor. So you have no incentive to do it. Not at all. It's a club you know? It's a club. I'll write where I need to, write for whom I need to write.
>
> (Pr3)

Some argued that removing these incentives would "allow academics to spend more time with practitioners" (L8), while others went a step further and suggested a realignment of incentives that explicitly promoted wider engagement: "when universities recognise this broader community-based research and sharing, I think we'll see a bigger change" (R8). In UK terms, the REF was often cited as the key driver of academic behaviour, and while it was acknowledged that "impact is clearly becoming more important" most participants recognised that it is "still not up there" (L3). A system that explicitly rewarded researchers when they "go and input theoretical background to practitioners who are dealing with the realities of advancing open access" (L3) would lead to much more significant activity in this area. Although universities and national bodies were most commonly identified as driving incentive schemes, one participant observed that funders too have a key role to play, and highlighted that some are already supporting impact agendas through funding provision:

> What I think is really interesting is that in other fields of research funders are starting to mandate more around this. They're starting to expect you to put ten percent of your grant into this kind of stuff. And if that was happening in the open access research community, and indeed all

> communities, you would start to see much more capacity being given to knowledge exchange.
>
> (Pu1)

Tools and services

A range of tools and services that might support the integration of theory and practice were discussed by participants, although it is important to point out that only a relatively small number of interviewees raised these points. One interviewee, part of an organisation that works to support the dissemination of research, discussed plans for tools and services to link research and practice. This would involve showcasing research published on particular subjects, and actively encouraging the engagement of policymakers and industry.

One publisher discussed the ways in which their organisation aids the dissemination of the academic work it publishes, particularly the type of summaries that many practitioners suggested they might find useful. While acknowledging the limitations of current approaches, this publisher argued that there was the potential for this service to improve in scope and functionality:

> So how well are we doing it? Not very well. Is it working? Yes, I mean there is lots that does get disseminated. Can it be done better? Yes, loads better ... I think making sure it's structured properly and therefore it becomes searchable and machine readable and all of that stuff will help just because of the huge volumes of it ... I think a lot of really smart people are working on trying to make it better.
>
> (Pu5)

Two participants suggested curated services that could aggregate, summarise, and translate academic research and/or theory relating to OA: "a bibliography of OA discourse" that included "summaries and explanations of the work, particularly if they were in difficult language" (Pu1).

Conclusion

All of our participants were confident both that theory could be *valuable* to practice but also that it was often not *valued* by practitioners. Theory could be a useful tool for explanation, it could play a valuable role in distilling, formalising, and confirming the existing knowledge and understanding of practitioners, but was still all too often seen as abstract and irrelevant. Even amongst our participants, who valued theory, theory and practice were often positioned as oppositional, with their relationship characterised as a "tension", or "struggle". Barriers to practitioners engaging with theory were pointed out, both in encountering theory in the first place and then in understanding it.

Even when those barriers were overcome, the role of theory in helping actually to address real-world problems was often not clear. Translation is still often needed.

All of our participants agreed that there was a theory-practice gap, and that bridging it was worthwhile but not easy. It was suggested that researchers could engage with practitioner communities, making their results more accessible and meaningful to practitioners, perhaps "layering" their outputs, with different approaches being adopted for different purposes and audiences. There was also a need for dialogue, and finding channels and venues for that dialogue to happen. Co-production of research was also suggested to be important. There was a major role for boundary spanners in playing a creative translation role between communities.

There is a complex set of factors at play here. In the next part of the book we try to make sense of what we have found.

Part 5

Integrations

Theory, practice, and open access

Chapter 9

Theory and practice

Barriers and bridges

> If it is true that every theory must be based upon observed facts, it is equally true that facts cannot be observed without the guidance of some theory.
>
> (Auguste Comte (1830). *Cours de Philosophie Positive*)

> I can tell when I'm reading something that's aimed at action and when it's aimed at understanding.
>
> (Participant in this study)

In Part 1 of this book we mapped out some of the key features of the OA environment. In Part 2, we discussed the nature of theory and the relationship between theory and practice. Then in Part 3, we carried out a detailed content analysis of theory-informed literature investigating OA. In Part 4, we reported our wide-ranging interviews with researchers and practitioners working on OA about their views of the theory-practice relationship in their roles. Now in Part 5, we discuss what these results mean. In Chapter 10, we will consider what our research tells us about OA and its potential future, but in this chapter we will discuss what the results mean for our understanding of the relationship between theory and practice.

Our discussion is structured around a model we have developed. In explaining each element of this model, and the relationship between elements, we demonstrate how different actors in the OA landscape interact (or fail to interact) with theory, the nature of the theory that is used and developed with regard to OA, and the barriers that inhibit practitioner engagement with theory. We also use this model to situate potential remedies to the theory-practice gap. We consider our results through the lens of Bourdieu's Practice Theory, and consider how our understanding of the theory-practice gap in the OA context informs wider discussion of the theory-practice relationship.

Modelling the theory-practice relationship in OA

Taken together, our literature analysis and interviews provide a rich dataset with which to interrogate the nature of the theory-practice relationship in the context of open access. Figure 9.1 represents our attempt to model this relationship. This model was built inductively from the results presented in Parts 3 and 4, and attempts to map the entities, processes, and attributes, and the links between them, that together represent the interaction of theory and practice in the context of OA. The next part of this chapter provides a detailed description of the model, dealing with each element in turn.

Theory and practice

Central to the model are the concepts at the heart of this book – *Theory* and *Practice*. The evidence from our interviews, and our review in Part 2, suggests that the meaning of first of these terms is contested. Interviewees conveyed three distinct ways of understanding theory – as principles (the arguments underpinning the OA movement), as hypothesis (essentially a shorthand for the scientific method of theory building and testing), and as what we have termed "conceptual theory" (a generalisation, representation, or abstraction). Often the interpretation of the term could be linked to participants' prior education, with those with a scientific background the most likely to proffer the theory as hypothesis interpretation. It is striking, however, that not one of our participants defined theory in the way we have seen it used in discussions of the theory-practice relationship in other disciplines (most notably nursing) – as "academic evidence" or "best-practice" (Billings & Kowalski, 2006). This raises some interesting questions regarding the relationship between our research, and other work in the theory-practice space. Our working definition of theory (see Chapter 5) is most closely related to the third of our participant-generated definitions – conceptual theory. The *Theory* element of our model, therefore, is illustrated with examples of theories found to be used in relation to OA issues in our literature analysis. Much of the literature concerning the theory-practice relationship, in contrast, could perhaps be better described as relating to the relationship between research and practice. As we discuss below there are inevitable links between these two issues, and in fact we might consider the theory-practice relationship to be a subsidiary of a broader research-practice debate.

The literature analysis presented in Part 3 provides a rich picture of the range and distribution of theories used and created in relation to OA research. It is again striking to note the diversity of these theories from a number of perspectives – particularly academic field of origin, scope, and purpose. As we shall see, this diversity clearly relates to some of the unique aspects of OA as both a practical endeavour and research topic.

There is rather less to say about the *Practice* element of the model, which is in itself revealing. In contrast to the contested nature of the term theory, our participants appeared to implicitly understand and accept the concept of

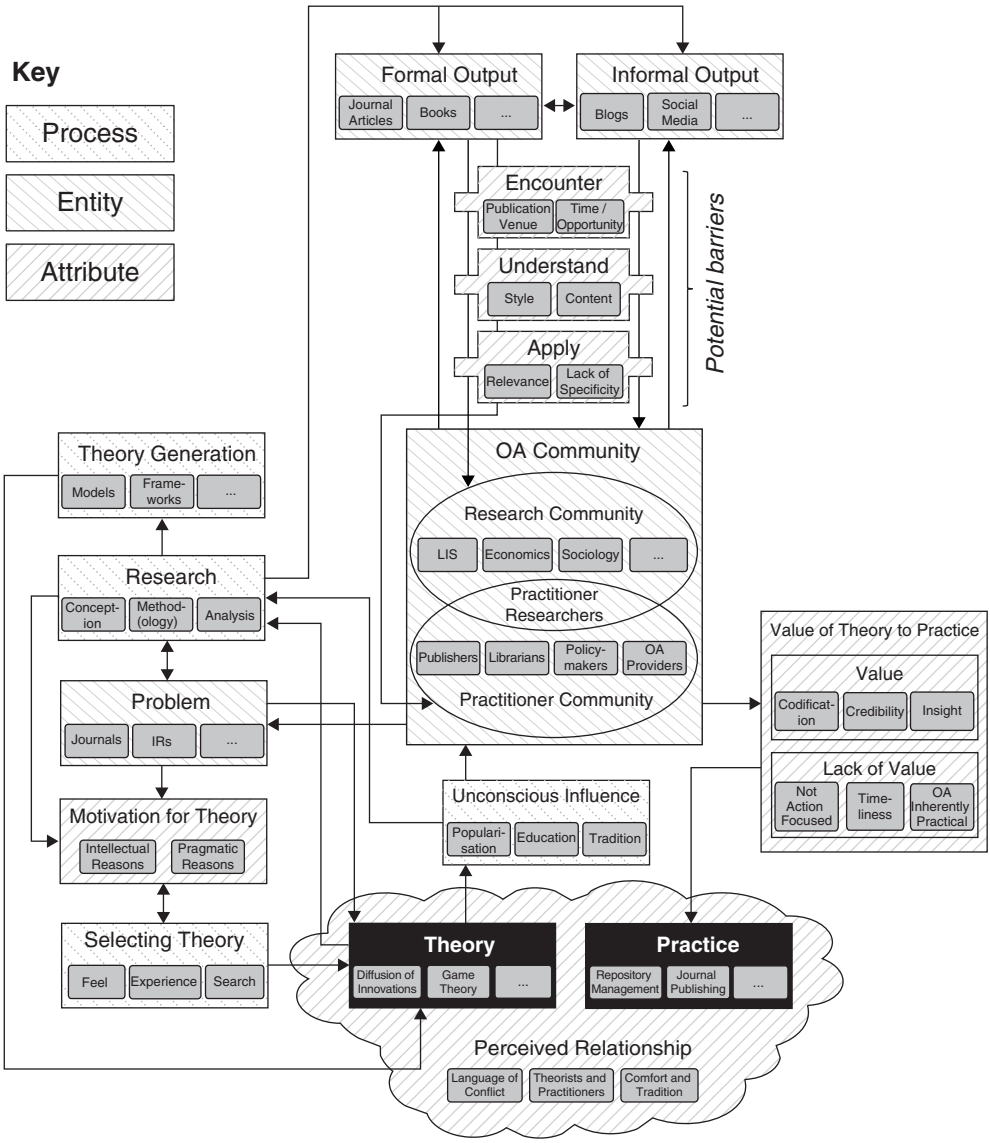

Figure 9.1 A model of the theory-practice relationship in open access

practice. Only a very small number questioned what was meant by the term, and in all cases agreed with our interpretation of it as the day-to-day activity of individuals involved in OA provision or planning. In fact, as later discussion of the perceived relationship between theory and practice revealed, the terms theory and practice were often defined oppositionally.

OA community

While *Theory* and *Practice* are the key concepts within the model, the *OA Community* element represents the most integral entity. By *OA Community* we mean all the individuals and groups actively working on open access-related issues, and here we classify these actors into two overlapping groups in line with the focus of our study – the *Research Community* and the *Practitioner Community*. The *Research Community* represents those engaged in OA-related research. Many such researchers are academics in LIS departments, but this group also consists of a strikingly large number of academics working in other disciplines. The *Practitioner Community* is made up of the librarians, publishers, policymakers, and technology and infrastructure providers involved in delivering the various OA models, policies, and platforms. The model also includes actors with a foot in both camps – the *Practitioner Researchers*. Such actors are typically practitioners who have engaged in research activities – mostly librarians, but occasionally publishers and providers. It is important to note here that for the purposes of our model, the *OA Community* does not include the many academics who publish or disseminate their work OA, whether through choice or mandate, nor does it include the consumers of OA content, be they in academia, industry, or beyond. While these much larger groups undoubtedly have skin in the OA game, we do not consider them active producers or readers of theoretically informed work about OA.

The problem

From the *OA Community* we draw a line to another entity, albeit an abstract one – the *Problem*. This element represents the underlying issue, whether identified by researchers or practitioners, which research (and by extension, theory) could address. Included in our coding of the theoretically informed literature was a classification of material in the corpus by the OA sub-field on which it focuses. The typology used for this coding was based on the one developed by Pinfield (2015), and we note that all of the OA sub-fields identified in that earlier work are addressed by numerous examples of theoretically informed work; even the least commonly addressed field – OA and Impact – has had theory applied to it in at least 11 articles. This is significant for two reasons. First, it suggests that theory can be relevant – at least in the eyes of authors – to a very wide range of OA-related issues. This in turn implies that theory might potentially inform practice in all these areas. Second, the results inform our understanding of an issue raised by several practitioners, namely that researchers working in the OA space were not applying theory to the right questions. The extent

to which this view is based on a lack of awareness of such work (rather than the work not having been done) is dealt with below, but here we might also consider whether the OA research community has indeed failed to apply themselves to some key issues. One example, which we noted in Chapter 8, related to the extent to which librarians were adequately enough prepared for negotiations with publishers, with the participant (a librarian) noting a lack of theoretically informed guidance on negotiation strategy and tactics. We encountered no such research in our literature analysis, and had we done so it is not entirely clear how it would have fit within the OA field typology (which was itself based on an extensive review of the literature). The implication, perhaps, is that there are indeed OA issues that are not being properly addressed by OA researchers.

Finally, we also note that the model links *Problem* and *Theory*. This is to account for the single instance in our interviews of a practitioner applying theory directly to a practical problem, something which, in the instance of the participant, had evidently been very successful. The problem, in that case, was a perceived need for a theoretical foundation on which to build long-term and far-reaching OA development strategy. As noted in Chapter 8, this example stands in stark contrast to the attitudes to theory of the remainder of our practitioner participants, and this line on the model therefore represents an exception rather than a rule, but remains an interesting approach.

Research

The model shows a link, in both directions, between the *Problem* and *Research* elements. This is no doubt unsurprising, since the identification of a problem leads often to research undertaken to address or explore that problem, and in turn that research can itself refine or reconfigure problems, or identify new ones. Within the model we consider *Research* to be a process, encompassing a number of stages from conception, development of method, data collection, and analysis. Our literature analysis shows that theory can be deployed at any and all of these stages, and thus the model shows a link directly from *Theory* to *Research*. Most commonly we found theory used to inform the method, and the analysis or discussion of results. The case of theory as method merits particular discussion. Broadly speaking, we can identify two distinct ways in which theory can relate to research method. The first relates to theories such as UTAUT, Theory of Planned Behaviour and Theory of Reasoned Action, which are used to guide the development of research instruments, most often surveys. In such cases the theory is clearly integral to the method, but also independent of it. This is in contrast to the second use of theory as method, which relates to the use of predictive, mathematics-based theories – examples being the Solow-Swan Model, and Game Theory. In these instances, the theory itself can be considered the research tool. To further complicate matters, research of this type often requires that the theory is adapted to meet the particular demands of the research context, meaning that, as one participant put it, “I don’t know where theory ends and method begins” (R7).

As we have seen throughout this book, understanding how theory is utilised by researchers is an essential step towards understanding the theory-practice relationship. In our model, *Research* is the element with the most inward and outward links to other elements. We now consider some of these related parts of the model.

