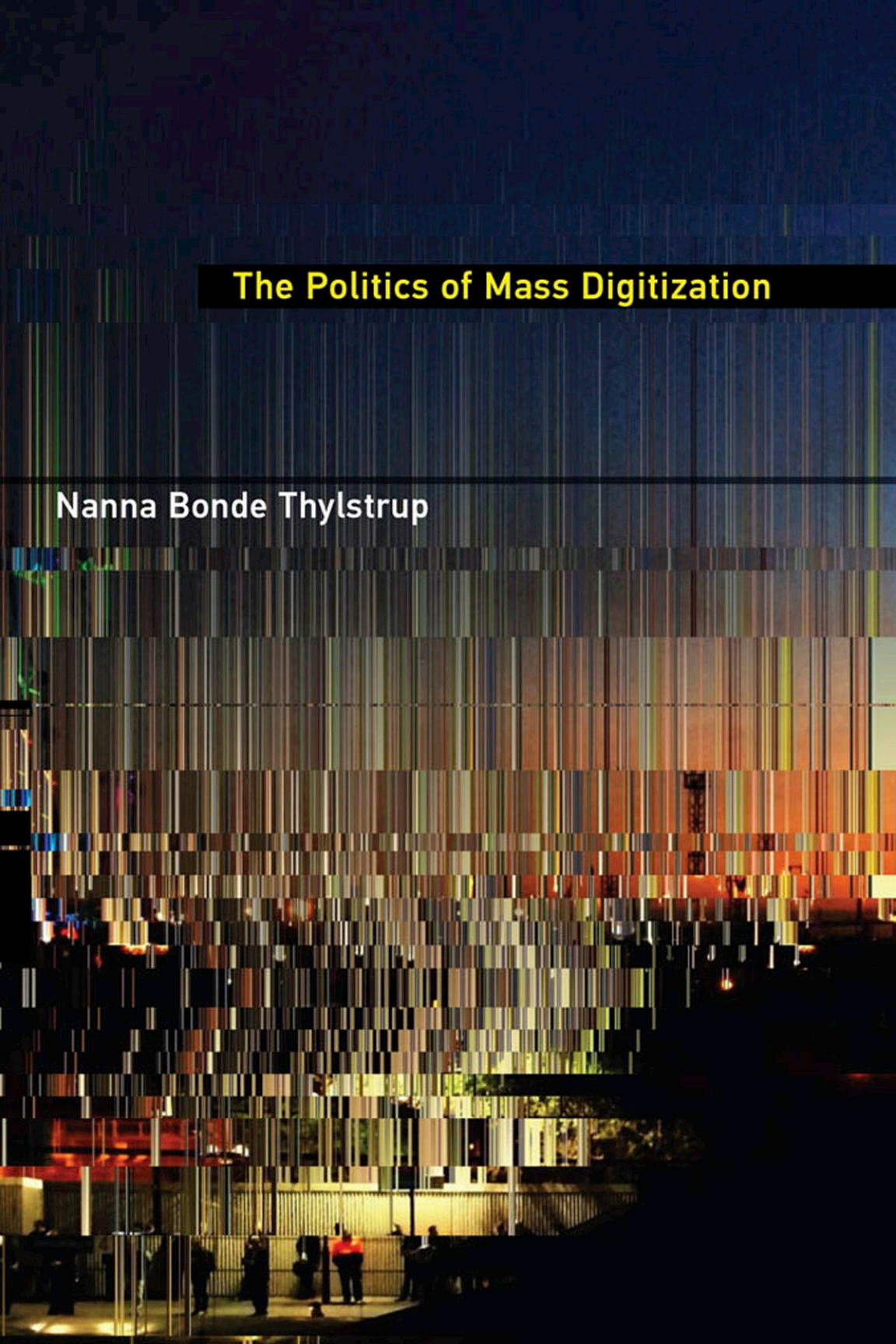
The Politics of Mass Digitization

Nanna Bonde Thylstrup



The Politics of Mass Digitization

The Politics of Mass Digitization

Nanna Bonde Thylstrup

The MIT Press
Cambridge, Massachusetts
London, England

This book was set in ITC Stone Sans Std and ITC Stone Serif Std by Toppan Best-set Premedia Limited. Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Names: Thylstrup, Nanna Bonde, author.
Title: The politics of mass digitization / Nanna Bonde Thylstrup.
Description: Cambridge, MA : The MIT Press, [2018] | Includes bibliographical references and index.
Identifiers: LCCN 2018010472 | ISBN 9780262039017 (hardcover : alk. paper)
Subjects: LCSH: Library materials--Digitization. | Archival materials--Digitization. | Copyright and digital preservation.
Classification: LCC Z701.3.D54 T49 2018 | DDC 025.8/4--dc23 LC record available at https://lccn.loc.gov/2018010472

10 9 8 7 6 5 4 3 2 1

Contents

Acknowledgments

I am very grateful to all those who have contributed to this book in various ways. I owe special thanks to Bjarki Valtysson, Frederik Tygstrup, and Peter Duelund, for their supervision and help thinking through this project, its questions, and its forms. I also wish to thank Andrew Prescott, Tobias Olsson, and Rune Gade for making my dissertation defense a memorable and thoroughly enjoyable day of constructive critique and lively discussions. Important parts of the research for this book further took place during three visiting stays at Cornell University, Duke University, and Columbia University. I am very grateful to N. Katherine Hayles, Andreas Huyssen, Timothy Brennan, Lydia Goehr, Rodney Benson, and Fredric Jameson, who generously welcomed me across the Atlantic and provided me with invaluable new perspectives, as well as theoretical insights and challenges. Beyond the aforementioned, three people in particular have been instrumental in terms of reading through drafts and in providing constructive challenges, intellectual critique, moral support, and fun times in equal proportions—thank you so much Kristin Veel, Henriette Steiner, and Daniela Agostinho. Marianne Ping-Huang has further offered invaluable support to this project and her theoretical and practical engagement with digital archives and academic infrastructures continues to be a source of inspiration. I am also immensely grateful to all the people working on or with mass digitization who generously volunteered their time to share with me their visions for, and perspectives on, mass digitization.

This book has further benefited greatly from dialogues taking place within the framework of two larger research projects, which I have been fortunate enough to be involved in: Uncertain Archives and The Past's Future. I am very grateful to all my colleagues in both these research projects:

Kristin Veel, Daniela Agostinho, Annie Ring, Katrine Dirkinck-Holmfeldt, Pepita Hesselberth, Kristoffer Ørum, Ekaterina Kalinina Anders Søgaard as well as Helle Porsdam, Jeppe Eimose, Stina Teilmann, John Naughton, Jeffrey Schnapp, Matthew Battles, and Fiona McMillan. I am further indebted to La Vaughn Belle, George Tyson, Temi Odumosu, Mathias Danbolt, Mette Kia, Lene Asp, Marie Blønd, Mace Ojala, Renee Ridgway, and many others for our conversations on the ethical issues of the mass digitization of colonial material. I have also benefitted from the support and insights offered by other colleagues at the Department of Arts and Cultural Studies, University of Copenhagen.

A big part of writing a book is also about keeping sane, and for this you need great colleagues that can pull you out of your own circuit and launch you into other realms of inquiry through collaboration, conversation, or just good times. Thank you Mikkel Flyverbom, Rasmus Helles, Stine Lomborg, Helene Ratner, Anders Koed Madsen, Ulrik Ekman, Solveig Gade, Anna Leander, Mareile Kaufmann, Holger Schulze, Jakob Kreutzfeld, Jens Hauser, Nan Gerdes, Kerry Greaves, Mikkel Thelle, Mads Rosendahl Thomsen, Knut Ove Eliassen, Jens-Erik Mai, Rikke Frank Jørgensen, Klaus Bruhn Jensen, Marisa Cohn, Rachel Douglas-Jones, Taina Bucher, and Baki Cakici. To this end you also need good friends—thank you Thomas Lindquist Winther-Schmidt, Mira Jargil, Christian Sønderby Jepsen, Agnete Sylvest, Louise Michaëlis, Jakob Westh, Gyrith Ravn, Søren Porse, Jesper Værn, Jacob Thorsen, Maia Kahlke, Josephine Michau, Lærke Vindahl, Chris Pedersen, Marianne Kiertzner, Rebecca Adler-Nissen, Stig Helveg, Ida Vammen, Alejandro Savio, Lasse Folke Henriksen, Siine Jannsen, Rens van Munster, Stephan Alsman, Sayuri Alsman, Henrik Moltke, Sean Treadway, and many others. I also have to thank Christer and all the people at Alimentari and CUB Coffee who kept my caffeine levels replenished when I tired of the ivory tower.

I am furthermore very grateful for the wonderful guidance and support from MIT Press, including Noah Springer, Marcy Ross, and Susan Clark—and of course for the many inspiring conversations with and feedback from Doug Sery. I also want to thank the anonymous peer reviewers whose insightful and constructive comments helped improve this book immensely. Research for this book was supported by grants from the Danish Research Council and the Velux Foundation.

Last, but not least, I wish to thank my loving partner Thomas Gammeltoft-Hansen for his invaluable and critical input, optimistic outlook, and perfect morning cappuccinos; my son Georg and daughter Liv for their general awesomeness; and my extended family—Susanne, Bodil, and Hans—for their support and encouragement.

I dedicate this book to my parents, Karen Lise Bonde Thylstrup and Asger Thylstrup, without whom neither this book nor I would have materialized.

I Framing Mass Digitization

1 Understanding Mass Digitization

Introduction

Mass digitization is first and foremost a professional concept. While it has become a disciplinary buzzword used to describe large-scale digitization projects of varying scope, it enjoys little circulation beyond the confines of information science and such projects themselves. Yet, as this book argues, it has also become a defining concept of our time. Indeed, it has even attained the status of a cultural and moral imperative and obligation.[1] Today, anyone with an Internet connection can access hundreds of millions of digitized cultural artifacts from the comfort of their desk—or many other locations—and cultural institutions and private bodies add thousands of new cultural works to the digital sphere every day. The practice of mass digitization is forming new nexuses of knowledge, and new ways of engaging with that knowledge. What at first glance appears to be a simple act of digitization (the transformation of singular books from boundary objects to open sets of data), reveals, on closer examination, a complex process teeming with diverse political, legal, and cultural investments and controversies.

This volume asks why mass digitization has become such a "matter of concern,"[2] and explores its implications for the politics of cultural memory. In practical terms, mass digitization is digitization on an industrial scale. But in cultural terms, mass digitization is much more than this. It is the promise of heightened access to—and better preservation of—the past, and of more original scholarship and better funding opportunities. It also promises entirely new ways of reading, viewing, and structuring archives, new forms of value and their extraction, and new infrastructures of control. This volume argues that the shape-shifting quality of mass digitization, and its

social dynamics, alters the politics of cultural memory institutions. Two movements simultaneously drive mass digitization programs: the relatively new phenomenon of big data gold rushes, and the historically more familiar archival accumulative imperative. Yet despite these prospects, mass digitization projects are also uphill battles. They are costly and speculative processes, with no guaranteed rate of return, and they are constantly faced by numerous limitations and contestations on legal, social, and cultural levels. Nevertheless, both public and private institutions adamantly emphasize the need to digitize on a massive scale, motivating initiatives around the globe—from China to Russia, Africa to Europe, South America to North America. Some of these initiatives are bottom-up projects driven by highly motivated individuals, while others are top-down and governed by complex bureaucratic apparatuses. Some are backed by private money, others publically funded. Some exist as actual archives, while others figure only as projections in policy papers. As the ideal of mass digitization filters into different global empirical situations, the concept of mass digitization attains nuanced political hues. While all projects formally seek to serve the public interest, they are in fact infused with much more diverse, and often conflicting, political and commercial motives and dynamics. The same mass digitization project can even be imbued with different and/or contradictory investments, and can change purpose and function over time, sometimes rapidly.

Mass digitization projects are, then, highly political. But they are not political in the sense that they transfer the politics of analog cultural memory institutions into the digital sphere 1:1, or even liberate cultural memory artifacts from the cultural politics of analog cultural memory institutions. Rather, mass digitization presents a new political cultural memory paradigm, one in which we see strands of technical and ideological continuities combine with new ideals and opportunities; a political cultural memory paradigm that is arguably even more complex—or at least appears more messy to us now—than that of analog institutions, whose politics we have had time to get used to. In order to grasp the political stakes of mass digitization, therefore, we need to approach mass digitization projects not as a continuation of the existing politics of cultural memory, or as purely technical endeavors, but rather as emerging sociopolitical and sociotechnical phenomena that introduce new forms of cultural memory politics.

Framing, Mapping, and Diagnosing Mass Digitization

Interrogating the phenomenon of mass digitization, this book asks the question of how mass digitization affects the politics of cultural memory institutions. As a matter of practice, something is clearly changing in the conversion of bounded—and scarce—historical material into ubiquitous ephemeral data. In addition to the technical aspects of digitization, mass digitization is also changing the political territory of cultural memory objects. Global commercial platforms are increasingly administering and operating their scanning activities in favor of the digital content they reap from the national "data tombs" of museums and libraries and the feedback loops these generate. This integration of commercial platforms into the otherwise primarily public institutional set-up of cultural memory has produced a reconfiguration of the political landscape of cultural memory from the traditional symbolic politics of scarcity, sovereignty, and cultural capital to the late-sovereign infrapolitics of standardization and subversion.

The empirical outlook of the present book is predominantly Western. Yet, the overarching dynamics that have been pursued are far from limited to any one region or continent, nor limited solely to the field of cultural memory. Digitization is a global phenomenon and its reliance on late-sovereign politics and subpolitical governance forms are shared across the globe.

The central argument of this book is that mass digitization heralds a new kind of politics in the regime of cultural memory. Mass digitization of cultural memory is neither a neutral technical process nor a transposition of the politics of analog cultural heritage to the digital realm on a 1:1 scale. The limitations of using conventional cultural-political frameworks for understanding mass digitization projects become clear when working through the concepts and regimes of mass digitization. Mass digitization brings together so many disparate interests and elements that any mono-theoretical lens would fail to account for the numerous political issues arising within the framework of mass digitization. Rather, mass digitization should be approached as an *infrapolitical* process that brings together a multiplicity of interests hitherto foreign to the realm of cultural memory.

The first part of the book, "framing," outlines the theoretical arguments in the book—that the political dynamics of mass digitization organize themselves around the development of the technical infrastructures of mass digitization in late-sovereign frameworks. Fusing infrastructure theory and theories on the political dynamics of late sovereignty allows us to understand mass digitization projects as cultural phenomena that are highly dependent on standardization and globalization processes, while also recognizing that their resultant infrapolitics can operate as forms of both control and subversion.

The second part of the book, "mapping," offers an analysis of three different mass digitization phenomena and how they relate to the late-sovereign politics that gave rise to them. The part thus examines the historical foundation, technical infrastructures, and (il)licit status and ideological underpinnings of three variations of mass digitization projects: primarily corporate, primarily public, and primarily private. While these variations may come across as reproductions of more conventional societal structures, the chapters in part two nevertheless also present us with a paradox: while the different mass digitization projects that appear in this book—from Google's privatized endeavor to Europeana's supranational politics to the unofficial initiatives of shadow libraries—have different historical and cultural-political trajectories and conventional regimes of governance, they also undermine these conventional categories as they morph and merge into new infrastructures and produce a new form of infrapolitics. The case studies featured in this book are not to be taken as exhaustive examples, but rather as distinct, yet nevertheless entangled, examples of how analog cultural memory is taken online on a digital scale. They have been chosen with the aim of showing the diversity of mass digitization, but also how it, as a phenomenon, ultimately places the user in the dilemma of digital capitalism with its ethos of access, speed, and participation (in varying degrees). The choices also have their limitations, however. In their Western bias, which is partly rooted in this author's lack of language skills (specifically in Russian and Chinese), for instance, they fail to capture the breadth and particularities of the infrapolitics of mass digitization in other parts of the world. Much more research is needed in this area.

The final part of the book, "diagnosing," zooms in on the pathologies of mass digitization in relation to affective questions of desire and uncertainty.

This part argues that instead of approaching mass digitization projects as rationalized and instrumental projects, we should rather acknowledge them as ambivalent spatio-temporal projects of desire and uncertainty. Indeed, as the third part concludes, it is exactly uncertainty and desire that organizes the new spatio-temporal infrastructures of cultural memory institutions, where notions such as serendipity and the infrapolitics of platforms have taken precedence over accuracy and sovereign institutional politics. The third part thus calls into question arguments that imagine mass digitization as instrumentalized projects that either undermine or produce values of serendipity, as well as overarching narratives of how mass digitization produces uncomplicated forms of individualized empowerment and freedom. Instead, the chapter draws attention to the new cultural logics of platforms that affect the cultural politics of mass digitization projects.

Crucially, then, this book seeks neither to condemn nor celebrate mass digitization, but rather to unpack the phenomenon and anchor it in its contemporary political reality. It offers a story of the ways in which mass digitization produces new cultural memory institutions online that may be entwined in the cultural politics of their analog origins, but also raises new political questions to the collections.

Setting the Stage: Assembling the Motley Crew of Mass Digitization

The dream and practice of mass digitizing cultural works has been around for decades and, as this section attests, the projects vary significantly in shape, size, and form. While rudimentary and nonexhaustive, this section gathers a motley collection of mass digitization initiatives, from some of the earliest digitization programs to later initiatives. The goal of this section is thus not so much to meticulously map mass digitization programs, but rather to provide examples of projects that might illuminate the purpose of this book and its efforts to highlight the infrastructural politics of mass digitization. As the section attests, mass digitization is anything but a streamlined process. Rather, it is a painstakingly complex process mired in legal, technical, personal, and political challenges and problems, and it is a vision whose grand rhetoric often works to conceal its messy reality.

It is pertinent to note that mass digitization suffers from the combined gendered and racialized reality of cultural institutions, tech corporations, and infrastructural projects: save a few exceptions, there is precious little

diversity in the official map of mass digitization, even in those projects that emerge bottom-up. This does not mean that women and minorities have not formed a crucial part of mass digitization, selecting cultural objects, prepping them (for instance ironing newspapers to ensure that they are flat), scanning them, and constructing their digital infrastructures. However, more often than not, their contributions fade into the background as tenders of the infrastructures of mass digitization rather than as the (predominantly white, male) "face" of mass digitization. As such, an important dimension of the politics of these infrastructural projects is their reproduction of established gendered and racialized infrastructures already present in both cultural institutions and the tech industry.[3] This book hints at these crucial dimensions of mass digitization, but much more work is needed to change the familiar cast of cultural memory institutions, both in the analog and digital realms.

With these introductory remarks in place, let us now turn to the long and winding road to mass digitization as we know it today. Locating the exact origins of this road is a subjective task that often ends up trapping the explorer in the mirror halls of technology. But it is worth noting that of course there existed, before the Internet, numerous attempts at capturing and remediating books in scalable forms, for the purposes both of preservation and of extending the reach of library collections. One of the most revolutionary of such technologies before the digital computer or the Internet was microfilm, which was first held forth as a promising technology of preservation and remediation in the middle of the 1800s.[4] At the beginning of the twentieth century, the Belgian author, entrepreneur, visionary, lawyer, peace activist, and one of the founders of information science, Paul Otlet, brought the possibilities of microfilm to bear directly on the world of libraries. Otlet authored two influential think pieces that outlined the benefits of microfilm as a stable and long-term remediation format that could, ultimately, also be used to extend the reach of literature, just as he and his collaborator, inventor and engineer Robert Goldschmidt, co-authored a work on the new form of the book through microphotography, *Sur une forme nouvelle du livre: le livre microphotographique*.[5] In his analyses, Otlet suggested that the most important transformations would not take place in the book itself, but in substitutes for it. Some years later, beginning in 1927 with the Library of Congress microfilming more than three million pages of books and manuscripts in the British Library, the remediation

of cultural works in microformat became a widespread practice across the world, and microfilm is still in use to this day.[6] Otlet did not confine himself to thinking only about microphotography, however, but also pursued a more speculative vein, inspired by contemporary experiments with electromagnetic waves, arguing that the most radical change of the book would be wireless technology. Moreover, he also envisioned and partly realized a physical space, *Mundaneum*, for his dreams of a universal archive. Paul Otlet and Nobel Peace Prize Winner Henri La Fontaine conceived of Mundaneum in 1895 as part of their work on documentation science. Otlet called the Mundaneum "… an Idea, an Institution, a Method, a Body of work materials and collections, a Building, a Network." In more concrete, but no less ambitious terms, the Mundaneum was to gather together all the world's knowledge and classify it according to a universal system they developed called the "Universal Decimal Classification." In 1910, Otlet and Fontaine found a place for their work in the Palais du Cinquantenaire, a government building in Brussels. Later, Otlet commissioned Le Corbusier to design a building for the Mundaneum in Geneva. The cooperation ended unsuccesfully, however, and it later led a nomadic life, moving from The Hague to Brussels and then in 1993 to the city of Mons in Belgium, where it now exists as a museum called the Mundaneum Archive Center. Fatefully, Mons, a former mining district, also houses Google's largest data center in Europe and it did not take Google long to recognize the cultural value in entering a partnership with the Mundaneum, the two parties signing a contract in 2013. The contract entailed among other things that Google would sponsor a traveling exhibit on the Mundaneum, as well as a series of talks on Internet issues at the museum and the university, and that the Mundaneum would use Google's social networking service, Google Plus, as a promotional tool. An article in the *New York Times* described the partnership as "part of a broader campaign by Google to demonstrate that it is a friend of European culture, at a time when its services are being investigated by regulators on a variety of fronts."[7] The collaboration not only spurred international interest, but also inspired a group of influential tech activists and artists closely associated with the creative work of shadow libraries to create the critical archival project Mondotheque.be, a platform for "discussing and exploring the way knowledge is managed and distributed today in a way that allows us to invent other futures and different narrations of the past,"[8] and a resulting digital publication project, *The*

Radiated Book, authored by an assembly of activists, artists, and scholars such as Femke Snelting, Tomislav Medak, Dušan Barok, Geraldine Juárez, Shin Joung Yeo, and Matthew Fuller.[9]

Another early precursor of mass digitization emerged with Project Gutenberg, often referred to as the world's oldest digital library. Project Gutenberg was the brainchild of author Michael S. Hart, who in 1971, using technologies such as ARPANET, Bulletin Board Systems (BSS), and Gopher protocols, experimented with publishing and distributing books in digital form. As Hart reminisced in his later text, "The History and Philosophy of Project Gutenberg,"[10] Project Gutenberg emerged out of a donation he received as an undergraduate in 1971, which consisted of $100 million worth of computing time on the Xerox Sigma V mainframe at the University of Illinois at Urbana-Champaign. Wanting to make good use of the donation, Hart, in his own words, "announced that the greatest value created by computers would not be computing, but would be the storage, retrieval, and searching of what was stored in our libraries."[11] He therefore committed himself to converting analog cultural works into digital text in a format not only available to, but also accessible/readable to, almost all computer systems: "Plain Vanilla ASCII" (ASCII for "American Standard Code for Information Interchange"). While Project Gutenberg only converted about 50 works into digital text in the 1970s and the 1980s (the first was the Declaration of Independence), it today hosts up to 56,000 texts in its distinctly lo-fi manner.[12] Interestingly, Michael S. Hart noted very early on that the intention of the project was never to reproduce authoritative editions of works for readers—"who cares whether a certain phrase in Shakespeare has a ':' or a ';' between its clauses"—but rather to "release etexts that are 99.9% accurate in the eyes of the general reader."[13] As the present book attests, this early statement captures one of the central points of contestation in mass digitization: the trade-off between accuracy and accessibility, raising questions both of the limits of commercialized accelerated digitization processes (see chapter 2 on Google Books) and of class-based and postcolonial implications (see chapter 4 on shadow libraries).

If Project Gutenberg spearheaded the efforts of bringing cultural works into the digital sphere through manual conversion of analog text into lo-fi digital text, a French mass digitization project affiliated with the construction of the Bibliothèque nationale de France (BnF) initiated in 1989 could

be considered one of the earliest examples of actually digitizing cultural works on an industrial scale.[14] The French were thus working on blueprints of mass digitization programs before mass digitization became a widespread practice as part of the construction of a new national library, under the guidance of Alain Giffard and initiated by François Mitterand. In a letter sent in 1990 to Prime Minister Michel Rocard, President Mitterand outlined his vision of a digital library, noting that "the novelty will be in the possibility of using the most modern computer techniques for access to catalogs and documents of the Bibliothèque nationale de France."[15] The project managed to digitize a body of 70,000–80,000 titles, a sizeable amount of works for its time. As Alain Giffard noted in hindsight, "the main difficulty for a digitization program is to choose the books, and to choose the people to choose the books."[16] Explaining in a conversation with me how he went about this task, Giffard emphasized that he chose "not librarians but critics, researchers, etc." This choice, he underlined, could be made only because the digitization program was "the last project of the president and a special mission" and thus not formally a civil service program.[17] The work process was thus as follows:

> I asked them to prepare a list. I told them, "Don't think about what exists. I ask of you a list of books that would be logical in this concept of a library of France." I had the first list and we showed it to the national library, which was always fighting internally. So I told them, "I want this book to be digitized." But they would never give it to us because of territory. Their ship was not my ship. So I said to them, "If you don't give me the books I shall buy the books." They said I could never buy them, but then I started buying the books from antiques suppliers because I earned a lot of money at that time. So in the end I had a lot of books. And I said to them, "If you want the books digitized you must give me the books." But of the 80,000 books that were digitized, half were not in the collection. I used the staff's garages for the books, 80,000 books. It is an incredible story.[18]

Incredible indeed. And a wonderful anecdote that makes clear that mass digitization, rather than being just a technical challenge, is also a politically contingent process that raises fundamental questions of territory (institutional as well as national), materiality, and culture. The integration of the digital *très grande bibliothèque* into the French national mass digitization project Gallica, later in 1997, also foregrounds the infrastructural trajectory of early national digitization programs into later glocal initiatives.[19]

The question of pan-national digitization programs was precisely at the forefront of another early prominent mass digitization project, namely the

Universal Digital Library (UDL), which was launched in 1995 by Carnegie Mellon computer scientist Raj Reddy and developed by linguist Jaime Carbonell, physicist Michael Shamos, and Carnegie Mellon Foundation dean of libraries Gloriana St. Clair. In 1998, the project launched the Thousand Book Project. Later, the UDL scaled its initial efforts up to the Million Book Project, which they successfully completed in 2007.[20] Organizationally, the UDL stood out from many of the other digitization projects by including initial participation from three non-Western entities in addition to the Carnegie Mellon Foundation—the governments of India, China, and Egypt.[21] Indeed, India and China invested about $10 million in the initial phase, employing several hundred people to find books, bring them in, and take them back. While the project ambitiously aimed to provide access "to all human knowledge, anytime, anywhere," it ended its scanning activities 2008. As such, the Universal Digital Library points to another central infrastructural dimension of mass digitization: its highly contingent spatio-temporal configurations that are often posed in direct contradistinction to the universalizing discourse of mass digitization. Across the board, mass digitization projects, while confining themselves in practice to a limited target of how many books they will digitize, employ a discourse of universality, perhaps alluding vaguely to how long such an endeavor will take but in highly uncertain terms (see chapters 3 and 5 in particular).

No exception from the universalizing discourse, another highly significant mass digitization project, the Internet Archive, emerged around the same time as the Universal Digital Library. The Internet Archive was founded by open access activist and computer engineer Brewster Kahle in 1996, and although it was primarily oriented toward preserving born-digital material, in particular the Internet (*Wired* calls Brewster Kahle "the Internet's de facto librarian"[22]), the Archive also began digitizing books in 2005, supported by a grant from the Alfred Sloan Foundation. Later that year, the Internet Archive created the infrastructural initiative, Open Content Alliance (OCA), and was now embedded in an infrastructure that included over 30 major US libraries, as well as major search engines (by Yahoo! and Microsoft), technology companies (Adobe and Xerox), a commercial publisher (O'Reilly Media, Inc.), and a not-for-profit membership organization of more than 150 institutions, including universities, research libraries, archives, museums, and historical societies.[23] The Internet Archive's mass

digitization infrastructure was thus from the beginning a mesh of public and private cooperation, where libraries made their collections available to the Alliance for scanning, and corporate sponsors or the Internet Archive conversely funded the digitization processes. As such, the infrastructures of the Internet Archive and Google Books were rather similar in their setups.[24] Nevertheless, the initiative of the Internet Archive's mass digitization project and its attendant infrastructural alliance, OCA, should be read as both a technical infrastructure responding to the question of *how* to mass digitize in technical terms, and as an infrapolitical reaction in response to the forces of the commercial world that were beginning to gather around mass digitization, such as Amazon[25] and Google. The Internet Archive thus positioned itself as a transparent open source alternative to the closed doors of corporate and commercial initiatives. Yet, as Kalev Leetaru notes, the case was more complex than that. Indeed, while the OCA was often foregrounded as more transparent than Google, their technical infrastructural components and practices were in fact often just as shrouded in secrecy.[26] As such, the Internet Archive and the OCA draw attention to the important infrapolitical question in mass digitization, namely how, why, and when to manage visibilities in mass digitization projects.

Although the media sometimes picked up stories on mass digitization projects already outlined, it wasn't until Google entered the scene that mass digitization became a headline-grabbing enterprise. In 2004, Google founders Larry Page and Sergey Brin traveled to Frankfurt to make a rare appearance at the Frankfurt Book Fair. Google was at that time still considered a "scrappy" Internet company in some quarters, as compared with tech giants such as Microsoft.[27] Yet Page and Brin went to Frankfurt to deliver a monumental announcement: Google would launch a ten-year plan to make available approximately 15 million digitized books, both in- and out-of-copyright works.[28] They baptized the program "Google Print," a project that consisted of a series of partnerships between Google and five English-language libraries: the University of Michigan at Ann Arbor, Stanford, Harvard, Oxford (Bodleian Library), and the New York City Public Library. While Page's and Brin's announcement was surprising to some, many had anticipated it; as already noted, advances toward mass digitization proper had already been made, and some of the partnership institutions had been negotiating with Google since 2002.[29] As with many of the previous mass digitization projects, Google found inspiration for their digitization project

in the long-lived utopian ideal of the universal library, and in particular the mythic library of Alexandria.[30] As with other Google endeavors, it seemed that Page was intent on realizing a utopian ideal that scholars (and others) had long dreamed of: a library containing everything ever written. It would be realized, however, not with traditional human-centered means drawn from the world of libraries, but rather with an AI approach. Google Books would exceed human constraints, taking the seemingly impossible vision of digitizing all the books in the world as a starting point for constructing an omniscient Artificial Intelligence that would know the entire human symbol system and allow flexible and intuitive recollection. These constraints were physical (how to digitize and organize all this knowledge in physical form); legal (how to do it in a way that suspends existing regulation); and political (how to transgress territorial systems). The invocation of the notion of the universal library was not a neutral action. Rather, the image of Google Books as a library worked as a symbolic form in a cultural scheme that situated Google as a utopian, and even ethical, idealist project. Google Books seemingly existed by virtue of Goethe's famous maxim that "To live in the ideal world is to treat the impossible as if it were possible."[31] At the time, the industry magazine *Bookseller* wrote in response to Google's digitization plans: "The prospect is both thrilling and frightening for the book industry, raising a host of technical and theoretical issues."[32] And indeed, while some reacted with enthusiasm and relief to the prospect of an organization being willing to suffer the cost of mass digitization, others expressed economic and ethical concerns. The Authors Guild, a New York–based association, promptly filed a copyright infringement suit against Google. And librarians were forced to revisit core ethical principles such as privacy and public access.

The controversies of Google Books initially played out only in US territory. However, another set of concerns of a more territorial and political nature soon came to light. The French President at the time, Jacques Chirac, called France to cultural-political arms, urging his culture minister, Renaud Donnedieu de Vabres, and Jean-Noël Jeanneney, then-head of France's Bibliothèque nationale, to do the same with French texts as Google planned to do with their partner libraries, but by means of a French search engine.[33] Jeanneney initially framed this French cultural-political endeavor as a European "contre-attaque" against Google Books, which, according to Jeanneney, could pose "une domination écrasante de l'Amérique dans la

définition de l'idée que les prochaines générations se feront du monde." ("a crushing American domination of the formation of future generations' ideas about the world")[34] Other French officials insisted that the French digitization project should be seen not primarily as a cultural-political reaction *against* Google, but rather as a cultural-political incentive within France and Europe to make European information available online. "I really stress that it's not anti-American," an official at France's Ministry of Culture and Communication, speaking on the condition of anonymity, noted in an interview. "It is not a reaction. The objective is to make more material relevant to European heritage available. … Everybody is working on digitization projects." Furthermore, the official did not rule out potential cooperation between Google and the European project.[35] There was no doubt, however, that the move to mass digitization "was a political drive by the French," as Stephen Bury, head of European and American collections at the British Library, emphasized.[36]

Despite its mixed messages, the French reaction nevertheless underscored the controversial nature of mass digitization as a symbolic, as well as technical, aspiration: mass digitization was a process that not only neutrally scanned and represented books but could also produce a new mode of world-making, actively structuring archives as well as their users.[37] Now questions began to surface about where, or with whom, to place governance over this new archive: who would be the custodian of the keys to this new library? And who would be the librarians? A series of related questions could also be asked: who would determine the archival limits, the relations between the secret and the non-secret or the private and the public, and whether these might involve property or access rights, publication or reproduction rights, classification, and putting into order? France soon managed to rally other EU countries (Spain, Poland, Hungary, Italy, and Germany) to back its recommendation to the European Commission (EC) to construct a European alternative to Google's search engine and archive and to set this out in writing. Occasioned by the French recommendation, the EC promptly adopted the idea of Europeana—the name of the proposed alternative—as a "flagship project" for the budding EU cultural policy.[38] Soon after, in 2008, the EC launched Europeana, giving access to some 4.5 million digital objects from more than 1,000 institutions.

Europeana's Europeanizing discourse presents a territorializing approach to mass digitization that stands in contrast to the more universalizing

tone of Mundaneum, Gutenberg, Google Books, and the Universal Digital Library. As such, it ties in with our final examples, namely the sovereign mass digitization projects that have in fact always been one of the primary drivers in mass digitization efforts. To this day, the map of mass digitization is populated with sovereign mass digitization efforts from Holland and Norway to France and the United States. One of the most impressive projects is the Norwegian mass digitization project at the National Library of Norway, which since 2004 has worked systematically to develop a digital National Library that encompasses text, audio, video, image, and websites. Impressively, the National Library of Norway offers digital library services that provide online access (to all with a Norwegian IP address) to full-text versions of all books published in Norway up until the year 2001, access to digital newspaper collections from the major national and regional newspapers in all libraries in the country, and opportunities for everyone with Internet access to search and listen to more than 40,000 radio programs recorded between 1933 and the present day.[39] Another ambitious national mass digitization project is the Dutch National Library's effort to digitize all printed publications since 1470 and to create a National Platform for Digital Publications, which is to act both as a content delivery platform for its mass digitization output and as a national aggregator for publications. To this end, the Dutch National Library made deals with Google Books and Proquest to digitize 42 million pages just as it entered into partnerships with cross-domain aggregators such as Europeana.[40] Finally, it is imperative to mention the Digital Public Library of America (DPLA), a national digital library conceived of in 2010 and launched in 2013, which aggregates digital collections of metadata from around the United States, pulling in content from large institutions like the National Archives and Records Administration and HathiTrust, as well as from smaller archives. The DPLA is in great part the fruit of the intellectual work of Harvard University's Berkman Center for Internet and Society and the work of its Steering Committee, which consisted of influential names from the digital, legal, and library worlds, such as Robert Darnton, Maura Marx, and John Palfrey from Harvard University; Paul Courant of the University of Michigan; Carla Hayden, then of Baltimore's Enoch Pratt Free Library and subsequently the Librarian of Congress; Brewster Kahle; Jerome McGann; Amy Ryan of the Boston Public Library; and Doron Weber of the Sloan Foundation. Key figures in the

DPLA have often to great rhetorical effect positioned DPLA vis-à-vis Google Books, partly as a question of public versus private infrastructures.[41] Yet, as the then-Chairman of DPLA John Palfrey conceded, the question of what constitutes "public" in a mass digitization context remains a critical issue: "The Digital Public Library of America has its critics. One counterargument is that investments in digital infrastructures at scale will undermine support for the traditional and the local. As the chairman of the DPLA, I hear this critique in the question-and-answer period of nearly every presentation I give. … The concern is that support for the DPLA will undercut already eroding support for small, local public libraries."[42] While Palfrey offers good arguments for why the DPLA could easily work in unison with, rather than jeopardize, smaller public libraries, and while the DPLA is building infrastructures to support this claim,[43] the discussion nevertheless highlights the difficulties with determining when something is "public," and even national.

While the highly publicized and institutionalized projects I have just recounted have taken center stage in the early and later years of mass digitization, they neither constitute the full cast, nor the whole machinery, of mass digitization assemblages. Indeed, as chapter 4 in this book charts, at the margins of mass digitization another set of actors have been at work building new digital cultural memory assemblages, including projects such as Monoskop and Lib.ru. These actors, referred to in this book as shadow library projects (see chapter 4), at once both challenge and confirm the broader infrapolitical dimensions of mass digitization, including its logics of digital capitalism, network power, and territorial reconfigurations of cultural memory between universalizing and glocalizing discourses. Within this new "ecosystem of access," unauthorized archives as Libgen, Gigapedia, and Sci-Hub have successfully built "shadow libraries" with global reach, containing massive aggregations of downloadable text material of both scholarly and fictional character.[44] As chapter 4 shows, these initiatives further challenge our notions of public good, licit and illicit mass digitization, and the territorial borders of mass digitization, just as they add another layer of complexity to the question of the politics of mass digitization.

Today, then, the landscape of mass digitization has evolved considerably, and we can now begin to make out the political contours that have

shaped, and continue to shape, the emergent contemporary knowledge infrastructures of mass digitization, ripe as they are with contestation, cooperation, and competition. From this perspective, mass digitization appears as a preeminent example of how knowledge politics are configured in today's world of "assemblages" as "multisited, transboundary networks" that connect subnational, national, supranational, and global infrastructures and actors, without, however, necessarily doing so through formal interstate systems.[45] We can also see that mass digitization projects did not arise as a result of a sovereign decision, but rather emerged through a series of contingencies shaped by late-capitalist and late-sovereign forces. Furthermore, mass digitization presents us with an entirely new cultural memory paradigm—a paradigm that requires a shift in thinking about cultural works, collections, and contexts, from cultural records to be preserved and read by humans, to ephemeral machine-readable entities. This change requires a shift in thinking about the economy of cultural works, collections, and contexts, from scarce institutional objects to ubiquitous flexible information. Finally, it requires a shift in thinking about these same issues as belonging to national-global domains to conceiving them in terms of a set of political processes that may well be placed in national settings, but are oriented toward global agendas and systems.

Interrogating Mass Digitization

Mass digitization is often elastic in definition and elusive in practice. Concrete attempts have been made to delimit what mass digitization is, but these rarely go into specifics. The two characteristics most commonly associated with mass digitization are the relative lack of selectivity of materials, as compared to smaller-scale digitization projects, and the high speed and high volume of the process in terms of both digital conversion and metadata creation, which are made possible through a high level of automation.[46] Mass digitization is thus concerned not only with preservation, but also with what kind of knowledge practices and values technology allows for and encourages, for example, in relation to de- and recontextualization, automation, and scale.[47]

Studies of mass digitization are commonly oriented toward technology or information policy issues close to libraries, such as copyright, the quality of digital imagery, long-term preservation responsibility, standards

and interoperability, and economic models for libraries, publishers, and booksellers, rather than, as here, the exploration of theory.[48] This is not to say that existing work on mass digitization is not informed by theoretical considerations, but rather that the majority of research emphasizes policy and technical implementation at the expense of a more fundamental understanding of the cultural implications of mass digitization. In part, the reason for this is the relative novelty of mass digitization as an identifiable field of practice and policy, and its significant ramifications in the fields of law and information science.[49] In addition to scholarly elucidations, mass digitization has also given rise to more ideologically fuelled critical books and articles on the topic.[50]

Despite its disciplinary branching, work on mass digitization has mainly taken place in the fields of information science, law, and computer science, and has primarily problematized the "hows" of mass digitization and not the "whys."[51] As with technical work on mass digitization, most nontechnical studies of mass digitization are "problem-solving" rather than "critical," and this applies in particular to work originating from within the policy analysis community. This body seeks to solve problems within the existing social order—for example, copyright or metadata—rather than to interrogate the assumptions that underlie mass digitization programs, which would include asking what kinds of knowledge production mass digitization gives rise to. How does mass digitization change the ideological infrastructures of cultural heritage institutions? And from what political context does the urge to digitize on an industrial scale emerge? While the technical and problem-solving corpus on mass digitization is highly valuable in terms of outlining the most important stakeholders and technical issues of the field, it does not provide insight into the deeper structures, social mechanisms, and political implications of mass digitization. Moreover, it often fails to account for digitization as a force that is deeply entwined with other dynamics that shape its development and uses. It is this lack that the present volume seeks to mitigate.

Assembling Mass Digitization

Mass digitization is a composite and fluctuating infrastructure of disciplines, interests, and forces rooted in public-private assemblages, driven by ideas of value extraction and distribution, and supported by new forms of

social organization. Google Books, for instance, is both a commercial project covered by nondisclosure agreements *and* an academic scholarly project open for all to see. Similarly, Europeana is both a public digitization project directed at "citizens" *and* a public-private partnership enterprise ripe with profit motives. Nevertheless, while it is tempting to speak about specific mass digitization projects such as Google Books and Europeana in monolithic and contrastive terms, mass digitization projects are anything but tightly organized, institutionally delineated, coherent wholes that produce one dominant reading. We do not find one "essence" in mass digitized archives. They are not "enlightenment projects," "library services," "software applications," "interfaces," or "corporations." Nor are they rooted in one central location or single ideology. Rather, mass digitization is a complex material and social infrastructure performed by a diverse constellation of cultural memory professionals, computer scientists, information specialists, policy personnel, politicians, scanners, and scholars. Hence, this volume approaches mass digitization projects as "assemblages," that is, as contingent arrangements consisting of humans, machines, objects, subjects, spaces and places, habits, norms, laws, politics, and so on. These arrangements cross national-global and public-private lines, producing what this volume calls "late-sovereign," "posthuman," and "late-capitalist" assemblages.

To give an example, we can look at how the national and global aspects of cultural memory institutions change with mass digitization. The national museums and libraries we frequent today were largely erected during eras of high nationalism, as supreme acts of cultural and national territoriality. "The early establishment of a national collection," as Belinda Tiffen notes, "was an important step in the birth of the new nation," since it signified "the legitimacy of the nation as a political and cultural entity with its own heritage and culture worthy of being recorded and preserved."[52] Today, as the initial French incentive to build Europeana shows, we find similar nationalization processes in mass digitization projects. However, nationalizing a digital collection often remains a performative gesture than a practical feat, partly because the information environment in the digital sphere differs significantly from that of the analog world in terms of territory and materiality, and partly because the dichotomy between national and global, an agreed-upon construction for centuries, is becoming more and more difficult to uphold in theory and practice.[53] Thus, both Google

Books and Europeana link to sovereign frameworks such as citizens and national representation, while also undermining them with late-capitalist transnational economic agreements.

A related example is the posthuman aspect of cultural memory politics. Cultural memory artifacts have always been thought of as profoundly human collections, in the sense that they were created by and for human minds and human meaning-making. Previously, humans also organized collections. But with the invention of computers, most cultural memory institutions also introduced a machine element to the management of accelerating amounts of information, such as computerized catalog systems and recollection systems. With the advent of mass digitization, machines have gained a whole new role in the cultural memory ecosystem, not only as managers, but also as interpreters. Thus, collections are increasingly digitized to be read by machines instead of humans, just as metadata is now becoming a question of machine analysis rather than of human contextualization. Machines are taking on more and more tasks in the realm of cultural memory that require a substantial amount of cognitive insight (just as mass digitization has created the need for new robot-like, and often poorly paid, human tasks, such as the monotonous work of book scanning). Mass digitization has thereby given rise to an entirely new cultural-legal category titled "non-consumptive research," a term used to describe the large-scale analysis of texts, and which has been formalized by the Google Books Settlement, for instance, in the following way: "research in which computational analysis is performed on one or more books, but not research in which a researcher reads or displays."[54]

Lastly, mass digitization connects the politics of cultural memory to transnational late capitalism, and to one of its expressions in particular: digital capitalism.[55] Of course, cultural memory collections have a long history with capitalism. The nineteenth century held very fuzzy boundaries between the cultural functions of libraries and the commercial interests that surrounded them, and, as historian of libraries Francis Miksa notes, Melvin Dewey, inventor of the Dewey Decimal System, was a great admirer of the corporate ideal, and was eager to apply it to the library system.[56] Indeed, library development in the United States was greatly advanced by the philanthropy of capitalism, most notably by Andrew Carnegie.[57] The question, then, is not so much whether mass digitization has brought cultural memory institutions, and their collections and users, into a capitalist

system, but *what kind* of capitalist system mass digitization has introduced cultural memory to: digital capitalism.

Today, elements of the politics of cultural memory are being reassembled into novel knowledge configurations. As a consequence, their connections and conjugations are being transformed, as are their institutional embeddings. Indeed, mass digitization assemblages are a product of our time. They are new forms of knowledge institutions arising from a sociopolitical environment where vertical territorial hierarchies and horizontal networks entwine in a new political mesh: where solid things melt into air, and clouds materialize as material infrastructures, where boundaries between experts and laypeople disintegrate, and where machine cognition operates on a par with human cognition on an increasingly large scale. These assemblages enable new types of political actors—networked assemblages—which hold particular forms of power despite their informality vis-à-vis the formal political system; and in turn, through their practices, these actors partly build and shape those assemblages.

