

Gabriel Hankins



The Cambridge **Introduction** to

Digital Humanities

*The Cambridge Introduction to
Digital Humanities*

How are the humanities transformed in the digital era? This book describes the reconstruction of the humanities after the largest shifts in the production of knowledge since the printing press. It addresses a wide range of disciplines, providing a history of those shifts and how humanists have responded to them. It argues that we are all digital humanists now, since we are all addressed by an era of pervasive digital research, reading, teaching, and learning. This book provides a history of digital transformations in the humanities since the first computers, defines the digital humanities through specific communities, conversations, tactics, and intersections, and poses the key questions of the field. Rather than particular technologies or tools, this *Introduction* centers on the lasting intellectual objects, methods, and concerns of the humanities from the late medieval period to the explosive growth of generative AI.

Gabriel Hankins is Series Coeditor for the Cambridge Elements in Digital Literary Studies, and lead editor of *Digital Futures of Graduate Study in the Humanities* (University of Minnesota Press, 2024). His first book is *Interwar Modernism and the Liberal World Order* (Cambridge University Press, 2019).

The Cambridge Introduction to Digital Humanities

GABRIEL HANKINS

Clemson University



CAMBRIDGE
UNIVERSITY PRESS



Shaftesbury Road, Cambridge CB2 8EA, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
New Delhi – 110025, India

Cambridge University Press is part of Cambridge University Press & Assessment,
a department of the University of Cambridge.

We share the University's mission to contribute to society through the pursuit of
education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781108839419

DOI: [10.1017/9781108990349](https://doi.org/10.1017/9781108990349)

© Cambridge University Press & Assessment 2026

This publication is in copyright. Subject to statutory exception and to the provisions
of relevant collective licensing agreements, no reproduction of any part may take
place without the written permission of Cambridge University Press & Assessment.

When citing this work, please include a reference to the DOI [10.1017/9781108990349](https://doi.org/10.1017/9781108990349)

First published 2026

Cover image: Lev Manovich, from Drawing Rooms series (detail), generated with Midjourney
and edited in Lightroom, 2023–2024.

A catalogue record for this publication is available from the British Library

Library of Congress Cataloging-in-Publication Data

Names: Hankins, Gabriel, 1981– author

Title: The Cambridge introduction to digital humanities / Gabriel Hankins, Clemson University.

Description: Cambridge ; New York : Cambridge University Press, 2026. | Series: Cambridge
introductions to literature | Includes bibliographical references and index.

Identifiers: LCCN 2026007386 | ISBN 9781108839419 hardback | ISBN 9781108964708
paperback | ISBN 9781108990349 ebook

Subjects: LCSH: Digital humanities | Humanities – Research – Data processing | Humanities –
Electronic information resources

Classification: LCC AZ105 .H36 2026

LC record available at <https://lccn.loc.gov/2026007386>

ISBN 978-1-108-83941-9 Hardback

ISBN 978-1-108-96470-8 Paperback

Cambridge University Press & Assessment has no responsibility for the persistence
or accuracy of URLs for external or third-party internet websites referred to in this
publication and does not guarantee that any content on such websites is, or will remain,
accurate or appropriate.

For EU product safety concerns, contact us at Calle de José Abascal, 56, 1º,
28003 Madrid, Spain, or email eugpsr@cambridge.org

*To colleagues, friends, and students at the University of Virginia,
the University of Illinois system, Victoria, Berkeley, and Clemson
University.*

Contents

List of Figures	<i>page</i> viii
Acknowledgments	ix
Introduction: Defining the Digital Humanities	1
1 The Revolutions of the Word	12
2 Histories: Curation, Preservation, Loss	36
3 Transformations	60
4 Sight, Sound, and Sense-Making	85
5 Critique and Construction	105
Notes	124
Bibliography	158
Index	182

Figures

1.1	“Système Figuré des Connoissances Humaines” (1752), developed by Diderot and d’Alembert, 1752. Photo: The Picture Art Collection/Alamy.	page 25
2.1	Charles-Joseph Minard’s 1869 “Carte Figurative,” showing the number of men in Napoleon’s 1812–1813 Russian campaign army and the temperature they encountered on the return path. Photo: Blueeee/Alamy.	46
2.2	Detail from “Quantifying Digital Humanities,” 2012. Melissa Terras/UCL Centre for Digital Humanities. Source: Melissa Terras’ Blog. http://www.ucl.ac.uk/infostudies/melissa-terras/DigitalHumanitiesInfographic.pdf . 2012. Accessed July 15, 2025.	58
3.1	Jan van Eyck, “Saint Jerome in His Study,” ca. 1435, oil on linen paper on oak panel. Detroit Institute of Arts, City of Detroit Purchase, 25.4.	62
3.2	職專巡撫 (“Assigned the post of Provincial Governor”) in “Ming Dynasty Activities of Minister of War Wang Qiong.” National Museum of China. Early sixteenth century. Photo: The Picture Art Collection/Alamy.	64
4.1	“Emblem 2: Of the Secrets of Nature.” Detail from Tara Nummedal and Donna Bilak, eds., <i>Furnace and Fugue: A Digital Edition of Michael Maier’s Atalanta fugiens (1618) with Scholarly Commentary</i> . Creative Commons License CC BY-NC-ND 4.0.	100

Emojis used under a creative commons licence, © X Corp. Full details: Copyright 2026 X Corp and other contributors

Code licensed under the MIT Licence:

<http://opensource.org/licenses/MIT>

Graphics licensed under CC-BY 4.0:

<https://creativecommons.org/licenses/by/4.0/>

Acknowledgments

I owe an enormous debt to all my teachers and interlocutors in the Digital Humanities over the last two decades. I thank the Office of the Provost and the Deans of the College of the Arts and Humanities at Clemson University for research leaves crucial to this project. This book comes out of a long apprenticeship beginning at the University of Virginia's Scholars' Lab, where I learned from Bethany Nowviskie, David McClure, Jeremy Boggs, Alex Gil, and many others. The graduate program in English at Virginia was a crucial point of departure both for the institutionalized Digital Humanities and for my training: Jerome McGann and Johanna Drucker defined the field for us there, and David Golumbia taught us to read it critically. Thank you to Scott Selisker, Karen Leick, Mark Canuel, Alison Booth, Scott Weingart, Michael Gavin, Jonathan Reeve, Meredith Martin, Anna Preus, Shawna Ross, Claire Battershill, Matthew Kirschenbaum, Alan Liu, Laura Mandell, Ted Underwood, Julie Thompson Klein, Ray Siemens, and Anna Kornbluh, essential interlocutors for this project. Thank you to my colleagues and students at the University of Victoria, the University of Virginia, the University of Illinois Chicago, the University of California, Berkeley, and Clemson University.

This book was deeply refined, queried, and restructured by a brilliant interlocutor and developmental editor, Katina Rogers. It was enabled by research time provided to me by Clemson University and by my colleagues in the English Department at Clemson. My work there is indebted to the academic workers whose labor creates and sustains my freedom to write. My freedom to write is supported as well by our professional organizations, by the work of the American Association of University Professors on academic freedom, and by our administrative staff and faculty, including Emily Hager, Katlyn Krumrey, Keri Crist-Wagner, Susan Chastain, Bryce Toole, Camille Cooper, Susanna Ashton, Will Stockton, Erin Goss, Megan Eatman, Michael LeMahieu, and Nicolas Vazsonyi.

Particular thanks to Ray Ryan and Biju Singh at Cambridge University Press. I have learned a great deal from my co-editors at Cambridge,

Minnesota, and elsewhere: Kath Bode, Adam Hammond, Anouk Lang, Simon Appleford, and Matthew Hannah.

My ability to write in a sustainable way owes everything to Karen Kettnich, Mary Ellen Griffin, and family and friends in Asheville, North Carolina. I write on the unceded land of the Cherokee Nation, and of the ᏍᏏᏉᏯ (Eastern Band) Cherokee who inhabit it now.

Introduction

Defining the Digital Humanities

Here is a question all students and researchers in the humanities are faced with now: how do I think about the digital transformation of my field, my profession, and the entire process of search, discovery, mediation, and transmission of knowledge? How should I understand the incorporation of the human cultural inheritance into digital models, chatbots, and platforms? These questions correctly assume that the digital turn in global society and economy matters to everyone, across fields and specializations, between and within established boundaries of knowledge production. In this framework, we are all digital humanists now. We all need to negotiate the shifting boundaries of the largest formal shifts in the production of knowledge since hypertext (or the printing press, depending on your media-historical frame). We all experience the world of monetized attention, the algorithmic mediation of desire, the artificial generation of common sense, the era of digital immediacy and of platform capitalism.¹ This is the primary framework of this book: all humanists are digital humanists, as we are all confronted with the transformations in the way we research, teach, learn, and know now. But how we confront these changes, in what mode, with what projects, are all open questions. (This is not the usual way that the story of the Digital Humanities has been told; far more common is a story based on institutional and infrastructural history that I discuss in Definition 1.)

This introduction understands particular and concrete histories of the Digital Humanities as always involved in the larger common story of our collective mediation within a digital culture, economy, and society.² The larger story is both simpler and more complex than particular institutional histories. How humans make knowledge in an era of pervasive digital mediation is a central subject of this book. We will take up the question of digital mediation and historical mediation at more length in Chapters 1 and 2.

This introduction is written to address two intersecting sets of questions, posed by the two kinds of audiences we often have in the field. The first audience is new entrants and students of digital humanities, at any level, who

want to know the concrete history of the digital humanities community, their projects, and their major debates and questions. The second audience is already engaged in the digital mediation of knowledge, scholarship, culture, and economy, and wants to better understand the present and future of that engagement. But all of us are both beginners and experts in different ways and at different times in relation to these histories. We are all digital humanists now, because we are all addressed by pervasive digital mediation of our work and culture, yet we do not fully grasp the material history that led to our present condition.

Toward a fuller understanding, this introduction sets out the major competing definitions of the digital humanities, along with many of what Alan Liu has called its major “contact zones” and boundary cases: Media Studies, Science and Technology Studies, Digital History, Media Archaeology, Cultural Analytics, and other overlapping intellectual fields.³ The purpose of these definitions, and of this introduction more generally, is to provide those entering the field with usable histories, definitions, resources, and genres of practice – not to solidify “DH” as a discipline for all time, but to give the resources needed to engage the central practices and discourses of its many intersecting conversations. I begin with Digital Humanities (in capitals) as self-identifying “community and infrastructure” (Definition 1); then digital humanities (lower cased) as an expansive conversation on methods, objects, and tools (Definition 2). These initial definitions are fairly well established. I argue for “digital humanist” as a universal condition of humanities practice under regimes of digital mediation, and digital humanities as “tactic and strategy” for a renewed humanist praxis engaged with that digital mediation (Definition 3), and “global digital humanities” as a set of geographic and epistemological intersections, boundaries, and contact zones (Definition 4). “Digital humanist” is thus oriented toward our shared position within a digitally mediated political economy and academy. The fourth definition points to the particular ways in which peripheries, positions, dialects, and differences within digital humanities practice in fact define every aspect of the field. The tension between the universal and particular definitions of digital humanities is essential to the story this book wants to tell: We are all digital humanists now, but what that means in any particular case differs across all the boundary lines, dialects, and objects of the global digital humanities.

Definition 1: Digital Humanities as Community and Infrastructure

In disciplinary terms, first of all, the Digital Humanities means the self-identified community of scholars and learners interested in building digital

knowledge infrastructures in the humanities, modeling humanities objects and ways of knowing, and creatively employing digital tools to enhance and transform familiar disciplinary tasks. This self-consciously “DH” genealogy will be capitalized throughout, to indicate the specificity of its history and development. Digital Humanities arises in the Anglophone, Italian, and German scholarly world out of a variety of fields, retrospectively named “Humanities Computing,” and designates a community with a history stretching now over some six decades. According to the origin story of Humanities Computing, the first major project in the field was the *Index Thomisticus* of Father Roberto Busa, a massive concordance of Thomas Aquinas’s words that ran from 1949 to the late seventies, eventually producing fifty-six printed volumes (as we will see in Chapter 1). A variety of other points of origin have been offered by digital humanists: Rachel Sagner Buurma and Laura Heffernan point to Josephine Miles’s mid-twentieth-century study of the “phrasal forms of the poetry of the 1640s, 1740s, and 1840s” as an alternative origin for computational reading, for example.⁴ Edward Vanhoutte offers, as the earliest recorded digital humanities idea, a note by Ada Lovelace in 1843 on the potential use of Babbage’s analytical engine for the composition of “elaborate and scientific pieces of music of any degree of complexity or extent.”⁵ These and other points of origin are offered throughout this volume, as where we begin the story will depend on what story we want to tell.

Whatever its origins, histories of “Humanities Computing” agree on the essential disciplines, topics, and venues that constituted the field. Humanities Computing arose largely out of disciplines interested in texts and archives, as the conference papers and affiliations associated with its key conferences demonstrate (the Association of Literary and Linguistic Computing and Association of Computers and the Humanities conferences begun in 1970 and held together since 1989).⁶ Researchers were overwhelmingly concerned with texts, textual markup, and the computational treatment of words, documents, and digital archives.⁷ Humanities Computing was hardly monolingual, with a variety of prominent contributions from Western Europe, yet papers in the field were dominated by the United States, the United Kingdom, and Canada.⁸ Professional affiliations were largely in English departments, linguistics, and the modern languages, but the biggest conference affiliation of all in 2005, a pivotal year just before the shift to “Digital Humanities,” was with schools of Library and Information Science. The professional needs of librarians, archivists, and curators working in digital environments still drive much of the conversation in the field, a fact that has produced both rich collaborative projects and considerable professional tension.

That disciplinary past is a necessary prelude, because the community of scholars who identified with Humanities Computing first and Digital Humanities later built much of the essential institutional and disciplinary infrastructure of the field (in parallel with the development of Digital History, recounted in Chapter 2). That disciplinary infrastructure began with the first associations and conferences in the field, with the Literary and Linguistic Computing Center at Cambridge (1964), the subsequent Association for Literary and Linguistic Computing (1973), then the Association for Computers and the Humanities in the US (1978), and later extended to large-scale standards for text encoding (e.g. the Text Encoding Initiative), which has now produced a host of humanities-specific tools, platforms, and archival techniques. The Alliance of Digital Humanities Organizations umbrella group now claims seven constituent organizations and a variety of Digital Humanities centers across the world. What we mean by “Digital Humanities” is in large part what this community of nearly a half century has produced and is producing. I expand on that disciplinary history and its infrastructural legacy in Chapter 1.

Definition 2: Conversations and Objects

The second definition is broader: the digital humanities (which I will leave uncapsalized throughout) designates the conjunction of humanistic objects and interests with digital tools, methods, languages, and organizations. Descriptive rather than prescriptive, open to all entrants, this form of “big-tent DH” addresses itself to all humanists concerned with the digital transformations of their fields. Digital humanities in this sense, common after the 2006 rebranding of the field, refers to an extremely broad set of intersecting conversations, practices, and debates, but remains tied to particular objects and interests, as we shall see throughout the following chapters.

The simplicity of this redefinition belies its radicality. If “digital humanities” addressed all humanists focused on digital objects, methods, or cultures, as was claimed around the turn of the twenty-first century, it addressed a vast and motley crew of digital historians, archivists, librarians, media theorists, archaeologists, art historians, classicists, computational linguists, philosophers, philologists, theologians, editors, pedagogues, and publishing-studies types, not to mention practitioners of digital arts. And, in fact, and in various institutional contexts, this sometimes actually occurred. Digital humanities centers and initiatives really were trying to rebuild the Tower of

Babel, reuniting long-divided intellectual and interpretive communities around at least partially shared objects and goals.

And so, of course, the disciplinary gods had to strike these interdisciplinary edifices down. Much of the controversy over the development of the Digital Humanities as institutionalized community arises from transgressions against the laws against intellectual reproduction outside the boundaries of an established community. The problem is not “interdisciplinary” work in the humanities, which usually means work that addresses novel scholarly objects with familiar disciplinary methods and tools, but rather genuinely transdisciplinary work, which confronts disciplinary objects of study with novel methods and interpretive paradigms.⁹ Because academics in particular identify so strongly with interpretive communities founded on particular methods, transdisciplinary developments have been difficult to assimilate, often giving rise to entirely new intellectual communities (like Cultural Analytics, as we will see in Chapter 3). Interdisciplinary and transdisciplinary scholarship works entirely against the academic imperative to specialize oneself through a particular object, archive, and method – the social history of the British penal system in the late seventeenth century, as read through a deep understanding of the Proceedings of the Old Bailey prison, to take a prominent example – and so can lead to work that doesn’t enter into the historiography of a particular discipline, or the conversation of a subfield.¹⁰

The digital humanities as an interdisciplinary conversation, and sometimes as a transdisciplinary practice, addresses a potentially vast range of subjects and communities, from digital pedagogy to archaeology. In practice, the range of subjects often remains constrained by the institutional developments fundamental to Digital Humanities Definition 1. Nonetheless, all the institutional forms associated with the digital humanities have been radically challenged by the inclusion of an enormous range of intellectual fields and energies once exterior to the field, including digital rhetoric, new media studies, cultural studies, and a variety of politically minded critical methods. Equally fundamental was the uneasy union of textual disciplines with Digital History, once bracketed with purely quantitative historical studies or the “new economic history,” and now part of an expanded notion of the digital humanities conversation (see Chapter 2, “Histories”).¹¹ Thus, the digital humanities conversation – and, to a lesser extent, the Digital Humanities as institutionalized community – expanded after 2006 in at least two transdisciplinary directions at once: toward the social sciences and computer science, particularly through work in quantitative history, statistics, and computational social and information science; and toward the politically inflected work associated with critical race studies, work concerned with decolonial and Indigenous

knowledges, feminist data science, and new media studies. Such completely different epistemic models had to diverge at many points. And indeed they have, in a series of splits and new formulations that have produced new intellectual communities and projects. Fissures in the digital humanities conversation opened in particular over the question of Digital Humanities as a product of the Global North not open to peripheral digital humanists, and separately over “computation” as the central element of digital humanities practice: There is now a separate “Conference on Computational Humanities Research” that seeks to refocus on computational methods and approaches, along with new digital humanities volumes and programs that focus on the quantitative and the computational.¹² We will mark some of these moments of self-differentiation through the fundamental questions or approaches that divide research communities.

Definition 3: Digital Mediation, Tactic, and Strategy

This definition begins with the universal condition with which I began: We are all digital humanists now, insofar as we are all addressed by a moment of pervasive digital mediation. We encounter the history of human mediation every time we pick up a screen, as Bernard Geoghegan notes in his account of the origins of the computer screen in radar surveillance.¹³ That means that being a digital humanist is a near universal condition, and we all have something to say about it (and it says something about all of us). All of us work under conditions of pervasive digital mediation and often surveillance; nearly all of us research, teach, or learn through institutional databases and learning managements systems; and all of our work – along with the shared symbolic commons found on the open web – is now the raw material for machine learning of various kinds. But how we respond to our shared condition as digital workers, teachers, students, and researchers in the humanities is a matter of tactics and strategy. One tactic is refusal: refuse digitization, refuse the enclosure of the linguistic commons through privatized large language models, refuse the digital surveillance of our lives and the commodification of our attention. Jonathan Crary has perhaps most clearly articulated this tactic in *Scorched Earth: Beyond the Digital Age to a Post-capitalist World*: “Pathways to a different world will not be found by internet search engines. Rather, what is needed is exploration and creative receptivity to all the resources and practices developed over the long history of human societies for thousands of years.”¹⁴ Working digital humanists have largely chosen adaptation, innovation, and repurposing of the tools both of the humanities

and of the contemporary digital world, contesting and critiquing that world rather than refusing the contemporary technosocial world entirely. But strategic refusal remains an important strategy in both research and scholarship. Theodor Adorno and Max Horkheimer's critique of instrumental rationality, the use of infinitely rational means for increasingly irrational and destructive ends, has never been more urgently needed.¹⁵

Matthew Kirschenbaum and Rita Raley have proposed distinct versions of a tactical definition of "Digital Humanities" as a term used to win resources, influence, and allegiances within an age of pervasive digital mediation.¹⁶ Kirschenbaum notes that, at the turn of the twenty-first century at least, "digital humanities [was] a term possessed of enough currency and escape velocity to penetrate layers of administrative strata to get funds allocated, initiatives under way, and plans set in motion."¹⁷ Digital Humanities is, in this definition as in others, a political term, an attempt to contest the distribution of resources, though not necessarily one with a determinate politics. The sheer number of tactical institutional and disciplinary interests is one reason for the semiotic multiplicity of the term itself. At one institution "Digital Humanities" has been used to win resources for studying the letters of Alexander von Humboldt; at another, it supports a game studies center; at yet another, the study of "network culture."

As Rita Raley has argued in her differently tactical approach to the Digital Humanities, digital humanists need to be particularly self-aware and self-critical in relation to information technologies and the "universities of excellence" in which they are embedded. "We ought," she writes, "to be marshalling the full critical, philosophical, and rhetorical resources at our disposal in order to think about the very universities in which we are embedded, their organizational structures, instrumentalities, and governing ideas."¹⁸ A "critical digital humanities," for both Raley and Kirschenbaum, would thus attend to the protocols, standards, digital forms, and technological mediations that structure work in the university more generally, asking how the particular tool or instrument at hand reinforces, resists, or colludes with dominant ways of knowing – or threatens to discredit expertise and authority itself, in the case of generative AI.¹⁹

Recent work in the field has undergone a tactical turn, a consensus that work in the digital humanities, in either of the two previous definitions, should be clearly coupled with intellectual, political, or disciplinary goals.²⁰ Thus, we have seen expansion of work in public humanities, feminist data science, decolonial DH, and the branching off of work in "cultural analytics" and "computational humanities" from work in media archaeology, media studies, and digital philology. All these terms represent ways of parsing the

digital humanities community into tactical groups, oriented toward different goals and frameworks. These groups either remain participants in the larger conversations and communities of DH definitions 1 and 2 or depart the conversation entirely in favor of new intellectual terrain. Meanwhile, the early twenty-first century turn to digital “tools and methods” has now transitioned to a general shift in the entire knowledge economy, as the different varieties of machine learning and artificial intelligence begin to permeate both the general economy and specific academic knowledge ecologies.

For all groups involved in these redefinitions, the question is within what strategy or for what goal “Digital Humanities” is deployed. Some manifesto writers have defined Digital Humanities in the hortatory mode, announcing it as a tactical field that must be employed to advance the goals of the humanities themselves.²¹ These goals include the preservation of the historical and cultural memory, the incitement to critical analysis, the parenthesis of aesthetic beauty, the continuing necessity of cultural critique, and the reorientation of our lifeworlds through the imaginative encounter with the experiences, words, and standards of others. The tactical turn in the Digital Humanities serves as one terrain for the self-conscious reflection and elaboration on humanistic thought in the digital era, on its conditions of possibility, and on the conditions both of its freedom and its unfreedom. The digital humanities in this sense exist as a space of possibility within which different strategic goals and aims can be imagined: Some of these will be marked out in Chapters 3 to 5, on transformation, sense-making, and critique.

Definition 4: Intersections, Boundary Objects, Contact Zones

Finally, digital humanists locate themselves at specific intersections: the intersection of race, gender, class, and the digital economy; the intersection of geography and the global digital economy; the intersection of disciplines and research questions; the intersection of language, history, and colonial legacy; the intersection of intellect, politics, and embodiment. Particularly in North American contexts, the language used to describe these intersections draws on the practice of intersectionality developed in Black feminist and critical race studies.²² Intersectional work in the digital humanities describes its subjects and effects as situated in particular racialized, gendered, colonized, classed, abled, and embodied sites. The point of such analysis is not to tick off a laundry list of identities, but, as with the work of Stuart Hall, to locate our work within a complex system still “structured in dominance.” Outside North

America a different sense of intersectionality might obtain: the inevitably contested political and disciplinary intersections of digital and national cultures, the inequalities between colonized and neocolonial states, the intersections between languages and disciplinary practices, between Afro-Caribbean and African Francophone *humanités numériques* – contact zones subject to what Brent Hayes Edwards calls the *décalage* (unevenness) of translation even within shared diasporic experience.²³

Intersections, boundary objects, contact zones: These are all spatial metaphors that locate the stakes and terrain of contestation.²⁴ The metaphor of the “intersection” in particular should imply attention to the conjunction of a particular position with the structural forces that bear on that position. Those forces – including the force of the ongoing digital transformation and mediation of capitalism, our politics, our language, and our everyday life – will always be unevenly felt, and their results will not always be predictable across national or linguistic contexts. One purpose of an intersectional analysis is to identify, when speaking from a position of privilege such as a *Cambridge Introduction*, the locations of oppression and dispossession implicated in that position. To compass Mansfield Park, as Edward Said demonstrated, we must travel to Antigua. When we write from the Anglophone centers of the scholarly world to address areas of dispossession, we do not claim to speak for the oppressed. Rather, we locate the aporias in our own spatial representations, gaps in our cognitive maps, and the fundamental tensions between the abstractions required for digital work and the cultural, linguistic, and historical density of humanist objects. As we do so, we must foreground the contradictions entailed in humanist procedures, the lapses that inhabit our thinking, the reductions that enable an analysis. Intersectional work in this sense points to the significant gaps, contradictions, and silences that haunt digital abstractions and archives.²⁵

This introduction outlines many of the contested and multiple origin stories of the digital humanities, beginning with the philological disciplines oriented toward texts and histories, but also indicating the richness and diversity of digital humanities as practiced around the world. My purpose is not just to affirm that richness, but to argue that digital humanities is happening along all the many folds between the past and present that constitute the work of the humanities. This *Introduction* examines the ways that particular knowledge communities constitute their own subject matter, with what limitations, in what social and political intersections, through what boundary objects and divisions. The constant tension of these particular accounts is with the structural and systemic shifts in the economies and societies with which I began. If we are all digital humanists now, it is largely

because we work, learn, and teach in an economy largely mediated by what Nick Srnicek and others call “platform capitalism,” on learning platforms and devices not entirely of our making, in an era of intellectual and cultural production increasingly mediated by generative AI.²⁶ These forms of digital mediation matter to every intersection of the humanities now.