Motivation for theory and selecting theory

Our interviews provide useful insights into the *Motivation for Theory*, and the process of *Selecting Theory*. Researchers' decisions to use theory appear to be based on one or both of two reasons. The first is intellectual, and relates to the perceived value of theory as a tool with which to undertake the work, or a lens with which to interpret it. The second is pragmatic, and relates to the ways in which a theoretical element to the research is seen as a requirement – either to be published, or to be seen by peers as appropriately academic. Although not addressed specifically by our participants, it seems likely that these underlying rationales for using theory have significant influence on the process of selecting theory. It is striking that while there is a large body of literature exploring the use of theory in a range of different disciplines (see for example Colquhoun, Letts, Law, MacDermid, & Missiuna, 2010; McKechnie & Pettigrew, 2002; Painter, Borba, Hynes, Mays, & Glanz, 2008), this work typically uses content analysis techniques to review the use of theory in the literature. We have found no other work that qualitatively investigates the processes and motivations for selecting theory. When asked about this process, our researcher participants were somewhat vague, with the term "fit" often used to describe a sense that a given theory could meet the needs of the research being undertaken. There was also an acknowledgement from some that the selection of theory was influenced by how it would be perceived by readers – both in terms of the theory's reputation as established, valid, and rigorous, and the extent to which it aligns with current academic trends. To this we might add another factor, albeit one not raised explicitly by our participants. That is the notion that the selection of theory is also influenced by the extent to which a given theoretical approach is compatible with a researcher's underlying philosophical outlook. A researcher's ontological and epistemological perspective will clearly be more suited to some theories than others. Choosing a theory, then, is not a straightforward mapping process – there is no clearly labelled toolkit from which researchers can simply pluck the appropriate theory.

It is important to note here that the *Motivation for Theory* element also relates to instances where researchers choose *not* to use theory. Of particular relevance here is the relatively low number of theory-informed articles and books authored by librarians.

Theory generation

In some cases, *Research* leads to *Theory Generation*. Our literature analysis found more than 80 examples of articles, reports, and books in which theory

was generated in relation to OA. Reviewing our coding against the typologies of theory developed by Gregor (2006) and Reynolds (1971), we find that most theories generated can be categorised as Gregor's "Theory for analysing, typically initial descriptive attempts at theory", and Reynolds' "Vague concepts, untested hypotheses, prescriptions for good behaviour". This is in line with our understanding of theory development in LIS (see Chapter 3), which suggests a prevalence of context-specific and pragmatic theory-building (something we consider further in the next chapter). In further developing our analysis of theory generation, in Chapter 6 we presented

Table 9.1 Typology of theories generated in relation to OA

Type of theory	*Description*	*Examples*	*Articles/conference proceedings/book chapters (152)*	*Reports (19)*	*Books (7)*
Theory for evaluation and development	Theory provides a formal structure for the evaluation and/or development of a technology or process. The theory is typically suitable for application in a localised context	Campbell-Meier (2011), Kim & Kim (2008); Hyun & Yong (2006)	11	0	0
Theory of attitudes, relationships, and processes	Theory provides an analysis or explanation of the attitude of actors, and/or the relationships between actors, or maps the processes with which they engage	Kennan & Cecez-Kecmanovic (2007); Kim (2007); Lwoga & Questier (2014)	22	8	0
Theory of systems	Theory addresses a system as a whole (e.g. the scholarly communications system) and proposes or defines models for that system	Fuchs & Sandoval, (2013); Fyson et al. (2013); Gherab-Martín & Gonzalez Quiros (2014)	15	2	1
Theory as method	Theory developed as a tool to facilitate investigation. Includes instances of existing theory being significantly adapted for this purpose.	McCabe et al. (2013); Houghton (2011); Campbell (2015)	18	6	0

a new typology of theories generated in relation to OA (see Table 9.1). A key strength of this typology is that it relates directly to how the theory in question can be applied. In this regard it is potentially useful for both researchers and practitioners. While our typology is derived from a dataset limited to OA research, we see potential for it to be applied in other domains, and in this respect it may serve as a framework for future analysis.

Another interesting aspect to emerge from our analysis of theory generation related to the terminology used to describe or label theory. In almost all cases we found authors using the terms "model" or "framework" to describe their work, and in fact we identified not a single case of the term "theory" being used. Our interviews revealed researchers' views on this. There emerged a sense that models and frameworks represent the type of theorising most often encountered in the LIS literature, and were perceived by many as a desired, and even required, output of research. Theory in a grander sense, however, was perceived as something of a rarefied commodity – a pinnacle of a certain type of academic endeavour. It seems likely then that the term "theory" has potentially been eschewed as a label for two reasons: first as a result of self-moderation, and a reluctance to overstate the significance of work, and second because the nature and context of much OA research is incompatible with this kind of grand theorising. We discuss this latter point in Chapter 10.

Outputs

Research, once completed, is usually disseminated in some way. We classify the form of dissemination as either *Formal Output* or *Informal Output*. *Formal Output* refers to the peer-reviewed academic literature, be it journal article, book, or conference paper. *Informal Output* refers to any of the numerous ways with which research can be communicated outside these formal channels. Examples here include, blogs, presentations and talks, and social media posts. Very often a single piece of research is disseminated using both formal and informal channels, and for this reason we have added a link, in both directions between the two output elements of the model.

Our interviews revealed that practitioners rely primarily on informal outputs – specifically Twitter, email lists, networks of colleagues, and practitioner conferences. While these channels often provide links to the related *Formal Output*, our evidence suggests that these are rarely looked at by practitioners in great detail. The one exception to this was in the context of formal report writing, with a number of practitioners describing how they would seek out formal academic literature only when required to do so to support the drafting of position papers or policy documents.

As might be expected, academics described a very different set of information monitoring and searching behaviours, with many viewing the academic literature as their primary source of OA-related material. Researchers were also found to prioritise the creation of formal over informal outputs. As is widely

understood, formal outputs, in particular journal articles, are of considerable importance to academics, not only as a means of communicating research results to their peers, but also as a way of establishing and maintaining their academic reputation and meeting a range of institutional and funder performance requirements.

Crucial to our understanding of the theory-practice relationship is the extent to which these different types of output reach different members of the *OA Community*. The model represents this process with lines between the various output and *OA Community* elements. As can be seen, a series of potential barriers are found between the outputs and the communities to whom they might be relevant. We now discuss these barriers in detail.

Barriers

The model shows three types of barrier. The shape of these elements within the model is intended to represent how much each barrier serves to disrupt the flow of theory to researchers and practitioners. Lines passing through the central, thicker part of each element indicate that the barrier is more significant than for lines passing through the outer, thinner part.

The first barrier is the extent to which different members of the OA community *Encounter* the outputs of theoretically informed research. Our interviews revealed two factors affecting the likelihood of practitioners encountering such work. The first is the lack of time available to busy practitioners to spend exploring and consuming the academic literature. The second relates to the publication venues of this work. This is a significant consequence of the fact, discussed in detail earlier, that OA research has been undertaken by academics from a very wide range of different disciplines. As we note in Chapter 6, a great deal of work by these researchers is published in their own disciplinary-specific journals. The dispersed nature of the OA literature, therefore, makes any attempt to monitor or actively seek out formal OA research more challenging. This is true of the OA research community too, albeit to a lesser degree. There is also the issue of "closed" access, of course, with some resources not being readily available since they were behind subscription barriers. For the participants in our study, this was not the major problem they had with encountering research, however. Many of them were able to access resources needed, even if (as some of them admitted) this might involve workarounds.

The second barrier relates to the degree to which OA practitioners and researchers can *Understand* the theoretically informed research they do encounter (sometimes called, "intellectual" or "conceptual" access). The level of understanding is informed by both the style and the content of the research output. Typically, informal outputs were perceived to be more accessible in both style and content and thus our model shows the link between informal output and OA community passing through the thin part of this element. In contrast, both our literature analysis and our interviews raised important

questions about the accessibility of theoretically informed research. Participants, and in particular practitioners, were quick to note the difficulties associated with consuming academic outputs written for specific academic communities. They described how the style of communication (for example the use of mathematical notation, or dense prose) could represent a sometimes insurmountable challenge, as could the complexity of the content of such outputs.

The third barrier represents the degree to which members of the OA community are able to *Apply* the findings of theoretically informed work. Two factors are again significant here. First there is the relevance of the work. This applies not just in the sense of the specific issue the research addresses, which may be more or less applicable to a given reader's context, but also the ways in which the author is able (or unable) to communicate the relevance to their audience. Linked to this is the notion of specificity, with practitioners in particular emphasising that in order to be useful, research outputs must clearly identify and communicate direct recommendations for action. This key issue is closely related to a broad distinction made by several participants between research aimed at understanding, and research aimed at action.

As shown by the path of the links in our model, our results suggest that in general these three barriers to consuming theory from formal outputs represent a more substantial challenge to the practitioner than to the academic. This is not true in every case, of course; certainly many social science researchers would face significant barriers in encountering, understanding, and applying the research outputs reporting Game Theory-informed analyses of OA. Overall, though, we believe this represents an accurate portrayal of the opportunities for, and abilities of, researchers and practitioners to engage with theory.

Unconscious influence

Situated between the *Theory*, *Practice*, and *OA Community* elements in our model is a process we have termed *Unconscious Influence*. This element represents the ways in which theory informs practice and research indirectly, or without the individual being explicitly aware of the fact. This occurs in a number of ways. As several participants noted, the popularisation of some theories is such that key terms and ideas have entered the public consciousness, and inform action without the actors being aware of their origins. A common example given here was Rogers' Innovation Diffusion Theory, which has been adopted so widely that terms such as "early adopters" are now very well understood, and often used to inform planning and marketing strategies without any explicit reference to Rogers. We also suggest that the educational experience of practitioners can lead to unconscious use of theory. This applies particularly to librarians, many of whom will have completed postgraduate degrees in librarianship or a related subject. Such courses will have included theoretical components, often in foundational contexts, and it seems likely that this grounding in theory will have some influence of the subsequent

practice of graduates. This notion can also be related to the wider literature on the theory-practice gap (see Chapter 4), which often locates the educational setting as a key space informing perceptions of theory. Finally, there is the sense in which practice is itself built on theory. Again this is most easily identified in the library context, where practical issues such as cataloguing, resource discovery, and collection management all have long and extensive theoretical traditions. Theory is thus informing the activities of librarians engaged in this work, even while they may not be conscious of the fact.

Value of theory to practice

The final element in the model relates to the *Value of Theory to Practice*. Within this section of the model we find perspectives on both the *Value of Theory* and its *Lack of Value*. Theory was valued by our practitioner participants for its potential to codify existing practices and perspectives, with this process seen as adding structure and clarity to what might have been unformed or undeveloped ideas. Theory was also valued for the credibility it brought. This was seen as relating not only to substance – the extent to which a theory could inform or underpin an argument or position in an OA debate – but also perception, in that theory was acknowledged to bestow credibility to the work in which it featured. Finally, a small number of participants spoke of the insight that theory had afforded them into their practice, helping them to better understand an aspect of open access.

The timeliness of theoretically informed research was discussed by a number of participants, one of several ways in which the *Lack of Value* of theory to practice was explained. Most often, though, this perceived lack of value related to the failure of theory to be action-focused – concerned more with abstract understanding than directing practice. For some interviewees this was closely linked to a characterisation of open access as an inherently practical pursuit, and therefore fundamentally unsuited to a theoretical perspective. This view, it should be noted, was contested by other practitioners, who were able to see the potential value to their work offered by theory, even if this value was not properly realised.

Perceived relationship

One section of our model remains to be explained, and that is the *Perceived Relationship* between theory and practice. We place this element in a cloud, rather than a box, as it represents a different, more holistic level of analysis in what is otherwise a broadly linear model. Practitioner perspectives on the relationship between theory and practice both inform and are informed by the other elements in the model. Key to our understanding of this perceived relationship is a reading of the language and imagery used by practitioners in our discussions, which in many cases suggested the relationship to be one of conflict or struggle. The strength of feeling many participants expressed implies a deep-seated sense of what can at best be described as mistrust, and in a few cases outright antipathy.

Strikingly, perceptions were often framed in the context of theorists and practitioners, rather than theory and practice, with the former group characterised as out of touch and ineffective. This was often linked to the historical development of OA, particularly in the UK and US, within which an action-driven tradition has emerged. Librarians and publishers within this tradition have prioritised the building and popularising of systems and business models for OA, and it is in opposition to this that theorists (and their theory) are perceived.

Adding pressure points to the model

We complete our discussion of the model by identifying key locations within it where the relationship between theory and practice is challenged. We refer to these locations as pressure points, and they are represented by the crosses in Figure 9.2. Naturally, the three barriers to engagement with research outputs (*Encounter*, *Understand*, and *Apply*) represent points in the model where the application of theory to practice is stymied. Another relates to the relative infrequency with which theoretically informed work is disseminated through informal outputs. Given practitioners' clear preference for these informal channels of communication, the failure of many researchers to utilise these channels as part of their dissemination strategies is clearly reducing the potential for ideas to reach practice. A third pressure point relates to *Problem* identification, and refers to the argument made by some practitioners that researchers are not using theory to address the most relevant OA issues. There is also a pressure point that relates to the motivation to use theory as part of the research process. Here were refer to both the relative infrequency with which librarians and other practitioners incorporate theory into their research, and the extent to which authors are using theory for purely pragmatic reasons. Both cases represent issues for the theory-practice relationship – the first as a missed opportunity for practitioners to apply theory in practically useful ways, and the latter as a potential cause of superficial use of theory, which itself serves to further obscure the potential value of theory to practice. The final pressure points on the model relate to the relationship between researchers (including theorists) and practitioners. These two communities too often operate as separate entities, and frequently fail to take advantage of opportunities for collaboration and knowledge exchange. This is fuelled perhaps by the perceived relationship – an "us and them" mentality which inhibits engagement and the free flow of ideas.