Since concepts always respond to "a specific social and historical situation of which an intellectual occasion is part,"[58] it is instructive to revisit the 1980s, when the theoretical notion of assemblage emerged and slowly gained cross-disciplinary purchase.[59] Around this time, the stable structures of modernist institutions began to give ground to postmodern forces: sovereign systems entered into supra-, trans-, and international structures, "globalization" became a buzzword, and privatizing initiatives drove wedges into the foundations of state structures. The centralized power exercised by disciplinary institutions was increasingly distributed along more and more lines, weakening the walls of circumscribed centralized authority.[60] This disciplinary decomposition took place on all levels and across all fields of society, including institutional cultural memory containers such as libraries and museums. The forces of privatization, globalization, and digitization put pressures not only on the authority of these institutions but also on a host of related authoritative cultural memory elements, such as "librarians," "cultural works," and "taxonomies," and cultural memory practices such as "curating," "reading," and "ownership." Librarians were "disintermediated" by technology, cultural works fragmented into flexible data, and curatorial principles were revised and restructured just as reading was now beginning to take place in front of screens, meaning-making to

be performed by machines, and ownership of works to be substituted by contractual renewals.

Thinking about mass digitization as an "assemblage" allows us to abandon the image of a circumscribed entity in favor of approaching it as an aggregate of many highly varied components and their contingent connections: scanners, servers, reading devices, cables, algorithms; national, EU, and US policymakers; corporate CEOs and employees; cultural heritage professionals and laypeople; software developers, engineers, lobby organizations, and unsalaried labor; legal settlements, academic conferences, position papers, and so on. It gives us pause—every time we say "Google" or "Europeana," we might reflect on what we actually mean. Does the researcher employed by a university library and working with Google Books also belong to Google Books? Do the underpaid scanners? Do the users of Google? Or, when we refer to Google Books, do we rather only mean to include the founders and CEOs of Google? Or has Google in fact become a metaphor that expresses certain characteristics of our time? The present volume suggests that all these components enter into the new phenomenon of mass digitization and produce a new field of potentiality, while at the same time they retain their original qualities and value systems, at least to some extent. No assemblage is whole and imperturbable, nor entirely reducible to its parts, but is simultaneously an accumulation of smaller assemblages and a member of larger ones.[61] Thus Google Books, for example, is both an aggregation of smaller assemblages such as university libraries, scanners (both humans and machines), and books, *and* a member of larger assemblages such as Google, Silicon Valley, neoliberal lobbies, and the Internet, to name but a few.

While representations of assemblages such as the analyses performed in this volume are always doomed to misrepresent empirical reality on some level, this approach nevertheless provides a tool for grasping at least some of mass digitization's internal heterogeneity, and the mechanisms and processes that enable each project's continued assembled existence. The concept of the assemblage allows us to grasp mass digitization as comprised of ephemeral projects that are uncertain by nature, and sometimes even made up of contradictory components.[62] It also allows us to recognize that they are more than mere networks: while ephemeral and networked, something enables them to cohere. Bruno Latour writes, "Groups are not

silent things, but rather the provisional product of a constant uproar made by the millions of contradictory voices about what is a group and who pertains to what."[63] It is the "taming and constraining of this multivocality," in particular by communities of knowledge and everyday practices, that enables something like mass digitization to cohere as an assemblage.[64] This book is, among other things, about those communities and practices, and the politics they produce and are produced by. In particular, it addresses the politics of mass digitization as an infrapolitical activity that retreats into, and emanates from, digital infrastructures and the network effects they produce.

Politics in Mass Digitization: Infrastructure and Infrapolitics

If the concept of "assemblage" allows us to see the relational set-up of mass digitization, it also allows us to inquire into its political infrastructures. In political terms, assemblage thinking is partly driven by dissatisfaction with state-centric dominant ontologies, including reified units such as state, society, or capitalism, and the unilinear focus on state-centric politics over other forms of politics.[65] The assemblage perspective is therefore especially useful for understanding the politics of late-sovereign and late-capitalist data projects such as mass digitization. As we will see in part 2, the epistemic frame of sovereignty continues to offer an organizing frame for the constitution and regulation of mass digitization and the virtues associated with it (such as national representation and citizen engagement). However, at the same time, mass digitization projects are in direct correspondence with neoliberal values such as privatization, consumerism, globalization, and acceleration, and its technological features allow for a complete restructuring of the disciplinary spaces of libraries to form vaster and even global scales of integration and economic organization on a multinational stage.

Mass digitization is a concrete example of what cultural memory projects look like in a "late-sovereign" age, where globalization tests the political and symbolic authority of sovereign cultural memory politics to its limits, while sovereignty as an epistemic organizing principle for the politics of cultural memory nonetheless persists.[66] The politics of cultural memory, in particular those practiced by cultural heritage institutions, often still cling to fixed sovereign taxonomies and epistemic frameworks. This focus

is partly determined by their institutional anchoring in the framework of national cultural policies. In mass digitization, however, the formal political apparatus of cultural heritage institutions is adjoined by a politics that plays out in the margins: in lobbies, software industries, universities, social media, etc. Those evaluating mass digitization assemblages in macropolitical terms, that is, those who are concerned with political categories, will glean little of the real politics of mass digitization, since such politics at the margins would escape this analytic matrix.[67] Assemblage thinking, by contrast, allows us to acknowledge the political mechanisms of mass digitization beyond disciplinary regulatory models, in societies where "where forces … not categories, clash."[68]

As Ian Hacking and many others have noted, the capacious usage of the notion of "politics" threatens to strip the word of meaning.[69] But talk of a politics of mass digitization is no conceptual gimmick, since what is taking place in the construction and practice of mass digitization assemblages plainly is political. The question, then, is how best to describe the politics at work in mass digitization assemblages. The answer advanced by the present volume is to think of the politics of mass digitization as "infrapolitics."

The notion of infrapolitics has until now primarily and profoundly been advanced as a concept of hidden dissent or contestation (Scott, 1990).[70] This volume suggests shifting the lens to focus on a different kind of infrapolitics, however, one that not only takes the shape of resistance but also of maintenance and conformity, since the story of mass digitization is both the story of contestation *and* the politics of mundane and standard-seeking practices.[71] The infrapolitics of mass digitization is, then, a kind of politics "premised not on a subject, but on the infra," that is, the "underlying rules of the world," organized around glocal infrastructures.[72] The infrapolitics of mass digitization is the building and living of infrastructures, both as spaces of contestation and processes of naturalization.

Geoffrey Bowker and Susan Leigh Star have argued that the establishment of standards, categories, and infrastructures "should be recognized as the significant site of political and ethical work that they are."[73] This applies not least in the construction and development of knowledge infrastructures such as mass digitization assemblages, structures that are upheld by increasingly complex sets of protocols and standards. Attaching "politics" to "infrastructure" endows the term—and hence mass digitization under this rubric—with a distinct organizational form that connects various stages

and levels of politics, as well as a distinct temporality that relates mass digitization to the forces and ideas of industrialization and globalization.

The notion of infrastructure has a surprisingly brief etymology. It first entered the French language in 1875 in relation to the excavation of railways.[74] Over the following decades, it primarily designated fixed installations designed to facilitate and foster mobility. It did not enter English vocabulary until 1927, and as late as 1951, the word was still described by English sources as "new" (OED).[75] When NATO adopted the term in the 1950s, it gained a military tinge. Since then, "infrastructure" has proliferated into ever more contexts and disciplines, becoming a "plastic word"[76] often used to signify any vital and widely shared human-constructed resource.[77]

What makes infrastructures central for understanding the politics of mass digitization? Primarily, they are crucial to understanding how industrialism has affected the ways in which we organize and engage with knowledge, but the politics of infrastructures are also becoming increasingly significant in the late-sovereign, late-capitalist landscape.

The infrastructures of mass digitization mediate, combine, connect, and converge upon different institutions, social networks, and devices, augmenting the actors that take part in them with new agential possibilities by expanding the radius of their action, strengthening and prolonging the reach of their performance, and setting them free for other activities through their accelerating effects, time often reinvested in other infrastructures, such as, for instance, social media activities. The infrastructures of mass digitization also increase the demand for globalization and mobility, since they expand the radius of using/reading/working.

The infrastructures of mass digitization are thus media of polities and politics, at times visible and at others barely legible or felt, and home both to dissent as well as to standardizing measures. These include legal infrastructures such as copyright, privacy, and trade law; material infrastructures such as books, wires, scanners, screens, server parks, and shelving systems; disciplinary infrastructures such as metadata, knowledge organization, and standards; cultural infrastructures such as algorithms, searching, reading, and downloading; societal infrastructures such as the realms of the public and private, national and global. These infrastructures are, depending, both the prerequisites for and the results of interactions between the spatial, temporal, and social classes that take part in the construction of mass

digitization. The infrapolitics of mass digitization is thus geared toward both interoperability and standardization, as well as toward variation.[78]

Often when thinking of infrastructures, we conceive of them in terms of durability and stability. Yet, while some infrastructures, such as railways and Internet cables, are fairly solid and rigid constructions, others—such as semantic links, time-limited contracts, and research projects—are more contingent entities which operate not as "fully coherent, deliberately engineered, end-to-end processes," but rather as morphous contingent assemblages, as "ecologies or complex adaptive systems" consisting of "numerous systems, each with unique origins and goals, which are made to interoperate by means of standards, socket layers, social practices, norms, and individual behaviors that smooth out the connections among them."[79] This contingency has direct implications for infrapolitics, which become equally flexible and adaptive. These characteristics endow mass digitization infrastructures with vulnerabilities but also with tremendous cultural power, allowing them to distribute agency, and to create and facilitate new forms of sociality and culture.

Building mass digitization infrastructures is a costly endeavor, and hence mass digitization infrastructures are often backed by public-private partnerships. Indeed infrastructures—and mass digitization infrastructures are no exceptions—are often so costly that a certain mixture of political or individual megalomania, state reach, and private capital is present in their construction.[80] This mixed foundation means that a lot of the political decisions regarding mass digitization literally take place *beneath* the radar of "the representative institutions of the political system of nation-states," while also more or less aggressively filling out "gaps" in nation-state systems, and even creating transnational zones with their own policies.[81] Hence the notion of "infra": the infrapolitics of mass digitization hover at a frequency that lies *below* and beyond formal sovereign state apparatus, organized, as they are, around glocal—and often private or privatized—material and social infrastructures.

While distinct from the formalized sovereign political system, infrapolitical assemblages nevertheless often perform as late-sovereign actors by engaging in various forms of "sovereignty games."[82] Take Google, for instance, a private corporation that often defines itself as at odds with state practice, yet also often more or less informally meets with state leaders, engages in diplomatic discussions, and enters into agreements with state

agencies and local political councils. The infrapolitical forces of Google in these sovereignty games can on the one hand exert political pressure on states—for instance in the name of civic freedom—but in Google's embrace of politics, its infrapolitical forces can on the other hand also squeeze the life out of existing parliamentary ways, promoting instead various forms of apolitical or libertarian modes of life. The infrapolitical apparatus thus stands apart from more formalized politics, not only in terms of political arena, but also the constraints that are placed upon them in the form, for instance, of public accountability.[83] What is described here can in general terms be called the infrapolitics of neoliberalism, whose scenery consists of lobby rooms, policy-making headquarters, financial zones, public-private spheres, and is populated by lobbyists, bureaucrats, lawyers, and CEOs.

But the infrapolitical dynamics of mass digitization also operate in more mundane and less obvious settings, such as software design offices and standardization agencies, and are enacted by engineers, statisticians, designers, and even users. Infrastructures are—increasingly—essential parts of our everyday lives, not only in mass digitization contexts, but in all walks of life, from file formats and software programs to converging transportation systems, payment systems, and knowledge infrastructures. Yet, what is most significant about the majority of infrapolitical institutions is that they are so mundane; if we notice them at all, they appear to us as boring "lists of numbers and technical specifications."[84] And their maintenance and construction often occurs "behind the scenes."[85] There is a politics to these naturalizing processes, since they influence and frame our moral, scientific, and aesthetic choices. This is to say that these kinds of infrapolitical activities often retire or withdraw into a kind of self-evidence in which the values, choices, and influences of infrastructures are taken for granted and accorded a kind of obviousness, which is universally accepted. It is therefore all the more "politically and ethically crucial"[86] to recognize the infrapolitics of mass digitization, not only as contestation and privatized power games, but also as a mode of existence that values professionalized standardization measures and mundane routines, not least because these infrapolitical modes of existence often outlast their material circumstances ("software outlasts hardware" as John Durham Peters notes).[87] In sum, infrastructures and the infrapolitics they produce yield subtle but significant world-making powers.

Power in Mass Digitization

If mass digitization is a product of a particular social configuration and political infrastructure, it is also, ultimately, a site and an instrument of power. In a sense, mass digitization is an event that stages a fundamental confrontation between state and corporate power, while pointing to the reconfigurations of both as they become increasingly embedded in digital infrastructures. For instance, such confrontation takes place at the negotiating table, where cultural heritage directors face the seductive and awe-inspiring riches of Silicon Valley, as well as its overwhelmingly intricate contractual layouts and its intimidating entourage of lawyers. Confrontation also takes place at the level of infrastructural ideology, in the meeting between twentieth-century standardization ideals and the playful and flexible network dynamics of the twenty-first century, as seen for instance in the conjunction of institutionally fixed taxonomies and algorithmic retrieval systems that include feedback mechanisms. And it takes place at the level of users, as they experience a gain in some powers and the loss of others in their identity transition from national patrons of cultural memory institutions to globalized users of mass digitization assemblages.

These transformations are partly the results of society's increasing reliance on network power and its effects. Political theorists Michael Hardt and Antonio Negri suggested almost two decades ago that among other things, global digital systems enabled a shift in power infrastructures from robust national economies and core industrial sectors to interactive networks and flexible accumulation, creating a "form of network power, which requires the wide collaboration of dominant nation-states, major corporations, supra-national economic and political institutions, various NGOs, media conglomerates and a series of other powers."[88] From this landscape, according to their argument, emerged a new system of power in which morphing networks took precedence over reliable blocs. Hardt and Negri's diagnosis was one of several similar arguments across the political spectrum that were formed within such a short interval that "the network" arguably became the "defining concept of our epoch."[89] Within this new epoch, the old centralized blocs of power crumbled to make room for new forms of decentralized "bastard" power phenomena, such as the extensive corporate/state mass surveillance systems revealed by Edward

Snowden and others, and new forms of human rights such as "the right to be forgotten," a right for which a more appropriate name would be "the right to not be found by Google."[90] Network power and network effects are therefore central to understanding how mass digitization assemblages operate, and why some mass digitization assemblages are more powerful than others.

The power dynamics we find in Google Books, for instance, are directly related to the ways in which digital technologies harness network effects: the power of Google Books grows exponentially as its network expands.[91] Indeed, as Siva Vaidhyanathan noted in his critical work on Google's role in society, what he referred to as the "Googlization of books" was ultimately deeply intertwined with the "Googlization of everything."[92] The networks of Google thus weren't external to both the success and the challenges of Google, but deeply endemic to it, from portals and ranking systems to anchoring (elite) institutions, and so on. The better Google Books becomes at harnessing network effects, the more fundamental its influence is in the digital sphere. And Google Books is very good at harnessing digital network power. Indeed, Google Books reached its "tipping point" almost before it launched: it had by then already attracted so many stakeholders that its mere existence decreased the power of any competing entities—and the fact that its heavy user traffic is embedded in Google only strengthened its network effects. Google Books's tipping point tells us little about its quality in an abstract sense: "tipping points" are more often attained by proprietary measures, lobbying, expansion, and most typically by a mixture of all of the above, than by sheer quality.[93] This explains not only the success of Google Books, but also its traction with even its critics: although Google Books was initially criticized heavily for its poor imagery and faulty metadata,[94] its possible harmful impact on the public sphere,[95] and later, over privacy concerns,[96] it had already created a power hub to which, although they could have navigated around it, masses of people were nevertheless increasingly drawn.

Network power is endemic not only to concrete digital networks, but also to globalization at large as a process that simultaneously gives rise to feelings of freedom of choice and loss of choice.[97] Mass digitization assemblages, and their globalization of knowledge infrastructures, thus crystalize the more general tendencies of globalization as a process in which people participate by choice, but not necessarily voluntarily; one in which we are

increasingly pushed into a game of social coordination, where common standards allow more effective coordination yet also entrap us in their pull for convergence. Standardization is therefore a key technique of network power: on the one hand, standardization is linked with globalization (and various neoliberal regimes) and the attendant widespread contraction of the state, while on the other hand, standardization implies a reconfiguration of everyday life.[98] Standards allow for both minute data analytics and overarching political systems that "govern at a distance."[99] Standardization understood in this way is thus a mode of capturing, conceptualizing, and configuring reality, rather than simply an economic instrument or lubricant. In a sense, standardization could even be said to be habit forming: through standardization, "inventions become commonplace, novelties become mundane, and the local becomes universal."[100]

To be sure, standardization has long been a crucial tool of world-making power, spanning both the early and late-capitalist eras.[101] "Standard time," as John Durham Peters notes, "is a sine qua non for international capitalism."[102] Without the standardized infrastructure of time there would be no global transportation networks, no global trade channels, and no global communication networks. Indeed, globalization is premised on standardization processes.

What kind of standardization processes do we find, then, in mass digitization assemblages? Internet use alone involves direct engagement with hundreds of global standards, from Bluetooth to Wi-Fi standards, from protocol standards to file standards such as Word and MP4 and HTTP.[103] Moreover, mass digitization assemblages confront users with a series of additional standards, from cultural standards of tagging to technical standards of interoperability, such as the European Data Model (EDM) and Google's schema.org, or legal standards such as copyright and privacy regulations. Yet, while these standards share affinities with the standardization processes of industrialization, in many respects they also deviate from them. Instead, we experience in mass digitization "a new form of standardization,"[104] in which differentiation and flexibility gain increasing influence without, however, dispensing with standardization processes.

Today's standardization is increasingly coupled with demands for flexibility and interoperability. Flexibility, as Joyce Kolko has shown, is a term that gained traction in the 1970s, when it was employed to describe putative solutions to the problems of Fordism.[105] It was seen as an antidote to

Fordist "rigidity"—a serious offense in the neoliberal regime. Thus, while the digital networks underlying mass digitization are geared toward standardization and expansion, since "information technology rewards scale, but only to the extent that practices are standardized,"[106] they are also becoming increasingly flexible, since too-rigid standards hinder network effects, that is, the growth of additional networks. This is one reason why mass digitization assemblages increasingly and intentionally break down the so-called "silo" thinking of cultural memory institutions, and implement standard flexibility and interoperability to increase their range.[107] One area of such reconfiguration in mass digitization is the taxonomic field, where stable institutional taxonomic structures are converted to new flexible modes of knowledge organization like linked data.[108] Linked data can connect cultural memory artifacts as well as metadata in new ways, and the move from a cultural memory web of interlinked documents to a cultural memory web of interlinked data can potentially "amplify the impact of the work of libraries and archives."[109] However, in order to work effectively, linked data demands standards and shared protocols.

Flexibility allows the user a freer range of actions, and thus potentially also the possibility of innovation. These affordances often translate into user freedom or empowerment. Yet flexibility does not necessarily equal fundamental user autonomy or control. On the contrary, flexibility is often achieved through decomposition, modularization, and black-boxing, allowing some components to remain stable while others are changed without implications for the rest of the system.[110] These components are made "fluid" in the sense that they are dispersed of clear boundaries and allowed multiple identities, and in that they enable continuity and dissolution.

While these new flexible standard-setting mechanisms are often localized in national and subnational settings, they are also globalized systems "oriented towards global agendas and systems."[111] Indeed, they are "glocal" configurations with digital networks at their cores. The increasing significance of these glocal configurations has not only cultural but also democratic consequences, since they often leave users powerless when it comes to influencing their cores.[112] This more fundamental problematic also pertains to mass digitization, a phenomenon that operates in an environment that constructs and encourages less Habermasian public spheres than "relations of sociability," from which "aggregate outcomes emerge not from an act of collective decision-making, but through the accumulation

of decentralized, individual decisions that, taken together, nonetheless conduce to a circumstance that affects the entire group."[113] For example, despite the flexibility Google Books allows us in terms of search and correlation, we have very little sway over its construction, even though we arguably influence its dynamics. The limitations of our influence on the cores of mass digitization assemblages have implications not only for how we conceive of institutional power, but also for our own power within these matrixes.

II Mapping Mass Digitization

2 The Trials, Tribulations, and Transformations of Google Books

Introduction

In a 2004 article in the cultural theory journal *Critical Inquiry*, book historian Roger Chartier argued that the electronic world had created a triple rupture in the world of text: by providing new techniques for inscribing and disseminating the written word, by inspiring new relationships with texts, and by imposing new forms of organization onto them. Indeed, Chartier foresaw that "the originality and the importance of the digital revolution must therefore not be underestimated insofar as it forces the contemporary reader to abandon—consciously or not—the various legacies that formed it."[1] Chartier's premonition was inspired by the ripples that digitization was already spreading across the sea of texts. People were increasingly writing and distributing electronically, interacting with texts in new ways, and operating and implementing new textual economies.[2] These textual transformations gave rise to a range of emotional reactions in readers and publishers, from catastrophizing attititudes and pessimism about "the end of the book" to the triumphalist mythologizing of liquid virtual books that were shedding their analog ties like butterflies shedding their cocoons.

The most widely publicized mass digitization project to date, Google Books, precipitated the entire emotional spectrum that could arise from these textual transversals: from fears that control over culture was slipping from authors and publishers into the hands of large tech companies, to hopeful ideas about the democratizing potential of bringing knowledge that was once locked up in dusty tomes at places like Harvard and Stanford, and to a utopian mythologizing of the transcendent potential of mass digitization. Moreover, Google Books also affected legal and professional

transformations of the infrastructural set-up of the book, creating new precedents and a new professional ethos. The cultural, legal, and political significance of Google Books, whether positive or negative, not only emphasizes its fundamental role in shaping current knowledge landscapes, it also allows us to see Google Books as a prism that reflects more general political tendencies toward globalization, privatization, and digitization, such as modulations in institutional infrastructures, legal landscapes, and aesthetic and political conventions. But how did the unlikely marriage between a tech company and cultural memory institutions even come about? Who drove it forward, and around and within which infrastructures? And what kind of cultural memory politics did it produce? The following sections of this chapter will address some of these problematics.

The New Librarians

It was in the midst of a turbulent restructuring of the world of text, in October 2004 at the Frankfurt International Book Fair, that Larry Page and Sergey Brin of Google announced the launch of Google Print, a cooperation between Google and leading Anglophone publishers. Google Print, which later became Google Partner Program, would significantly alter the landscape and experience of cultural memory, as well as its regulatory infrastructures. A decade later, the traditional practices of reading, and the guardianship of text and cultural works, had acquired entirely new meanings. In October 2004, however, the publishing world was still unaware of Google's pending influence on the institutional world of cultural memory. Indeed, at that time, Amazon's mounting dominance in the field of books, which began a decade earlier in 1995, appeared to pose much more significant implications. The majority of publishers therefore greeted Google's plans in Frankfurt as a welcome alternative to Jeff Bezos's growing online behemoth.

Larry Page and Sergey Brin withheld a few details from their announcement at Frankfurt, however; Google's digitization plans would involve not only cooperation with publishers, but also with libraries. As such, what would later become Google Books would in fact consist of two separate, yet interrelated, programs: Google Print (which would later become Google Partner Program) and Google Library Project. In all secrecy, Google had for many months prior to the Frankfurt Book Fair worked with select libraries

in the US and the UK to digitize their holdings. And in December 2004 the true scope of Google's mass digitization plans were revealed: what Page and Brin were building was the foundation of a groundbreaking cultural memory archive, inspired by the myth of Alexandria.[3] The invocation of Alexandria situated the nascent Google Books project in a cultural schema that historicized the project as a utopian, even moral and idealist, project that could finally, thanks to technology, exceed existing human constraints—legal, political, and physical.[4]

Google's utopian discourse was not foreign to mass digitization enthusiasts. Indeed, it was the *langue du jour* underpinning most large-scale digitization projects, a discourse nurtured and influenced by the seemingly borderless infrastructure of the web itself (which was often referred to in universalizing terms).[5] Yet, while the universalizing discourse of mass digitization was familiar, it had until then seemed like aspirational talk at best, and strategic policy talk in the face of limited public funding, complex copyright landscapes, and lumbering infrastructures, at worst. Google, however, faced the task with a fresh attitude of determination and a will to disrupt, as well as a very different form of leverage in terms of infrastructural set-up. Google was already the world's preferred search engine, having mastered the tactical skill of navigating its users through increasingly complex information landscapes on the web, and harvesting their metadata in the process to continuously improve Google's feedback systems. Essentially ever-larger amounts of information (understood here as "users") were passing through Google's crawling engines, and as the masses of information in Google's server parks grew, so did their computational power. Google Books, then, as opposed to most existing digitization projects, which were conceived mainly in terms of "access," was embedded in the larger system of Google that understood the power and value of "feedback," collecting information and entering it into feedback loops between users, machines, and engineers. Google also understood that information power didn't necessarily lie in owning all the information they gave access to, but rather in controlling the informational processes themselves.

Yet, despite Google's advances in information seeking behaviors, the idea of Google Books appeared as an odd marriage. Why was a private company in Silicon Valley, working in the futuristic and accelerating world of software and fluid information streams, intent on partnering up with the slow-paced world of cultural memory institutions, traditionally more concerned with

the past? Despite the apparent clash of temporal and cultural regimes, however, Google was in fact returning home to its point of inception. Google was born of a research project titled the Stanford Integrated Digital Library Project, which was part of the NSF's Digital Libraries Initiative (1994–1999). Larry Page and Sergey Brin were students then, working on the Stanford component of this project, intending to develop the base technologies required to overcome the most critical barriers to effective digital libraries, of which there were many.[6] Page's and Brin's specific project, titled Google, was presented as a technical solution to the increasing amount of information on the World Wide Web.[7] At Stanford, Larry Page also tried to facilitate a serious discussion of mass digitization at Stanford, and of whether or not it was feasible. But his ideas received little support, and he was forced to leave the idea on the drawing board in favor of developing search technologies.[8]

In September 1998, Sergey Brin and Larry Page left the library project to found Google as a company and became immersed in search engine technologies. However, a few years later, Page resuscitated the idea of mass digitization as a part of their larger self-professed goal to change the world of information by increasing access, scaling the amount of information available, and improving computational power. They convinced Eric Schmidt, the new CEO of Google, that the mass digitization of cultural works made sense not only from a information perspective, but also from a business perspective, since the vast amounts of information Google could extract from books would improve Google's ability to deliver information that was hitherto lacking, and this new content would eventually also result in an increase in traffic and clicks on ads.[9]

The Scaling Techniques of Mass Digitization

A series of experiments followed on how to best approach the daunting task. The emergence and decay of these experiments highlight the ways in which mass digitization assemblages consist not only of thoughts, ideals, and materials, but also a series of cultural techniques that entwine temporality, materiality, and even corporeality. This perspective on mass digitization emphasizes the mixed nature of mass digitization assemblages: what at first glance appears as a relatively straightforward story about new technical inventions, at a closer look emerges as complex entanglements of human

and nonhuman actors, with implications not only for how we approach it as a legal-technical entity but also an infrapolitical phenomenon. As the following section shows, attending to the complex cultural techniques of mass digitization (its "how") enables us to see that its "minor" techniques are not excluded from or irrelevant to, but rather are endemic to, larger questions of the infrapolitics of digital capitalism. Thus, Google's simple technique of scaling scanning to make the digitization processes go faster becomes entangled in the creation of new habits and techniques of acceleration and rationalization that tie in with the politics of digital culture and digital devices. The industrial scaling of mass digitization becomes a crucial part of the industrial apparatus of big data, which provide new modes of inscription for both individuals and digital industries that in turn can be capitalized on via data-mining, just as it raises questions of digital labor and copyright.

Yet, what kinds of scaling techniques—and what kinds of investments—Google would have to leverage to achieve its initial goals were still unclear to Google in those early years. Larry Page and co-worker Marissa Mayer therefore began to experiment with the best ways to proceed. First, they created a makeshift scanning device, whereby Marissa Mayer would turn the page and Larry Page would click the shutter of the camera, guided by the pace of a metronome.[10] These initial mass digitization experiments signaled the industrial nature of the mass digitization process, providing a metronomic rhythm governed by the implacable regularity of the machine, in addition to the temporal horizon of eternity in cultural memory institutions (or at least of material decay).[11] After some experimentation with scale and time, Google bought a consignment of books from a second-hand book store in Arizona. They scanned them and subsequently experimented with how to best index these works not only by using information from the book, but also by pulling data about the books from various other sources on the web. These extractions allowed them to calculate a work's relevance and importance, for instance by looking at the number of times it had been referred to.[12]

In 2004 Google was also granted patent rights to a scanner that would be able to scan the pages of works without destroying them, and which would make them searchable thanks to sophisticated 3D scanning and complex algorithms.[13] Google's new scanner used infrared camera technology that detected the three-dimensional shape and angle of book pages when the

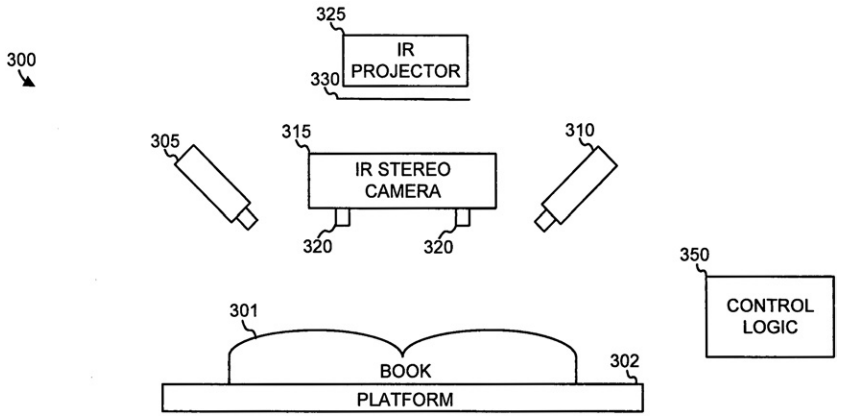


Figure 2.1
François-Marie Lefevere and Marin Saric. "Detection of grooves in scanned images." U.S. Patent 7508978B1. Assigned to Google LLC.

book was placed in the scanner. The information from the book was then transmitted to Optical Character Recognition (OCR), which adjusted image focus and allowed the OCR software to read images of curved surfaces more accurately.

These new scanning technologies allowed Google to unsettle the fixed content of cultural works on an industrial scale and enter them into new distribution systems. The untethering and circulation of text already existed, of course, but now text would mutate on an industrial scale, bringing into coexistence a multiplicity of archiving modes and textual accumulation. Indeed, Google's systematic scaling-up of already existing technologies on an industrial and accelerated scale posed a new paradigm in mass digitization, to a much larger extent than, for instance, inventions of new technologies.[14] Thus, while Google's new book scanners did expand the possibilities of capturing information, Google couldn't solve the problem of automating the process of turning the pages of the books. For that they had to hire human scanners who were asked to manually turn pages. The work of these human scanners was largely invisible to the public, who could only see the books magically appearing online as the digital archive accumulated. The scanners nevertheless left ghostly traces, in the form of scanning errors such as pink fingers and missing and crumbled pages—visual traces that underlined the historically crucial role of human labor in

industrializing and automating processes.[15] Indeed, the question of how to solve human errors in the book scanning process led to a series of inventive systems, such as the patent granted to Google in 2009 (filed in 2003), which describes a system that would minimize scanning errors with the help of music.[16] Later, Google open sourced plans for a book scanner named "Linear Book Scanner" that would turn the pages automatically with the help of a vacuum cleaner and a cleverly designed sheet metal structure, after passing them over two image sensors taken from a desktop scanner.[17]

Eventually, after much experimentation, Google consolidated its mass digitization efforts in collaboration with select libraries.[18] While some institutions immediately and enthusiastically welcomed Google's aspirations as aligning with their own mission to improve access to information, others were more hesitant, an institutional vacillation that hinted ominously at controversy to come. Some libraries, such as the University of Michigan, greeted the initiative with enthusiasm, whereas others, such as the Library of Congress, saw a red flag pop up: copyright, one of the most fundamental elements in the rights of texts and authors.[19] The Library of Congress questioned whether it was legal to scan and index books without a rights holder's permission. Google, in response, argued that it was within the fair use provisions of the law, but the argument was speculative in so far as there was no precedent for what Google was going to do. While some universities agreed with Google's views on copyright and shared its desire to disrupt existing copyright practices, others allowed Google to make digital copies of their holdings (a precondition for creating an index of it). Hence, some libraries gave full access, others allowed only the scanning of books in the public domain (published before 1923), and still others denied access altogether. While the reticence of libraries was scattered, it was also a precursor of a much more zealous resistance to Google Books, an opposition that was mounted by powerful voices in the cultural world, namely publishers and authors, and other commercial infrastructures of cultural memory.

While Google's announcement of its cooperation with publishers at the Frankfurt Book Fair was received without drama—even welcomed by many—the announcement of its cooperation with libraries a few months later caused a commercial uproar. The most publicized point of contestation was the fact that Google was now not only displaying books in cooperation with publishers, but also building a library of its own, without

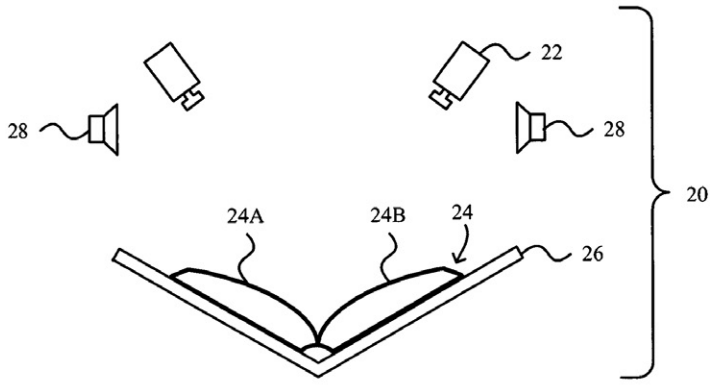


FIG. 1

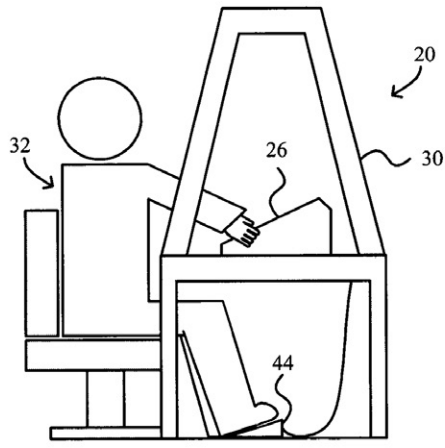


FIG. 2

Figure 2.2
Joseph K. O'Sullivan, Alexander Proudfooot, and Christopher R. Uhlik. "Pacing and error monitoring of manual page turning operator." U.S. Patent 7619784B1. Assigned to Google LLC, Google Technology Holdings LLC.

remunerating publishers and authors. Why would readers buy books if they could read them free online? Moreover, the Authors Guild worried that Google's digital library would increase the risk of piracy. At a deeper level, the case also emphasized authors' and publishers' desire to retain control over their copyrighted works in the face of the threat that the Library Project (unlike the Partner Program) was posing: Google was digitizing without the copyright holder's permission. Thus, to them, the Library Project fundamentally threatened their copyrights and, on a more fundamental level, existing copyright systems. Both factors, they argued, would make book buying a superfluous activity.[20] The harsher criticisms framed Google Books as a book thief rather than as a global philanthropist.[21] Google, on its behalf, launched a defense of their actions based on the notion of "fair use," which as the following section shows, eventually became the fundamental legal question.

Infrastructural Transformations

Google Books became the symbol of the painful confusion and territorial battles that marred the publishing world as it underwent a transformation from analog to digital. The mounting and diverse opposition to Google Books was thus not an isolated affair, but rather a persistent symptom—increasingly loud stress signals emitting from the infrastructural joints of the analog realm of books as it buckled under the strain of digital logic. As media theorist John Durham Peters (drawing on media theorist Harold Innis) notes, the history of media is also an "occupational history" that tells the tales of craftspeople mastering medium-specific skills tactically battling for monopolies of knowledge and guarding their access.[22] And in the occupational history of Google Books, the craftspeople of the printed book were being challenged by a new breed of artificers who were excelling not so much in how to print, which book sellers to negotiate with, or how to sell books to people, but rather in the medium-specific tactical skills of the digital, such as building software and devising search technologies, skills they were leveraging to their own gain to create new "monopolies of knowledge" in the process.

As previously mentioned, the concerns expressed by publishers and authors in regards to remuneration was accompanied by a more abstract sense of a loss of control over their works and how this loss of control

would affect the copyrights. These concerns did not arise out of thin air, but were part of a more general discourse on digital information as something that *cannot* be secured and controlled in the same way as analog commodities can. Indeed, it seemed that authors and publishers were part of a world entirely different from Google Books: while publishers and authors were still living in and defending a "regime of scarcity,"[23] Google Books, by contrast, was busy building a "realm of plenitude and infinite replenishment." As such, the clash between the traditional infrastructures of the analog book and the new infrastructures of Google Books was symptomatic of the underlying radical reorganization of information from a state of trade and exchange to a state of constant transmission and contagion.[24]

Foregrounding the fair use defense[25], Google argued that the public benefits of scanning outweighed the negative consequences for authors.[26] Influential legal scholars such as Lawrence Lessig, among others, supported this argument, suggesting that inclusion in a search engine in a way that does not erode the value of the book was of such societal importance that it should be deemed legal.[27] The copyright owners, however, insisted that the burden should be on Google to request permission to scan each work.[28]

Google and copyright owners reached a proposed settlement on October 28, 2008. The proposal would allow Google not only to continue its scanning activities and to show free snippets online, but would also give Google exclusive rights to sell digital copies of out-of-print books. In return, Google would provide all libraries in the United States with one free subscription to the digital database, but Google could also sell additional subscriptions. Moreover, Google was to pay $125 million, part of which would go to the construction of a Book Rights Registry that identified rights holders and handled payments to lawyers.[29] Yet before the settlement was even formally treated, a mounting opposition to it was launched in public.

The proposed settlement was received with harsh words, for instance by Internet archivist Brewster Kahle and legal scholar Lawrence Lessig, who opposed the settlement with words ranging from "insanity" to "cultural asphyxiation" and "information monopoly."[30] Privacy proponents also spoke out against Google Books, bringing attention to the implications of Google being able to follow and track reading habits, among other things.[31] The organization Privacy Authors, including writers such as Jonathan Lethem, Bruce Schneier, and Michael Chabon, and publishers, argued that

although Google Books was an "extremely exciting" project, it failed in its current form to protect the privacy of readers, thus creating a "real risk of disclosure" of sensitive information to "prying governmental entities and private litigants," potentially giving rise to a "chilling effect," hurting not only readers but also authors and publishers, not least those writing about sensitive or controversial topics.[32] The Association of Libraries also raised a set of concerns, such as the cost of library subscriptions and privacy.[33] And most predictably, companies such as Amazon and Microsoft, who also had a stake in mass digitization, opposed the settlement; Microsoft even funded some nuanced research efforts into its implications.[34] Finally, and most damningly, the Department of Justice decided to get involved with an antitrust argument.

By this point, opposition to the Google Books project, as it was outlined in the proposed settlement, wasn't only motivated by commercial concerns; it was now also motivated by a public that framed Google's mass digitization project as a parasitical threat to the public sphere itself. The framing of Google as a potential menace was a jarring image that stood in stark contrast to Larry Page's and Sergey Brin's philanthropic attitudes and to Google's famous "Don't be evil" slogan. The public reaction thus signaled a change in Google's reputation as the company metamorphosed in the public eye from a small underdog company to a multinational corporation with a near-monopoly in the search industry. Google's initially inspiring approach to information as a realm of plenitude now appeared in the public view more similar to the actions of megalomaniac land-grabbers.

Google, however, while maintaining its universalizing mission regarding information, also countered the accusations of monopoly building, arguing that potential competitors could just step up, since nothing in the agreements entered into by the libraries and Google "precludes any other company or organization from pursuing their own similar effort."[35] Nevertheless Judge Denny Chin denied the settlement in March 2011 with the following statement: "The question presented is whether the ASA is fair, adequate, and reasonable. I conclude that it is not."[36] Google left the proposed settlement behind, and appealed the decision of their initial case with new amicus briefs focusing on their argument that book scanning was fair use. They argued that they were not demanding exclusivity on the information they scanned, that they didn't prohibit other actors from

digitizing the works they were digitizing, and that their main goal was to enrich the public sphere with more information, not to build an information monopoly. In July 2013 Judge Denny Chin issued a new opinion confirming that Google Books was indeed fair use.[37] Chin's opinion was later consolidated in a major victory for Google in 2015 when Judge Pierre Leval in the Second Circuit Court legalized Google Books with the words "Google's unauthorized digitizing of copyright-protected works, creation of a search functionality, and display of snippets from those works are non-infringing fair uses."[38] Leval's decision marked a new direction, not only for Google Books, but also for mass digitization in general, as it signaled a shift in cultural expectations about what it means to experience and disseminate cultural artifacts.

Once again, the story of Google Books took a new turn. What was first presented as a gift to cultural memory institutions and the public, and later as theft from and threat to these same entities, on closer inspection revealed itself as a much more complex circulatory system of expectations, promises, risks, and blame. Google Books thus instigated a dynamic and forceful connection between Google and cultural memory institutions, where the roles of giver and receiver, and the first giver and second giver/returner, were difficult to decode. Indeed, the binding nature of the relationship between Google Books and cultural memory institutions proved to be much more complex than the simple physical exchange of books and digital files. As the next section outlines, this complex system of cultural production was held together by contractual arrangement—central joints, as it were, connecting data and works, public and private, local and global, in increasingly complex ways. For Google Books, these contractual relations appear as the connective tissues that make these assemblages possible, and which are therefore fundamental to their affective dimensions.