What This Introduction Does, and What It Doesn’t Do

The four definitions given earlier will run throughout this account of the past, present, and futures of the digital humanities. My approach in this introduction draws on media theory, feminist science and technology studies, sociological studies of critical method, and a historicist account of meaning-making in the humanities.²⁷ I approach the humanities as a set of material knowledge-making practices conditioned by specific institutional conditions, histories, and disciplinary formations. Whenever possible I look for examples outside my own formation in Anglophone literary and cultural studies, and in library-based collective projects – an intellectual formation that nonetheless inevitably conditions my account. Digital Humanities as a self-conscious and self-identifying community, as in Definition 1, necessarily shapes the history and future of the subject. But the broader histories and futures of digital humanities in its tactical and intersectional senses extend far beyond that conversation, along every disciplinary fold of systemic inquiry into the human past and present.

What this introduction does not do is comprehensively cover coding languages, tools, platforms, and research infrastructures in the present. The difficulty with tools and platforms, however sophisticated and long-lived, is that the capacities and affordances of the tool begin to determine the questions that can be asked and the answers that will be found. This introduction will instead focus on boundary objects (like the library), working materials (like the dictionary and encyclopedia), research environments (like the study and the lab), affordances (what digital media enable and constrain), and material practices that unite and divide work in the humanities, placing those within a historical narrative and media history. There are excellent practical guides to teaching with digital humanities, like Claire Battershill and Shawna Ross’s *Using Digital Humanities in the Classroom* (2nd ed., 2022). Good introductions to humanities coding exist for R, a standard language for social-science and statistical fields, and for Python, a common and very adaptable programming language.²⁸ Subject-specific introductions, like Jennifer Guiliano’s *A Primer for Teaching Digital History* (2022) and Emma Annette Wilson’s *Digital Humanities for Librarians* (2020), also are highly recommended, and will be drawn on throughout.

Finally, this introduction assumes that any reader has a particular set of questions and interests at hand. Rather than an exhaustive history of activities, disciplines, and projects, then, this book puts research questions, problems, and resources first – often in the form of the inset boxes, like Box I.1, that point to resources for more specific communities, discussions, and debates. How do we do things with words and texts, in the disciplines devoted to textuality and language (Chapter 1)? What is the deep history of our fields? What do we want to preserve, even as it transformed and remediated by that preservation? What is lost in those acts of preservation (Chapter 2)? What should we change, and how? How do we transform the primary materials of our disciplines (Chapter 3)? How might we see, hear, and feel our materials differently (Chapter 4)? What has been left out? How do we know what we know, and what are the conditions and limits of that knowledge (Chapter 5)? These fundamental questions and problems structure this book, even as they constitute the history of humanist technologies of knowing.

BOX I.1 Where should I begin? An introduction to other introductions

Many good introductions exist for the component parts of the Digital Humanities: The most important resources here are the Blackwell edited collections *A Companion to the Digital Humanities* (Schreibman, Siemens, and Unsworth, 2004), and *A New Companion to the Digital Humanities* (Schreibman, Siemens, and Unsworth, 2016), along with *A Companion to Digital Literary Studies* (Schreibman and Siemens, 2007) and *Digital Humanities* (Burdick, Drucker, Lunenfeld, Presner, and Schnapp, 2012). *Defining Digital Humanities* (Terras, Nyhan, and Vanhoutte, 2013) provides essential historical background and key texts in the transition from Humanities Computing to Digital Humanities, as do the oral histories in *Computation and the Humanities* (Nyhan and Flinn, 2016). Patrik Svensson and David Theo Goldberg's *Between Humanities and the Digital* (2015) usefully surveys and deprovincializes the conversation. A good German-language introduction to key issues and technologies is Jannidis, Kohle, and Rehbein, *Digital Humanities: Eine Einführung* (2017), and a parallel Italian introduction is Fiormonte, Numerico, and Tomasi, *The Digital Humanist: A Critical Inquiry* (2015). Adam Crymble's *Technology and the Historian* (2021) provides essential history on Digital History.

Recent shifts in the field are registered in the Debates in Digital Humanities volumes at the University of Minnesota Press, a hybrid print/digital book series available online for query and comment. The "Humanities Commons" initiative collects a large group of practitioners and much shared scholarship in its "Digital Humanities" group: <https://hcommons.org/groups/digital-humanists/>. The keywords in *Digital Pedagogy in the Humanities* (Davis et al., 2020) are a good place for finding a way into a conversation, as Brandon Walsh describes in "Finding a Way In" (2023) (see Chapter 3).

The Revolutions of the Word

What's in a Word?

This chapter considers the fields articulated primarily through words, texts, books, and libraries, and tells the story of their contribution to digital humanities research now. All the fields we will examine center on words and texts, in some combination: (1) words in the right order, (2) words in a printed book, (3) words in context, and (4) words in libraries and databases. Digital humanities originated in large part as a conversation about novel ways of investigating and representing words, through a series of disciplinary transformations – from textual criticism to philology to digital editorial theory to media theory and Cultural Analytics – which we will begin to outline in this chapter, while remaining focused on the revolutionary technologizing of the word that constitutes the history of the humanities more broadly. The chapter begins small, with the word as a unit, and then moves to more complex tools and systems for thinking with words, from encyclopedias to libraries, concordances to word embeddings. A question throughout will be what these different media forms enable and what they constrain. “Origin stories” and “fundamental questions” in the digital humanities are presented in boxes, as a reminder of the different ways we might tell the story of the intimate relationship between the humanities and digital technologies. The primary story of the relationship between the humanities and technology is the rediscovery of the new within the old, the past within the present. I will begin that story with what Walter Ong called the “technologizing of the word” across its many media forms.¹

Begin at the beginning: what is a word? The answer seems obvious: a word is the smallest separate unit of language, and we know it when we see “it.” But what about contractions, compounds, hyphenates (son-in-law), grunts, and clicks? Are these words, or something else? Is a word a set of letters on paper, or a continuous sound, or the concept produced in our minds when we see those letters combined? Is it a living thing or an immutable mark in the world?

The answer to this question gives us an initial set of boundary terms: Indeed, a word can be studied as one of the original boundary objects through which disciplines define what they do, and what they do not.² What we mean by “word” differs across digital literary and linguistic studies, philology, textual editing, and the parallel computational field of natural language processing (NLP). Let’s break down what we mean by a “word” across these fields:

- (1) Linguistics: While there’s no universal definition, linguists often define a “word” as the *smallest conventional unit of speech (and/or writing) that carries meaning*, whether it stands alone or in combination with other words, and whether or not it is divided by spaces (as in English). Words are further divided into “morphemes” that are the smallest unit of grammatical function: Examples are the “un” in negation (“un-happy”) or the “s” in pluralization (the “s” in “cats”), as well as the standard “root” morpheme to which bound morphemes are affixed (“happy”; “cat”). At the level of sound, words and morphemes are divided into *phonemes*: meaningful sounds that differ from other sounds in a recognizable way within a given language (like the “uh” in “unhappy”). In written English, a sequence of letters composes a *grapheme* (like the “ph” in philology) that represents a phoneme (the sound also known as “f”).
- (2) Computational linguistics: In English-language computational processes like those developed by researchers in NLP, a “word” is often treated formally, as a discrete sequence of characters separated by whitespace or punctuation. Words are further broken down, for the purposes of analysis and modeling, into *tokens*: character units roughly corresponding to the morphemes discussed earlier, but also including punctuation and other nonverbal characters like the whitespace token (“!” and “”). The first step in digital analysis is thus often tokenization, in which standard texts are broken down into meaningful characters. Large language models (LLMs) and generative AI are built out of these tokens.
- (3) Semiotics and structural linguistics: In the classic structural study of language as a sign-making system, as in the Swiss linguist Ferdinand de Saussure’s influential *Course in General Linguistics* (1916), words are often divided into the *signifier* (“sound-image”) and *signified* (“concept”): “The linguistic sign unites, not a thing and a name, but a concept and a sound-image. The latter is not the material sound, a purely physical thing, but the psychological imprint of the sound, the impression that it makes on our senses.”³ “Signifiers” are always intimately linked to the “signified” within a “sign” like “tree,” for the tradition that comes after

Saussure; signifiers differ from each other systematically at the phonic level, as a set of meaningful differences between phonemes, but also at the level of the signified, where “tree” is defined through its difference from “bush” and “plant,” as well as its linkage to particular examples like “oak” and “pine.” The idea of language as a map of *meaningful differences* has also become newly useful in the context of LLMs, where sequences of words are predicted and generated through a statistical map of their relationship to other words (the “weights” in LLMs).

One key point across these examples is that each individual element of a language, no matter how small, is always related to all the other elements of the language. This is one sense in which each element of language is *mediated* by all the other possible elements: “tree” is only meaningful in its phonemic difference from “three” and “try,” and semantically in distinction from “bush” and “oak.” One token is likewise “meaningful” in LLMs only in relation to the corpus or training data of which it is a part, in relation to other words and patterns of words provided by the “weights” of the model. This notion of meaning as mediation, in which one part is only meaningful in relation to the other elements of the system, will be fundamental to the following chapters.

Mediation: Love and Clicks

What do we mean by “mediate”? Mediation means, first of all, that the smallest, most immediate word, sound, or token is only meaningful in relation to the other words, sounds, or tokens within a larger whole like a language, a textual corpus (collection of written texts), or a society. Let’s take an everyday case of digital mediation as a first way into the idea, in an immediate, ordinary, repetitive act of everyday digital life: the “love/like” emoji (❤️, 👍, etc.).

Clicking ❤️ might seem to be the most self-evident act in the world, the barest minimal registration of a feeling or affect. What could be more personal and immediate, and less meaningful in any other way? I like what I like, and I know it when I see it, I click it without conscious thought: What we like seems both transparent and tautological. Yet why do we like *this* and not that, and what could be the basis of our liking? What do we mean when we ❤️ a text, a status, a post, a novel, a dress, a movie trailer? This question connects the fields of media studies, internet studies, and platform studies, all of which study the concrete ways that digital platforms now shape a great deal of our

mental life. The question also connects to the field of aesthetics – a field of inquiry we could reframe as the philosophy of what and how we like.

What happens when we “like” online is at once personal, political, and material. Clicks register locally as a digital pulse, a stream of ones and zeros registered in local memory, then transmitted to the vast “cloud” servers where most of the digital economy is located, in enormous racks of silicon chips, circuitry, LLMs, and massive amounts of water for cooling equally enormous releases of energy. Those “cloud servers” are composed of materials both local and distant: the energy from the local gas plant; cobalt, tantalum, and rare minerals from the Congo; LLMs fabricated from huge corpora of everyday speech and privatized in Silicon Valley; chips fabricated in enormous factories in Taiwan.⁴ All of these places are zones of conflict and violence, at different scales and of different kinds. Every click – even every unsent message – is associated with a digital identity identifier by the major commercial sites, which in turn is used to sell our information on every other website and web service, within seconds. Our likes are the product, and what we like is what will be sold. Those identifiers, even without knowing names and faces, are organized around our web of close associations, the network of friends, family, partners; their search histories, queries, chats, preferences, and affiliations are connected to ours. The entirety of this economy of “likes” – or clicks, swipes, taps, or any preconscious point of entry into the digital world – is linked tightly to the real-world economy of selling, mining, burning oil, extracting personal information, and profiting from that extraction. That world is the one that produces – every second – the devices, networks, and software that enable us to like a message, video, or text.

At the same time as the ❤️ mediates the entire political, economic, and sociotechnical world around us, it also inescapably indicates an act of aesthetic judgment, a judgment about how and what we *should* like. The “like” is a minimal act of aesthetic judgment, just the barest indication of attachment or approval, ready to shift and change with the next click. We are not declaring our liked objects beautiful, sublime, or deserving of universal acclaim, as philosopher of aesthetic judgment Immanuel Kant would have us do. Yet we do make claims on the way the world should be presented and ordered. This dress, not that dress; this angle, not that one; this composition and position. This constant process of recursive aesthetic thinking can now be automated with a brief prompt to an image-generation site that generates ten improved versions of a photo, through algorithms perfected by many other acts of liking and unliking.

The way that the immediacy of the “like,” the brief pleasure of the click, is produced by a whole extended network of economic and political relations,

quantified emotions, and affective algorithms, I will call *digital mediation*. This is a materialist and economic version of Hegel's essential insight, which can be paraphrased thus: "The immediate is mediated."⁵ Every immediate "like" is actually coproduced by us and the whole social world: The "like" *mediates* this whole world in a particular click. We are not conscious of this larger social and material world most of the time, of course: "Liking" largely operates at the unconscious level, as well as through conscious choice. We like those shoes or that book because they were shown to us by an engine designed to sell shoes and books, and because liking is the option we have on the platform. We don't know why we like them, just as we don't know why exactly we must keep getting "likes." When we study the ways in which digital platforms, or digital archives, mediate our intimate enjoyments as well as our research objects, we are engaged in reading mediation.⁶ The study of the way that media systems and media ecologies produce these immediate, intimate effects is part of the work of widely different disciplines, from media studies, platform studies, and critical AI studies to digital culture and society, communications, and digital rhetorics: These conversations are sometimes separated from the Digital Humanities, but must inform any understanding of digital mediation now.

This first example of the "like" exemplifies an essential point that we will return to again and again: Our most immediate and personal acts, our most minimal words and forms of language, *mediate* our economy, our politics, our technological platforms and infrastructures, and our history, all at the click of a button. The immediate is always mediated, most importantly by the moment of history we live in and the past moments that have produced it. The following sections work out the second part of the essential premise: If our immediate likes are always mediated, then we can only understand ourselves through careful study of the digital present *and* a historical understanding of the origins of that present in the proximate and distant past. The digital humanities, in its broadest forms, engages the digital present through the knowledge communities that study the long history of the creation of that present, through a variety of disciplinary mediations – research methods, networks of review, craft practices, and other ways of knowing – along with the media forms that concretize that knowledge, in critical editions, dictionaries, concordances, prosody manuals, theories, portraits, models, word vectors, libraries, and databases. The affordances of these media forms, as design theorists call the built-in capacities of different forms and materials, both enable and constrain knowledge-making in the textual humanities.

We are all digital humanists now, insofar as we work and think in the digitally mediated present; but that present has been produced, in large part,

by the self-reflective work of many generations of scholars, writers, and experimenters. This chapter continues with one development of the institutional Digital Humanities out of the disciplines devoted to textual mediation at the most fundamental level: the love of words, also known as philology.

Words in the Right Order: Document, Text, Edition, and Early Humanism

The study of words in their historical as well as linguistic context is a central concern of both linguistics and philology, two of the founding disciplines of Digital Humanities in its midcentury “Literary and Linguistic Computing” version that Susan Hockey sees as fundamental to “Humanities Computing” in the excerpt in Box 1.1. The concern with words in the correct order goes back much further, however, to the very first translations of the Greek classics in the Arab world and then in late medieval Europe. When we investigate words in their correct order and context, we are in a sense returning to that formative moment of the “humanities” as a moment of textual translation and reinvention – a moment integral to the formation and present constitution of the Digital Humanities now.

What were the “humanities”? In their primer for students of the digital humanities, medievalists Eileen Gardiner and Ronald Musto tell the story of the late medieval and Renaissance roots of the humanities in the West as one of loss and recovery. After the loss (in the West) of easy access to the classic texts of the Greek and Latin world, and the perceived decline from the high Latin and Greek moral and philosophical tradition they represented, a group of “men of letters” associated first with the fourteenth-century Italian poet Francesco Petrarch argued for the recovery of the ancient arts of language, including rhetoric, grammar, and philology, the love of words.⁷ (We should note that much of the Greek classical tradition was continuously preserved in the Greek-speaking Byzantine church, as well as through eighth-century Greco-Arabic translations associated with the Abbasid dynasty at Baghdad.⁸ The Western “rediscovery” of the classics was in fact a return to the cosmopolitan reach of an earlier Greek and Arabic intellectual world.⁹) Petrarch’s brilliant group of followers set out, over the course of several generations, a group of skills and activities that defined their model of education against the more pragmatic education of an earlier Italian business-oriented curriculum, and also against the lawyers, doctors, and theologians. These scholars set to deciphering, collecting, editing, and translating the scattered classical inheritance to be found in the monasteries, aristocratic libraries, and papal

BOX 1.1 Origin stories (1): Father Busa and “The History of Humanities Computing”

Susan Hockey tells the story of the genesis of Digital Humanities from an earlier formulation – Humanities Computing – in “The History of Humanities Computing,” a founding document of the important edited collection *A Companion to Digital Humanities*:¹

Unlike many other interdisciplinary experiments, humanities computing has a very well-known beginning. In 1949, an Italian Jesuit priest, Father Roberto Busa, began what even to this day is a monumental task: to make an *index verborum* [concordance] of all the words in the works of St Thomas Aquinas and related authors, totaling some 11 million words of medieval Latin. Father Busa imagined that a machine might be able to help him, and, having heard of computers, went to visit Thomas J. Watson at IBM in the United States in search of support (Busa 1980). Some assistance was forthcoming and Busa began his work. The entire texts were gradually transferred to punched cards and a concordance program written for the project. The intention was to produce printed volumes, of which the first was published in 1974 (Busa 1974).

This paragraph unites 900 years of Catholic theology with midcentury American capitalist know-how in an exemplary way. Many have objected to this origin story. Historians objected to the way the Busa story omits quantitative and *longue-durée* work in historical disciplines (see Chapter 2 in this volume); many note the way this story privileges textual study and text-centric fields above others, while failing to account for the post-2006 explosion of “DH” objects and varieties, thus failing to provide a coherent history.² While appealing to the universalism of Aquinas’s Latin, it actually grounds a monolingual account of Digital Humanities that ignores other humanistic uses of quantitative methods.³ More pointedly, members of collective movements like #transformDH have demanded a break from the patriarchal lineage literalized in Father Busa as symbolic father of the field. Many scholars, including the contributors to *Alternative Historiographies of the Digital Humanities* have mounted a sustained critique of standard DH histories, and have advanced alternative historiographies of the field.⁴ We will engage with several different origin stories in this chapter and others, as in the revisionist account of feminist and labor historians in Chapter 5.

¹ Susan Schreibman, Ray Siemens, and John Unsworth, *A Companion to Digital Humanities*. Blackwell, 2004.

² Chris Alen Sula and Heather V. Hill. “The Early History of Digital Humanities: An Analysis of Computers and the Humanities (1966–2004) and Literary and Linguistic Computing (1986–2004).” *Digital Scholarship in the Humanities* 34, no. Supplement_1 (2019): i190–206. <https://doi.org/10.1093/llc/fqz072>.

³ Frédéric Clavert, “The Digital Humanities Multicultural Revolution Did Not Happen Yet.” *L’histoire contemporaine à l’ère numérique* (blog; n.d.). Accessed February 26, 2020. <https://histnum.hypotheses.org/1546>.

⁴ Adeline Koh and Dorothy Kim. *Alternative Historiographies of the Digital Humanities*. Punctum Books, 2021. <https://muse.jhu.edu/book/84502/>.

collections of Europe and Byzantium. By around 1500, scholars and editors like Desiderius Erasmus and John Colet were disseminating new editions of classical texts and the Bible, the basis for the first vernacular translations by Luther, Tyndale, and others. These men – and women, like Isotta Nogarola, 1418–1466 – “framed their activities in the words of the second-century scholar Aulus Gellius: they were engaged in the study of the *humanitas*” – that is, “learning and instruction in good or liberal arts. [For] those who earnestly desire and seek after these are most highly humanized.”¹⁰

What these poets, translators, and men of letters were interested in were the recovery, first, of documents and texts from the ancient libraries of Europe and also the Byzantine church – where many Greek texts were preserved – and then their purification through comparison of sources and textual emendations. Their orientation toward the “human” and classical might seem to imply a secularizing narrative, a turn away from Church authority and the imitation of divine models, but the most important editorial activity of all for the great humanist Erasmus and his associates was the preparation of a standard Latin-Greek text of the Christian New Testament, the *Novum Instrumentum Omne* (1516–1535). To publish this standard edition of the basic text of Christianity in parallel Latin and Greek, Erasmus engaged in a number of fundamental interpretive activities:

I collated the most ancient and reliable *manuscripts in both languages*, and indeed no small number of them. I investigated the *commentaries* of ancients and moderns, both Greek and Latin. I noticed the *various readings* they furnished. I weighed the meaning of the passage and only then did I pronounce what I thought. No, I did not even pronounce; rather I *informed* the reader, leaving everyone free to make up his own mind.¹¹

The goal for Erasmus’s textual criticism was an opening of the interpretive material to all, not just the few with access to manuscript sources. This universalizing of the written word was to have seismic consequences for the later Reformation, and for the secular formation of “critique” that arose within Counter-Reformation debates, as we will see in Chapter 5.

Since writing, editing, and critique are fundamental functions and tools for humanistic knowledge production, we should pause over some of the editorial tasks most commonly elaborated in the digital humanities, and their implications for work with words. Erasmus first found and determined the authority of various documents containing the Byzantine version of the Greek New Testament, as well as Latin translation and commentaries. *Documents* are the physical substrate on which words survive: the manuscripts, scrolls, and then

later the codex form, what we call books. Erasmus collated the texts in order to see “the *various readings* they furnished”: A *reading* here means a difference in the text at a specific point. He did all this to produce a *critical text*, a new sequence of words informed by careful critical attention and comparison. A *text*, in editorial theory, is a sequence of words in a fixed order. Once set in type and printed, this critical text becomes an *edition*. Erasmus’s critical text in fact varied dramatically over at least four editions of the *Novum Instrumentum*, as did the surrounding interpretive material: At times he included the commentaries of the Latin Church Fathers, in one edition he included a parallel Vulgate translation, and the four editions differ dramatically from each other.

Textual critique is still a fundamental activity in the digital humanities, where the digital scholarly edition is a major area of theory and practice. Most digital editions are critical editions, meaning that they are the product of textual critique like that performed by Erasmus: They may have emendations (editorial correction to the source-text) and they may draw on many documents or versions of the same work (eclectic texts). A *documentary edition* is an edited version aiming to capture and reproduce a physical document. As Elena Pierazzo notes, quite extensive documentary editions have been made possible by the very different capacities of digital presentation, including reproductions of the physical manuscripts of medieval works like *Piers Plowman*, or the poems and paintings of William Blake in the *Blake Archive*.¹² *Social editions*, like those of the “Grub Street Project” focusing on eighteenth-century London, aim to capture the social relationships embedded within publications and their data, along with the social composition contexts of major works.¹³

What editors of digital editions are trying to do, like editors of all kinds of editions, is add to their knowledge of a particular text, book, periodical, or zine, often through exploring the circumstances of its creation, the community that created it, and the interpretive community that reads it. This is a fundamental kind of knowledge work: editors can add to our understanding of publication and composition history, as with the richly described editions of *Leaves of Grass* in *The Walt Whitman Archive*;¹⁴ illuminate the social context of Byron’s poems and their composition context;¹⁵ or enrich our sense of context through associated maps, images, or other materials unavailable in a print edition. Some editions let us hear and see the text in a new way, through the addition of radically new affordances (as with Tara Nummedal and Donna Bilak’s audible edition of *Atalanta fugiens*, which we will return to in Chapter 4).¹⁶ In their ambitious survey of the future of digital editions, James O’Sullivan and Michael Pidd point to the necessary affordances that we

would need to capture even a part of contemporary born-digital political discourse – for example, platform affordances, relational information about who is speaking to whom, and the sea of discursive contexts in which any social media post swims.¹⁷ This contextual dimension of political speech – the illocutionary intent and perlocutionary impact of political speech, as Cambridge School intellectual historians call it – remains a necessary if potentially infinite horizon for work on future digital editions of texts produced, circulated, and debated on digital platforms.¹⁸

Book History, Publishing, and the Critical Making

The printed book became the central technology of humanists, and the critical edition the hallmark of the humanist's art, for the next 500 years. The influence of Erasmus's critical edition was so profound not just because of his critical activities, but because it was a huge best-seller printed in hundreds of thousands of copies. This widespread dissemination and influence was of course only possible because of the printing press itself, a fundamental innovation of what was once called the "Gutenberg Era" – now perhaps a "Gutenberg Parenthesis," an interval of print dominance in the West, followed by a hybrid and in some ways postliterate intellectual ecology.¹⁹ Book historians now speak of a shared era of print and print literacy over some centuries before Gutenberg in China and Korea, and of a relative explosion of print in the seventeenth and eighteenth centuries in Europe that did not culminate in mass print literacy until the later nineteenth century CE.

Not only books, but pamphlets, posters, newspapers, and manifestos were the revolutionary new forms of the print revolution, and the study of publishing and print culture continues to be a central component of Digital Humanities work now. "The world of the book and the digital are instinctively opposed" in our culture, Justin Tonra notes – and yet the two are inextricably linked, not only on Amazon's Kindle Direct Publishing platform, but across the fields of book history and bibliography (the study of books as physical objects).²⁰ Scholars in book history now publish on the selling of books with algorithms, on social reading platforms like Wattpad, and on the assembly of large digital corpora.²¹ Some of the most significant and innovative digital humanities projects, like Martin Paul Eve's computational reading of David Mitchell's *Cloud Atlas*, are studies of just one book, archive, or genre.²² Nor are born-digital works free from the need for material analysis, as Dene Grigar and Mariusz Pisarski note in *Challenges of Born-Digital Fiction*.²³ The central point is that the digital revolutions in the production, distribution, and

marketing of books are all *material processes*, studied by many of the same research communities and scholars who study print culture. The history of the book and the ways we read books now are inextricably linked.

Publishers and print-makers are makers, no less than the poets: “critical making” is an associated movement within digital humanities and media studies contexts, oriented toward many of the same questions of practice and its relation to theory that animate book and publishing history. “Maker spaces,” digital humanities “lab culture,” and the rise of digital+print studios like Ryan Cordell’s Skeuomorph Press + Book Lab can all be seen as the products of a basic digital humanities concern with the materiality of humanities practices, with the material history of print culture, and with “thinking as handwork.” Critical making, in DH contexts, has often been associated with the “maker movement” and DIY culture, as well as the resurgence of craft practices and knowledges precisely in response to a screen-mediated world. Yet, as in Jentery Sayers’ important collection *Making Things and Drawing Boundaries*, critical making can also mean critical reflection on the process and practice of making, across disciplines and ways of knowing.²⁴ Screens themselves mediate culture and history to us in their form and affordances, as Bernard Geoghegan notes in his genealogy of computational screening out of mid twentieth-century military tracking systems.²⁵ When we make or remake the word through screens, or against them, we operate within cultural and historical imperatives that provide the conditions for our creative acts.