Relationship to the theory-practice literature

In Chapter 4 we reviewed the literature relating to the theory-practice relationship in a variety of different disciplinary contexts. It is instructive to refer back to this literature now, and review how our findings relate to this broad body of work. Before doing so, however, we must acknowledge some characteristics of our study that set it apart from previous work in this area. First, as we noted

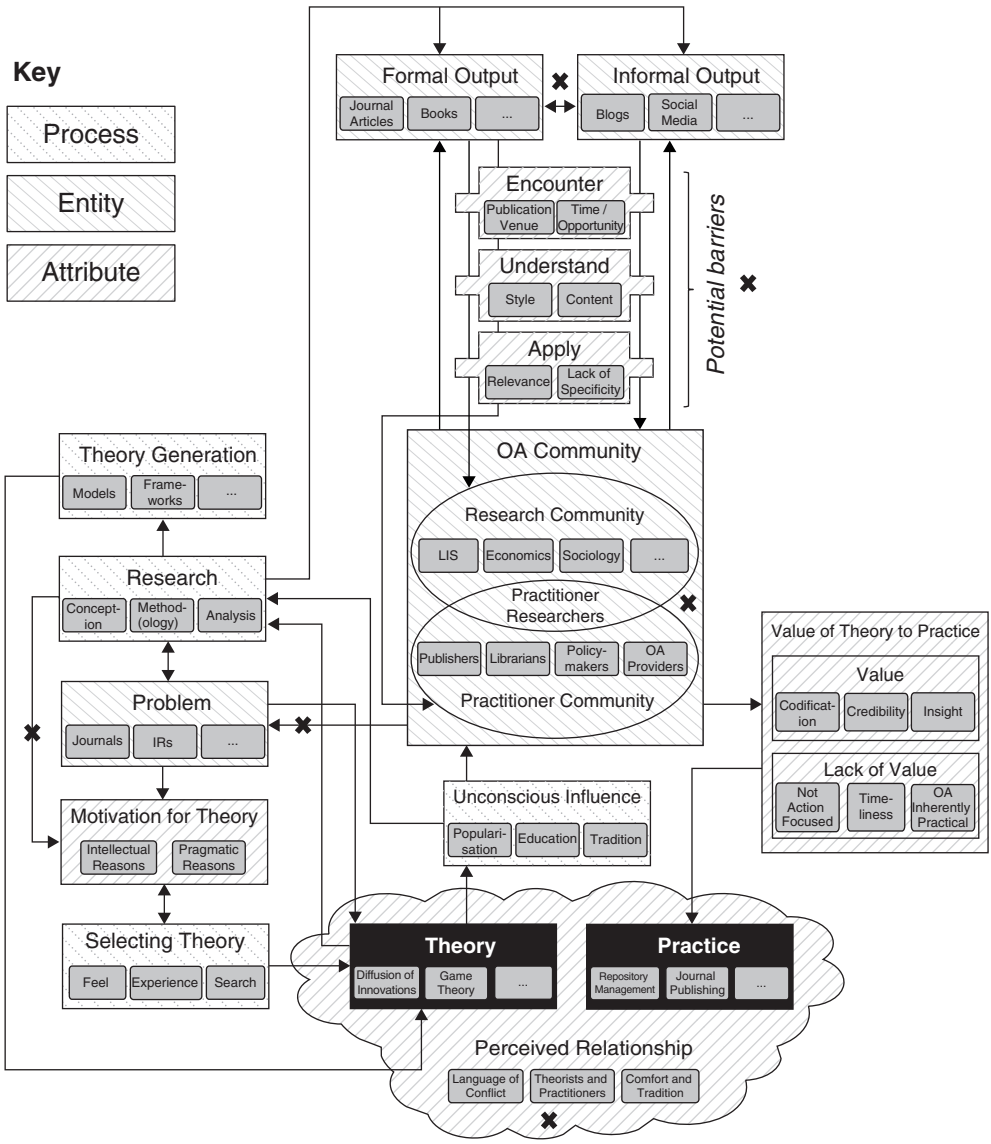

Figure 9.2 Model of the theory-practice relationship in open access with pressure points added

in the introduction to this book, the practice of open access is related to not one – as is the case in most fields – but many practitioner communities, including policymakers and funders, publishers, OA service providers, librarians, and consultants. The heterogeneity of the practitioner community extends to the type of OA work undertaken even within discrete practitioner groups. Librarians, for example, might encounter OA-related issues while engaged in a wide range of different activities: IR system development and management, institutional policy development, collection management, and vendor negotiations. This means that the notion of "practice" in the OA context is inevitably more fluid and contestable than in many other disciplines, with attendant consequences for our understanding of a theory-practice relationship, and more importantly for comparing that relationship to those described in other fields. Also relevant, and again as previously noted, is the geographic and professional context of OA practice, which often operates within an educational environment (as with librarians and some OA providers), or in close contact with academia (as with publishers). This proximity to the academy might be expected to make the OA community more open to theory than other professional communities. Finally, we note that our conceptual definition of theory – as generalisation, representation, or abstraction – differs markedly from the use of the term in other fields, most notably nursing and management. In these disciplines theory is often taken to mean "academic best practice" or "evidence". The large amount of literature relating to the theory-practice gap in these contexts is therefore of a fundamentally different nature.

The first point to make here is that, as Figure 9.2 shows, the theory-practice relationship is complex. In fact, we suggest it is helpful to think of it not as single relationship, but many interrelated and evolving relationships. In other words, understanding a theory-practice gap means understanding many theory-practice and theorist-practitioner relationships. Consider what our results show: that academics from diverse fields are conducting research into different aspects of OA using different types of theory in different ways and for different purposes. The results of this research are communicated in different ways, and are, to differing degrees, relevant to a diverse range of practitioners. Those practitioners are themselves engaged in different types of work. Other factors are relevant too: the educational background and prevailing worldview of actors; the ways in which incentives are driving behaviour; the time available to individuals to engage with academic literature; the speed with which decisions need to be made. The concept of the theory-practice relationship, therefore, encompasses all of this. It is really shorthand for a range of relationships within academia, and within practice, as well as between them.

That is not to say, of course, that there is not value in considering theory and practice at the conceptual level – just that doing so is more complicated than it may at first seem. At this level our work confirms again what has long been recognised – that there is a gap between theory and practice – and some of our key findings echo arguments made in the theory-practice literature. A key theme of this literature, for example, is the nature of the relationship between academics and practitioners. This clearly emerged as a highly significant factor in our study,

with the "state of permanent tension" described by Reed (2009) graphically illustrated in the characterisation of theorists offered by some of our practitioner participants. At the heart of this tension is what Korthagen calls the "gap between professional cultures" (2007), or more specifically the fundamental differences in the ambitions and intent of academic and practical work. Our study provides ample evidence of the apparent incompatibility of the practitioner's focus on direct solutions to specific problems, and the academic's desire to understand or explain. Many OA practitioners appear to have either failed to be convinced by the argument that the value of theory is its capacity to develop an understanding of practice, or to have accepted it but determined that understanding alone is of little practical importance.

This provides useful context for another key theme found in the literature: the mode of communicating theory to practice. Alexander (1997) identified two such modes – the translational mode, whereby theory or theory-informed work is transformed into direct recommendation for action, and the enlightenment mode, whereby theory itself is communicated to practitioners who must then interpret and convert theory into action. Our results clearly support this distinction, which we can link directly to the *Apply* barrier of our model. Practitioners were near unanimous in their desire for theory to be presented in the translational mode, with the link to action explicitly stated.

Perhaps the most relevant prior work for this study is Haddow and Klobas' study of the research-practice gap in LIS (2004). They identified 11 types of gap relating to research and practice. Table 9.2 shows these gaps, along with

Table 9.2 LIS research-practice gap compared with the OA theory-practice gap

Research-practice gap	*Description (from Haddow & Klobas, 2004)*	*Supported by our findings?*	*Relationship to our study*
Knowledge gap	Both researchers and practitioners would be more informed if there were more effective communication between them.	Yes	A perceived lack of effective communication between practitioners and researchers was a clear theme to emerge from our research.
Culture gap	Researchers and practitioners fail to understand each other, respect different types of work, gain new knowledge from different processes, and communicate only within their own peer group.	Yes	Cultural differences between research and practice were seen to contribute to a theory-practice gap.
Motivation gap	Practitioners are not interested in research.	Partially	This was true of some participants, but many practitioners described how useful both research in general, and theoretically informed research in particular, could be.

(*Continued*)

Table 9.2 (Cont.)

Research-practice gap	*Description (from Haddow & Klobas, 2004)*	*Supported by our findings?*	*Relationship to our study*
Relevance gap	Researchers and practitioners value investigation of different types of problem.	Yes	As noted, some practitioners felt that researchers were using theory to address the wrong problems.
Immediacy gap	Practitioners' problems need solutions more quickly than academic research problems.	Yes	The timeliness of OA research was identified as problematic by a number of participants.
Publication gap	There is relatively little research publication in the field, and little of it is written by practitioners.	No	Our literature analysis suggests that there is a significant amount of theory-informed OA literature, with a small but significant proportion of it written by practitioners.
Reading gap	Researchers and practitioners do not read each other's literature.	Yes	This was broadly supported by our research, with practitioners favouring professional journals over more scholarly titles.
Terminology gap	Each group uses terminology that is not understood by the other. This is particularly true of researchers.	Yes	The inaccessibility of published OA research was a clear issue for many practitioners.
Activity gap	Few practitioners conduct research.	No	Our study suggests that a small but significant proportion of the research into OA is conducted by practitioners.

the original description provided by Haddow and Klobas, and a summary of their relevance to our study. Comparing these gaps to our findings, we note that most are clearly identifiable in our results, the only exceptions being the Publication gap (there is little research on the subject) and Activity gap (only a small number of practitioners conduct research). Our findings suggest that there is a large body of theory-informed research into OA, and that a significant proportion of this work is conducted by practitioners.

Two new themes to emerge from our study

It is notable that two themes emerge from our study which we believe are new to the theory-practice discourse. We discuss them briefly here.

Uncertainty

We noted in Chapter 7 that many of our participants struggled to articulate responses to our questions about theory. In fact, in reviewing our data we found evidence of uncertainty from a range of participants in a range of contexts. That uncertainty was revealed both explicitly and implicitly during the interviews. Consider these two responses to the question of "what is theory?":

> Now I've retired, I could probably tell you I don't know what theory is. I honestly don't know what theory is. Twenty years of being a professor wasn't enough. I don't know.
>
> (R7)

> So I assumed it would be, I was taking it to mean, how can I express this, that there was like, you know, someone had, like in any sort of science experiment, sort of like a hypothesis to the experiment, and like theorise that this would lead to this.
>
> (Po2)

In the first example we have an experienced academic candidly admitting to uncertainty about the nature and meaning of theory. In the second, a practitioner struggling under pressure to articulate a definition for the term. In their own way both examples speak to an important theme to emerge from this research, which is the notion that theory is a term that all participants felt they were *expected* to understand. In example one, the interviewee acknowledges that it is only in retirement that they are comfortable admitting their uncertainty – the implication being that it would be somehow inappropriate or damaging to admit such a thing while still an active researcher. Example two represents an assumption, with a call to the interviewer ("you know") to recognise the definition being offered.

There are other uncertainties, too. Researchers we spoke to who had used theory often found it difficult to describe the process of selecting a theory to use, using vague justifications ("fit") or referring to an emotional response. There was uncertainty about the amount of theory-informed literature available on the topic of OA, and about what theory was adding to research in particular instances. We, as researchers, also experienced uncertainty. Reflecting on our experiences conducting this study, we feel this is best illustrated in the development of our definition of theory – something it was essential for us to produce for practical purposes to define the scope of our literature analysis. Here we found our instinctive, deeply embedded understandings of the term challenged not just by the literature we encountered from different disciplines and fields, but also by the responses of our interviewees. The definition was therefore the subject of considerable discussion, and was refined and augmented over the course of the project.

What is striking is that these uncertainties are not detectable in the published outputs from research that uses theory; traditionally the conventions of

scholarly writing have precluded them from appearing. In the conventional mode of research reporting readers rarely get a sense of any struggle or confusion on the part of theory-minded researchers. Theories are introduced and their relevance justified, usually without any explicit reflection on the process by which they were discovered or evaluated, or the extent to which researchers' understandings of those theories (both in terms of the meaning of the theories themselves, and their relevance to a specific piece of research) evolved over the course of the research process. Not all research-reporting is of this type, of course, with many social science disciplines increasingly adopting more reflexive styles of communication. It does, however, remain the norm for most researchers, in most fields. The reality of using and generating theory, we argue, is different. It is messier and more challenging than the published work suggests.

Our overall point here relates to the underlying assumptions often found at the heart of the theory-practice debate; that academics are interested in and familiar with theory, while practitioners, typically, are not. We argue that things are not as clear-cut as this. There are, of course, very many researchers working with and producing conceptual theory. Our work, however, suggests that even among this group there might be uncertainties at a fundamental level about the nature and purpose of theory, in both general and specific senses. That this uncertainty is so rarely acknowledged in the outputs of research serves only to cement the perceived dichotomy between research and practice. Seeing theory communicated with such certainty might serve to reinforce practitioner insecurities about their own theoretical knowledge, and so further distance the practitioner community from academia.

Pragmatism and practicality

Another important theme to emerge from the interview phase of our research was the extent to which notions of pragmatism were found to inform researcher behaviour. This manifested itself in a number of contexts. Most notably, many researchers admitted to incorporating theory into their work for pragmatic reasons: either because they felt a theoretical element was required to facilitate the publication of their work, or, more broadly, because they believed it was necessary in order to be taken seriously by their academic community. Pragmatism was said to inform the selection of theory, too, with some researchers feeling that they needed to avoid controversial or newer theories, and instead use well-established and widely accepted theoretical lenses. There were also cases of researchers affirming the high priority placed on formal outputs (e.g. journal articles) over informal channels (e.g. blogs), since the former constitute the unit by which academic performance is typically tracked and measured.

None of this should be particularly surprising. The caricature of the aloof, ivory tower-bound academic concerned only with the pursuit of knowledge, and unmoved by crude measures of productivity, no longer bears much relation to reality (if, indeed, it ever did). A great deal has now been written about the extent to

which academic behaviours and practices are driven by various incentive and evaluation schemes and processes. As we have seen, and will discuss further in Chapter 10, this reward system is a crucial part of the current OA debate. But here we make a more general point about how theory relates to this system: that theory can be considered a *tool* in this context. Using theory, or more specifically using the right kind of theory in the right kind of publication, can help an academic get published, gain the respect of their peers, establish and maintain a reputation, and ultimately meet the performance targets set by their institution. Rather than simply serving an intellectual purpose, theory can help academics maximise the potential of their work within the pervasive reward system. In this sense it serves as a signifier of a certain type of academic work – a type that researchers in many fields are incentivised to produce.

Applying Bourdieu

In considering the relationship between the use of theory and pragmatism, we are essentially considering the *practice* of research. It is therefore helpful here to return to Bourdieu's Practice Theory, which we introduced in Chapter 4, and consider how the findings of our study can be interpreted using this theoretical lens.

We can start by reaffirming some of the prior work we introduced in Chapter 1 and covered in more detail in Chapter 4. Academics' descriptions of their publication and dissemination behaviour support the argument made by Bourdieu, and developed by Cronin and Shaw (2002) and Desrochers et al. (2018), that reputation serves as social capital within the field of production that is the academy. Reputation is developed and maintained primarily through publication, and can be assessed both quantitatively (the number of publications, the number of citations etc.) and qualitatively (the insight the work communicates to readers). Formal academic output, primarily the journal article, therefore represents the most significant form of social capital for researchers. While external esteem – and by extension the effective communication of research beyond the academy – may be increasingly incentivised (Desrochers et al., 2018), our evidence suggests that the influence this is having on theory-minded researchers is limited.

How, then, does theory fit into this analysis? We can first return to the notion of pragmatism explored above, and note the belief that using the right theory in the right way can enhance chances of publication, and signals to peers that the work (and, crucially, its author) conforms to the traditions and cultural norms of academia. Theory, then, can be considered itself a form of social capital, its use by academics serving both to advance their standing within their own social space, and distinguish (or even elevate) that space from others. An understanding of this, whether conscious or not, is part of the *habitus* of the academic researcher, in a way that is simply not the case for practitioners. The practitioner space has its own, often very different forms of social capital; broadly speaking, they tend to relate to the conception and delivery of services or products. Theory, then, only offers value to the extent with which it supports the accumulation of these other

forms of capital. The results of our study suggest that in most cases, the degree to which theory is perceived to accomplish this is very low.