The Infrapolitics of Contract

In common parlance a contract is a legal tool that formalizes a "mutual agreement between two or more parties that something shall be done or forborne by one or both," often enforceable by law.[39] Contractual systems emerged with the medieval merchant regime, and later evolved with classical liberalism into an ideological revolt against paternalist systems as nothing less than freedom, a legal construct that could destroy the sentimental

bonds of personal dependence.[40] As the classic liberal social scientist William Graham Sumner argued, "[c]ontract … is rational … realistic, cold, and matter-of-fact." The rational nature of contracts also affected their temporality, since a contract endures only "so long as the reason for it endures," and their spatiality, relegating any form of sentiment from the public sphere to "the sphere of private and personal relations."[41]

Sentiments prevailed, however, as the contracts tying together Google and cultural memory institutions emerged. Indeed, public and professional evaluations of the agreements often took an affective, even sexualized, form. The economist Paul Courant situated libraries "in bed with Google"[42]; library consultant and media experts Jeff Ubois and Peter B. Kaufman recounted *how* they got in bed with Google—"[w]e were approached singly, charmed in confidence, the stranger was beguiling, and we embraced"[43]; communication scholar Evelyn Bottando announced that "libraries not only got in bed with Google. They got married"[44]; and librarian Jessamyn West finally pondered on the relationship ruins, "[s]till not sure, after all that, how we got this all so wrong. Didn't we both want the same thing? Maybe it really wasn't us, it was them. Most days it's hard to remember what we saw in Google. Why did we think we'd make good partners?"[45]

The evaluative discourse around Google Books dispels the idea of contracts as dispassionate transactions for services and labor, showing rather that contracts are infrapolitical apparatuses that give rise to emotions and affect; and that, moreover, they are systems of doctrines, relations, and social artifacts that organize around specific ideologies, temporalities, materialities, and techniques.[46] First and foremost, contracts give rise to new kinds of infrastructures in the field of cultural memory: they mediate, connect, and converge cultural memory institutions globally, giving rise to new institutional networks, in some cases increasing globalization and mobility for both users and objects, and in other cases restricting the same. The Google Books contracts display both technical and symbolic aspects: as technical artifacts they establish intricate frameworks of procedures, commitments, rights, and incentives for governing the transactions of cultural memory artifacts and their digitized copies. As symbolic artifacts they evoke normative principles, expressing different measures of good will toward libraries, but also—as all contracts do—introduce the possibility of distrust, conflict and betrayal.[47]

Despite their centrality to mass digitization assemblages, and although some of them have been made available to the public,[48] the content of these particular contracts still suffer from the epistemic gap incurred in practical and symbolic form by Google's Agreements and Non-Disclosure Agreements (NDA), a kind of agreement most libraries are required to sign when entering the agreement. Like all contracts, the individual contracts signed by the partnership libraries vary in nature and have different implications. While many of Google's agreements may be publically available, they have often only been made public through requests and transparency mechanisms such as the Freedom of Information Act. As the Open Rights Alliance notes in their publication of the agreement entered between the British Library and Google, "We asked the British Library for a copy of the agreement with Google, which was not uploaded to their transparency website with other similar contracts, as it didn't involve monetary exchange. This may be a loophole transparency activists want to look at. After some toing and froing with the Freedom of Information Act we got a copy."[49]

While the culture of contractual secrecy is native to the business world, with its safeguarding of business processes, and is easily navigated by business partners, it is often opposed to the ethos of state-subsidized cultural institutions who "draw their financial and moral support from a public that expects transparency in their activities, ranging from their materials acquisitions to their business deals."[50] For these reasons, library organizations have recommended that nondisclosure agreements should be avoided if possible, and minimized if they are necessary.[51] Google, in response, noted on its website that: "[t]hough not all of the library contracts have been made public, we can say that all of them are non-exclusive, meaning that all of our library partners are free to continue their own scanning projects or work with others while they work with Google to digitize their books."[52]

Regardless of their contractual content and later publication, the contracts are a vital instrument in Google's broader management of visibility. As Mikkel Flyverbom, Clare Birchall, and others have argued, this practice of visibility management—which they define as "the many ways in which organizations seek to curate and control their presence, relations, and comprehension vis-à-vis their surroundings" through practices of transparency, secrecy, opacity, surveillance, and disclosure—is in the digital age a complex issue closely tied to the question of governance and power. While each

publication act may serve to create an uncomplicated picture of transparency, it nevertheless happens in a paradoxical global regulatory environment that on the one hand encourages "sunshine" laws that demand that governments, corporations, and civil-sector organizations provide access to information, yet on the other hand also harbors regulatory agencies that seek mechanisms and rules by which to keep information hidden. Thus, as Flyverbom et al. conclude, the "everyday practices of organizing invariably implicate visibility management," whose valences are "attached to transparency and opacity" that are not simple and straightforward, but rather remain "dependent upon the actor, the context, and the purpose of organizations and individuals."[53]

Steven Levy recounts how Google began its scanning operations in "near-total stealth," a "cloak-and-dagger" approach that stood in contrast to Google's public promotion of transparency as a new mode of existence. As Levy argues, "[t]he secrecy was yet another expression of the paradox of a company that sometimes embraced transparency and other times seemed to model itself on the NSA."[54] Yet, while secrecy practices may have suited some of Google's operations, they sit much more uneasily with their book scanning programs: "If Google had a more efficient way to scan books, sharing the improved techniques could benefit the company in the long run—inevitably, much of the output would find its way onto the web, bolstering Google's indexes. But in this case, paranoia and a focus on short-term gain kept the machines under wraps."[55] The nondisclosure agreements show that while boundaries may be blurred between Google Books and libraries, we may still identify different regulatory models and modes of existence within their networks, including the explicit *library ethos* (in the Weberian sense of the term) of public access, not only to the front end but also to some areas of the back end, and the business world's secrecy practices.[56]

Entering into a mass digitization public-private partnership (PPP) with a corporation such as Google is thus not only a logical and pragmatic next step for cultural memory institutions, it is also a political step. As already noted, Google Books, through its embedding in Google, injects cultural memory objects into new economic and cultural infrastructures. These infrastructures are governed less by the hierarchical world of curators, historians, and politicians, and more by feedback networks of tech companies, users, and algorithms. Moreover, they forge ever closer connections

to data-driven market logics, where computational rather than representational power counts. Mass digitization PPPs such as Google Books are thus also symptoms of a much more pervasive infrapolitical situation, in which cultural memory institutions are increasingly forced to alter their identities from public caretakers of cultural heritage to economic actors in the EU internal market, controlled by the framework of competition law, time-limited contracts, and rules on state aid.[57] Moreover, mastering the rules of these new infrastructures is not necessarily an easy feat for public institutions.[58] Thus, while Google claims to hold a core commitment regarding free digital access to information, and while its financial apparatus could be construed as making Google an eligible partner in accordance with the EU's policy objectives toward furthering public-private partnerships in Europe,[59] it is nevertheless, as legal scholar Maurizio Borghi notes, relevant to take into account Google's previous monopoly-building history.[60]

The Politics of Google Books

A final aspect of Google Books relates to the universal aspiration of Google Books's collection, its infrapolitics, and what it empirically produces in territorial terms. As this chapter's previous sections have outlined, it was an aspiration of Google Books to transcend the cultural and political limitations of physical cultural memory collections by gathering the written material of cultural memory institutions into one massive digitized collection. Yet, while the collection spans millions of works in hundreds of languages from hundreds of countries,[61] it is also clear that even large-scale mass digitization processes still entail procedures of selection on multiple levels from libraries to works. These decisions produce a political reality that in some respects reproduces and accentuates the existing politics of cultural memory institutions in terms of territorial and class-based representations, and in other respects give rise to new forms of cultural memory politics that part ways with the political regimes of traditional curatorial apparatuses.

One obvious area in which to examine the politics produced by the Google Books assemblage is in the selection of libraries that Google chooses to partner with.[62] While the full list of Google Books partners is not disclosed on Google's own webpage, it is clear from the available list that, up to now, Google Books has mainly partnered with "great libraries," such

as elite university libraries and national libraries. The rationale for choosing these libraries has no doubt been to partner up with cultural memory institutions that preside over as much material as possible, and which are therefore able to provide more pieces of the puzzle than, say, a small-town public library that only presides over a fraction of their collections. Yet, while these libraries provide Google Books with an impressive and extensive collection of rare and valuable artifacts that give the impression of a near-universal collection, they nevertheless also contain epistemological and historical gaps. Historian and digital humanist Andrew Prescott notes, for example, the limited collections of literature written by workers and other lower-class people in the early eighteenth century in elite libraries. This institutional lack creates a pre-filtered collection in Google Books, favoring "[t]hose writers of working class origins who had a success story to report, who had become distinguished statesmen, successful businessmen, religious leaders and so on," that is, the people who were "able to find commercial publishers who were interested in their story."[63] Google's decision to partner with elite libraries thus inadvertently reproduces the class-based biases of analog cultural memory institutions.

In addition to the reproduction of analog class-based bias in its digital collection, the Google Books corpus also displays a genre bias, veering heavily toward scientific publications. As mathematicians Eitan Pechenik et al. show, the contents of the Google Books corpus in the period of the 1900s is "increasingly dominated by scientific publications rather than popular works," and "even the first data set specifically labeled as fiction appears to be saturated with medical literature."[64] The fact that Google Books is constellated in such a manner thus challenges a "vast majority of existing claims drawn from the Google Books corpus," just as it points to the need "to fully characterize the dynamics of the corpus before using these data sets to draw broad conclusions about cultural and linguistic evolution."[65]

Last but not least, Google Books's collection still bespeaks its beginnings: it still primarily covers Anglophone ground. There is hardly any literature that reviews the geographic scope in Google Books, but existing work does suggest that Google is still heavily oriented toward US-based libraries.[66] This orientation does not necessarily give rise to an Anglophone linguistic hegemony, as some have feared, since many of the Anglophone libraries hold considerable collections of foreign language books. But it does invariably

limit its collections to the works in foreign languages that the elite libraries deemed worthy of preserving. The gaps and biases of Google Books reveal it to be less of a universal and monolithic collection, and more of an impressive, but also specific and contingent, assemblage of works, texts, and relations that is determined by the relations Google Books has entered into in terms of class, discipline, and geographical scope.

Google Books is not only the result of selection processes on the level of partnering institutions, but also on the level of organizational infrastructure. While the infrastructures of Google Books in fact depart from those of its parent company in many regards to avoid copyright infringement charges, there is little doubt, however, that people working actively on Google's digitization activities (included here are both users and Google employees) are also globally distributed in networked constellations. The central organization for cultural digitization, the Google Cultural Institute, is located in Paris, France. Yet the people affiliated with this hub are working across several countries. Moreover, people working on various aspects of Google Books, from marketing to language technology, to software developments and manual scanning processes, are dispersed across the globe. And it is perhaps in this way that we tend to think of Google in general—as a networked global company—and for good reasons. Google has been operating internationally almost for as long as it has been around. It has offices in countries all over the globe, and works in numerous languages. Today it is one of the most important global information institutions, and as more and more people turn to Google for its services, Google also increasingly reflects them—indeed they enter into a complex cognitive feedback mechanism system. Google depends on the growing diversity of its "inhabitants" and on its financial and cultural leverage on a global scale, and to this effect it is continuously fine-tuning its glocalization strategies, blending the universal and the particular. This glocal strategy does not necessarily create a universal company, however; it would be more correct to say that Google's glocality brings the globe to Google, redefining it as an "American" company.[67] Hence, while there is little doubt that Google, and in effect Google Books, increasingly tailors to specific consumers,[68] and that this tailoring allows for a more complex global representation generated by feedback systems, Google's core nevertheless remains lodged on American soil. This is underlined by the fact that Google Books still effectively belongs to US jurisdiction.[69] Google Books is thus on the one hand a globalized company

in terms of both content and institutional framework; yet it also remains an *American* multinational corporation, constrained by US regulation and social standards, and ultimately reinforcing the capacities of the American state. While Google Books operates as a networked glocal project with universal aspirations, then, it also remains fenced in by its legal and cultural apparatuses.

In sum, just as a country's regulatory and political apparatus affects the politics of its cultural memory institutions in the analog world, so is the politics of Google Books co-determined by the operations of Google. Thus, curatorial choices are made not only on the basis of content, but also of the location of server parks, existing company units, lobbying efforts, public policy concerns, and so on. And the institutional identity of Google Books is profoundly late-sovereign in this regard: on one hand it thrives on and operates with horizontal network formations; on the other, it still takes into account and has to operate with, and around, sovereign epistemologies and political apparatuses. These vertical and horizontal lines ultimately rewire the politics of cultural memory, shifting the stakes from sovereign territorial possessions to more functional, complex, and effective means of control.

3 Sovereign Soul Searching: The Politics of Europeana

Introduction

In 2008, the European Commission launched the European mass digitization project, Europeana, to great fanfare. Although the EC's official communications framed the project as a logical outcome of years of work on converging European digital library infrastructures, the project was received in the press as a European counterresponse to Google Books.[1] The popular media framings of Europeana were focused in particular on two narratives: that Europeana was a public response to Google's privatization of cultural memory, and that Europeana was a territorial response to American colonization of European information and culture. This chapter suggests that while both of these sentiments were present in Europeana's early years, the politics of what Europeana was—and is—paints a more complicated picture. A closer glance at Europeana's social, economic, and legal infrastructures thus shows that the European mass digitization project is neither an attempt to replicate Google's glocal model, nor is it a continuation of traditional European cultural policies. Rather, Europeana produces a new form of cultural memory politics that converge national and supranational imaginaries with global information infrastructures.

If global information infrastructures and national politics today seemingly go hand in hand in Europeana, it wasn't always so. In fact, in the 1990s, networked technologies and national imaginaries appeared to be mutually exclusive modes of existence. The fall of the Berlin Wall in 1989 nourished a new antisovereign sentiment, which gave way to recurring claims in the 1990s that the age of sovereignty had passed into an age of post-sovereignty. These claims were fueled by a globalized set of economic, political, and technological forces, not least of which the seemingly

ungovernable nature of the Internet—which appeared to unbuckle the nation-state's control and voice in the process of globalization and gave rise to a sense of plausible anarchy, which in turn made John Perry Barlow's (in)famous "Declaration of the Independence of Cyberspace" appear not as pure utopian fabulation, but rather as a prescient diagnosis.[2] Yet, while it seemed in the early 2000s that the Internet and the cultural and economic forces of globalization had made the notion and practice of the nation-state redundant on both practical and cultural levels, the specter of the nation nevertheless seemed to linger. Indeed, the nation-state continued to remain a fixed point in political and cultural discourses. In fact, it not only lingered as a specter, but borders were also beginning to reappear as regulatory forces. The borderless world was, as Tim Wu and Jack Goldsmith noted in 2006, an illusion;[3] geography had revenged itself, not least in the digital environment.[4]

Today, no one doubts the cultural-political import of the national imaginary. The national imaginary has fueled antirefugee movements, the surge of nationalist parties, the EU's intensified crisis, and the election of Donald Trump, to name just a few critical political events in the 2010s. Yet, while the nationalist imaginary is becoming ever stronger, paradoxically its communicative infrastructures are simultaneously becoming ever more globalized. Thus, globally networked digital infrastructures are quickly supplementing, and in many cases even substituting, those national communicative infrastructures that were instrumental in establishing a national imagined community in the first place—infrastructures such as novels and newspapers.[5] The convergence of territorially bounded imaginaries and global networks creates new cultural-political constellations of cultural memory where the centripetal forces of nationalism operate alongside, sometimes with and sometimes against, the centrifugal forces of digital infrastructures. Europeana is a preeminent example of these complex infrastructural and imaginary dynamics.

A European Response

When Google announced their digitization program at the Frankfurt Book Fair in 2004, it instantly created ripples in the European cultural-political landscape, in France in particular. Upon hearing the news about Google's plans, Jacques Chirac, president of France at the time, promptly urged the

then-culture minister, Renaud Donnedieu de Vabres, and Jean-Noël Jeanneney, head of France's Bibliothèque nationale, to commence a similar digitization project and to persuade other European countries to join them.[6] The seeds for Europeana were sown by France, "the deepest, most sedimented reservoir of anti-American arguments,"[7] as an explicitly political reaction to Google Books.

Europeana was thus from its inception laced with the ambiguous political relationship between two historically competing universalist-exceptionalist nations: the United States and France.[8] A relationship that France sometimes pictures as a question of Americanization, and at other times extends to an image of a more diffuse Anglo-Saxon constellation. Highlighting the effects Google Books would have on French culture, Jeanneney argued that Google's mass digitization efforts would pose several possible dangers to French cultural memory such as bias in the collecting and organizing practices of Google Books and an Anglicization of the cultural memory regulatory system. Explaining why Google Books should be seen not only as an American, but also as an Anglo-Saxon project, Jeanneney noted that while Google Books "was obviously an American project," it was nevertheless also one "that reached out to the British." The alliance between the Bodleian Library at Oxford and Google Books was thus not only a professional partnership in Jeanneney's eyes, but also a symbolic bond where "the familiar Anglo-Saxon solidarity" manifested once again vis-à-vis France, only this time in the digital sphere. Jeanneney even paraphrased Churchill's comment to Charles de Gaulle, noting that Oxford's alliance with Google Books yet again evidenced how British institutions, "without consulting anyone on the other side of the English Channel," favored US-UK alliances over UK-Continental alliances "in search of European patriotism for the adventure under way."[9]

How can we understand Jeanneney's framing of Google Books as an Anglo-Saxon project and the function of this framing in his plea for a nation-based digitization program? As historian Emile Chabal suggests, the concept of the Anglo-Saxon mentality is a preeminently French construct that has a clear and rich rhetorical function to strengthen the French self-understanding vis-à-vis a stereotypical "other."[10] While fuzzy in its conceptual infrastructure, the French rhetoric of the Anglo-Saxon is nevertheless "instinctively understood by the vast majority of the French population" to denote "not simply a socioeconomic vision loosely inspired by market

liberalism and multiculturalism" but also (and sometimes primarily) "an image of individualism, enterprise, and atomization."[11] All these dimensions were at play in Jeanneney's anti-Google Books rhetoric. Indeed, Jeanneney suggested, Google's mass digitization project was not only Anglo-Saxon in its collecting practices and organizational principles, but also in its regulatory framework: "We know how Anglo-Saxon law competes with Latin law in international jurisdictions and in those of new nations. I don't want to see Anglo-Saxon law unduly favored by Google as a result of the hierarchy that will be spontaneously established on its lists."[12]

What did Jeanneney suggest as infrastructural protection against the network power of the Anglo-Saxon mass digitization project? According to Jeanneney, the answer lay in territorial digitization programs: rather than simply accepting the colonizing forces of the Anglo-Saxon matrix, Jeanneney argued, a national digitization effort was needed. Such a national digitization project would be a "*contre-attaque*" against Google Books that should protect three dimensions of French cultural sovereignty: its language, the role of the state in cultural policy, and the cultural/intellectual order of knowledge in the cultural collections.[13] Thus Jeanneney suggested that any Anglo-Saxon mass digitization project should be competed against and complemented by mass digitization projects from other nations and cultures to ensure that cultural works are embedded in meaningful cultural contexts and languages. While the nation was the central base of mass digitization programs, Jeanenney noted, such digitization programs necessarily needed to be embedded in a European, or Continental, infrastructure. Thus, while Jeanneney's rallying cry to protect the French cultural memory was voiced from France, he gave it a European signature, frequently addressing and including the rest of Europe as a natural ally in his *contre-attaque* against Google Books.[14] Jeanenney's extension of French concerns to a European level was characteristic for France, which had historically displayed a leadership role in formulating and shaping the EU.[15] The EU, Jeanneney argued, could provide a resilient supranational infrastructure that would enable French diversity to exist within the EU while also providing a protective shield against unhampered Anglo-Saxon globalization.

Other French officials took on a less combative tone, insisting that the French digitization project should be seen not merely as a reaction to Google but rather in the context of existing French and European efforts to make

information available online. "I really stress that it's not anti-American," stated one official at the Ministry of Culture and Communication. Rather than framing the French national initiatives as a reaction to Google Books, the official instead noted that the prime objective was to "make more material relevant to European patrimony available," noting also that the national digitization efforts were neither unique nor exclusionary—not even to Google.[16] The disjunction between Jeanneney's discursive claims to mass digitization sovereignty and the anonymous bureaucrat's pragmatic and networked approach to mass digitization indicates the late-sovereign landscape of mass digitization as it unfolded between identity politics and pragmatic politics, between discursive claims to sovereignty and economic global cooperation. And as the next section shows, the intertwinement of these discursive, ideological, and economic infrastructures produced a memory politics in Europeana that was neither sovereign nor post-sovereign, but rather late-sovereign.

The Infrastructural Reality of Late-Sovereignty

Politically speaking, Europeana was always more than just an empty countergesture or emulating response to Google. Rather, as soon as the EU adopted Europeana as a prestige project, Europeana became embedded in the political project of Europeanization and began to produce a political logic of its own. Latching on to (rather than countering) a sovereign logic, Europeana strategically deployed the European imaginary as a symbolic demarcation of its territory. But the means by which Europeana was constructed and distributed its territorial imaginaries nevertheless took place by means of globalized networked infrastructures. The circumscribed cultural imaginary of Europeana was thus made interoperable with the networked logic of globalization. This combination of a European imaginary and neoliberal infrastructure in Europeana produced an uneasy balance between national and supranational infrastructural imaginaries on the one hand and globalized infrastructures on the other.

If France saw Europeana primarily through the prism of sovereign competition, the European Commission emphasized a different dispositive: economic competition. In his 2005 response to Jaques Chirac, José Manuel Barroso acknowledged that the digitization of European cultural heritage

was an important task not only for nation-states but also for the EU as a whole. Instead of the defiant tone of Jeanneney and De Vabres, Barraso and the EU institutions opted for a more neutral, pragmatic, and diplomatic mass digitization discourse. Instead of focusing on Europeana as a lever to prop up the cultural sovereignty of France, and by extension Europe, in the face of Americanization, Barosso framed Europeana as an important economic element in the construction of a knowledge economy.[17]

Europeana was thus still a competitive project, but it was now reframed as one that would be much more easily aligned with, and integrated into, a global market economy.[18] One might see the difference in the French and the EU responses as a question of infrastructural form and affordance. If French mass digitization discourses were concerned with circumscribing the French cultural heritage within the territory of the nation, the EC was in practice more attuned to the networked aspects of the global economy and an accompanying discourse of competition and potentiality. The infrastructural shift from delineated sphere to globalized network changed the infrapolitics of cultural memory from traditional nation-based issues such as identity politics (including the formation of canons) to more globally aligned trade-related themes such as copyright and public-private governance.

The shift from canon to copyright did not mean, however, that national concerns dissipated. On the contrary, ministers from the European Union's member countries called for an investigation into the way Google Books handled copyright in 2008.[19] In reality, Google Books had very little to do with Europe at that time, in the sense that Google Books was governed by US copyright law. Yet the global reach of Google Books made it a European concern nevertheless. Both German and French representatives emphasized the rift between copyright legislation in the US and in EU member states. The German government proposed that the EC examine whether Google Books conformed to Europe's copyright laws. In France, President Nicolas Sarkozy stated in more flamboyant terms that he would not permit France to be "stripped of our heritage to the benefit of a big company, no matter how friendly, big, or American it is."[20] Both countries moreover submitted *amicus curia* briefs[21] to judge Denny Chin (who was in charge of the ongoing Google Books settlement lawsuit in the US[22]), in which they argued against the inclusion of foreign authors in the lawsuit.[23] They further brought separate suits against Google Books for their scanning

activities and sought to exercise diplomatic pressure against the advancement of Google Books.[24]

On an EU level, however, the territorial concerns were sidestepped in favor of another matrix of concern: the question of public-private governance. Thus, despite pressure from some member states, the EC decided not to write a similar "amicus brief" on behalf of the EU.[25] Instead, EC Commissioners McCreevy and Reding emphasized the need for more infrastructures connecting the public and private sectors in the field of mass digitization.[26] Such PPPs could range from relatively conservative forms of cooperation (e.g., private sponsoring, or payments from the private sector for links provided by Europeana) to more far-reaching involvement, such as turning the management of Europeana over to the private sector.[27] In a similar vein, a report authored by a high-level reflection group (Comité des Sages) set down by the European Commission opened the door for public-private partnerships and also set a time frame for commercial exploitation.[28] It was even suggested that Google could play a role in the construction of Europeana. These considerations thus contrasted the French resistance against Google with previous statements made by the EC, which were concerned with preserving the public sector in the administration of Europeana.

Did the European Commission's networked politics signal a post-sovereign future for Europeana? This chapter suggests no: despite the EC's strategies, it would be wrong to label the infrapolitics of Europeana as post-sovereign. Rather, Europeana draws up a *late-sovereign*[29] mass digitization landscape, where claims to national sovereignty exist alongside networked infrastructures.[30] Why not post-sovereign? Because, as legal scholar Neil Walker noted in 2003,[31] the logic of sovereignty never waned even in the face of globalized capitalism and legal pluralism. Instead, it fused with these more globalized infrastructures to produce a form of politics that displayed considerable continuity with the old sovereign order, yet also had distinctive features such as globalized trade networks and constitutional pluralisms. In this new system, seemingly traditional claims to sovereignty are carried out irrespective of political practices, showing that globally networked infrastructures and sovereign imaginaries are not necessarily mutually exclusive; rather, territory and nation continue to remain powerful emotive forces. Since Neil Walker's theoretical corrective to theories on post-sovereignty, the notion of late sovereignty seems to have only

gained in relevance as nationalist imaginaries increase in strength and power through increasingly globalized networks.

As the following section shows, Europeana is a product of political processes that are concerned with both the construction of bounded spheres and canons *and* networked infrastructures of connectivity, competition, and potentiality operating beyond, below, and between national societal structures. Europeana's late-sovereign framework produces an infrapolitics in which the discursive political juxtaposition between Europeana and Google Books exists alongside increased cooperation between Google Books and Europeana, making it necessary to qualify the comparative distinctions in mass digitization projects on a much more detailed level than merely territorial delineations, without, however, disposing of the notion of sovereignty. The simultaneous contestations and connections between Europeana and Google Books thus make visible the complex economic, intellectual, and technological infrastructures at play in mass digitization.

What form did these infrastructures take? In a sense, the complex infrastructural set-up of Europeana as it played out in the EU's framework ended up extending along two different axes: a vertical axis of national and supranational sovereignty, where the tectonic territorial plates of nation-states and continents move relative to each other by converging, diverging, and transforming; and a horizontal axis of deterritorializing flows that stream within, between, and throughout sovereign territories consisting both of capital interests (in the form of transnational lobby organizations working to protect, promote, and advance the interests of multinational companies or nongovernmental organizations) and the affective relations of users.

Harmonizing Europe: From Canon to Copyright

Even if the EU is less concerned with upholding the regulatory boundaries of the nation-state in mass digitization, bordering effects are still found in mass digitized collections—this time in the form of copyright regulation. As in the case of Google Books, mass digitization also raised questions in Europe about the future role of copyright in the digital sphere. On the one hand, cultural industries were concerned about the implications of mass

digitization for their production and copyrights[32]; on the other hand, educational institutions and digital industries were interested in "unlocking" the cognitive and cultural potentials that resided within the copyrighted collections in cultural heritage institutions. Indeed, copyright was such a crucial concern that the EC repeatedly stated the necessity to reform and harmonize European copyright regulation across borders.

Why is copyright a concern for Europeana? Alongside economic challenges, the current copyright legislation is *the* greatest obstacle against mass digitization. Copyright effectively prohibits mass digitization of any kind of material that is still within copyright, creating large gaps in digitized collections that are often referred to as "the twentieth-century black hole." These black holes appear as a result of the way European "copyright interacts with the digitization of cultural heritage collections" and manifest themselves as "marked lack of online availability of twentieth-century collections."[33] The lack of a common copyright mechanism not only hinders online availability, but also challenges European cross-border digitization projects as well as the possibilities for data-mining collections à la Google because of the difficulties connected to ascertaining the relevant public domain and hence definitively flagging the public domain status of an object.[34]

While Europeana's twentieth-century black hole poses a problem, Europe would not, as one worker in the EC's Directorate-General (DG) Copyright unit noted, follow Google's opt-out mass digitization strategy because "the European solution is not the Google solution. We do a diligent search for the rights holder before digitizing the material. We follow the law."[35] By positioning herself as on the right side of the law, the DG employee implicitly also placed Google on the wrong side of the law. Yet, as another DG employee explained with frustration, the right side of the law was looking increasingly untenable in an age of mass digitization. Indeed, as she noted, the demands for diligent search was making her work near impossible, not least due to the different legal regimes in the US and the EU:

> Today if one wants to digitize a work, one has to go and ask the rights holder individually. The problem is often that you can't find the rights holder. And sometimes it takes so much time. So there is a rights holder, you know that he would agree, but it takes so much time to go and find out. And not all countries have collective management … you have to go company by company. In Europe we have producing companies that disappear after the film has been made, because they are created

only to make that film. So who are you going to ask? While in the States the situation is different. You have the majors, they have the rights, you know who to ask because they are very stable. But in Europe we have this situation, which makes it very difficult, the cultural access to cultural heritage. Of course we dream of changing this.[36]

The dream is far from realized, however. Since the EU has no direct legislative competence in the area of copyright, Europeana is the center of a natural tension between three diverging, but sometimes overlapping instances: the exclusivity of national intellectual property laws, the economic interests toward a common market, and the cultural interests in the free movement of information and knowledge production—a tension that is further amplified by the coexistence of different legal traditions across member states.[37] Seeking to resolve this tension, the European Parliament and certain units in the European Commission have strategically used Europeana as a rhetorical lever to increase harmonization of copyright legislation and thus make it easier for institutions to make their collections available online.[38] "Harmonization" has thus become a key concept in the rights regime of mass digitization, essentially signaling interoperability rather than standardization of national copyright regimes. Yet stakeholders differ in their opinions concerning who should hold what rights over what content, over what period of time, at what price, and how things should be made available. So within the process of harmonization is a process that is less than harmonious, namely bringing stakeholders to the table and committing. As the EC interviewee confirms, harmonization requires not only technical but also political cooperation.

The question of harmonization illustrates the infrapolitical dimensions of Europeana's copyright systems, showing that they are not just technical standards or "direct mirrors of reality" but also "co-produced responses to technoscientific and political uncertainty."[39] The European attempts to harmonize copyright standards across national borders therefore pit not only one technical standard against the other, but also "alternative political cultures and their systems of public reasoning against one another"[40] (Jasanoff, 133). Harmonization thus compresses, rather than eliminates, national varieties within Europe.[41] Hence, Barroso's vision of Europeana as a collective *European* cultural memory is faced with the fragmented patterns of national copyright regimes, producing if not overtly political borders in the collections, then certainly infrapolitical manifestations of the cultural barriers that still exist between European countries.

The Infrapolitics of Interoperability

Copyright is not the only infrastructural regime that upholds borders in Europeana's collections; technical standards also pose great challenges for the dream of an European connective cultural memory.[42] The notion of *interoperability*[43] has therefore become a key concern for mass digitization, as interoperability is what allows digitized cultural memory institutions to exchange and share documents, queries, and services.[44]

The rise of interoperability as a key concept in mass digitization is a side-effect of the increasing complexity of economic, political, and technological networks. In the twentieth century, most European cultural memory institutions existed primarily as small "sovereign" institutions, closed spheres governed by internal logics and with little impetus to open up their internal machinery to other institutions and cooperate. The early 2000s signaled a shift in the institutional infrastructural layout of cultural memory institutions, however. One early significant articulation of this shift was a 324-page European Commission report entitled *Technological Landscapes for Tomorrow's Cultural Economy: Unlocking the Value of Cultural Heritage* (or the DigiCULT study), a "roadmap" that outlined the political, organizational, and technological challenges faced by European museums, libraries, and archives in the period 2002–2006. A central passage noted that the "conditions for success of the cultural and memory institutions in the Information Society is (sic) the 'network logic,' a logic that is of course directly related to the necessity of being interoperable."[45] The network logic and resulting demand for interoperability was not merely a question of digital connections, the report suggested, but a more pervasive logic of contemporary society. The report thus conceived interoperability as a question that ran deeper that technological logic.[46] The more complex cultural memory infrastructures become, the more interoperability is needed if one wants the infrastructures to connect and communicate with each other.[47] As information scholar Christine Borgman notes, interoperability has therefore long been "the holy grail of digital libraries"—a statement echoed by Commissioner Reding on Europeana in 2005 when she stated that "I am not suggesting that the Commission creates a single library. I envisage a network of many digital libraries—in different institutions, across Europe."[48] Reding's statement shows that even at the height of the French exceptionalist discourse on European mass digitization, other political forces worked

instead to reformat the sovereign sphere into a network. The unravelling of the bounded spheres of cultural memory institutions into networked infrastructures is therefore both an effect of, and the further mobilization of, increased interoperability.

Interoperability is not only a concern for mass digitization projects, however; rather, the calls for interoperability takes place on a much more fundamental level. A European Council Conclusion on Europeana identifies interoperability as a key challenge for the future construction of Europeana, but also embeds this concern within the overarching European interoperability strategy, *European Interoperability Framework for pan-European eGovernment services*.[49] Today, then, interoperability appears to be turning into a social theory. The extension of the concept of interoperability into the social sphere naturally follows the socialization of another technical term: infrastructure. In the past decades, Susan Leigh Star, Geoffrey Bowker, and others have successfully managed to frame infrastructure "not only in terms of human versus technological components but in terms of a set of interrelated social, organizational, and technical components or systems (whether the data will be shared, systems interoperable, standards proprietary, or maintenance and redesign factored in)."[50] It follows, then, as Christine Borgman notes, that even if interoperability in technical terms is a "feature of products and services that allows the connection of people, data, and diverse systems,"[51] policy practice, standards and business models, and vested interest are often greater determinants of interoperability than is technology.[52] In similar terms, information science scholar Jerome Mcdonough notes that "we need to cease viewing [interoperability] purely as a technical problem, and acknowledge that it is the result of the interplay of technical and social factors."[53] Pushing the concept of interoperability even further, legal scholars Urs Gasser and John Palfrey have even argued for viewing the world through a theory of interoperability, naming their project "interop theory,"[54] while Internet governance scholar Laura Denardis proposes a political theory of interoperability.[55]

More than denoting a technical fact, then, interoperability emerges today as an infrastructural logic, one that promotes openness, modularity, and connectivity. Within the field of mass digitization, the notion of interoperability is in particular promoted by the infrastructural workers of cultural memory (e.g., archivists, librarians, software developers, digital humanists, etc.) who dream of opening up the silos they work on to enrich

them with new meanings.[56] As noted in chapter 1, European cultural memory institutions had begun to address unconnected institutions as closed "silos." Mass digitization offered a way of thinking of these institutions anew—not as frigid closed containers, but rather as vital connective infrastructures. Interoperability thus gives rise to a new infrastructural form of cultural memory: the traditional delineated sovereign spheres of expertise of analog cultural memory institutions are pried open and reformatted as networked ecosystems that consist not only of the traditional national public providers, but also of additional components that have hitherto been alien in the cultural memory industry, such as private individual users and commercial industries.[57]

The logic of interoperability is also born of a specific kind of infrapolitics: the politics of modular openness. Interoperability is motivated by the "open" data movements that seek to break down proprietary and disciplinary boundaries and create new cultural memory infrastructures and ways of working with their collections. Such visions are often fueled by Lawrence Lessig's conviction that "the most important thing that the Internet has given us is a platform upon which experience is interoperable."[58] And they have given rise to the plethora of cultural concepts we find on the Internet in the age of digital capitalism, such as "prosumers", "produsers", and so on. These concepts are becoming more and more pervasive in the digital environment where "any format of sound can be mixed with any format of video, and then supplemented with any format of text or images."[59] According to Lessig, the challenge to this "open" vision are those "who don't play in this interoperability game," and the contestation between the "open" and the "closed" takes place in the "the network," which produces "a world where anyone can clip and combine just about anything to make something new."[60]

Despite its centrality in the mass digitization rhetoric, the concept of interoperability and the politics it produces is rarely discussed in critical terms. Yet, as Gasser and Palfrey readily conceded in 2007, interoperability is not necessarily in itself an "unalloyed good." Indeed, in "certain instances," Palfrey and Gasser noted, interoperability brings with it possible drawbacks such as increased homogeneity, lack of security, lack of reliability.[61] Today, ten years on, Urs Gasser's and John Palfrey's admissions of the drawbacks of interoperability appear too modest, and it becomes clear that while their theoretical apparatus was able to identify the centrality of

interoperability in a digital world, their social theory missed its larger political implications.

When scanning the literature and recommendations on interoperability, certain words emerge again and again: innovation, choice, diversity, efficiency, seamlessness, flexibility, and access. As Tara McPherson notes in her related analysis of the politics of modularity, it is not much of a stretch to "layer these traits over the core tenets of post-Fordism" and note their effect on society: "time-space compression, transformability, customization, a public/private blur, etc."[62] The result, she suggests, is a remaking of the Fordist standardization processes into a "neoliberal rule of modularity." Extending McPherson's critique into the temporal terrain, Franco Bifo Berardi emphasizes the semantic politics of speed that is also inherent in connectivity and interoperability: "Connection implies smooth surfaces with no margins of ambiguity … connections are optimized in terms of speed and have the potential to accelerate with technological developments.[63] The connectivity enabled by interoperability thus implies modularity with components necessarily "open to interfacing and interoperability." Interoperability, then, is not only a question of openness, but also a way of harnessing network effects by means of speed and resilience.

While interoperability may be an inherent infrastructural tenet of neoliberal systems, increased interoperability does not automatically make mass digitization projects neoliberal. Yet, interoperability does allow for increased connectivity between individual cultural memory objects and a neoliberal economy. And while the neoliberal economy may emulate critical discourses on freedom and creativity, its main concern is profit. The same systems that allow users to create and navigate collections more freely are made interoperable with neoliberal systems of control.[64]

The "Work" in Networking

What are the effects of interoperability for the user? The culture of connectivity and interoperability has not only allowed Europeana's collections to become more visible to a wider public, it has also enabled these publics to become intentionally or unintentionally involved in the act of describing and ordering these same collections, for instance by inviting users to influence existing collections as well as to generate their own collections.

The increased interaction with works also transform them from stable to mobile objects.[65] Mass digitization has thus transformed curatorial practice, expanding it beyond the closed spheres of cultural memory institutions into much broader ecosystems and extending the focus of curatorial attention from fixed objects to dynamic network systems. As a result, "curatorial work has become more widely distributed between multiple agents including technological networks and software."[66] From having played a central role in the curatorial practice, the curator is now only part of this entire system and increasingly not central to it. Sharing the curator's place are users, algorithms, software engineers, and a multitude of other factors.

At the same time, the information deluge generated by digitization has enhanced the necessity of curation, both within and outside institutions. Once considered as professional caretaking for collections, the curatorial concept has now been modulated to encompass a whole host of activities and agents, just as curatorial practices are now ever more engaged in epistemic meaning making, selecting and organizing materials in an interpretive framework through the aggregation of global connection.[67] And as the already monumental and ever accelerating digital collections exceed human curatorial capacity, the computing power of machines and cognitive capabilities of ordinary citizens is increasingly needed to penetrate and make meaning of the data accumulations.

What role is Europeana's user given in this new environment? With the increased modulation of public-private boundaries, which allow different modules to take on different tasks and on different levels, the strict separation between institution and environment is blurring in Europeana. So is the separation between user, curator, consumer, and producer. New characters have thus arisen in the wake of these transformations, hereunder the two concepts of the "amateur" and the "citizen scientist."

In contrast to much of the microlabor that takes place in the digital sphere, Europeana's participatory structures often consist in cognitive tasks that are directly related to the field of cultural memory. This aligns with the aspirations of the Citizen Science Alliance, which requires that all their crowdsourcing projects answer "a real scientific research question" and "must never waste the 'clicks,' or time, of volunteers."[68] Citizen science is an emergent form of research practice in which citizens participate in research projects on different levels and in different constellations with

established research communities. The participatory structures of citizen science range from highly complex processes to more simple tasks, such as identifying colors, themes, patterns that challenge machinic analyses, and so on. There are different ways of classifying these participatory structures, but the most prevalent participatory structures in Europeana include:

1. Contribution, where visitors are solicited to provide limited and specified objects, actions, or ideas to an institutionally controlled process, for example, Europeana's *1914–1918* exhibition, which allowed (and still allows) users to contribute photos, letters, and other memorabilia from that period.
2. Correction and transcription, where users correct faulty OCR scans of books, newspapers, etc.
3. Contextualization, that is, the practice of placing or studying objects in a meaningful context.
4. Augmenting collections, that is, enriching collections with additional dimensions. One example is the recently launched Europeana Sound Connections, which encourages and enables visitors to "actively enrich geo-pinned sounds from two data providers with supplementary media from various sources. This includes using freely reusable content from Europeana, Flickr, Wikimedia Commons, or even individuals' own collections."[69]
5. And finally, Europeana also offers participation through classification, that is, a social tagging system in which users contribute with classifications.

All these participatory structures fall within the general rubric of crowdsourcing, and they are often framed in social terms and held up as an altruistic alternative to the capitalist exploitation of other crowdsourcing projects, because, as new media theorist Mia Ridge argues, "unlike commercial crowdsourcing, participation in cultural memory crowdsourcing is driven by pleasure, not profit. Rather than monetary recompense, GLAM (Galleries, Museums, Archives, and Libraries) projects provide an opportunity for altruistic acts, activated by intrinsic motivations, applied to inherently engaging tasks, encouraged by a personal interest in the subject or task."[70] In addition—and based on this notion of altruism—these forms of crowdsourcing are also subversive successors of, or correctives to, consumerism.

The idea of pitting the activities of citizen science against more simple consumer logics has been at the heart of Europeana since its inception, particularly influenced by the French philosopher Bernard Stiegler, who has been instrumental not only in thinking about, but also building, Europeana's software infrastructures around the character of the "amateur." Stiegler's thesis was that the amateur could subvert the industrial ethos of production because he/she is not driven by a desire to consume as much as a desire to love, and thus is able to imbue the archive with a logic different from pure production[71] without withdrawing from participation (the word "amateur" comes from the French word *aimer*).[72] Yet it appears to me that the convergence of cultural memory ecosystems leaves little room for the philosophical idea of mobilizing amateurism as a form of resistance against capitalist logics.[73] The blurring of production boundaries in the new cultural memory ecosystems raises urgent questions to cultural memory institutions of how they can protect the ethos of the amateur in citizen archives,[74] while also aligning them with institutional strategies of harvesting the "cognitive surplus" of users[75] in environments where play is increasingly taking on aspects of labor and vice versa. As cultural theorist Angela Mitropoulos has noted, "networking is also net-working."[76] Thus, while many of the participatory structures we find in Europeana are participatory projects proper and not just what we might call participation-lite—or minimal participation[77]—models, the new interoperable infrastructures of cultural memory ecosystems make it increasingly difficult to uphold clear-cut distinctions between civic practice and exploitation in crowdsourcing projects.

Collecting Europe

If Europeana is a late-sovereign mass digitization project that maintains discursive ties to the national imaginary at the same time that it undercuts this imaginary by means of networked infrastructures through increased interoperability, the final question is: what does this late-sovereign assemblage produce in cultural terms? As outlined above, it was an aspiration of Europeana to produce and distribute European cultural memory by means of mass digitization. Today, its collection gathers more than 50 million cultural works in differing formats—from sound bites to photographs, textiles, films, files, and books. As the previous sections show, however, the

processes of gathering the cultural artifacts have generated a lot of friction, producing a political reality that in some respects reproduces and accentuates the existing politics of cultural memory institutions in terms of representation and ownership, and in other respects gives rise to new forms of cultural memory politics that part ways with the political regimes of traditional curatorial apparatuses.

The story of how Europeana's initial collection was published and later revised offers a good opportunity to examine its late-sovereign political dynamics. Europeana launched in 2008, giving access to some 4.5 million digital objects from more than 1,000 institutions. Shortly after its launch, however, the site crashed for several hours. The reason given by EU officials was that Europeana was a victim of its own success: "On the first day of its launch, Europe's digital library Europeana was overwhelmed by the interest shown by millions of users in this new project … thousands of users searching in the very same second for famous cultural works like the *Mona Lisa* or books from Kafka, Cervantes, or James Joyce. … The site was down because of massive interest, which shows the enormous potential of Europeana for bringing cultural treasures from Europe's cultural institutions to the wide public."[78] The truth, however, lay elsewhere. As a Europeana employee explained, the site didn't buckle under the enormous interest shown in it, but rather because "people were hitting the same things everywhere." The problem wasn't so much the way they were hitting on material, but *what* they were hitting; the Europeana employee explained that people's search terms took the Commission by surprise, "even hitting things the Commission didn't want to show. Because people always search for wrong things. People tend to look at pornographic and forbidden material such as *Mein Kampf*, etc."[79] Europeana's reaction was to shut down and redesign Europeana's search interface. Europeana's crash was not caused by user popularity, but rather was caused by a decision made by the Commission and Europeana staff to rework the technical features of Europeana so that the most popular searches would not be public and to remove potentially politically contentious material such as *Mein Kampf* and nude works by Peter Paul Rubens and Abraham Bloemaert, among others. Another Europeana employee explained that the launch of Europeana had been forced through before its time because of a meeting among the cultural ministers in Europe, making it possible to display only a prototype. This beta version was coded to reveal the most popular searches, producing a "carousel" of

the same content because, as the previous quote explains, people would search for the same things, in particular "porn" and "*Mein Kampf*," allegedly leading the US press to call Europeana a collection of fascist and porn material.

On a small scale, Europeana's early glitch highlighted the challenge of how to police the incoming digital flows from national cultural heritage institutions for in-copyright works. With hundreds of different institutions feeding hundreds of thousands of texts, images, and sounds into the portal, scanning the content for illegal material was an impossible task for Europeana employees. Many in-copyright works began flooding the portal. One in-copyright work that appeared in the portal stood out in particular: Hitler's *Mein Kampf*. A common conception has been that *Mein Kampf* was banned after WWII. The truth was more complicated and involved a complex copyright case. When Hitler died, his belongings were given to the state of Bavaria, including his intellectual property rights to *Mein Kampf*. Since Hitler's copyright was transferred as part of the Allies' de-Nazification program, the Bavarian state allowed no one to republish the book.[80] Therefore, reissues of *Mein Kampf* only reemerged in 2015, when the copyright was released. The premature digital distribution of *Mein Kampf* in Europeana was thus, according to copyright legislation, illegal. While the *Mein Kampf* case was extraordinary, it flagged a more fundamental problem of how to police and analyze all the incoming data from individual cultural heritage institutions.

On a more fundamental level, however, *Mein Kampf* indicated not only a legal, but also a political, issue for Europeana: how to deal with the expressions that Europeana's feedback mechanisms facilitated. Mass digitization promoted a new kind of cultural memory logic, namely of feedback. Feedback mechanisms are central to data-driven companies like Google because they offer us traces of the inner worlds of people that would otherwise never appear in empirical terms, but that can be catered to in commercial terms.[81] Yet, while the traces might interest the corporation (or sociologist) on the hunt for people's hidden thoughts, a prestige project such as Europeana found it untenable. What Europeana wanted was to present Europe's cultural memory; what they ended up showing was Europeans' intense fascination with fascism and porn. And this was problematic because Europeana was a political project of representation, not a commercial project of capture.[82]

Since its glitchy launch, Europeana has refined its interface techniques, is becoming more attuned to network analytics, and has grown exponentially both in terms of institutional and in material scope. There are, at the time of this writing, more than 50 million items in Europeana, and while its numbers are smaller than Google Books, its scope is much larger, including images, texts, sounds, videos, and 3-D objects. The platform features carefully curated exhibitions highlighting European themes, from generalized exhibitions about World War I and European artworks to much more specialized exhibitions on, for instance, European cake culture.

But how is Europe represented in statistical terms? Since Europeana's inception, there have been huge variances in how much each nation-state contributes to Europeana.[83] So while Europeana is in principle representing Europe's collective cultural memory, in reality it represents a highly fragmented image of Europe with a lot of European countries not even appearing in the databases. Moreover, even these numbers are potentially misleading, as one information scholar formerly working with Europeana notes: to pump up their statistical representation, many institutions strategically invented counting systems that would make their representation seem bigger than it really is, for example, by declaring each scanned page in a medieval manuscript as an object instead of as the entire work.[84] The strategic acts of volume increase are interesting mass digitization phenomena for many reasons: first, they reveal the ultimately volume-based approach of mass digitization. According to the scholar, this volume-based approach finds a political support in the EC system, for whom "the object will always be quantitative" since volume is "the only thing the commission can measure in terms of funding and result."[85] In a way then, the statistics tell more than one story: in political terms, they recount not only the classic tale of a fragmented Europe but also how Europe is increasingly perceived, represented, and managed by calculative technologies. In technical terms, they reveal the gray areas of how to delineate and calculate data: what makes a data object? And in cultural policy terms, they reflect the highly divergent prioritization of mass digitization in European countries.