Work, Author, Style

Why do we want to preserve what we preserve, why *this* object, text, album, or painting? Often the answer is an attachment to some person-shaped thing: an artist, writer, philosopher, or prophet. When we move from an embodied, discrete text to its authorizing Proper Name, we are discussing a “work” of the author (not the text as a sequence of letters, for example, or the edition as a theoretical construct). Authority itself, as *auctoritas*, was a prime good and central value of the medieval tradition out of which humanism arises. Commentaries on the leading authorities were the prized works of medieval scholasticism, and the critical editions and translations of the humanities addressed themselves to these primary authors. Other than the Bible itself, Erasmus’s major editions were those of these “Church Fathers,” with nine volumes devoted to Jerome alone. As we have seen, Digital Humanities as a disciplinary community created a founding myth around the most canonical of medieval saints, Aquinas, and addressed itself to bibliographies and concordances of the canonical authors

(“canonical” in both the sacred and the secular sense) as one of its prime research activities. Stylistics, one of the major research projects of the Humanities Computing era, arises out of the same concern with authority: can we identify particular authors by their written style? How would we know that this poem or that play was written by Shakespeare, Fletcher, or Ford?

Authors and their canons fell out of fashion in many fields at the end of the twentieth century through several famous waves of critique. One critique, perhaps the most misunderstood, arose out of the attack of (what American theorists called) “French Theory” on the traditional culture of its time. Michel Foucault’s essay “What Is an Author?” suggested that we move from attachments to particular proper names to a critique of the function of those proper names within a given social context (the “author-function”);²⁶ Roland Barthes argued in “The Death of the Author” for a text given shape and meaning by the reader’s playful self-appropriations, not an author’s intentions.²⁷ The American reception of these critiques in particular tended to decontextualize their interventions within the institutional forms of the French academy, and miss the deep attachments of both writers to particular literary objects and, indeed, authors. The post-1968 period spawned a whole series of exciting new fields and formations, including the “post-disciplines” of cultural studies and new media studies, but with a loss of interest and attention to mere authors and their authority, now read as merely contingent, politically defined, and “ideological” (in the bad sense, “duped by the dominant discourse”). The death of the author was coterminous with the birth of celebrity theorists, critics, and *maîtres du discours* (masters of discourse) like Barthes and Foucault, at least in the academy.

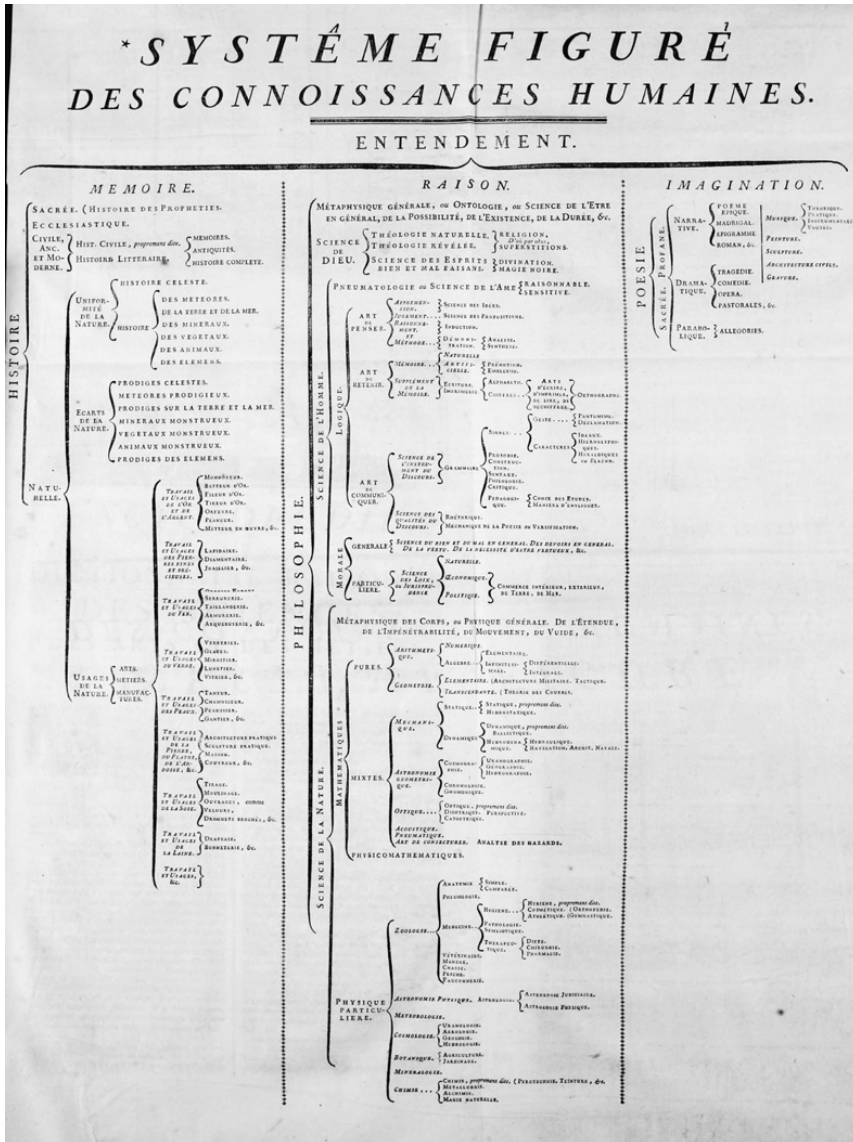
In the Digital Humanities as well, style and stylistics left the foreground of the conversation for a generation, in part because of the important critique of 1970s-era stylistics by the literary theorist Stanley Fish (among others).²⁸ But style, authors, and stylistics have now returned to the foreground of scholarly work in a variety of ways. First, we have seen a renewed attachment to particular writers from within communities newly forming canons and traditions; a renewed attention to the celebrity–authorial–industrial complex in studies of the contemporary publishing economy; and an attachment to naming the “minor” figures of history, in particular by theorists like Saidiya Hartman and digital practitioners like Rhondda Thomas.²⁹ Studies of style also have links to “digital forensics” and authorship attribution studies, which have a variety of practical and legal uses.³⁰ And stylistics has seen a resurgence of work, particularly in Europe and Asia, including machine-learning approaches that offer radically expanded horizons for authorship attribution.³¹ Authors, artists, and other person-shaped topics of research have returned in a variety of ways to the fore, even as the poststructuralist ideal of language writing itself – *écriture* – has

in some ways reached its practical apotheosis and confirmation in the era of the LLM, as Leif Wetherby and others have argued.³²

Reference Machines: Dictionaries, Encyclopedias, Wikipedia

Language may write itself, but accurate and reliable reference out to the worlds around a generative linguistic model remains an accomplishment of some of the oldest and most radical mediations of the word: dictionaries and encyclopedias. Dictionaries are as old as the need for standardized meanings and translations, with the first Sumerian-Akkadian wordlists dating from 2300 BCE.³³ Such wordlists were one of the tools that allowed the translation and retelling of our standard text of *The Epic of Gilgamesh* around the thirteenth to the tenth centuries BCE, a reminder that literary production, editing, and translation have been united from the beginning of the literate era. The first monolingual dictionary produced in China around the third century BCE, the *Erya*, became a major element of the Chinese literary canon; it takes the form of a lexical gloss of words in the Chinese Classics rather than a set of abstract definitions.³⁴ Pierre Bayles's famed *Dictionnaire Historique et Critique* (1697 CE) was actually a biographical encyclopedia, a covert tool for the publication of dissident and anti-authoritarian views on Christianity and one of the sources for our notion of "critique." Dictionaries as "data structures" are still used in computing languages like Python, where in form they replicate the first wordlists in Sumerian, through a simple list of pairings between *keys* and *values*, in a one-to-one relationship. The technologies of literacy thus constantly recapitulate and remediate their own history, here as elsewhere.³⁵

The encyclopedia in its early forms implied the "cycle of education" (ἐγκύκλιος παιδεία) also associated with an educational curriculum, the "course" a student takes through subject matter. Encyclopedias implied the ideal of a unified knowledge of the world from the medieval period onwards, and were often organized on the same principles as the educational curriculum they embodied.³⁶ For both Bayles's *Dictionnaire Historique* and then the famous *Encyclopédie* of Diderot and d'Alembert (1751–1772), the encyclopedic form represented a potentially revolutionary democratization of knowledge in which the vast learning of the medieval and early modern libraries could be made public and accessible to anyone. The *Encyclopédistes* presented a radical new critical mode of thinking about the world as a whole, with named sources and in alphabetical order, organized in terms of human capacities: memory, reason, imagination (see Fig. 1.1).



BOX 1.2 Origin stories (2): Ada Lovelace on Charles Babbage's "analytical engine" and electronic music

Edward Vanhoutte describes perhaps the first imaginative application of computation to the arts in the translation notes of the famous polymath Ada Lovelace on a description of Charles Babbage's "analytical engine," one of the first planned general computation devices:¹

[The operating mechanism] might act upon other things besides *number*, were objects found whose mutual fundamental relations could be expressed by those of the abstract science of operations, and which should be also susceptible of adaptations to the action of the operating notation and mechanism of the engine. Supposing, for instance, that the fundamental relations of pitched sounds in the science of harmony and of musical composition were susceptible of such expression and adaptations, the engine might compose elaborate and scientific pieces of music of any degree of complexity or extent.

Vanhoutte notes: "However, the first computer music wasn't produced before CSIRAC [Council for Scientific and Industrial Research Automatic Computer], Australia's first digital computer, was used to perform the Colonel Bogey march in 1950 or 1951, and electronic computer music boomed from 1957 onwards with the release of the first program for sound generation, appropriately called MUSIC." (The MUSIC-N series of music programs was developed by Max Vernon Mathews and others at Bell Labs, from 1957 to the late 1960s.)²

For more on Sound Studies and digital humanities work on audible objects, see Ceraso, "Sound,"³ and Chapter 4: "Sight, Sound, and Sense-Making."

¹ Edward. Vanhoutte, "The Gates of Hell: History and Definition of Digital | Humanities | Computing." In Melissa Terras, Julianne Nyhan, and Edward Vanhoutte, *Defining Digital Humanities: A Reader* (Ashgate Publishing Company, 2013), 120.

² In *Defining Digital Humanities: A Reader*, edited by Melissa Terras, Julianne Nyhan, and Edward Vanhoutte (Ashgate Publishing Company, 2013), 121. Citing Ada Lovelace, "Notes by the Translator." In Philip Morrison and Emily Morrison, eds., *Charles Babbage and His Calculating Engines: Selected Writings by Charles Babbage and Others*. Dover Publications, 1961 [1843], 248–9.

³ Steph Ceraso, "Sound." In *Digital Pedagogy in the Humanities: Concepts, Models, and Experiments*, edited by Rebecca Frost Davis, Matthew Gold, Katherine Harris, and Jentery Sayers. MLA Commons, 2020. Accessed August 30, 2025. <https://digitalpedagogy.hcommons.org/keyword/Sound>.

The signal achievement of this continuing project of universally accessible public knowledge, for many digital humanists, is Wikipedia. Despite its lingering reputation as a changeable, cheap substitute for printed reference works – on which it still mostly relies – Wikipedia is usually as accurate, vastly more comprehensive, and more up-to-date than any previously existing encyclopedic work.³⁷ The most comprehensive review of research on Wikipedia's reliability found it roughly comparable across many domains with established sources like the *Encyclopedia Britannica*, even in many specialist medical and technical fields;³⁸ Wikipedia is now also more than eighty-five times larger than the printed *Britannica*, which is now, not coincidentally, only available online.³⁹ It remains free, run by volunteer labor and user donations. The pillars of Wikipedia, and its associate Wiki projects, are the open and transparent construction of shared knowledge, including transparency about the history of revision, criticism, and debate on specific topics (though these debates are heated and sometimes tendentious): see, for example, the delightful dialog about the status of Erasmus's translations of the New Testament, the "Textus receptus."⁴⁰

Libraries, Links, and Databases

All of the major forms of knowledge discussed earlier are the product of libraries. Libraries were the sources for the books and manuscripts of the first humanists, libraries were the repositories and often sponsors of the first critical editions, and libraries provided the substance and form of early modern bibliographies and encyclopedias, often according to the *ordo librorum* of the university curriculum.⁴¹ Libraries remain the most important zone of contact between us and the accumulated knowledge of the past, and one of the most important locations for work on the digital turn across disciplines. In previous generations, they were seen as repositories and collections of books, journals, newspapers, and documents; the role of the librarian was to connect you to the right book or article. Librarians linked readers with good sources of information, good books, and, increasingly by the end of the twentieth century, good databases.

At the beginning of the twenty-first century, libraries faced an existential question: What is the purpose and place of the library when information is widely available through a search on Google, a click on Wikipedia, or (later) a prompt to a chatbot? When many of the traditional questions posed to librarians – where do I find it? How should I start research on this? – have been offloaded to algorithms, what do librarians now do? The responses to those questions have engaged several generations of library and information-science

specialists, transformed the field itself (now Library and Information Science, or just Information Science), and deeply shaped the larger digital humanities conversation as well. The response to the digital shift in preservation, research, and discovery across the university has been both deep and profound.

In the wake of these fundamental shifts in the mediation of preserved knowledge, the field has moved away from the popular image of libraries as mere repositories of knowledge, waiting to be called upon by researchers, to a much more active role as co-creator and guide in the research process itself. The library itself as “boundary object” – a workspace characterized by a set of arrangements in which different communities overlap and cooperate without agreement, as Susan Leigh Star and collaborators define it – is a great virtue in interdisciplinary digital humanities research.⁴² The creation of Digital Humanities itself as an institutional conversation owes as much to librarians as any other profession, and public and private libraries have been crucial to the establishment of its continuing projects and conversations.⁴³ The first digital humanities centers and institutes, a major locus of activity in the field, were located in libraries at the Bodleian and at the University of Virginia Library, in examples that would be widely imitated elsewhere. Librarians have been called upon not only to guide the research process, but to lead new institutes and centers of digital scholarship across the disciplines. Librarians in the digital humanities community have led cutting-edge conversations about labor, knowledge infrastructure, and the transformation of research methods. They have also challenged the traditional categorization of library work as “service work,” through a variety of new publications and publication venues, including the online publication *dh+lib*, amongst others.⁴⁴

Collaboration, teamwork, and the need to manage large projects and groups are familiar tasks in the library, as Emma Annette Wilson notes in her useful guide to digital humanities for librarians.⁴⁵ The image of the monastic humanist toiling in his cell, following Erasmus – always a myth, as the highly collaborative process of editing the *Novum Instrumentum* demonstrates – simply doesn’t work for large collaborations on major digital platforms like WorldCat, the global book catalogue that makes up the first step in research for many of us.⁴⁶ Libraries have also been the natural place to support the new work on metadata, markup, special collections and archives, and public exhibition and public humanities projects that we will discuss in later chapters. As threats to notions of public access and public knowledge itself have increased worldwide, libraries are also crucial places to recover and defend the notion of shared goods, common knowledge, and public spaces for community.⁴⁷

BOX 1.3 Library and Information Science

Students of Library and Information Science seeking a good disciplinary guide are in luck: Emma Annette Wilson's *Digital Humanities for Librarians* (2020) is an excellent guide to the theory and practice of digital humanities practice in libraries, archives, and some cultural heritage institutions. Archivists have Leggett's *Digitizing and Digital Archiving: A Practical Guide for Librarians* (2021). A good starting-point for current events and opportunities is the aggregator dh+lib (<https://dhandlib.org/>). Hartsell-Gundy and colleagues' *Digital Humanities in the Library* (2nd ed., 2024), is a useful guide for subject specialists. White and Gilbert, eds. *Laying the Foundation: Digital Humanities in Academic Libraries* (2016), argues for an active and participatory role for library science in digital humanities research. Muñoz, "Data Curation as Publishing for the Digital Humanities" (2013), takes up the link between curation and Library and Information Science.

Bibliographies

The prime directive of scholarship is that your reader must be able to replicate your work. (In complex statistical fields, including the computational digital humanities, the difficulty of replication has led to both a "replication crisis" and a voluminous literature on replication and reproducibility.⁴⁸) In the case of humanities scholarship this means they must be able to find and, at least potentially, read your primary and secondary sources through some form of bibliographic record. Bibliographies record the sources of our research, whether in a brief appendix at the end of a paper or a printed volume containing all references in a subfield (a subject bibliography). The first printed enumerative bibliographies in the West were organized as imagined libraries, following the same order as the medieval university curriculum that created them. Conrad Gesner's bibliography the *Pandects* (1548) put the *trivium* of grammar, logic, and rhetoric first, then poetry, followed by the *quadrivium* of arithmetic, geometry, astronomy, and music, then "astrology, divination and magic; geography; history; mechanical arts; natural philosophy . . . and finally the three higher faculties, law, medicine, and theology."⁴⁹ Descriptive bibliography refers to the study of books as physical objects, and adjoins the fields of book history and publication studies described earlier.

Yearly subject bibliographies were once the primary point of entry into humanities research, and for many their digital analogues remain so today, but with a vaster reach, a quicker point of entry, and often a higher level of complexity. In the history of art, for example, the Getty Institute provides free access to the combined "Bibliography of the History of Art" and the *Répertoire de la littérature de l'art* (BHA/RILA), but only from 1975 to 2007; after 2007,

researchers must consult the subscription-based International Bibliography of Art (IBA), managed by ProQuest. The MLA International Bibliography is the standard point of entry for research in literary studies, now managed by the privately owned EBSCO Connect. *Oxford Bibliographies* offer quite useful, thorough introductions to a variety of topics and fields that go beyond the standard form of the annotated bibliography (still an important genre for students to master).⁵⁰ All online resources have gaps and faults, which conscientious writers supplement with such standard works as the National Union Catalogue and trips into the physical stacks (where they are still available).⁵¹

Subject bibliographies are essential resources, yet must be navigated with help. In *How to Write a Thesis*, the great scholar and fabulist Umberto Eco describes an imagined student's trip through subject bibliographies, pursuing a thesis on the baroque concept of metaphor, as a picaresque adventure: "I decide to start from the subject catalogue. Unfortunately, I am immediately exceptionally lucky . . . Under the entry 'metaphor' I find Giuseppe Conte, *La metafora barocca: Saggio sulle poetiche del Seicento* (The baroque metaphor: Essay on seventeenth-century poetics) (Milan: Mursia, 1972). This book is essentially my thesis realized."⁵² Grasping for something new, Eco begins with other reference works on the baroque, making bibliographic notes on cards and watching for entries in indexes, before moving into author catalogues and then historical accounts, Renaissance editions of Aristotle, hundreds of secondary critical works in Italian, German, and French, and finally a key essay which summarizes the whole sixteenth-century controversy over baroque metaphor. The messiness of this baroque trip might have been avoided, as Eco admits, if he had first consulted the subject librarian:

BOX 1.4 Where do I keep it? Annotated bibliographies, snippets, and reference managers

This work, like many other complex research projects, was largely built through the craft practice known as the creation of an "annotated bibliography," in which the writer reads the important books in a field, records a full bibliographic citation, then writes short summaries of their content with cited snippets of text to use later. Those snippets are then reorganized into the citations and foundational elements of our research, often years later: The citation will be reused in a reference list, a "Bibliography" or "Works Cited."

How do we keep track of all these citations and snippets, often over the course of many years on a project? With a reference manager: Here, Digital Humanities has made a distinctive mark with the development of Zotero, a very adaptable, open-source, mostly intuitive citation manager (zotero.org). Historians and fields with visual archives use Tropy to manage archival collections (<https://tropy.org/>). Many beginners also use the powerful (and for-profit) features of Microsoft Endnote, or the ProQuest reference manager supported by many libraries, RefWorks.

I can interrogate the librarian. I discard this possibility immediately both because it is the easiest and because it would compromise the integrity of this experiment. I do in fact know the librarian and when I tell him what I am doing, he barrages me with a series of titles of bibliographical indexes available to him, even some in German and English. (82)

The lesson: Always go to the subject librarian – and their assembled resources – first; they know the resources better than anyone, and have expertise in good and bad approaches to any research question.

Databases: Semipublic, Private, and "Open Access"

The primary way we access articles and books now is through the research database. The database is the master metaphor of information retrieval now, as Lev Manovich, Ed Folsom, and others have argued: Infinitely addressable, indefinitely extensive, and physically inaccessible, the database can seem a black box for those accustomed to the stacks, though it offers a far higher degree of transparency than black-boxed AI models.⁵³ Jerome McGann and others have argued for a stricter sense of database limited to certain operations of querying, transforming, and reordering: In place of the database, McGann and others are committed to the archive as the dominant metaphor of their work, a boundary object we will return to in Chapter 3.⁵⁴ As a form, the database is simply a set of structured data (rows and columns, keys and values) accessed through a database management system like MySQL.

Many of the first research databases and aggregation tools were nonprofit ventures, as in the case of JSTOR in the early 1990s, initially funded by the Mellon Foundation and supported by the University of Michigan libraries.⁵⁵ JSTOR was revolutionary in its potential: full scans of thousands of print journals, with access freely granted to scholarly societies initially and with a sliding subscription model added later. Other semipublic research databases were launched at the same moment: Project MUSE by Johns Hopkins University Press (1995), as well as the ACLS E-Book collection of "over 5,400 seminal books in the humanities and related social sciences," both using a scanned-page model.⁵⁶ Routledge, Oxford, Chicago, and Cambridge presses all launched digital aggregation platforms for their publications in the subsequent years. Cambridge Core now hosts more than 400 journals and thousands of academic books, first as digital objects, then print artifacts.⁵⁷

Private research databases, aggregators, and publishing conglomerates soon took to the fore, as university expenditures shifted from print runs to

subscription-based databases, some in the sciences running into millions of dollars per year. The astonishing profit margins of some of these private publishers – 36 percent per year for the scientific publisher Elsevier in 2010 – have led to calls for boycotts and open-access alternatives.⁵⁸ In the humanities, publishers like Gale/Cengage have helped develop and support major research databases like Eighteenth-Century Collections Online (ECCO) and Early English Books Online (EBBO), as well as a variety of customized research tools and collections addressed to digital humanities audiences.⁵⁹ The ability to search across thousands of years and millions of manuscript pages has radically transformed the kinds of arguments that scholars in these periods can make in these fields.

The open-access movement in academic publishing arose partly in response to the spectacle of for-profit publishers like Elsevier making billions in profit on research that had been paid for by universities or federal funding agencies, peer-reviewed by scientists at those universities, and then sold back to those same universities and researchers at an enormous markup. One of the first open-access research repositories of the early 1990s, arXiv.org, remains one of the most successful, with explosive growth after 2016 and widespread usage in the mathematical and statistical disciplines. The digital humanities library community supported a number of the efforts mentioned earlier, and pioneered the open educational resources (OER) movement to demonetize common textbooks.⁶⁰ The open-access movement supported the development of widely used Creative Commons licenses, allowing for reuse of materials with a variety of different limitations.⁶¹ Many journals and even presses are now entirely open access, whether through subventions or institutional supports.⁶² Open-access journals and presses often employ either the “Green OA” pathway (based on preprints, often stored on institutional repositories) or “Gold OA,” in which subventions are often required to make a publication truly open to the public.⁶³ Whatever the funding mechanism for open access, good editorial labor requires skill, time, and resources, and database maintenance requires even more. (A fuller account of the transformation of reading and peer review platforms in the twenty-first century is found in Chapter 3.)

Words in Context: Indexes, Concordances, N-grams, and Word Vectors

Words always occur in a context, whether that context is verbal, linguistic, textual, or political. When I say “I,” the meaning of that pronoun is given by the context of its use: “I” is both the most universal and particular of words, as

Hegel notes in the *Encyclopedia of the Philosophical Sciences*.⁶⁴ Words that produce meaning by pointing to some part of their context are called “indexical,” in the tradition associated with the linguist Charles Sanders Peirce.⁶⁵ Language produces meaning from its own referential mechanisms, rather than simply pointing out to the world (*deixis*): the use of a deictic such as “here,” for example, refers to a place within language, rather than outside it.

Peirce’s notion of “indices” derives directly from the Renaissance technology of the index, still one of our most powerful intellectual tools. The notion of the index is implied in many previous reference technologies we have surveyed, like the glosses of the Chinese Classics in the *Erya* of third-century BCE.⁶⁶ Renaissance indexes began as what we would call “tables of contents,” and evolved into the present-day index in such works as Leonard Mascall’s *A booke of the arte and maner how to plant and graffe all sortes of trees* (1575), with an index of all sorts of trees.⁶⁷ The most famous book-length index was the *Index Librorum Prohibitorum*, a Counter-Reformation attempt at controlling or cancelling the burgeoning threat of the printing press, which divided forbidden books into the heretical, the immoral, and the magical.⁶⁸ The *Index*, run in part by the Sacred Congregation of the Index, was active from 1560 to 1966.⁶⁹

A concordance is a specialized index of words used in a book or body of work, listing every instance of the word with its immediate linguistic context. Because of the difficulty and time involved in the compilation of concordances, before the digital era only sacralized texts and authors had concordances: examples include the Vedas, the Bible, the Qur’an, Shakespeare, and Thomas Aquinas (see Origin Story 1 [Box 1.1] on Father Busa’s *Index Thomisticus*).⁷⁰ Digital concordances were among the first major digital humanities projects, as in the Oxford Concordance Program (1974).⁷¹ Josephine Miles’s *Concordance to the Poetical Works of John Dryden*, based in part on notes left by a colleague and prepared by computer, has been claimed as one of the first published results of the digital humanities (see Origin Story 3 [Box 1.5]).

The interrelations of words in context have produced many digital humanities analytic techniques, including the discovery of “topics” in collections of documents (topic modeling) and the modeling of semantic meaning through “word embeddings” – a mathematical approach to discovering meaning about a particular word through the surrounding words.⁷² Google’s work on the massive Google Books project – the digitization of most of the published material at Harvard, the University of Michigan, and other academic libraries – allowed for the automatic search and Key Word In Context (KWIC) snippets for most printed books, in theory. This in turn led to their “Google Books N-Gram Reader,” which allowed anyone to track the frequencies of key words

BOX 1.5 Origin stories (3): Josephine Miles and the origins of distant reading

Rachel Sagner Buurma and Laura Heffernan argue for this revision to the Father Busa story:

Every time you see the name Roberto Busa invoked as a – or the – founding scholar of either quantitative or computational method in the humanities, we want you to mentally search and replace with another name: Josephine Miles.