Furthermore, as we have seen the theory-practice gap is exacerbated by the manner in which conceptual theory is communicated, the language and style of the academic article not being conducive to knowledge transfer from the domain of academia to the domain of practice. Bourdieu recognised the crucial role played by language, arguing that,

> The use of language, the manner as much as the substance of discourse, depends on the social position of the speaker, which governs the access he can have to the language of the institution, that is, to the official, orthodox and legitimate speech.
>
> (Bourdieu, 1991, p. 109)

The presentation of theoretically informed work in ways that make it potentially inaccessible to a practitioner audience can be seen here in the context of the academic orthodoxy of scholarly communication. The tone, terminology, and style of scholarly discourse are inculcated into researchers throughout their training, and constantly reinforced through their ongoing engagement with the literature. Practitioners, in contrast, operate within different social spaces, with their own orthodoxies of language and style. The accessibility barrier which forms part of model is not then simply one of technical proficiency, but also cultural familiarity. For practitioners the stylistic conventions of scholarly discourse serve to highlight the otherness of the social space from which it originated, exacerbating either consciously or unconsciously a perception that this work is not *for* them.

Our analysis so far might apply to the theory-practice relationship in general terms, in many applied fields, and we suggest that future work in these other areas might seek to explore this. But there are also aspects of the OA context that set it apart from these other domains. Specifically, here we refer to the heterogeneity of both its practitioner and researcher spaces. From a practical perspective, OA has also required the engagement and interaction of a range of different actors from a range of different professional fields. In fact, these professional fields are much more richly constructed and maintained than the somewhat nebulous concept of an OA practitioner community. Librarianship and publishing, in particular, have long, complex, and sometimes oppositional histories, and the *habitus* of individuals within these fields can differ greatly. The extent to which theory can influence these different kinds of practice is dependent on the nature of the work being done, and the channels and style of communication that predominate within each field.

In the researcher space, we have seen that OA is a topic that has attracted attention from academics working in a wide range of disciplines, many of whom have brought their own theoretical lenses to bear on different aspects of OA. While our discussion so far has treated academia as its own field of production, there are also ways in which the subsidiary fields differ. At the most

basic level, the extent to which theory operates as social capital is likely to differ between disciplines, with some valuing it more than others. There is also the nature of theory itself, which differs in both form and function across different fields. This influences the extent to which theories can be applied in multidisciplinary ways, or remain the preserve of specific communities of scholars. The results of our literature analysis suggest that as well as a theory-practice gap, there may also be manifestations of a theory-research gap. In other words, that certain types of theoretical work into OA are not being communicated to or valued by researchers in other disciplines. Many of the arguments used above in relation to practitioners and theory – relating to the language and customary modes of scholarly discourse, and the ways in which theory informs *habitus* – might therefore also be applied to researchers, and their relationship with theories that originate beyond their own field.

Bourdieu's theory has explanatory power in relation to our data in several respects. Not only does it provide an explanation of the theory-practice gap, by explaining in particular the role of theory amongst researchers in contrast to practitioners, it also provides explanation of differences between professional groups (publishers and librarians, for example). In addition, it explains differences between researcher disciplinary communities, which helps to explain the separation we have seen between the different literatures on OA – that located in the general LIS area and that in other disciplinary literatures.

Bridging the theory-practice gap

As we have seen, the findings of our study support the notion that a theory-practice gap exists in the context of OA. So what can be done to bridge this gap? Our interviewees offered a number of potential solutions, which we presented in detail in Chapter 8 and are summarised in Table 9.3.

The most important thing to note about these proposed solutions is that they are not new ideas. In many ways the suggestions made by our participants echo the ideas we have found in the wider theory-practice literature. Most of the solutions focus on ways of initiating closer engagement and collaboration between practitioners and researchers, improving the accessibility of published research, and fostering a "research and theory" culture within the practice space. These are the key concepts that have underpinned proposed solutions to the theory-practice gap for many years.

Given the enduring nature of the theory-practice gap, it seems inadequate to simply restate solutions that have long been advocated, apparently without much effect. We suggest that there are two important reasons that might explain why these much-discussed ideas have ultimately failed to impact a theory-practice gap.

First, as we have seen in our discussion so far in this chapter, the theory-practice gap must be understood in the context of the social spaces inhabited

Table 9.3 Proposed solutions to the theory-practice gap in OA

Actions required of OA researchers	Engage with practitioners Disseminate in forms other than the journal article Make research outputs more accessible Link theory to the real world Apply the right theory to the right questions
Actions required of OA practitioners	Do more to seek out theoretical work Work to develop skills needed to understand theory
Actions required of the OA community	Engage in dialogue Attend each other's conferences Co-production of research Foster links between LIS departments and practice Disseminate in forms other than the journal article Identify and support "boundary spanners"

by the various actors. The forms of social capital valued in these spaces are quite different, and conventions and orthodoxies deeply embedded. Solutions to a theory-practice gap that advocate significant changes to researcher and practitioner behaviour are attempting to challenge long-standing and systematically incentivised attitudes and behaviours within the different communities. This is no small task, and indeed may be an impossible one without significant support from policymakers at different levels, including institutional and national levels. The impact agenda, which is gaining increasing traction in research evaluation processes in the UK and beyond, offers some hope of challenging traditional drivers of academic behaviour. Our interviews, however, found little evidence that this was significantly affecting the behaviour of theory-minded researchers. There remain questions about the degree to which we can realistically expect to see major shifts in behaviour within what is a global system.

Second, we suggest that many proposed solutions to the theory-practice gap are themselves theoretical rather than practical. The goal of closer collaboration between researchers and practitioners, for example, is admirable, but how exactly might this be facilitated? As well as the issue of incentives, noted above, such collaboration requires infrastructure and resources. There must be spaces in which connections can be made, and support for those involved in co-producing research. There is perhaps some cause for optimism here, however. Projects such as LISRA in Australia (http://lisresearch.org.au/project/) represent attempts to provide practical solutions to some of these issues. LISRA has investigated the

research-practice relationship in LIS, and crucially attempted to take steps to foster the relationship between practitioners and researchers through the funding of collaborative research projects, development of an online space for dialogue between the two communities, and the hosting of events to disseminate research to practitioners. Examples of successful collaborations between researchers and practitioners could lead to an understanding of best-practice for such work, and encourage future cooperation. However, the challenge faced by projects, such as LISRA, which attempt to address a theory-practice gap, is the extent to which a fixed-term project can lead to continued and widespread change.

In light of this we suggest that it is the last of the solutions presented in Table 9.3 that has greatest potential to sustainably bridge the theory-practice gap: identifying and supporting boundary spanners. In the OA context, boundary spanners are individuals who straddle both academic and practitioner communities, and have the potential to fulfil both advocacy and translational functions. Individual boundary spanners might be practitioners with particularly close ties to academia, or interest in theory, or academics with close relationships to practice. In many cases, they will be individuals who have held (or currently hold) positions in both practice and research environments. The crucial point to make about boundary spanners as a solution to the theory-practice gap is that it does not require widespread changes in behaviour from large numbers of people. Theorists and practitioners can continue to work as they traditionally have – using and generating theory on one side, and engaging in action on the other. A single boundary spanner has the potential to translate theory to a large part of a practitioner community (or to communicate practical concerns to theorists), as long as there is a receptivity to this amongst practitioners and theorists – which our research suggests there is.

The concept of the boundary spanner originated in the context of organisation development, and there is a very large body of literature that explores the concept in both theoretical and practical terms. From this literature we can identify some key characteristics and attributes of successful boundary spanners. They should be strong communicators, and have the interpersonal skills required to build relationships with members of the very different communities they engage with (Engel, 1994; Webb, 2007; Williams, 2011). These skills are particularly important because the work of boundary spanners is often done in informal or social contexts (Ryan & O'Malley, 2016; Trist, 1983). In order to effectively transfer ideas and priorities across groups the boundary spanner also needs leadership qualities (Luke, 1998), and may also need to apply innovative or even entrepreneurial techniques (deLeon, 1996; Ryan & O'Malley, 2016).

There are reasons to believe that the OA context offers considerable potential for effective boundary spanning. Most OA practitioners are extremely familiar with the academic environment, and are more likely than in many other domains to have personal relationships with academics. There are also high numbers of practitioner researchers, particularly in countries, such as the

US, where librarians often have faculty status. In addition, we note that high proportions of LIS faculty have prior practical experience. The point here is that the social spaces of practitioners and researchers are not entirely alien, which should serve to make the boundary spanner task somewhat easier. How then can boundary spanners be identified and supported, as our participants suggest?

The first point to note is that boundary spanning is rarely a formal position. Indeed, in the OA context boundary spanners may face pressure from their employing organisations to limit their cross-boundary work, since it might not easily be seen to fit within an official job description. Increasing the number of individuals engaged in boundary spanning activities, and establishing and maintaining the space they are afforded to undertake this activity, is therefore in part a responsibility of the organisations by whom these individuals are employed. There is also the question of who, exactly, we expect to identify boundary spanners? Certainly there is the potential for both practitioners and academics to look around them, and note colleagues who are engaging more closely with both practice and theory. But this, it seems to us, would require a widespread understanding that both the role exists, and that it offers potential value. It is not immediately clear how this understanding can be effectively communicated and fostered. It seems more likely, therefore, that boundary spanners will often need to identify themselves, and engage with the issue explicitly and in their own context. There are, perhaps, readers of this book who recognise themselves in our characterisation of boundary spanners. We encourage such readers to embrace this role, and think explicitly about how they can apply their understanding of both the theory and practice spaces to the business of knowledge transfer. We also encourage managers within organisations in which boundary spanners are based, and colleagues with whom they work, to recognise the importance of the boundary spanner role and help it develop in their particular context.

Conclusion

The model we have presented in this chapter was designed to encapsulate many of the key findings of research relating to the theory-practice gap. We have seen how various members of the OA Community (researchers and practitioners) carry out research in order to address particular problems in the OA domain. Their research may involve theory which we have seen is selected for both intellectual and pragmatic reasons. We have described some of these reasons, but we are conscious that this is still a little-explored area. Theory generation associated with OA, our findings indicate, is often context-specific and pragmatic, frequently addressing particular practice-based issues.

There are major barriers in the use of theory-informed work. These we have summarised as, encountering, understanding, and applying, although they affect different groups in different ways and vary depending on how outputs of

research are presented. Use of theory is not necessarily self-conscious – there is evidence of unconscious use of theory by practitioners. We also seen opinions expressed by participants of the value of theory to practice, although the opposite view is also frequently expressed, and the language of opposition, even conflict, in this space is notable.

Our recommendations for addressing the theory-practice gap in OA correspond to many recommendations made elsewhere, and correlate in many respects with recommendations made elsewhere for addressing the more general research-practice gap. Our analysis, including our model (Figure 9.1 and 9.2) are likely then to apply elsewhere. We have, however, identified some areas of particular interest from our study which do not seem to have been highlighted before. First, we have seen uncertainty around applying theory, even amongst researchers. Second, we have seen a pragmatism around theory use, often not acknowledged. We believe both of these merit further study.

We have applied Bourdieu's Practice Theory to our work as an explanatory lens. The identification of theory as social capital is, we believe, illuminating in this area. Crucially, it helps to explain gaps, not merely between theory and practice (or theorists and practitioners), but also between different practitioner groups (such as librarians and publishers), and different disciplinary groups of researchers. Differing ideas of social capital between these groups create and reinforce boundaries between them.

In practical terms, this is where the role of boundary spanners is relevant. Whilst we have put forward a number of recommendations for addressing the theory-practice gap, and many of these have the potential to be useful, our findings suggest the role of boundary spanner may often be particularly significant. This is an issue to which we will return in the conclusion, and is also important for our consideration of OA in the next chapter.

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Chapter 10

Open access

Debates and priorities

> Without sensibility no object would be given to us, and without understanding none would be thought. Thoughts without content are empty, intuitions without concepts are blind.
>
> (Immanuel Kant (1781). *Kritik der Reinen Vernunft*)

In this chapter, we consider what our analysis of the theory-practice relationship in the domain of open access tells us about OA as a phenomenon and its potential futures. Here we are building again on our work reported in earlier chapters, and we will further reflect on some of the implications of our research, this time on what they tell us about open access. We begin by summarising what we have found about how theory is applied (and generated) in studies of OA, drawing in particular on our findings in Parts 3 and 4 of this book. We will go on to consider what this shows about the types of theory that are involved, reflecting on the overview we provided in Part 2, and which we touched on briefly in the previous chapter. We will then reflect on what this means for our understanding of OA and its future, keeping our focus on the points where theory and practice intersect. This last section will involve us drawing from all the previous parts of the book.

The application of theory

To develop a summative understanding of the way theory has been used in relation to OA, it may be useful to return to the model of the OA environment we developed in Part 1. In the model, we presented the main components of OA based on our analysis of the literature and current practice. The model was designed to delineate the key actors involved in or impacted by OA, and indicate different ways in which they relate to major dimensions of OA.

The model can help us situate the various theoretical approaches we have seen in the OA environment (Figure 10.1). It is notable that many of the theoretically informed analyses of OA we have discussed tend to focus on relationships between specific components in the different layers of the model – how