The final question is, then: how is this fragmented European collection distributed? This is the point where Europeana's territorial matrix reveals its ultimately networked infrastructure. Europeana may be entered through Google, Facebook, Twitter, and Pinterest, and vice versa. Therefore a click on the aforementioned cake exhibition, for example, takes one straight to

Google Arts and Culture. The transportation from the Europeana platform to Google happens smoothly, without any friction or notice, and if one didn't look at the change in URL, one would hardly notice the change at all since the interface appears almost similar. Yet, what are the implications of this networked nature? An obvious consequence is that Europeana is structurally dependent on the social media and search engine companies. According to one Europeana report, Google is the biggest source of traffic to the Europeana portal, accounting for more than 50 percent of visits. Any changes in Google's algorithm and ranking index therefore significantly impact traffic patterns on the Europeana portal, which in turn affects the number of Europeana pages indexed by Google, which then directly impacts on the number of overall visits to the Europeana portal.[86] The same holds true for Facebook, Pinterest, Google+, etc.

Held together, the feedback mechanisms, the statistical variance, and the networked infrastructures of Europeana show just how difficult it is to collect Europe in the digital sphere. This is not to say that territorial sentiments don't have power, however—far from it. Within the digital sphere we are already seeing territorial statements circulated in Europe on both national and supranational scales, with potentially far-reaching implications on both. Yet, there is little to suggest that the territorial sentiments will reproduce sovereign spheres in practice. To the extent that reterritorializing sentiments are circulated in globalizing networks, this chapter has sought to counter both ideas about post sovereignty and pure nationalization, viewing mass digitization instead through the lens of late-sovereignty. As this chapter shows, the notion of late-sovereignty allows us to conceptualize mass digitization programs, such as Europeana, as globalized phenomena couched within the language of (supra)national sovereignty. In the age where rampant nationalist movements sweep through globalized communication networks, this approach feels all the more urgent and applicable not only to mass digitization programs, but also to reterritorializing communication phenomena more broadly. Only if we take the ways in which the nationalist imaginary works in the infrastructural reality of late capitalism, can we begin to account for the infrapolitics of the highly mediated new territorial imaginaries.

4 The Licit and Illicit Nature of Mass Digitization

Introduction: Lurking in the Shadows

A friend has just recommended an academic book to you, and now you are dying to read it. But you know that it is both expensive and hard to get your hands on. You head down to your library to request the book, but you soon realize that the wait list is enormous and that you will not be able to get your hands on the book for a couple of weeks. Desperate, you turn to your friend for help. She asks, "Why don't you just go to a pirate library?" and provides you with a link. A new world opens up. Twenty minutes later you have downloaded 30 books that you felt were indispensable to your bookshelf. You didn't pay a thing. You know what you did was illegal. Yet you also felt strangely justified in your actions, not least spurred on by the enthusiastic words on the shadow library's front page, which sets forth a comforting moral compass. You begin thinking to yourself: "Why are pirate libraries deemed more illegal than Google's controversial scanning project?" and "What are the moral implications of my actions vis-à-vis the colonial framework that currently dictates Europeana's copyright policies?"

The existence of what this book terms shadow libraries raises difficult questions, not only to your own moral compass but also to the field of mass digitization. Political and popular discourses often reduce the complexity of these questions to "right" and "wrong" and Hollywood narratives of pirates and avengers. Yet, this chapter wishes to explore the deeper infrapolitical implications of shadow libraries, setting out the argument that shadow libraries offer us a productive framework for examining the highly complex legal landscape of mass digitization. Rather than writing a chapter that either supports or counters shadow libraries, the chapter seeks

to chart the complexity of the phenomenon and tease out its relevance for mass digitization by framing it within what we might call an infrapolitics of parasitism.

In *The Parasite*, a strange and fabulating book that brings together information theory and cybernetics, physics, philosophy, economy, biology, politics, and folk tales, French philosopher Michel Serres constructs an argument about the conceptual figure of the parasite to explore the parasitic nature of social relations. In a dizzying array of images and thought-constructs, Serres argues against the idea of a balanced exchange of energy, suggesting instead that our world is characterized by one parasite stealing energy by feeding on another organism. For this purpose he reminds us of the three meanings of parasite in the French language. In French, the term parasite has three distinct, but related meanings. The first relates to one organism feeding off another and giving nothing in return. Second, it refers to the social concept of the freeloader, who lives off society without giving anything in return. Both of these meanings are fairly familiar to most, and lay the groundwork for our annoyance with both bugs and spongers. The third meaning, however, is less known in most languages except French: here the parasite is static noise or interference in a channel, interrupting the seemingly balanced flow of things, mediating and thus transforming relations. Indeed, for Serres, the parasite is itself a disruptive relation (rather than entity). The parasite can also change positions of sender, receiver, and noise, making it exceedingly difficult to discern parasite from nonparasite; indeed, to such an extent that Serres himself exclaims "I no longer really know how to say it: the parasite parasites the parasites."[1] Serres thus uses his parasitic model to make a claim about the nature of cybernetic technologies and the flow of information, arguing that "cybernetics gets more and more complicated, makes a chain, then a network. Yet it is founded on the theft of information, quite a simple thing."[2] The logic of the parasite, Serres argues, is the logic of the interrupter, the "excluded third" or "uninvited guest" who intercepts and confuses relations in a process of theft that has a value both of destruction and a value of construction. The parasite is thus a generative force, inventing, affecting, and transforming relations. Hence, parasitism refers not only to an act of interference but also to an interruption that "invents something new."[3]

Michel Serres's then-radical philosophy of the parasite is today echoed by a broader recognition of the parasite as not only a dangerous entity, but

also a necessary mediator. Indeed, as Jeanette Samyn notes, we are today witnessing a "pro-parasitic" movement in science in which "scientists have begun to consider parasites and other pathogens not simply as problems but as integral components of ecosystems."[4] In this new view, "… the parasite takes from its host without ever taking its place; it creates new room, feeding off excess, sometimes killing, but often strengthening its milieu." In the following sections, the lens of the parasite will help us explore the murky waters of shadow libraries, not (only) as entities, but also as relational phenomena. The point is to show how shadow libraries belong to the same infrapolitical ecosystem as Google Books and Europeana, sometimes threatening them, but often also strengthening them. Moreover, it seeks to show how visitors' interactions with shadow libraries are also marked by parasitical relations with Google, which often mediates literature searches, thus entangling Google and shadow libraries in a parasitical relationship where one feeds off the other and vice versa.

Despite these entangled relations, the mass digitization strategies of shadow libraries, Europeana, and Google Books differ significantly. Basically, we might say that Google Books and Europeana each represent different strategies for making material available on an industrial scale while maintaining claims to legality. The sprawling and rapidly growing group of mass digitization projects interchangeably termed shadow libraries represents a third set of strategies. Shadow libraries[5] share affinities with Europeana and Google Books in the sense that they offer many of the same services: instant access to a wealth of cultural works spanning journal articles, monographs, and textbooks among others. Yet, while Google Books and Europeana promote visibility to increase traffic, embed themselves in formal systems of communication, and operate within the legal frameworks of public funding and private contracting, shadow libraries in contrast operate in the shadows of formal visibility and regulatory systems. Hence, while formal mass digitization projects such as Google Books and Europeana publicly proclaim their desire to digitize the world's cultural memory, another layer of people, scattered across the globe and belonging to very diverse environments, harbor the same aspirations, but in much more subtle terms. Most of these people express an interest in the written word, a moral conviction of free access, and a political view on existing copyright regulations as unjust and/or untimely. Some also express their fascination with the new wonders of technology and their new infrastructural possibilities. Others

merely wish to practice forms of access that their finances, political regime, or geography otherwise prohibit them from doing. And all of them are important nodes in a new shadowy infrastructural system that provides free access worldwide to books and articles on a scale that collectively far surpasses both Google and Europeana.

Because of their illicit nature, most analyses of shadowy libraries have centered on their legal transgressions. Yet, their cultural trajectories contain nuances that far exceed legal binaries. Approaching shadow libraries through the lens of infrapolitics is helpful for bringing forth these much more complex cultural mass digitization systems. This chapter explores three examples of shadow libraries, focusing in particular on their stories of origin, their cultural economies, and their sociotechnical infrastructures. Not all shadow libraries fit perfectly into the category of mass digitization. Some of them are smaller in size, more selective, and less industrial. Nevertheless, I include them because their open access strategies allow for unlimited downloads. Thus, shadow libraries, while perhaps selective in size themselves, offer the opportunity to reproduce works at a massive and distributed scale. As such, they are the perfect example of a mass digitization assemblage.

The first case centers on lib.ru, an early Russia-based file-sharing platform for exchanging books that today has grown into a massive and distributed file-sharing project. It is primarily run by individuals, but it has also received public funding, which shows that what at first glance appears as a simple case of piracy simultaneously serves as a much more complex infrapolitical structure. The second case, Monoskop, distinguishes itself by its boutique approach to digitization. Monoskop too is characterized by its territorial trajectory, rooted in Bratislava's digital scene as an attempt to establish an intellectual platform for the study of avant-garde (digital) cultures that could connect its Bratislava-based creators to a global scene. Finally, the chapter looks at UbuWeb, a shadow library dedicated to avant-garde cultural works ranging from text and audio to images and film. Founded in 1996 as a US-based noncommercial file-sharing site by poet Kenneth Goldsmith in response to the marginal distribution of crucial avant-garde material, UbuWeb today offers a wealth of avant-garde sound art, video, and textual works.

As the case studies show, shadow libraries have become significant mass digitization infrastructures that offer the user free access to academic articles

and books, often by means of illegal file-sharing. They are informal and unstable networks that rely on active user participation across a wide spectrum, from deeply embedded people who have established file-sharing sites to the everyday user occasionally sending the odd book or article to a friend or colleague. As Lars Eckstein notes, most shadow libraries are characterized not only by their informal character, but also by the speed with which they operate, providing "a velocity of media content" which challenges legal attacks and other forms of countermeasures.[6] Moreover, shadow libraries also often operate in a much more widely distributed fashion than both Europeana and Google, distributing and mirroring content across multiple servers, and distributing labor and responsibility in a system that is on the one hand more robust, more redundant, and more resistant to any single point of failure or control, and on the other hand more ephemeral, without a central point of back-up. Indeed, some forms of shadow libraries exist entirely without a center, instead operating infrastructurally along communication channels in social media; for example, the use of the Twitter hashtag #ICanHazPDF to help pirate scientific papers.

Today, shadow libraries exist as timely reminders of the infrapolitical nature of mass digitization. They appear as hypertrophied versions of the access provided by Google Books and Europeana. More fundamentally, they also exist as political symptoms of the ideologies of the digital, characterized by ideals of velocity and connectivity. As such, we might say that although shadow libraries often position themselves as subversives, in many ways they also belong to the same storyline as other mass digitization projects such as Google Books and Europeana. Significantly, then, shadow libraries are infrapolitical in two senses: first, they have become central infrastructural elements in what James C. Scott calls the "infrapolitics of subordinate groups," providing everyday resistance by creating entrance points to hitherto-excluded knowledge zones.[7] Second, they represent and produce the infrapolitics of the digital *tout court* with their ideals of real-time, globalized, and unhindered access.

Lib.ru

Lib.ru is one of the earliest known digital shadow libraries. It was established by the Russian computer science professor Maxim Moshkov, who complemented his academic practice of programming with a personal

hobby of file-sharing on the so-called RuNet, the Russian-language segment of the Internet.[8] Moshkov's collection had begun as an e-book swapping practice in 1990, but in 1994 he uploaded the material to his institute's web server where he then divided the site into several section such as "my hobbies," "my work," and "my library."[9] If lib.ru began as a private project, however, the role of Moshkov's library soon changed as it quickly became Russia's preferred shadow library, with users playing an active role in its expansion by constantly adding new digitized books. Users would continually scan and submit new texts, while Moshkov, in his own words, worked as a "receptionist" receiving and handling the material.[10]

Shadow libraries such as Moshkov's were most likely born not only out of a love of books, but also out of frustration with Russia's lack of access to up-to-date and affordable Western works.[11] As they continued to grow and gain in popularity, shadow libraries thus became not only points of access, but also signs of infrastructural failure in the formal library system.[12] After lib.ru outgrew its initial server storage at Moshkov's institute, Moshkov divided it into smaller segments that were then distributed, leaving only the Russian literary classics on the original site.[13] Neighboring sites hosted other genres, ranging from user-generated texts and fan fiction on a shadow site called samizdat.lib.ru to academic books in a shadow library titled Kolkhoz, named after the commons-based agricultural cooperative of the early Soviet era and curated and managed by "amateur librarians."[14] The steadily accumulating numbers of added works, digital distributors, and online access points expanded not only the range of the shadow collections, but also their networked affordances. Lib.ru and its offshoots thus grew into an influential node in the global mass digitization landscape, attracting both political and legal attention.

Lib.ru and the Law

Until 2004, lib.ru deployed a practice of handling copyright complaints by simply removing works at the first request from the authors.[15] But in 2004 the library received its first significant copyright claim from the big Russian publisher Kirill i Mefody (KM). KM requested that Moshkov remove access to a long list of books, claiming exclusive Internet rights on the books, along with works that were considered public domain. Moshkov refused to honor the request, and a lawsuit ensued. The Ostankino Court of Moscow initially denied the lawsuit because the contracts for exclusive Internet

rights were considered invalid. This did not deter KM, however, which then approached the case from a different perspective, filing applications on behalf of well-known Russian authors, including the crime author Alexandra Marinina and the science fiction writer Eduard Gevorkyan. In the end, only Eduard Gevorkyan maintained his claim, which was of the considerable size of one million rubles.[16]

During the trial, Moshkov's library received widespread support from both technologists and users of lib.ru, expressed, for example, in a manifesto signed by the International Union of Internet Professionals, which among other things touched upon the importance of online access not only to cultural works but also to the Russian language and culture:

> Online libraries are an exceptionally large intellectual fund. They lessen the effect of so-called "brain drain," permitting people to stay in the orbit of Russian language and culture. Without online libraries, the useful effect of the Internet and computers in Russian education system is sharply lowered. A huge, openly available mass of Russian literary texts is a foundation permitting further development of Russian-language culture, worldwide.[17]

Emphasizing that Moshkov often had an agreement with the authors he put online, the manifesto also called for a more stable model of online public libraries, noting that "A wide list of authors who explicitly permitted placing their works in the lib.ru library speaks volumes about the practicality of the scheme used by Maxim Moshkov. However, the litigation underway shows its incompleteness and weak spots."[18] Significantly, Moshkov's shadow library also received both moral and financial support from the state, more specifically in the form of funding of one million rubles granted by the Federal Agency for the Press and Mass Media. The funding came with the following statement from the Agency's chairman, Mikhail Seslavinsky: "Following the lively discussion on how copyright could be protected in electronic libraries, we have decided not to wait for a final decision and to support the central library of RuNet—Maxim Moshkov's site."[19] Seslavinsky's support not only reflected the public's support of the digital library, but also his own deep-seated interests as a self-confessed bibliophile, council chair of the Russian organization National Union of Bibliophiles since 2011, and author of numerous books on bibliology and bibliophilia. Additionally, the support also reflected the issues at stake for the Russian legislative framework on copyright. The framework had just passed a second reading of a revised law "On Copyright and

Related Rights" in the Russian parliament on April 21, 2004, extending copyright from 50 years after an author's death to 70 years, in accordance with international law and as a condition of Russia's entry into the World Trade Organization.[20]

The public funding, Moshkov stated, was spent on modernizing the technical equipment for the shadow library, including upgrading servers and performing OCR scanning on select texts.[21] Yet, despite the widespread support, Moshkov lost the copyright case to KM on May 31, 2005. The defeat was limited, however. Indeed, one might even read the verdict as a symbolic victory for Moshkov, as the court fined Moshkov only 30,000 rubles, a fragment of what KM had originally sued for. The verdict did have significant consequences for how Moshkov manages lib.ru, however. After the trial, Moshkov began extending his classical literature section and stopped uploading books sent by readers into his collection, unless they were from authors who submitted them because they wished to publish in digital form.

What can we glean from the story of lib.ru about the infrapolitics of mass digitization? First, the story of lib.ru illustrates the complex and contingent historical trajectory of shadow libraries. Second, as the next section shows, it offers us the possibility of approaching shadow libraries from an infrastructural perspective, and exploring the infrapolitical dimensions of shadow libraries in the area of tension between resistance and standardization.

The Infrapolitics of Lib.ru: Infrastructures of Culture and Dissent

While global in reach, lib.ru is first and foremost a profoundly territorialized project. It was born out of a set of political, economic, and aesthetic conditions specific to Russia and carries the characteristics of its cultural trajectory. First, the private governance of lib.ru, initially embodied by Moshkov, echoes the general development of the Internet in Russia from 1991 to 1998, which was constructed mainly by private economic and cultural initiatives at a time when the state was in a period of heavy transition. Lib.ru's minimalist programming style also made it a cultural symbol of the early RuNet, acting as a marker of cultural identity for Russian Internet users at home and abroad.[22]

The infrapolitics of lib.ru also carry the traits of the media politics of Russia, which has historically been split into two: a political and visible

level of access to cultural works (through propaganda), and an infrapolitical invisible level of contestation and resistance, enabling Russian media consumers to act independently from official institutionalized media channels. Indeed, some scholars tie the practice of shadow libraries to the Soviet Union's analog shadow activities, which are often termed *samizdat*, that is, illegal cultural distribution, including illegally listening to Western radio, illegally trafficking Western music, and illegally watching Western films.[23] Despite often circulating Western pop culture, the late-Soviet era samizdat practices were often framed as noncapitalist practices of dissent without profit motives.[24] The dissent, however, was not necessarily explicitly expressed. Lacking the defining fervor of a clear political ideology, and offering no initiatives to overthrow the Soviet regime, samizdat was rather a mode of dissent that evaded centralized ideological control. Indeed, as Aleksei Yurchak notes, samizdat practices could even be read as a mode of "suspending the political," thus "avoiding the political concerns that had a binary logic determined by the sovereign state" to demonstrate "to themselves and to others that there were subjects, collectivities, forms of life, and physical and symbolic spaces in the Soviet context that, without being overtly oppositional or even political, exceeded that state's abilities to define, control, and understand them."[25] Yurchak thus reminds us that even though samizdat was practiced as a form of nonpolitical practice, it nevertheless inherently had significant political implications.

The infrapolitics of samizdat not only referred to a specific social practice but were also, as Ann Komaromi reminds us, a particular discourse network rooted in the technology of the typewriter: "Because so many people had their own typewriters, the production of samizdat was more individual and typically less linked to ideology and organized political structures. … The circulation of Samizdat was more rhizomatic and spontaneous than the underground press—samizdat was like mushroom 'spores.'"[26] The technopolitical infrastructure of samizdat changed, however, with the fall of the Berlin Wall in 1989, the further decentralization of the Russian media landscape, and the emergence of digitization. Now, new nodes emerged in the Russian information landscape, and there was no centralized authority to regulate them. Moreover, the transmission of the Western capitalist system gave rise to new types of shadow activity that produced items instead of just sharing items, adding a new consumerist dimension to shadow libraries. Indeed, as Kuznetsov notes, the late-Soviet samizdat created a

dynamic textual space that aligned with more general tendencies in mass digitization where users were "both readers and librarians, in contrast to a traditional library with its order, selection, and strict catalogisation."[27]

If many of the new shadow libraries that emerged in the 1990s and 2000s were inspired by the infrapolitics of samizdat, then, they also became embedded in an infrastructural apparatus that was deeply nested within a market economy. Indeed, new digital libraries emerged under such names as Aldebaran, Fictionbook, Litportal, Bookz.ru, and Fanzin, which developed new platforms for the distribution of electronic books under the label "Liters," offering texts to be read free of charge on a computer screen or downloaded at a cost.[28] In both cases, the authors receive a fee, either from the price of the book or from the site's advertising income. Accompanying these new commercial initiatives, a concomitant movement rallied together in the form of Librusek, a platform hosted on a server in Ecuador that offered its users the possibility of uploading works on a distributed basis.[29] In contrast to Moshkov's centralized control, then, the library's operator Ilya Larin adhered to the international piracy movement, calling his site a pirate library and gracing Librusek's website with a small animated pirate, complete with sabre and parrot.

The integration and proliferation of samizdat practices into a complex capitalist framework produced new global readings of the infrapolitics of shadow libraries. Rather than reading shadow libraries as examples of late-socialist infrapolitics, scholars also framed them as capitalist symptoms of "market failure," that is, the failure of the market to meet consumer demands.[30] One prominent example of such a reading was the influential Social Science Research Council report edited by Joe Karaganis in 2006, titled "Media Piracy in Emerging Economies," which noted that cultural piracy appears most notably as "a failure to provide affordable access to media in legal markets" and concluded that within the context of developing countries "the pirate market cannot be said to compete with legal sales or generate losses for industry. At the low end of the socioeconomic ladder where such distribution gaps are common, piracy often simply is the market."[31]

In the Western world, Karaganis's reading was a progressive response to the otherwise traditional approach to media piracy as a legal failure, which argued that tougher laws and increased enforcement are needed to stem infringing activity. Yet, this book argues that Karaganis's report, and

the approach it represents, also frames the infrapolitics of shadow libraries within a consumerist framework that excises the noncommercial infrapolitics of samizdat from the picture. The increasing integration of Russian media infrapolitics into Western apparatuses, and the reframing of shadow libraries from samizdat practices of political dissent to market failure, situates the infrapolitics of shadow libraries within a consumerist dispositive and the individual participants as consumers. As some critical voices suggest, this has an impact on the political potential of shadow libraries because they—in contrast to samizdat—actually correspond "perfectly to the industrial production proper to the legal cultural market production."[32] Yet, as the final section in this chapter shows, one also risks missing the rich nuances of infrapolitics by conflating consumerist infrastructures with consumerist practice.[33]

The political stakes of shadow libraries such as lib.ru illustrate the difficulties in labeling shadow libraries in political terms, since they are driven neither by pure globalized dissent nor by pure globalized and commodified infrastructures. Rather, they straddle these binaries as infrapolitical entities, the political dynamics of which align both with standardization and dissent. Revisiting once more the theoretical debate, the case of lib.ru shows that shadow libraries may certainly be global phenomena, yet one should be careful with disregarding the specific cultural-political trajectories that shape each individual shadow library. Lib.ru demonstrates how the infrapolitics of shadow libraries emerge as infrastructural expressions of the convergence between historical sovereign trajectories, global information infrastructures, and public-private governance structures. Shadow libraries are not just globalized projects that exist in parallel to sovereign state structures and global economic flows. Instead, they are entangled in territorial public-private governance practices that produce their own late-sovereign infrapolitics, which, paradoxically, are embedded in larger mass digitization problematics, both on their own territory and on the global scene.

Monoskop

In contrast to the broad and distributed infrastructure of lib.ru, other shadow libraries have emerged as specialized platforms that cater to a specific community and encourage a specific practice. Monoskop is one such

shadow library. Like lib.ru, Monoskop started as a one-man project and in many respects still reflects its creator, Dušan Barok, who is an artist, writer, and cultural activist involved in critical practices in the fields of software, art, and theory. Prior to Monoskop, his activities were mainly focused on the Bratislava cultural media scene, and Monoskop was among other things set up as an infrastructural project, one that would not only offer content but also function as a form of connectivity that could expand the networked powers of the practices of which Barok was a part.[34] In particular, Barok was interested in researching the history of media art so that he could frame the avant-garde media practices in which he engaged in Bratislava within a wider historical context and thus lend them legitimacy.

The Shadow Library as a Legal Stratagem

Monoskop was partly motivated by Barok's own experiences of being barred from works he deemed of significance to the field in which he was interested. As he notes, the main impetus to start a blog "came from a friend who had access to PDFs of books I wanted to read but could not afford go buy as they were not available in public libraries."[35] Barok thus began to work on Monoskop with a group of friends in Bratislava, initially hiding it from search engine bots to create a form of invisibility that obfuscated its existence without, however, preventing people from finding the Log and uploading new works. Information about the Log was distributed through mailing lists on Internet culture, among many other posts on e-book torrent trackers, DC++ networks, extensive repositories such as LibGen and Aaaaarg, cloud directories, document-sharing platforms such as Issuu and Scribd, and digital libraries such as the Internet Archive and Project Gutenberg.[36] The shadow library of Monoskop thus slowly began to emerge, partly through Barok's own efforts at navigating email lists and downloading material, and partly through people approaching Monoskop directly, sending it links to online or scanned material and even offering it entire e-book libraries. Rather than posting these "donated" libraries in their entirety, however, Barok and his colleagues edited the received collection and materials so that they would fit Monoskop's scope, and they also kept scanning material themselves.

Today Monoskop hosts thematically curated collections of downloadable books on art, culture, media studies, and other topics, partly in order to stimulate "collaborative studies of the arts, media, and humanities."[37]

Indeed, Monoskop operates with a *boutique* approach, offering relatively small collections of personally selected publications to a steady following of loyal patrons who regularly return to the site to explore new works. Its focal points are summarized by its contents list, which is divided into three main categories: "Avant-garde, modernism and after," "Media culture," and "Media, theory and the humanities." Within these three broad focal points, hundreds of links direct the user to avant-garde magazines, art exhibitions and events, art and design schools, artistic and cultural themes, and cultural theorists. Importantly, shadow libraries such as Monoskop do not just host works unbeknownst to the authors—authors also leak their own works. Thus, some authors publishing with brand name, for-profit, all-rights-reserving, print-on-paper-only publishing houses will also circulate a copy of their work on a free text-sharing network such as Monoskop.[38]

How might we understand Monoskop's legal situation and maneuverings in infrapolitical terms? Shadow libraries such as Monoskop draw their infrapolitical strength not only from the content they offer but also from their mode of engagement with the gray zones of new information infrastructures. Indeed, the infrapolitics of shadow libraries such as Monoskop can perhaps best be characterized as a stratagematic form of infrapolitics. Monoskop neither inhabits the passive perspective of the digital spectator nor deploys a form of tactics that aims to be failure free. Rather, it exists as a body of informal practices and knowledges, as cunning and dexterous networks that actively embed themselves in today's sociotechnical infrastructures. It operates with high sociotechnical sensibilities, living off of the social relations that bring it into being and stabilize it. Most significantly, Monoskop skillfully exploits the cracks in the infrastructures it inhabits, interchangeably operating, evading, and accompanying them. As Matthew Fuller and Andrew Goffey point out in their meditation on stratagems in digital media, they do "not cohere into a system" but rather operate as "extensive, open-ended listing[s]" that "display a certain undecidability because inevitably a stratagem does not describe or prescribe an action that is certain in its outcome."[39] Significantly, then, failures and errors not only represent negative occurrences in stratagematic approaches but also appeal to willful dissidents as potentially beneficial tools. Dušan Barok's response to a question about the legal challenges against Monoskop evidences this stratagematic approach, as he replies that shadow libraries such

as Monoskop operate in the "gray zone," which to him is also the zone of fair use.[40] Barok thus highlights the ways in which Monoskop engages with established media infrastructures, not only on the level of discursive conventions but also through their formal logics, technical protocols, and social proprieties.

Thus, whereas Google lights up gray zones through spectacle and legal power plays, and Europeana shuns gray zones in favor of the law, Monoskop literally embraces its shadowy existence in the gray zones of the law. By working in the shadows, Monoskop and likeminded operations highlight the ways in which the objects they circulate (including the digital artifacts, their knowledge management, and their software) can be manipulated and experimented upon to produce new forms of power dynamics.[41] Their ethics lie more in the ways in which they operate as shadowy infrastructures than in intellectual reflections upon the infrastructures they counter, without, however, creating an opposition between thinking and doing. Indeed, as its history shows, Monoskop grew out of a desire to create a space for critical reflection. The infrapolitics of Monoskop is thus an infrapolitics of grayness that marks the breakdown of clearly defined contrasts between legal and illegal, licit and illicit, desire and control, instead providing a space for activities that are ethically ambiguous and in which "everyone is sullied."[42]

Monoskop as a Territorializing Assemblage

While Monoskop's stratagems play on the infrapolitics of the gray zones of globalized digital networks, the shadow library also emerges as a late-sovereign infrastructure. As already noted, Monoskop was from the outset focused on surfacing and connecting art and media objects and theory from Central and Eastern Europe. Often, this territorial dimension recedes into the background, with discussions centering more on the site's specialized catalog and legal maneuvers. Yet Monoskop was initially launched partly as a response to criticisms on new media scenes in the Slovak and Czech Republics as "incomprehensible avant-garde."[43] It began as a simple invite-only instance of wiki in August 2004, urging participants to collaboratively research the history of media art. It was from the beginning conceived more as a collaborative social practice and less as a material collection, and it targeted noninstitutionalized researchers such as Barok himself.

As the nodes in Monoskop grew, its initial aim to research media art history also expanded into looking at wider cultural practices. By 2010, it had grown into a 100-gigabyte collection which was organized as a snowball research collection, focusing in particular on "the white spots in history of art and culture in East-Central Europe," spanning "dozens of CDs, DVDs, publications, as well as recordings of long interviews [Barok] did"[44] with various people he considered forerunners in the field of media arts. Indeed, Barok at first had no plans to publish the collection of materials he had gathered over time. But during his research stay in Rotterdam at the influential Piet Zwart Institute, he met the digital scholars Aymeric Mansoux and Marcell Mars, who were both active in avant-garde media practices, and they convinced him to upload the collection.[45] Due to the fragmentary character of his collection, Barok found that Monoskop corresponded well with the pre-existing wiki, to which he began connecting and embedding videos, audio clips, image files, and works. An important motivating factor was the publication of material that was otherwise unavailable online. In 2009, Barok launched Monoskop Log, together with his colleague Tomáš Kovács. This site was envisioned as an affiliated online repository of publications for Monoskop, or, as Barok terms it, "a free access living archive of writings on art, culture, and media technologies."[46]

Seeking to create situated spaces of reflection and to shed light on the practices of media artists in Eastern and Central Europe, Monoskop thus launched several projects devoted to excavating media art from a situated perspective that takes its local history into account. Today, Monoskop remains a rich source of information about artistic practices in Central and Eastern Europe, Poland, Hungary, Slovakia, and the Czech Republic, relating it not only to the art histories of the region, but also to its history of cybernetics and computing.

Another early motivation for Monoskop was to provide a situated nodal point in the globalized information infrastructures that emphasized the geographical trajectories that had given rise to it. As Dušan Barok notes in an interview, "For a Central European it is mind-boggling to realize that when meeting a person from a neighboring country, what tends to connect us is not only talking in English, but also referring to things in the far West. Not that the West should feel foreign, but it is against intuition that an East-East geographical proximity does not translate into a cultural one."[47] From this perspective, Monoskop appears not only as an infrapolitical project of

global knowledge, but also one of situated sovereignty. Yet, even this territorial focus holds a strategic dimension. As Barok notes, Monoskop's ambition was not only to gain new knowledge about media art in the region, but also to cash in on the cultural capital into which this knowledge could potentially be converted. Thus, its territorial matrix first and foremost translates into Foucault's famous dictum that "knowledge is power." But it is nevertheless also testament to the importance of including more complex spatial dynamics in one's analytical matrix of shadow libraries, if one wishes to understand them as more than globalized breakers of code and arbiters of what Manuel Castells once called the "space of flows."[48]

UbuWeb

If Monoskop is one of the most comprehensive shadow libraries to emerge from critical-artistic practice, UbuWeb is one of the earliest ones and has served as an inspirational example for Monoskop. UbuWeb is a website that offers an encyclopedic scope of downloadable audio, video, and plain-text versions of avant-garde art recordings, films, and books. Most of the books fall in the category of small-edition artists' books and are presented on the site with permission from the artists in question, who are not so concerned with potential loss of revenue since most of the works are officially out of print and never made any money even when they were commercially available. At first glance, UbuWeb's aesthetics appear almost demonstratively spare. Still formatted in HTML, it upholds a certain 1990s net aesthetics that has resisted the revamps offered by the new century's more dynamic infrastructures. Yet, a closer look reveals that UbuWeb offers a wealth of content, ranging from high art collections to much more rudimentary objects. Moreover, and more fundamentally, its critical archival practice raises broader infrapolitical questions of cultural hierarchies, infrastructures, and domination.

Shadow Libraries between Gift Economies and Marginalized Forms of Distribution

UbuWeb was founded by poet Kenneth Goldsmith in response to the marginal distribution of crucial avant-garde material. It provides open access both to out-of-print works that find a second life through digital art reprint and to the work of contemporary artists. Upon its opening in 2001, Kenneth

Goldsmith termed UbuWeb's economic infrastructure a "gift economy" and framed it as a political statement that highlighted certain problems in the distribution of and access to intellectual materials:

> Essentially a gift economy, poetry is the perfect space to practice utopian politics. Freed from profit-making constraints or cumbersome fabrication considerations, information can literally "be free": on UbuWeb, we give it away. … Totally independent from institutional support, UbuWeb is free from academic bureaucracy and its attendant infighting, which often results in compromised solutions; we have no one to please but ourselves. … UbuWeb posts much of its content without permission; we rip full-length CDs into sound files; we scan as many books as we can get our hands on; we post essays as fast as we can OCR them. And not once have we been issued a cease and desist order. Instead, we receive glowing emails from artists, publishers, and record labels finding their work on UbuWeb, thanking us for taking an interest in what they do; in fact, most times they offer UbuWeb additional materials. We happily acquiesce and tell them that UbuWeb is an unlimited resource with unlimited space for them to fill. It is in this way that the site has grown to encompass hundreds of artists, thousands of files, and several gigabytes of poetry.[49]

At the time of its launch, UbuWeb garnered extraordinary attention and divided communities along lines of access and rights to historical and contemporary artists' media. It was in this range of responses to UbuWeb that one could discern the formations of new infrastructural positions on digital archives, how they should be made available, and to whom. Yet again, these legal positions were accompanied by a territorial dynamic, including the impact of regional differences in cultural policy on UbuWeb. Thus, as artist Jason Simon notes, there were significant differences between the ways in which European and North American distributors related to UbuWeb. These differences, Simon points out, were rooted in "medium-specific questions about infrastructure," which differ "from the more interpretive discussion that accompanied video's wholesale migration into fine art exhibition venues."[50] European pre-recession public money thus permitted nonprofit distributors to embrace infrastructures such as UbuWeb, while American distributors were much more hesitant toward UbuWeb's free-access model. When recession hit Europe in the late 2000s, however, the European links to UbuWeb's infrastructures crumbled while "the legacy American distributors … have been steadily adapting."[51] The territorial modulations in UbuWeb's infrastructural set-up testify not only to how shadow libraries such as UbuWeb are inherently always linked up to larger political events in complex ways, but also to latent ephemerality of the entire project.

Goldsmith has more than once asserted that UbuWeb's insistence on "independent" infrastructures also means a volatile existence: "… by the time you read this, UbuWeb may be gone. Cobbled together, operating on no money and an all-volunteer staff, UbuWeb has become the unlikely definitive source for all things avant-garde on the internet. Never meant to be a permanent archive, Ubu could vanish for any number of reasons: our ISP pulls the plug, our university support dries up, or we simply grow tired of it." Goldsmith's emphasis on the ephemerality of UbuWeb is a shared condition of most shadow libraries, most of which exist only as ghostly reminders with nonfunctional download links or simply as 404 pages, once they pull the plug. Rather than lamenting this volatile existence, however, Goldsmith embraces it as an infrapolitical stance. As Cornelia Solfrank points out, UbuWeb was—and still is—as much an "archival critical practice that highlights the legal and social ramifications of its self-created distribution and archiving system as it is about the content hosted on the site."[52] UbuWeb is thus not so much about authenticity as it is about archival defiance, appropriation, and self-reflection. Such broader and deeper understandings of archival theory and practice allow us to conceive of it as the kind of infrapolitics that, according to James C. Scott, "provides much of the cultural and structural underpinning of the more visible political attention on which our attention has generally been focused."[53] The infrapolitics of UbuWeb is devoted to hatching new forms of organization, creating new enclaves of freedom in the midst of orthodox ways of life, and inventing new structures of production and dissemination that reveal not only the content of their material but also their marginalized infrastructural conditions and the constellation of social forces that lead to their online circulation.[54]

The infrapolitics of UbuWeb is testament not only to avant-garde cultures, but also to what Hito Steyerl in her *Defense of Poor Images* refers to as the "neoliberal radicalization of the culture as commodity" and the "restructuring of global media industries."[55] These materials "circulate partly in the void left by state organizations" that find it too difficult to maintain digital distribution infrastructures and the art world's commercial ecosystems, which offer the cultural materials hosted on UbuWeb only a liminal existence. Thus, while UbuWeb on the one hand "reveals the decline and marginalization of certain cultural materials" whose production were often "considered a task of the state,"[56] on the other hand it shows how

intellectual content is increasingly privatized, not only in corporate terms but also through individuals, which in UbuWeb's case is expressed in Kenneth Goldsmith, who acts as the sole archival gatekeeper.[57]

The Infrapolitics of Shadow Libraries

If the complexity of shadow libraries cannot be reduced to the contrastive codes of "right" and "wrong" and global-local binaries, the question remains how to theorize the cultural politics of shadow libraries. This final section outlines three central infrapolitical aspects of shadow libraries: access, speed, and gift.

Mass digitization poses two important questions to knowledge infrastructures: a logistical question of access and a strategic question of to whom to allocate that access. Copyright poses a significant logistical barrier between users and works as a point of control in the ideal free flow of information. In mass digitization, increased access to information stimulates projects, whereas in publishing industries with monopoly possibilities, the drive is toward restriction and control. The uneasy fit between copyright regulations and mass digitization projects has, as already shown, given rise to several conflicts, either as legal battles or as copyright reform initiatives arguing that current copyright frameworks cast doubt upon the political ideal of total access. As with Europeana and Google Books, the question of *access* often stands at the core of the infrapolitics of shadow libraries. Yet, the strategic responses to the problem of copyright vary significantly: if Europeana moves within the established realm of legality to reform copyright regulations and Google Books produces claims to new cultural-legal categories such as "nonconsumptive reading," shadow libraries offer a third infrastructural maneuver—bypassing copyright infrastructures altogether through practices of illicit file distribution.

Shadow libraries elicit a range of responses and discourses that place themselves on a spectrum between condemnation and celebration. The most straightforward response comes, unsurprisingly, from the publishing industry, highlighting the fundamentally violent breaches of the legal order that underpins the media industry. Such responses include legal action, policy initiatives, and public campaigns against piracy, often staging—in more or less explicit terms—the "pirate" as a common enemy of mankind, beyond legal protection and to be fought by whatever means necessary.

The second response comes from the open source movement, represented among others by the pro-reform copyright movement Creative Commons (CC), whose flexible copyright framework has been adopted by both Europeana and Google Books.[58] While the open source movement has become a voice on behalf of the telos of the Internet and its possibilities of offering free and unhindered access, its response to shadow libraries has revealed the complex infrapolitics of access as a postcolonial problematic. As Kavita Philip argues, CC's founder Lawrence Lessig maintains the image of the "good" Western creative vis-à-vis the "bad" Asian pirate, citing for instance his statement in his influential book *Free Culture* that "All across the world, but especially in Asia and Eastern Europe, there are businesses that do nothing but take other people's copyrighted content, copy it, and sell it. … This is piracy plain and simple, … This piracy is wrong."[59] Such statements, Kavita Philip argues, frames the Asian pirate as external to order, whether it be the order of Western law or neoliberalism.[60]

The postcolonial critique of CC's Western normative discourse has instead sought to conceptualize piracy, not as deviatory behavior in information economies, but rather as an integral infrastructure endemic to globalized information economies.[61] This theoretical development offers valuable insights for understanding the infrapolitics of shadow libraries. First of all, it allows us to go beyond moral discussions of shadow libraries, and to pay attention instead to the ways in which their infrastructures are built, how they operate, and how they connect to other infrastructures. As Lawrence Liang points out, if infrastructures traditionally belong to the domain of the state, often in cooperation with private business, pirate infrastructures operate in the gray zones of this set-up, in much the same way as slums exist as shadow cities and copies are regarded as shadows of the original.[62] Moreover, and relatedly, it reminds us of the inherently unstable form of shadow libraries as a cultural construct, and the ways in which what gets termed piracy differs across cultures. As Brian Larkin notes, piracy is best seen as emerging from specific domains: dynamic localities with particular legal, aesthetic, and social assemblages.[63] In a final twist, research on users of shadow libraries shows that usage of shadow libraries is distributed globally. Multiple sources attest to the fact that most Sci-Hub usage occurs outside the Anglosphere. According to Alexa Internet analytics, the top five country sources of traffic to Sci-Hub were China, Iran, India, Brazil, and Japan, which account for 56.4 percent of recent traffic.

As of early 2016, data released by Sci-Hub's founder Alexandra Elbakyan also shows high usage in developed countries, with a large proportion of the downloads coming from the US and countries within the European Union.[64] The same tendency is evident in the #ICanHazPDF Twitter phenomenon, which while framed as "civil disobedience" to aid users in the Global South[65] nevertheless has higher numbers of posts from the US and Great Britain.[66]

This brings us to the second cultural-political production, namely the question of distribution. In their article "Book Piracy as Peer Preservation," Denis Tenen and Maxwell Henry Foxman note that rather than condemning book piracy *tout court*, established libraries could in fact learn from the infrastructural set-ups of shadow libraries in relation to participatory governance, technological innovation, and economic sustainability.[67] Shadow libraries are often premised upon an infrastructure that includes user participation without, however, operating in an enclosed sphere. Often, shadow libraries coordinate their actions by use of social media platforms and online forums, including Twitter, Reddit, and Facebook, and the primary websites used to host the shared files are AvaxHome, LibGen, and Sci-Hub. Commercial online cloud storage accounts (such as Dropbox and Google Drive) and email are also used to share content in informal ways. Users interested in obtaining an article or book chapter will disseminate their request over one or more of the platforms mentioned above. Other users of those platforms try to get the requested content via their library accounts or employer-provided access, and the actual files being exchanged are often hosted on other websites or emailed to the requesting users. Through these networks, shadow libraries offer convenient and speedy access to books and articles. Little empirical evidence is available, but one study does indicate that a large number of shadow library downloads are made because obtaining a PDF from a shadow library is easier than using the legal access methods offered by a university's traditional channels of access, including formalized research libraries.[68] Other studies indicate, however, that many downloads occur because the users have (perceived) lack of full-text access to the desired texts.[69]

Finally, as indicated in the introduction to this chapter, shadow libraries produce what we might call a cultural politics of parasitism. In the normative model of shadow libraries, discourse often centers upon piracy as a theft economy. Other discourses, drawing upon anthropological sources, have

pointed out that peer-to-peer file-sharing sites in reality organize around a gift economy, that is, "a system of social solidarity based on a structured set of gift exchange and social relationships among consumers."[70] This chapter, however, ends with a third proposal: that shadow libraries produce a parasitical form of infrapolitics. In *The Parasite*, philosopher Michel Serres speculates a way of thinking about relations of transfer—in social, biological, and informational contexts—as fundamentally parasitic, that is, a subtractive form of "taking without giving." Serres contrasts the parasitic model with established models of society based on notions such as exchange and gift giving.[71] Shadow libraries produce an infrapolitics that denies the distinction between producers and subtractors of value, allowing us instead to focus on the social roles infrastructural agents perform. Restoring a sense of the wider context of parasitism to shadow libraries does not provide a clear-cut solution as to when and where shadow libraries should be condemned and when and where they should be tolerated. But it does help us ask questions in a different way. And it certainly prevents the regarding of shadow libraries as the "other" in the landscape of mass digitization. Shadow libraries instigate new creative relations, the dynamics of which are infrastructurally premised upon the medium they use. Just as typewriters were an important component of samizdat practices in the Soviet Union, digital infrastructures are central components of shadow libraries, and in many respects shadow libraries bring to the fore the same cultural-political questions as other forms of mass digitization: questions of territorial imaginaries, infrastructures, regulation, speed, and ethics.

III Diagnosing Mass Digitization

5 Lost in Mass Digitization

The Desire and Despair of Large-Scale Collections

In 1995, founding editor of *Wired* magazine Kevin Kelly mused upon how a digital library would look:

> Two decades ago nonlibrarians discovered Borges's Library in silicon circuits of human manufacture. The poetic can imagine the countless rows of hexagons and hallways stacked up in the Library corresponding to the incomprehensible micro labyrinth of crystalline wires and gates stamped into a silicon computer chip. A computer chip, blessed by the proper incantation of software, creates Borges's Library on command. … Pages from the books appear on the screen one after another without delay. To search Borges's Library of all possible books, past, present, and future, one needs only to sit down (the modern solution) and click the mouse.[1]

At the time of Kelly's writing, book digitization on a massive scale had not yet taken place. Building his chimerical dream around Jorge Luis Borges's own famous magic piece of speculation regarding the Library of Babel, Kelly not only dreamed up a fantasy of what a digital library might be in an imaginary dialogue with Borges; he also argued that Jorge Luis Borges's vision had already taken place, by grace of nonlibrarians, or—more specifically—programmers. Specifically, Kelly mentions Karl Sims, a computer scientist working on a supercomputer called Connection Machine 5 (you may remember it from the set of *Jurassic Park*), who had created a simulated version of Borges's library.[2]

Twenty years after Kelly's vision, a whole host of mass digitization projects have sought more or less explicitly to fulfill Kelly's vision. Incidentally, Brewster Kahle, one of the lead engineers of the aforementioned Connection Machine, has become a key figure in the field. Kahle has long dreamed of creating a universal digital library, and has worked to fulfill it in practical

terms through the nonprofit Internet Archive project, which he founded in 1996 with the stated mission of creating "universal access to all knowledge." In an op-ed in 2017, Kahle lamented the recent lack of progress in mass digitization and argued for the need to create a new vision for mass digitization, stating, "The Internet Archive, working with library partners, proposes bringing millions of books online, through purchase or digitization, starting with the books most widely held and used in libraries and classrooms."[3] Reminding us that three major entities have "already digitized modern materials at scale: Google, Amazon, and the Internet Archive, probably in that order of magnitude,"[4] Kahle nevertheless notes that "bringing universal access to books" has not yet been achieved because of a fractured field that diverges on questions of money, technology, and legal clarity. Yet, outlining his new vision for how a sustainable mass digitization project could be achieved, Kahle remains convinced that mass digitization is both a necessity and a possibility.