Miles was a poet and an English professor at Berkeley. In the 1930s, as a graduate student at Berkeley, she completed her first distant reading project: an analysis of the adjectives favored by Romantic poets. In the 1940s, with the aid of a Guggenheim, she expanded this work into a large-scale study of the phrasal forms of the poetry of the 1640s, 1740s, and 1840s. In all this distant reading work, Miles created her tabulations by hand, with pen and graph paper. She also directed possibly the first literary concordance to use machine methods. In the early 1950s, Miles became project director of an abandoned index-card-based Concordance to the Poetical Works of John Dryden. Partnering with the Electrical Engineering department at Berkeley, and contracting with their computer lab and its IBM tabulation machine, Miles used machine methods to complete the concordance. It was published in 1957, six years after she and several woman graduate students and woman punch-card operators began the work. It was thus begun around the time that Busa circulated early proof-of-concept drafts of his concordance to the complete works of St. Thomas Aquinas, and published seventeen years before the first volumes of the 56-volume *Index Thomasticus* [sic] began to appear.¹

¹ From Rachel Sagner Buurma and Laura Heffernan, “Search and Replace: Josephine Miles and the Origins of Distant Reading.” *Modernism / Modernity Print+*, vol. 3, cycle 1. Accessed November 8, 2019. <https://modernismmodernity.org/forums/posts/search-and-replace>.

over centuries (in a small subset of books, with many provisos, and only up to 2008).⁷³

Word embeddings, in combination with neural networks and transformer models, are also intrinsic to how LLMs produce what are apparently novel sentences. Word embeddings can be analogized to a massive predictive concordance for every word (or token) in the language, stating how likely it is that a particular token is found alongside (or at a certain distance from) other tokens in a representation of semantic space.⁷⁴ Word embeddings are an intrinsic part of the way that AI models calculate the probability of the next

most likely entry in a sequence of words, pixels, or images (which is what “generative” AI mainly does). The oldest humanities technology thus remains proximate to the massive models that are shifting the means of textual production now.

This chapter has told a story about the Digital Humanities as a development out of the historical humanities, told as a set of textual and disciplinary mediations that arise from what Walter Ong called the “technologizing of the word.” This history moves between the work of the late medieval humanists and the fundamental technology of the humanities – language itself, in its full indexical and recursive power – through the hybrid machine literacies of the present. The movement from the technologies of the word developed by the early humanists to our own digitally mediated humanist moment is not smooth or continuous: It is iterative, recursive, and often retroactive, rather than progressive. Rather than a continuous movement of intellectual advances, what we see in humanist history are revolutions of the word, in the sense both of historical break and of historical return. We will examine the future of history in Chapter 2.



Chapter 2

Histories

Curation, Preservation, Loss

Perhaps the most important boundary work within the digital humanities is that between the past and the present: what to preserve from the past, how to make it new in the present, and what futures the move from past to present makes possible. This chapter takes up those questions through a consideration of historical preservation in its most common institutional forms and in our most intimate digital acts. Any act of preservation entails loss and transformation. When we put the past into a new medium, as with the early humanist editions of the Greek and Roman classics, we are engaged with the practice of historiographic mediation: the act of putting the past into a new medium, to make it visible and usable for common use.¹ That essential practice of the first humanists persists as an imperative in the era of pervasive digital mediation. This chapter takes up the interplay between preservation, loss, and historical mediation at key moments: in the present practice of self-curation; curation in the cultural heritage sector loss and transformation in the origins of history-writing itself; the quantitative and statistical approaches to history that arose in the nineteenth and twentieth centuries; the divisive mid twentieth-century controversy over “Cliometrics” and the history of Atlantic enslavement; the late twentieth-century “History Web” era; and the Digital History 2.0 work that followed it. We end by turning to global and situated histories of DH within a deeply interconnected twenty-first century, in which no field or institution remains unaddressed by pervasive datafication. History is not just a subject or a discipline. The work of historical remediation – of making the past and present visible through a new medium – is part of our everyday life.²

Mediating the Present: Self-Curation and Self-Branding

Consider the basic work of curating ourselves online: We curate our various profiles and pictures, choosing just the right angle and shot; we select our preferences, our groups, our “likes” and dislikes. We edit our work histories,

our positions, skills, and professional networks. We put up a profile on a dating site that resembles someone we want to look like. We fit ourselves into the frame of the screen. At another remove, throughout the knowledge-work professions, we are required to maintain and cultivate a “web presence,” a page with our professional profile and institutional affiliation, our achievements and awards. Even if we do not cultivate our “online profile” as part of our work, with an account on the various professional networking sites, one will be created for us – a name, with a list of links, citations, references, and reviews. Not included in this profile is what feminists call “the shadow CV”: the list of our failures, our absences and illnesses, our care work, the invisible labor dedicated to maintaining friends, community, children, and/or chosen families.³

“Curation” is a word taken from a specific kind of historical work – the work of selection and presentation that goes into the displays of museums and galleries – that has migrated to what the sociologist Erving Goffman called the “presentation of the self in everyday life.”⁴ With another step, into the economic world of market societies, we move from self-curation to *self-branding*: the curation of the self as if it were a commercial image. This marketing of one’s self-image is itself a product of its historical moment, a way in which we experience our historical moment in action. “Self” and “marketing” are both crucial elements combined in this mediation, which retains the emphasis on personality and uniqueness even as it conjoins it to market activity. Exactly then, at the moment when we feel the imperative or necessity to turn ourselves into marketable brands, we experience the historical force of what theorists call neoliberal capitalism: the transformation of every part of human life into materials for the market. This moment of self-branding, then, is an exemplary historical mediation of a technological and historical moment, through particular acts on professional marketing, dating, and social media sites.

The materials of self-branding are just ourselves, our work, words, images, and persona, but now consolidated into an entirely new set of meanings: entrepreneurial young worker, or knowledgeable expert in X and Y. Our brand is whatever the market wants, with just enough “unique identity” left in place to distinguish us from the host of others with almost exactly the same brand. The ideal case is that what we really want is also what the market wants from us: to sell ourselves at the highest price. In this sense the process of self-branding is also a transformation of our past into material usable for the present, as with every historical mediation. But what is lost in that process? How would we grasp both the profit and the loss of self-curation? I return to that question in Chapter 5.

Digital Cultural Heritage in Galleries, Libraries, Archives, and Museums

“Curation” in its primary sense refers to the historical mediation performed by cultural heritage institutions: work performed in galleries, libraries, archives, and museums (the GLAM sector, as its inhabitants call it). While every intersection of digital and humanistic work remakes its own center, cultural heritage institutions are at the core of funded digital humanities activity. The funding for European cultural heritage programs alone amounts to many billions of euros – and if we include the economic impact from tourism, far more. Such projects as Europeana contain dozens of programs across hundreds of institutions;⁵ major cultural heritage sites like the Bibliothèque Nationale, the British Library, and the Smithsonian house major digital heritage collections as well, some included in “digital research infrastructures” like DARIAH (the Digital Research Infrastructure for the Humanities).⁶ In the US, the Digital Public Library of America provides access to a wide range of primary sources, as well as exhibits and teaching aids, and the Smithsonian’s Learning Lab offers a similar range of cultural heritage and pedagogical materials.⁷

All these cultural institutions curate the present as well as the past, and they have been among the first to respond to shifts in the conditions of technical mediation. Cultural heritage institutions like the Library of Congress were among the first to digitize their cultural materials. Major cultural heritage surveys like Diane Zorich’s “A Survey of Digital Cultural Heritage Initiatives and Their Sustainability Concerns” (2003) were commissioned by the Council on Library and Information Resources (CLIR), one of many library-based organizations.⁸ The “London Charter” offers still useful principles for best practices in visualizing cultural heritage, and some history of the first wave of digital visualization.⁹ Cultural heritage institutions continue to be the major drivers of new thinking about how to preserve their collections now, from shared standards like Dublin Core to the Metadata Encoding and Transmissions Standard (METS) employed in the “semantic web” – a term for open and interoperable data standards that would increase ease of access and reuse across institutions.¹⁰ Recent work at Europeana on documentation for cultural data machine learning has led to the development of digital cultural heritage “datasheets”: documents which provide information on provenance, selection criteria, digitization process, and versioning control for datasets.¹¹

The digital turn within cultural heritage institutions has been radically accelerated by the era of global viral pandemics. Many institutions offered

only “virtual” or online versions of their collections during the height of pandemic conditions, which meant both great losses and interesting innovations in digital exhibitions and public humanities collections. Other digital historical projects have attempted to recreate entire lost spaces, as with the “Virtual St. Paul’s Cathedral Project,” which attempts to recreate the experience of worshipping at St. Paul’s in the early seventeenth century through spatial and acoustic modeling.¹² What cannot be transmitted by a digital exhibit, acoustic model, web gallery, or QR code? Those losses are just as important to consider in digital exhibitions, alongside the various innovations that have added entire layers of historical information onto public spaces throughout the mobile-enabled world.¹³

Digital Preservation and Preservationists in the Present

Curation in the digital humanities also implies curation in the present. What will remain of the vast digital cultural materials of the present? What will remain of our attempts to curate ourselves, our likes and dislikes, our photos and videos? The list of defunct social media platforms, where many of these cultural materials are produced, extends into the hundreds.¹⁴ The experience of humanists who attempt to preserve digital culture, like the experience of digital culture itself, is characterized by overwhelming plenitude and staggering loss. Never has so much cultural production been recorded and available, at least theoretically, for the cultural, textual, aural, and visual historian; yet, despite the work of digital historians on such essential sites as *The Programming Historian*, the process by which we might secure and make sense of that flood of information remains difficult and uncertain.¹⁵

The work of preserving the immediate past is a core function of digital preservationists and archivists at many cultural heritage institutions. Most digital preservationists work at quite different scales from widely used sites like the Internet Archive’s Wayback Machine, which attempt to preserve entire sections of the “old internet” in at least partially usable form.¹⁶ Digital preservation sometimes entails quite painstaking detective work, as Matthew Kirschenbaum describes in *Bitstreams: The Future of Digital Literary Heritage*. Kirschenbaum outlines the work of the “forensic” bibliographer who reconstructs Toni Morrison’s manuscripts for *Beloved* from partial Word documents, low-resolution scans, and fire damage.¹⁷ What has to be preserved in such work is not only the physical artifacts – the disks, papers, desktop machines – but also the computing protocols and mechanisms. *Beloved*’s notion of “rememory” – “a way of naming a past trauma externalized beyond an individual consciousness” – parallels for Kirschenbaum the

returns to disk memory and remediation required to access *Beloved's* composition and publication history.¹⁸

Digital preservation is also a deep concern of the Electronic Literature community: a group founded on central core remediations of “literature” on digital platforms like Apple’s HyperCard software (1987–1998). Early uses of the HyperCard nonlinear writing tool are inaccessible without a machine that can play HyperCard, or a reasonable simulacrum thereof. Preservation of early digital artwork requires not just equipment but the knowledge of the practitioners and pathways involved.¹⁹ Long-term preservation of such early digital works requires emulation of defunct platforms and migration to new platforms and protocols, and the “media translation” involved requires thinking about the embodiment of the digital as well as the digitization of embodied material.²⁰ But, as the continuing fascination of early video-game emulation among digital hobbyists demonstrates, if a community is deeply attached to a media object (like the original *Legend of Zelda* from 1986), they will find a way to maintain that object through emulation, preservation, or remediation into new platforms. “Love will find a way” has long been an ethic and an aspiration in the digital humanities community, one that has now turned toward attempts to preserve the annotations and traces found in threatened library books, as in the “Booktraces” project.²¹

Video-game emulation, deep histories of the Atari Video Computer System, and the preservation of annotated books share an essential impulse that drives much preservation work in digital contexts: the *desire to preserve our encounter with a medium*, meaning both the media objects we are attached to, the matrix of experiences around them, and the cultural meanings and attachments they have accrued.²² The only way to regain the lost medium encounters of the past is through their transformation, emulation, or remediation in the present: that is the lesson we turn to in Chapter 3.

We curate the past by re-mediating it, which means changing and transforming it into new forms of visibility, readability, access, and use. One of the primary ways that cultural heritage institutions mediate the past is through storytelling and narrative, digital or otherwise. Storytelling is a primary technology of any narrative form, including this book. Thus far, we have been telling the story of the development of digital cultural heritage and curation, as part of both the Digital Humanities conversation and as part of the universal intersection of humanistic disciplines and goals with the current digital mediation of the academy, economy, and society. When we are telling a story of historical development, we are returning to the roots of the humanistic and historical disciplines, returning indeed to an original technology of the word developed in the “inquiries” [*historíēs*] of Herodotus, a key

moment of historical remediation that has a claim to found history as a discipline.

Mediating the Past: Herodotus, Historical Inquiry, and Loss

Here are presented the results of the enquiry [*historiês*] carried out by Herodotus of Helicarnassus. The purpose is to prevent the trace of human events from being erased by time, and to preserve the fame of the important and remarkable achievements produced by both Greeks and non-Greeks; among the matters covered is, in particular, the cause of the hostilities between Greeks and non-Greeks. According to learned Persians, it was the Phoenicians who caused the conflict.

Herodotus, *The Histories*, Book One

While self-curation and self-marketing are primary acts of historical mediation in the present, the work of historical mediation also marks the very beginning of historical writing. Consider the opening of Herodotus' *Histories*, written around 430 BCE. Herodotus' histories of the Persian Wars, the "history" or narrative account that gives its name to all later histories, begins with a name, a place, a conflict, and a division between "us" and "other." Herodotus was born in Helicarnassus, on the western coast of modern Turkey, part of the Persian Empire at the time of the conflicts he describes; he thus begins his history at the contact zone between two different imperial forces of his moment: the Persian and the Greek. His story is that of a conflict between the Greeks and non-Greeks – literally, the "Barbarians": those who do not speak intelligible Greek. Yet Herodotus' own name signals that he does not come from the Athenian context in which he writes, but rather from Ἀλικαρνησέος [Helicarnassus], an unfamiliar Asian (Carnian) word with a Greek suffix – as the Perseus Digital Library markup allows us to see.²³ (Gregory Crane's Perseus Digital Library is a foundational digital humanities project in the Greek and Latin classics.) Herodotus' sources for the origins of that conflict are also outside the Athenian Empire, in the "learned Persians" whom he names but does not cite. Those authorities tell of the origins of the war in a third party: the Phoenicians. Herodotus thus speaks with an authority derived from his contact with non-Greek experts and the non-Greek world, and his slightly foreign name, in order to tell Greeks about the world around them. This is what Michel de Certeau will call a "heterology": a discourse about the other which is also *authorized* by the other – the past, Asia, the practices of the barbarians.²⁴ Because the *Histories* are organized as long accounts of the strange traditions of various foreign nations from the Persians to the Egyptians, it's also one of the ancestral documents of what

Edward Said calls “orientalism”: the construction of the West (here the “Greek”) through an archive of knowledge about its Others, the non-Greeks.

More than just an account of other nations, Herodotus’ opening also stages an encounter between two media forms: the epic storytelling tradition, indicated by the dialectal form of his name, and the *ιστορίης* (*historiês*), the written form in which we still read his words. History is from the beginning a transformative encounter between two technologies of the word and two regimes of thought: literacy and orality.²⁵ The opening to the *Histories* thus also contains its own *formal* Other within it, in the markers of the storytelling tradition that still animates history today.

Finally, Herodotus’ opening proclaims its desire to preserve the past – “to prevent the traces of human events from being erased by time” – a key ambition of all the historical disciplines to follow. What should we preserve, what histories should we write, through what means and mediations, and in what accent? These are central questions for all the technologies of the humanities, from the written word to the database form. In what follows, I consider preservation and loss in its most common institutional situations and in our most intimate digital acts. I organize my discussion around some of the most common forms through which the past is mediated to us: archives, museums, historical public testimony, and digital storytelling. I put these forms of historical mediation alongside a brief history of Digital History as one of the primary fields that has contributed to the institutional Digital Humanities. Digital History has not always historicized the sources and arc of its own development, though there are now excellent accounts of specific periods of its development by Adam Crymble and others.²⁶ This introduction will outline some of the central relevant episodes in the long history of History as a discipline, drawing on accounts of the field that recognize the primacy of digital remediation for any account of history in the present: “we [historians] are all digital now,” as Ian Mulligan rightly puts it.²⁷

Archive, Database, Archivists, and Erasure

Archives are primary forms that mediate the past, across the historical disciplines, sites where power intersects with knowledge in an exemplary way. Archives in the West, as Peter Burke reminds us, descend from early modern colonial and imperial information-gathering: “the extension of knowledge [was] a precondition as well as a consequence of the expansion of empire” (117). States have used writing as form of control at least since the first records of taxes and loaves on the first Sumerian tablets: The extension of state power and the reflexive record of that power are coterminous from the

BOX 2.1 Origin stories (4): The classics

A fundamental area of Digital Humanities work has been the remediation of classic texts that ground major cultural traditions, like the Perseus Project. Those surveyed herein are only some of the founding projects; full bibliographic data is given in the Bibliography.

Jewish and Christian Classics have been the subject of many fundamental projects, from the concordance to Aquinas to the Digital Dead Sea Scrolls. Clivaz et al. discuss digital work in Biblical, Early Jewish and Early Christian studies in *Ancient Worlds in Digital Culture* (2016).

Islamic and Middle East Classics are surveyed in Muhanna, *The Digital Humanities and Islamic & Middle East Studies* (2016). Miller and colleagues, in “Digitizing the Textual Heritage of the Premodern Islamicate World” (2018), discuss the vast range of Arabic, Persian, and Turkish materials now being assembled in digital form.

Greek and Roman classics have been well represented in the Digital Humanities since the founding of the Thesaurus Linguae Graecae in 1972 and the Perseus Project in 1987.

Chinese Classics were digitized after 1984 in the Scripta Sinica, a “full-text database of the Chinese Classics” (漢籍全文資料庫).

Buddhist Classics across traditions are available at the Buddhist Digital Resource Center in scanned manuscript and text.

earliest major empires onwards.²⁸ But there’s a marked increase in the production and centralization of knowledge through state archives with the growth of the major imperial states, first in fourteenth-century China (the Ottoman and Mughal empires), then increasingly in the European colonial states after the seventeenth century.²⁹ Archives, maps, and questionnaires were all tools of the Western colonial states, used to collect and control information about their areas of control: In this, as in many domains of knowledge and power, “the periphery was surveyed before the centre” – and thus the tools of imperial control are only later imported to the Western capitals.³⁰ The first databases of empire – and thus direct ancestors of quantified history – were the ledgers, forms, files, and ways of organizing the periphery into legibility for the imperial center, both within the imperial state itself (as in the case of the “paperwork empires” of Louis XIV in France and Catherine the Great in Russia)³¹ and for the imperial metropolises which organized the colonial peripheries into the “Orient,” “Middle East,” “Afrique occidentale française,” or “Far East” for the purposes of both knowledge and its control. These famously became organized into “statistics” for the purposes of the state, as the German etymology shows (Gr. *Statistik*, related to *statisticus* in New Latin and *Staat*, the state in German).

In the first generations of digital humanities work in the latter half of the twentieth century, major editorial projects were often called “archives” because of the institutional and scholarly prestige that archival work implies. As Ed Folsom says, “We call it The Walt Whitman Archive, but that’s a metaphor, meant to evoke the dust and texture and smell of the old books and documents themselves. The Whitman Archive is, in actuality or virtuality, a database.”³² For Folsom, an archive always implies a place: “difficult to access physically, often unreliably cataloged, always partial and isolated, requiring slow going.”³³ That difficulty and unreliability is part of the archive’s appeal, for the historian and the critic: “The archive” in this unmediated sense always remains too large to be entirely traced and encompassed, like material history itself. The Whitman Archive for Folsom exemplifies “database” as “the genre of the twenty-first century,” a genre characterized by “access, immediacy, and the ability to juxtapose items that in real space might be far removed from each other.”³⁴ Databases are of course highly mediated, constructed, and material forms, rife with occlusions and ideological choices, as any creator or maintainer of a database knows, while giving that impression of immediacy that Georg Lukács and Anna Kornbluh see as intrinsic to uncritical thought.³⁵

“Archive” also denotes a professional domain, and “archivist” is a job, as B. M. Watson’s “Please Stop Calling Things Archives” notes.³⁶ Watson objects to the casual use of “archive” to describe a personal collection of items, a website, a flashdrive, or the unmediated materials of history. “As many historians currently use the word ‘archives,’” Watson writes, “they seem to imply that an archive is the natural state in which primary sources arrange themselves after being discarded or left by their creators. It creates the false impression that there is little to no work that goes into making primary sources available to researchers, and – more dangerously – that archives are even a neutral or unmoderated space.” She argues that this erases the careful work of highly trained archival specialists, “reduc[ing] the labor of me and my (mostly women) colleagues to reading room furniture or ‘obstacles’ in the way of (mostly male) historians.”³⁷ The labor of archivism thus is erased, along with the careful arrangements of knowledge and power that create and sustain archives in the present as well as the past.

What historians and theorists often mean by “the archive,” the sense to which Watson reacts, is the entire body of primary materials – indeed, possible primary materials – out of which narrative histories are written. Black Atlantic historians speak of the “archive of slavery” in this sense: not as something to be captured or remediated, but largely as the traces of an absent presence of which we are “in the wake,” as Christina Sharpe puts it.³⁸

An archive is a location of institutional power and technical authority, as well as erasure and dispossession, and the two must be thought of at once. As Puthiya Purayil Sneha reminds us, decolonization of the archive has a long history in India and throughout the colonized world, where archives were first of all excavated as records of colonial administrative rule.³⁹ The subfield of “critical archival studies” considers the ways that the colonial archives in particular are products and agents of state power, as Ann Laura Stoler argued in *Along the Archival Grain*, and the archive must be read against its official narrative in order to recover voices otherwise lost to history. Engaging with this history of power and erasure implies rethinking the beginnings of Digital History in the statistical explosion of the modern European empires, its contested disciplinary origins in the first wave of work on “cliometrics” in the mid twentieth century, and Digital History’s most recent reckoning with the history of Atlantic enslavement.

Digital History I: Cliometrics, the History of Enslavement, and the Critique of Reductionism

History has long employed numerical and statistical evidence, including visual arguments: Charles-Joseph Minard’s famous visualization of the declining number of troops in Napoleon’s army during the invasion of Russia in 1812–1813 (Fig. 2.1) was part of a historical argument that demonstrated the role of temperature and geography on military history. If we include all broadly quantitative arguments within the prehistory of “digital history,” then the latter would begin with the eighteenth- and nineteenth-century formalizations of historical economic evidence, from Adam Smith to Marx and the invention of modern “critical source history” by Leopold von Ranke and others.⁴⁰ Historians operate on several broadly quantitative lines from the nineteenth to the twentieth centuries, as in the *Annales* school of long-term history in France, orthodox historical-materialist history in the communist East, and the school formed around the *Economic History Review* (founded 1927). One tradition in the Digital Humanities grounds itself in exactly this history of quantitative abstraction, as in Franco Moretti’s invocation of Fernand Braudel and Immanuel Wallerstein’s “world-systems” economic history to ground his notion of “distant reading.”⁴¹ Computation becomes a part of these quantitative traditions as early as 1949, according to historian William Thomas III, with Frank Owsley’s analysis of tax returns and census data in the American South (a frequent battleground for digital historians).⁴² Adam Crymble points to a much longer history of quantitative

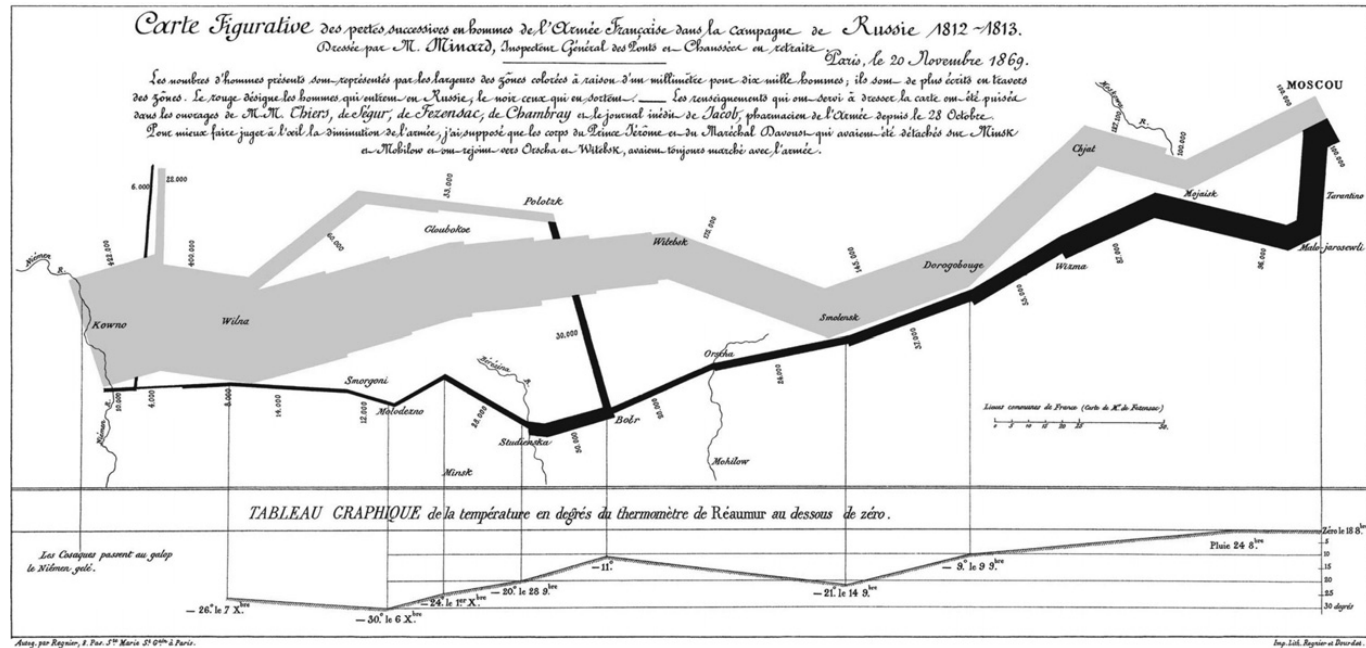


Figure 2.1 Charles-Joseph Minard's 1869 "Carte Figurative," showing the number of men in Napoleon's 1812–1813 Russian campaign army and the temperature they encountered on the return path.
 Photo: Blueee/Alamy.

and analytic approaches in social and economic history in particular, as part of the rise of the positivist social sciences in the nineteenth century.⁴³

Statistical and quantitative abstractions are a form of information reduction: techniques that reduce the richness of qualitative objects to a few countable dimensions, in order to produce an intellectual gain. Whenever we count people, texts, aspects of language, or aspects of human experience, we reduce their irredeemable human complexity in the service of some abstracted intellectual gain. Whenever we produce models of history or human experience – including those models we call “theories” – we reduce the complexity of the object in order to produce a gain in understanding. Reductions can be both intellectually useful and deeply dangerous, as the controversy over the “New Economic History” and “Cliometrics” in the US recalls.