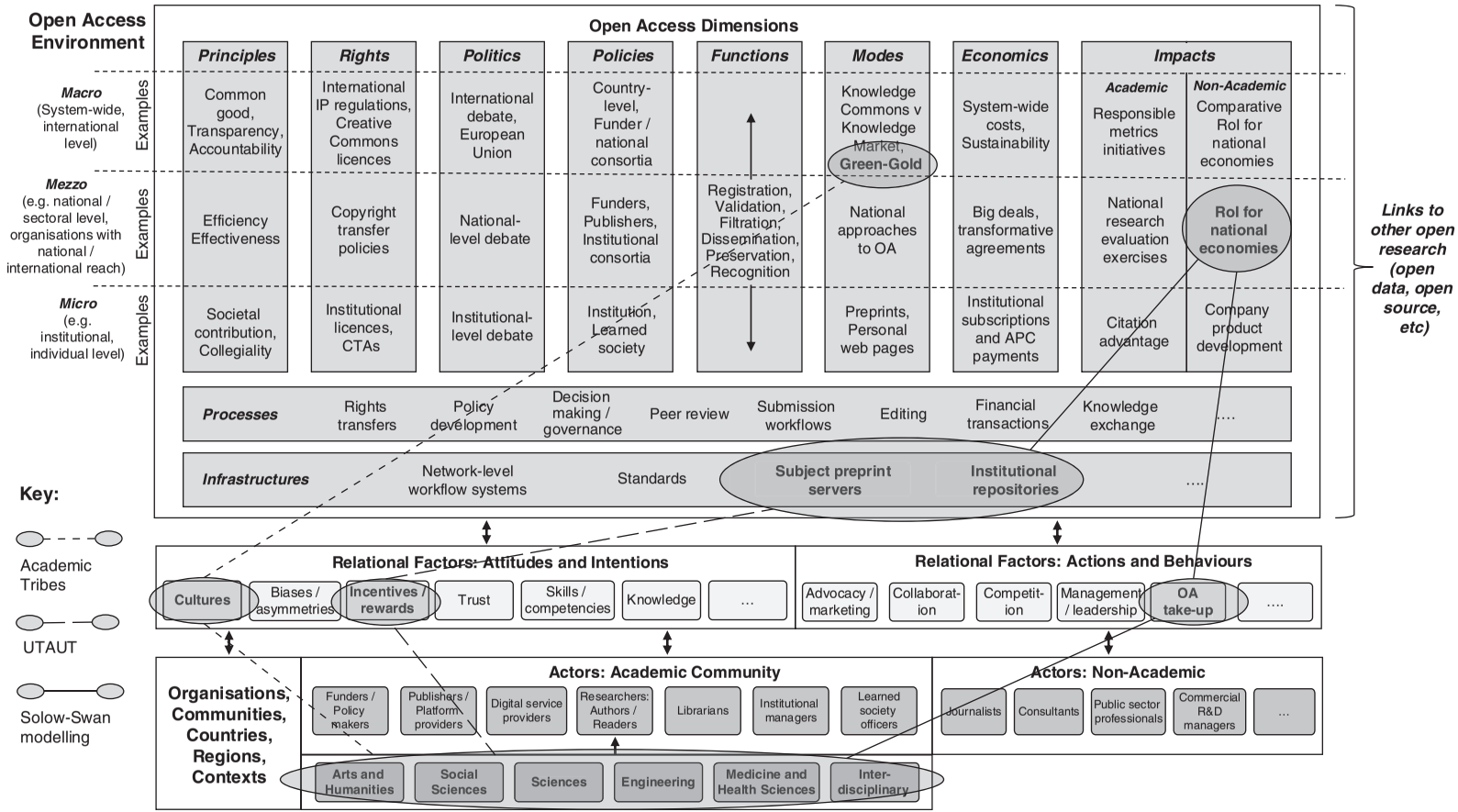

Figure 10.1 The OA environment overlaid with theories

specific *actors*, or groups of actors, *relate to* specific OA *dimensions.* Three initial examples demonstrate this point (and are illustrated in Figure 10.1). First, analyses based on Academic Tribes theory often look at researchers from various disciplines (*actors*), and how different disciplinary cultures (*relational factor*) relate to modes of OA, such as Green OA or Gold OA practices (*dimensions*), or other OA dimensions. The centre of gravity of this kind of analysis is in showing how the disciplinary cultures and practises as defined in the theory relate to adoption of modes of OA – using the theory as an explanatory framework of differing adoption patterns of OA by discipline. Another example, UTAUT-based studies, often focus on factors important in incentivising adoption (*relational factors*) by individual researchers (*actors*) of one or a number OA practices, systems, or services (*dimensions*), such as IRs or preprint servers. The centre of gravity of the approach is in the identifying of factors most important in leading to the intention to adopt and actual adoption behaviour. A third example: studies using Solow–Swan modelling focus primarily on economic impacts of OA at a mezzo level, normally at the level of a national economy (*dimensions*), but in order to do so, take account of the costs associated with key OA infrastructures and processes (other *dimensions*) carried out by different *actors* (particularly researchers) depending on levels of take-up of OA (*relational factor*). Here the outcome is a set of quantified benefits in terms of return on investment which can then be used, for example, as a basis for shaping policy.

Of course, there is not always a neat one-to-one mapping of theories onto the model. There is considerable complexity here. Studies based on Critical Theory, for example, tend to place emphasis on biases and asymmetries of power (*relational factor*) exercised by different *actors* in relation to each other. They may examine specific OA *dimensions*, or groups of them, but more typically deal with large-scale system-wide issues, often making it difficult to map them onto particular dimensions in the model. Another example, Actor Network Theory, adds non-human "actors" to the analysis, regarding them as having agency alongside human *actors*. In analyses of the OA environment, such non-human actors would include instantiations of technologies, such as repositories, which we have located in our model in the *dimensions* layer. To regard non-human entities as actors, with the agency that comes with that status, is a controversial aspect of ANT, based on particular ontological perspectives bound up in the theory. There are, of course, other theoretical positions which do not draw a hard line between human and non-human actors, such as Floridi's philosophy of information (Floridi, 2014).

This reminds us that it is important not to artificially flatten these and the other theories we have examined. It is essential to appreciate their richness and complexity. These different theories work in different ways and are each trying to do different things. The theories have different foci, work at different levels of abstraction, and achieve different purposes. Typically, they are based on varying implicit or explicit ontologies and epistemologies, and deploy different

methodologies. UTAUT, for example, is most commonly used in an essentially realist paradigm to inform the design and interpret the results of deductive quantitative studies which identify factors that are most important in determining uptake of a specific technology. UTAUT studies typically focus at the level of individuals' adoption decisions. On the other hand, Critical Theory is very different. Critical Theory (or the group of approaches which are clustered under that label) tends to be used in a more interpretivist way (certainly since Critical Theory's postmodern turn in the 1960s). Studies using Critical Theory often take a broad system-wide perspective in order to observe correspondences between the phenomena under scrutiny with existing socio-political theory, as a mode for explanation.

Theories are spread over a wide area of our model, each with their own approach and characteristics, but it is noticeable that there is a cluster of theories which focus on the attitudes, motivations, intentions, and behaviours of actors. This relates to what we identified in Chapter 6 as "theory of attitudes, relationships, and processes". These theories are mostly concerned with researchers as the core group of actors, and attempt to analyse their views on and take-up of different aspects of OA. Many of these attempt to do so at the level of the individual. Some take general theories of decision making and behaviour and apply them to particular OA contexts. The Theory of Planned Behaviour and Theory of Reasoned Action are examples. Others make use of theories focused on adoption of innovations or technologies, and apply the theory to given OA-related innovations and technologies, like institutional repositories or preprint servers. Examples here include UTAUT and other particular Technology Acceptance theories. Still other theories shift the level of analysis from individuals to communities. Here Innovation Diffusion Theory (IDT) is the most prominent. IDT works with various types of "units of adoption", which are communities of one sort or another. Application of these theories to OA has undoubtedly led to greater understanding of factors which influence attitudes and behaviours. The preponderance of the use of these kinds of theories is understandable at a time when OA is still widely debated and by no means fully embedded in individuals' or communities' practices, and where there are still a range of different routes and systems about which users have to make choices. Theory is being used here to try to understand what the choices are, what affects how they are made, and what kinds of activities result.

Kinds of theory

We have observed that many studies of OA are found in the library and information science (LIS) literature. Others, of course, are not, but there is certainly a cluster of research in this area, as might be expected by the fact that, as we have previously observed, LIS is the discipline which studies the whole of the communication chain of recorded information, including scholarly communication. As far

as theory is concerned, our analysis of the literature on theory in social sciences and humanities (SSH) and LIS in Chapter 3 led us to make some provisional observations on the kinds of theory that we might expect to see in LIS (although many of the observations apply in cognate SSH fields as well). We touched on this briefly in Chapter 9 in relation to our theory-practice model presented there, but it would be useful now for us to use this set of seven main characteristics we identified in Chapter 3 to reflect on the kinds of theory we have seen in relation to OA (both within and outside the LIS literature), and what this tells us about OA.

Our first observation about the theory we were likely to find was that it "may not be called 'theory', and its creators and users may not regard it as such". We have seen in our analysis of uses of theory in the OA domain that whilst formal use of existing theory in peer-reviewed studies was normally accompanied by the clear identification of that theory by name (for example, "Innovation Diffusion Theory" or "Theory of Planned Behaviour"), there were many examples of theory both in the OA literature and in practice which were not labelled as such. Where theory was generated by OA studies (as opposed to pre-existing theory being used), other terms are used to describe it, such as "framework" or "model". We noticed that many practice-based studies, including "theory-like" elements, used words such as "toolkit" or "guidelines". Such studies were taking an approach which it is likely their authors would not regard as dealing with theory. We saw in our interviews practitioners making use of theory but not necessarily calling it that, preferring terms like "guidelines". We also saw evidence of theory being used unconsciously by practitioners, and there was evidence of this being more common than might be assumed.

Of the theory being used or generated, our initial outline suggested, "it will be mid-range theory, in Merton's usage". "Mid-range" theory definitely featured most prominently in our data. There was no "unified theory" (Merton) or "Grand capital-T Theory" (Robertson). The complexity of OA perhaps makes a Grand Theory of open access impossible (Grand Theory is, in any case, less common in many SSH research areas). The use of theory in the OA domain illustrates the complexity and multi-dimensionality of OA. OA lends itself to the application of a variety of theories, which can deal with a variety of issues, from intellectual property rights to economic models. One of our interviewees emphasised the value of mid-range theory in a number of areas being applied to OA, as they believed this was most likely to be useful in informing action. There was plenty of evidence of "low range" theory, of course: what Merton sees as, "minor but necessary working hypotheses that evolve in abundance during day-to-day research". This is to be expected in any area of research investigation.

In terms of the details of theory type, we anticipated that,

> in terms of the most usual typologies, the theory we might expect to see is likely to be Reynolds' 2 or 3 (conceptual understanding and conceptual process models), and Gregor's 1 or 2 (description and explanation) or possibly 5 (action research).

We excluded Reynolds' type 4, "vague concepts, untested hypotheses, prescriptions for good behaviour", since there is some doubt about whether this really constitutes theory at all, although we have now seen a great deal of it relating to OA. Many other OA studies did, however, fit within the next two levels, as we expected (level 3, "Descriptions of causal processes", and level 2, "An inter-related set of definitions, axioms and propositions"), and it was those which our interviewees were most likely to see as theory, although even then there was not universal agreement on this. Of Gregor's types, "Theory for analysing" was most common, followed by "theory for design and action". There was evidence of "Theory for explaining" and "Theory for predicting", but, as we have said, no grand theories, "for explaining and predicting".

Based on our analysis of theory generation within studies on OA we constructed a new four-part typology: theory for evaluation and development; theory of attitudes, relationships, and processes; theory of systems; and theory as method. This typology better reflects the emphases within the OA literature which generates theory, capturing in particular the various focuses on attitudes and relationships, for example, which we have already observed. As we mentioned in the previous chapter, it is based on a relatively small sample, and so could usefully be tested in other ways. In particular, it would be interesting to take this typology and apply it in other related areas, particularly those pertaining to other open science fields, such as data. We believe there may be some correspondences in those other areas.

We have, however, seen that much of the theory used in the OA area has a qualitative character, confirming our expectation summarised in Chapter 3 that, "theory used might be expected to be qualitative, even if constructed on the basis of quantitative data". Although we have seen some use of theory expressed quantitatively, derived from particular disciplines, e.g. economics, it is far more common to see qualitative theory using models and frameworks constructed to explain contexts or relationships. There is an interesting connection with the emphasis on telling the stories to influence policy rather than presenting quantitative data (Ramage, 2017). This relates to our next anticipated characteristic of theory: "it will comprise either conceptual frameworks for understanding or process models". This is definitely the case with literature on OA. The prevalence of process models is noticeable from simple high-level research cycle diagrams, on the one hand, to the detail of Björk's business process mapping (Björk, 2007), on the other hand. This use of models extends into the area of "guidelines" and "toolkits", most closely related to practitioner concerns, that we have already observed. Since scholarly communication is basically a process, this is not surprising.

This kind of approach leads to our next proposal about the theory we would find: that,

> the theory will most likely be built by successive expansion of simple conceptual schemes. It is rare to see use of metatheory, but other approaches to theorising can be seen in LIS, particularly the creation of models *de*

novo using a Grounded Theory-like approach, and the bringing-in of pre-packaged theories from other disciplines.

The last part of this, the importing of theory from other disciplinary areas, is actually the most prominent in our findings. LIS in general has a long record of importing theory in this way (Hall, 2003). Interestingly, this was something accepted by practitioners we interviewed, who were very happy to draw on theory in an eclectic way if it helped to explain their work, or helped them to justify it to others. This perhaps helps us to explain why it is apparently common in the domain of studies on OA: researchers engaged in such studies, even if writing within the LIS discipline, may often be trying to reach a wider cross-disciplinary audience, and so are happy to draw on theory from outside LIS. Other models, we have seen, have been created based on analysis of scholarly communication, often around mapping processes. Building of models based on successive conceptual iterations can be seen in a number of OA studies, such as ideas of the de/reconstructed journal.

Our final anticipated characteristic of theory in this area – it "is likely to be aimed primarily at increasing understanding" – is linked to this idea of its potential purpose. Many would regard this as the key function of theory and it is clear that most theory-informed studies of OA appear to have this as their fundamental aim. It is interesting, therefore, that so much of the scepticism about the value of theory evident in our interview data seems to show that many people involved in making OA work saw some theoretical treatments of OA as obscuring rather than enlightening. When it comes to "understanding", the question of "whose understanding?" becomes critical. This question is partly addressed by our discussion in the previous chapter, with the use of theory being part of the researcher's habitus and a form of social capital in the research community itself. Whilst understanding may be key for most theory-informed studies, some do, nevertheless, make attempts to point out implications for practice, but this is often done in a rather cursory way which does not really engage with practitioner concerns. Related to this, theory for prescription (that points to particular actions) is far less common.

Gaps, theory development, and OA futures

Having considered ways in which theory is used in the OA space, it is worthwhile to go on to consider the extent to which our study has indicated any gaps or areas of potential development in OA theory and its relationship with practice. Here we wish to focus on areas where it seems that theory development could have a direct bearing on practice. In some cases, theory can suggest approaches to action, in others practice-based problems might be addressed, at least in part, through theory development.

We can use the model of the OA environment (Figure 10.1) as a guide here, focusing in the first place on the dimensions. We will spend some time

discussing the *Principles* dimension in the model, since it is there that we see a particularly strong connection with theory. We will then go on to cover the other dimensions (*Rights*, *Politics*, *Policies* etc.), followed by selectively discussing relational factors and actors, where our study has given rise to issues on OA in theory and practice.

Dimensions: Principles

The *Principles* dimension is an area of particular interest since there was a call from some advocates of OA amongst our interviewees to return to core principles. This apparently came from a feeling that leaders of OA implementations had lost sight of those principles, and that the core principles of OA were being compromised in the ways it was being delivered. There was not always specificity or agreement amongst our participants about what those core principles were, but they normally included issues mentioned in the model, such as transparency, efficiency, and equity. However, many of the concerns seemed to relate especially to costs. Advocates, it seems, felt that OA was becoming too costly (particularly hybrid journals were mentioned) and that this was inhibiting participation in OA, and was also cutting across principles, such as efficiency and equity. There remained disagreement, however, not only about precisely what the principles were, but also about whether such principles espoused by OA advocates constituted theory or ideology (or even "articles of faith").

What is clear is that principles supporting OA are often used rhetorically without much explanation of their bases. Willinsky (2006), Peters and Roberts (2012), and more recent work by Moore (2017) and Neylon (e.g. Neylon, 2017) are amongst the exceptions in the literature of those that attempt to explore theoretical foundations of OA. However, some of the arguments they deploy based on theory are not often used by practitioners (for example, openness as a virtue), and other principles (like OA as a moral imperative) are usually used by practitioners in only vague ways. It is clear from our research that many of its advocates and implementers prioritise "doing stuff" rather than building theoretical justifications for their actions.

An obvious response to this is that further work needs to be done to create more of a robust and widely understood theoretical base for the principles of OA. However, it is clear that might not work for at least some practitioners. It might in fact be in their interests to keep the theoretical underpinning of aspects of OA fuzzy. To begin with there was a consciousness amongst some participants that decision makers, such those in the policy arena, were not interested in theory, but would be more likely to respond positively to rhetorical or "common sense" arguments. The argument, for example, that "publicly funded research should be publicly available" as a rhetorical slogan may be more effective in persuading policymakers or politicians if assumed to be self-evidently true, rather than as a result of unpacking its theoretical basis. One reason for this is that such a slogan could be linked to quite different

theoretical underpinnings. It could resonate with the "getting value from the taxpayers' $" argument which stems from what Peters and Roberts (2012) identify as the "open market society" strand of open thought. Alternatively, it could correspond to "open access as common good" argument derived from a strand of open thinking relating to Commons Theory, which challenges a market approach. The ambiguity here may be useful to OA advocates as it enables them to garner support from different actors (such as policymakers, politicians etc.) with quite different values. Many OA advocates might avoid exploring the theoretical foundations of their views (whether consciously or otherwise) in order not to divide their audience of politicians, policymakers, sponsors, and entrepreneurs.