While Brewster Kahle, Kevin Kelly, Google, Amazon, Europeana's member institutions, and others disagree on how to achieve mass digitization, for whom, and in what form, they are all united in their quest for digitization on a massive scale. Many shadow libraries operate with the same quantitative statements, proudly asserting the quantities of their massive holdings on the front page.

Given the fractured field of mass digitization, and the lack of economic models for how to actually make mass digitization sustainable, why does the common dream of mass digitization persist? As this chapter shows, the desire for quantity, which drives mass digitization, is—much like the Borges stories to which Kelly also refers—laced with ambivalence. On the one hand, the quantitative aspirations are driven forth by the basic assumption that "more is more": more data and more cultural memory equal better industrial and intellectual progress. One the other hand, the sheer scale of ambition also causes frustration, anxiety, and failed plans.

The sense that sheer size and big numbers hold the promise of progress and greatness is nothing new, of course. And mass digitization brings together three fields that have each historically grown out of scalar ambitions: collecting practices, statistics, and industrialization processes. Historically, as cultural theorist Couze Venn reminds us, most large collections bear the imprint of processes of (cultural) colonization, human desires, and dynamics of domination and superiority. We therefore find in large

collections the "impulses and yearnings that have conditioned the assembling of most of the collections that today establish a monument to past efforts to gather together knowledge of the world and its treasury of objects and deeds."[5] The field of statistics, moreover, so vital to the evolution of modern governance models, is also premised upon the accumulation of ever-more information.[6] And finally, we all recognize the signs of modern industrialization processes as they appear in the form of globalization, standardization, and acceleration. Indeed, as French sociologist Henri Lefebvre once argued (with a nod to Marx), the history of modern society could plainly and simply be seen as the history of accumulation: of space, of capital, of property.[7]

In mass digitization, we hear the political echoes of these histories. From Jeanneney's war cry to defend European patrimonies in the face of Google's cultural colonization to Google's megalomaniac numbers game and Europeana's territorial maneuverings, scale is used as a point of reference not only to describe the space of cultural objects in themselves but also to outline a realm of cultural command.

A central feature in the history of accumulation and scale is the development of digital technology and the accompanying new modes of information organization. But even before then, the invention of new technologies offered not only new modes of producing and gathering information and new possibilities of organizing information assemblages, but also new questions about the implications of these leaps in information production. As historians Ann Blair and Peter Stallybrass show, "infolust," that is, the cultural attitude that values expansive collections for long-term storage, emerged in the early Renaissance period.[8] In that period, new print technology gave rise to a new culture of accumulating and stockpiling notes and papers, even without having a specific compositional purpose in mind. Within this scholarly paradigm, new teleologies were formed that emphasized the latent value of any piece of information, expressed for instance by Joachim Jungius's exclamation that "no field was too remote, no author too obscure that it would not yield some knowledge or other" and Gabriel Naudé's observation that there is "no book, however bad or decried, which will not be sought after by someone over time."[9] The idea that any piece of information was latently valuable was later remarked upon by Melvin Dewey, who noted at the beginning of the twentieth century that a "normal librarian's instinct is to keep every book and pamphlet. He knows that possibly some day, somebody wants it."[10]

Today, mass digitization repeats similar concerns. It reworks the old dream of an all-encompassing and universal library and has foregrounded once again questions about what to save and what to let go. What, one might ask, would belong in such a library? One important field of interest is the question of whether, and how, to preserve metadata—today's marginalia. Is it sufficient to digitize cultural works, or should all accompanying information about the provenance of the work also be included? And how can we agree upon what marginalia actually is across different disciplines? Mass digitization projects in natural history rarely digitize marginalia such as logs and written accounts, focusing only on what to that discipline is the main object at hand, for example, a piece of rock, a fly specimen, a pressed plant. Yet, in the history of science, logs are an invaluable source of information about how the collected object ended up in the collection, the meaning it had to the collector, and the place it takes in the collection.[11] In this way, new questions with old trajectories arise: What is important for understanding a collection and its life? What should be included and excluded? And how will we know what will turn out to be important in the future?

In the era of big data, the imperative is often to digitize and "save all." Prestige mass digitization projects such as Google Books and Europeana have thus often contextualized their importance in terms of scale. Indeed, as we saw in the previous chapters, the question of scale has been a central point of political contestation used to signal infrastructural power. Thus the hype around Google Books, as well as the political ire it drew, centered on the scale of the project just as quantitative goals are used in Europeana to signal progress and significance. Inherent in these quantitative claims are not only ideas about political power, but also the widespread belief in digital circles—and the political regimes that take inspiration from them—that the more information the user is able to access, the more empowered the user is to navigate and make meaning on their own. In recent years, the imaginaries of freedom of navigation have also been adjoined by fantasies of freedom of infrastructural construction through the image of the platform. Mass digitization projects should therefore not only offer the user the potential to navigate collections freely, but also to build new products and services on top of them.[12] Yet, as this chapter argues, the ethos of potentially unlimited expansion also prompts a new set of infrapolitical questions about agency and control. While these questions are inherently

related to the larger questions of territory and power explored in the previous chapters, they occur on a different register, closer to the individual user and within the spatialized imaginaries of digital information.

As many critics have noted, the logic of expansion and scale, and the accompanying fantasies of the empowered user, often builds on neoliberal subjectification processes. While highly seductive, they often fail to take into account the reality of social complexity. Therefore, as Lisa Nakamura notes, the discourse of complete freedom of navigation through technological liberation—expressed aptly in Microsoft's famous slogan "Where do you want to go today?"—assumes, wrongly, that everyone is at liberty to move about unhindered.[13] And the fantasy of empowerment through platforming is often also shot through with neoliberal ideals that not only fail to take into account the complex infrapolitical realities of social interaction, but also rely on an entrepreneurial epistemology that evokes "a flat, two-dimensional stage on which resources are laid out for users to do stuff with" and which we are not "inclined to look underneath or behind it, or to question its structure."[14]

This chapter unfolds these central infrapolitical problematics of the spatial imaginaries of knowledge in relation to a set of prevalent cultural spatial tropes that have gained new life in digital theory and that have informed the construction and development of mass digitization projects: the flâneur, the labyrinth, and the platform. Cultural reports, policy papers, and digital design strategies often use these three tropes to elicit images of pleasure and playfulness in mass digitization projects; yet, as the following sections show, they also raise significant questions of control and agency, not least against the backdrop of ever-increasing scales of information production.

Too Much—Never Enough

The question of scale in mass digitization is often posed as a rational quest for knowledge accumulation and interoperability. Yet this section argues that digitized collections are more than just rational projects; they strike deep affective cords of desire, domination, and anxiety. As Couze Venn reminds us, collections harbor an intimate connection between cognition and affective economy. In this connection, the rationalized drive to collect is often accompanied by a slippage, from a rationalized urge to a

pathological drive ultimately associated with desire, power, domination, anxiety, nostalgia, excess, and—sometimes even—compulsion and repetition.[15] The practice of collecting objects thus not only signals a rational need but often also springs from desire, and as psychoanalysis has taught us, a sense of lack is the reflection of desire. As Slavoj Zizek puts it, "desire's *raison d'être* is not to realize its goal, to find full satisfaction, but to reproduce itself as desire."[16] Therefore, no matter how much we collect, the collector will rarely experience their collection as complete and will often be haunted by the desire to collect more.

In addition to the frightening (yet titillating) aspect of never having our desires satisfied, large collections also give rise to a set of information pathologies that, while different in kind, share an understanding of information as intimidation. The experience is generally induced by two inherently linked factors. First, the size of the cultural collection has historically also often implied a powerful collector with the means to gather expensive materials from all over the world, and a large collection has thus had the basic function of impressing and, if need be, intimidating people. Second, large collections give rise to the sheer subjective experience of being overwhelmed by information and a mental incapacity to take it all in. Both factors point to questions of potency and importance. And both work to instill a fear in the visitor. As Voltaire once noted, "a great library has the quality of frightening those who look upon it."[17]

The intimidating nature of large collections has been a favored trope in cultural representations. The most famous example of a gargantuan, even insanity-inducing, library is of course Jorge Luis Borges's tale of the Library of Babel, the universal totality of which becomes both a monstrosity in the characters' lives and a source of hope, depending on their willingness to make peace and submit themselves to the library's infinite scale and Kafkaesque organization.[18] But Borges's nonfiction piece from 1939, *The Total Library,* also serves as an elegant tale of an informational nightmare. *The Total Library* begins by noting that the dream of the utopia of the total library "has certain characteristics that are easily confused with virtues" and ends with a more somber caution: "One of the habits of the mind is the invention of horrible imaginings. … I have tried to rescue from oblivion a subaltern horror: the vast, contradictory Library, whose vertical wildernesses of books run the incessant risk of changing into others that affirm, deny, and confuse everything like a delirious god."[19]

Few escape the intimidating nature of large collections. But while attention has often been given to the citizen subjected to the disciplining force of the sovereign state in the form of its institutions, less attention has been given to those that have had to structure and make sense of these intimidating collections. Until recently, cultural collections were usually oriented toward the figure of the patron or, in more abstract geographical terms, (God-given) patrimony. Renaissance cabinets of curiosities were meant to astonish and dazzle; the ostentatious wealth of the Baroque museums of the seventeenth and eighteenth centuries displayed demonstrations of Godly power; and bourgeois museums of the nineteenth century positioned themselves as national institutions of *Bildung*. But while cultural memory institutions have worked first and foremost to mirror to an external audience the power and the psyche of their owners in individual, religious, and/or geographical terms, they have also consistently had to grapple internally with the problem of how to best organize and display these collections.

One of the key generators of anxiety in vast libraries has been the question of infrastructure. Each new information paradigm and each new technology has induced new anxieties about how best to organize information. The fear of disorder haunted both institutions and individuals. In his illustrious account of Ephraim Chamber's *Cyclopaedia* (the forerunner of Denis Diderot's and Jean le Rond d'Alembert's famous Enlightenment project, the *Encyclopédie*), Richard Yeo thus recounts how Gottfried Leibniz complained in 1680 about "that horrible mass of books which keeps on growing" so that eventually "the disorder will become nearly insurmountable."[20] Five years on, the French scholar and critic Adrien Baillet warned his readers, "We have reason to fear that the multitude of books which grows every day in a prodigious fashion will make the following centuries fall into a state as barbarous as that of the centuries that followed the fall of the Roman Empire."[21] And centuries later, in the wake of the typewriter, the annual report of the Secretary of the Smithsonian Institution in Washington, DC, drew attention to the infrastructural problem of organizing the information that was now made available through the typewriter, noting that "about twenty thousand volumes … purporting to be additions to the sum of human knowledge, are published annually; and unless this mass be properly arranged, and the means furnished by which its contents may be ascertained, literature and science will be overwhelmed by their own unwieldy bulk."[22] The experience of feeling overwhelmed by information

and lacking the right tools to handle it is no joke. Indeed, a number of German librarians actually went documentably insane between 1803 and 1825 in the wake of the information glut that followed the secularization of ecclesiastical libraries.[23] The desire for grand collections has thus always also been followed by an accompanying anxiety relating to questions of infrastructure.

As the history of collecting pathologies shows, reducing mass digitization projects to rational and technical information projects would deprive them of their rich psychological dimensions. Instead of discounting these pathologies, we should acknowledge them, and examine not only their nature, but also their implications for the organization of mass digitization projects. As the following section shows, the pathologies not only exist as psychological forces, but also as infrastructural imaginaries that directly impact theories on how best to organize information in mass digitization. If the scale of mass digitization projects is potentially limitless, how should they be organized? And how will we feel when moving about in their gargantuan archives?

The Ambivalent Flâneur

In an article on cultures of archiving, sociologist Mike Featherstone asked whether "the expansion of culture available at our fingertips" could be "subjected to a meaningful ordering," or whether the very "desire to remedy fragmentation" should be "seen as clinging to a form of humanism with its emphasis upon cultivation of the persona and unity which are now regarded as merely nostalgic."[24] Featherstone raised the question in response to the popularization of the Internet at the turn of the millennium. Yet, as the previous section has shown, his question is probably as old as the collecting practices themselves. Such questions have become no less significant with mass digitization. How are organizational practices conceived of as meaningful today? As we shall see, this question not only relates to technical characteristics but is also informed by a strong spatial imaginary that often takes the shape of labyrinthine infrastructures and often orients itself toward the figure of the user. Indeed, the role of the organizer of knowledge, and therefore the accompanying responsibility of making sense of collections, has been conferred from knowledge professionals to individuals.

Today, as seen in all the examples of mass digitization we have explored in the previous chapters, cultural memory institutions face a different paradigm than that of the eighteenth- and nineteenth-century disciplining cultural memory institution. In an age that encourages individualism, democratic ideals, and cultural participation, the orientations of the cultural memory institutions have shifted in discourse, practice, or both, toward an emphasis on the importance of the subjective experience and active participation of the individual visitor. As part of this shift, and as a result of the increasing integration of the digital imaginary and production apparatus into the field of cultural memory, the visitor has thus metamorphosed from a disciplinary subject to a prosumer, produser, participant, and/or user.

The organizational shift in the cultural memory ecosystem means that visionaries and builders of mass digitization infrastructures now pay attention not only to how collections may reflect upon the institution that holds the collection, but also on how the user experiences the informational navigation of collections. This is not to say that making an impression, or even disciplining the user, is not a concern for many mass digitization projects. Mass digitizations' constant public claims to literal greatness through numbers evidence this. Yet, today's projects also have to contend with the opinion of the public and must make their projects palatable and consumable rather than elitist and intimidating. The concern of the builders of mass digitization infrastructure is therefore not only to create an internal logic to their collections, but also to maximize the user's experience of being offered a wealth of information, while mitigating the danger of giving the visitor a sense of losing oneself, or even drowning, in information. An important question for builders of mass digitization projects has therefore been how to build visual and semantic infrastructures that offer the user a sense of meaningful direction as well as a desire to keep browsing.

While digital collections are in principle no longer tethered to their physical origins in spatial terms, we still encounter ideas about them in spatialized terms, often using notions such as trails, paths, and alleyways to visualize the spaces of digital collections.[25] This form of spatialized logic did not emerge with the mass digitization of cultural heritage collections, however, but also resides at the heart of some of the most influential early digital theories on the digital realm.[26] These theorized and conceptualized the web as a new form of architectural infrastructure, not only in material terms (such as cables and servers) but also as a new experiential space.[27] And

in this spatialized logic, the figure of the flâneur became a central character. Thus, we saw in the 1990s the rise of a digital interpretation of the flâneur, originally an emblematic figure of modern urban culture at the turn of the twentieth century, in the form of the virtual flâneur or the cyberflâneur. In 1994, German net artists Heiko Idensen and Matthias Krohn paid homage to the urban figure, noting in a text that "the screen winks at the flâneur" and locating the central tenets of computer culture with the "intoxication of the flânerie. Screens as streets and homes … of the crowd?"[28] Later, artist Steven Goldate provided a simple equation between online and offline spaces, noting among other things that "What the city and the street was to the flâneur, the Internet and the Superhighway have become to the Cyberflâneur."[29]

Scholars, too, explored the potentials and limits of thinking about the user of the Internet in flâneurian terms. Thus, Mike Featherstone drew parallels between the nineteenth-century flâneur and the virtual flâneur, exploring the similarities and differences between navigational strategies, affects, and agencies in the early urban metropolis and the emergent digital realm of the 1990s.[30]

Although the discourse on the digital flâneur was most prevalent in the 1990s, it still lingers on in contemporary writings about digitized cultural heritage collections and their design. A much-cited article by computer scientists Marian Dörk, Sheelagh Carpendale, and Carey Williamson, for instance, notes the striking similarity between the "growing cities of the 19th century and today's information spaces" and the relationship between "the individual and the whole."[31] Dörk, Carpendale, and Williamson use the figure of the flâneur to emphasize the importance of supporting not only utilitarian information needs through grand systems but also leisurely information surfing behaviors on an individual level. Dörk, Carpendale, and Willliamson's reflections relate to the experience of moving about in a mass of information and ways of making sense of this information. What does it mean to make sense of mass digitization? How can we say or know that the past two hours we spent rummaging about in the archives of Google Books, digging deeper in Europeana, or following hyperlinks in Monoskop made sense, and by whose standards? And what are the cultural implications of using the flâneur as a cultural reference point for these ideals? We find few answers to these questions in Dörk, Carpendale, and Williamson's article, or in related articles that invoke the flâneur as a figure

of inspiration for new search strategies. Thus, the figure of the flâneur is predominantly used to express the pleasurable and productive aspect of archival navigation. But in its emphasis on pleasure and leisure, the figure neglects the much more ambivalent atmosphere that enshrouds the flâneur as he navigates the modern metropolis. Nor does it problematize the privileged viewpoint of the flâneur.

The character of the flâneur, both in its original instantiations in French literature and in Walter Benjamin's early twentieth-century writings, was certainly driven by pleasure; yet, on a more fundamental level, his existence was also, as Elizabeth Wilson points out in her feminist reading of the flâneur, "a sorrowful engagement with the melancholy of cities," which arose "partly from the enormous, unfulfilled promise of the urban spectacle, the consumption, the lure of pleasure and joy which somehow seem destined to be disappointed."[32] Far from an optimistic and unproblematic engagement with information, then, the figure of the flâneur also evokes deeper anxieties arising from commodification processes and the accompanying melancholic realization that no matter how much one strolls and scrolls, nothing one encounters can ever fully satisfy one's desires. Benjamin even strikingly spatializes (and sexualizes) this mental state in an infrastructural imaginary: the labyrinth. The labyrinth is thus, Benjamin suggests, "the home of the hesitant. The path of someone shy of arrival at a goal easily takes the form of a labyrinth. This is the way of the (sexual) drive in those episodes which precede its satisfaction."[33]

Benjamin's hesitant flâneur caught in an unending maze of desire stands in contrast to the uncomplicated flâneur invoked in celebratory theories on the digital flâneur. Yet, recent literature on the design of digital realms suggests that the hesitant man caught in a drive for more information is a much more accurate image of the digital flâneur than the man-in-the-know.[34] Perhaps, then, the allegorical figure of the flâneur in digital design should be used less to address pleasurable wandering and more to invoke "the most characteristic response of all to the wholly new forms of life that seemed to be developing: ambivalence."[35] Caught up in the commodified labyrinth of the modern digitized archive, the digital flâneur of mass digitization might just as easily get stuck in a repetitive, monotonous routine of scrolling and downloading new things, forever suspended in a state of unfulfilled desire, than move about in meaningful and pleasurable ways.[36]

Moreover, and just as importantly, the figure of the flâneur is also entangled in a cultural matrix of assumptions about gender, capabilities, and colonial implications. In short: the flâneur is a white, able-bodied male. As feminist theory attests to, the concept of the flâneur is male by definition. Some feminists such as Griselda Pollock and Janet Wolff have denied the possibility of a female variant altogether, because of women's status as (often absent) objects rather than subjects in the nineteenth-century urban environment.[37] Others, such as Elizabeth Wilson, Deborah Epstein Nord, and Mica Nava have complicated the issue by alluding the opportunities and limitations of thinking about a female variant of the flâneur, for instance a flâneuse.[38] These discussions have also reverberated in the digital sphere in new variations.[39] Whatever position one assumes, it is clear that the concept of the flâneur, even in its female variant, is a complicated figure that has problematic allusions to a universal privileged figure.

In similar terms, the flâneur also has problematic colonial and racial connotations. As James Smalls points out in his essay "'Race As Spectacle in Late-Nineteenth-Century French Art and Popular Culture," the racial dimension of the flâneur is "conspicuously absent" from most critical engagements with the concept.[40] Yet, as Smalls notes, the question of race is crucial, since "the black man … is not privileged to lose himself in the Parisian crowd, for he is constantly reminded of his epidermalized existence, reflected back at him not only by what he sees, but by what we see as the assumed 'normal' white, universal spectator."[41] This othering is, moreover, not limited to the historical scene of nineteenth-century Paris, but still remains relevant today. Thus, as Garnette Cadogan notes in his essay "Walking While Black," non-white people are offered none of the freedoms of blending into the crowd that Baudelaire's and Benjamin's flâneurs enjoyed. "Walking while black restricts the experience of walking, renders inaccessible the classic Romantic experience of walking alone. It forces me to be in constant relationship with others, unable to join the New York flâneurs I had read about and hoped to join."[42]

Lastly, the classic figure of the flâneur also assumes a body with no disabilities. As Marian Ryan notes in an essay in the *New York Times*, "The art of flânerie entails blending into the crowd. The disabled flâneur can't achieve that kind of invisibility."[43] What might we take from these critical interventions into the uncomplicated discourse of the flâneur? Importantly, they counterbalance the dominant seductive image of the empowered user, and

remind us of the colonial male gaze inherent in any invocation of the metaphor of the flâneur, which for the majority of users is a subject position that is simply not available (nor perhaps desirable).

The limitations of the figure of the flâneur raise questions not only about the metaphor itself, but also about the topography of knowledge production it invokes. As already noted, Walter Benjamin placed the flâneur within a larger labyrinthine topology of knowledge production, where the flâneur could read the spectacle in front of him without being read himself. Walter Benjamin himself put the flâneur to rest with an analysis of an Edgar Allen Poe story, where he analyzed the demise of the flâneur in an increasingly capitalist topography, noting in melancholy terms that, "The bazaar is the last hangout of the flâneur. If in the beginning the street had become an interieur for him, now this interieur turned into a street, and he roamed through the labyrinth of merchandise as he had once roamed through the labyrinth of the city. It is a magnificent touch in Poe's story that it includes along with the earliest description of the flâneur the figuration of his end."[44] In 2012, Evgeny Morozov in similar terms declared the death of the cyberflâneur. Linking the commodification of urban spaces in nineteenth-century Paris to the commodification of the Internet, Morozov noted that "it's no longer a place for strolling—it's a place for getting things done" and that "Everything that makes cyberflânerie possible—solitude and individuality, anonymity and opacity, mystery and ambivalence, curiosity and risk-taking—is under assault."[45] These two death sentences, separated by a century, link the environment of the flâneur to significant questions about the commodification of space and its infrapolitical implications.

Exploring the implications of this topography, the following section suggests, will help us understand the infrapolitics of the spatial imaginaries of mass digitization, not only in relation to questions of globalization and late sovereignty, but also to cultural imaginaries of knowledge infrastructures. Indeed, these two dimensions are far from mutually exclusive, but rather belong to the same overarching tale of the politics of mass digitization. Thus, while the material spatial infrastructures of mass digitization projects may help us appreciate certain important political dynamics of Europeana, Google Books, and shadow libraries (such as their territorializing features or copyright contestations in relation to knowledge production), only an inclusion of the infrastructural imaginaries of knowledge production will help us understand the complex politics of mass digitization as it

metamorphoses from analog buildings, shelves, and cabinets to the circulatory networks of digital platforms.

Labyrinthine Imaginaries: Infrastructural Perspectives of Power and Knowledge Production

If the flâneur is a central early figure in the cultural imaginary of the observer of cultural texts, the labyrinth has long served as a cultural imaginary of the library, and, in larger terms, the spatialized infrastructural conditions of knowledge and power. Thus, literature is rife with works that draw on libraries and labyrinths to convey stories about knowledge production and the power struggles hereof. Think only of the elderly monk-librarian in Umberto Eco's classic, *The Name of the Rose,* who notes that: "the library is a great labyrinth, sign of the labyrinth of the world. You enter and you do not know whether you will come out"[46]; or consider the haunting images of being lost in Jose Luis Borges's tales about labyrinthine libraries.[47] This section therefore turns to the infrastructural space of the labyrinth, to show that this spatial imaginary, much like the flâneur, is loaded with cultural ambivalence, and to explore the ways in which the labyrinthine infrastructural imaginary emphasizes and crystallizes the infrapolitical tension in mass digitization projects between power and perspective, agency and environment, playful innovation and digital labor.

The labyrinth is a prevalent literary trope, found in authors from Ovid, Virgil, and Dante to Dickens and Nietzsche, and it has been used particularly in relation to issues of knowledge and agency, and in haunting and nightmarish terms in modern literature.[48] As the previous section indicates, the labyrinth also provides a significant image for understanding our relationship to mass digitization projects as sites of both knowledge production and experience. Indeed, one shadow library is even named *Aleph*, which refers to the ancient Hebrew letter and likely also nods at Jose Luis Borges's labyrinthine short story, *Aleph,* on infinite labyrinthine architectures. Yet, what kind of infrastructure is a labyrinth, and how does it relate to the potentials and perils of mass digitization?

In her rich historical study of labyrinths, Penelope Doob argues that the labyrinth possesses a dual potentiality: on the one hand, if experienced from within, the labyrinth is a sign of confusion; on the other, when viewed from above, it is a sign of complex order.[49] As Harold Bloom notes, "all of us

have had the experience of admiring a structure when outside it, but becoming unhappy within it."[50] Envisioning the labyrinth from within links to a claustrophobic sense of ignorance, while also implying the possibility of progress if you just turn the next corner. What better way to describe one's experience in the labyrinthine infrastructures of mass digitization projects such as Google Books with its infrastructural conditions and contexts of experience and agency? On the one hand, Google Books appears to provide the view from above, lending itself as a logistical aid in its information-rich environment. On the other hand, Google Books also produces an alienating effect of impenetrability on two levels. First, although Google presents itself as a compass, its seemingly infinite and constantly rearranging universe nevertheless creates a sense of vertigo, only reinforced by the almost existential question "Do you feel lucky?" Second, Google Books also feels impenetrable on a deeper level, with its black-boxed governing and ordering principles, hidden behind complex layers of code, corporate cultures, and nondisclosure agreements.[51] But even less-commercial mass digitization projects such as, for instance, Europeana and Monoskop can produce a sense of claustrophobia and alienation in the user. Think only of the frustration encountered when reaching dead ends in the form of broken links or in lack of access set down by European copyright regulations. Or even the alienation and dissatisfaction that can well up when there are seemingly no other limits to knowledge, such as in Monoskop, than one's own cognitive shortcomings.

The figure of the labyrinth also serves as a reminder that informational strolling is not only a leisurely experience, but also a laborious process. Penelope Doob thus points out the common medieval spelling of labyrinth as *laborintus*, which foregrounds the concept of labor and "difficult process," whether frustrating, useful, or both.[52] In an age in which "labor itself is now play, just as play becomes more and more laborious,"[53] Doob's etymological excursion serves to highlight the fact that in many mass digitization projects it is indeed the user's leisurely information scrolling that in the end generates profit, cultural value, and budgetary justification for mass digitization platforms. Jose van Dijck's analysis of the valuation of traffic in a digital environment is a timely reminder of how traffic is valued in a cultural memory environment that increasingly orients itself toward social media, "Even though communicative traffic on social media platforms seems determined by social values such as popularity, attention,

and connectivity, they are impalpably translated into monetary values and redressed in business models made possible by digital technology."[54] This is visible, for instance, in Europeana's usage statistic reports, which links the notions of *traffic* and *performance* together in an ontological equation (in this equation poor performance inevitably means a mark of death).[55] In a blogpost marking the launch of the *Europeana Statistics Dashboard*, we are told that information about mass digitization traffic is "vital information for a modern cultural institution for both reporting and planning purposes and for public accountability."[56] Thus, although visitors may feel solitary in their digital wanderings, their digital footsteps are in fact obsessively traced and tracked by mass digitization platforms and often also by numerous third parties.

Today, then, the user is indeed at work as she makes her way in the labyrinthine infrastructures of mass digitization by scrolling, clicking, downloading, connecting, and clearing and creating new paths. And while "search" has become a keyword in digital knowledge environments, digital infrastructures in mass digitization projects in fact distract as much as they orient. This new economy of cultural memory begs the question: if mass digitization projects, as labyrinthine infrastructures, invariably disorient the wanderer as much as they aid her, how might we understand their infrapolitics? After all, as the previous chapters have shown, mass digitization projects often present a wide array of motivations for why digitization should happen on a massive scale, with knowledge production and cultural enlightenment usually featuring as the strongest arguments. But as the spatialized heuristics of the flâneur and the labyrinth show, knowledge production and navigation is anything but a simple concept. Rather, the political dimensions of mass digitization discussed in previous chapters—such as standardization, late sovereignty, and network power—are tied up with the spatial imaginaries of what knowledge production and cultural memory are and how they should and could be organized and navigated.

The question of the spatial imaginaries of knowledge production and imagination has a long philosophic history. As historian David Bates notes, knowledge in the Enlightenment era was often imagined as a labyrinthine journey. A classic illustration of how this journey was imagined is provided by Enlightenment philosopher Jean-Louis Castilhon, whose frustration is palpable in this exclamation: "How cruel and painful is the situation of

a Traveller who has imprudently wandered into a forest where he knows neither the winding paths, nor the detours, nor the exits!"[57] These Enlightenment journeys were premised upon an infrastructural framework that linked error and knowledge, but also upon an experience of knowledge quests riddled by loss of oversight and lack of a compass. As the previous sections show, the labyrinth as a form of knowledge production in relation to truth and error persists as an infrastructural trope in the digital. Yet, it has also metamorphosed significantly since Castilhon. The labyrinthine infrastructural imaginaries we find in digital environments thus differ significantly from more classical images, not least under the influence of the rhizomatic metaphors of labyrinths developed by Deleuze and Guattari and Eco. If the labyrinth of the Renaissance had an endpoint and a truth, these new labyrinthine infrastructures, as Kristin Veel points out, had a much more complex relationship to the spatial organization of the truth. Eco and Deleuze and Guattari thus conceived of their labyrinths as networks "in which all points can be connected with one another" with "no center" but "an almost unlimited multiplicity of alternative paths," which makes it "impossible to rise above the structure and observe it from the outside, because it transcends the graphic two-dimensionality of the two earlier forms of labyrinths."[58] Deleuze expressed the senselessness of these contemporary labyrinths as a "theater where nothing is fixed, a labyrinth without a thread (Ariadne has hung herself)."[59]

In mass digitization, this new infrastructural imaginary feeds a looming concern over how best to curate and infrastructurate cultural collections. It is this concern that we see at play in the aforementioned institutional concerns over how to best create meaningful paths in the cultural collections. The main question that resounds is: where should the paths lead if there is no longer one truth, that is, if the labyrinth has no center? Some mass digitization projects seem to revel in this new reality. As we have seen, shadow libraries such as Monoskop and UbuWeb use the affordances of the digital to create new cultural connections outside of the formal hierarchies of cultural memory institutions. Yet, while embraced by some, predictably the new distribution of authority generates anxiety in the cultural memory circles that had hitherto been able to hold claim to knowledge organization expertise. This is the dizzying perspective that haunts the cultural memory professionals faced with Europeana's data governance model. Thus, as one Europeana professional explained to me in 2010, "Europeana aims at an

open-linked-data model with a number of implications. One implication is that there will be no control of data usage, which makes it possible, for instance, to link classics with porn. Libraries do not agree to this loss of control which was at the base of their self-understanding."[60] The Europeana professional then proceeded to recount the profound anxiety experienced and expressed by knowledge professionals as they increasingly came face-to-face with a curatorial reality that is radically changing what counts as knowledge and context, where a search for Courbet could, in theory, not only lead the user to other French masters of painting but also to a copy of a porn magazine (provided it is out of copyright). The anxiety experienced by knowledge professionals in the new cultural memory ecosystem can of course be explained by a rationalized fear of job insecurity and territorial concerns. Yet, the fear of knowledge infrastructures without a center may also run deeper. As Penelope Doob reminds us, the center of the labyrinth historically played a central moral and epistemological role in the labyrinthine topos, as the site that held the epiphanous key to unravel whatever evils or secrets the labyrinth contained. With no center, there is no key, no epiphany.[61] From this perspective, then, it is not only a job that is lost. It is also the meaning of knowledge itself.[62]

What, then, can we take from these labyrinthine wanderings as we pursue a greater understanding of the infrapolitics of mass digitization? Certainly, as this section shows, the politics of mass digitization is entangled in spatialized imaginaries that have a long and complex cultural and affective trajectory interlinked with ontological and epistemological questions about the very nature of knowledge. Cladding the walls of these trajectories are, of course, the ever-present political questions of authority and territory, but also deeper cultural and affective questions about the nature and meaning of knowledge as it bandies about in our cultural imaginaries, between discoveries and dead-ends, between freedom and control.

As the next section will show, one concept has in particular come to encapsulate these concerns: the notion of serendipity. While the notion of serendipity has a long history, it has gained new relevance with mass digitization, where it is used to express the realm of possibilities opened up by the new digital infrastructures of knowledge production. As such, it has come to play a role, not only as a playful cultural imaginary, but also as an architectural ideal in software developments for mass digitization. In the following section, we will look at a few examples of these architectures, as well as the knowledge politics they are entangled in.

The Architecture of Serendipitous Platforms

Serendipity has for long been a cherished word in archival studies, used to describe a magical moment of "Eureka!" A fickle and fabulating concept, it belongs to the world of discovery, capturing the moment when a meandering soul, a flâneur, accidentally stumbles upon a valuable find. As such, the moment of serendipity is almost always a happy circumstance of chance, and never an unfortunate moment of risk. Serendipity also embodies the word in its own origins. This section outlines the origins of this word and situate its reemergence in theories on libraries and on digital realms of knowledge production.

The English aristocrat Horace Walpole coined the word serendipity in a letter to Horace Mann in 1754, in which he explained his fascination with a Persian fairy tale about three princes from the *Isle of Serendip*[63] who possess superpowers of observation. In his letter, Walpole linked the contents of the fantastical story to his view of how new discoveries are made: "As their highnesses travelled, they were always making discoveries, by "accidental sagacity," of things which they were not in quest of."[64] And he proposed a new word—"serendipity"—to describe this sublime talent for discovery.

Walpole's conceptual invention did not immediately catch fire in common parlance.[65] But a few centuries after its invention, it suddenly took hold. Who awakened the notion from its dormant state, and why? Sociologists Robert K. Merton and Elinor Barber provided one influential answer in their own enjoyable exploration of the word. As they note, serendipity had a particular playful tone to it, expressing a sense that knowledge comes about not only through sheer willpower and discipline, but also via pleasurable chance. This almost hedonistic dimension made it incompatible with the serious ethos of the nineteenth century. As Merton and Barber note, "The serious early Victorians were not likely to pick up serendipity, except perhaps to point to it as a piece of frivolous whimsy. … Although the Victorians, and especially Victorian scientists, were familiar with the part played by accident in the process of discovery, they were likely neither to highlight that factor nor to clothe the phenomenon of accidental discovery in so lighthearted a word as serendipity."[66] But in the 1940s and 1950s something happened—the word began to catch on. Merton and Barber link this turn of linguistic events not only to pure chance, but also a change in scientific networks and paradigms. Traveling from the world of letters, as they recount, the word began making its way into

scientific circles, where attention was increasingly turned to "splashy discoveries in lab and field."[67] But as Lorraine Daston notes, "discoveries, especially those made by serendipity, depend partly on luck, and scientists schooled in probability theory are loathe to ascribe personal merit to the merely lucky," and scientists therefore increasingly began to "domesticate serendipity."[68] Daston remarks that while scientists schooled in probability were reluctant to ascribe their discoveries to pure chance, the "historians and literary scholars who struck serendipitous gold in the archives did not seem so eager to make a science out of their good fortune."[69] One tale of how literary and historical scholars struck serendipitous gold in the archive is provided by Mike Featherstone:

> Once in the archive, finding the right material which can be made to speak may itself be subject to a high degree of contingency—the process not of deliberate rational searching, but serendipity. In this context it is interesting to note the methods of innovatory historians such as Norbert Elias and Michel Foucault, who used the British and French national libraries in highly unorthodox ways by reading seemingly haphazardly "on the diagonal," across the whole range of arts and sciences, centuries and civilizations, so that the unusual juxtapositions they arrived at summoned up new lines of thought and possibilities to radically re-think and reclassify received wisdom. Here we think of the flâneur who wanders the archival textual city in a half-dreamlike state in order to be open to the half-formed possibilities of the material and sensitive to unusual juxtapositions and novel perceptions.[70]

English scholar Nancy Schultz in similar terms notes that the archive "in the humanities" represents a "prime site for serendipitous discovery."[71] In most of these cases, serendipity is taken to mean some form of archival insight, and often even a critical intellectual process. Deb Verhoeven, Associate Dean of Engagement and Innovation at the University of Technology Sydney, reminds us in relation to feminist archival work that "stories of accidental discovery" can even take on dimensions of feminist solace, consoling "the researcher, and us, with the idea that no system, whatever its claims to discipline, comprehensiveness, and structure, is exempt from randomness, flux, overflow, and therefore potential collapse."[72]

But with mass digitization processes, their fusion of probability theories and archives, and their ideals of combined fun and fact-finding, the questions raised in the hard sciences about serendipity, its connotations of freedom and chance, engineering and control, now also haunt the archives of historians and literary scholars. Serendipity has now often come to be used as a motivating factor for digitization in the first place, based on

arguments that mass digitized archives allow not only for dedicated and target-oriented research, but also for new modes of search, of reading haphazardly "on the diagonal" across genres and disciplines, as well as across institutional and national borders that hitherto kept works and insights apart. As one spokesperson from a prominent mass digitization company states, "digital collections have been designed both to assist researchers in accessing original primary source materials and to enable them to make serendipitous discoveries and unexpected connections between sources."[73] And indeed, this sentiment reverberates in all mass digitization projects from Europeana and Google Books to smaller shadow libraries such as UbuWeb and Monoskop. Some scholars even argue that serendipity takes on new forms due to digitization.[74]

It seems only natural, then, that mass digitization projects, and their actors, have actively adopted the discourse of serendipity, both as a selling point and a strategic claim. Talking about Google's digitization program, Dr. Sarah Thomas, Bodley's Librarian and Director of Oxford University Library Services, notes: "Library users have always loved browsing books for the serendipitous discoveries they provide. Digital books offer a similar thrill, but on multiple levels—deep entry into the texts or the ability to browse the virtual shelf of books assembled from the world's great libraries."[75] But it has also raised questions for those people who are in charge, not only of holding serendipity forth as an ideal, but also building the architecture to facilitate it. Dan Cohen, speaking on behalf of the DPLA, thus noted the centrality of the concept, but also the challenges that mass digitization raised in practical terms: "At DPLA, we've been thinking a lot about what's involved with serendipitous discovery. Since we started from scratch and didn't need to create a standard online library catalog experience, we were free to experiment and provide novel ways into our collection of over five million items. How to arrange a collection of that scale so that different users can bump into items of unexpected interest to them?" While adopting the language of serendipity is easy, its infrastructural construction is much harder to envision. This challenge clearly troubles the strategic team developing Europeana's infrastructure, as it notes in a programmatic tone that stands hilariously at odds with the curiosity it must cater to:

> Reviewing the personas developed for the D6.2 Requirements for Europeana. eu8 deliverable—and in particular those of the "culture vultures"—one finds two somewhat-opposed requirements. On the one hand, they need to be able to find

what they are looking for, and navigate through clear and well-structured data. On the other hand, they also come to Europeana looking for "inspiration"—that is to say, for something new and unexpected that points them towards possibilities they had previously been unaware of; what, in the formal literature of user experience and search design, is sometimes referred to as "serendipity search." Europeana's users need the platform to be structured and predictable—but not entirely so.[76]

To achieve serendipity, mass digitization projects have often sought to take advantage of the labyrinthine infrastructures of digitization, relying not only on their own virtual bookshelves, but also on the algorithmic highways and back alleys of social media. Twitter, in particular, before it adopted personalization methods, became a preferred infrastructure for mass digitization projects, who took advantage of Twitter's lack of personalized search to create whimsical bots that injected randomness into the user's feed. One example was the Digital Public Library of America's DPLA Bot, which grabs a random noun and uses its API to share the first result it finds. The DPLA Bot aims to "infuse what we all love about libraries—serendipitous discovery—into the DPLA" and thus seeks to provide a "kind of 'Surprise me!' search function for DPLA."[77] It did not take the programmer Peter Meyr much time to develop a similar bot for Europeana. In an interview with EuropeanaPro, Peter Meyr directly related the EuropeanaBot to the serendipitous affordances of Twitter and its rewards for mass digitization projects, noting that:

> The presentation of digital resources is difficult for libraries. It is no longer possible to just explore, browse the stacks and make serendipitous findings. With Europeana, you don't even have a physical library to go to. So I was interested in bringing a little bit of serendipity back by using a Twitter bot. … If I just wanted to present (semi) random Europeana findings, I wouldn't have needed Twitter—an RSS-Feed or a web page would be enough. However, I wanted to infuse EuropeanaBot with a little bit of "Twitter culture" and give it a personality.[78]

The British Library also developed a Twitter bot titled the Mechanical Curator, which posts random resources with no customization except a special focus on images in the library's seventeenth- to nineteenth-century collections.[79] But there were also many projects that existed outside social media platforms and operated across mass digitization projects. One example was the "serendipity engine," Serendip-o-matic, which first examined the user's research interests and then, based on this data, identified "related content in locations such as the Digital Public Library of America (DPLA), Europeana, and Flickr Commons."[80] While this initiative was not endorsed

by any of these mass digitization projects, they nevertheless featured it on their blogs, integrating it into the mass digitization ecosystem.

Yet, while mass digitization for some represents the opportunity to amplify the chance of chance, other scholars increasingly wonder whether the engineering processes of mass digitization would take serendipity out of the archive. Indeed, to them, the digital is antithetical to chance. One such viewpoint is uttered by historian Tristram Hunt in an op-ed charging against Google's British digitization program under the title, "Online is fine, but history is best hands on." In it, Hunt argues that the digital, rather than providing a new means of chance finding, would impede historical discovery and that only the analog archival environment could foster real historical discoveries, since it is "… only with MS in hand that the real meaning of the text becomes apparent: its rhythms and cadences, the relationship of image to word, the passion of the argument or cold logic of the case. Then there is the serendipity, the scholar's eternal hope that something will catch his eye,"[81] In similar terms, Graeme Davison describes the lacking of serendipitous errings in digital archives, as he likens digital search engines with driving "a high-powered car down a freeway, compared with walking or cycling. It gets us there more quickly but we skirt the towns and miss a lot of interesting scenery on the way."[82] William McKeen also links the loss of serendipity to the acceleration of method in the digital:

> Think about the library. Do people browse anymore? We have become such a directed people. We can target what we want, thanks to the Internet. Put a couple of key words into a search engine and you find—with an irritating hit or miss here and there—exactly what you're looking for. It's efficient, but dull. You miss the time-consuming but enriching act of looking through shelves, of pulling down a book because the title interests you, or the binding. Inside, the book might be a loser, a waste of the effort and calories it took to remove it from its place and then return. Or it might be a dark chest of wonders, a life-changing first step into another world, something to lead your life down a path you didn't know was there.[83]

Common to all these statements is the sentiment that the engineering of serendipity removes the very chance of serendipity. As Nicholas Carr notes, "Once you create an engine—a machine—to produce serendipity, you destroy the essence of serendipity. It becomes something expected rather than unexpected."[84] It appears, then, that computational methods have introduced historians and literary scholars to the same "beaverish efforts"[85]

to domesticate serendipity as the hard sciences had to face at the beginning of the twentieth century.

To my knowledge, few systematic studies exist about whether mass digitization projects such as Europeana and Google Books hamper or foster creative and original research in empirical terms. How one would go about such a study is also an open question. The dichotomy between digital and analog does seem a bit contrived, however. As Dan Cohen notes in a blogpost for DPLA, "bookstores and libraries have their own forms of 'serendipity engineering,' from storefront staff picks to behind-the-scenes cataloguing and shelving methods that make for happy accidents."[86] Yet there is no doubt that the discourse of serendipity has been infused with new life that sometimes veers toward a "spectacle of serendipity."[87]

Over the past decade, the digital infrastructures that organize our cultural memory have become increasingly integrated in a digital economy that valuates "experience" as a cultural currency that can be exchanged to profit, and our affective meanderings as a form of industrial production. This digital economy affects the architecture and infrastructure of digital archives. The archival discourse on digital serendipity is thus now embroiled in a more deep-seated infrapolitics of workspace architecture, influenced by Silicon Valley's obsession with networks, process, and connectivity.[88] Think only of the increasing importance of Google and Facebook to mass digitization projects: most of these projects have a Facebook page on which they showcase their material, just as they take pains to make themselves "algorithmically recognizable"[89] to Google and other search engines in the hope of reaching an audience beyond the echo chamber of archives and to distribute their archival material on leisurely tidbit platforms such as Pinterest and Twitter.[90] If serendipity is increasingly thought of as a platform problem, the final question we might pose is what kind of infrapolitics this platform economy generates and how it affects mass digitization projects.

The Infrapolitics of Platform Power

As the previous sections show, mass digitization projects rely upon spatial metaphors to convey ideas about, and ideals of, cultural memory infrastructures, their knowledge production, and their serendipitous potential. Thus, for mass digitization projects, the ideal scenario is that the labyrinthine

errings of the user result in serendipitous finds that in turn bring about new forms of cultural value. From the point of the user, however, being caught up in the labyrinth might just as easily give rise to an experience of being confronted with a sense of lack of oversight and alienation in the alleyways of commodified infrastructures. These two scenarios co-exist because of what Penelope Doob (as noted in the section on labyrinthine imaginaries) refers to as the dual potentiality of the labyrinth, which when experienced from within can be become a sign of confusion, and when viewed from above becomes a sign of complex order.[91]

In this final section, I will turn to a new spatial metaphor, which appears to have resolved this dual potentiality of the spatial perspective of mass digitization projects: the platform. The platform has recently emerged as a new buzzword in the digital economy, connoting simultaneously a perspective, a business strategy, and a political ideology. Ideally the platform provides a different perspective than the labyrinth, offering the user the possibility of simultaneously constructing the labyrinth and viewing it from above. This final section therefore explores how we might understand the infrapolitics of the platform, and its role in the digital economy.