That controversy is worth recalling briefly here, for both its importance to local histories of Digital History and its lesson for quantitative reductionism in the present. The mid twentieth-century “cliometrics” controversy centered on two major books: Alfred Conrad and John Meyer’s *The Economics of Slavery in the Antebellum South* (1958), and Robert Fogel and Stanley Engerman’s *Time on the Cross* (1974), a major keystone of the “new economic history.”⁴⁴ Both these volumes were revisionist histories of the American Civil War and its relationship to slavery, written by economic historians: Conrad and Meyer argued that slavery would have persisted long after the US Civil war, using statistical arguments to present the case for the “productivity and efficiency” of slave economies. Fogel and Engerman went further, provoking a disciplinary firestorm that can still be felt today. As one (sympathetic) economic historian summarizes Fogel and Engerman’s argument: “*Time on the Cross* presented a comprehensive reinterpretation of American slavery, [utilizing] the framework of neo-classical economics to argue that it was efficient, productive and humane, and contributed to Southern economic progress.”⁴⁵ Slaveholders were recast by Fogel and Engerman as rational business actors who would never damage the returns on their human property through practices like over-whipping, bad housing, or sexual abuse. This argument met with horror on the part of most historians of slavery, who picked apart its ideological assumptions, poor use of sources, and sweeping argumentative leaps, as well as basic errors in long division. The general conclusion of the critics, voiced by Thomas Haskell, was that the book was so flawed it did not deserve any further scholarly attention at all.⁴⁶

What this controversy demonstrated, for many historians, was that strong arguments based on econometric and other reductive quantitative methods, like those of the New Economic History, or “Cliometrics,” were entirely

unsuited for nuanced historical accounts. What one critic says of Fogel and Engerman was extended to econometric approaches to historical data in general and still resonates today: They show a “curious combination of technical sophistication and historical naiveté.”⁴⁷ Fogel and Engerman came to stand in for the failures of quantitative reductionism tout court: the lack of attention to the lives of the enslaved; the idealization of a profit calculation over contextual knowledge; the commitment to a model over local and particular histories; the inability to read archival silences and repressions; and, perhaps worst of all, a commitment to an “emotionally detached” analysis of slavery as a rational, productive system that recapitulates the attitudes of the enslavers themselves.⁴⁸ Against the notion of a “dispassionate” analysis or statistical reduction of the archive of slavery, more recent histories of slavery take the view of the enslaved themselves as their starting point.⁴⁹ These histories often position slavery in intimate proximity to “racial capitalism” (as in Walter Johnson’s *River of Dark Dreams*), and make the erasures and silencing of the past the starting point of a critique of any “neutral” approach to the “data” of slavery.⁵⁰

The critique of cliometrics, for contemporary digital humanists, centers on the problem of digital reductionism itself, and in particular the reduction of suffering, enslaved people to numbers in an econometric analysis. As Jessica Marie Johnson notes:

Statistics on their own, enticing in their seeming neutrality, failed to address or unpack black life hidden behind the archetypes, caricatures, and nameless numbered registers of human property slave owners had left behind. And cliometricians failed to remove emotion from the discussion. Data without an accompanying humanistic analysis – an exploration of the world of the enslaved from their own perspective – served to further obscure the social and political realities of black diasporic life under slavery.⁵¹

Johnson extends this critique of the data of slavery to a major library-based digital humanities project, the Trans-Atlantic Slave Trade Database (now “Slave Voyages”): The transfer of “data” from slave voyages encodes “skin color, hair texture, height, weight, age, and gender in new digital forms, replicating the surveilling actions of slave owners and slave traders” (59–60). While the database form enables entirely new forms of scholarly and public participation in the history of the slave trade, it at the same time remediates the reductions and reifications of slavery itself. There is no easy way out of this dialectic of historical discovery and erasure. Scholars of slavery and the database must

reckon with the thingification (Johnson's theoretical translation of "reification") implied in the creation of data out of human life.⁵²

The dispute over the "new economic history" and cliometrics does not stand in for all others, even in the Anglosphere, let alone the vibrant quantitative-historical work in France and Italy during the same period. As Adam Crymble points out, in the case of demographic historians at Cambridge and elsewhere in the UK, the major quantitative histories were often undertaken as part of a move toward "history from below," an attempt to recover histories hidden by the ruling classes.⁵³ What the cliometrics controversy demonstrates, in an important early case, is the inseparability of archival discovery and analysis from historical erasure and its critique. Preservation and loss are two parts of one ineluctable process, for history and within historical method. Critique of the historical record, its gaps and elisions, and the methods through which we make that record visible are thus essential to a self-reflective digital humanist practice.

Digital History II: The "History Web" and Mass Digitization (1993–2006)

From the time of the cliometrics controversy in the mid twentieth century to the first internet browsers of the early nineties, historians mostly presented their materials through mediums codified by the early humanists, augmented by the rise of the social sciences and statistical abstraction over the course of the nineteenth and twentieth centuries: books, articles, illustrations, graphs, and the occasional museum and library display. Even the work of the Literary and Linguistic Computing Centre at Cambridge, established in July 1964, was largely oriented toward the traditional objects discussed in Chapter 1: indexes, concordances, and dictionaries.⁵⁴ The parallel Cambridge Group for the History of Population and Social Structure was also founded in 1964, and established an early association between computation and historical demographics and statistics in Britain.⁵⁵ (Quentin Skinner's first lectureship appointment at Cambridge was in 1965, setting up what would become a hardly coincidental contrast between "Cambridge School" contextual historicism and computational approaches to history.) Only in the late 1980s and early 1990s did historians begin to experiment with new forums of historical presentation: first microfilm transfers, laserdiscs and CD-ROMS, then private networks and FTP (file transfer protocol) sites, the cutting-edge technologies of their time.⁵⁶ The Library of Congress began a systematic transfer of materials to optical discs and microfilm as early as 1982, expanding the effort into the "National Digital Library Program" in 1994.⁵⁷

In 1993, Mosaic – the first graphical web browser based on the HTML protocol – was released at the University of Illinois. Other browsers, including Netscape, soon followed. (The graphical web browser was not the first “internet” device, as Julien Mailland and Kevin Driscoll recall in their work on the Minitel network, but it was by far the most successful.⁵⁸) The first issue of *Wired Magazine* was published in the spring of 1993 as well, proclaiming the inevitability of the “hyperlearning” revolutions which would soon eliminate outdated classrooms, the first of many such EdTech (educational technology) pronouncements.⁵⁹ Daniel Cohen and Roy Rosenzweig began their epochal volume *Digital History* with this union of capitalist hype and academic and scientific standardization, both intrinsic components of the internet revolutions. Historical use of website technologies was first slow and then explosive, as they recall: George Welling constructed perhaps the first US history website at the University of Groningen’s Humanities Computing program, one of the first of its kind, in November 1994, and by 1996 there were 873 websites on US history alone.⁶⁰ Cohen and Rosenzweig’s book, in its influential hybrid digital–print form, was a fundamental part of the optimistic vision of the nineties and early naughts. Practical, progressive, and oriented toward the problems of the working digital historian, it articulated a hopeful vision of the ways that digital affordances “allow us to do things better”: Capacity, accessibility, flexibility, diversity, manipulability, interactivity, and nonlinearity all lay ahead of the digital historian, while certain roadblocks remain (among them quality, durability, and inaccessibility).⁶¹

The shocking promise of the early web era, hard to recall two generations later, was that “millions have access to their own printing press,” a radical extension of the “Gutenberg Revolution” that promised to unsettle social, political, and epistemic hierarchies.⁶² Paraphrasing the hypertext critic George Landow, along with an entire narrative about postmodern technocultures, Cohen and Rosenzweig argue that “conceptual systems ‘founded upon ideas of center, margin, hierarchy, and linearity’ are overturned in the Hypertext Era by ‘ones of multilinearity, nodes, links, and networks.’”⁶³ Centers are disrupted, and hierarchies will not hold. They note that history as a profession relies on hierarchies of knowledge, circles of privilege, and a linear model of development: student to apprentice, apprentice to first-time author, author to authority. The overturning of hierarchies and linear modes of publication by the introduction of a private printing press in every home threatens that narrative of progressive development with epistemic chaos. But these facts should not make us throw up our hands in despair, Cohen and Rosenzweig argue: “Rather – and this is a key message of this book – they should prod us to sit down in front of our computers and get to work” (13).

This pragmatic and goal-oriented approach to Digital History was widely influential in the US and the Anglophone countries. Less worrying, more typing; less “yacking,” more “hacking,” was its motto. The problem was that “just getting to work” presumes both that we know what our work should be and that public history, preserved on websites and databases, would be the best way to go about it. Tens of thousands of historical websites were created during the “History Web” era, and most have vanished entirely, accessible only as fragments in the Internet Archive’s “Wayback Machine” or not at all. (The Internet Archive itself is a distinctively utopian yet practical project of the first web era, a nonprofit founded in 1996 to preserve as much of the open web as possible.⁶⁴)

At the same time, major institutional players were beginning to engage the era of “mass digitization,” the ongoing attempt to preserve and remediate cultural materials in digital form. Adam Crymble usefully summarizes much of the history of mass digitization in Britain and the US in his *Technology and the Historian*.⁶⁵ Major examples of mass digitization began in the sixties and seventies: ERIC, the Educational Resources Information Center sponsored by the United States Department of Education, and one of the first digital research libraries, began in 1964;⁶⁶ Michael Hart’s transcriptions of the Declaration of Independence and literary texts at the University of Illinois, the first basis for his idealistic (if flawed) Project Gutenberg, were established in 1971.⁶⁷ In the US and Britain, many of the first mass digitization efforts were inspired by E. P. Thompson’s notion of “history from below”: Tim Hitchcock and Robert Shoemaker’s landmark digitization of prison records at London’s “Old Bailey” arose from a commitment to working-class and social history, in part in opposition to projects centered on the major British thinkers and writers, like the Newton Project at Oxford (founded in 1998).⁶⁸ In the US, labor historians and educators Herbert Gutman and Steve Brier took the notion of “history from below” as one of their inspirations for the American Working Class History Project at the City University of New York.⁶⁹ Their textbook *Who Built America?* collected a series of primary sources into a revisionary account that was adapted into an educational CD-ROM that was shipped with every Apple computer sold to educational institutions in the US.⁷⁰

Partly in response to the era of mass digitization and “multimedia” education, Roy Rosenzweig founded one of the most important models for Digital History: the Center for History and New Media at George Mason University (CHNM). The CHNM served as a model for collaborative and largely government-funded research that recentered the needs of historians, librarians, archivists, and museums. Projects developed by the CHNM were

widely adopted by those professions, including Omeka (a web-based publishing platform for museums and collections) and Zotero (a web-based citation and bibliography tool widely used by humanists). Also widely influential was the “DH Center” model of collaboration between humanists, librarians, software developers, and governmental funding bodies at George Mason and elsewhere. Digital humanities centers and labs have been essential parts of the second wave of digital humanities growth and institutionalization, as in the Center for Digital Narrative at the University of Bergen, which studies electronic literature, games, and digital culture. Bergen is one of twenty-plus formal centers devoted to digital humanities research in Europe alone.⁷¹

What has most lasted from the History Web era is not particular websites or archives, but rather the forms of collaboration and collective knowledge production pioneered in places like Roy Rosenzweig’s CHNM; the Center for Digital Narrative at Bergen; the Digital Humanities Summer Institutes at Victoria, Oxford, and elsewhere; and a thousand micro-collaborative Technology and the Humanities camps, colloquially known as THATcamps. These were formative moments of exchange, most legible now in rather tattered Wordpress and Omeka sites and the occasional digital manifesto, but more permanently in the collaborative practices and projects of those who participated in them. Summer institutes, training camps, and Digital Humanities centers have been a core element in the global production of the digital humanities.

Digitization efforts accelerated around the turn of the century, first with the private companies that digitized library collections – the University of Michigan and Proquest’s Early English Books Online (2000), Gale-Cengage’s Eighteenth Century Collections Online (2003) – then with Google’s commitment to digitize the world’s books in Google Books (2004). Major private as well as institutional players are invested in the digitization of records and census data, with the genealogy firm Ancestry.com digitizing 30 billion records by 2022.⁷² Scraping the open web became a major source of training data for LLMs, to the point that web providers have begun building anti-AI web-crawling blocks and traps composed of AI-generated fake pages.⁷³ The era of mass digitization has thus culminated in a series of public and private repositories, some open to all, some gated behind library credentials and private firewalls, even as the for-profit digitization of everyday life, culture, and economy has accelerated enormously.

Digital History III: Participation, Standardization, and Storytelling in the Twenty-First Century

The story of digital historical work after the “History Web” era is one of both standardization and participation, elaboration and cross-pollination with

other disciplines. Historians were among the first to engage what was called, as early as 1999, the “Web 2.0” moment of participatory, interactive, and socially networked websites.⁷⁴ While the blog and the Wiki stand as lasting epitomes of “Web 2.0,” most of the central digital humanities projects of the last twenty years engaged the social and participatory turn in various forms.⁷⁵ Major examples of community interaction include the Transcribe Bentham Project, which allowed thousands of participants to transcribe original and unstudied manuscripts in the Bentham archives at University College London,⁷⁶ and the many oral history projects, like New Roots/Nuevas Raíces, an oral history of Latin American life in the American South.⁷⁷ Beyond the participatory website or oral history, the primary forms of historical scholarship – articles and books – themselves were opened up to collective annotation and critique, through major open scholarship platforms like CommentPress (home of Kathleen Fitzpatrick’s *Planned Obsolescence*, an inquiry into the future of publishing), open web annotation tools like Hypothes.is, and open publication platforms such as PubPub.⁷⁸ Major historians not identified with “digital history” engaged with digital maps and open data replication, like Jill Lepore’s data replication repository for *New York Burning*.⁷⁹ Calls for open data, and the replication crisis that began in psychology before spreading to many other social sciences and professional schools, meant that open data standards and repositories became increasingly common, if not mandatory.⁸⁰

History was also transformed by the social media explosion of the early twenty-first century, both at the level of the object – in the “Big History” era that mapped major historical events like the Arab Spring of 2011 through participant cell phone data – and at the level of the field’s internal conversation.⁸¹ Digital humanities platforms all integrated social media feeds and comments after the explosive growth of (now declining) platforms like Facebook (2004), Twitter (2006), and Instagram (2010) – a conversation once largely conducted on Twitter (before its turn into an instrument of alt-right radicalization). This socialization of the research conversation can also be seen in the changing digital mediation of the Debates in the Digital Humanities volumes at the University of Minnesota Press. This canonical series of self-reflections in the field were first hosted through the open-source CommentPress plugin for “social texts,” and then moved to the Manifold platform hosted by the University of Minnesota Press, a public–private collaboration, in a form that allows for both private and more public forms of review and contestation.⁸²

The Center for History and New Media’s Omeka exhibit builder was one of many projects to build the infrastructure of social and participatory history in

this period.⁸³ Omeka also marked a turn toward standardization and permanence in Digital History and “public humanities,” meaning humanities work intended for a broad public audience outside the academy. Omeka exhibits were created with standardized “metadata” categories – “Creator,” “Publisher,” “Format,” “Date,” and so forth – that, in theory, made anything a user entered in them machine-readable and accessible to others on the “semantic web.”⁸⁴ As the capabilities of machine reading and analysis have increased, such efforts begin to look outdated. Classifiers and generative AI models now easily “read” and categorize entire sections of the old open internet, without the help of metadata or markup. For library and archival preservation, as well as citation tools like Zotero, clear metadata markup still matters.

Quite different from the trend toward standardization are the many projects to engage digital historical storytelling through new forms. Some of these were vivid visualization projects like “A Knotted Line,” an astonishing Adobe Flash project on the interplay between freedom and constraint in the long history of slavery and emancipation, now a victim of the quick obsolescence of its platform.⁸⁵ Elsie Paul’s Indigenous multimodal book/site *As I Remember It* stages both oral and written histories of the ɫaʔamun (Coastal Salish) people in a way that displaces the standard colonizing gaze of the web browser: Outsiders are asked to enter the site as guest-friends, not as potential consumers, appropriators, or litigators.⁸⁶ (We will examine this and other experimental mediations of Indigenous cultures in Chapter 4.) Oral storytelling traditions, the motor of historical narrative since Herodotus, still animate the digital histories of the present.

Global Histories of the Digital Humanities

History has long since undergone a global turn as a discipline, one presaged by Eric Williams’s history of *Capitalism and Slavery* (1944) at a global scale, Eric Hobsbawm’s astonishing global histories of revolution and empire (1962–1991), the world-systems histories of Immanuel Wallerstein and others, and the mid-twentieth century work of the *Annales* historians in France. Global history has more recently been epitomized by materialist, data-rich accounts like Sven Beckert’s *Empire of Cotton* (2014) and *Capitalism: A Global History* (2025) and Jo Guldi’s *The Long Land War: The Global Struggle for Occupancy Rights* (2022). These long-durée and macrohistorical accounts are in productive tension with the geographically specific “microhistories” epitomized, in the Digital Humanities, by Ed Ayers’s work on *The Valley of the Shadow* (1993) and Vincent Brown’s *Slave Revolt in Jamaica* (2012).⁸⁷

The historiography of the Digital Humanities has been globalized as well. Many responses to the consolidation of Digital Humanities organizations after 2006 were articulated through alternative histories positioned outside the Anglophone world: Domenico Fiormonte critiqued the monolingualism of DH tools and histories, and argued for a Bourdieuan critical reflection on their use (“Towards a Cultural Critique”);⁸⁸ his *Global Debates in the Digital Humanities*, edited with Sukanta Chaudhuri and Paola Ricaurte, provides another set of histories outside those of the Anglophone Global North.⁸⁹ The oral histories in Nyhan and Flinn’s *Computation and the Humanities* demonstrate the diverse set of origins and entanglements between particular projects and the midcentury political and economic conjuncture that generated Humanities Computing.⁹⁰ Other points of origin include the creation of the Scripta Sinica, a major project in the remediation of the Chinese Classics, and, more generally, the parallel Chinese developments in corpus linguistics and GIS.⁹¹ Multilingual tools and platforms have increasingly become the standard across digital humanities journals, platforms, and corpora, as with the Dorothy Kim and Adeline Koh’s *Alternative Historiographies of the Digital Humanities*. Kim and Koh’s volume represents a useful moment of protest to standard DH histories, from its counter-history of the Father Busa narrative, through the military and fascist uses of computational social science (Arun Jacob), to the Indigenist projects of recreating the futures of tribal communities, not just archiving their pasts (Siobhan Senior).⁹² A major aporia in digital humanities histories has been parallel work in the (computational) social sciences, as many commentators have noted. Many of the most important tools and resources for digital humanities work are adapted within collaborative and interdisciplinary contexts.⁹³

The global turn in the history of the institutionalized Digital Humanities is well underway, at the levels of institutions, programs, and historiography. Globalization in the digital humanities means, at the first level, the nominal global turn in conferences, organizations, summer schools, and volumes, like the important survey *Global Debates in the Digital Humanities* (Domenico Fiormonte, Paola Ricaurte, and Sukanta Chaudhuri, eds., 2022).⁹⁴ As the editors of that volume recount, the global DH conversation shifted considerably in 2013 with the emergence of the Global Outlook Digital Humanities group. Conferences on Global DH in Australia (2015), the TransformDH movement, the Asociación Argentina de Humanidades Digitales conference in 2016, and the 2018 Alliance of Digital Humanities Organizations (ADHO) conference in Mexico City all marked a shift of linguistic and geographic terrain.⁹⁵ Summer schools and centers have been established in Nigeria, South Africa, and throughout Latin America and the Caribbean, though formal

“digital humanities” programs still remain mostly confined to Europe and North America.⁹⁶ Graduate programs have grown explosively in East Asia in particular, though as Jing Chen and Lik Hang Tsui point out in their survey of the region, no unique term for defining “digital humanities” in Chinese exists across Hong Kong, Taiwan, and mainland China.⁹⁷

The apparently global shift signaled by the ADHO and others is more than merely nominal, yet these shifts bely the continuing material dominance of the Anglo-American and European centers of DH work. Most DH scholarly venues and organizations which operate internationally do so in English; the flagship journals have only recently begun to offer bilingual and multilingual articles and issues.⁹⁸ Publications, research programs, summer schools, grants, and research visibility all depend on research protocols set in the metropolitan North. Even (in fact, especially) in pan-European projects like DARIAH, English remains the privileged language in a way that occludes the labor of translating thought and programs into other domains.⁹⁹ The relative dominance of English as the language of scholarship and research is debatably strengthened by the rise of India as a center of scholarly research and publication. Whether or not these developments are post-, neo-, or hypercolonial is a valid area of debate in the field.

Discursive and disciplinary relations of power reflect a changing global political economy and society, as demonstrated by the marked rise of Chinese scholarship and concerns in international Digital Humanities journals and, indeed, across published academic research.¹⁰⁰ Critical theorists of DH have proposed a number of new directions that move beyond the merely global coordinates of international organizing, an internationalism that recapitulates dominant racial, linguistic, and cultural norms of the neocolonial world. Fiormonte, Ricaurte, and Chaudhuri propose their scholarship as a form of “epistemic reparation” toward the marginalized scholars and societies of the world, largely those in the Global South (understood as a set of marginalized, racialized positions and standing labor reserves that interpenetrate any literal “North” or “South”).¹⁰¹ Anne McGail, Angel David Nieves, and Siobhan Senier’s *People, Practice, Power* positions itself “outside the Center” of Digital Humanities, in the institutional sense, the academic sense, and the geopolitical sense.¹⁰² Robin Wharton proposes a theory of resistance as self-reflective practice within the digital humanities, including the resistance to the most common forms of pedagogical conformity.¹⁰³ And a variety of theorists have proposed postcolonial, decolonial, intersectional, and materialist critiques of digital humanities norms and practices, as we will see in Chapter 5.

Any discussion of the global horizons of digital humanities work, as of digitalization more broadly, must attend to the specific dialectical relation between the global and the local, to the way that the peripheries produce the center as well as the reverse, and the way both are shaped by a specific moment in the global political economy. We must also attend to relations of dialect within the dialectic of the particular and the universal, to what Roopika Risam calls the “DH accent.” Scholarly conversations are also “dialectics” in the original sense of “conversations” between unequals, in which equality must become an active project; we conduct that conversation in our own dialects and accents, in ways that mark us as relatively inside or outside institutional structures of power at the level of nation, geography, discipline, sex, and gender. (As the Carian dialect of Herodotus’ *Histories* recalls, nonnormative dialects can bestow the authority of the cultural Other on a speaker, as well as take it away.) In “Other Worlds, Other DHs,” Risam points out the surprising ways in which, when evaluating the South Asian *Bichitra* project, her own geographic “accent” as a scholar in the US overrode her disciplinary “accent” as a postcolonialist.¹⁰⁴ As her account shows, the classed, placed, and racialized accents of our work inflect how we read and evaluate, not just how we write. Any dialectical account of the Digital Humanities world must attend to the dialects in which we work, our place in the global economy, even as we attempt to make our fields open to all. Accounts of the globalizing force of digital tools and platforms must acknowledge the fundamental ways in which those platforms are “structured in inequality,” as Stuart Hall put it, and maintain fundamentally inegalitarian relations. At the same moment, those tools and platforms are constantly being appropriated and reused in ways that cannot be controlled or predicted, by both emancipatory and appropriating forces.

After these somewhat abstract discussions of the “global,” it can help to pause on particular projects and visualizations through which that history is mediated to us. One important visualization discussed by Risam, Amy Earhart, and others is Melissa Terras’s visualization “Quantifying Digital Humanities” from 2011, a useful marker of the post-2006 high point in the expansion of Digital Humanities centers and events (Fig. 2.2).¹⁰⁵

This infographic, along with the accompanying list of research activities in the Digital Humanities, captures one Anglo-American version of the Digital Humanities exceptionally well. Many scholars have registered objections to the particular inclusions and exclusions in the lists of centers and agencies here. But this relatively clear infographic lets us pose helpful questions about how the “global” is usually imagined and transmitted to us as an idea and a representation. What does the world look like? How are countries and

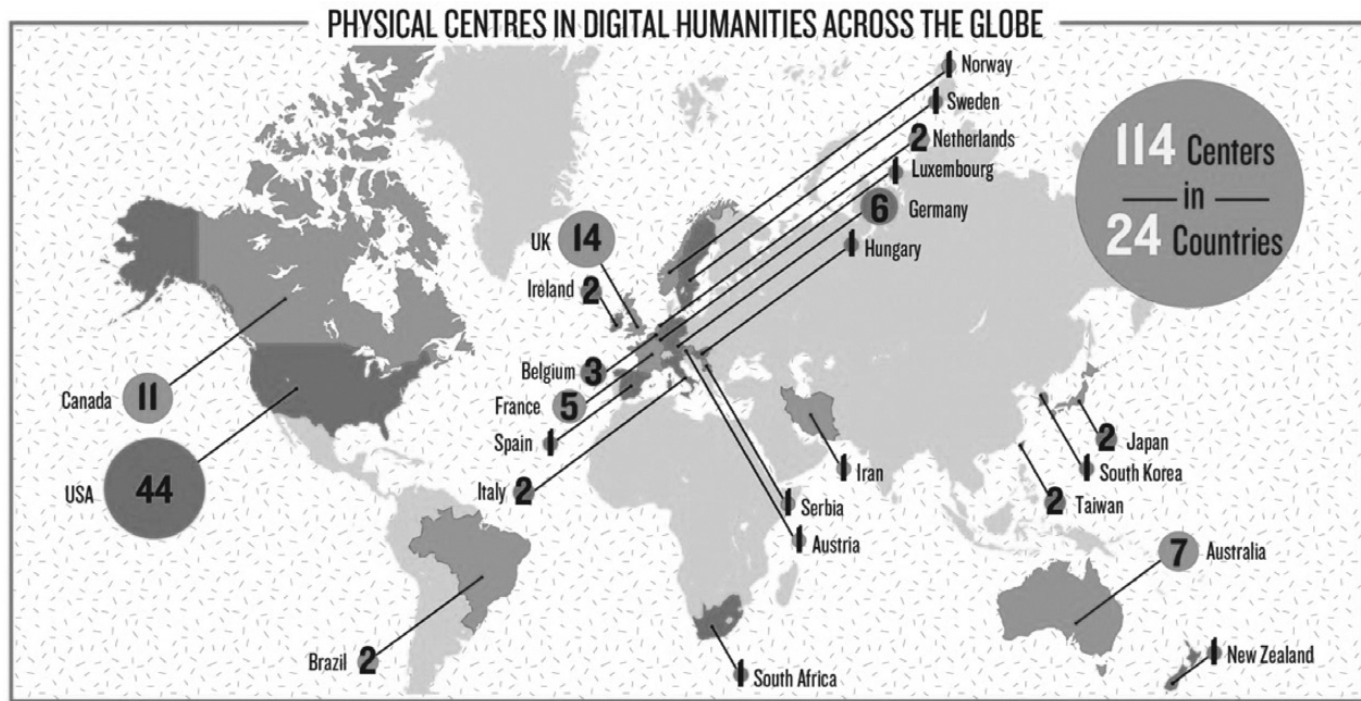


Figure 2.2 Detail from “Quantifying Digital Humanities,” 2012. Melissa Terras/UCL Centre for Digital Humanities.
 Source: Melissa Terras’ Blog. <http://www.ucl.ac.uk/infostudies/melissa-terras/DigitalHumanitiesInfographic.pdf>. 2012. Accessed July 15, 2025.

territories demarcated above, and what defines their boundaries? Why the three-color schema for representing difference? Why no other boundary demarcations? What's the effect of using the Mercator projection, which famously expands territory around the poles and shrinks that located at the equator for the purposes of "straight-line" navigation? What might be left out of a simple count of "digital humanities centers" in academic institutions and libraries?