For this reason, advocates may often favour citing OA principles based on instrumental reasoning (improving efficiency, reducing friction etc.), rather than those relating to say ethical or moral positions. In this scenario, OA is justified through a kind of technocratic argument, citing benefits such as productivity and return on investment, often favoured in many Western neoliberal systems (Sandel, 2018).

Whether or not some practitioners may not wish to surface the fundamental theoretical bases of the principles of OA, numerous questions around the principles of OA remain. One very important issue is the question of how some of the principles relate to one of the other dimensions in the model, the *Modes* of OA delivery. In particular, the relationship between what we have characterised as the knowledge commons and knowledge market systems is unclear. One aspect of this is the question of how a knowledge commons can be sustained in an otherwise market economy. We have already cited Wellen's (2013) observation that even neoliberal governments may wish to maintain a commons arrangement in the scholarly communication domain, but it is unclear how this can be made to work, and even whether what results is indeed a commons. Key questions remain. What are the boundaries of each system (the commons and the market) if they are coexisting, and how do they intersect? Can such a knowledge commons accommodate commercial players taking profits from the system, for example? This seems to be an ongoing dilemma in the OA space, which is little explored in theoretical terms.

There is also the specific question of the role of the state in relation to the market and the commons. In many countries, the most important funders of research are government-sponsored agencies, with varying degrees of proximity to government itself. In Commons Theory, the commons is distinguished from both the market and the state. The commons exists where there is not private enclosure of resources *or* state-controlled organisation, and is characterised by the "self-governance" of actors directly associated with the common-pool resources in question (Ostrom, 1990). A recognition of this leads to questions about the relationship between the development of a knowledge commons and the state. Research funders are in many countries primarily representatives of the state, although the extent to which funders are directly linked to government and the

extent to which they are at "arm's length" varies. We have seen that funders are taking an increasingly interventionist approach in scholarly communication – this was certainly a prominent feature of our interviews. This then raises the question of whether funder intervention of this sort constitutes state intervention, and to what extent, therefore, it is able to create a genuine commons. This question becomes increasingly relevant as funders start to provide publication venues and other services in the scholarly communication space as well as policy direction. Are these systems around which actors may organise their work and achieve dissemination of their content a commons involving community self-governance or state intervention? This has major implications for the governance and management of OA.

Apart from these questions, a number of other issues associated with the *Principles* dimension have emerged from our research which merit further theoretical and practical development. One of these is the question of the principles that underpin a higher education institution's contribution to OA. Work has been done on this recently characterising the university as an "open knowledge institution" (Montgomery et al., 2018), including OA in the wider frame of other "opens", and aligning that with the mission and values of the university. There is an argument that openness in general is compatible with the fundamentals of academic endeavour (Fitzpatrick, 2019; Neylon, 2017), but also is a suitable vehicle for achieving beneficial civic and societal impact central to many universities. The nature of this alignment is a topic of current work at the interface of theory and practice, and is likely to be more important over the next decade.

Other dimensions

Moving on to consideration of other dimensions of OA in the model now we have considered *Principles* and *Modes*, we begin with some observations on *Rights*, a foundational issue in the OA environment. A number of questions relating to rights remain highly controversial in the scholarly communication space – even the fundamental question of who actually owns research outputs and what freedom they should have to transfer rights to third parties. Ownership, retention, and transfer of rights are key issues in discussions on relationships between researchers themselves, their funders, institutions, and publishers. The extent to which each of these actors can exercise influence on how rights are apportioned are crucial questions, within an environment where the legal position itself is unclear and where custom and practice has often meant that the position remains ill-defined. The legal position in many countries is that the employer (mostly, the academic institution) owns copyright, but custom and practice is that researchers themselves have the right to dispose of copyright as they think fit. Suggestions that researchers and their institutions should take a shared approach to rights are themselves controversial, although this does seem to be the direction that many are now taking, with funders also

taking a more interventionist approach to rights management, developing ways to discourage or prevent authors from transferring all rights to publishers and other third parties. The extent to which Creative Commons licences work in the interests of the different actors is also a current issue, with recent debates associated with funder policies (which mandate use of CC licences) focusing on issues such as protection moral rights (for example, misrepresentation of an author's views being enabled through reuse of items) and commercialisation (for example, the extent to which commercial organisations can make use of research results without providing any rewards to the researcher). All of this has become associated with broader questions of academic freedom, and the extent to which conceptualisations of academic freedom should include decision-making power about the venue of publication. These questions are complicated by the international nature of scholarly communication, which crosses legislative jurisdictions. The lack of clarity on this whole area would benefit from ongoing thorough theoretical investigation as well as discussion and debate about practice-based issues.

Rights are an important aspect of the *Politics* and *Policies* of OA, the next dimensions. As we have seen, there have been policies encouraging or mandating OA adopted by governments, funders, and other organisations since the middle of the first decade of the 21st century. Many of our interviews focused on issues associated with policy, including policy development and compliance. However, there still seems to be inadequate and under-theorised understanding of OA policy development and how this relates to the incentives of different actors. Policy development is often a very pragmatic process and involves a great deal of trial and error (one of the potential downsides of an approach to practice insufficiently informed by theory highlighted by Lewin, 1944). However, there now appears to be what might be characterised as an "incentives impasse" in relation to OA (there is an obvious connection with the relational factor of *Incentives and Rewards* here). The reputation economy continues to push researchers into impact-factor chasing, and any incentives to develop open practices are in most cases simply not strong enough. It is not always clear what policy levers can best be pulled (and in what combination) to create incentives (including rewards for compliance and sanctions for non-compliance) directed at achieving OA. As we have seen, individual researchers are motivated most strongly by individualised considerations of reputation, and not systemic considerations of the benefits of openness.

A key challenge of the reputation economy is that it is global, meaning that policy development in one institution, or even country, is not enough to change the system as a whole – a collective action problem on a system-wide scale (Neylon et al., 2019). Constraining their behaviour locally may even expose researchers in a specific country or institution to the risk of weakening their competitive position in the global scientific community. Coordination of policy at higher levels, across national boundaries, is an obvious way of addressing this, but achieving such coordination is fraught with complexity.

The nearest to such international coordination that has been achieved to date is policy around SciELO in South America and, more recently, Plan S in Europe. However, with so few instances of meaningful international coordination of policymaking in this area, there is little understanding of what their consequences are likely to be. For example, there is very little clarity on what the international characteristics of the impacts of Plan S are likely to be and how these could be measured. Theoretically informed modelling of possible impacts could contribute significantly to practice. Theoretical insights could be brought to bear on this from other domains where international coordination of policy is more established. Understanding how OA policy can be developed, calibrated, and monitored potentially has wider significance in areas such open science more broadly, but also policy development beyond that.

It is important to note that the "incentives impasse" does not just relate to researchers, but also to publishers. Less work has been done on this than on researchers. The fundamental problem is that current levels of income per article for publishers under a subscription system are far higher than in any posited OA model, say funded by APCs. Johnson, Fosci, Chiarelli, Pinfield, and Jubb (2017) estimate that system-wide per-article income for subscription journals is between 4,000 and 5,000 Euros, whereas APCs average at between 1,500 (fully OA) and 2,500 (hybrid) Euros. This amounts to a major incentives impasse for existing players in the publishing market to transition to OA. Transformational read-and-publish deals may go some way to addressing this challenge pragmatically, but there is obviously need for more work, for example in areas such as market disruption and how this relates to existing and new players. Theories of disruption and disruptive innovation have considerable potential here, as demonstrated by a number of existing studies, as we have seen (e.g. Lewis, 2004).

Moving on in the model to the *Functions* of scholarly communication, we have already noted the prevalence of the taxonomy of functions derived from the work of Roosendaal and Geurts (1997), which is commonly used in OA discourse, even if often unacknowledged. This theory has been extremely influential in shaping discussion on scholarly communication. In particular, it has been used as a basis for discussing the re-assemblage or reconstruction of the functions in different configurations. Although there has been interesting theoretical development in this area (Priem & Hemminger, 2012; Roosendaal, Geurts, & van der Vet, 2001; A. P. Smith, 2000; J. W. T., Smith, 1999), there is need for further work interacting with practice-based discussion, experimentation, and evaluation. This was something mentioned by some of our participants. There are a number of elements to this at the interface of theory and practice, including questions of systemic interoperability and business process design – how can different systems developed as part of the de/reconstructed journal be best joined up in terms of technical interoperability and interacting processes? There are also key challenges of sustainability – what are the best sustainability or business models for reconstructed journals?

This question leads us to the *Economics* dimension in the model. There was concern amongst some OA advocates we interviewed that the academic community had not understood the full implications of the hybrid journals model, and that this was partly due to a lack of work on modelling its impact (at least, in advance). With the gradual introduction of transformative read-and-publish agreements, there is an obvious need for modelling of these latest agreements, as previously mentioned, particularly in terms of their impacts on purchasing institutions and consortia as well as publishers. This does raise the issue of data availability as well as theoretical expertise. Empirical data associated with costs and prices can be very difficult to come by in this area of OA, often because of commercial confidentiality. It is essential that theory development in this area is accompanied by complementary work to identify empirical data sources that can be used to inform theory generation and test theory validity.

The availability of data alongside theory development is also important in the next dimension OA – *Impacts*. Assumed positive impacts of OA are implicit in many discussions on OA, and evidence of such impacts is clearly fundamental to the case for universal OA adoption. *Academic impact* is traditionally measured using metrics, particularly of citations, and so a great deal of work has taken place to see whether OA creates a citation advantage for individual or groups of outputs and their authors (which most studies find it does). An approach which gauges the significance of a piece of research based on impact at article level (looking at the citations of the article itself), rather than journal level (using the impact factor of a journal as a proxy to assess the importance of an article) is, of course, a more credible way forward. This is particularly the case if additional measures for impact are used alongside citation, such as those developed as part of the altmetrics movement (where social media mentions are measured) (Wilsdon, Bar-Ilan, Frodeman, Peters, & Wouters, 2017). However, there remains a potentially large amount of theoretical and practical work to do to develop other indicators of impact, including development of approaches in which levels of openness can be assessed. Early work has already begun in this area but a great deal remains to be a done and even more needs to be done to ensure that the work is taken up in practice, as well as to ensure that established measures of impact are used in more responsible ways (Wilsdon et al., 2015).

There is also a major set of gaps in our understanding of the impacts of OA beyond the academy (*Non-academic impact*). This is still an underdeveloped area, both in terms of theoretical and empirical work. Developing an evidence base is methodologically challenging in a number of ways, particularly in relation to fundamental questions of what constitutes impact and how to measure it (ElSabry, 2017). In practice, such challenges often include identifying proxies of impact (for example, accessing research by non-academic actors), and disaggregating the impact of OA research compared with non-OA. This is complex, since it is so context specific – the use made of research will differ markedly

between say a scientist in a pharmaceutical company and a policymaker in a government department. It remains an area in which further work is urgently needed, encompassing theory as well as practice.

The final two dimensions which in many respects underpin the others are *Infrastructures* and *Processes*. At the theory-practice interface, there is the fundamental question of how *infrastructure* should be sustained and who should be responsible for sustaining it, bearing in mind that infrastructure is used by multiple actors and crosses borders. The awareness of infrastructure and its development ("infrastructuring") being a socio-technical challenge, involving the agendas of different actors has been a recent theoretical perspective brought to bear on OA involving new methods, including, for example, ethnographies of infrastructure (Larkin, 2013). Infrastructures operate at multiple levels, only some of which are technical. Other layers are economic, political, social, cultural, ideological, and so on. Bringing these rich theoretical insights to bear on practice-based development is still in its infancy, although there have been some interesting early contributions to this (Kenner, 2014). Applying this kind of theoretically informed analysis to the AmeliCA (Open Knowledge for Latin America and the Global South) infrastructure initiative has potential.

Processes (including rights transfer, policy development, governance, etc.), is an obvious area for practice-based development, but has already been a focus for some theory development. One area within this dimension that requires further theoretical and practical work is that of peer review. Peer review is fundamental to the scholarly communication process but is still insufficiently understood, largely because of confidentiality associated with it. In many respects, openness has exposed many of the challenges associated with peer review which have always been there but are made more obvious in an open environment. There is a need for more understanding of how peer review works in its various modes (open and closed) and how in particular it is affected by biases, including gender, ethnicity, affiliation, region, and language, amongst others.

Relational factors

This links to several of the relational factors identified in the model. We move on to discuss some of these where developments at the interface between theory and practice are needed. On the issue of *Cultures* to begin with, it is clear that some work has been done on adoption patterns of open practices by different disciplines. This was mentioned in our interviews and also features in the literature. There is, however, still only a partial understanding of disciplinary differences in relation to OA. Understanding in this area has benefitted from theory-informed analysis of the environment, identifying as it does key patterns of take-up explained by disciplinary characteristics. There is an ongoing need to update such analyses as patterns of adoption change. It has been observed, for example, that the "new wave" of preprint servers that have been set up since 2013 were often associated with disciplines previously

believed to favour Gold OA, such as biosciences (Chiarelli, Johnson, Pinfield, & Richens, 2019). Identifying patterns and developing explanations of adoption of different modes of OA by discipline is potentially significant for practice, in areas such as marketing and advocacy by funders or institutions.

The next relational factor of *Biases and Asymmetries* was also apparent in our study. OA advocates have traditionally argued that OA helps to address biases and asymmetries in scholarly communication in particular and in the research environment in general. This view was evident in early statements of support for OA, such as the BOAI (2002), and was also apparent in our data. However, there is a growing recognition in the OA discourse that openness/closedness is just one of a number of biases/asymmetries in scholarly communication. Others (gender, ethnicity, language, region, and so on) have an impact on scholarly communication, in a wide range of areas, such as peer review, editorship, editorial board membership, etc. However, they also impact at numerous other points in the academy, including appointments, promotions, funding allocations etc. These biases intersect in complex ways and are often mutually reinforcing. Furthermore, there is evidence that some aspects of OA implementation may in fact be reproducing and reinforcing pre-existing biases and asymmetries, rather than correcting them. For example, Gold APC-based OA may have the effect of excluding contributions to the scholarly literature by researchers from the Global South. This observation has led to extensive discussions on the degree to which APC-funded Gold OA is sustainable in the Global South – with various pragmatic responses discussed, such as APC waivers or discounts for authors from low-income countries.

However, critiques of OA in relation to the Global South are not limited to particular modes or business models of OA – some have taken a system-wide approach. Accounts of OA informed by Critical Theory have been developed which see OA as reinforcing neocolonial epistemologies which position scientific knowledge as developed in the Global North as superior to others, including indigenous epistemologies. In this narrative, OA is a kind of epistemic hegemonic move that reinforces neocolonial dominance, rather than a development which reduces asymmetries.