In its recent business strategy, Europeana claimed that it was moving from operating as a "portal" to operating as a "platform."[92] The announcement was part of a broader infrastructural transition in the field of cultural memory, undergirded by a process of opening up and connecting the cultural memory sector to wider knowledge ecosystems.[93] Indeed, Europeana's move is part of a much larger discursive and material reality of a more fundamental process of "platformization" of the web.[94] The notion of the platform has thus recently become an important heuristic for understanding the cultural development of the web and its economy, fusing the computational understanding of the platform as an environment in which a code is executed[95] and the political and social understanding of a platform as a site of politics.[96]

While the infrapolitics of the platformization of the web has become a central discussion in software and communication studies, little interest has been paid to the implications of platforms for the politics of cultural memory. Yet, Europeana's business strategy illustrates the significant infrapolitical role that platforms are given in mass digitization literature. Citing digital historian Tim Sherratt's claim that "portals are for visiting, platforms for building on,"[97] Europeana's strategy argues that if cultural

memory sites free themselves and their content from the "prison of portals" in favor of more openness and flexibility, this will in turn empower users to created their own "pathways" through the digital cultural memory, instead of being forced to follow predetermined "narrative journeys."[98] The business plan's reliance on Sherratt's theory of platforms shows that although the platform has a technical meaning in computation, Europeana's discourse goes beyond mere computational logic. It instead signifies an infrapolitics that carries with it an assumption about the political dynamics of software, standing in for the freedom to act in the labyrinthine infrastructures of digital collections.

Yet, what is a platform, and how might we understand its infrapolitics? As Tarleton Gillespie points out, the oldest definition of platform is architectural, as a level or near-level surface, often elevated.[99] As such, there is something inherently simple about platforms. As architect Sverre Fehn notes, "the simplest form of architecture is to cultivate the surface of the earth, to make a platform."[100] Fehn's statement conceals a more fundamental insight about platforms, however: in the establishment of a low horizontal platform, one also establishes a social infrastructure. Platforms are thus not only material constructions, they also harbor infrapolitical affordances. The etymology of the notion of "platform" evidences this infrapolitical dimension. Originally a spatial concept, the notion of platform appeared in architectural, figurative, and military formations in the sixteenth century, soon developing into specialized discourses of party programs and military and building construction,[101] religious congregation,[102] and architectural vantage points.[103] Both the architectural and social understandings of the term connote a process in which sites of common ground are created in contradistinction to other sites. In geology, for instance, platforms emerge from abrasive processes that elevate and distinguish one area in relation to others. In religious and political discourse, platforms emerge as organizational sites of belonging, often in contradistinction to other forms of organization. Platforms, then, connote both common ground and demarcated borders that emerge out of abrasive processes. In the nineteenth century, a third meaning adjoined the notion of platforms, namely trade-related cooperation. This introduced a dynamic to the word that is less informed by abrasive processes and more by the capture processes of what we might call "connective capitalism." Yet, despite connectivity taking center stage,

even these platforms were described as territorializing constructs that favor some organizations and corporations over others.[104]

In the twentieth and twenty-first centuries, as Gilles Deleuze and Felix Guattari successfully urged scholars and architects to replace roots with rhizomes, the notion of platform began taking on yet another meaning. Deleuze and Guattari began fervently arguing for the nonexistence of rooted platforms.[105] Their vision soon gave rise to a nonfoundational understanding of the world as a "limitless multiplicity of positions from which it is possible only to erect provisional constructions."[106] Deleuze and Guattari's ontology became widely influential in theorizing the web *in toto*; as Rem Koolhaas once noted, the "language of architecture—platform, blueprint, structure—became almost the preferred language for indicating a lot of phenomenon that we're facing from Silicon Valley."[107] From the singular platforms of military and party politics, emerged, then, the thousand platforms of the digital, where "nearly every surge of research and investment pursued by the digital industry—e-commerce, web services, online advertising, mobile devices and digital media sales—has seen the term migrate to it."[108]

What infrapolitical logic can we glean from Silicon Valley's adoption of the vernacular notion of the platform? Firstly, it is an infrapolitics of temporality. As Tarleton Gillespie points out, the semantic aspects of platforms "point to a common set of connotations: a 'raised level surface' designed to facilitate some activity that will subsequently take place. It is anticipatory, but not causal."[109] The inscription of platforms into the material infrastructures of the Internet thus assume a value-producing futurity. If serendipity is what is craved, then platforms are the site in which this is thought to take place.

Despite its inclusion in the entrepreneurial discourse of Silicon Valley, the notion of the platform is also used to signal an infrapolitics of collaboration, even subversion. Olga Gurionova, for instance, explores the subversive dynamics of critical artistic platforms,[110] and Trebor Sholtz promotes the term "platform cooperativism" to advance worker-based cooperatives that would "design their own apps-based platforms, fostering truly peer-to-peer ways of providing services and things, and speak truth to the new platform capitalists."[111] Shadow libraries such as Monoskop appear as perfect examples of such subversive platforms and evidence of Srnicek's

reminder that not *all* social interactions are co-opted into systems of profit generation.[112] Yet, as the territorial, legal, and social infrastructures of mass digitization become increasingly labyrinthine, it takes a lot of critical consciousness to properly interpret and understand its infrapolitics. Engage with the shadow library Library Genesis on Facebook, for instance, and you submit to platform capitalism.

A significant trait of platform-based corporations such as Google and Facebook is that they more often than not present themselves as apolitical, neutral, and empowering tools of connectivity, passive until picked up by the user. Yet, as Lisa Nakamura notes, "reading's economies, cultures of sharing, and circuits of travel have never been passive."[113] One of digital platforms' most important infrapolitical traits is their dependence on network effects and a winner-takes-all logic, where the platform owner is not only conferred enormous power vis-à-vis other less successful platforms but also vis-à-vis the platform user.[114] Within this game, the platform owner determines the rules of the product and the service on offer. Entering into the discourse of platforms implies, then, not only constructing a software platform, but also entering into a parasitical game of relational network effects, where different platforms challenge and use each other to gain more views and activity. This gives successful platforms a great advantage in the digital economy. They not only gain access to data, but they also control the rules of how the data is to be managed and governed. Therefore, when a user is surfing Google Books, Google—and not the library—collects the user's search queries, including results that appeared in searches and pages the user visited from the search. The browser, moreover, tracks the user's activity, including pages the user has visited and when, user data, and possibly user login details with auto-fill features, user IP address, Internet service provider, device hardware details, operating system and browser version, cookies, and cached data from websites. The labyrinthine infrastructure of the mass digitization ecosystem also means that if you access one platform through another, your data will be collected in different ways. Thus, if you visit Europeana through Facebook, it will be Facebook that collects your data, including name and profile; biographical information such as birthday, hometown, work history, and interests; username and unique identifier; subscriptions, location, device, activity date, time and time-zone, activities; and likes, check-ins, and events.[115] As more platforms emerge from which one can access mass digitized archives, such as social

media sites like Facebook, Google+, Pinterest, and Twitter, as well as mobile devices such as Android, gaining an overview of who collects one's data and how becomes more nebulous.

Europeana's reminder illustrates the assemblatic infrastructural set-up of mass digitization projects and how they operate with multiple entry points, each of which may attach its own infrapolitical dynamics. It also illustrates the labyrinthine infrastructures of privacy settings, over which a mapping is increasingly difficult to attain because of constant changes and reconfigurations. It furthermore illustrates the changing legal order from the relatively stable sovereign order of human rights obligations to the modulating landscape of privacy policies.

How then might we characterize the infrapolitics of the spatial imaginaries of mass digitization? As this chapter has sought to convey, writings about mass digitization projects are shot through with spatialized metaphors, from the flâneur to the labyrinth and the platform, either in literal terms or in the imaginaries they draw on. While this section has analyzed these imaginaries in a somewhat chronological fashion, with the interactivity of the platform increasingly replacing the more passive gaze of the spectator, they coexist in that larger complex of spatial digital thinking. While often used to elicit uncomplicated visions of empowerment, desire, curiosity, and productivity, these infrapolitical imaginaries in fact show the complexity of mass digitization projects in their reinscription of users and cultural memory institutions in new constellations of power and politics.

6 Concluding Remarks

I opened this book claiming that the notion of mass digitization has shifted from a professional concept to a cultural political phenomenon. If the former denotes a technical way of duplicating analog material in digital form, mass digitization as a cultural practice is a much more complex apparatus. On the one hand, it offers the simple promise of heightened public and private access to—and better preservation of—the past; one the other, it raises significant political questions about ethics, politics, power, and care in the digital sphere. I locate the emergence of these questions within the infrastructures of mass digitization and the ways in which they not only offer new ways of reading, viewing, and structuring cultural material, but also new models of value and its extraction, and new infrastructures of control. The political dynamic of this restructuring, I suggest, may meaningfully be referred to as a form of infrapolitics, insofar as the political work of mass digitization often happens at the level of infrastructure, in the form of standardization, dissent, or both. While mass digitization entwines the cultural politics of analog artifacts and institutions with the infrapolitical logics of the new digital economies and technologies, there is no clear-cut distinction between between the analog and digital realms in this process. Rather, paraphrasing N. Katherine Hayles, I suggest that mass digitization, like a Janus-figure, "looks to past and future, simultaneously reinforcing and undermining both."[1]

A persistent challenge in the study of mass digitization is the mutability of the analytical object. The unstable nature of cultural memory archives is not a new phenomenon. As Derrida points out, they have always been haunted by an unintended instability, which he calls "archive fever." Yet, mass digitization appears to intensify this instability even further, both in its material and cultural instantiations. Analog preservation practices that

seek to stabilize objects are in the digital realm replaced with dynamic processes of content migration and software updates. Cultural memory objects become embedded in what Wendy Chun has referred to as the enduring ephemerality of the digital as well as the bleeding edge of obsolescence.[2]

Indeed, from the moment when the seed for this book was first planted to the time of its publication, the landscape of mass digitization, and the political battles waged on its maps, has changed considerably. Google Books—which a decade ago attracted the attention, admiration, and animosity of all—recently metamorphosed from a giant flood to a quiet trickle. After a spectacle of press releases on quantitative milestones, epic legal battles, and public criticisms, Google apparently lost interest in Google Books. Google's gradual abandonment of the project resembled more an act of prolonged public ghosting than a clear-cut break-up, leaving the public to read in between the lines about where the company was headed: scanning activities dwindled; the Google Books blog closed along with its Twitter feed; press releases dried up; staff was laid off; and while scanning activities are still ongoing, they are limited to works in the public domain, changing the scale considerably.[3] One commentator diagnosed the change of strategy as the demise of "the greatest humanistic project of our time."[4] Others acknowledged in less dramatic terms that while Google's scanning activities may have stopped, its legacy lives on and is still put to active use.[5]

In the present context, the important point to make is that a quiet life does not necessarily equal death. Indeed, this is the lesson we learn from attending to the subtle workings of infrastructure: the politics of infrastructure is the politics of what goes on behind the curtains, not only what is launched to the front page. Thus, as one engineer notes when confronted with the fate of Google Books, "We're not focused on shiny features and things that are very visible to users. … It's more like behind-the-scenes work and perfecting the technology—acquiring content, processing it properly so that we can view the entire book online, and adjusting the search algorithm."[6] This is a timely reminder that any analysis of the infrapolitics of mass digitization has to tend not only to the visible and loud politics of construction, but also the quiet and ongoing politics of infrastructure maintenance. It makes no sense to write an obituary for Google Books if the infrastructure is still at work. Moreover, the assemblatic nature of mass digitization also demands that we do not stop at the immediate borders

of a project when making analytical claims about their infrapolitics. Thus, while Google Books may have stopped in its tracks, other trains of mass digitization have pulled up instead, carrying the project of mass digitization forward toward new, divergent, and experimental sites. Google's different engagements with cultural digitization shows that an analysis of the politics of Google's memory work needs to operate with an assemblatic method, rather than a delineating approach.[7] Europeana and DPLA also are mutable analytical objects, both in economic and cultural form. Therefore, Europeana leads a precarious life from one EU budget framework to the next, and its cultural identity and software instantiations have transformed from a digital library, to a portal, to a platform over the course of only a few decades. Last, but not least, shadow libraries are mediating and multiplying cultural memory objects from servers and mirror links that sometimes die just as quickly as they emerged. The question of institutionalization matters greatly in this respect, outlining what we might call a spectrum of contingency. If a mass digitization project lives in the margins of institutions, such as in the case of many shadow libraries, its infrastructure is often fraught with uncertainties. Less precarious, but nonetheless tumultuous, are the corporate institutions with their increasingly short market-driven lifespans. And, at the other end of the spectrum, we find mass digitization projects embedded in bureaucratic apparatuses whose lumbering budget processes provide publically funded mass digitization projects with more stable infrastructures.

The temporal dimension of mass digitization projects also raises important questions about the horizon of cultural memory in material terms. Should mass digitization, one might ask, also mean whither analog cultural memory? This question seems relevant not least in cases where institutions consider digitization as a form of preservation that allows them to discard analog artifacts once digitized. In digital form, we further have to contend with a new temporal horizon of cultural memory itself, based not on only on remembrance but on anticipation in the manner of "If you liked this, you might also like. …." Thus, while cultural memory objects link to objects of the past, mass digitized cultural memory also gives rise to new methods of prediction and preemption, for instance in the form of personalization. In this anticipatory regime, cultural memory becomes subject to perpetual calculatory activities, processing affects, and activities in terms of likelihoods and probabilistic outcomes.

Thus, cultural memory has today become embedded in new glocalized infrastructures. On the one hand, these infrastructures present novel opportunities. Cultural optimists have suggested that mass digitization has the potential to give rise to new cosmopolitan public spheres tethered from the straitjackets of national territorializing forces. On the other hand, critics argue that there is little evidence that cosmopolitan dynamics are in fact at work. Instead, new colonial and neoliberal platforms arise from a complex infrastructural apparatus of private and public institutions and become shaped by political, financial, and social struggles over representation, control, and ownership of knowledge.

In summary, it is obvious that the scale of mass digitization, public and private, licit and illicit, has transformed how we engage with texts, cultural works, and cultural memory. People today have instant access to a wealth of works that would previously have required large amounts of money, as well as effort, to engage with. Most of us enjoy the new cultural freedoms we have been given to roam the archives, collecting and exploring oddities along the way, and making new connections between works that would previously have been held separate by taxonomy, geography, and time in the labyrinthine material and social infrastructures of cultural memory.

A special attraction of mass digitization no doubt lies in its unfathomable scale and linked nature, and the fantasy and "spectacle of collecting."[8] The new cultural environment allows the user to accelerate the pace of information by accessing key works instantly as well as idly rambling in the exotic back alleys of digitized culture. Mass digitized archives can be explored to functional, hedonistic, and critical ends (sometimes all at the same time), and can be used to exhume forgotten works, forgotten authors, and forgotten topics. Within this paradigm, the user takes center stage—at least discursively. Suddenly, a link made between a porn magazine and a Courbet painting could well be a valued cultural connection instead of a frowned-upon transgression in the halls of high culture. Users do not just download books; they also upload new folksonomies, "ego-documents," and new cultural constellations, which are all welcomed in the name of "citizen science." Digitization also infuses texts with new life due to its new connective properties that allow readers and writers to intimately and exhibitionistically interact around cultural works, and it provides new ways of

engaging with texts as digital reading migrates toward service-based rather than hardware-based models of consumption. Digitization allows users to digitally collect works themselves and indulge in alluring archival riches in new ways.

But mass digitization also gives rise to a range of new ethical, political, aesthetic, and methodological questions concerning the spatio-temporality, ownership, territoriality, re-use, and dissemination of cultural memory artifacts. Some of those dimensions have been discussed in detail in the present work and include questions about digital labor, platformization, management of visibility, ownership, copyright, and other new forms of control and de- and recentralization and privatization processes. Others have only been alluded to but continue to gain in relevance as processes of mass digitization excavate and make public sensitive and contested archival material. Thus, as the cultural memories and artifacts of indigenous populations, colonized territories and other marginalized groups are brought online, as well as artifacts that attest to the violent regimes of colonialism and patriarchy, an attendant need has emerged for an ethics of care that goes beyond simplistic calls for right to access, to instead attend to the sensitivity of the digitized material and the ways in which we encounter these materials.

Combined, these issues show that mass digitization is far from a straightforward technical affair. Rather, the productive dimensions of mass digitization emerge from the rubble of disruptive and turbulent political processes that violently dislocate established frontiers and power dynamics and give rise to new ones that are yet to be interpreted. Within these turbulent processes, the familiar narratives of empowered users collecting and connecting works and ideas in new and transgressive ways all too often leave out the simultaneous and integrated story of how the labyrinthine infrastructures of mass digitization also writes itself on the back of the users, collecting them and their thoughts in the process, and subjecting them to new economic logics and political regimes. As Lisa Nakamura reminds us, "by availing ourselves of its networked virtual bookshelves to collect and display our readerliness in a postprint age, we have become objects to be collected."[9] Thus, as we gather vintage images on Pinterest, collect books in Google Books, and retweet sounds files from Europeana, we do best not only to question the cultural logic and ethics of these actions but also to

remember that as we collect and connect, we are also ourselves collected and connected.

If the power of mass digitization happens at the level of infrastructure, political resistance will have to take the form of infrastructural intervention. We play a role in the formulation of the ethics of such interventions, and as such we have to be willing to abandon the predominant tropes of scale, access, and acceleration in favor of an infrapolitics of care—a politics that offers opportunities for mindful, slow, and focused encounters.

Notes

Chapter 1

1. Borghi 2012, 420.

2. Latour 2008.

3. For more on this, see Hicks 2018; Abbate 2012; Ensmenger 2012. In the case of libraries, (white) women still make out the majority of the workforce, but there is a disproportionate amount of men in senior positions, in comparison with their overall representation; see, for example, Schonfeld and Sweeney 2017.

4. Meckler 1982.

5. Otlet and Rayward 1990, chaps. 6 and 15.

6. For a historical and contemporary overview over some milestones in the use of microfilms in a library context, see Canepi et al. 2013, specifically "Historic Overview." See also chap. 10 in Baker 2002.

7. Pfanner 2012.

8. http://www.mondotheque.be/wiki/index.php/Mondothèque:About.

9. Medak et al. 2016.

10. Michael S. Hart, "The History and Philosophy of Project Gutenberg," Project Gutenberg, August 1992, http://www.gutenberg.org/wiki/Gutenberg:The_History_and_Philosophy_of_Project_Gutenberg_by_Michael_Hart.

11. Ibid.

12. http://www.gutenberg.org.

13. Ibid.

14. Bruno Delorme, "Digitization at the Bibliotheque Nationale De France, Including an Interview with Bruno Delorme," *Serials* 24 (3) (2011): 261–265.

15. Alain Giffard, "Dilemmas of Digitization in Oxford," *AlainGiffard's Weblog*, posted May 29, 2008, https://alaingiffard.wordpress.com/2008/05/29/dilemnas-of-digitization-in-oxford.

16. Ibid.

17. Author's interview with Alain Giffard, Paris, 2010.

18. Ibid.

19. Later, in 1997, François Mitterrand demanded that the digitized books should be brought online, accessible as text from everywhere. This, then, was what became known as Gallica, the digital library of BnF, which was launched in 1997. Gallica contains documents primarily out of copyright from the Middle Ages to the 1930s, with priority given to French-speaking culture, hosting about 4 million documents.

20. Imerito 2009.

21. Ambati et al. 2006; Chen 2005.

22. Ryan Singel, "Stop the Google Library, Net's Librarian Says," *Wired*, May 19, 2009, https://www.wired.com/2009/05/stop-the-google-library-nets-librarian-says.

23. Alfred P. Sloan Foundation, Annual Report, 2006, https://sloan.org/storage/app/media/files/annual_reports/2006_annual_report.pdf.

24. Leetaru 2008.

25. Amazon was also a major player in the early years of mass digitization. In 2003 they gave access to a digital archive of more than 120,000 books with the professed goal of adding Amazon's multimillion-title catalog in the following years. As with all other mass digitization initiatives, Jeff Bezos faced a series of copyright and technological challenges. He met these with legal rhetorical ingenuity and the technical skills of Udi Manber, who later became the lead engineer with Google, see, for example, Wolf 2003.

26. Leetaru 2008.

27. John Markoff, "The Coming Search Wars," *New York Times*, February 1, 2004, http://www.nytimes.com/2004/02/01/business/the-coming-search-wars.html.

28. Google press release, "Google Checks out Library Books," December 14, 2004, http://googlepress.blogspot.dk/2004/12/google-checks-out-library-books.html.

29. Vise and Malseed 2005, chap. 21.

30. Auletta 2009, 96.

31. Johann Wolfgang Goethe, *Sprüche in Prosa*, "Werke" (Weimer edition), vol. 42, pt. 2, 141; cited in Cassirer 1944.

32. Philip Jones, "Writ to the Future," *The Bookseller*, October 22, 2015, https://www.thebookseller.com/blogs/writ-future-315153.

33. "Jacques Chirac donne l'impulsion à la création d'une bibliothèque numérique," *Le Monde*, March 16, 2005, http://www.lemonde.fr/culture/article/2005/03/16/jacques-chirac-donne-l-impulsion-a-la-creation-d-une-bibliotheque-numerique_401857_3246.html.

34. "An overwhelming American dominance in defining future generations' conception about the world" (author's own translation). Ibid.

35. Labi 2005; "The worst scenario we could achieve would be that we had two big digital libraries that don't communicate. The idea is not to do the same thing, so maybe we could cooperate, I don't know. Frankly, I'm not sure they would be interested in digitizing our patrimony. The idea is to bring something that is complementary, to bring diversity. But this doesn't mean that Google is an enemy of diversity."

36. Chrisafis 2008.

37. Béquet 2009. For more on the political potential of archives, see Foucault 2002; Derrida 1996; and Tygstrup 2014.

38. "Comme vous soulignez, nos bibliothèques et nos archives contiennent la mémoire de nos culture européenne et de société. La numérisation de leur collection—manuscrits, livres, images et sons—constitue un défi culturel et économique auquel il serait bon que l'Europe réponde de manière concertée." (As you point out, our libraries and archives contain the memory of our European culture and society. Digitization of their collections—manuscripts, books, images, and sounds—is a cultural and economic challenge it would be good for Europe to meets in a concerted manner.) Manuel Barroso, open letter to Jacques Chirac, July 7, 2007, http://www.peps.cfwb.be/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/sites/numpat/upload/numpat_super_editor/numpat_editor/documents/Europe/Bibliotheques_numeriques/2005.07.07reponse_de_la_Commission_europeenne.pdf&hash=fe7d7c5faf2d7befd0894fd998abffdf101eecf1.

39. Jøsevold 2016.

40. Janssen 2011.

41. Robert Darnton, "Google's Loss: The Public's Gain," *New York Review of Books*, April 28, 2011, http://www.nybooks.com/articles/2011/04/28/googles-loss-publics-gain.

42. Palfrey 2015, 104.

43. See, for example, DPLA's Public Library Partnership's Project, https://dp.la/info/about/projects/public-library-partnerships.

44. Karaganis, 2018.

45. Sassen 2008, 3.

46. Coyle 2006; Borghi and Karapapa, *Copyright and Mass Digitization*; Patra, Kumar, and Pani, *Progressive Trends in Electronic Resource Management in Libraries*.

47. Borghi 2012.

48. Beagle et al. 2003; Lavoie and Dempsey 2004; Courant 2006; Earnshaw and Vince 2007; Rieger 2008; Leetaru 2008; Deegan and Sutherland 2009; Conway 2010; Samuelson 2014.

49. The earliest textual reference to the mass digitization of books dates to the early 1990s. Richard de Gennaro, Librarian of Harvard College, in a panel on funding strategies, argued that an existing preservation program called "brittle books" should take precedence over other preservation strategies such as mass deacidification; see Sparks, *A Roundtable on Mass Deacidification*, 46. Later the word began to attain the sense we recognize today, as referring to digitization on a large scale. In 2010 a new word popped up, "ultramass digitization," a concept used to describe the efforts of Google vis-à-vis more modest large-scale digitization projects; see Greene 2010.

50. Kevin Kelly, "Scan This Book!," *New York Times*, May 14, 2006, http://nyti.ms/1Z8qxsG; Hall 2008; Darnton 2009; Palfrey 2015.

51. As Alain Giffard notes, "I am not very confident with the programs of digitization full of technical and economical considerations, but curiously silent on the intellectual aspects" (Alain Giffard, "Dilemmas of Digitization in Oxford," *Alain-Giffard's Weblog*, posted May 29, 2008, https://alaingiffard.wordpress.com/2008/05/29/dilemnas-of-digitization-in-oxford).

52. Tiffen 2007. 344. See also Peatling 2004.

53. Sassen 2008.

54. See *The Authors Guild et al. vs. Google, Inc.*, Amended Settlement Agreement 05 CV 8136, United States District Court, Southern District of New York, (2009) sec 7(2)(d) (research corpus), sec. 1.91, 14.

55. Informational capitalism is a variant of late capitalism, which is based on cognitive, communicative, and cooperative labor. See Christian Fuchs, *Digital Labour and Karl Marx* (New York: Routledge, 2014), 135–152.

56. Miksa 1983, 93.

57. Midbon 1980.

58. Said 1983, 237.

59. For example, the diverse body of scholarship that employed the notion of "assemblage" as a heuristic and/or ontological device for grasping and formulating

these changing relations of power and control; in sociology: Haggerty and Ericson 2000; Rabinow 2003; Ong and Collier 2005; Callon et al. 2016; in geography: Anderson and McFarlane 2011, 124–127; in philosophy: Deleuze and Guattari 1987; DeLanda 2006; in cultural studies: Puar 2007; in political science: Sassen 2008. The theoretical scope of these works ranged from close readings of and ontological alignments with Deleuze and Guattari's work (e.g., DeLanda), to more straightforward descriptive employments of the term as outlined in the OED (e.g., Sassen). What the various approaches held in common was the effort to steer readers away from thinking in terms of essences and stability toward thinking about more complex and unstable structures. Indeed, the "assemblage" seems to have become a prescriptive as much as a diagnostic tool (Galloway 2013b; Weizman 2006).

60. Deleuze 1997; Foucault 2009; Hardt and Negri 2007.

61. DeLanda 2006; Paul Rabinow, "Collaborations, Concepts, Assemblages," in Rabinow and Foucault 2011, 113–126, at 123.

62. Latour 2005, 28.

63. Ibid., 35.

64. Tim Stevens, *Cyber Security and the Politics of Time* (Cambridge: Cambridge University Press, 2015), 33.

65. Abrahamsen and Williams 2011.

66. Walker 2003.

67. Deleuze and Guattari 1987, 116.

68. Parisi 2004, 37.

69. Hacking 1995, 210.

70. Scott 2009. In James C. Scott's formulation, infrapolitics is a form of micropolitics, that is, the term refers to political acts that evade the formal political apparatus. This understanding was later taken up by Robin D. G. Kelley and Alberto Moreires, and more recently by Stevphen Shukaitis and Angela Mitropolous. See Kelley 1994; Shukaitis 2009; Mitropoulos 2012; Alterbo Moreiras, *Infrapolitics: the Project and Its Politics. Allegory and Denarrativization. A Note on Posthegemony*. eScholarship, University of California, 2015.

71. James C. Scott also concedes as much when he briefly links his notion of infrapolitics to infrastructure, as the "cultural and structural underpinning of the more visible political action on which our attention has generally been focused"; Scott 2009, 184.

72. Mitropoulos 2012, 115.

73. Bowker and Star 1999, 319.

74. Centre National de Ressource Textuelle et Lexicales, http://www.cnrtl.fr/etymologie/infrastructure.

75. For an English etymological examination, see also Batt 1984, 1–6.

76. This is on account of their malleability and the uncanny way they are used to fit every circumstance. For more on the potentials and problems of plastic words, see Pörksen 1995.

77. Edwards 2003, 186–187.

78. Mitropoulos 2012, 117.

79. Edwards et al. 2012.

80. Peters 2015, at 31.

81. Beck 1996, 1–32, at 18; Easterling 2014.

82. Adler-Nissen and Gammeltoft-Hansen 2008.

83. Holzer and Mads 2003.

84. Star 1999, 377.

85. Ibid.

86. Bowker and Star 1999, 326.

87. Peters 2015, 35.

88. Hardt and Negri 2009, 205.

89. Chun 2017.

90. As argued by John Naughton at the *Negotiating Cultural Rights* conference, National Museum, Copenhagen, Denmark, November 13–14, 2015, http://humanities.ku.dk/calendar/2015/november/negotiating-cultural-rights.

91. The "tipping point" is a metaphor for sudden change first introduced by Morton Grodzins in 1960, later used by sociologists such as Thomas Schelling (for explaining demographic changes in mixed-race neighborhoods), before becoming more generally familiar in urbanist studies (used by Saskia Sassen, for instance, in her analysis of global cities), and finally popularized by mass psychologists and trend analysts such as Malcolm Gladwell, in his bestseller of that name; see Gladwell 2000.

92. "Those of us who take liberalism and Enlightenment values seriously often quote Sir Francis Bacon's aphorism that 'knowledge is power.' But, as the historian Stephen Gaukroger argues, this is not a claim about knowledge: it is a claim about power. 'Knowledge plays a hitherto unrecognized role in power,' Gaukroger writes. 'The model is not Plato but Machiavelli.'1 Knowledge, in other words, is an

instrument of the powerful. Access to knowledge gives access to that instrument of power, but merely having knowledge or using it does not automatically confer power. The powerful always have the ways and means to use knowledge toward their own ends. … How can we connect the most people with the best knowledge? Google, of course, offers answers to those questions. It's up to us to decide whether Google's answers are good enough." See Vaidhyanathan 2011, 149–150.

93. Easley and Kleinberg 2010, 528.

94. Duguid 2007; Geoffrey Nunberg, "Google's Book Search: A Disaster for Scholars," *Chronicle of Higher Education,* August 31, 2009; *The Idea of Order: Transforming Research Collections for 21st Century Scholarship* (Washington, DC: Council on Library and Information Resources, 2010), 106–115.

95. Robert Darnton, "Google's Loss: The Public's Gain," *New York Review of Books*, April 28, 2011, http://www.nybooks.com/articles/2011/04/28/googles-loss-publics-gain.

96. Jones and Janes 2010.

97. David S. Grewal, *Network Power: The Social Dynamics of Globalization* (New Haven: Yale University Press, 2008).

98. Higgins and Larner, *Calculating the Social: Standards and the Reconfiguration of Governing* (Basingstoke: Palgrave Macmillan, 2010).

99. Ponte, Gibbon, and Vestergaard 2011; Gibbon and Henriksen 2012.

100. Russell 2014. See also Wendy Chun on the correlation between habit and standardization: Chun 2017.

101. Busch 2011.

102. Peters 2015, 224.

103. DeNardis 2011.

104. Hall and Jameson 1990.

105. Kolko 1988.

106. Agre 2000.

107. For more on the importance of standard flexibility in digital networks, see Paulheim 2015.

108. Linked data captures the intellectual information users add to information resources when they describe, annotate, organize, select, and use these resources, as well as social information about their patterns of usage. On one hand, linked data allows users and institutions to create taxonomic categories for works on a par with cultural memory experts—and often in conflict with such experts—for instance by

linking classical nudes with porn; and on the other hand, it allows users and institutions to harness social information about patterns of use. Linked data has ideological and economic underpinnings as much as technical ones.

109. *The National Digital Platform: for Libraries, Archives and Museums*, 2015, https://www.imls.gov/publications/imls-focus-summary-report-national-digital-platform.

110. Petter Nielsen and Ole Hanseth, "Fluid Standards. A Case Study of a Norwegian Standard for Mobile Content Services," under review, http://heim.ifi.uio.no/~oleha/Publications/FluidStandardsNielsenHanseth.pdf.

111. Sassen 2008, 3.

112. Grewal 2008.

113. Ibid., 9.

Chapter 2

1. Chartier 2004.

2. As philosopher Jacques Derrida noted anecdotally on his colleagues' way of reading, "some of my American colleagues come along to seminars or to lecture theaters with their little laptops. They don't print out; they read out directly, in public, from the screen. I saw it being done as well at the Pompidou Center [in Paris] a few days ago. A friend was giving a talk there on American photography. He had this little Macintosh laptop there where he could see it, like a prompter: he pressed a button to scroll down his text. This assumed a high degree of confidence in this strange whisperer. I'm not yet at that point, but it does happen." (Derrida 2005, 27).

3. As Ken Auletta recounts, Eric Schmidt remembers when Page surprised him in the early 2000s by showing off a book scanner he had built which was inspired by the great library of Alexandria, claiming that "We're going to scan all the books in the world," and explaining that for search to be truly comprehensive "it must include every book ever published." Page literally wanted Google to be a "super librarian" (Auletta 2009, 96).

4. Constraints of a physical character (how to digitize and organize all this knowledge in physical form); legal character (how to do it in a way that suspends existing regulation); and political character (how to transgress territorial systems).

5. Take, for instance, project Bibliotheca Universalis, comprising American, Japanese, German, and British libraries among others, whose professed aim was "to exploit existing digitization programs in order to … make the major works of the world's scientific and cultural heritage accessible to a vast public via multimedia technologies, thus fostering … exchange of knowledge and dialogue over national and international borders." It was a joint project of the French Ministry of Culture,

the National Library of France, the Japanese National Diet Library, the Library of Congress, the National Library of Canada, Discoteca di Stato, Deutsche Bibliothek, and the British Library: http://www.culture.gouv.fr/g7/eng/aceuil3.htm. The project took its name from the groundbreaking Medieval publication *Bibliotecha Universalis* (1545–1549), a four-volume alphabetical bibliography that listed all the known books printed in Latin, Greek, or Hebrew. Obviously, the dream of the total archive is not limited to the realm of cultural memory institutions, but has a much longer and more generalized lineage; for a contemporary exploration of these dreams see, for instance, issue six of *Limn Magazine*, March 2016, https://limn.it/issue/06/.

6. As the project noted in its research summary, "One of these barriers is the heterogeneity of information and services. Another impediment is the lack of powerful filtering mechanisms that let users find truly valuable information. The continuous access to information is restricted by the unavailability of library interfaces and tools that effectively operate on portable devices. A fourth barrier is the lack of a solid economic infrastructure that encourages providers to make information available, and give users privacy guarantees"; Summary of the Stanford Digital Library Technologies Project, http://ilpubs.stanford.edu:8091/diglib/pub/summary.shtml.

7. Brin and Page 1998.

8. Levy 2011, 347.

9. Levy 2011, 349.

10. Levy 2011, 349.

11. Young 1988.

12. They had a hard time, however, creating a new PageRank-like algorithm for books; see Levy 2011, 349.

13. Google Inc., "Detection of Grooves in Scanned Images," March 24, 2009, https://www.google.ch/patents/US7508978?dq=Detection+Of+Grooves+In+Scanned+Images&hl=da&sa=X&ved=0ahUKEwjWqJbV3arMAhXRJSwKHVhBD0sQ6AEIHDAA.

14. See, for example, Jeffrey Toobin. "Google's Moon Shot," *New Yorker*, February 4, 2007, https://www.newyorker.com/magazine/2007/02/05/googles-moon-shot.

15. Scanners whose ghostly traces are still found in digitized books today are evidenced by a curious little blog collecting the artful mistakes of scanners, *The Art of Google Books*, http://theartofgooglebooks.tumblr.com. For a more thorough and general introduction to the historical relationship between humans and machines in labor processes, see Kang 2011.

16. The abstract from the patent reads as follows: "Systems and methods for pacing and error monitoring of a manual page turning operator of a system for capturing images of a bound document are disclosed. The system includes a speaker for

playing music having a tempo and a controller for controlling the tempo based on an imaging rate and/or an error rate. The operator is influenced by the music tempo to capture images at a given rate. Alternative or in addition to audio, error detection may be implemented using OCR to determine page numbers to track page sequence and/or a sensor to detect errors such as object intrusion in the image frame and insufficient light. The operator may be alerted of an error with audio signals and signaled to turn back a certain number of pages to be recaptured. When music is played, the tempo can be adjusted in response to the error rate to reduce operator errors and increase overall throughput of the image capturing system. The tempo may be limited to a maximum tempo based on the maximum image capture rate." See Google Inc., "Pacing and Error Monitoring of Manual Page Turning Operator," November 17, 2009, https://www.google.ch/patents/US7619784.

17. Google, "linear-book-scanner," *Google Code Archive*, August 22, 2012, https://code.google.com/archive/p/linear-book-scanner.

18. The libraries of Harvard, the University of Michigan, Oxford, Stanford, and the New York Public Library.

19. Levy 2011, 351.

20. *The Authors Guild et al. vs. Google, Inc.*, Class Action Complaint 05 CV 8136, United States District Court, Southern District of New York, September 20, 2005, https://web.archive.org/web/20091015172156/http://www.authorsguild.org/advocacy/articles/settlement-resources.attachment/authors-guild-v-google/Authors%20Guild%20v%20Google%2009202005.pdf.

21. As the Authors Guild notes, "The problem is that before Google created Book Search, it digitized and made many digital copies of millions of copyrighted books, which the company never paid for. It never even bought a single book. That, in itself, was an act of theft. If you did it with a single book, you'd be infringing." Authors Guild v. Google: Questions and Answers, https://www.authorsguild.org/authors-guild-v-google-questions-answers/.

22. Peters 2015, 21.

23. Hayles 2005.

24. Purdon 2016, 4.

25. Fair use constitutes an exception to the exclusive right of the copyright holder under the United States Copyright Act; if the use of a copyright work is a "fair use," no permission is required. For a court to determine if a use of a copyright work is fair use, four factors must be considered: (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work.

26. "Do you really want … the whole world not to have access to human knowledge as contained in books, because you really want opt out rather than opt in?" as quoted in Levy 2011, 360.

27. "It is an astonishing opportunity to revive our cultural past, and make it accessible. Sure, Google will profit from it. Good for them. But if the law requires Google (or anyone else) to ask permission before they make knowledge available like this, then Google Print can't exist" (Farhad Manjoo, "Indexing the Planet: Throwing Google at the Book," *Spiegel Online International*, November 9, 2005, http://www.spiegel.de/international/indexing-the-planet-throwing-google-at-the-book-a-383978.html.) Technology lawyer Jonathan Band also expressed his support: Jonathan Band, "The Google Print Library Project: A Copyright Analysis," *Journal of Internet Banking and Commerce*, December 2005, http://www.icommercecentral.com/open-access/the-google-print-library-project-a-copyright-analysis.php?aid=38606.

28. According to Patricia Schroeder, the Association of American Publishers (AAP) President, Google's opt-out procedure "shifts the responsibility for preventing infringement to the copyright owner rather than the user, turning every principle of copyright law on its ear." BBC News, "Google Pauses Online Books Plan," *BBC News*, August 12, 2005, http://news.bbc.co.uk/2/hi/technology/4146488.stm.

29. Professor of law, Pamela Samuelson, has conducted numerous progressive and detailed academic and popular analyses of the legal implications of the copyright discussions; see, for instance, Pamela Samuelson, "Why Is the Antitrust Division Investigating the Google Book Search Settlement?," *Huffington Post*, September 19, 2009, https://www.huffingtonpost.com/pamela-samuelson/why-is-the-antitrust-divi_b_258997.html; Samuelson 2010; Samuelson 2011; Samuelson 2014.

30. Levy 2011, 362; Lessig 2010; Brewster Kahle, "How Google Threatens Books," *Washington Post*, May 19, 2009, http://www.washingtonpost.com/wp-dyn/content/article/2009/05/18/AR2009051802637.html.

31. EFF, "Google Book Search Settlement and Reader Privacy," Electronic Frontier Foundation, n.d., https://www.eff.org/pages/google-book-search-s.

32. *The Authors Guild et al. vs. Google Inc.*, 05 Civ. 8136-DC, United States Southern District of New York, March 22, 2011, http://www.nysd.uscourts.gov/cases/show.php?db=special&id=115.

33. Brief of Amicus Curiae, American Library Association et al. in relation to *The Authors Guild et al. vs. Google Inc.*, 05 Civ. 8136-DC, filed on August 1 2012, https://www.eff.org/files/filenode/googlebookseffl ibrariesamicusbrief.pdf.

34. Steven Levy, "Who's Messing with the Google Books Settlement? Hint: They're in Redmond, Washington," *Wired*, March 3, 2009, https://www.wired.com/2009/03/whos-messing-wi.

35. Sergey Brin, "A Library to Last Forever," *New York Times*, October 8, 2009, http://www.nytimes.com/2009/10/09/opinion/09brin.html.

36. *The Authors Guild et al. vs. Google Inc.*, 05 Civ. 8136-DC, United States Southern District of New York, March 22, 2011, http://www.nysd.uscourts.gov/cases/show.php?db=special&id=115.

37. "Google does, of course, benefit commercially in the sense that users are drawn to the Google websites by the ability to search Google Books. While this is a consideration to be acknowledged in weighing all the factors, even assuming Google's principal motivation is profit, the fact is that Google Books serves several important educational purposes. Accordingly, I conclude that the first factor strongly favors a finding of fair use." *The Authors Guild et al. vs. Google Inc.*, 05 Civ. 8136-DC, United States Southern District of New York, November 14, 2013, http://www.nysd.uscourts.gov/cases/show.php?db=special&id=355.

38. *Authors Guild v. Google, Inc.*, 13–4829-cv, December 16, 2015, http://www.ca2.uscourts.gov/decisions/isysquery/b3f81bc4-3798-476e-81c0-23db25f3b301/1/doc/13-4829_opn.pdf. In the aftermath of Pierre Leval's decision the Authors Guild has yet again filed yet another petition for the Supreme Court to reverse the appeals court decision, and has publically reiterated the framing of Google as a parasite rather than a benefactor. A brief supporting the Guild's petition and signed by a diverse group of authors such as Malcolm Gladwell, Margaret Atwood, J. M. Coetzee, Ursula Le Guin, and Yann Martel noted that the legal framework used to assess Google knew nothing about "the digital reproduction of copyrighted works and their communication on the Internet or the phenomenon of 'mass digitization' of vast collections of copyrighted works"; nor, they argued, was the fair-use doctrine ever intended "to permit a wealthy for-profit entity to digitize millions of works and to cut off authors' licensing of their reproduction, distribution, and public display rights." Amicus Curiae filed on behalf of Author's Guild Petition, No. 15–849, February 1, 2016, https://www.authorsguild.org/wp-content/uploads/2016/02/15-849-tsac-TAA-et-al.pdf.

39. Oxford English Dictionary, http://www.oed.com/view/Entry/40328?rskey=bCMOh6&result=1&isAdvanced=false#eid8462140.

40. The contract as we know it today developed within the paradigm of Lex Mercatoria; see Teubner 1997. The contract is therefore a device of global reach that has developed "mainly outside the political structures of nation-states and international organisations for exchanges primarily in a market economy" (Snyder 2002, 8). In the contract theory of John Locke, the signification of contracts developed from a mere trade tool to a distinction between the free man and the slave. Here, the societal benefits of contracts were presented as a matter of time, where the bounded delineation of work was characterized as contractual freedom; see Locke 2003 and Stanley 1998.

41. Sumner 1952, 23.

42. Paul Courant, "On Being in Bed with Google," *Au Courant*, November 4, 2007, http://paulcourant.net/2007/11/04/on-being-in-bed-with-google.

43. Kaufman and Ubois 2007.

44. Bottando 2012.

45. Jessamyn West, "Google's Slow Fade With Librarians: Maybe They're Just Not That Into Us," *Medium*, February 2, 2015, https://medium.com/message/googles-slow-fade-with-librarians-fddda838a0b7.

46. Suchman 2003. The lack of research into contracts and emotions is noted by Hillary M. Berk in her fascinating research on contracts in the field of surrogacy: "Despite a rich literature in law and society embracing contracts as exchange relations, empirical work has yet to address their emotional dimensions" (Berk 2015).

47. Suchman 2003, 100.

48. See a selection on the Public Index: http://www.thepublicindex.org/filings/libraries, and The Internet Archive: https://archive.org/details/GoogleLibraryAgreement. You may also find contracts here: the University of Michigan (https://www.lib.umich.edu/michigan-digitization-project), the University of California (https://www.cdlib.org/services/collections/massdig), the Committee on Institutional Cooperation (http://www.btaa.org/library/book-search/cic-google-agreement), and the British Library (https://www.openrightsgroup.org/blog/2011/access-to-the-agreement-between-google-books-and-the-british-library), to name but a few.

49. Javier Ruiz, "Is the Deal between Google and the British Library Good for the Public?," Open Rights Group, August 24, 2011, https://www.openrightsgroup.org/blog/2011/access-to-the-agreement-between-google-books-and-the-british-library.

50. Kaufman and Ubois 2007.

51. Association of Research Libraries, "ARL Encourages Members to Refrain from Signing Nondisclosure or Confidentiality Clauses," *ARL News*, June 5, 2009, http://www.arl.org/news/arl-news/3062-arl-encourages-members-to-refrain-from-signing-nondisclosure-or-confidentiality-clauses#.Vriv-McZdE4.

52. Google, "About the Library Project," *Google Books Help,* n.d., https://support.google.com/books/partner/faq/3396243?hl=en&rd=1.