The debate over the global histories of the digital humanities gives us a set of questions we can ask of any particular map or moment of digital work in the humanities. What is the geographic and disciplinary "accent" of this work? What needs did it arise from, and what were the institutional, economic, and technosocial conditions that shaped it? What boundaries does it draw around its subject, and in relation to the wider world? What are its languages, and how does it constitute the normative language of the field? What makes it intelligible as a certain kind of work for a particular group of professionals? What does it position as central forms of knowing and working, and what intersections of class, race, gender, ability, geography, and discipline enable those ways of knowing and working? What absences, reductions, and erasures are necessary to make the map intelligible? What labor was needed to create it, and what freedoms from other labor? What kinds of scarcity does it respond to, and how does it envision or enact its future not just for those at the center, but for those at the margins?

These questions can be asked at all the various boundaries of the digital humanities, as a fundamental part of the boundary-drawing and redrawing of the conversation constantly happening in our own work. We draw a boundary whenever we write a line. The global turn in the digital humanities pushes us to recognize those working on the other side of that line, to see their labor as inseparable from our own freedom, and to participate in making new improvised collectives bound together by necessity and solidarity, new *gambiarra*s (a Brazilian term for technical improvisations in the face of scarcity) and *jugaads* (a Hindi word for a nonconventional, frugal workaround).¹⁰⁶ Global history requires us to deprovincialize our accounts, in part through better histories of the digital "periphery." We are all digital humanists now, but we have yet to fully grasp what "all" entails.

Transformations

This chapter takes up the transformations in humanist practice, beginning with the fundamental writing and reading environments of the early humanists and moving to contemporary digital workflows. The chapter considers a variety of transformative practices and techniques, from research environments to analytic tools to modes of open peer review. The chapter also takes up the transformative publics and methods of public digital humanities, an area of work explicitly devoted to outreach and public impact.

We live in a time of rapid, often disorienting change. It can help to orient ourselves to continuities across the long duration of changing research practices in the humanities, in order to understand the transformations now underway. This chapter emphasizes the continuities across the long history of work on the materials of the humanities across traditional scholarly cultures. As we have seen in Chapter 1, humanist research practices in the West coalesced in the late medieval period, in a time of massive intellectual and cultural change; were formalized in research-centered academic institutions in the nineteenth and twentieth centuries; and radically intensified around the turn of the twenty-first century.¹ Scholarly work in the Islamic and Chinese classics extends far longer, even as that work now participates in the global shifts in digital mediation. Part of the continuing claim of this book is that the examples of the early humanists, scholars, and translators still have much to teach us about the processes of innovation, stabilization, and community-formation in a time of rapid technosocial change. Thus, this chapter begins with Van Eyck's paradigmatic portrait of the late medieval scholar at work, "Saint Jerome in His Study" (1435), and a parallel portrait of the Ming scholar-official Wang Qiong (early sixteenth century), in order to identify fundamental continuities and differences between the origins of humanist research and humanities scholarship in the present. The chapter then takes up the fundamental transformations in reading and writing environments; annotation and peer review; research infrastructures; analysis and the research process; the transformation and stabilization of our materials into "data"; and the audiences and publics toward which our work is oriented.

Since all these features of the research environment are related, the discussion will necessarily be iterative as well as progressive, moving back and forth from the early modern period to the AI era.

This chapter begins with the most proximate examples of changing practices, then moves to the larger communities and technosocial infrastructures that mediate them. We begin with the question of transformations in reading, writing, and publishing, including social annotation and collaborative scholarly platforms. We then turn to research and analysis, including the contested questions of coding and machine learning. From scholarly platforms we move to the transformation of knowledge infrastructure and disciplinary method, including open peer review. We end with the transformative political claims of public digital humanities on audiences and the public impact of work in the humanities.

Reading and Writing Environments

As we have seen in Chapter 1, the environments within which most humanists think and write have been relatively unchanged for centuries: Here historical statisticians are the exception, not the rule. These composition environments begin with the elements of classical rhetoric and grammar; the codices, letters, and manuscripts; the pen, ink, sheet of paper, or papyrus; and the private libraries out of which more libraries are made. All of this is gathered in the closed spatial arrangement of the humanist's study, much like the one depicted in Van Eyck's famous portrait of St. Jerome (Fig. 3.1): "a walled-off space, writing and reading table, storage structure for research materials and a private collection of books, letters and visual materials; and musical, calculation or other instruments."² Classrooms, symposia, lectures, seminars and conferences functioned in the early modern period as extensions of this primary, private space, as ways of making it public or social.

This portrait of a fourth-century Church Patriarch as late medieval scholar is delightful for many reasons, foremost among them the apparent boredom of Jerome before his bookstand, despite the traditional presence of the small lion at his feet.³ So many books, instruments, and the traditional hourglass, warning us of the passage of time! Rather than busily composing the Vulgate in Latin out of his source texts with the small pen and inkwell on his table, a fundamental act of translation between source texts and the universal language of his time, Jerome is reading an anachronistically bound volume on his bookstand. Behind him stand reference works, scientific instruments, and various reminders of the redemption of the world by the Word made flesh. The calm study of the Saint within the worldly richness of his study –



Figure 3.1 Jan van Eyck, “Saint Jerome in His Study,” ca. 1435, oil on linen paper on oak panel. Detroit Institute of Arts, City of Detroit Purchase, 25.4.

and the splendor of Cardinal-red robes – recalls the monastic and aristocratic origins of humanistic study, an activity that erases in many ways the labor that goes into its own creation.

Humanist culture derives from an ancient privilege, the freedom from manual labor, as Eileen Gardiner and Ronald Musto recall: “The life of the singular mind [was] built upon the labor of the many and on the service of a literate but subordinate class of readers and amanuenses.”⁴ (Contemporary humanists, as they go on to note, often erase the work of the technical professionals that labor to embody their work in lasting print and digital forms.) This erasure of labor applies to the traditional attribution of the painting in Figure 3.1, attributed to “Van Eyck” rather than the unnamed apprentice who likely painted it in Van Eyck’s workshop. This study of the patriarch as humanist is thus a space set apart from the material world of work, laboring, social reproduction, and actual reproduction, even as it necessarily builds on the materials of that work in every symbolic detail. The inclusion of a nonhuman companion – the humanist at work with his pet lion – recalls the larger world that subtends human labor itself. Intellectual work is labor wrested from social and ecological reproduction, turned to ends other than those of the immediate moment – including the work of rethinking work.

To the idealized picture of St. Jerome, we could contrast the delightful sequence of Chinese paintings depicting the scholar–bureaucrat Wang Qiong (王琼, 1459–1532 CE), a sequence of forty-six painted leaves with titles such as “Studying Diligently in Youth,” “Passing the Highest Imperial Examination,” “Managing the Ten Treasury Offices,” “Dredging Rivers and Repairing Roads,” and “Assigned the Post of Provincial Governor” (Fig. 3.2). In contrast to St. Jerome’s privacy, Wang Qiong’s idealized study is at once a place of nature, repose, writing, and public service, its walls often transparent to the line of subordinates outside his door. The twisted line of the trees, and its natural irregularities, contrasts with the rectilinear perfection of Wang’s writing utensils; the luxury of his robes (like Jerome, in a deep, rich red in the original) unites him with the materials of his red writing-desk, and makes a precise contrast with the green of the tree and the blue of his subordinates. As often in the sequence, Wang’s writing desk seems to rise above the foreground, floating over the clouds that surround him and unite the activities of heaven and earth. This is a picture of the scholar–bureaucrat as political actor and player, still set apart by the insistence on a writing environment that unites study, order, and harmony.

The writing environment for most humanists in the present resembles the office of Wang Qiong more than that of St. Jerome, with an endless series of activities and tasks waiting just outside the door. What we can learn best from this official portrait, perhaps, is its sense of openness, harmony, and negative space. Digital humanists employ a number of new



Figure 3.2 職專巡撫 (“Assigned the post of Provincial Governor”) in “Ming Dynasty Activities of Minister of War Wang Qiong.” National Museum of China. Early sixteenth century.

Note: In the sequence “Activities of Minister of War, Wang Qiong (1459–1532).” Accessed July 15, 2025. <https://bit.ly/4rDrz2Q>.

Photo: The Picture Art Collection/Alamy.

writing and programming environments, some discussed in this chapter and the next, but we still require the balance between space, distance, inwardness, and yet connection to the public world that this portrait imagines in idealized form.

In the following I discuss transformations in humanistic research not in terms of particular tools or software – all of which changes by the day and the week – but rather through shifts in reading platforms, writing environments, scholarly infrastructures, and research processes over the long *durée* since the (very different) fifteenth-century scholars depicted in the portraits of St. Jerome and Wang Qiong. Our shifting and often conflicting identification with one field and tradition of research against others – statistical methods and abstractions, for example, or close reading and visual analysis – always takes material forms, in ways that cut across established fields and disciplines. This is one primary meaning of digital mediation: Our working methods materialize a historical moment, whether that of late medieval humanism or our own era of digital immediacy. Following the tradition of feminist science and technology studies, this discussion centers on the material correlates of the digital turn in digital scholarship in the humanities, always understood as itself a series of material transformations in the way we work now.⁵

BOX 3.1 Working materials: What do we need to do our work?

If the task is editing a first draft, we need a red pencil, time, and space. If the task is a geospatial analysis of ancient Rome, we may need expensive proprietary software. As with the rest of this chapter, the real answer is: Begin with what is needed for the task. Marking up documents beyond editing and review, for example, requires a greater level of complexity than that allowed by standard word processors: The Oxygen XML editor is favored by those working with XML and TEI editing. LaTeX and its variants are needed for extensive mathematical formatting. Digital humanists who need to move back and forth between text and code in their work often use some version of Markdown, which allows us to write blocks of code, formatting, and regular text at the same textual level. And a variety of open and proprietary standards and platforms exist for the study of sound, video, space (including ArcGIS and QGIS), and three-dimensional modeling (see Chapter 4).

Programming humanists employ a variety of tools, writing environments, and coding languages. No one uses all of these all of the time, and many specialize in only one. The key question is always “What do you need for this particular research question and task?”

Reading, Annotating, Publishing, and Peer Review

Among the most fundamental transformations in the past thirty years have been the explosive shifts in the relation between reading, annotating, and publishing. As we have seen, the early modern humanists were the products of a revolution in print culture, one prepared through the invention of type in eleventh-century China and the development of the movable-type press by German printers during the fifteenth century.⁶ What we see, in the early modern portraits of the humanists, are primarily readers, and particularly readers of books: The portrait of St. Jerome is exemplary as a portrait of this active contemplation, of reading as act. The ways we read now have radically shifted from this moment of private reading, in a number of ways. We are more likely to read on PDF and e-readers than in print during the publication process; we are more likely to read or listen on digital devices, thus under constant threat of distraction; we share, comment on, and respond to our texts in different ways, in an environment where everything is potentially available to share, comment on, like, scrape, and publish. We live in what media theorists call a “transmedia” culture, in which older forms of oral memory and storytelling coexist alongside a flood of digitally generated texts, images, sounds, and videos.⁷ These shifts have profound implications: Reading is a deeply transformative social and neurological process, a cultural achievement that alters the nature of our brain, the way we see, and the shape of our thoughts.⁸

N. Katherine Hayles and others have proposed new schema for how we read in response to the twenty-first-century epistemic ecology, including a division between “close, hyper, and machine” reading.⁹ Hayles’s work is part of a more general reassessment of how reading is changing, and how that change affects scholarly reading practices. In the early twenty-first century, Franco Moretti famously advocated what he called “distant reading,” in contrast to traditional literary close reading, in a move toward large-scale statistical descriptions later championed by the Cultural Analytics movement (see the section on “Culture Wars: Culturomics, Cultural Analytics, and Digital Cultural Studies”).¹⁰ Distant reading, machine reading, and “surface reading” are all elaborations on the careful (and slow) work of critical reading, summary, comparison, and critique that still stands at the heart of humanist practice.¹¹ More recently, the decline in immersive reading across the cell-phone-saturated world has led to the revival of ancient reading techniques, including audible reading, dialogic reading (as with AI interlocutors), and reading as a classroom activity.

Annotation marks another area of both transformation and continuity in humanities practice. Annotation is perhaps the first and most important scholarly transformation of our materials, though one not often formally taught. Every time we underline or highlight a passage, scribble in a margin, or paste a sticky note, we are annotating our texts. Commonplaces, slips of paper, notes, snippets of prose – all of these are transformative forms of annotation and elaboration that mark a fundamental part of the research process, both in the early modern period and today.¹² At a more formal level, formalizations like the Text Encoding Initiative Guidelines, or playful hermeneutical forms of markup like the Prism Project mark-up game, are elaborations on annotation that traverse many potential dimensions and research questions.¹³ Annotation and commentary are always performed in and by some community; those communities in turn are reciprocally defined by their canonical and secondary texts. Commentaries on the Torah, the Qur’an, and the Confucian classics are perhaps the oldest examples of a shared global tradition of translation, elaboration, and communal meaning-making that lies at the heart of digital humanist practice.¹⁴

As we have seen in Chapter 2, the hypertext revolution of the 1990s transformed the way that historians and other humanists wrote, published, and imagined their audience and their interpretive communities. Hypertext enabled both the linked-data article fundamental to the sciences and computational social sciences, and also fueled the “Blog Era” boom in small-scale academic and para-academic writing. After the hypertext-only era, digital humanists created or repurposed a variety of new platforms to enable and capture the work of their interpretive communities, many of them “social”

before the major social networks appeared. One of these was CommentPress, a WordPress add-on that allowed books like Kathleen Fitzpatrick's pioneering *Planned Obsolescence* to be commented on at the level of the paragraph; this model has been extended in the MLA Commons project *Literary Studies in the Digital Age*, as in Matthias Bauer and Angelika Zirker's apposite essay on literary annotation in the digital humanities.¹⁵ Contemporary social reading platforms like the University of Minnesota's Manifold, MIT's PubPub, and the open web annotation tool Hypothes.is allow scholars to preserve commentary on individual sentences and words, and also allow for specific reading communities and groups – annotation at the level of the class and discussion group.¹⁶ These transformations of the reading process may be attended by moves to surveillance, commodification, and gamification in large and well-supported EdTech reading platforms such as Perusall.¹⁷ AI-enabled reading platforms like Explainpaper now allow researchers to ask clarifying questions about technical papers directly, and to refine that explanation for various levels of expertise (with perhaps various levels of accuracy).¹⁸

Scholarly publishing in the humanities has now developed a bewildering number of new forms, many of them intertwined. The humanities were once a monoculture of the article and monograph, a form named for the individual labor of a single scholar over many years and even decades of reading and writing, bound to a single name, place, and press. Now scholars can write spatially enabled books, like Elaine Sullivan's three-dimensional reconstruction of the Egyptian necropolis of Saqqara; construct film texts interlaced with audiovisual essays; and provide new ways to enter into monograph-style texts, as in Jason Mittell's companion to *Complex TV*.¹⁹ The final two examples are supported by Scalar, a recursive, nonlinear publishing platform.²⁰ Minigraphs, open-access publications, and online-first monographs have changed the forms in which, and the speed at which, we can make the initial steps of our arguments.²¹ Online-first journals like Kairos, e-flux, and a host of Journal+ additions to standard scholarly journals allow for interactive visualization, multi-modal presentation of sound with text and image, and collective review and interpretation.²² Scholars and data journalists can use the visualization tools in the Observable platform for JavaScript to create astonishing mobile and graphic-rich presentations of their materials, as with Olivia Vane's "Drawing Water (in Old Maps)."²³ Jupyter notebooks, R Studio, and Google Colab notebooks are now standard form for organizing, discussing, and embedding code within a larger argument, with hundreds of extant use cases in the digital humanities, including quite complex machine learning approaches.²⁴ Many of these new forms of publication have parallel print avatars: Bound books remain the archival medium of choice for long-term storage and preservation.

Research: Transforming Collective Understanding

Where to Begin

The research process itself is the site of some of the most contested transformations in the humanities now. Though we cannot describe all the transformations in digital humanities research, which shifts as rapidly as some of its central digital tools and platforms, it's worth describing the basic phases of a research process in the humanities as we typically move through them. (Members of DARIAH, the European Union's "Digital Research Infrastructure for the Arts and Humanities," have developed an exhaustive "Taxonomy of Digital Research Activities in the Humanities" that lays out all possible elements of a digital research process, from analyzing to interpreting to disseminating and storing.²⁵ It's worth digging into one or two of the examples, all of which are linked to standard Wikidata references and examples.) If we understand the basic form of a typical research process, we are far better able to understand the specific transformation being proposed in a particular field of humanities research – and, more importantly, why the transformation matters, and what it hopes to preserve and to accomplish in a given field.

Research in the humanities tends to be problem-oriented, inductive, and iterative: It begins with a stable understanding about a certain set of ideas, assumptions, texts, or artifacts within a specific research community (this is often called a "standard view" or current state of knowledge – what Hans-Georg Gadamer calls "prejudgment"); moves to open up a question or problem within that stable understanding; proposes changes, additions, or transformations to our understanding on the basis of (stable) evidence and (new) analysis and interpretation; and then concludes with a restatement of some new understanding, along with the new questions and problems that follow.²⁶ Those basic steps of the research process are also present in the steps of a problem-based introduction in many fields, and not widely different from the standard elements of a laboratory research paper (though the "results" of an inquiry tend to be part of the inquiry itself, in the humanities). The research process moves between novelty – of questions, evidence, analysis, interpretation – and the necessary stabilization of the materials with which we work, and the interpretive community within which they are meaningful. We always move back and forth between stable communal assumptions and novel tools and insights, in what Hans-Georg Gadamer called the "hermeneutic circle" of questioning prior historical understandings that characterizes humanistic method.²⁷

BOX 3.2 Where do we start? Keywords for the digital humanities

Brandon Walsh offers a useful five-step process in his guide to “Finding a Way In” for digital humanists (condensed and edited herein):¹

1. Describe your research interests in about a paragraph or so.
2. Read the Table of Contents for *Digital Pedagogy in the Humanities* [or the Taxonomy of Digital Research Activities in the Humanities referenced earlier].
3. Write 3–5 keywords that seem to intersect the most with your interests.
4. Read the editorial headnotes [or Wikidata links] for each keyword, and peruse the artifacts collected under it.
5. To go further, take note of the other projects and scholars referenced in each editorial headnote.

Proceeding by keyword is a good way to start mapping out areas of research work and intellectual interest; if tracked over time as well, keywords can also begin to suggest the shape of change and historical meaning, as in Raymond Williams’s classic *Keywords* (1976). Mapping the keywords with good notes and citations is the beginning of the annotated bibliography.

¹ See Brandon Walsh, “Finding a Way In.” *Walshbr.com* (blog). Published May 22, 2023. <http://walshbr.com/blog/finding-a-way-in/>. Accessed July 15, 2025.

A transformation in our understanding means the transformation – real or potential – of a given community and the way it thinks. Every time we write we are inventing the imagined community for the occasion, just as every time we tell the story of Erasmus or Wang Qiong we reinvent the story of humanism. (In public humanities work, we are often directly addressing the need for change in the community, the public, or the larger world; in research, this imperative is usually more implicit, and the immediate goal is a change in a shared understanding.) All research is embedded within a community and culture, and within already rich communal understandings: As we write, we usually begin with the words and work of others, organized into a “they say,” an “interpretive community” or “literature review” in our work itself. “In order to make your own argument you have to write someone else’s voice into your text,” as Gerald Graff puts it.²⁸ This means we must inscribe the values, commitments, problems, and key texts of the community we want to address into our work. Along the way, we must also tell or imply the reasons why our writing matters to this community. This question – “So what? How does this matter to my

interests and objects?” – is a particularly difficult problem in the case of a diverse interdisciplinary conversation like that of the digital humanities, where almost every field and subfield has different values, commitments, positions, and cultural assumptions: This is one reason for the robust metadiscussion about “debates in the Digital Humanities,” which is really a set of debates between interpretive communities. The only solution is to clearly address a particular conjunction of object, method, and community, even as we understand our work as one part of the general digital mediation of the humanities now.

So begin with the community, its methods, and its objects: either the actual community of a classroom, lab, conference presentation, and research group, or the community relevant for your research object and interests. “Readers of Goethe’s letters will know that . . . ” invokes a very different community, conversation, and method from that of “maker-scholars of video games” or “historians of enslavement.” Specificity matters for the research conversations we enter, and the important positions within it: “Losh and Wernimont’s intersectional framework” is a far better point of entry than “intersectional feminists say.” Dissent and disagreement require standard positions from which to differ, just as anti-normativity requires norms: “the Father Busa origin story of humanities computing” provides a point of contrast for the various communities, critical collectives, and counterpublics that explicitly depart from it.²⁹

Analysis, Evidence, and Digital Workflows

Transformation occurs throughout the research process, from relatively stable initial understandings to new analytic techniques to restabilization in conclusions, repositories, and citations. Analysis in the humanities usually takes the form of transforming one’s primary object or materials – whether through close reading, textual editing, visualization, inductive reasoning, quantification, or conceptual abstraction – in response to a question or problem. If we understand the research process as some stabilized set of transformative moves that build a collective understanding, from evidence through reasoning and analysis to conclusions, then analysis is only one form of “transformation.” Transformative work can include both thoughtful translations from one medium and language to another – the primary activity depicted in Van Eyck’s “St. Jerome” in Figure 3.1 – and the interpretive work of recoding visual detail into words and texts, as when art historians decode the allegorical meaning of the instruments on St. Jerome’s table. Analysis

happens through writing, arguing, and thinking, not through the mere reconfiguration of data in charts, bars, or graphs: This is the evidence we employ in analysis, stabilized in a workflow and citation system that allows for open contestation and reuse.

Before we identify a method of analysis, we should first identify the community we are addressing, how that community poses questions, and why those questions matter to us and that community. The most common problem within digital humanities work is not, as some detractors have it, mere enthusiasm for technical tools, but rather an orientation to the analysis stage of a research question *rather than* to the essential questions, materials, methods, and communities that define a field. What we are (often) most attached to, across our various disciplinary boundaries, are critical methods: close reading, sociological analysis, historical storytelling, immanent critique, authorship attribution, visual analysis – all ways of working that define research communities as well. The combination of method and object is not accidental but intrinsic to certain research communities: If we are studying the history of prison reform in Great Britain, for example, we should probably be familiar with Michel Foucault's critique of the prison in *Discipline and Punish* and also with the "Proceedings of the Old Bailey, 1674–1913" (one of the best established and most extensively used archives in Digital History).³⁰ Scholars working in truly transdisciplinary fields, like disability studies, new media studies, and much of the digital humanities, need to be especially aware of the way methodological distinctions define our work and divide disciplinary cultures (see the section on "Culture Wars: Culturomics, Cultural Analytics, and Digital Cultural Studies").

So, once again: Begin with community, a collective understanding, and shared objects, especially when introducing or addressing novel digital methods. "Shakespeare's works have long been the sandbox of philologists, historical linguists, and especially lexicographers": this union of author and research materials provides an excellent opening to Daniel Shore's argument for a Shakespearean "constructicon," "a new work of philological reference that will incorporate Shakespeare's linguistic forms as well as his fixed words and phrases," in part through the integration of regular expressions (Regex) and computational linguistics.³¹ "Studies of digital labor within information science often leave unvoiced the feminist reclamation of 'service' that an earlier era of library science scholarship had proclaimed": this invented example identifies two research communities by one gap between them. In an era when scholars speak of contested canons rather than the timeless "classics," Melanie Walsh and Maria Antoniak ask "Why do contemporary readers [on Goodreads] use the term 'classic' so frequently and so passionately?"³² Walsh and Antoniak's close

and also digital analysis of more than 120,000 Goodreads reviews considers the interplay of “classic” prestige and contemporary digital marketing in a way that sheds light on both the past and the present.

These questions and others are best addressed within relatively stabilized workflows like those developed on the Programming Historian website: paths from relatively stable evidence through peer-reviewed methods (themselves available for scrutiny and improvement) to new interpretive results and conclusions.³³ These could be as simple as the mark-up of individual comments on Goodreads in an Excel document, and as complex as the latest open-source LLM. A research community is defined not so much by the new kinds of findings it achieves as by the premises, methods, and relatively stabilized paths through the research cycle it accepts: The tension between methodological commitments is part of the permanent tension between the constitutive

BOX 3.3 Where do I find digital workflows?

Where do we find a usable digital workflow that fits our particular question? Often the best choice is replicating work that asks similar questions: If your question involves the layers of interpretation that readers have put on texts, for example, you may want to look at work like that of Walsh and Antoniak.¹ Articles in journals such as *Cultural Analytics* and the *Journal of Open Humanities Data* provide both their results and their methods, often in easily accessible code notebooks. Individual working groups often publish their notebooks online on GitHub or Google Colaboratory, as with the Riveter workbook for comparing social standing within texts² or the AI for Humanists code tutorials (<https://aiforhumanists.com/tutorials/>). Many researchers and working groups maintain their workflows alongside code on GitHub. The best workflows have been tested, peer-reviewed, and maintained: Examples of such tested workflows include William J. Turkel and Adam Crymble’s workflow for moving from simple text on historical websites to larger transformations, analysis, and corpus-building, along with other such workflows found on Programming Historian.³

¹ Melanie Walsh and Maria Antoniak, “The Goodreads ‘Classics’: A Computational Study of Readers, Amazon, and Crowdsourced Amateur Criticism.” *Journal of Cultural Analytics* 6, no. 2 (April 20, 2021). <https://doi.org/10.22148/001c.22221>.