There is a challenging tension here, with the theory-practice relationship at its centre. Many early advocates of OA were unembarrassed in expressing support for OA on ethical or social justice grounds. OA, it was argued, would correct asymmetries in the academic community within and between countries and global regions, and also beyond the academy. Concluding their comparison of OA with conventional subscription publishing, Scherlen and Robinson (2008) state, "open access publishing is more consistent with social justice". Many researchers and other practitioners continue to take this perspective. They argue for the universal value of the scientific literature as it stands and the scientific and scholarly enterprise that it supports. However, in the last ten years, OA has been subjected to the deconstructionist critiques we have just mentioned, particularly in relation to the Global South, and this has led to a dilemma for OA advocates. Arguably, it has created some hesitancy, even embarrassment, amongst

OA advocates to make the ethical/social justice case as confidently as previously. It has also led to a growing discourse on what decolonisation of OA should look like. Some advocates reference initiatives such as SciELO in this debate, claiming it has performed better in addressing biases than other services in the Global North. It has always accepted various forms of publications representing different epistemological perspectives, including reports based on indigenous knowledge, alongside more conventional scientific papers.

There is clearly a need for more work to be done, building on experiences in practice and recent studies such as those brought together by Chan, Ratanawaraha, Neylon, Vessuri, and Thorsteinsdottir (2019). Here the interaction between theory and practice is crucial in achieving a credible way forward. However, tensions remain. More positivistic views of science (and corresponding scepticism of the idea of situated epistemologies) lead some OA advocates to continue to advocate the universal value of the scientific literature in its current form, and to continue to see the aim of achieving its wider availability in the Global South as well as the Global North as unproblematic. This view sits uneasily with the Critical view and continues prompt disagreement (implicit or explicit) amongst OA advocates, disagreement which points to the need for ongoing developments at the theory-practice interface. The relationship between theory development and practice-based implementation is crucial here.

The relational factor of *Trust* has also been fundamental to many discussions on OA in recent, albeit often in an implicit way. The scholarly communication system in particular, like scholarship in general, is based on trust (Nicholas et al., 2014). One of the reasons that conventional journal publishing is valued by researchers is for the markers that it provides for trust. Established peer-reviewed journals are trusted, whereas other venues of dissemination may not be since they do not have clear and well-understood markers of trust associated with them. Mapping out how new OA venues can establish trust is a challenging theoretical and practical challenge (Grand, Wilkinson, Bultitude, & Winfield, 2012; Haider & Åström, 2017). To date, new journals have, for example, endeavoured to do this by imitating successful established journals. This could be seen in the early journals published by PLOS or BioMed Central, which were set up in ways highly reminiscent of conventional journals, except in terms of their business models. How trust can be established in more radical OA initiatives, such as preprints or deconstructed journal systems, is a major challenge. There is, however, an extensive literature on the theory of trust in communities and organisations that could be brought to bear on this question (Kramer & Tyler, 1995; Sztompka, 1999). This theory has been used in LIS and related areas (Hashim & Tan, 2015; Wilson, 2010), but only in limited way to study of OA.

Actors

Actors have been fundamental to the discussion above but a key additional point needs to be made, relating in particular to the social systems within which actors

work. Actors in our model are identified in professional groups but it is also made clear these different groups interact with each other in different social situations: *Organisations*, *Communities* (which may cut across organisations), *Countries*, *Regions*, and *Contexts*. Understanding of the importance of these social systems was often implicit in our interviews, and that is often the case in the literature as well. It is notable that much of the theory development and empirical analysis of OA in the literature (at least the English-language literature) has tended to focus on similar contexts, specifically organisations based in countries in the Global North, and assumed that context to be normative. However, even these contexts may be more variable, across countries, for example, than is sometimes acknowledged. As we have already seen, contexts in the Global South may be very different from each other and certainly from the Global North. More work is clearly needed which is sufficiently contextualised and adequately situated as part of its analysis. The situatedness of scholarly communication and its associated socio-technical systems has emerged in recent work as being particularly important, but still little theorised and insufficiently understood.

Conclusion

Our research has highlighted several areas where our understanding of OA and of activity in the OA space can be enhanced by theory. We have seen how different theories relate in different ways the actors involved OA to the main dimensions of OA via various relational factors (attitudes and behaviours). With OA still a fast-moving, widely debated set of developments which is addressing key aspects of the academic "reputation economy", it makes sense that there appears to be a focus of the uses of theory in the area of attitudes and behaviours. Many of the uses of theory associated with OA occur in the LIS literature, although a wide range of literatures have some engagement with OA. Even when located in the LIS discourse, however, theories are imported extensively from other areas.

There are a wide range of areas of OA where further evidence gathering and theory development could enhance understanding and underpin practice. We see particular opportunity for theory development closely linked to practice in areas such as principles underpinning OA, but there are many opportunities elsewhere. Most of the dimensions of OA we have identified give rise to significant theoretical questions which if addressed could have a direct bearing on practice. There is also a growing consciousness of the need to examine the biases and asymmetries in scholarly communication and how these might be being perpetuated, rather than reduced, by OA, and how this might be addressed. There is increasing awareness that we need to understand scholarly communication in general and OA in particular in a more situated way, taking into account context (geographical, cultural, and epistemological) more seriously.

We are, however, aware that in some cases pragmatic explanations of and instrumental arguments for OA may be favoured by practitioners. Sometimes, theory can be seen as off-putting and may divide intended audiences, particularly

when it comes to fundamental values or world views. In that case, theory may often be downplayed, even if practitioners believe it could be useful in shaping action, meaning the theory-practice gap is perpetuated. However, often such a dilemma may not apply, and so overcoming perceptions that it is not relevant for practice is an important step in putting theory to use for wider benefit.

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Conclusion

Chapter 11

Conclusion

Open access in theory and practice

> "We could have no science at all if we hampered ourselves with the limitations which actual life involves" … What does this lucid explanation amount to but this, that in theory there is no difference between theory and practice, while in practice there is?
>
> (Benjamin Brewster (1882). *Yale Literary Magazine*, *47*(5), 202)

> Popularised as, "In theory there is no difference between theory and practice, but in practice there is."

We began this book by quoting the famous maxim popularised by Kurt Lewin, "There is nothing as practical as a good theory". As we observed at the outset, this was an appeal to theorists and practitioners to work together more closely, rather than a statement of a widely recognised reality. The appeal is still relevant in many fields relating to the social sciences and humanities, including the one on which we have focused, that of open-access publishing and dissemination of research outputs.

The saying used by Lewin was apparently countering the common assumption that "there is nothing so *im*practical as a … theory". He was also implicitly relating the "goodness" of a theory to how "practical" it was. By "practical" he seems to have meant that which has an impact on or use for practice – it can be "applied", as he put it. As Lewin remarked, both theorists and practitioners need to engage in addressing the theory-practice gap. What this implies is that, on the one hand, theorists need to accept that theory may or even should be "practical", and then use and, where feasible, communicate their work in ways that reaches practitioners and can inform their practice. On the other hand, practitioners need to engage with theory and be able and willing to deploy it where possible in "practical" situations. In this final chapter, we will review what our research has shown about this in the OA domain.

At the outset of our study, we set ourselves the aim of analysing "the ways and the extent that theory and practice have interacted (and have been perceived to interact) in the development of open-access approaches to

publishing and dissemination of research outputs", and then exploring "what this reveals about the nature of open-access itself and its future, and the relationship between theory and practice". Here we will briefly reflect on some of the issues which our research has highlighted in relation to these questions.

We suggested in the introduction several reasons why we believed OA was an interesting case study of the theory-practice relationship; we also want to take the opportunity to discuss these points again now in the light of our findings. They were (in summary) first, that OA has had a wide range of theories applied to it; second, that OA is, nevertheless, an intensely practical challenge; third, that OA at its core involves theorists and practitioners working together to produce outputs; fourth, that OA involves a range of practitioner groups; fifth, that many practitioners in the area of OA might be expected to be open to theory; sixth, that OA has itself been proposed as part of the solution to bridging the theory-practice gap. We will incorporate comments on these points into our discussion below.

Sizing the gap(s)

Our study on OA has shown that much of the literature and the views of many of our interviewees agree that there *is* a theory-practice gap and it could usefully be bridged. We have also seen, however, that the gap is not as simple as some theory-practice discussions might assume. In particular, we have qualified in a number of important ways the idea that researchers, on the one hand, are always confident handlers of theory, and that practitioners, on the other, eschew theory. As far as researchers are concerned, our study has shown that researchers who use theory are often not as certain about the nature of theory and its purpose as might be assumed. Its use is often messier than usually assumed or presented. As far as practitioners are concerned, we have seen that some theory on OA has been developed or used by practitioners. In other words, it is not just researchers who use or develop theory; rather, some prominent authors in the OA domain who use theory are in fact practitioners. Furthermore, we have seen some theory deployed by practitioners unconsciously, where the concepts and language of particular theories seem to have entered into the discourse of practitioners without them being conscious that is what is happening. This has the effect of narrowing the gap between theory and practice. We also see work by practitioners which does not use theory but has a "theory-like" character, in that it involves analysis of a problem and systematisation of thinking about it in order to inform action. The resulting "toolkits" and "checklists" that often emerge from such studies are typically very similar to the theoretical frameworks and models produced by researchers. We have also seen that there is a strong argument that all practice is in fact founded on theoretical bases of various kinds, regardless of whether this is recognised by

practitioners themselves. These factors mean that the theory-practice gap is not as straightforward or as stark as often thought.

There is another point on understanding the gap which needs emphasising. Whilst it is perfectly correct to refer to "the theory-practice gap" in conceptual terms, it is essential to understand the concept in a nuanced way. The reality is one of multiple gaps between different theories and types of theory, and multiple practitioner communities. Our research has shown this complexity clearly – with a wide range of theories and types of theory being applied to OA, and a variety of different related groups of practitioners working in the OA space. This complexity makes the idea of bridging the theory-practice gap daunting, but our research has also helped to indicate areas where useful action might take place.

Nevertheless, the fundamental point remains important: that action is required by both researchers working with theory and by practitioners to address the gap between theory and practice in order to yield benefits to the domain in which they work, in this case, OA. As we suggested, in order for Lewin's maxim to be realised, theorists (or researchers working with theory), on the one hand, need to accept that theory may or even should be "practical", and then use and communicate their theory-informed work in ways that reaches practitioners and can inform their practice. On the other hand, practitioners need to engage with theory and be able and willing to deploy it in "practical" situations. We will look at each side of this (that of researchers and that of practitioners) in what follows.

Researchers

Dealing with researchers first, do researchers working with theory in the domain of OA accept that it may be "practical"?

This question relates to why theory is used in the first place. Our study has shown different uses of theory, including theory for analysis, explaining, and understanding. Much of this use of theory implies something "practical", since it might be expected, for example, greater understanding of a phenomenon enables informed action with regard to it. We have seen a wide range of theories being used in the domain of OA, mostly with the aim of enabling analysis and enhancing understanding. We observed at the outset that this was an interesting ostensible feature of OA studies – the wide range of theories used in the domain – our study has identified an even wider range than we expected, largely because of the use of discipline-specific theory (e.g. Game Theory) published in the literature of those disciplines. This emphasises the multidimensionality of OA, a multidimensionality we have tried to delineate as part of our analysis.

However, we have also seen an interesting issue around how theory is chosen and its "fit" – its "fit", that is, to the phenomena being analysed and the kind of analysis being undertaken. "Fit" is an elusive idea that emerged from our data. It seems to include disciplinary background (with a tendency to choose theories familiar to the disciplinary community in which a particular

study is being presented, even if the theories do not originate there), personal experience (having used the theory before), world view (theories vary in terms of the fundamental ontological and epistemological assumptions behind them), and convenience (the ease with a theory can be understood, used, and communicated). There is also an emotional element to "fit", in which it is emotionally satisfying. In the case of discipline-specific theory, it is clear researchers use theoretical tools that are near to hand and familiar – familiar to them and their anticipated readers (from their community). This is often the case both within and beyond LIS, with some researchers making repeated use of particular theories. The vagueness of the idea of "fit" corresponds to the uncertainty we have seen about what theory to use and how to use it, even amongst researchers – uncertainty rarely formally acknowledged. We have also seen numerous pragmatic or contingent reasons for using theory in research on OA, including the expectations of the disciplinary community being addressed, and particularly the (anticipated) expectations of peer reviewers. Some participants reported that there was an expectation that they should use theory in peer-reviewed studies in order to get published. Motivations and methods for selecting theory are still under-researched, we would suggest.

One key aspect of this is theory as a boundary marker which contributes to community identity, in this case, an academic disciplinary identity. The use of theory is in this way a mark of belonging and status (social capital, to use Bourdieu's term) within that community. The consequence an actor's use of theory as social capital in a particular research community is that it will be less of a priority for them to ensure understanding beyond that community. The by-product of this can then often be the exclusion of those who are outside the boundary of the community in question. Theory can both "bind and blind" – drawing those within a particular academic community together whilst at the same time excluding those outside. Some theory use classified as being related to understanding, therefore, does raise the question of "whose understanding?", as we have mentioned (in Chapter 10). It is paradoxical that sometimes the subjects of analysis of theory-informed research on OA, who develop the policies and run the systems under scrutiny, do not have their own understanding enhanced by theory used and developed about them and their work. Interestingly, it is likely that the rhetoric of scepticism about the value of theory may have a similar function – in giving a sense of inclusion, this time in practitioner communities. The view that practitioners "get things done" and therefore don't need theory, can also act as an important marker of belonging in practitioner communities.

Some practitioners we spoke to were keen that researchers should be encouraged to translate theory-informed work to make it more accessible to them, and to help make the implications for practice of their findings clearer. Teasing out the practice-related implications of theoretically informed research often requires considerable effort and expertise. The translation of research findings into actionable insights happens best as part of a dialogue between researchers and practitioners,

rather than as broadcast by researchers. Engaging in such dialogue requires time and skills. It also does not happen without strategy and resources. Whilst there is evidence of these in particular projects, they remain rare, and translation work of this kind is often ad hoc and based on best efforts. Whilst we have identified some practical ways in which this case be done (in Chapter 9 and summarised below), we recognise that resources to undertake such work are in reality often sparse. The incentives for researchers to engage seriously in such work are currently weak. As we have seen, the priorities and values of the different communities (researcher and practitioner) are often insufficiently aligned in order for such translation work to be undertaken as the norm. Although the impact agenda currently being pursued in a number of countries, which encourage researchers to engage more in ensuring their research has beneficiaries beyond the academy, may go some way to addressing this incentives issue, it remains a significant problem. There are other possible approaches to mitigating such problems which we have discussed (in Chapter 9), such as co-production of research. Our study suggests at least some practitioners want more of a say in setting the research agenda in OA.

Practitioners

This leads us to consider practitioners. As we have seen, in order to realise Lewin's ideal, there needs to be a willingness to engage with theory and readiness to deploy it in practice.

We have found that some practitioners value theory highly, reporting the positive experience of theory casting light on a practice-based problem, for example. Less commonly, we have seen practitioners actively seeking out theory to inform their practice – but this does seem to be unusual. Nevertheless, amongst a good number, there is clearly a willingness to engage with theory in the domain of OA, at least in principle. At the same time, our work has also uncovered considerable scepticism and cynicism about theory in relation to practice. The view that theory is by its very nature impractical (abstract and abstruse) is common. Whilst not a surprise, it is still important to acknowledge this. Even amongst our participants who valued theory, there was often a tendency to talk about theory and practice as oppositional.