53. Flyverbom, Leonardi, Stohl, and Stohl 2016.

54. Levy 2011, 354.

55. Levy 2011, 352.

56. To be sure, however, the practice of secrecy is no stranger to libraries. Consider only the closed stack that the public is never given access to; the bureaucratic routines that are kept from the public eye; and the historic relation between libraries and secrecy so beautifully explored by Umberto Eco in numerous of his works. Yet, the motivations for nondisclosure agreements on the one hand and public sector secrets on the other differ significantly, the former lodged in a commercial logic and the latter in an idea, however abstract, about "the public good."

57. Belder 2015. For insight into the societal impact of contractual regimes on civil rights regimes, see Somers 2008. For insight into relations between neoliberalism and contracts, see Mitropoulos 2012.

58. As engineer and historian Henry Petroski notes, for a PPP contract to be successful a contract must be written "properly" but "the public partners are not often very well versed in these kinds of contracts and they don't know how to protect themselves." See Buckholtz 2016.

59. As argued by Lucky Belder in "Cultural Heritage Institutions as Entrepreneurs," 2015.

60. Borghi 2013, 92–115.

61. Stephan Heyman, "Google Books: A Complex and Controversial Experiment," *New York Times*, October 28, 2015, http://www.nytimes.com/2015/10/29/arts/international/google-books-a-complex-and-controversial-experiment.html.

62. Google, "Library Partners," *Google Books*, http://www.google.dk/googlebooks/library/partners.html.

63. Andrew Prescott, "How the Web Can Make Books Vanish," *Digital Riffs*, August 2013, http://digitalriffs.blogspot.dk/2013/08/how-web-can-makes-books-vanish.html.

64. Pechenick, Danforth, Dodds, and Barrat 2015.

65. What Pechenik et al. refer to here is of course the claims of Erez Aiden and Jean-Baptiste Michel among others, who promote "culturomics," that is, the use of huge amounts of digital information—in this case the corpus of Google Books—to track changes in language, culture, and history. See Aiden and Michel 2013; and Michel et al. 2011.

66. Neubert 2008; and Weiss and James 2012, 1–3.

67. I am indebted to Gayatri Spivak here, who makes this argument about New York in the context of globalization; see Spivak 2000.

68. In this respect Google mirrors the glocalization strategies of media companies in general; see Thussu 2007, 19.

69. Although the decisions of foreign legislation of course also affect the workings of Google, as is clear from the growing body of European regulatory casework on Google such as the right to be forgotten, competition law, tax, etc.

Chapter 3

1. Lefler 2007; Henry W., "Europe's Digital Library versus Google," Café Babel, September 22, 2008, http://www.cafebabel.co.uk/culture/article/europes-digital-library-versus-google.html; Chrisafis 2008.

2. While digitization did not stand apart from the political and economic developments in the rapidly globalizing world, digital theorists and activists soon gave rise to the Internet as an inherent metaphor for this integrative development, a sign of the inevitability of an ultimately borderless world, where as Negroponte notes, time zones would "probably play a bigger role in our digital future than trade zones" (Negroponte 1995, 228).

3. Goldsmith and Wu 2006.

4. Rogers 2012.

5. Anderson 1991.

6. "Jacques Chirac donne l'impulsion à la création d'une bibliothèque numérique," *Le Monde*, March 16, 2005, http://lemonde.fr/culture/article/2005/03/16/jacques-chirac-donne-l-impulsion-a-la-creation-d-une-bibliotheque-numerique_401857_3246.html.

7. Meunier 2007.

8. As Sophie Meunier reminds us, the *Ursprung* of the competing universalisms can be located in the two contemporary revolutions that lent legitimacy to the universalist claims of both the United States and France. In the wake of the revolutions, a perceived competition arose between these two universalisms, resulting in French intellectuals crafting anti-American arguments, not least when French imperialism "was on the wane and American imperialism on the rise." See Meunier 2007, 141. Indeed, Muenier suggests, anti-Americanism is "as much a statement about France as it is about America—a resentful longing for a power that France no longer has" (ibid.).

9. Jeanneney 2007, 3.

10. Emile Chabal thus notes how the term is "employed by prominent politicians, serious academics, political commentators, and in everyday conversation" to "cover a wide range of stereotypes, pre-conceptions, and judgments about the Anglo-American world" (Chabal 2013, 24).

11. Chabal 2013, 24–25.

12. Jeanneney 2007.

13. While Jeanneney framed this French cultural-political endeavor as a European "contre-attaque" against Google Books, he also emphasized that his polemic was not at all to be read as a form of aggression. In particular he pointed to the

difficulties of translating the word *défie*, which featured in the title of the piece: "Someone rightly pointed out that the English word 'defy,' with which American reporters immediately rendered *défie,* connotes a kind of violence or aggressiveness that isn't implied by the French word. The right word in English is 'challenge,' which has a different implication, more sporting, more positive, more rewarding for both sides" (Jeanneney 2007, 85).

14. See pages 12, 22, and 24 for a few examples in Jeanneney 2007.

15. On the issue of the common currency, see, for instance, Martin and Ross 2004. The idea of France as an appropriate spokesperson for Europe was familiar already in the eighteenth century when Voltaire declared French "la Langue de l'Europe"; see Bivort 2013.

16. The official thus first noted that, "Everybody is working on digitization projects … cooperation between Google and the European project could therefore well occur." and later added that "The worst scenario we could achieve would be that we had two big digital libraries that don't communicate. … The idea is not to do the same thing, so maybe we could cooperate, I don't know. Frankly, I'm not sure they would be interested in digitizing our patrimony. The idea is to bring something that is complementary, to bring diversity. But this doesn't mean that Google is an enemy of diversity." See Labi 2005.

17. Letter from Manuel Barroso to Jaques Chirac, July 7, 2005, http://www.peps.cfwb.be/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/sites/numpat/upload/numpat_super_editor/numpat_editor/documents/Europe/Bibliotheques_numeriques/2005.07.07reponse_de_la_Commission_europeenne.pdf&hash=fe7d7c5faf2d7befd0894fd998abffdf101eecf1.

18. As one EC communication noted, a digitization project on the scale of Europeana could sharpen Europe's competitive edge in digitization processes compared to those in the US as well India and China; see European Commission, "i2010: Digital Libraries," *COM(2005) 465 final*, September 30, 2005, eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52005DC0465&from=EN.

19. "Google Books raises concerns in some member states," as an anonymous Czech diplomatic source put it; see Paul Meller, "EU to Investigate Google Books' Copyright Policies," *PCWorld*, May 28, 2009, https://pcworld.com/article/165697/eu_to_investigate_google_books_copyright_policies.html.

20. Pfanner 2011; Doward 2009; Samuel 2009.

21. Amicus brief is a legal term that in Latin means "friend of the court." Frequently, a person or group who is not a party to a lawsuit, but has a strong interest in the matter, will petition the court for permission to submit a brief in the action with the intent of influencing the court's decision.

22. See chapter 4 in this volume.

23. de la Durantaye 2011.

24. Kevin J. O'Brien and Eric Pfanner, "Europe Divided on Google Book Deal," *New York Times*, August 23, 2009, http://www.nytimes.com/2009/08/24/technology/internet/24iht-books.html; see also Courant 2009; Darnton 2009.

25. de la Durantaye 2011.

26. Viviane Reding and Charlie McCreevy, "It Is Time for Europe to Turn over a New E-Leaf on Digital Books and Copyright," MEMO/09/376, September 7, 2009, europa.eu/rapid/press-release_MEMO-09-376_en.htm?locale=en.

27. European Commission, "Europeana—Next Steps," COM(2009) 440 final, August 28, 2009, eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0440:FIN:en:PDF.

28. "It is logical that the private partner seeks a period of preferential use or commercial exploitation of the digitized assets in order to avoid free-rider behaviour of competitors. This period should allow the private partner to recoup its investment, but at the same time be limited in time in order to avoid creating a one-market player situation. For these reasons, the Comité set the maximum time of preferential use of material digitised in public-private partnerships at maximum 7 years" (Niggemann 2011).

29. Walker 2003.

30. Within this complex environment it is not even possible to draw boundaries between the networked politics of the EU and the sovereign politics of member states. Instead, member states engage in double-talk. As political scientist Sophie Meunier reminds us, even member states such as France engage in double-talk on globalization, with France on the one hand becoming the "worldwide champion of anti-globalization," and on the other hand "a country whose economy and society have quietly adapted to this much-criticized globalization" (Meunier 2003). On political two-level games, see also Putnam 1988.

31. Walker 2003.

32. "Google Books Project to Remove European Titles," *Telegraph*, September 7, 2009, http://www.telegraph.co.uk/technology/google/6151136/Google-Books-project-to-remove-European-titles.html.

33. "Europeana Factsheet," Europeana, September 28, 2015, https://pro.europeana.eu/files/Europeana_Professional/Advocacy/Twentieth%20Century%20Black%20Hole/copy-of-europeana-policy-illustrating-the-20th-century-black-hole-in-the-europeana-dataset.pdf .

34. C. Handke, L. Guibault, and J. J. Vallbé, "Is Europe Falling Behind in Data Mining? Copyright's Impact on Data Mining in Academic Research," 2015, https://elpub.architexturez.net//doc/oai-elpub-id-12015-15-handke-elpub2015-paper-23.

35. Interview with employee, DG Copyright, DC Commission, 2010.

36. Interview with employee, DG Information and Society, DC Commission, 2010.

37. Montagnani and Borghi 2008.

38. Julia Fallon and Paul Keller, "European Parliament Demands Copyright Rules that Allow Cultural Heritage Institutions to Share Collections Online," Europeana Pro, https://pro.europeana.eu/blogpost/eu-parliament-in-favour-of-copyright-rules-better-fit-for-a-digital-age.

39. Jasanoff 2013, 133

40. Ibid.

41. Tate 2001.

42. It would be tempting to suggest the discussion on harmonization above would apply to interoperability as well. But while the concepts of harmonization and interoperability—along with the neighboring term standardization—are used intermittently and appear similar at first glance, they nevertheless have precise cultural-legal meanings and implicate different infrastructural set-ups. As noted above, the notion of harmonization is increasingly used in the legal context of harmonizing regulatory apparatuses—in the case of mass digitization especially copyright laws. But the word has a richer semantic meaning, suggesting a search for commonalities, literally by means of fitting together or arranging units into a whole. As such the notion of harmony suggests something that is both pleasing and presupposes a cohesive unit(y), for example, a door hinged to a frame, an arm hinged to a body. While used in similar terms, the notion of interoperability expresses a very different infrastructural modality. If harmonization suggests unity, interoperability rather alludes to modularity. For more on the concepts of standardization and harmonization in regulatory contexts, see Tay and Parker 1990.

43. The notion of interoperability is often used to express a system's ability to transfer, render and connect to useful information across systems, and calls for interoperability have increased as systems have become increasingly complex.

44. There are "myriad technical and engineering issues associated with connecting together networks, databases, and other computer-based systems"; digitized cultural memory institutions have the option of providing "a greater array of services" than traditional libraries and archives from sophisticated search engines to document reformatting as rights negotiations; digitized cultural memory materials are often more varied than the material held in traditional libraries; and finally and most importantly, mass digitization institutions are increasingly becoming platforms that connect "a large number of loosely connected components" because no "single corporation, professional organization, or government" would be able to provide all that is necessary for a project such as Europeana; not least on an international scale. EU-NSF Digital Library Working Group on Interoperability between Digital Libraries

Position Paper, 1998, https://www.ics.forth.gr/isl/publications/paperlink/interop.htm.

45. *The Digicult Report: Technological Landscapes for Tomorrow's Cultural Economy: Unlocking the Value of Cultural Heritage: Executive Summary* (Luxembourg: Office for Official Publications of the European Communities, 2002), 80.

46. "… interoperability in organisational terms is not foremost dependent on technologies," ibid.

47. As such they align with what Internet governance scholar Laura Denardis calls the Internet's "underlying principle" (see DeNardis 2014).

48. The results of the EC Working Group on Digital Library Interoperability are reported in the briefing paper by Stephan Gradman entitled "Interoperability: A Key Concept for Large Scale, Persistent Digital Libraries" (Gradmann 2009).

49. "Semantic operability ensures that programmes can exchange information, combine it with other information resources and subsequently process it in a meaningful manner: *European Interoperability Framework for pan-European eGovernment services*, 2004, http://ec.europa.eu/idabc/servlets/Docd552.pdf?id=19529. In the case of Europeana, this could consist of the development of tools and technologies to improve the automatic ingestion and interpretation of the metadata provided by cultural institutions, for example, by mapping the names of artists so that an artist known under several names is recognised as the same person." (Council Conclusions on the Role of Europeana for the Digital Access, Visibility and Use of European Cultural Heritage," European Council Conclusion, June 1, 2016, http://data.consilium.europa.eu/doc/document/ST-9643-2016-INIT/en/pdf.)

50. Bowker, Baker, Millerand, and Ribes 2010.

51. Tsilas 2011, 103.

52. Borgman 2015, 46.

53. McDonough 2009.

54. Palfrey and Gasser 2012.

55. DeNardis 2011.

56. The .txtual Condition: Digital Humanities, Born-Digital Archives, and the Future Literary; Palfrey and Gasser 2012; Matthew Kirschenbaum, "Distant Mirrors and the Lamp," talk at the 2013 MLA Presidential Forum Avenues of Access session on "Digital Humanities and the Future of Scholarly Communication."

57. Ping-Huang 2016.

58. Lessig 2005

59. Ibid.

60. Ibid.

61. Palfrey and Gasser 2012.

62. McPherson 2012, 29.

63. Berardi, Genosko, and Thoburn 2011, 29–31.

64. For more on the nexus of freedom and control, see Chun 2006.

65. The mere act of digitization of course inflicts mobility on an object as digital objects are kept in a constant state of migration.

66. Krysa 2006.

67. See only the wealth of literature currently generated on the "curatorial turn," for example, O'Neill and Wilson 2010; and O'Neill and Andreasen 2011.

68. Romeo and Blaser 2011.

69. Europeana Sound Connections, http://www.eusounds.eu/news/sound-connections-exploring-and-enriching-sound-collections-on-a-social-networking-platform.html.

70. Ridge 2013.

71. Carolyn Dinshaw has argued for the amateur's ability in similar terms, focusing on her potential to queer the archive (see Dinshaw 2012).

72. Stiegler 2003; Stiegler n.d. The idea of the amateur as a subversive character precedes digitization, of course. Think only of Roland Barthes's idea of the amateur as a truly subversive character that could lead to a break with existing ideologies in disciplinary societies; see, for instance, Barthes's celebration of the amateur as a truly anti-bourgeois character (Barthes 1977 and Barthes 1981).

73. Not least in light of recent writings on the experience as even love itself as a form of labor (see Weigel 2016). The constellation of love as a form of labor has a long history (see Lewis 1987).

74. Raddick et al. 2009; Proctor 2013.

75. "Many companies and institutions, that are successful online, are good at supporting and harnessing people's cognitive surplus. … Users get the opportunity to contribute something useful and valuable while having fun" (Sanderhoff, 33 and 36).

76. Mitropoulos 2012, 165.

77. Carpentier 2011.

78. EC Commission, "Europeana Website Overwhelmed on Its First Day by Interest of Millions of Users," MEMO/08/733, November 21, 2008, http://europa.eu/rapid/press-release_MEMO-08-733_en.htm. See also Stephen Castle, "Europeana Goes

Online and Is Then Overwhelmed," *New York Times*, November 21, 2008, nytimes .com/2008/11/22/technology/Internet/22digital.html.

79. Information scholar affiliated with Europeana, interviewed by Nanna Bonde Thylstrup, Brussels, Belgium, 2011.

80. See, for instance, Martina Powell, "Bayern will mit 'Mein Kampf' nichts mehr zu tun haben," *Die Zeit*, December 13, 2013, http://zeit.de/wissen/geschichte/2013-12/neue-edition-mein-kampf-soll-erscheinen. Bavaria's restrictive publishing policy of *Mein Kampf* should most likely be interpreted as a case of preventive precaution on behalf of the Bavarian State's diplomatic reputation. Yet by transferring Hitler's author's rights to the Bavarian Ministry, they allocated *Mein Kampf* to an existence in a gray area between private and public law. Since then, the book has been the center of attention in a rift between, on the one hand, the Ministry of Finance who has rigorously defended its position as the formal rights holder, and, on the other hand, historians and intellectuals who, supported the Bavarian science minister Wolfgang Heubisch, have argued that an academic annotated version of *Mein Kampf* should be made publicly accessible in the name of Enlightenment.

81. Latour 2007.

82. Europeana's more traditional curatorial approach to mass digitization was criticized not only by the media, but also others involved in mass digitization projects, who claimed that Europeana had fundamentally misunderstood the point of mass digitization. One engineer working on mass digitization projects is the influential cultural software developer organization, IRI, argued that Europeana's production pattern was comparable to "launching satellites" without thinking of the messages that are returned by the satellites. Google, he argued, was differently attuned to the importance of feedback, because "feedback is their business."

83. In the most recent published report, Germany contributes with about 15 percent and France with around 16 percent of the total amount of available works. At the same time, Belgium and Slovenia only count around 1 percent and Denmark along with Greece, Luxembourg, Portugal, and a slew of other countries doesn't even achieve representation in the pie chart; see "Europeana Content Report," August 6, 2015, https://pro.europeana.eu/files/Europeana_Professional/Projects/Project_list/Europeana_DSI/Milestones/europeana-dsi-ms7-content-report-august.pdf.

84. Europeana information scholar interview, 2011.

85. Ibid.

86. Wiebe de Jager, "MS15: Annual traffic report and analysis," Europeana, May 31 2014, https://pro.europeana.eu/files/Europeana_Professional/Projects/Project_list/Europeana_Version3/Milestones/Ev3%20MS15%20Annual%20Traffic%20Report%20Analysis.pdf.

Chapter 4

1. Serres 1982, 55.

2. Serres 1982, 36.

3. Serres 1982, 36.

4. Samyn 2012.

5. I stick with "shadow library," a term that I first found in Lawrence Liang's (2012) writings on copyright and have since seen meaningfully unfolded in a variety of contexts. Part of its strength is its sidestepping of the question of the pirate and that term's colonial connotations.

6. Eckstein and Schwarz 2014.

7. Scott 2009, 185–201.

8. See also Maxim Moshkov's own website hosted on lib.ru, http://lib.ru/~moshkow.

9. Carey 2015.

10. Schmidt 2009.

11. Bodó 2016. "Libraries in the post-scarcity era." As Balazs Bodó notes, the first Russian mass-digitized shadow archives in Russia were run by professors from the hard sciences, but the popularization of computers soon gave rise to much more varied and widespread shadow library terrain, fueled by "enthusiastic readers, book fans, and often authors, who spared no effort to make their favorite books available on FIDOnet, a popular BBS system in Russia."

12. Stelmakh 2008, 4.

13. Bodó 2016.

14. Bodó 2016.

15. Vul 2003.

16. "In Defense of Maxim Moshkov's Library," n.d., The International Union of Internet Professionals, http://ezhe.ru/actions/lib/eng.html.

17. Ibid.

18. Ibid.

19. Schmidt 2009, 7.

20. Ibid.

21. Carey 2015.

22. Mjør 2009, 84.

23. Bodó 2015.

24. Kiriya 2012.

25. Yurchak 2008, 732.

26. Komaromi, 74.

27. Mjør, 85.

28. Litres.ru, https://www.litres.ru.

29. Library Genesis, https://lib.rus.ec/g.

30. Kiriya 2012.

31. Karaganis 2011, 65, 426.

32. Kiriya 2012, 458.

33. For a great analysis of the late-Soviet youth's relationship with consumerist products, read Yurchak's careful study in *Everything Was Forever, Until It Was No More: The Last Soviet Generation* (2006).

34. "Dušan Barok: Interview," *Neural* 44 (2010), 10.

35. Ibid.

36. Ibid.

37. Monoskop," last modified March 28, 2018, Monoskop. https://monoskop.org/Monoskop. https://monoskop.org/Monoskop.

38. "Dušan Barok: Interview," *Neural* 44 (2010), 10.

39. Fuller and Goffey 2012, 21.

40. "Dušan Barok: Interview," *Neural* 44 (2010), 11.

41. In an interview, Dušan Barok mentions his inspirations, including early examples such as textz.com, a shadow library created by the Berlin-based artist Sebastian Lütgert. Textz.com was one of the first websites to facilitate free access to books on culture, politics, and media theory in the form of text files. Often the format would itself toy with legal limits. Thus, Lütgert declared in a mischievous manner that the website would offer a text in various formats during a legal debacle with Surhkamp Verlag: "Today, we are proud to announce the release of walser.php (http://textz.com/trash/walser.php.txt), a 10,000-line php script that is able to generate the plain ascii version of 'Death of a Critic.' The script can be redistributed and modified (and, of course, linked to) under the terms of the GNU General Public License, but may not be run without written permission by Suhrkamp Verlag. Of course, reverse-engineering the writings of senile German revisionists is not the core business of

textz.com, so walser.php includes makewalser.php, a utility that can produce an unlimited number of similar (both free as in speech and free as in copy) php scripts for any digital text"; see "Suhrkamp recalls walser.pdf, textz.com releases walser.php," Rolux.org, http://rolux.org/texts/suhrkamp_recalls_walser.pdf_textz.com_releases_walser.php.

42. Fuller and Goffey 2012, 11.

43. "MONOSKOP Project Finished," COL-ME Co-located Media Expedition, www.col-me.info/node/841.

44. "Dušan Barok: Interview," *Neural* 44 (2010), 10.

45. Aymeric Mansoux is a senior lecturer at the Piet Zwart Institute whose research deals with the defining, constraining, and confining of cultural freedom in the context of network-based practices. Marcel Mars is an advocate of free software and a researcher who is also active in a shadow library named *Public Library,* https://www.memoryoftheworld.org (also interchangeably known as Memory of the World).

46. "Dušan Barok," Memory of the World, https://www.memoryoftheworld.org/dusan-barok.

47. "Dušan Barok: Interview," *Neural* 44 (2010), 10.

48. Castells 1996.

49. Kenneth Goldsmith,"UbuWeb Wants to Be Free" (last modified July 18, 2007), http://www.writing.upenn.edu/~afilreis/88/ubuweb.html.

50. Jacob King and Jason Simon, "Before and After UbuWeb: A Conversation about Artists' Film and Video Distribution," *Rhizome*, February 20, 2014. http://rhizome.org/editorial/2014/feb/20/and-after-ubuweb-distributing-artists-film-and-vid.

51. King and Simon 2014.

52. Sollfrank 2015.

53. Scott 1990, 184.

54. For this, I am indebted to Hito Steyerl's essay "In Defense of the Poor Image," in her book *The Wretched of the Screen*, 31–59.

55. Steyerl 2012, 36.

56. Steyerl 2012, 39.

57. Sollfrank 2015.

58. Other significant open source movements include Free Software Foundation, the Wikimedia Foundation, and several open access initiatives in science.

59. Lessig 2005, 57.

60. Philip 2005, 212.

61. See, for instance, Larkin 2008; Castells and Cardoso 2012; Fredriksson and Arvanitakis 2014; Burkart 2014; and Eckstein and Schwarz 2014.

62. Liang 2009.

63. Larkin 2008.

64. John Bohannon, "Who's Downloading Pirated Papers? Everyone," *Science Magazine*, April 28, 2016, http://www.sciencemag.org/news/2016/04/whos-downloading-pirated-papers-everyone.

65. "The Scientists Encouraging Online Piracy with a Secret Codeword," *BBC Trending*, October 21, 2015, http://www.bbc.com/news/blogs-trending-34572462.

66. Liu 2013.

67. Tenen and Foxman 2014.

68. See Kramer 2016.

69. Gardner and Gardner 2017.

70. Giesler 2006, 283.

71. Serres 2013, 8.

Chapter 5

1. Kelly 1994, p. 263.

2. Connection Machines were developed by the supercomputer manufacturer Thinking Machines, a concept that also appeared in Jorge Luis Borges's *The Total Library*.

3. Brewster Kahle, "Transforming Our Libraries from Analog to Digital: A 2020 Vision," *Educause Review*, March 13, 2017, https://er.educause.edu/articles/2017/3/transforming-our-libraries-from-analog-to-digital-a-2020-vision.

4. Ibid.

5. Couze Venn, "The Collection," *Theory, Culture & Society* 23, no. 2–3 (2006), 36.

6. Hacking 2010.

7. Lefebvre 2009.

8. Blair and Stallybrass 2010, 139–163.

9. Ibid., 143.

10. Dewey 1926, 311.

11. See, for instance, Lorraine Daston's wonderful account of the different types of historical consciousness we find in archives across the sciences: Daston 2012.

12. David Weinberger, "Library as Platform," *Library Journal*, September 4, 2012, https://lj.libraryjournal.com/2012/09/future-of-libraries/by-david-weinberger/#_.

13. Nakamura 2002, 89.

14. Shannon Mattern,"Library as Infrastructure," *Places Journal*, June 2014, https://placesjournal.org/article/library-as-infrastructure/.

15. Couze Venn, "The Collection," *Theory, Culture & Society* 23, no. 2–3 (2006), 35–40.

16. Žižek 2009, 39.

17. Voltaire, "Une grande bibliothèque a cela de bon, qu'elle effraye celui qui la regarde," in *Dictionaire Philosophique*, 1786, 265.

18. In his autobiography, Borges asserted that it "was meant as a nightmare version or magnification" of the municipal library he worked in up until 1946. Borges describes his time at this library as "nine years of solid unhappiness," both because of his co-workers and the "menial" and senseless cataloging work he performed in the small library. Interestingly, then, Borges translated his own experience of being informationally underwhelmed into a tale of informational exhaustion and despair. See "An Autobiographical Essay" in *The Aleph and Other Stories*, 1978, 243.

19. Borges 2001, 216.

20. Yeo 2003, 32.

21. Cited in Blair 2003, 11.

22. Bawden and Robinson 2009, 186.

23. Garrett 1999.

24. Featherstone 2000, 166.

25. Thus, for instance, one Europeana-related project with the apt acronym PATHS, argues for the need to "make use of current knowledge of personalization to develop a system for navigating cultural heritage collections that is based around the metaphor of paths and trails through them" (Hall et al. 2012). See also Walker 2006.

26. Inspiring texts for (early) spatial thinking of the Internet, see: Hayles 1993; Nakamura 2002; Chun 2006.

27. Much has been written about whether or not it makes sense to frame digital realms and infrastructures in spatial terms, and Wendy Chun has written an excellent account of the stakes of these arguments, adding her own insightful comments to them; see chapter 1, "Why Cyberspace?" in Chun 2013.

28. Cited in Hartmann 2004, 123–124.

29. Goldate 1996.

30. Featherstone 1998.

31. Dörk, Carpendale, and Williamson 2011, 1216.

32. Wilson 1992, 108.

33. Benjamin. 1985a, 40.

34. See, for instance, Natasha Dow Schüll's fascinating study of the addictive design of computational culture: Schüll 2014. For an industry perspective, see Nir Eyal, *Hooked: How to Build Habit-Forming Products* (Princeton, NJ: Princeton University Press, 2014).

35. Wilson 1992, 93.

36. Indeed, it would be interesting to explore the link between Susan Buck Morss's reinterpretation of Benjamin's anesthetic shock of phantasmagoria and today's digital dopamine production, as described by Natasha Dow Schüll in *Addicted by Design* (2014); see Buck-Morss 2006. See also Bjelić 2016.

37. Wolff 1985; Pollock 1998.

38. Wilson 1992; Nord 1995; Nava and O'Shea 1996, 38–76.

39. Hartmann 1999.

40. Smalls 2003, 356.

41. Ibid., 357.

42. Cadogan 2016.

43. Marian Ryan, "The Disabled Flâneur," *New York Times*, December 12, 2017, https://www.nytimes.com/2017/12/12/well/live/the-disabled-flaneur.html.

44. Benjamin. 1985b, 54.

45. Evgeny Morozov, "The Death of the Cyberflâneur," *New York Times*, February 4, 2012.

46. Eco 2014, 169.

47. See also Koevoets 2013.

48. In colloquial English, "labyrinth" is generally synonymous with "maze," but some people observe a distinction, using maze to refer to a complex branching (multicursal) puzzle with choices of path and direction, and using labyrinth for a single, non-branching (unicursal) path, which leads to a center. This book, however, uses the concept of the labyrinth to describe all labyrinthine infrastructures.

49. Doob 1994.

50. Bloom 2009, xvii.

51. Might this be the labyrinthine logic detected by Foucault, which unfolds only "within a hidden landscape," revealing "nothing that can be seen" and partaking in the "order of the enigma"; see Foucault 2004, 98.

52. Doob 1994, 97. Doob also finds this perspective in the fourteenth century in Chaucer's *House of Fame*, in which the labyrinth "becomes an emblem of the limitations of knowledge in this world, where all we can finally do is meditate on *labor intus*" (ibid., 313). Lady Mary Wroth's work *Pamphilia to Amphilanthus* provides the same imagery, telling the story of the female heroine, Pamphilia, who fails to escape a maze but nevertheless engages her experience within it as a source of knowledge.

53. Galloway 2013a, 29.

54. van Dijck 2012.

55. "Usage Stats for Europeana Collections," *EuropeanaPro,* https://pro.europeana.eu/resources/statistics/europeana-usage-statistics.

56. Joris Pekel, "The Europeana Statistics Dashboard is here," *EuropeanaPro*, April 6, 2016, https://pro.europeana.eu/post/introducing-the-europeana-statistics-dashboard.

57. Bates 2002, 32.

58. Veel 2003, 154.

59. Deleuze 2013, 56.

60. Interview with professor of library and information science working with Europeana, Berlin, Germany, 2011.

61. Borges mused upon the possible horrendous implications of such a lack, recounting two labyrinthine scenarios he once imagined: "In the first, a man is supposed to be making his way through the dusty and stony corridors, and he hears a distant bellowing in the night. And then he makes out footprints in the sand and he knows that they belong to the Minotaur, that the minotaur is after him, and, in a sense, he, too, is after the minotaur. The Minotaur, of course, wants to devour him, and since his only aim in life is to go on wandering and wandering, he also longs for the moment. In the second sonnet, I had a still more gruesome idea—the idea that there was no minotaur—that the man would go on endlessly wandering. That may have been suggested by a phrase in one of Chesterton's Father Brown books. Chesterton said, 'What a man is really afraid of is a maze without a center.' I suppose he was thinking of a godless universe, but I was thinking of the labyrinth without a minotaur. I mean, if anything is terrible, it is terrible because it is meaningless." Borges and Dembo 1970, 319.

62. Borges actually found a certain pleasure in the lack of order, however, noting that "I not only feel the terror … but also, well, the pleasure you get, let's say, from a chess puzzle or from a good detective novel." Ibid.

63. Serendib, also spelled Serendip (Arabic Sarandīb), was the Persian/Arabic word for the island of Sri Lanka, recorded in use as early as AD 361.

64. Letter to Horace Mann, 28 January 1754, in *Walpole's Correspondence*, vol. 20, 407–411.

65. As Robert Merton and Elinor Barber note, it first made it into the OED in 1912 (Merton and Barber 2004, 72).

66. Merton and Barber 2004, 40.

67. Lorraine Daston, "Are You Having Fun Today?," *London Review of Books*, September 23, 2004.

68. Ibid.

69. Ibid.

70. Featherstone 2000, 594.

71. Nancy Lusignan Schulz, "Serendipity in the Archive," *Chronicle of Higher Education*, May 15, 2011, https://www.chronicle.com/article/Serendipity-in-the-Archive/127460.

72. Verhoeven 2016, 18.

73. Caley 2017, 248.

74. Bishop 2016

75. "Oxford-Google Digitization Project Reaches Milestone," Bodleian Library and Radcliffe Camera, March 26, 2009. https://www.bodleian.ox.ac.uk/bodley/news/2009/2009_mar_26.

76. Timothy Hill, David Haskiya, Antoine Isaac, Hugo Manguinhas, and Valentine Charles (eds.), *Europeana Search Strategy*, May 23, 2016, https://pro.europeana.eu/files/Europeana_Professional/Publications/EuropeanaSearchStrategy_whitepaper.pdf.

77. "DPLAbot," *Digital Public Library of America*, https://dp.la/apps/12.

78. "Q&A with EuropeanaBot developer," *EuropeanaPro*, August 20, 2013, https://pro.europeana.eu/blogpost/qa-with-europeanabot-developer.

79. There are of course many other examples, some of which offer greater interactivity, such as the TroveNewsBot, which feeds off of the National Library of Australia's 370 million resources, allowing the user to send the bot any text to get the bot digging through the Trove API for a matching result.

80. Serendip-o-matic, n.d. http://serendip-o-matic.com.

81. Tristram Hunt, "Online Is Fine, but History Is Best Hands On," *Guardian* July 3, 2011, https://www.theguardian.com/commentisfree/2011/jul/03/tristram-hunt-british-library-google-history.

82. Davison 2009.

83. William McKeen, "Serendipity," *New York Times,* (n.d.), http://www.nytimes.com/ref/college/coll08McKEEN.html?mcubz=0.

84. Carr 2006. We find this argument once again in Aleks Krotoski, who highlights the man-machine dichotomy, noting that the "controlled binary mechanics" of the search engine actually make serendipitous findings "more challenging to find" because "branching pathways of possibility are too difficult to code and don't scale" (Aleks Krokoski, "Digital serendipity: be careful what you don't wish for," *Guardian*, August 11, 2011, https://www.theguardian.com/technology/2011/aug/21/google-serendipity-profiling-aleks-krotoski.)

85. Lorraine Daston, "Are You Having Fun Today?," *London Review of Books*, September 23, 2004.

86. Dan Cohen, "Planning for Serendipity," *DPLA* News and Blog, February 7, 2014, https://dp.la/info/2014/02/07/planning-for-serendipity/.

87. Shannon Mattern, "Sharing Is Tables," *e-flux*, October 17, 2017, http://www.e-flux.com/architecture/positions/151184/sharing-is-tables-furniture-for-digital-labor/.

88. Greg Lindsay, "Engineering Serendipity," *New York Times*, April 5, 2013, http://www.nytimes.com/2013/04/07/opinion/sunday/engineering-serendipity.html.

89. Gillespie 2017.

90. See, for instance, Milena Popova, "Facebook Awards History App that Will Use Europeana's Collections," *EuropeanaPro*, March 7, 2014, https://pro.europeana.eu/blogpost/facebook-awards-history-app-that-will-use-europeanas-collections.

91. Doob 1994.

92. "Europeana Strategy Impact 2015–2020," https://pro.europeana.eu/files/Europeana_Professional/Publications/Europeana%20Strategy%202020.pdf.

93. Ping-Huang 2016, 53.

94. Helmond 2015.

95. Ian Bogost and Nick Montfort. 2009. "Platform studies: freduently asked questions." *Proceeding of the Digital Arts and Culture Conference*. https://escholarship.org/uc/item/01r0k9br.

96. Srnicek 2017; Helmond 2015; Gillespie 2010.

97. "While a portal can present its aggregated content in a way that invites exploration, the experience is always constrained—pre-determined by a set of design decisions about what is necessary, relevant and useful. Platforms put those design decisions back into the hands of users. Instead of a single interface, there are innumerable ways of interacting with the data." See Tim Sherratt, "From Portals to Platforms; Building New Frameworks for User Engagement," National Library of Australia, November 5, 2013, https://www.nla.gov.au/our-publications/staff-papers/from-portal-to-platform.

98. "Europeana Strategy Impact 2015–2020," https://pro.europeana.eu/files/Europeana_Professional/Publications/Europeana%20Strategy%202020.pdf.

99. Gillespie 2010, 349.

100. Fjeld and Fehn 2009, 108.

101. Gießmann 2015, 126.

102. See, for example, C. S. Lewis's writings on Calvinism in *English Literature in the Sixteenth Century Excluding Drama*. Or how about Presbyterian minster Lyman Beecher, who once noted in a sermon: "in organizing any body, in philosophy, religion, or politics, you must *have* a platform; you must stand somewhere; on some solid ground." Such a platform could gather people, so that they could "settle on principles just as … bees settle in swarms on the branches, fragrant with blossoms and flowers." See Beecher 2012, 21.

103. "Platform, in architecture, is a row of beams which support the timber-work of a roof, and lie on top of the wall, where the entablature ought to be raised. This term is also used for a kind of terrace … from whence a fair prospect may be taken of the adjacent country." See Nicholson 1819.

104. As evangelist Calvin Colton noted in his work on the US's public economy, "We find American capital and labor occupying a very different position from that of the same things in Europe, and that the same treatment applied to both, would not be beneficial to both. A system which is good for Great Britain may be ruinous to the United States. … Great Britain is the only nation that is prepared for Free Trade … on a platform of universal Free Trade, the advanced position of Great Britain … in her skill, machinery, capital and means of commerce, would make all the tributary to her; and on the same platform, this distance between her and other nations … instead of diminishing, would be forever increasing, till … she would become the focus of the wealth, grandeur, and power of the world."

105. Deleuze and Guattari 1987.

106. Solá-Morales 1999, 86.

107. Budds 2016.

108. Gillespie 2010, 351.

109. Gillespie 2010, 350. Indeed, it might be worth resurrecting the otherwise-extinct notion of "plotform" to reinscribe agency and planning into the word. See Tawa 2012.

110. As Olga Gurionova points out, platforms have historically played a significant role in creative processes as a "set of shared resources that might be material, organizational, or intentional that inscribe certain practices and approaches in order to develop collaboration, production, and the capacity to generate change." Indeed, platforms form integral infrastructures in the critical art world for alternative systems of organization and circulation that could be mobilized to "disrupt institutional, representational, and social powers." See Olga Goriunova, *Art Platforms and Cultural Production on the Internet* (New York: Routledge, 2012), 8.

111. Trebor Scholz, "Platform Cooperativism vs. the Sharing Economy," *Medium*, December 5, 2016, https://medium.com/@trebors/platform-cooperativism-vs-the-sharing-economy-2ea737f1b5ad.

112. Srnicek 2017, 28–29.

113. Nakamura 2013, 243.

114. John Zysman and Martin Kennedy, "The Next Phase in the Digital Revolution: Platforms, Automation, Growth, and Employment," *ETLA Reports* 61, October 17, 2016, https://www.etla.fi/wp-content/uploads/ETLA-Raportit-Reports-61.pdf.

115. Europeana's privacy page explicitly notes this, reminding the user that, "this site may contain links to other websites that are beyond our control. This privacy policy applies solely to the information you provide while visiting this site. Other websites which you link to may have privacy policies that are different from this Privacy Policy." See "Privacy and Terms," *Europeana Collections*, https://www.europeana.eu/portal/en/rights/privacy.html.

Chapter 6

1. Hayles 1999, 17.

2. Chun. 2008; Chun 2017.

3. Murrell 2017.

4. James Somers, "Torching the Modern-Day Library of Alexandria," *The Atlantic*, April 20, 2017.

5. Jennifer Howard, "What Happened to Google's Effort to Scan Millions of University Library Books?," *EdSurge*, August 10, 2017, https://www.edsurge.com/news/2017-08-10-what-happened-to-google-s-effort-to-scan-millions-of-university-library-books.

6. Scott Rosenberg, "How Google Books Got Lost," *Wired*, November 4, 2017, https://www.wired.com/2017/04/how-google-book-search-got-lost.

7. What to make, for instance, of the new trend of employing Google's neural networks to find one's museum doppelgänger from the company's image database? Or the fact that Google Cultural Institute is consistently turning out new cultural memory hacks such as its cardboard VR glasses, its indoor mapping of museum spaces, and its gigapixel Art Camera which reproduces artworks in uncanny detail. Or the expansion of their remit from cultural memory institutions to also encompass natural history museums? See, for example, Adrien Chen, "The Google Arts & Culture App and the Rise of the 'Coded Gaze,'" *New Yorker*, January 26, 2018, https://www.newyorker.com/tech/elements/the-google-arts-and-culture-app-and-the-rise-of-the-coded-gaze-doppelganger.

8. Nakamura 2013, 240.

9. Ibid., 241.

References

Abbate, Janet. 2012. *Recoding Gender: Women's Changing Participation in Computing*. Cambridge, MA: MIT Press.

Abrahamsen, Rita, and Michael C. Williams. 2011. *Security beyond the State: Private Security in International Politics*. Cambridge: Cambridge University Press.

Adler-Nissen, Rebecca, and Thomas Gammeltoft-Hansen. 2008. *Sovereignty Games: Instrumentalizing State Sovereignty in Europe and Beyond*. New York: Palgrave Macmillan.

Agre, Philip E. 2000. "The Market Logic of Information." *Knowledge, Technology & Policy* 13 (3): 67–77.

Aiden, Erez, and Jean-Baptiste Michel. 2013. *Uncharted: Big Data as a Lens on Human Culture*. New York: Riverhead Books.

Ambati, Vamshi, N. Balakrishnan, Raj Reddy, Lakshmi Pratha, and C. V. Jawahar. 2006. "The Digital Library of India Project: Process, Policies and Architecture." *CiteSeer*. http://www.serc.iisc.ernet.in/~balki/papers/ICDL2006-Delhi.pdf.

Amoore, Louise. 2013. *The Politics of Possibility: Risk and Security beyond Probability*. Durham, NC: Duke University Press.

Anderson, Ben, and Colin McFarlane. 2011. "Assemblage and Geography." *Area* 43 (2): 124–127.

Anderson, Benedict. 1991. *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. London: Verso.

Arms, William Y. 2000. *Digital Libraries*. Cambridge, MA: MIT Press.

Arvanitakis, James, and Martin Fredriksson. 2014. *Piracy: Leakages from Modernity*. Sacramento, CA: Litwin Books.

Association of Research Libraries. 2009. "ARL Encourages Members to Refrain from Signing Nondisclosure or Confidentiality Clauses." *ARL News*, June 5. http://

www.arl.org/news/arl-news/3062-arl-encourages-members-to-refrain-from-signing-nondisclosure-or-confidentiality-clauses#.Vriv-McZdE4.

Auletta, Ken. 2009. *Googled: The End of the World As We Know It*. New York: Penguin Press.

Baker, Nicholson. 2002. *The Double Fold: Libraries and the Assault on Paper*. London: Vintage Books.

Barthes, Roland. 1977. "From Work to Text" and "The Grain of the Voice." In *Image Music Text*, ed. Roland Barthes. London: Fontana Press.

Barthes, Roland. 1981. *Camera Lucida: Reflections on Photography*. New York: Hill and Wang.

Bates, David W. 2002. *Enlightenment Aberrations: Error and Revolution in France*. Ithaca, NY: Cornell University Press.

Batt, William H. 1984. "Infrastructure: Etymology and Import." *Journal of Professional Issues in Engineering* 110 (1): 1–6.

Bawden, David, and Lyn Robinson. 2009. "The Dark Side of Information: Overload, Anxiety and Other Paradoxes and Pathologies." *Journal of Information Science* 35 (2): 180–191.

Beck, Ulrick. 1996. "World Risk Society as Cosmopolitan Society? Ecological Questions in a Framework of Manufactured Uncertainties." *Theory, Culture & Society* 13 (4), 1–32.

Beecher, Lyman. 2012. *Faith Once Delivered to the Saints: A Sermon Delivered at Worcester, Mass., Oct. 15, 1823*. Farmington Hills, MI: Gale, Sabin Americana.

Belder, Lucky. 2015. "Cultural Heritage Institutions as Entrepreneurs." In *Cultivate!: Cultural Heritage Institutions, Copyright & Cultural Diversity in the European Union & Indonesia*, eds. M. de Cock Buning, R. W. Bruin, and Lucky Belder, 157–196. Amsterdam: DeLex.

Benjamin, Walter. 1985a. "Central Park." *New German Critique, NGC* 34 (Winter): 32–58.

Benjamin, Walter. 1985b. "The Flâneur." In *Charles Baudelaire: a Lyric Poet in the Era of High Capitalism*. Translated by Harry Zohn. London: Verso.

Benjamin, Walter. 1999. *The Arcades Project*. Cambridge, MA: Harvard University Press.

Béquet, Gaëlle. 2009. *Digital Library as a Controversy: Gallica vs Google*. Proceedings of the 9th Conference Libraries in the Digital Age (Dubrovnik, Zadar, May 25–29, 2009). https://hal.archives-ouvertes.fr/hal-00718385.

Berardi, Franco, Gary Genosko, and Nicholas Thoburn. 2011. *After the Future*. Edinburgh, UK: AK Press.

Berk, Hillary L. 2015. "The Legalization of Emotion: Managing Risk by Managing Feelings in Contracts for Surrogate Labor." *Law & Society Review* 49 (1): 143–177.

Bishop, Catherine. 2016. "The Serendipity of Connectivity: Piecing Together Women's Lives in the Digital Archive." *Women's History Review* 26 (5): 766–780.

Bivort, Olivier. 2013. "*Le romantisme et la 'langue de Voltaire.'*" Revue Italienne d'études Françaises, 3. DOI: 10.4000/rief.211.

Bjelić, Dušan I. 2016. *Intoxication, Modernity, and Colonialism: Freud's Industrial Unconscious, Benjamin's Hashish Mimesis*. New York: Palgrave Macmillan.

Blair, Ann, and Peter Stallybrass. 2010. "Mediating Information, 1450–1800". In *This Is Enlightenment*, eds. Clifford Siskin and William B. Warner. Chicago: University of Chicago Press.

Blair, Ann. 2003. "Reading Strategies for Coping with Information Overload ca. 1550–1700." *Journal of the History of Ideas* 64 (1): 11–28.

Bloom, Harold. 2009. *The Labyrinth*. New York: Bloom's Literary Criticism.

Bodó, Balazs. 2015. "The Common Pathways of Samizdat and Piracy." In *Samizdat: Between Practices and Representations*, ed. V. Parisi. Budapest: CEU Institute for Advanced Study. Available at SSRN; https://ssrn.com/abstract=2672802.

Bodó, Balazs. 2016. "Libraries in the Post-Scarcity Era." In *Copyrighting Creativity: Creative Values, Cultural Heritage Institutions and Systems of Intellectual Property*, ed. Helle Porsdam. New York: Routledge.