² Antoniak, Maria, Anjalie Field, Jimin Mun, Melanie Walsh, Lauren Klein and Maarten Sap. “Riveter: Measuring Power and Social Dynamics between Entities.” In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (Volume 3: System Demonstrations)* (2023): 377–88. Toronto: Association for Computational Linguistics. <https://doi.org/10.18653/v1/2023.acl-demo.36>.

³ William J. Turkel and Adam Crymble, “Python Introduction and Installation,” *Programming Historian* 1 (2012), <https://doi.org/10.46430/phen0009>.

fields of the Digital Humanities and the ongoing interdisciplinary exchange at its discursive center. This tension is constitutive of work in fields deeply committed to human meaning, humanistic truth-making, and interpretive grounding in an age of pervasive digital mediation.

Data, Citation, Contestation, and Stability

Once we have performed an analysis, we will have results to record and stabilize into a new resource for ourselves and others. These could be as simple as a series of quotations, or as extensive as large corpora of texts, images, or object descriptions. Or perhaps we have data from one of the proliferating sources that exist even for “humanities data,” the best of which have been carefully curated and refined.³⁴ You might even have an analysis of an unimaginably large corpus like “Institutional Books 1.0,” a 242 billion-token open corpus derived from the digitization of Harvard’s libraries (mostly from before 1930).³⁵ But what does “data” mean in humanities fields that define themselves in opposition to mere quantification and the positivist illusion of objectivity?

Let us begin counterintuitively here, with the suggestion that “data” is everything that your audience – humanists first of all, not statisticians – is likely to give to you as the basis of your argument. “Data” just means “that which is given,” the plural nominalization of the Latin verb “to give,” and usually it’s assumed that what is “given” is provided by the world or the researcher to their audience; but, at the origin of the word’s English usage in the nineteenth century, it meant the reverse:³⁶ “‘Data,’ in this sense, means the *premises* which the author asks her audience to concede – or to give up – or to take as a given – before the argument begins.”³⁷ Usually we understand the meaning of the “given” in “data” in the same sense as data scientists and statisticians: data is the quantified, countable stuff taken out of the qualitative world and moved into a machine-readable language. Because this view of the qualitative reductions of “data” seems reductive, mechanistic, and naïvely entangled in nonhumanistic disciplinary ways of thinking, DH theorists have complicated it through neologisms like “capta,” Johanna Drucker’s way of emphasizing the active “capturing” and interpretive work inherent in constructing data, or Matthew Lavin’s notion of “situated data.”³⁸ Both these terms emphasize the constructed nature of “what is given,” and the interpretive work and framing that happens in that “givenness.”

We should understand the “given” in data not just as countable fact in a binary matrix, but as what your readers grant you: the premises that underwrite your argument, the larger reading in the field you have done,

the literature review that you took on, your careful positioning of a particular object in relation to the larger field it sits within. In some digital humanities contexts, your audience is likely to accept established corpora of texts or objects, statistical claims about those texts over time and in larger arrangements, and certain playful and well-bounded visualizations. But the more novel the method or approach, and the larger the claim, the higher the standard of evidence for what your audience will “give” you. Once the claims are very large and the methods quite novel, your audience will ask to see the data and replicate the results, as they should, and often they will not achieve the same results. Across the social and computational sciences this has led to the famous “replication crisis,” repeated in miniature for computational literary studies in the controversy over Nan Z. Da’s “The Computational Case against Computational Literary Studies.”³⁹ Any use of “data” in the humanities has to be attentive to the gaps, reductions, and elisions in the archive or object represented. This is one reason why we need to begin with a rich collective understanding of what’s being represented or discussed through the “data,” usually in a well-defined research community.

We need to end, as well, with a restabilization of our results within the collective understanding or problem we are addressing, whether that question is “who wrote the Dead Sea Scrolls?” or “how does capitalist productivism become integrated into structures of feeling on Wattpad?”⁴⁰ We integrate our thinking into a community throughout the moves of the research process, but especially through practices of contestation and citation. Citation is a foundational practice for the humanist tradition. There is a sense in which the invention of citation, and specifically of the footnote and endnote, is the inaugural moment of scholarship itself.⁴¹ Citations indicate both the location of your primary object of interest and the shape of the interpretive community around it. The prime directive of scholarly work is that your reader should be able to find and read your sources in order to check your analysis. Here, the distinction between primary and secondary sources matters a lot: Primary archival sources (like the manuscripts of the Dead Sea Scrolls) are often difficult to access and thus must be carefully represented for the reader through proxies like the Digital Dead Sea Scrolls; secondary sources, like commentaries on the Dead Sea Scrolls, are usually widely available for a given community and may be more quickly cited. And all humanities data and digital forms of representation should be stored in an institutional repository, and shared on open forums like the *Journal of Open Humanities Data*, arXiv.org, or Harvard’s Dataverse.⁴²

The most fundamental part of the research process is what happens afterwards: the publication, contestation, and dissemination of our work through

other researchers and readers, who read and critique what we have done in order to improve our shared understanding of the research question. Here we return to the beginning of the process, and to the earlier section on “Reading, Annotating, Publishing, and Peer Review,” in an iterative circle that establishes new understandings and new forms of community and collective thinking. The hermeneutic circle that moves from shared understandings to problems, questions, and analysis resolves into a new understanding, in a process that both renews and transforms the community within which we work: or, as often occurs, new methods and questions fracture a conversation into new research communities like those of computational humanities, computational linguistics, or Cultural Analytics.

Culture Wars: Culturomics, Cultural Analytics, and Digital Cultural Studies

Humanities research is always both embedded in and reflective of a culture, a time, and a place, even as it seeks to transform (while preserving) some essential element of that time and place. We see that in the specificity of St. Jerome’s robes, rosary, and pew-like chair, just as we see it in the gorgeous linearity of Wang Qiong’s writing instruments and their contrast to the natural forms around him. The reason we are all digital humanists now is because we too are inescapably part of a digitally mediated scholarly culture and political economy. The way we study “culture,” however, is one of the key fault-lines among self-reflective digital humanists, across a variety of disciplines and traditions.

Culture, famously “one of the two or three most complicated words in the English language,” both unites and divides intellectual cultures along its various axes of meaning.⁴³ Culture as an ideal of human development – *Bildung*, in German – is entirely different from “culture as a whole way of life” (Raymond Williams, summarizing one modernist and anthropological notion of culture), or *cultura* as institutionalized commitment to a patrimony of aesthetic and self-reflective historical knowing, as Ignacio Sánchez Prado reminds us.⁴⁴ In the digital humanities these senses of “culture” have been even more divergent. “Culturomics” was briefly the name of a research group centered on the Google Books project and corpora, one that sought to “[extend] the boundaries of rigorous quantitative inquiry to a wide array of new phenomena spanning the social sciences and the humanities.”⁴⁵ Humanists found that effort decidedly non-rigorous, as it contained no specialists in the historical or cultural fields it imagined revolutionizing, nor any awareness of the long history of attempts to quantify the historical record;

in retrospect, it looks like one of many attempts to assimilate human knowledge and meaning-making into a reductive pseudo-science, like the New Economic History of enslavement in Chapter 2. In an era when “data-driven” quantification provides new regimes of truth and verification, quantification and AI training are often ideological projects in search of questions and evidence, rather than the reverse.

“Cultural Analytics” is the name of an ongoing project oriented to “how computational methods combined with cultural artifacts create and contribute to new knowledge and diverse perspectives,” often at “significantly larger scales than traditional research,” in the words of its flagship journal.⁴⁶ In its first formulations, as in Lev Manovich’s notion of “reading” a billion images across media platforms for their patterns and meaningful differences, Cultural Analytics was oriented to both computational methods derived from the social sciences, to the analysis of “new media” objects, and to the relatively new discipline of “data science.”⁴⁷ In other iterations, Cultural Analytics has engaged in the study of book reviews, feminist reading communities, digital film historiography, fan fiction, and machine learning as an interpretive process.⁴⁸ Most scholars in Cultural Analytics and computational literary studies – another new intellectual division – were trained in the text-centered disciplines once grouped under “Humanities Computing” before 2006. But the ambit of computational analysis of culture is far larger, extending to platform theories, media and communications scholars, and the broad study of “internet culture,” among other groups. Cultural Analytics theorists are now exploring the ways in which generative AI can be treated as a “cultural technology” requiring new forms of situated “computational hermeneutics,” new pedagogical strategies, and new visual literacies and forms of public intelligence.⁴⁹

Digital cultural studies – or “digital studies,” an even larger rubric – tend to be concerned with the way that digital cultures and media objects function, whether through platforms and technologies (the Atari game system, the Commodore 64, MySpace) or as infrastructures, protocols, and media objects. Study of specific digital subcultures is not restricted to the notion of “cultural studies” developed in Britain and exported to the Anglosphere, but crosses over into the qualitative social sciences and beyond. All these rapidly shifting notions of culture, and its intersection with digital mediation in the present, are the products of different communities, goals, and intellectual histories: They all participate in digital humanities activities, but decidedly do not all attend to the same conversations and conferences.

BOX 3.4 Should we skim one million books or read one book carefully?

A fundamental tension within approaches to the digital humanities is the divide between reading, annotating, and marking up one book well – an approach often associated with book history, textual studies, and philology – and the computational reduction of thousands or millions of books within large “corpora” into their linguistic and stylistic features. This approach was first associated with stylistics in literary studies, and then the work that produced Google Book n-grams (charts of individual words and clusters of words over time), followed by large-scale Cultural Analytics and computational humanities in the era of ever larger corpora and bigger artificial models. At one level this is a fundamental question of the tension between abstraction versus particularity: what can we learn from viewing one million images, as Lev Manovich asks in his work on Cultural Analytics, as against the careful study of a single portrait like that of St. Jerome?

What Is “Coding” and Should I Learn How to Do It?

When I first entered the Digital Humanities conversation, just at the post-2006 moment when it was formalized in conferences and anthologies, whether and why to code was a defining question in the field. Stephen Ramsay – an important figure in algorithmic criticism and computational literary studies – famously argued that in order to be a digital humanist you needed to learn “how to code,” a position he subsequently modified to “how to build.”⁵⁰ The controversy that ensued defined much of the North American variant of Digital Humanities over the next several years, with “big tent” digital humanists vehemently opposing Ramsay’s position in public discourse, even as much of the conversation shifted focus from large library-based collaborations – in which programmers were often part of a large team led by humanists – to spectacular distant readings and statistical analyses by, yes, those who could code. At the same time, humanists who code have not entirely escaped their reputation as *garagistes*, as the French put it, with the attendant connotation of amateurism, technofetishism, and affinity for the “Californian Ideology” uniting the utopian left and libertarian right around better living through technology.⁵¹

Out of the hailstorm of objections to Ramsay’s position, one fundamental point should be emphasized: “Code” is not one thing, one set of artificial languages or protocols, nor is “coding” just one kind of activity, so injunctions to “learn to code” (as well as the anathemas against coding as part of the hegemony of neoliberal marketization) tend to miss the mark. “Code” can mean high-level programming languages like Python and R (as it usually does, in these conversations), the compiled languages with which

computer scientists usually begin (e.g. the current iteration of C++), or the machine languages into which all these are interpreted. “Codes” were also the way that certain kinds of “Theory” became codified in postwar France, through a variety of scientific institutes and mechanisms, as in Barthes’s *S/Z*.⁵² Encoding and decoding are fundamental parts of everyday meaning-making, theorization, and translation between dialects of thought. As a professional activity, “coding” (or software engineering) takes in far more than any single language, including training in the command line, debugging, manipulation of various data types and formats, and “data munging”: the shaping of messy materials into some sort of order.

The places to learn all this, according to critics of the computational humanities, are the vastly better-resourced computer science and data science faculties of the university – or the rare programs that genuinely bridge those resources to the humanities, like Carnegie Mellon’s program in Computational Culture Studies. With the rise of GitHub’s Copilot, Claude Code, and pedagogical code platforms like Jupyter and Observable, perhaps simply learning by asking and by doing, as the Germans say, will be the future. Even in the era of “vibe coding,” when entire programs can be generated at a prompt, it’s worth asking whether a research task really requires learning to code, and what’s being given up when we require it.⁵³ Students have been pushed into computational-adjacent degrees across the Western world, against their own inclinations and preferences, without any clear sense of which skills and attitudes will be valued during their long working lives, and in place of the liberal arts and social science degrees that might more broadly prepare them for the collective demands of pervasive epistemic uncertainty, disinformation, and climate collapse.⁵⁴ In the AI era, many coding jobs are increasingly rote-work and routinized, with unemployment rates sometimes higher than those in the humanities.⁵⁵

We cannot ignore the pervasive mediation of our culture and society by computational systems, even as we must resist the imperatives of always-on capitalist productivism. What we need, rather than quick adoptions, hot critical takes, or further epistemological polarization, is sustained thinking and conversation between fields – on the politics and ethics of data, on the nature of learning and expertise, and on the goals and horizons of our work. The rapid rise of generative AI, in both privatized and open-source forms, has pushed such questions decisively to the fore. No one who teaches or writes can avoid the codes that govern our moment: that’s one reason we are all digital humanists now.

BOX 3.5 From code to community: Finding resources and reasons

The questions to ask in relation to code are not just the fundamental ones for any research project – What do I need this language for, and why? Is it worth the time I will need to learn it? Which is appropriate for my research project? – but also: What communities and communal resources are available to support me? The best sources for answers are practitioners in your field with similar questions and applied experience. In Library and Information Science, as in archival and museum studies, extensive communities exist to support learning crucial tasks like cataloguing, archival description, metadata standards, and information retrieval: See Wilson’s *Digital Humanities for Librarians* for more. A large community of archivists and digital humanists collaborate on the Text Encoding Initiative (<https://tei-c.org/>). In programming languages, the open-source languages best supported for work in the humanities are Python (a common high-level programming language with many applications and resources) and R, a programming language commonly used in statistical and social science work. Melanie Walsh’s *Introduction to Cultural Analytics & Python* is an excellent introduction to the former, as is Folger Karsdorp, Mike Kestemont, and Allen Riddell’s *Humanities Data Analysis: Case Studies with Python* (www.humanitiesdataanalysis.org/index.html). Ben Schmidt’s *Humanities Data Analysis in Modern R* (<https://benschmidt.org/HDA/>) is a thoughtful guide to working with data in R. Other common applications used in the humanities include oXygen (for XML editing) and Gephi (for network analysis), both common in summer institutes and research training groups. Common tools for creating content on the web (HTML/CSS editors) are relatively accessible, while languages like JavaScript are best left to those with more extensive coding experience. Geographers, spatial humanists, and land-use planning professionals might use the proprietary software ArcGIS for their projects, and many across the humanities use the various tools developed by Adobe. Most code communities have groups on Reddit and code repositories on GitHub. The rule here is always to find a community of practice to advise you on specific resources, and then to seriously ask: Should I devote the time and energy it would take to learn this tool? Do I have time to do so while completing my main project(s)? For what (medium- and long-term) ends? The response here might have as much to do with alternate career paths and opportunities as with questions in your field. Then ask: What forms of community does this code enable and disable? How is a community encoded within it? What community, with what values, and for what purpose?

Teaching: EdTech, Platform Pedagogy, and the Artifice of Intelligence

One enduring form of transformation in the humanities happens in the mutually transformative process of learning and teaching that happens in the classroom. Transformations in how we learn and teach have often been the heart of Digital Humanities pedagogy from the first issues of *Computers*

and the Humanities. In 1967, Alyce Sands described in that journal the establishment of a new Educational Research Information Center (ERIC) designed as the “first nationwide, comprehensive information system designed to serve American education.”⁵⁶ This long-standing interest in pedagogy is not to be mistaken for contemporary EdTech, the pervasive commodification, platform-captured marketization, and gamification of learning that seeks to eliminate teachers (and any real relationship to students). One central confusion of the first decades of the Digital Humanities, especially for those outside the field, was the conflation between EdTech tools and digital humanities approaches to teaching and learning. “EdTech” is the industry that sells digital solutions to both real and invented educational challenges, and its scale and reach is immense: Proprietary learning management systems (LMS) like Canvas and Blackboard, e-textbook sellers like Pearson, and the attempt to place branded laptops and tablets in every classroom from elementary education onwards, and branded AI in every exam period – these are the primary faces of EdTech. As Audrey Watters (one of EdTech’s most persistent reporters and critics) has argued, the central fantasy of EdTech from its ideological inception was the elimination of the slow, messy, human process of learning from teachers in classrooms.⁵⁷ We have seen that the very first issue of *Wired Magazine* in 1993 proclaimed the end of outdated arrangements like classrooms, with the rise of a vaguely defined “hyperlearning” in its place – a more productive, market-based, individualized, zero-friction solution to the “problem” of the human classroom.⁵⁸

What we need instead of the immediacy of the one-click “edtech imaginary,” as Watters puts it, is a recommitment to the necessity of human mediation in every human institution, and especially for education.⁵⁹ Digital humanities pedagogies experiment with the limits and boundaries of classroom spaces, but do not replace teaching and learning with uploading and downloading. That’s the central, very monetizable, EdTech fantasy of education “disruption.” Nor are digital humanities pedagogies committed to the “distant” or automated learning platforms that arose through compulsion or greed during the COVID pandemic of 2020 and after. Critical digital pedagogies, like those developed at the journals *Hybrid Pedagogies*, *Kairos*, and *The Journal of Interactive Pedagogy and Technology*, instead center on the basic needs of students to critically reflect on and creatively transform a world of pervasive digital mediation.⁶⁰

Digital humanists have developed distinctive pedagogical forms and tools that reflect critically on our more general mediation within the era of EdTech pedagogical datafication. Some of the most important of these – the “unessay”

assignment described by Daniel Paul O'Donnell and refined by Ryan Cordell and Shawn Graham, for example – require no particular digital tools or affordances whatsoever, instead asking students to reflect on the form of the essay through creative experimentation with media.⁶¹ Other kinds of assignments, like the collection of “Interface” assignments curated by Kathi Inman Berens as part of the quite extensive *Digital Pedagogy in the Humanities* collection, mix digital methods, board games, electronic poetry, and other media forms.⁶² Jesse Stommel and others in the *Hybrid Pedagogy* group have been among the most prominent advocates of moving away from the reductionism of numerical grading, a fundamental component of post-World War mass education that reduced student learning to generic numbers long before the personal computer arrived. Instead of marks or grades as an end in itself, advocates of such practices as “ungrading,” process grading, and specifications grading have moved toward assessment as a process of communication and improvement.⁶³ In all these cases, the transformation at hand is not just a pedagogical accommodation to our regime of pervasive computation, but critically questions the premises that produced that regime.

The transformation of pedagogical forms and outcomes is badly needed in the era of generative AI, where some familiar educational outcomes, like the standard college essay, can be simulated to an increasingly high degree of precision. Generative AI is usefully generic; it gives us the form of sentences and thoughts in the most statistically predictable form. As Gerald Graff, Cathy Birkenstein, and others have demonstrated, most writing begins with standard views and moves, templates that can guide beginning writers. Generative AI offers such templates in an infinite array of options, threatening the end of writing instruction as we have known it. But we should let the end of the five-paragraph essay become the beginning of thought. The point of writing is always to enter into, expand, and transform a given conversation and question. In the era of AI, we are given standard views and clichés at the press of a button. Rather than “moving beyond” those views, we must move through them, identifying the dead languages and common resources within our work in order to revivify our thought. The point of the transformative pedagogical experiments we have considered herein is always to reconsider the form of our work as well as its content, beyond the “learning metrics” demanded by the managerial university.

“Every time a student sits down to write for us, he has to invent the university for the occasion,” as David Bartholomae puts it in a famous essay on introductory composition.⁶⁴ The university, along many of its branches and across technical, scientific, and humanistic fields, can now be statistically generated for the student (however erroneously). But this store of

accumulated knowledge, thinking, and insight is a common possession, not a private database to be queried and enclosed. We all have stakes in the free distribution of intellectual labor generated by all of us, even as the workers who have trained AI models, often under conditions of extreme hardship, are owed more material forms of recompense. More important than the results of writing are the mind's processes of discovering what to say and how to say it: The student does not only invent the university, or a branch of it, as she is re-invented by it, reworked by the discourses, texts, and forms of argumentation that she puts to use. The advent of generative AI marks an entire transformation in the relation between students and the cultural inheritance of the humanities, across all our fields. All of us must critically engage with and shape this, the latest historical step in the long process of the transformation of the university by its teachers and students.

Public Humanities: Transformation in Practice

Finally, many digital humanists seek to transform communities, public histories, and public awareness through what is often called the “public [digital] humanities.” What happens when we do humanities work in public – that is, the new, instantly global “public” of the always-already digital public sphere? Judith Butler argues, in “The Future of the Humanities Can Be Found in Its Public Forms,” that “the best case for art, poetry, literature, and performance is already being made by our most publicly engaged fields.”⁶⁵ “Public engagement” in this case refers to a range of activities within and without the academy and its institutions: Agricultural extension offices, academic activism, nongovernmental organizations, museum exhibits, para-academic publications, websites, and collaborative community engagement are all possible examples. “Public digital humanities” can take the form of cultural preservation, community support, education, and collaborative knowledge-making, as Allen Brizee argues.⁶⁶ Cultural heritage workers and the GLAM (Galleries, Libraries, Archives and Museums) sector have always been doing public humanities. Public humanities can also take the form of writing for the public, in order to disseminate research knowledge to a larger audience – one of the most fundamental acts of the “public intellectual,” now as in the past.⁶⁷ Many of the fundamental digital humanities forms in Chapter 2 – Omeka, Zotero, the digital archive – are exactly tools for public engagement and collaboration. And, of course, a fundamental form of public-facing work is teaching, whether in the seminar room or more public forums.⁶⁸

Public humanities work is oriented toward the defense and development of both the public value of humanities work and of the “public” itself. Whether

public humanities is oriented toward dissemination and publication of academic humanities work, toward culture heritage activities, or toward a collaboration between a public (or counterpublic) and the institutionalized humanities, it invokes a connection to public meaning-making that has often been absent in specialist fields. “Between unidirectional sharing of knowledge and multidirectional community engagement is space for imagining and inventing the methodologies of public humanities and the theories they evince,” as the editors of the PMLA forum on the public humanities say.⁶⁹ “Digital public humanities,” as in Jordana Cox and Lauren Tilton’s conception of the *Photogrammar* project, “enlists participants” through “position[ing] the act of looking as a site of active, civic spectatorship.” Every digital humanities project has the potential to create and enlist a public in its address, through its affordances and through generous modes of thinking and working.⁷⁰ Digital Public Humanities, in their conception, “offers a method and form for a kind of generative humanistic inquiry that constitutes publics through open, collaborative argumentation.”⁷¹ *Reviews in Digital Humanities* has given public-facing digital humanities projects new legibility, through special issues devoted to “community-engaged mapping,” digital native and Indigenous studies, and more.⁷²

Humanists are also increasingly doing intellectual work in public through new media forms: through “para-academic” online publications like *Public Books*, through “data storytelling” and community data curation, and through the explosive rise of scholarly or para-academic podcasts as a venue for thinking in public.⁷³ These podcasts – the inheritors of an older tradition of public humanities broadcasting that intellectuals from E. M. Forster to John Maynard Keynes participated in during an earlier era – range in scope from “Critical Theory” to “New Books in Jewish Studies” to “Novel Dialogue,” a conversation between a literary theorist and novelist in real time.⁷⁴ Matt Seybold’s “American Vandal,” an ambitious example of such podcasting at its best, splices a discussion of contemporary political economy and academic labor conditions with long-running discussions on the future of academic literary criticism, the future of Black colleges and universities, and the meaning of a new techno-feudalist “Gilded Age.”⁷⁵ Critics of public humanities work warn against the deprofessionalization of core humanities fields through alternative modes and models of publication not vetted by scholars or peers, and the illusion of alternative academic livelihoods that sometimes attend calls for “alt-ac” or public humanities careers.⁷⁶ The university is still where most intellectual work in the humanities happens, at least after the later twentieth century (a fact bemoaned by Edmund Wilson in the area of editorial practice as late as 1968).⁷⁷ But it seems clear that the public-facing modes of humanities

scholarship and practice will only increase in prominence in an era when key concepts from the humanities – the notion of gender as performance, of deconstructive critique, of critical race theory, to take some famous examples – are widely disseminated and debated outside the university walls.

This chapter has been concerned with the transformation and preservation of humanist objects, concepts, methods, and communities in a rapidly changing sociotechnical world. The only way to preserve the cultures of humanism is to transform them, and the transformations that matter will preserve some of the portraits of St. Jerome and Wang Qiong with which we began: space for study, serenity, and free inquiry, as well as a connection to the outer world of action and politics; an attention to the tools and forms of intellectual inquiry; and a sense of order and arrangement that we can only call the aesthetic life of the mind. We will explore further ways to visualize, hear, and otherwise embody the work of the humanities in Chapter 4.

Sight, Sound, and Sense-Making

Let's say we now know what we want to preserve and transform, as well as some of the history of that preservation and transformation. How do we see what it is that we have? How might we shift our materials into the realm of visibility, audibility, to the level of the senses, if the materials are not already easily visible, or if they cannot all be easily assembled before us? How do we tell a story, or make an argument, out of the highly disparate data of the sensible world? This is a problem that unites rainforest ecologists and astronomers with statistical historians and art historians: our materials cannot all be united on one plane, in one place; nevertheless, we must compare them, unite them on one plane, if only provisionally, to make the fundamental comparisons that ground our thought.¹

Digital Humanities had some of its first interdisciplinary breakthroughs around the sudden ability to combine the visible, textual, and audible in novel ways. Here we should think not only of the 1990s-era Blake Archive and Rossetti Archive, in the textual-studies lineage, but also of the pioneering Valley of the Shadow project in Digital History, which combined maps, letters, and graphic evidence to trace the fates of two communities over the course of the American Civil War.² Electronic Literature as a field of practice and study has its origins in the same moment of encounter with graphical and nonlinear writing technologies like HyperCard. Visual analysis of texts, the first generations of Optical Character Recognition (OCR), multimedia CD-ROMs, and the rise of geospatial analysis tools all gave humanists new ways to represent their objects.