Even where theory is accepted as being useful in principle, other problems of engagement remain. These we saw primarily in the three areas of encountering, understanding, and applying theory, as explained in Chapter 9. Encountering theory is the first problem, and it does involve barriers to access. Greater adoption of OA was seen as a positive step in improving the likelihood of encountering theory. However, access itself was less of a priority for the particular practitioner communities we studied in addressing the theory-practice gap, perhaps because many of them work in areas where they often can access literature behind subscription barriers (including informal workarounds, as well as straightforward access). Although improving access itself was seen as

important in principle, it was not enough. Time was perhaps the major problem, with many practitioners in all sectors feeling enormous pressure on their time, with little space to reflect. There was a clear need for communication to them to be succinct, clear, and crucially using channels they used, particularly social media, and specifically Twitter. The growth of social media in general and Twitter in particular as a vehicle for professional (as well as academic) communication is shown clearly in our data.

The second barrier experienced by practitioners, understanding, is the other side of the coin of the use of theory for understanding, that we have already discussed in relation to researchers. The question of "whose understanding?", we have seen, may not always be answered by the response, "practitioners". It is a moot point about how this could be addressed. One of our practitioner participants spoke of the need for practitioners to "train" themselves in engaging with theory, but for the most part our data shows, as we have seen, that the assumption was that the responsibility should rest primarily with researchers – that they should frame at least some of their communications in ways that could engage researchers without any such training.

At the centre of the third barrier, the applying barrier, is relevance or perceived relevance of theory. Theory, if it is to be applied in practice, must speak into the specific circumstances of the practitioner. Achieving that translation from the general (that theory will normally represent) to the particular (the specificities of a given practice-based situation) is challenging. The situation is especially complex in the OA domain because of the variety of practitioners involved (an area we noted at the outset was interesting). Our study has included policymakers and funders, publishers, OA service providers, librarians, consultants, and OA advocates as our primary practitioner groups. Between them, these groups form a complex set of interacting roles, perspectives, and interests, both within and between groups. Our analysis has shown such differences to be important in creating boundaries, with additional crucial differences associated with varying contexts: organisations, communities, countries, and regions. We observed that the situatedness of the knowledge being produced, shared, and used, and communities using it, has often not been sufficiently taken into account in studies to date on OA.

Bridging the gap

Our work has helped us to identify other ways in which the theory-practice gap can be addressed. These include the need to engage in meaningful dialogue, ensuring, for example, that conferences and other venues for communication (such as blogs and other online channels) are inhabited by both researchers and practitioners. Regular interaction between practitioners and practitioner educators may also be particularly important. We have placed some emphasis on the role of the boundary spanner in our analysis, reflecting the prevalence of this in our data. The potential of such a role helping to bridge the theory-practice gap, we believe, is

considerable. Boundary spanners can, for example, facilitate dialogue, drawing theorists and practitioners together, and undertake translation work highlighting the links between theoretical insight and practice-based application. However, it is striking that boundary spanner roles are often undertaken by people informally, who are not officially resourced to do it. They typically carry out the role because it interests them and because they believe it to be important, but often as a sideline to their day job.

As with much of our analysis, we believe the importance of boundary spanners and other approaches to bridging the theory-practice gap are likely to apply in other domains in SSH, beyond OA. Whilst our study has focused on the domain of OA in particular, as our work has progressed, it has become clear that our findings are likely to apply to other areas involving the same or similar research and practitioner communities, and indeed in other SSH areas. Consequently, the model we present in Chapter 9, derived from our findings, may have wider applicability. It could, for example, be applied in other open science domains, such as data. More generally in LIS, it may be applicable in an area such as information and digital literacies – another area where theory and practice have often been seen to interact. Beyond LIS, many of the insights our research has generated are likely to be applicable to other fields where there is a theory-practice/theorist-practitioner relationship in play. This might include some of the areas we referred to Chapter 4, such as nursing, education, and management.

Despite the barriers, and partly because of the ways that the theory-practice gap has already at times been bridged, our research has shown clearly where theory may be deployed to inform practice in the domain of OA. Examples have included Innovation Diffusion Theory informing the development of advocacy for an open access institutional repository, Commons Theory used to inform the creation of a new online publication platform, and Disruptive Innovation Theory to inform development of library strategy in relation to OA. We have also seen theory playing a role in enabling understanding of a more general kind, helping practitioners to understand a contextual issue in a new way. That understanding can go on to inform development of strategy and operations. In addition, we have seen pragmatic deployment of theory. For example, to justify a particular policy or service development, albeit often as a way of assisting advocacy in retrospect rather than informing action in prospect. This point, as well as the general academic context within which practitioners are based (the broad "academic community", as we have defined it) does seem to result in a general openness to the use of theory in practice-based areas. At the very least, the general openness to theory is likely to lead to a receptivity to the work of boundary spanners.

But despite such examples of theory being used in practice-based situations, a great deal more could still be done in enabling theory to relate closely to the practice of OA. In the introduction to this book, we observed that OA was an intensely practical problem (or set of problems), involving a global industry and its millions of consumers. Our interviewees have reinforced this view with

their accounts of large-scale practical challenges associated with OA, some local, some national, some system-wide. However, our analysis also points to a number of areas where significant development could usefully be made in theory which could have a direct bearing on practice.

Specifically, we have identified examples from a range of different OA dimensions where further work at the interface of theory and practice could have a significant impact. Prominent among these is the need to achieve greater development of theory underpinning the principles associated with OA and how these relate to modes of OA being used, particularly in relation to the knowledge market as against the knowledge commons. We have also seen that work at the interface of theory and practice, relating to intellectual property rights is also required. Work on policy development, particularly in addressing the incentives impasse, could have a major impact on practice, as could further work on the functions of scholarly communication in relation to OA. The economics of OA and its impacts within and beyond the academy also need more work. The issue of the benefits of OA beyond the academy is particularly pressing but presents considerable methodological challenges. Further work on infrastructures and processes is also needed. What we have called relational factors also need more work. A key area for development is greater understanding of disciplinary differences and how they relate to OA implementations. Biases and asymmetries need to be investigated and better understood in order to be addressed, including those such as gender, ethnicity, and language. Also included here are those issues associated with the relations of the Global North and Global South in terms of knowledge production and sharing. In addition, the issue of developing notions of trust and how they are signalled in the scholarly communication process are crucial. In relation to the actors involved in OA, we have identified the need already discussed above to see OA in a more situated way, with the richness of context requiring more theorisation and acknowledgement in practice. All of these areas are ones where theory development could have a direct bearing on practice, we believe, and may contribute to an agenda of further research and practice development.

There are no easy answers, of course – either to addressing the theory-practice gap in general, or in furthering OA development through theoretically informed action. However, our research shows that at least some of the potential of OA, and some of the most difficult challenges associated with its implementation, can be informed and enabled by a closer relationship between theory and practice. Some of what we have learned can also help inform wider questions of the theory-practice gap, we believe, particularly in cognate areas, involving the same actor groups. Crucially, we have seen that commitment from the actors concerned is also required, something Lewin observed. In the domain of open access, as in other areas, working to ensure that theory and practice are closely aligned in practice as well as in theory may help both to progress.

Afterword

> Theory is good; but it doesn't prevent things from existing.
> (Jean-Martin Charcot, quoted by Sigmund Freud in his obituary of Charcot (1893))

It may be worthwhile for us to reflect on our approach in carrying out our research and in writing this book. There are two areas of particular interest: first, our own engagement with open access, and second, our own use of theory. On the first, we are conscious that we have ourselves engaged with open access in producing this work in an open form, whilst at the same time as making OA the focus of the study. That has involved us in determining how best to make use of open practices in producing and communicating our work, whilst also analysing that kind of decision-making by others. On the second point, as part of the research presented in this book, we have ourselves deployed many of the theoretical approaches that have at the same time been the subject of our analysis. We have used theory in our analysis as well as analysed the use of theory. The combination of these two (communication in an OA form whilst focusing on the topic of OA *and* the use of theory in order to analyse the use of theory) is rather unusual, we believe. It is common for studies on OA to be made open; it is also common for studies of research practice to use theory in analysing the use of theory – but the combination of the two is unusual. It merits reflexivity in our approach.

We begin with some comments on our approach to openness.

Making our own research results openly available was always our plan. For a work on open access, anything else would have been odd, to say the least; although closed-access studies on open access remain common – testament perhaps to the pressures of the reputation/recognition economy. However, producing an OA monograph did not figure in our initial thinking; we originally expected to write a set of journal articles. But as our work proceeded, it became clear that a long-form output that built up a picture of the findings of our different research phases was a good way to communicate the different aspects of our research in a coherent way. Because our research was funded by

the Arts and Humanities Research Council, we were able to identify funding to pay a Book Processing Charge. We realise this option may often not be available to many SSH researchers – a problem with OA monograph publishing which we discuss briefly.

Whilst publishing our results in an OA form was fundamental to our plans, and we had the flexibility to achieve this in monograph form, we did conclude early that we could not make all of our data available in an open form. Whilst we were happy to share our analysis of the theory-informed OA literature, we were conscious that sharing the full transcripts of our interview data was more problematical. We wanted to invite a wide range of participants to take part in our interviews and wanted to encourage them to be candid in expressing their views. Granting them and their organisations anonymity was an important part of this, at least for many of the participants. Anonymising interview data is very difficult in an area where the people involved may have some professional profile, and even sharing redacted transcripts still runs the risk of identifiers being left in the data and/or allowing identification by triangulation. Our solution to this was to grant anonymity to participants, and to keep the transcripts confidential; but at the same time to present our analysis in detail, including extensive extracts from the interviews, in order to provide validation for our inferences. We realise this is a compromise. Like many decisions around openness, there was a combination of principle and pragmatism at play here.

Moving on to the use of theory in our own analysis, it would be useful to reflect on the shape our research approach took.

We opened the book with a narrative overview of key aspects of open access (its beginnings, important characteristics, and possible futures) and used this as a basis for some initial theorising, attempting to delineate the main components of the open-access environment. Our main aim in doing this was to add clarity to our narrative by more explicitly showing the component parts of OA. The model we presented in Chapter 2 corresponds to Gregor's type 1, "theory for analysing" involving "initial description". Within the typology we developed for OA literature as part of this study, it would be a "theory of systems", covering as it does the OA environment as a whole. We developed the model during our project as part of our deep engagement with OA, but it was not derived directly from our own data, and so therefore we included it early in the book as a systematisation of the OA environment before we presented our data analysis. We did, however, find it useful to augment the model in the light of our findings (presented in Chapter 10) as a way of locating theories in relation to different components of OA, and therefore understanding their place within the wider OA environment.

We went on in our study to engage with the concepts of theory and practice, aiming to identify key strands of thinking that could inform our work. We initially focused on "theory" (in Chapter 3). This proved to be a fruitful area of enquiry and our work here helped us to conduct the other stages of our research in more informed way. We also believe that our analysis of theory in LIS in the

wider context of theory in other disciplines is in its own right a significant contribution. One of its specific purposes in this part of the study was, however, to enable the development of a working definition of "theory" that we could use as a reference point in the empirical stages of our research. This proved to be an interesting challenge. We did develop a general definition (included at the beginning of Chapter 5), although this was iterated and clarified as the empirical stages proceeded and as we became more familiar with different approaches to theory development, particularly in the literature. This continued to be an area of discussion and debate within the team throughout the project.

Like many people in different fields investigating the theory-practice relationship, our understanding of "practice" was more implicit, at least in the early stages of the project. However, it became clear that "practice" also needed more conceptual consideration in our work and so we proceeded with this, including engaging with Practice Theory, and particularly Bourdieu's work (presented in Chapter 4). However, our real appreciation of the significance of Bourdieu's work for our study came only after we had gathered our empirical data and we realised its "fit" with our results – that it had significant explanatory power in relation to our empirical data (as discussed in Chapter 9). It not only helped to explain the theory-practice gap we saw in our data (or the theorist-practitioner gap), but also gaps between different practitioner communities and different disciplinary communities. This use of pre-existing theory was designed as an explanatory lens through which to look at our data and framework for describing its significance – "theory for explaining", Gregor's type 2.

The main empirical parts of our study were carried out after our initial work on OA and theory and theory-practice relationships, using that work as foundational to the research design. Our empirical research consisted of, first, the content analysis of theory-informed literature on OA (presented in Chapters 5 and 6), and, second, our analysis of our detailed semi-structured interviews (Chapters 7 and 8). Both datasets were collected systematically and analysed inductively in ways we have described. These two aspects of our project were carried out sequentially, with the first informing the design and conduct of the second.

From the inductive analyses we generated a model of the theory-practice relationship and also, as already mentioned, added another layer on to our pre-existing model of the OA environment. With regard to the model presented in Chapter 9 on the theory-practice relationship, this constitutes Gregor's type 2, "theory for explaining". In our own typology it is, "theory of attitudes, relationships, and processes". Our aim in producing this model was to systematise and crystallise our findings without losing their richness, something very similar to our intention in developing the model of the OA environment. The theoretical insights we gained from the construction of both models were, we believe, complemented by our engagement with Bourdieu, and the literature on theory, practice, and OA more generally.

Throughout, we have tried to connect our explanations to professional practice, that is, how our research relates to the practitioner groups at the centre of our study (policymakers and funders, publishers, librarians, and others). Our analysis of our data, in conversation with the literature on this topic, has allowed us to identify ways in which our research shows the theory-practice relationship might be improved, focusing on our chosen domain of OA, but with wider applicability, we believe. We have also set out what we see as a useful range of issues for further investigation in relation to the theory and practice of OA – issues where theory and practice intersect and can inform each other. In some cases, key issues relating to practice might be clarified and given impetus as a result of rigorous theory-informed investigation.

We began our study wanting (amongst other things) to test the view that openness itself might be part of the way in which the theory-practice gap could be bridged – by giving practitioners unrestricted access to theory-informed research. This was one of the things that made the combination of topics of open access and the theory-practice relationship interesting. Nevertheless, for our research participants, greater openness as a means of bridging the gap they saw between theory and practice was less of a priority than might have been expected. As we comment, however, the particular practitioner communities covered by our research are likely to be more adept than most at gaining access to published outputs, even if it involves "work-arounds". They are all scholarly communication insiders, after all. Despite this, it seems likely that the potential of OA to help bridge the theory-practice gap for other practitioner communities remains important, but this needs further investigation.

In any case, open access is not enough. Our research has made clear that there needs to be a translation process between theory and practice. All of the actions which we have identified, where further theory development could have a direct bearing on practice, still require translating into particular contexts. We have intentionally not attempted to provide detailed checklists of actions, since we believe that such detailed action plans are context-specific and need to be created by or with those within those contexts. Translation can take various forms, as we have suggested. However, in an attempt to stimulate thought and action in this area, as part of our funded project we organised a one-day workshop, held in London in June 2019, attended by 40 prominent LIS practitioners and researchers. In the same month, we also discussed our findings in a workshop as part of the international Conceptions of Library and Information Science (CoLIS) conference in Ljubljana, attended mostly by researchers with a particular interest in theory, many of whom were also LIS educators. We were encouraged at these meetings by the readiness of attendees to engage with issues of theory and practice, and we hope that some of these individuals might go on to carry out the type of translation work we have identified as being so crucial (or be encouraged to carry on doing so). We, of

course, recognise that such translation work is challenging. It requires skills and resources, as we have observed, and also a particular mindset – a willingness to engage in work across boundaries or support those who do. We believe that work often yields useful results, but it is not easy. Our study has illustrated that bridging the theory-practice gap requires sustained effort, but it is possible.

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