Bogost, Ian, and Nick Montfort. 2009. "Platform Studies: Frequently Asked Questions." *Proceeding of the Digital Arts and Culture Conference*. https://escholarship.org/uc/item/01r0k9br.

Borges, Jorge Luis. 1978. "An Autobiographical Essay." In *The Aleph and Other Stories, 1933–1969: Together with Commentaries and an Autobiographical Essay*. New York: E. P. Dutton.

Borges, Jorge Luis. 2001. "The Total Library." In *The Total Library: Non-fiction 1922–1986*. London: Penguin.

Borges, Jorge Luis, and L. S. Dembo. 1970. "An Interview with Jorge Luis Borges." *Contemporary Literature* 11 (3): 315–325.

Borghi, Maurizio. 2012. "Knowledge, Information and Values in the Age of Mass Digitisation." In *Value: Sources and Readings on a Key Concept of the Globalized World*, ed. Ivo de Gennaro. Leiden, the Netherlands: Brill.

Borghi, Maurizio, and Stavroula Karapapa. 2013. *Copyright and Mass Digitization: A Cross-Jurisdictional Perspective*. Oxford: Oxford University Press.

Borgman, Christine L. 2015. *Big Data, Little Data, No Data: Scholarship in the Networked World*. Cambridge, MA: MIT Press.

Bottando, Evelyn. 2012. *Hedging the Commons: Google Books, Libraries, and Open Access to Knowledge*. Iowa City: University of Iowa.

Bowker, Geoffrey C., Karen Baker, Florence Millerand, and David Ribes. 2010. "Toward Information Infrastructure Studies: Ways of Knowing in a Networked Environment." In *The International Handbook of Internet Research*, eds. Hunsinger Lisbeth Klastrup Jeremy and Matthew Allen. Dordrecht, the Netherlands: Springer.

Bowker, Geoffrey C, and Susan L. Star. 1999. *Sorting Things Out: Classification and Its Consequences*. Cambridge, MA: MIT Press.

Brin, Sergey. 2009. "A Library to Last Forever." *New York Times*, October 8. http://www.nytimes.com/2009/10/09/opinion/09brin.html.

Brin, Sergey, and Lawrence Page. 1998. "The Anatomy of a Large-Scale Hypertextual Web Search Engine." *Computer Networks and ISDN Systems* 30 (1–7): 107. http://infolab.stanford.edu/~backrub/google.html.

Buckholtz, Alison. 2016. "New Ideas for Financing American Infrastructure: A Conversation with Henry Petroski." *World Bank Group, Public-Private Partnerships Blog*, March 29. http://blogs.worldbank.org/ppps/comment/reply/793.

Buck-Morss, Susan. 2006. "The Flâneur, the Sandwichman and the Whore: The Politics of Loitering." *New German Critique* (39): 99–140.

Budds, Diana. 2016. "Rem Koolhaas: 'Architecture Has a Serious Problem Today.'" *CoDesign* 21 (May). https://www.fastcodesign.com/3060135/innovation-by-design/rem-koolhaas-architecture-has-a-serious-problem-today.

Burkart, Patrick. 2014. *Pirate Politics: The New Information Policy Contests*. Cambridge, MA: MIT Press.

Burton, James, and Daisy Tam. 2016. "Towards a Parasitic Ethics." *Theory, Culture & Society* 33 (4): 103–125.

Busch, Lawrence. 2011. *Standards: Recipes for Reality*. Cambridge, MA: MIT Press.

Caley, Seth. 2017. "Digitization for the Masses: Taking Users Beyond Simple Searching in Nineteenth-Century Collections Online." *Journal of Victorian Culture : JVC* 22 (2): 248–255.

Cadogan, Garnette. 2016. "Walking While Black." Literary Hub. July 8. http://lithub.com/walking-while-black.

Callon, Michel, Madeleine Akrich, Sophie Dubuisson-Quellier, Catherine Grandclément, Antoine Hennion, Bruno Latour, Alexandre Mallard, et al. 2016. *Sociologie des agencements marchands: Textes choisis*. Paris: Presses des Mines.

Cameron, Fiona, and Sarah Kenderdine. 2007. *Theorizing Digital Cultural Heritage: A Critical Discourse*. Cambridge, MA: MIT Press.

Canepi, Kitti, Becky Ryder, Michelle Sitko, and Catherine Weng. 2013. *Managing Microforms in the Digital Age*. Association for Library Collections & Technical Services. http://www.ala.org/alcts/resources/collect/serials/microforms.

Carey, Quinn Ann. 2015, "Maksim Moshkov and lib.ru: Russia's Own 'Gutenberg.'" *TeleRead: Bring the E-Books Home*. December 5. https://web.archive.org/web/20070927030404/http://www.teleread.org/blog/?p=4005.

Carpentier, Nico. 2011. *Media and Participation: A Site of Ideological-Democratic Struggle*. Bristol, UK: Intellect.

Carr, Nicholas. 2006. "The Engine of Serendipity." *Rough Type*, May 18. http://www.roughtype.com/?p=382.

Cassirer, Ernst. 1944. *An Essay on Man: An Introduction to a Philosophy of Human Culture*. New Haven, CT: Yale University Press.

Castells, Manuel. 1996a. *The Rise of the Network Society*. Malden, MA: Blackwell Publishers.

Castells, Manuel. 1996b. *The Informational City: Information Technology, Economic Restructuring, and the Urban-Regional Process*. Cambridge: Blackwell.

Castells, Manuel, and Gustavo Cardoso. 2012. "Piracy Cultures: Editorial Introduction." *International Journal of Communication* 6 (1): 826–833.

Chabal, Emile. 2013. "The Rise of the Anglo-Saxon: French Perceptions of the Anglo-American World in the Long Twentieth Century." *French Politics, Culture & Society* 31 (1): 24–46.

Chartier, Roger. 2004. "Languages, Books, and Reading from the Printed Word to the Digital Text." *Critical Inquiry* 31 (1): 133–152.

Chen, Ching-chih. 2005. "Digital Libraries and Universal Access in the 21st Century: Realities and Potential for US-China Collaboration." In *Proceedings of the 3rd China-US Library Conference, Shanghai, China, March 22–25*, 138–167. Beijing: National Library of China.

Chrisafis, Angelique. 2008. "Dante to Dialects: EU's Online Renaissance." *Guardian*, November 21. https://theguardian.com/world/2008/nov/21/eu.

Chun, Wendy H. K. 2006. *Control and Freedom: Power and Paranoia in the Age of Fiber Optics*. Cambridge, MA: MIT Press.

Chun, Wendy Hui Kyong. 2008. "The Enduring Ephemeral, or the Future Is a Memory." *Critical Inquiry* 35 (1): 148–171.

Chun, Wendy H. K. 2017. *Updating to Remain the Same*. Cambridge, MA: MIT Press.

Clarke, Michael Tavel. 2009. *These Days of Large Things: The Culture of Size in America, 1865–1930*. Ann Arbor: University of Michigan Press.

Cohen, Jerome Bernard. 2006. *The Triumph of Numbers: How Counting Shaped Modern Life*. New York: W.W. Norton.

Conway, Paul. 2010. "Preservation in the Age of Google: Digitization, Digital Preservation, and Dilemmas." *The Library Quarterly: Information, Community, Policy* 80 (1): 61–79.

Courant, Paul N. 2006. "Scholarship and Academic Libraries (and Their Kin) in the World of Google." *First Monday* 11 (8).

Coyle, Karen. 2006. "Mass Digitization of Books." *Journal of Academic Librarianship* 32 (6): 641–645.

Darnton, Robert. 2009. *The Case for Books: Past, Present, and Future*. New York: Public Affairs.

Daston, Lorraine. 2012. "The Sciences of the Archive." *Osiris* 27 (1): 156–187.

Davison, Graeme. 2009. "Speed-Relating: Family History in a Digital Age." *History Australia* 6 (2). http://www.tandfonline.com/doi/abs/10.2104/ha090043.

Deegan, Marilyn, and Kathryn Sutherland. 2009. *Transferred Illusions: Digital Technology and the Forms of Print*. Farnham, UK: Ashgate.

de la Durantaye, Katharine. 2011. "H Is for Harmonization: The Google Book Search Settlement and Orphan Works Legislation in the European Union." *New York Law School Law Review* 55 (1): 157–174.

DeLanda, Manuel. 2006. *A New Philosophy of Society: Assemblage Theory and Social Complexity*. London: Continuum.

Deleuze, Gilles. 1997. "Postscript on Control Societies." In *Negotiations 1972–1990*, 177–182. New York: Columbia University Press.

Deleuze, Gilles. 2013. *Difference and Repetition*. London: Bloomsbury Academic.

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

DeNardis, Laura. 2011. *Opening Standards: The Global Politics of Interoperability*. Cambridge, MA: MIT Press.

DeNardis, Laura. 2014. "The Social Media Challenge to Internet Governance." In *Society and the Internet: How Networks of Information and Communication Are Changing*

Our Lives, eds. Mark Graham and William H. Dutton. Oxford: Oxford University Press.

Derrida, Jacques. 1996. *Archive Fever: A Freudian Impression*. Chicago: University of Chicago Press.

Derrida, Jacques. 2005. *Paper Machine*. Stanford, CA: Stanford University Press.

Dewey, Melvin. 1926. "Our Next Half-Century." *Bulletin of the American Library Association* 20 (10): 309–312.

Dinshaw, Carolyn. 2012. *How Soon Is Now?: Medieval Texts, Amateur Readers, and the Queerness of Time*. Durham, NC: Duke University Press.

Doob, Penelope Reed. 1994. *The Idea of the Labyrinth: From Classical Antiquity Through the Middle Ages*. Ithaca, NY: Cornell University Press.

Dörk, Marian, Sheelagh Carpendale, and Carey Williamson. 2011. "The Information Flâneur: A Fresh Look at Information Seeking." *Conference on Human Factors in Computing Systems—Proceedings*, 1215–1224.

Doward, Jamie. 2009. "Angela Merkel Attacks Google's Plans to Create a Global Online Library." *Guardian*, October 11. https://theguardian.com/world/2009/oct/11/angela-merkel-google-digital-library.

Duguid, Paul. 2007. "Inheritance and Loss? A Brief Survey of Google Books." *First Monday* 12 (8). http://firstmonday.org/article/view/1972/1847.

Earnshaw, Rae A., and John Vince. 2007. *Digital Convergence: Libraries of the Future*. London: Springer.

Easley, David, and Jon Kleinberg. 2010. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*. New York: Cambridge University Press.

Easterling, Keller. 2014. *Extrastatecraft: The Power of Infrastructure Space*. Verso.

Eckstein, Lars, and Anja Schwarz. 2014. *Postcolonial Piracy: Media Distribution and Cultural Production in the Global South*. London: Bloomsbury.

Eco, Umberto. 2014. *The Name of the Rose*. Boston: Mariner Books.

Edwards, Paul N. 2003. "Infrastructure and Modernity: Force, Time and Social Organization in the History of Sociotechnical Systems." In *Modernity and Technology*, eds. Thomas J. Misa, Philip Brey, and Andrew Feenberg. Cambridge, MA: MIT Press.

Edwards, Paul N., Steven J. Jackson, Melissa K. Chalmers, Geoffrey C. Bowker, Christine L. Borgman, David Ribes, Matt Burton, and Scout Calvert. 2012. *Knowledge Infrastructures: Intellectual Frameworks and Research Challenges*. Report of a workshop sponsored by the National Science Foundation and the Sloan Foundation University of Michigan School of Information, May 25–28. http://knowledgeinfrastructures.org.

Ensmenger, Nathan. 2012. *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise*. Cambridge, MA: MIT Press.

Eyal, Nir. 2014. *Hooked: How to Build Habit-Forming Products*. Princeton, NJ: Princeton University Press.

Featherstone, Mike. 1998. "The Flâneur, the City and Virtual Public Life." *Urban Studies (Edinburgh, Scotland)* 35 (5–6): 909–925.

Featherstone, Mike. 2000. "Archiving Cultures." *British Journal of Sociology* 51 (1): 161–184.

Fiske, John. 1987. *Television Culture*. London: Methuen.

Fjeld, Per Olaf, and Sverre Fehn. 2009. *Sverre Fehn: The Pattern of Thoughts*. New York: Monacelli Press.

Flyverbom, Mikkel, Paul M. Leonardi, Cynthia Stohl, and Michael Stohl. 2016. "The Management of Visibilities in the Digital Age." *International Journal of Communication* 10 (1): 98–109.

Foucault, Michel. 2002. *Archaeology of Knowledge*. London: Routledge.

Foucault, Michel. 2004. *Death and the Labyrinth: The World of Raymond Roussel*. Continuum International Publishing Group Ltd.

Foucault, Michel. 2009. *Security, Territory, Population: Lectures at the College de France, 1977–1978*. Basingstoke, UK: Palgrave Macmillan.

Fredriksson, Martin, and James Arvanitakis. 2014. *Piracy: Leakages from Modernity*. Sacramento, CA: Litwin Books.

Freedgood, Elaine. 2013. "Divination." *PMLA* 128 (1): 221–225.

Fuchs, Christian. 2014. *Digital Labour and Karl Marx*. New York: Routledge.

Fuller, Matthew, and Andrew Goffey. 2012. *Evil Media*. Cambridge, MA: MIT Press.

Galloway, Alexander R. 2013a. *The Interface Effect*. Cambridge: Polity Press.

Galloway Alexander, R. 2013b. "The Poverty of Philosophy: Realism and Post-Fordism." *Critical Inquiry* 39 (2): 347–366.

Gardner, Carolyn Caffrey, and Gabriel J. Gardner. 2017. "Fast and Furious (at Publishers): The Motivations behind Crowdsourced Research Sharing." *College & Research Libraries* 78 (2): 131–149.

Garrett, Jeffrey. 1999. "Redefining Order in the German Library, 1775–1825." *Eighteenth-Century Studies* 33 (1): 103–123.

Gibbon, Peter, and Lasse F. Henriksen. 2012. "A Standard Fit for Neoliberalism." *Comparative Studies in Society and History* 54 (2): 275–307.

Giesler, Markus. 2006. "Consumer Gift Systems." *Journal of Consumer Research* 33 (2): 283–290.

Gießmann, Sebastian. 2015. *Medien Der Kooperation*. Siegen, Germany: Universitet Verlag.

Gillespie, Tarleton. 2010. "The Politics of 'Platforms.'" *New Media & Society* 12 (3): 347–364.

Gillespie, Tarleton. 2017. "Algorithmically Recognizable: Santorum's Google Problem, and Google's Santorum Problem." *Information Communication and Society* 20 (1): 63–80.

Gladwell, Malcolm. 2000. *The Tipping Point: How Little Things Can Make a Big Difference*. Boston: Little, Brown.

Goldate, Steven. 1996. "The Cyberflâneur: Spaces and Places on the Internet." *Art Monthly Australia* 91:15–18.

Goldsmith, Jack L., and Tim Wu. 2006. *Who Controls the Internet?: Illusions of a Borderless World*. New York: Oxford University Press.

Goldsmith, Kenneth. 2007. "UbuWeb Wants to Be Free." Last modified July 18, 2007. http://www.writing.upenn.edu/~afilreis/88/ubuweb.html.

Golumbia, David. 2009. *The Cultural Logic of Computation*. Cambridge, MA: Harvard University Press.

Goriunova, Olga. 2012. *Art Platforms and Cultural Production on the Internet*. New York: Routledge.

Gradmann, Stephan. 2009. "Interoperability: A Key Concept for Large Scale, Persistent Digital Libraries." 1st DL.org Workshop at 13th European Conference on Digital Libraries (ECDL).

Greene, Mark. 2010. "MPLP: It's Not Just for Processing Anymore." *American Archivist* 73 (1): 175–203.

Grewal, David S. 2008. *Network Power: The Social Dynamics of Globalization*. New Haven, CT: Yale University Press.

Hacking, Ian. 1995. *Rewriting the Soul: Multiple Personality and the Sciences of Memory*. Princeton, NJ: Princeton University Press.

Hacking, Ian. 2010. *The Taming of Chance*. Cambridge: Cambridge University Press.

Hagel, John. 2012. *The Power of Pull: How Small Moves, Smartly Made, Can Set Big Things in Motion*. New York: Basic Books.

Haggerty, Kevin D, and Richard V. Ericson. 2000. "The Surveillant Assemblage." *British Journal of Sociology* 51 (4): 605–622.

Hall, Gary. 2008. *Digitize This Book!: The Politics of New Media, or Why We Need Open Access Now*. Minneapolis: University of Minnesota Press.

Hall, Mark, et al. 2012. "PATHS—Exploring Digital Cultural Heritage Spaces." In *Theory and Practice of Digital Libraries. TPDL 2012*, vol. 7489, 500–503. Lecture Notes in Computer Science. Berlin: Springer.

Hall, Stuart, and Fredric Jameson. 1990. "Clinging to the Wreckage: a Conversation." *Marxism Today* (September): 28–31.

Hardt, Michael, and Antonio Negri. 2007. *Empire*. Cambridge, MA: Harvard University Press.

Hardt, Michael, and Antonio Negri. 2009. *Commonwealth*. Cambridge, MA: Harvard University Press.

Hartmann, Maren. 1999. "The Unknown Artificial Metaphor or: The Difficult Process of Creation or Destruction." In *Next Cyberfeminist International*, ed. Cornelia Sollfrank. Hamburg, Germany: obn. http://www.obn.org/obn_pro/downloads/reader2.pdf.

Hartmann, Maren. 2004. *Technologies and Utopias: The Cyberflâneur and the Experience of "Being Online."* Munich: Fischer.

Hayles, N. Katherine. 1993. "Seductions of Cyberspace." In *Lost in Cyberspace: Essays and Far-Fetched Tales*, ed. Val Schaffner. Bridgehampton, NY: Bridge Works Pub. Co.

Hayles, N. Katherine. 2005. *My Mother Was a Computer: Digital Subjects and Literary Texts*. Chicago: University of Chicago Press.

Helmond, Anne. 2015. "The Platformization of the Web: Making Web Data Platform Ready." *Social Media + Society* 1 (2). http://journals.sagepub.com/doi/full/10.1177/2056305115603080.

Hicks, Marie. 2018. *Programmed Inequality: How Britain Discarded Women Technologists and Lost its Edge in Computing*. Cambridge, MA: MIT Press.

Higgins, Vaughan, and Wendy Larner. 2010. *Calculating the Social: Standards and the Reconfiguration of Governing*. Basingstoke, UK: Palgrave Macmillan.

Holzer, Boris, and P. S. Mads. 2003. "Rethinking Subpolitics: Beyond the 'Iron Cage' of Modern Politics?" *Theory, Culture & Society* 20 (2): 79–102.

Huyssen, Andreas. 2015. *Miniature Metropolis: Literature in an Age of Photography and Film*. Cambridge, MA: Harvard University Press.

Imerito, Tom. 2009. "Electrifying Knowledge." *Pittsburgh Quarterly Magazine*. Summer. https://pittsburghquarterly.com/pq-health-science/pq-technology/item/898-electrifying-knowledge.html.

Janssen, Olaf. D. 2011. "Digitizing All Dutch Books, Newspapers and Magazines—730 Million Pages in 20 Years—Storing It, and Getting It Out There." In *Research and Advanced Technology for Digital Libraries*, eds. S. Gradmann, F. Borri, C. Meghini, and H. Schuldt, 473–476. TPDL 2011. Lecture Notes in Computer Science, vol. 6966. Berlin: Springer.

Jasanoff, Sheila. 2013. "Epistemic Subsidiarity—Coexistence, Cosmopolitanism, Constitutionalism." *European Journal of Risk Regulation* 4 (2) 133–141.

Jeanneney, Jean N. 2007. *Google and the Myth of Universal Knowledge: A View from Europe*. Chicago: University of Chicago Press.

Jones, Elisabeth A., and Joseph W. Janes. 2010. "Anonymity in a World of Digital Books: Google Books, Privacy, and the Freedom to Read." *Policy & Internet* 2 (4): 43–75.

Jøsevold, Roger. 2016. "A National Library for the 21st Century—Knowledge and Cultural Heritage Online." *Alexandria: The Journal of National and International Library and Information Issues* 26 (1): 5–14.

Kang, Minsoo. 2011. *Sublime Dreams of Living Machines: The Automaton in the European Imagination*. Cambridge, MA: Harvard University Press.

Karaganis, Joe. 2011. *Media Piracy in Emerging Economies*. New York: Social Science Research Council.

Karaganis, Joe. 2018. *Shadow Libraries: Access to Educational Materials in Global Higher Education*. Cambridge, MA: MIT Press.

Kaufman, Peter B., and Jeff Ubois. 2007. "Good Terms—Improving Commercial-Noncommercial Partnerships for Mass Digitization." *D-Lib Magazine* 13 (11–12). http://www.dlib.org/dlib/november07/kaufman/11kaufman.html.

Kelley, Robin D. G. 1994. *Race Rebels: Culture, Politics, and the Black Working Class*. New York: Free Press.

Kelly, Kevin. 1994. *Out of Control: The Rise of Neo-Biological Civilization*. Reading, MA: Addison-Wesley.

Kenney, Anne R, Nancy Y. McGovern, Ida T. Martinez, and Lance J. Heidig. 2003. "Google Meets Ebay: What Academic Librarians Can Learn from Alternative Information Providers." D-lib Magazine, 9 (6) http://www.dlib.org/dlib/june03/kenney/06kenney.html.

Kiriya, Ilya. 2012. "The Culture of Subversion and Russian Media Landscape." *International Journal of Communication* 6 (1): 446–466.

Koevoets, Sanne. 2013. *Into the Labyrinth of Knowledge and Power: The Library as a Gendered Space in the Western Imaginary*. Utrecht, the Netherlands: Utrecht University.

Kolko, Joyce. 1988. *Restructuring the World Economy*. New York: Pantheon Books.

Komaromi, Ann. 2012. "Samizdat and Soviet Dissident Publics." *Slavic Review* 71 (1): 70–90.

Kramer, Bianca. 2016a. "Sci-Hub: Access or Convenience? A Utrecht Case Study, Part 1." *I&M / I&O 2.0*, June 20. http://www.im2punt0.wordpress.com/2016/06/20/sci-hub-utrecht-case-study-part-1.

Kramer, Bianca. 2016b. "Sci-Hub: Access or Convenience? A Utrecht Case Study, Part 2." http://www.im2punt0.wordpress.com/2016/06/20/sci-hub-access-or-convenience-a-utrecht-case-study-part-2.

Krysa, Joasia. 2006. *Curating Immateriality: The Work of the Curator in the Age of Network Systems*. Brooklyn, NY: Autonomedia.

Kurgan, Laura. 2013. *Close up at a Distance: Mapping, Technology, and Politics*. Brooklyn, NY: Zone Books.

Labi, Aisha. 2005. "France Plans to Digitize Its 'Cultural Patrimony' and Defy Google's 'Domination.'" *Chronicle of Higher Education* (March): 21.

Larkin, Brian. 2008. *Signal and Noise: Media, Infrastructure, and Urban Culture in Nigeria*. Durham, NY: Duke University Press.

Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network Theory*. Oxford: Oxford University Press.

Latour, Bruno. 2007. "Beware, Your Imagination Leaves Digital Traces." *Times Higher Literary Supplement*, April 6.

Latour, Bruno. 2008. *What Is the Style of Matters of Concern?: Two Lectures in Empirical Philosophy*. Assen, the Netherlands: Koninklijke Van Gorcum.

Lavoie, Brian F., and Lorcan Dempsey. 2004. "Thirteen Ways of Looking at Digital Preservation." *D-Lib Magazine* 10 (July/August). http://www.dlib.org/dlib/july04/lavoie/07lavoie.html.

Leetaru, Kalev. 2008. "Mass Book Digitization: The Deeper Story of Google Books and the Open Content Alliance." *First Monday* 13 (10). http://firstmonday.org/ojs/index.php/fm/article/viewArticle/2101.

Lefebvre, Henri. 2009. *The Production of Space*. Malden, MA: Blackwell.

Lefler, Rebecca. 2007. "'Europeana' Ready for Maiden Voyage." *Hollywood Reporter*, March 23. https://www.hollywoodreporter.com/news/europeana-ready-maiden-voyage-132643.

Lessig, Lawrence. 2005a. "Lawrence Lessig on Interoperability." *Creative Commons*, October 19. https://creativecommons.org/2005/10/19/ccinreviewlawrencelessigon interoperability.

Lessig, Lawrence. 2005b. *Free Culture: The Nature and Future of Creativity*. New York: Penguin Books.

Lessig, Lawrence. 2010. "For the Love of Culture—Will All of Our Literary Heritage Be Available to Us in the Future? Google, Copyright, and the Fate of American Books. *New Republic* 24. https://newrepublic.com/article/72706/the-love-culture.

Levy, Steven. 2011. *In the Plex: How Google Thinks, Works, and Shapes Our Lives*. New York: Simon & Schuster.

Lewis, Jane. 1987. *Labour and Love: Women's Experience of Home and Family, 1850–1940*. Oxford: Blackwell.

Liang, Lawrence. 2009. "Piracy, Creativity and Infrastructure: Rethinking Access to Culture," July 20. https://ssrn.com/abstract=1436229.

Liu, Jean. 2013. "Interactions: The Numbers Behind #ICanHazPDF." *Altmetric*, May 9. https://www.altmetric.com/blog/interactions-the-numbers-behind-icanhazpdf.

Locke, John. 2003. *Two Treatises of Government: And a Letter Concerning Toleration*. New Haven, CT: Yale University Press.

Martin, Andrew, and George Ross. 2004. *Euros and Europeans: Monetary Integration and the European Model of Society*. New York: Cambridge University Press.

Mbembe, Achille. 2002. "The Power of the Archive and its Limits." In *Refiguring the Archive*, ed. Carolyn Hamilton. Cape Town, South Africa: David Philip.

McDonough, Jerome. 2009. "XML, Interoperability and the Social Construction of Markup Languages: The Library Example." *Digital Humanities Quarterly* 3 (3). http://www.digitalhumanities.org/dhq/vol/3/3/000064/000064.html.

McPherson, Tara. 2012. "U.S. Operating Systems at Mid-Century: The Intertwining of Race and UNIX." In *Race After the Internet*, eds. Lisa Nakamura and Peter Chow-White. New York: Routledge.

Meckler, Alan M. 1982. *Micropublishing: A History of Scholarly Micropublishing in America, 1938–1980*. Westport, CT: Greenwood Press.

Medak, Tomislav, et al. 2016. *The Radiated Book*. http://www.mondotheque.be/wiki/index.php/The_radiated_book.

Merton, Robert K., and Elinor Barber. 2004. *The Travels and Adventures of Serendipity: A Study in Sociological Semantics and the Sociology of Science*. Princeton, NJ: Princeton University Press.

Meunier, Sophie. 2003. "France's Double-Talk on Globalization." *French Politics, Culture & Society* 21:20–34.

Meunier, Sophie. 2007. "The Distinctiveness of French Anti-Americanism." In *Anti-Americanisms in World Politics*, eds. Peter J. Katzenstein and Robert O. Keohane. Ithaca, NY: Cornell University Press.

Michel, Jean-Baptiste, et al. 2011. "Quantitative Analysis of Culture Using Millions of Digitized Books." *Science* 331 (6014):176–182.

Midbon, Mark. 1980. "Capitalism, Liberty, and the Development of the Development of the Library." *Journal of Library History (Tallahassee, Fla.)* 15 (2): 188–198.

Miksa, Francis L. 1983. *Melvil Dewey: The Man and the Classification*. Albany, NY: Forest Press.

Mitropoulos, Angela. 2012. *Contract and Contagion: From Biopolitics to Oikonomia*. Brooklyn, NY: Minor Compositions.

Mjør, Kåre Johan. 2009. "The Online Library and the Classic Literary Canon in Post-Soviet Russia: Some Observations on 'The Fundamental Electronic Library of Russian Literature and Folklore.'" *Digital Icons: Studies in Russian, Eurasian and Central European New Media* 1 (2): 83–99.

Montagnani, Maria Lillà, and Maurizio Borghi. 2008. "Promises and Pitfalls of the European Copyright Law Harmonisation Process." In *The European Union and the Culture Industries: Regulation and the Public Interest*, ed. David Ward. Aldershot, UK: Ashgate.

Murrell, Mary. 2017. "Unpacking Google's Library." *Limn* (6). https://limn.it/unpacking-googles-library.

Nakamura, Lisa. 2002. *Cybertypes: Race, Ethnicity, and Identity on the Internet*. New York: Routledge.

Nakamura, Lisa. 2013. "'Words with Friends': Socially Networked Reading on Goodreads." *PMLA* 128 (1): 238–243.

Nava, Mica, and Alan O'Shea. 1996. *Modern Times: Reflections on a Century of English Modernity*, 38–76. London: Routledge.

Negroponte, Nicholas. 1995. *Being Digital*. New York: Knopf.

Neubert, Michael. 2008. "Google's Mass Digitization of Russian-Language Books." *Slavic & East European Information Resources* 9 (1): 53–62.

Nicholson, William. 1819. "Platform." In *British Encyclopedia: Or, Dictionary of Arts and Sciences, Comprising an Accurate and Popular View of the Present Improved State of Human Knowledge*. Philadelphia: Mitchell, Ames, and White.

Niggemann, Elisabeth. 2011. *The New Renaissance: Report of the "Comité Des Sages."* Brussels: Comité des Sages.

Noble, Safiya Umoja, and Brendesha M. Tynes. 2016. *The Intersectional Internet: Race, Sex, Class and Culture Online*. New York: Peter Lang Publishing.

Nord, Deborah Epstein. 1995. *Walking the Victorian Streets: Women, Representation, and the City*. Ithaca, NY: Cornell University Press.

Norvig, Peter. 2012. "Colorless Green Ideas Learn Furiously: Chomsky and the Two Cultures of Statistical Learning." *Significance* (August): 30–33.

O'Neill, Paul, and Søren Andreasen. 2011. *Curating Subjects*. London: Open Editions.

O'Neill, Paul, and Mick Wilson. 2010. *Curating and the Educational Turn*. London: Open Editions.

Ong, Aihwa, and Stephen J. Collier. 2005. *Global Assemblages: Technology, Politics, and Ethics As Anthropological Problems*. Malden, MA: Blackwell Pub.

Otlet, Paul, and W. Boyd Rayward. 1990. *International Organisation and Dissemination of Knowledge*. Amsterdam: Elsevier.

Palfrey, John G. 2015. *Bibliotech: Why Libraries Matter More Than Ever in the Age of Google*. New York: Basic Books.

Palfrey, John G., and Urs Gasser. 2012. *Interop: The Promise and Perils of Highly Interconnected Systems*. New York: Basic Books.

Parisi, Luciana. 2004. *Abstract Sex: Philosophy, Bio-Technology and the Mutations of Desire*. London: Continuum.

Patra, Nihar K., Bharat Kumar, and Ashis K. Pani. 2014. *Progressive Trends in Electronic Resource Management in Libraries*. Hershey, PA: Information Science Reference.

Paulheim, Heiko. 2015. "What the Adoption of Schema.org Tells About Linked Open Data." *CEUR Workshop Proceedings* 1362:85–90.

Peatling, G. K. 2004. "Public Libraries and National Identity in Britain, 1850–1919." *Library History* 20 (1): 33–47.

Pechenick, Eitan A., Christopher M. Danforth, Peter S. Dodds, and Alain Barrat. 2015. "Characterizing the Google Books Corpus: Strong Limits to Inferences of Socio-Cultural and Linguistic Evolution." *PLoS One* 10 (10).

Peters, John Durham. 2015. *The Marvelous Clouds: Toward a Philosophy of Elemental Media*. Chicago: University of Chicago Press.

Pfanner, Eric. 2011. "Quietly, Google Puts History Online." *New York Times*, November 20.

Pfanner, Eric. 2012. "Google to Announce Venture With Belgian Museum." *New York Times*, March 12. http://www.nytimes.com/2012/03/13/technology/google-to-announce-venture-with-belgian-museum.html.

Philip, Kavita. 2005. "What Is a Technological Author? The Pirate Function and Intellectual Property." *Postcolonial Studies: Culture, Politics, Economy* 8 (2): 199–218.

Pine, Joseph B., and James H. Gilmore. 2011. *The Experience Economy*. Boston: Harvard Business Press.

Ping-Huang, Marianne. 2016. "Archival Biases and Cross-Sharing." *NTIK* 5 (1): 55–56.

Pollock, Griselda. 1998. "Modernity and the Spaces of Femininity." In *Vision and Difference: Femininity, Feminism and Histories of Art*, ed. Griselda Pollock, 245–256. London: Routledge & Kegan Paul.

Ponte, Stefano, Peter Gibbon, and Jakob Vestergaard. 2011. *Governing Through Standards: Origins, Drivers and Limitations*. Basingstoke, UK: Palgrave Macmillan.

Pörksen, Uwe. 1995. *Plastic Words: The Tyranny of a Modular Language*. University Park: Pennsylvania State University Press.

Proctor, Nancy. 2013. "Crowdsourcing—an Introduction: From Public Goods to Public Good." *Curator* 56 (1): 105–106.

Puar, Jasbir K. 2007. *Terrorist Assemblages: Homonationalism in Queer Times*. Durham, NC: Duke University Press.

Purdon, James. 2016. *Modernist Informatics: Literature, Information, and the State*. New York: Oxford University Press.

Putnam, Robert D. 1988. "Diplomacy and Domestic Politics: The Logic of Two-Level Games." *International Organization* 42 (3): 427–460.

Rabinow, Paul. 2003. *Anthropos Today: Reflections on Modern Equipment*. Princeton, NJ: Princeton University Press.

Rabinow, Paul, and Michel Foucault. 2011. *The Accompaniment: Assembling the Contemporary*. Chicago: University of Chicago Press.

Raddick, M., et al. 2009. "Galaxy Zoo: Exploring the Motivations of Citizen Science Volunteers." *Astronomy Education Review* 9 (1).

Ratto, Matt, and Boler Megan. 2014. *DIY Citizenship: Critical Making and Social Media*. Cambridge, MA: MIT Press.

Reichardt, Jasia. 1969. *Cybernetic Serendipity: The Computer and the Arts*. New York: Frederick A Praeger. http://cyberneticserendipity.com/cybernetic_serendipity.pdf.

Ridge, Mia. 2013. "From Tagging to Theorizing: Deepening Engagement with Cultural Heritage through Crowdsourcing." *Curator* 56 (4): 435–450.

Rieger, Oya Y. 2008. *Preservation in the Age of Large-Scale Digitization: A White Paper*. Washington, DC: Council on Library and Information Resources.

Rodekamp, Volker, and Bernhard Graf. 2012. *Museen zwischen Qualität und Relevanz: Denkschrift zur Lage der Museen*. Berlin: G+H Verlag.

Rogers, Richard. 2012. "Mapping and the Politics of Web Space." *Theory, Culture & Society* 29:193–219.

Romeo, Fiona, and Lucinda Blaser. 2011. "Bringing Citizen Scientists and Historians Together." Museums and the Web. https://www.museumsandtheweb.com/mw2011/papers/bringing_citizen_scientists_and_historians_tog.

Russell, Andrew L. 2014. *Open Standards and the Digital Age: History, Ideology, and Networks*. New York: Cambridge University Press.

Said, Edward. 1983. "Traveling Theory." In *The World, the Text, and the Critic*, 226–247. Cambridge, MA: Harvard University Press.

Samimian-Darash, Limor, and Paul Rabinow. 2015. *Modes of Uncertainty: Anthropological Cases*. Chicago: The University of Chicago Press.

Samuel, Henry. 2009. "Nicolas Sarkozy Fights Google over Classic Books." *The Telegraph*, December 14. http://www.telegraph.co.uk/technology/google/6811462/Sarkozy-fights-Google-over-classic-books.html.

Samuelson, Pamela. 2010. "Google Book Search and the Future of Books in Cyberspace." *Minnesota Law Review* 94 (5): 1308–1374.

Samuelson, Pamela. 2011. "Why the Google Book Settlement Failed—and What Comes Next?" *Communications of the ACM* 54 (11): 29–31.

Samuelson, Pamela. 2014. "Mass Digitization as Fair Use." *Communications of the ACM* 57 (3): 20–22.

Samyn, Jeanette. 2012. "Anti-Anti-Parasitism." *The New Inquiry*, September 18. https://thenewinquiry.com/anti-anti-parasitism/.

Sanderhoff, Merethe. 2014. *Sharing Is Caring: Åbenhed Og Deling I Kulturarvssektoren*. Copenhagen: Statens Museum for Kunst.

Sassen, Saskia. 2008. *Territory, Authority, Rights: From Medieval to Global Assemblages*. Princeton, NJ: Princeton University Press.

Schmidt, Henrike. 2009. "'Holy Cow' and 'Eternal Flame': Russian Online Libraries." *Kultura* 1, 4–8. http://rvb.ru/about/meta/schmidt-holy-cow-2009.pdf.

Schmitz, Dawn. 2008. *The Seamless Cyberinfrastructure: The Challenges of Studying Users of Mass Digitization and Institutional Repositories*. Washington, DC: Digital Library Federation, Council on Library and Information Resources.

Schonfeld, Roger, and Liam Sweeney. 2017. "Inclusion, Diversity, and Equity: Members of the Association of Research Libraries." *Ithaka S+R*, August 30. http://www.sr.ithaka.org/publications/inclusion-diversity-and-equity-arl.

Schüll, Natasha Dow. 2014. *Addiction by Design: Machine Gambling in Las Vegas*. Princeton, NJ: Princeton University Press.

Scott, James C. 2009. *Domination and the Arts of Resistance: Hidden Transcripts*. New Haven, CT: Yale University Press.

Seddon, Nicholas. 2013. *Government Contracts: Federal, State and Local*. Annandale, Australia: The Federation Press.

Serres, Michel. 2013. *The Parasite*. Minneapolis: University of Minnesota Press.

Sherratt, Tim. 2013. "From Portals to Platforms: Building New Frameworks for User Engagement." National Library of Australia, November 5. https://www.nla.gov.au/our-publications/staff-papers/from-portal-to-platform.

Shukaitis, Stevphen. 2009. "Infrapolitics and the Nomadic Educational Machine." In *Contemporary Anarchist Studies: An Introductory Anthology of Anarchy in the Academy*, ed. Randall Amster. London: Routledge.

Smalls, James. 2003. "'Race' As Spectacle in Late-Nineteenth-Century French Art and Popular Culture." *French Historical Studies* 26 (2): 351–382.

Snyder, Francis. 2002. "Governing Economic Globalisation: Global Legal Pluralism and EU Law." In *Regional and Global Regulation of International Trade*, 1–47. Oxford: Hart Publishing.

Solá-Morales, Rubió I. 1999. *Differences: Topographies of Contemporary Architecture*. Cambridge, MA: MIT Press.

Sollfrank, Cornelia. 2015. "Nothing New Needs to Be Created. Kenneth Goldsmith's Claim to Uncreativity." In *No Internet—No Art. A Lunch Byte Anthology*, ed. Melanie Bühler. Eindhoven: Onomatopee. http://artwarez.org/projects/GWYDH/SOLLFRANK-NothingNew.pdf.

Somers, Margaret R. 2008. *Genealogies of Citizenship: Markets, Statelessness, and the Right to Have Rights*. Cambridge: Cambridge University Press.

Sparks, Peter G. 1992. *A Roundtable on Mass Deacidification*. Report on a Meeting Held September 12–13, 1991, in Andover, Massachusetts. Washington, DC: Association of Research Libraries.

Spivak, Gayatri C. 2000. "Megacity." *Grey Room* 1 (1): 8–25.

Srnicek, Nick. 2017. *Platform Capitalism*. Cambridge: Polity Press.

Stanley, Amy D. 1998. *From Bondage to Contract: Wage Labor, Marriage, and the Market in the Age of Slave Emancipation*. Cambridge: Cambridge University Press.

Stelmakh, Valeriya D. 2008. "Book Saturation and Book Starvation: The Difficult Road to a Modern Library System." *Kultura*, September 4.

Stiegler, Bernard. n.d. "Amateur." Ars Industrialis: Association internationale pour une politique industrielle des technologies de l'esprit. http://www.arsindustrialis.org/amateur.

Star, Susan Leigh. 1999. "The Ethnography of Infrastructure." *American Behavioral Scientist* 43 (3): 377–391.

Steyerl, Hito. 2012. "Defense of the Poor Image." In *The Wretched of the Screen*. Berlin, Germany: Sternberg Presss.

Stiegler, Bernard. 2003. *Aimer, s'aimer, nous aimer*. Paris: Éditions Galilée.

Suchman, Mark C. 2003. "The Contract as Social Artifact." *Law & Society Review* 37 (1): 91–142.

Sumner, William G. 1952. *What Social Classes Owe to Each Other*. Caldwell, ID: Caxton Printers.

Tate, Jay. 2001. "National Varieties of Standardization." In *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, ed. Peter A. Hall and David Soskice. Oxford: Oxford University Press.

Tawa, Michael. 2012. "Limits of Fluxion." In *Architecture in the Space of Flows*, eds. Andrew Ballantyne and Chris Smith. Abingdon, UK: Routledge.

Tay, J. S. W., and R. H. Parker. 1990. "Measuring International Harmonization and Standardization." *Abacus* 26 (1): 71–88.

Tenen, Dennis, and Maxwell Henry Foxman. 2014. "*Book Piracy as Peer Preservation*." Columbia University Academic Commons. doi: 10.7916/D8W66JHS.

Teubner, Gunther. 1997. *Global Law Without a State*. Aldershot, UK: Dartmouth.

Thussu, Daya K. 2007. *Media on the Move: Global Flow and Contra-Flow*. London: Routledge.

Tiffen, Belinda. 2007. "Recording the Nation: Nationalism and the History of the National Library of Australia." *Australian Library Journal* 56 (3): 342.

Tsilas, Nicos. 2011. "Open Innovation and Interoperability." In *Opening Standards: The Global Politics of Interoperability*, ed. Laura DeNardis. Cambridge, MA: MIT Press.

Tygstrup, Frederik. 2014. "The Politics of Symbolic Forms." In *Cultural Ways of Worldmaking: Media and Narratives*, ed. Ansgar Nünning, Vera Nünning, and Birgit Neumann. Berlin: De Gruyter.

Vaidhyanathan, Siva. 2011. *The Googlization of Everything: (and Why We Should Worry)*. Berkeley: University of California Press.

van Dijck, José. 2012. "Facebook as a Tool for Producing Sociality and Connectivity." *Television & New Media* 13 (2): 160–176.

Veel, Kristin. 2003. "The Irreducibility of Space: Labyrinths, Cities, Cyberspace." *Diacritics* 33:151–172.

Venn, Couze. 2006. "The Collection." *Theory, Culture & Society* 23:35–40.

Verhoeven, Deb. 2016. "As Luck Would Have It: Serendipity and Solace in Digital Research Infrastructure." *Feminist Media Histories* 2 (1): 7–28.

Vise, David A., and Mark Malseed. 2005. *The Google Story*. New York: Delacorte Press.

Voltaire. 1786. *Dictionaire Philosophique* (Oeuvres Completes de Voltaire, Tome Trente-Huiteme). Gotha, Germany: Chez Charles Guillaume Ettinger, Librarie.

Vul, Vladimir Abramovich. 2003. "Who and Why? Bibliotechnoye Delo," *Librarianship* 2 (2). http://www.bibliograf.ru/issues/2003/2/33/2/8.

Walker, Kevin. 2006. "Story Structures: Building Narrative Trails in Museums." In *Technology-Mediated Narrative Environments for Learning*, eds. G. Dettori, T. Giannetti, A. Paiva, and A. Vaz, 103–114. Dordrecht: Sense Publishers.

Walker, Neil. 2003. *Sovereignty in Transition*. Oxford: Hart.

Weigel, Moira. 2016. *Labor of Love: The Invention of Dating*. New York: Farrar, Straus and Giroux.

Weiss, Andrew, and Ryan James. 2012. "Google Books' Coverage of Hawai'i and Pacific Books." *Proceedings of the American Society for Information Science and Technology* 49 (1): 1–3.

Weizman, Eyal. 2006. "Lethal Theory." *Log* 7:53–77.

Wilson, Elizabeth. 1992. "The Invisible Flâneur." *New Left Review* 191 (January–February): 90–110.

Wolf, Gary. 2003. "The Great Library of Amazonia." *Wired*, November.

Wolff, Janet. 1985. "The Invisible Flâneuse. Women and the Literature of Modernity." *Theory, Culture & Society* 2 (3): 37–46.

Yeo, Richard R. 2003. "A Solution to the Multitude of Books: Ephraim Chambers's 'Cyclopaedia' (1728) as 'the Best Book in the Universe.'" *Journal of the History of Ideas* 64 (1): 61–72.

Young, Michael D. 1988. *The Metronomic Society: Natural Rhythms and Human Timetables*. Cambridge, MA: Harvard University Press.

Yurchak, Alexei. 1997. "The Cynical Reason of Late Socialism: Power, Pretense, and the Anekdot." *Public Culture* 9 (2): 161–188.

Yurchak, Alexei. 2006. *Everything Was Forever, Until It Was No More: The Last Soviet Generation*. Princeton, NJ: Princeton University Press.

Yurchak, Alexei. 2008. "Suspending the Political: Late Soviet Artistic Experiments on the Margins of the State." *Poetics Today* 29 (4): 713–733.

Žižek, Slavoj. 2009. *The Plague of Fantasies*. London: Verso.

Zuckerman, Ethan. 2008. "Serendipity, Echo Chambers, and the Front Page." *Nieman Reports* 62 (4). http://niemanreports.org/articles/serendipity-echo-chambers-and-the-front-page.

Index