Visualization has been a particularly prominent mode of work in the digital humanities, though often a controversial one. As Johanna Drucker has argued, humanists have tended to suspect visual forms of thinking – drawing, sketching, modeling, creating in a primarily visual medium – while tending to accept (or reject uncritically, a twin move) the presentation of “data” in “visualization tools” developed in the social sciences and computational sciences. She argues for thinking visually as a primary mode of thought, and for “modeling interpretation” visually rather than simply representing some

surrogate.³ The full history of visualization as argument in the humanities is quite complex, of course: Saussure's basic lesson on the signifier/signified distinction is almost unthinkable without his illustration of *l'arbre* (tree); structuralists of all stripes have employed the Gramscian semiotic square across disciplines; and historians have long made use of charts, maps, and statistical measures, though not without disputes of the kind that occasioned the split with economic history and "cliometrics."⁴ Drucker's *Graphesis* is a useful introduction to the long history of such visual hermeneutics.⁵ And, of course, entire humanistic fields and subfields center on careful readings of the portrait, the map, urban space, and the city plan.

Even more suspect than visualization are "craft knowledges," like weaving, cooking, midwifery, and all the tactile arts of reproducing daily life associated traditionally with women. As Peter Burke notes in his social history of knowledge production, these forms were ruled out of the Enlightenment-era formalization of knowledge in encyclopedias, dictionaries, and curricula altogether.⁶ One of the great advantages of new digital tools for reconstructing the daily life of ancient cities and sacred sites is a new attention to such ordinary tools for life-making and community-binding (see "Digital Archaeology and 3D modeling"). Craft practices have been newly integrated into maker spaces and critical making practices in ways not fully recognized by standard metrics of publication and citation.

Humanists have deep attachments to books and print media, the primary media of the humanities since Erasmus, but there are some inherent limits to the affordances of the article and codex that have traditionally defined even visually oriented humanistic fields. Text and illustration must be clearly delimited, for example, even if interrelated; media in dimensions exceeding two don't easily fit on the page; illustrations must follow the protocols and limits of the printing technology of the period. Scholarly renegades like Walter Benjamin and Mike Davis can point to entire cities as their object – look, here is Paris, capital of the nineteenth century, here is the dystopian-utopia that is 1990s Los Angeles – but their work elegizes objects that melt into air even as they are described. The medial limits of scholarly argument – the formal affordances of the book and journal, understood as enabling constraints – have remained much the same for centuries. Yet now the formal limits of humanistic argument have exploded, in a variety of fields, with unpredictable results. We see this in the new varieties of monograph+ publication, monographs enriched by associated web archives, sound-based arguments, monographs and archaeological reconstructions, interactive paths through video and game criticism, self-explaining articles, and the excitement and threat of generative "art" and its critique.⁷ But how do we understand

these exciting new experiments in humanities argumentation as both continuous with our disciplinary methods and self-understandings while also containing radically new possibilities for knowledge-making?

The first thing that any student of these new forms of knowledge creation needs to understand is that disciplines and fields are often deeply conservative in relation to methods and modes of argumentation – not in terms of explicit politics, but formally they tend to reject modes of making sense of the world that do not conform with established practices, standardized mediums (like the article and monograph), and disciplinary vocabularies. Disciplines tend to discipline – they constrain and formalize ways of making sense of the world, for worse or for the better. Thus, the rather radical transdisciplinary experiments of the digital humanities, like those of other “postdisciplines” like cultural studies and media studies, represent transgressive moments in the transformations of the humanities in and for the present moment.

The following account narrates some of the encounters of the humanities with new mediations of sight, sound, and sense-making, as well as the boundary objects and zones of contact between some of them. For some fields – archaeology, art history, and the visual arts, for example – these digital transformations and preservations of the sensory have led to the ongoing digital transformations of entire fields. In other fields, familiar forms of argumentation by the first humanists still rule. In relation to both creative and academic practice, we are inside a massive social and economic shift in the relations between machinic reproduction and human creativity. This shift promises not only to transform our relations to visual and aural evidence, but to affect the means of artistic production and reproduction across the humanities.

Visualization and Illustration in the Humanities

The origins of humanistic visualization reach as far back as the ekphrastic description of Achilles’ shield in the *Iliad* and its correlates in Attic black-line pottery, as far back as the hieroglyphic transcriptions at Karnak or the caves of Lascaux: at the very beginning. The attitude of the critics and philosophers toward nonverbal, nonwritten thinking has been equivocal at least since Plato, who in the *Meno* used an elaborately described geometrical drawing to demonstrate that all learning is remembering (*anamnesis*) and that this kind of visual knowledge (*mathesis*) was available even to the enslaved, even as he more famously deprecated visual, poetic, and rhetorical forms of thinking in his idealized city-state in the *Republic*.

Plato's suspicion of nonmathematical visualization was inherited by the Renaissance humanists, who often took the Protestant slogan *sola scriptura* at the letter. Epiphanies, relics, annunciations, and graven images of all sorts were put to the test and often to the bonfire. The medieval tradition of artistic illustration, paratextual emendation, and graphic commentary was of course continued and remediated in many forms, not least the elaborately shaped fonts of the Gutenberg Bible and the humanist presses. But at least until recently – outside fields devoted to commentary, like Midrashic scholarship on the Torah – scholars tended to neglect these marginal drawings and added meanings, along with the entire historical palimpsest of annotation. Not until the era of easily reproduced and disseminated manuscript images and large graphic lines were particular illustrations and annotations available for citation and discussion, as they are in the pioneering Piers Plowman Electronic Archive, or in projects like Andrew Stauffer's Book Traces.⁸

What do we mean by “visualization” and “illustration”? The first distinction to make is that between what Johanna Drucker calls “information visualization” and digital visualization as a scholarly methodology and method of interpretation. “Information visualization” is familiar to anyone who has made a bar chart in Word or watched a Powerpoint budget presentation:

A set of quantitative values is charted on a grid, plane, or space governed by a regular, standard metric. Columns, bars, pie charts, points, lines, network diagrams and so on are all produced in this way. The interpretive work of shaping the data disappears from view in the final result. The image displayed on screen, in print, or through other output devices appears as a statement of fact. The interpretative dimensions of the activity that shaped the data are rendered invisible, not so much concealed as simply missing from view, absent without a trace.⁹

This hiddenness of the production and interpretive shaping of “data” is referred to more generally in data and society studies as the “black box”: a term that can refer to the hidden premises of a statistical chart, the proprietary algorithmic processes by which digital identities are sold to advertisers, or the machine learning models that power Google's search and autocomplete functions. Frank Pasquale's notion of the “black box society” points to the way that our collective mediation by digital tools, algorithms, and markets is hidden by opaque layers of algorithms and machine learning.¹⁰ Yet the essential idea is older. The original black box is Plato's cave, in front of which stand a set of unseen puppets and actors, shaping shadows on the wall. A good way of enacting ideology, according to a line of critique going

back to the *Republic*, is to project a moving image in a darkened room and say “this is just how things are.” “Ideology,” in relation to digital visualization, means an imaginary visual relationship to our real conditions of existence, triply mediated by the “mere data” being projected, the computational transformation of that information, and the representation of that transformation in a standardized Cartesian space. Rather than such ideological visualizations of data as the “given,” Drucker advocates for a hermeneutical inquiry into visualization itself as interpretive practice.

In “Digital Visualization as a Scholarly Activity,” Martin Jessop discusses a more refined version of humanistic visualization: the illustration. Jessop makes a distinction between “illustration” and “visualization” as an integral part of scholarly argument: “A visualization departs from being an illustration when it becomes the principal medium of communication . . . [A]n illustration is intended merely to support a rhetorical device (usually textual) whereas a visualization is intended either to be the primary rhetorical device or serve as an alternative but parallel (rather than subordinate) rhetorical device.”¹¹ Against the mere “illustration” of a series of portraits typical of a museum catalogue, for example, John Berger’s *Ways of Seeing* (1972) contains a number of “visual essays” without text that are intended to raise questions about the history of Western portraiture through visual comparison alone.¹²

These distinctions raise important questions to ask of any visualization: Is it used as a meaningful part of the argument, or is it an illustration of something else? What claims is it making: local, specific, general or universal? Does it provide its sources, limits, assumptions, and mediating transformations? What are the conditions of possibility for its creation and legibility? What does it necessarily leave out? Does it treat visualization as an end or a means to further thinking?

Visualization as part of scholarly activity can range throughout the research process. Historians commonly use a wide range of statistical and temporal visualizations, like histograms, stacked graphs, scatter-plots, time-series data, and a range of maps.¹³ Urban planning, land-use studies, and geography all use maps in two or three dimensions, often with geographic information system (GIS) tools. A variety of other visualization methods have been developed for historical and archaeological reconstruction, including three-dimensional modeling of entire cities and landscapes, historical videogames, and photogrammetry. And in the fine arts and art history, visual analysis is undergoing a moment of technological shock in response to generative AI comparable to the invention of photography in the mid nineteenth century.¹⁴

We encounter forms of visualization across all these disciplines, in addition to the new forms of visualization being developed across the digital humanities.

From Discovery to Analysis

Let's take up the stages of visualization as an active rhetorical mode of communication. Its first, apparently most innocent stage is discovery, what classical rhetoric would have called "inventio": the discovery of the available tropes, forms, and modes of address available for a given argument. Here the possibilities are both endless and quite limited, depending on the project itself. If you are interested in investigating the rich history of either sixteenth-century Dutch Harlem or early twentieth-century American Harlem, you'll have a number of projects to choose from, including Stephen Robertson's *Digital Harlem*.¹⁵ If you want to understand the lives and histories that are missing from those projects, and the ways they've been lost to official accounts, the problem is more complex. Text analysis visualization was one of the first major applications in digital humanities pedagogy, and has entire suites of tools: the Voyant visualization platform features some common textual visualization tools, including word-frequency mapping and topic mapping, and has the advantage of its creators' extensive experience with visual interpretation over many versions of the site (and a related book, *Hermeneutica*).¹⁶ But without a clear research question and group of texts, such discovery tools can add to the problem of information overload, rather than helping solve it.

If we begin with our own rich knowledge of a particular place, subject, and question, we will be in a far better position to see whether visualizations are useful or spurious. So begin with a community, its canons, and its questions. Pedagogical discovery tools like those highlighted by the Learning Lab or Europeana group their visual collections into topics and primary source collections, around explicit or implicit research projects that motivate a particular path of discovery. For example, Photogrammar, a visualization tool that "maps" or geolocates photographs taken by the United States Farm Security Administration and Office of War Information, allows us to begin by finding photographs keyed to a particular location and even a particular photographer. That makes for a far more limited and effective first stage of discovery than beginning with all 170,000 photographs taken by the agency between 1935 and 1945.¹⁷

Text analysis tools for discovery are particularly common, and are particularly prone to uncritical uses. Techniques like topic modeling are common in

such text analysis tools, including long-running programs like MALLET.¹⁸ But as digital historian Ben Schmidt wrote during the first generation of MALLET's usage in the digital humanities, "When you have a MALLET, everything looks like a nail."¹⁹ If we begin the process of discovery with a tool of analysis, or even a general technique like topic modeling with many instantiations, then we are putting what should be the middle of the research process first, inviting the tool to give us our questions and our subject matter. This is a form of methodological instrumentalism, in which the method provides the suitable questions in advance, and we should approach it cautiously for digital as for other methods of reading and thinking. The same is true of common sentiment analysis tools, much used in the previous generation of digital humanities work, but in need of methodological refinement for humanist purposes – like those advanced in Katherine Elkin's sophisticated adaptation of machine-learning and sentiment analysis for the study of narrative.²⁰

Network analysis tools were once notorious as instruments of pseudo-discovery rather than informed analysis: Take any assortment of people, places, and things as "nodes," define their relations as "edges," and you could suddenly decipher such things as centrality or connectedness between them with popular open-source tools like Gephi or the network analysis resources of the R programming language. One of the dangers of the popularity of network analysis, in addition to methodological instrumentalism, is naïve methodological appropriation. All tools, certainly including historicization and close reading, come laden with certain premises, safeguards, and degrees of uncertainty, as Scott Weingart has noted.²¹ When we import new methods wholesale from distant fields and disciplines, we lose the essential weave of methodological debate and contestation that have informed work in those fields. This methodological disembedding is a danger for all truly inter- and transdisciplinary work. And yet excellent work on character networks, character space, and social form can result from large- and small-scale work with network graphs, like that of Scott Selisker on the Bechdel Test as a form of network relation.²²

More sophisticated humanistic work with networks of individuals, places, and artifacts has taken the place of earlier enthusiasm, including in such major platforms as the Early Modern Letters Online (EMLO), which has digitized most of the early modern correspondence at Oxford's Bodleian Library.²³ Scholars have applied more carefully theorized versions of network analysis to analyze character networks in relation to Hamlet, to questions of provenance in the contemporary art market, and to the study of archaeological sites.²⁴ Network analysis of academic publication and hiring networks is particularly

robust in the “science of science” field, which has developed a set of approaches and tools with implications for the social production of knowledge across disciplines.²⁵ But all these applications of network analysis need further debate and disciplinary contestation before they are accepted as lasting contributions.²⁶

The best advice for all forms of research visualization is to begin with a rich, focused understanding of the material being investigated, the kinds of questions we can meaningfully ask, and those we cannot. Here recent work recovering the lives of the enslaved and imprisoned across the greater Caribbean is an exemplary case. Celia Naylor’s rich work recovering the lives of enslaved people at Rose Hill Plantation in Jamaica allows an entire team of people to envision lifespans, registries, and primary material, in support of a narrative monograph as well as digital appendixes.²⁷ Vincent Brown’s “Slave Revolt in Jamaica, 1760–1761: A Cartographic Narrative” uses mapping to explore specific historical questions clearly set out for the reader: was the “slave revolt” a real threat or largely an invented white panic?²⁸ My colleague Rhondda Thomas has used a variety of historical archives and digital tools to reclaim the importance of those whose forced labor was used to build a campus on the grounds of John C. Calhoun’s former plantation, the site of my own university.²⁹ These projects require a new respect for and attention to the structuring silences and gaps in our histories, as well as the gaps in our understanding.

Visualizing Space, Time, and Geography

Maps of space and geography are some of the earliest forms of humanistic visualization, as in the T-maps of the early Mediterranean or the coastline etchings of the Inuit. The revolution of one kind of “spatial humanities” over the last three decades was occasioned by the introduction of powerful and precise geographic information systems (GIS) platforms in historical, cultural, and archaeological work. The “spatial humanities” is defined by David Bodenhamer and Ed Ayers as “an interdisciplinary conversation between digital historians, cultural geographers, and other humanists” that “critically engage[s] GIS technology and direct[s] it to the subject matter of the Humanities.”³⁰ Much of this work arose naturally out of innovative early mapping projects like Ed Ayers’s “Valley of the Shadow,” but now historians can precisely layer historical maps onto a geographic grid, trace out transcontinental railway networks, and animate changes in landscapes, demographics, events, and infrastructure over time.

All this precision depended on tools developed by urban planning and land management technology in the 1970s and 1980s, supported by the ubiquitous mapping of geolocator capitalism, and ultimately dependent on military satellite technologies. Early GIS work had to work around epistemological and social premises built into these mapping technologies, including the potential for naïve positivism in relation to the “land” represented, the often false imputation of precision about geographic data, and the dominant frame of the Global North, in addition to the usual problems of moving from quantitative to historical and cultural analysis. Critical geographers in the social sciences and humanities quite early began the work of moving away from the land-use framework, forming a field that became known as “critical GIS” or “GIS and Society,” and later the “neogeography” movement.³¹ This group of scholars took up the “production of space as a cultural activity,” rather than as merely a given domain of analysis and measurement.³² Marxist critical geographers engaged spatial mapping in an entirely different way, thinking through the production of capitalist relations as a problem of mapping the (“properly unrepresentable”) spaces of capitalist production and its others.³³

In the digital humanities, the spatial turn affected the way we see history, and also “History” as a field. Historians have long employed Mercator-based maps, choropleth maps, and cartograms (maps with statistics overlaid), so this was in some respects a natural transition. Such visualizations of the historical record were suddenly far more achievable and potentially more powerful with GIS. A series of short- and longer-lived experiments in historical visualization followed. Many of these made use of Omeka, a museums- and archival-collections tool that allowed certain kind of geographic display, including the quite powerful Neatline tool for humanistic visualization (a JavaScript-based platform produced by the Scholars’ Lab at the University of Virginia).³⁴ Scholars in geography, demography, and population history have made extensive use of GIS to map the long history of occupation and class in Britain, as in the work of the Cambridge Group for the History of Population and Social Structure. Richard White and the Spatial History group pioneered the study of such railway networks at Stanford.³⁵ Literary scholars have also engaged the spatial humanities turn: Ryan Cordell’s *Viral Texts* project traced the transmission of key texts over growing railway network of the nineteenth century, making literary inferences about the spread of culture alongside that enormous infrastructural project.³⁶ Melanie Walsh’s mapping of the imagined and real geographies of Balzac and Proust is a prototypical example of a new form of literary geography.³⁷ Spatial humanities projects cross disciplinary boundaries between history, languages,

geography, architecture, landscape and urban planning, and the computational sciences, thus constituting a prototypical transdisciplinary nexus within the digital humanities.

Political and Committed Mapping

Who are these spatial humanities projects for? To whom and by whom are they oriented? What epistemological frameworks and premises do their maps import? These are the questions of political mapping as practice and epistemology. The history of spatial mapping itself closely tracks the needs of colonial and imperial epistemologies, from the earliest charts of the Mediterranean onwards. This hidden order is revealed in the imposition of the invisible Cartesian grid, always oriented to the Global North as up and the Greenwich Meridian as the degree zero of longitude – that is, by the invisible legacy of British imperial order. As the cartographer Mark Monmonier notes, “not only is it easy to lie with maps, it’s essential. To portray meaningful relationships for a complex, three-dimensional world on a flat sheet of paper or a video screen, a map must distort reality.”³⁸ The process by which these distortions are made entails what Monmonier calls a series of “white lies,” a nicely Janus-faced phrase pointing both to the pose of innocence within positivistic cartography and to the racial investments of those who made our maps.³⁹

Digital mapping can be turned against such “white lies,” highlighting their gaps and systemic misrepresentations. One of the simplest and most powerful ways to do this has been through decolonial mapping, understood as a practice that does not simply erase the history of colonialism and empire but inverts it, challenges its boundaries, and strategically arrests its premises. These decolonial maps are oriented around rivers and landmarks, the seasonal changes in North American food sources, the diversity of Indigenous geographic features never seen in a standard topography, and the role of the enclosures in the Hundred Years’ War. A decolonial view of the colonizing North from the interior of the continent reverses core-periphery epistemologies.⁴⁰ Patricia Murietta-Flores and others are engaged in exploring Indigenous deep mapping in early colonial Mesoamerica and after, among a number of projects turning GIS against its origins.⁴¹ Such projects understand decolonial thinking and practice as an ongoing dialectical engagement with the tools of geographic reification, an engagement that requires internal critique of the tools as such.

Digital humanists have long been involved in what we might call *committed mapping*, a relative of the partisan mapping that we see in Vincent Brown's map of Haitian revolts against enslavement.⁴² "Torn Apart/Separados," an initiative of Alex Gil and others at the Columbia xpmethods group, mapped the family separations of 2017 and after, envisioned the forced-labor camps of the American prison-industrial complex, and tracked the flow of donations from these for-profit prisons to the congresspeople who enabled them.⁴³

Laurel Mei-Singh and Vernadette Vicuña Gonzalez describe committed "DeTours" in the island of O'ahu, from the sites of the forced imprisonment of the royal family, the palace of the last Hawaiian king, to the continuing military presence of the US Pacific Command and its polluting effects on the surrounding island. Decolonial tourism operates against the logic both of capitalist entertainment and of the narrative of a return to prelapsarian purity, and for the DeTours that's the point.⁴⁴ For other projects, the goal of geospatial scholarship is to track the changing power and reach of the state and economy into Indigenous and also nonhuman lifeworlds. Cameron Blevin's project Paper Trails traces the spread of the US Postal Service over the Indigenous West in a way that graphically envisions the infrastructural life of the modern state.⁴⁵ One of the most evocative maps of human economic predation on the nonhuman lifeworlds that continually support us is Ben Schmidt's global map of nineteenth-century whaling routes, a map that demonstrates both the economic life of whale shipping in the Northeastern US and the ecocidal violence of the first petrocapiatist era of global capitalism.⁴⁶

Digital Archaeology and 3D Modeling

Archaeology exemplifies the thesis that digital humanities may become so integrated into disciplinary practice that it disappears from view as the new "normal science." Modern archaeology has begun to integrate the imperative not to do further harm to ancient and sacred sites already degraded and often destroyed by the colonizing archaeological practices of the nineteenth and twentieth centuries. Rather than fully excavate and thus often destroy their sites of study, archaeologists now use GIS, computer-aided spatial design software, and photogrammetry to build models of their sites in two or three dimensions.⁴⁷ Such technologies are both at the forefront of archaeological research and are the new standard set of practices.⁴⁸

Three-dimensional modeling allows us to ask a different range of questions about historical sites as well, and to experience those sites in new ways. What influence did the annual flood have on the religious ceremonies at Karnak? How would the bells of Florence have sounded in the fifteenth century, and what soundscapes would they have created across the city?⁴⁹ What was it like to hear the space within St. Paul's Cathedral in the eighth century?⁵⁰ How might we investigate the layers of previous archaeological disturbance in neolithic sites?⁵¹ These are all questions being asked in digital reconstructions of historic spaces, by Egyptologists, art historians, and cultural heritage experts, as well as archaeologists. Archaeologists can now "situate" previously excavated objects using a "mixed-reality" process that combines GIS, spatial simulation, and three-dimensional geometry.⁵² Archaeologists have used LiDAR (Light [or laser] Detection And Ranging) to locate thousands of previously hidden structures, including cairns, burial mounds, and monumental lost cities.⁵³ In combination with deep learning approaches, such techniques promise to make the next wave of archaeological research something more like planetary detection for astronomers: the deep past as a field vastly increased in both scope and definition.⁵⁴

Victoria Szabo describes the many uses of three-dimensional visualizations in a useful survey of techniques: "Three-dimensional visualizations can be used for creating models, supplementing maps, developing games, printing objects, developing virtual environments, enhancing telecommunications, and housing simulations. They can be used to support retrospective and prospective analysis, exploration of counterfactuals, and representation of hybrid or alternate realities, particularly when they combine objects in 3D contexts."⁵⁵ Szabo's own Visualizing Venice project combines many of these possibilities.⁵⁶ Szabo's point is that such visualizations are not just "reconstructions" of a putative past "as it was," but a means of entering into alternate spaces and realities other than our own for a range of purposes, including the extension of our felt understanding of the past.

Because archaeology and its investigation matter for an entire range of other fields, from history to religious studies to anthropology and beyond, these discoveries have important consequences for the humanities as a whole, if we understand one task of the humanities to be the constantly shifting attempt to make sense of the entire human record. Humanists have largely ceded this ground to anthropologists, economists, and pop psychology, but recent large-scale rereadings of the historical record point out the possible return of grand historical narratives alongside, or in conversation with, the rise of "Big Data" in the historical reconstruction of the past.⁵⁷

Videographic Criticism and Video Textbooks

“One of the great ironies of film study is that its ‘evidence’ (a term itself derived from Latin and meaning ‘out of the seen’) has so limited a visibility in print form”: this epigraph to a handbook on video essays and academic research could apply to any number of academic fields concerned with visual evidence.⁵⁸ The fields that might seem most clearly addressed by the digital turn in production, distribution, and reception have been among the last to employ digital tools in their criticism. But film and television studies too have begun to experiment with new forms and platforms for argument and pedagogy. One response to the fundamental gap between object and academic method is the Scalar platform for nonlinear audio and visual argumentation, developed by the Alliance for Networking Visual Culture at the University of Southern California.⁵⁹ Thomas van den Berg and Miklós Kiss’s *Film Studies in Motion: From Audiovisual Essay to Academic Research Video*, where the above excerpt appears, attempts to set out some of the preliminary methodological steps for doing video-based criticism, including a typology of typical genres of academic video research: excerpts, mashups, supercuts, videographic analysis, and thesis videos, with various subvariants.⁶⁰

The video essay as form has a number of exemplary cases, workshops, and examples, many collected usefully in *The Videographic Essay*.⁶¹ That Scalar volume develops a series of arguments – about the dissolve as filmic device, about the weirdness of a Lynchian trailer, about the relation between making and thinking in videographic criticism – all in conjunction with a “multimodal” and threaded argument that integrates video and sound from a variety of (usually external) sources. The very fact of these dependencies makes this video text/book a thrilling if perhaps precarious academic prospect. Finally, a way to see Vertov’s cuts alongside a discussion of the cut! Yet all the videos must be hosted by some stable source – Critical Commons, in this case, or commercial platforms such as Vimeo in others. Scalar is famous for its dedication to updating and maintaining dependencies, but here, as elsewhere, we cannot be sure of the half-life of an academic platform still in its teenage years.

Jason Mittell has argued that these developments in academic video studies constitute a “distinct DH method, one that one that has the potential to transform how we engage with, analyze, and convey ideas about moving image texts; such a method . . . offer[s] a new mode of digital scholarship to all scholars interested in moving images, regardless of their disciplinary home.”⁶² His own multimodal book, *Complex TV*, exemplifies this medial

shift in criticism, exemplifying many of its key moments through linked media files that illustrate the central points but also, importantly, allow room for contestation and response. The “evaluation” of sexism in *Mad Men*, for example, gives us a key scene of the show’s presentation of sexism, described as both “offensive and charming” – with a clip that readers not already involved in the show’s internal logic may not find so charming.⁶³ That opening to a new critical and also pedagogical response, the ability to refine or contest a videographic reading, is entirely the point of this kind of videographic citation.

Sound, Multimodal Argument, and Digital Musical Editions

The Scalar and web-based projects discussed herein are examples of “multimodal” argumentation, arguments that integrate image, sound, video, and other kinds of media objects into their thinking and criticism. “Multimedia” platforms for research in the humanities were among the first, most utopian objects of early digital humanities work, through such technologies as HyperCard, through the multimedia CD-ROM era discussed in Chapter 2, and then through the multimedia architecture of HTML and the web itself. Most of the humanities disciplines we have surveyed passed through as first response to the possibilities of the browser-based internet, as well as the “Web 2.0” moment of participatory, interactive, and socially-oriented websites.⁶⁴

Such multimodal platforms afford new paths for the study of sound. From the first generation of digital humanities scholarship we see interest in the potential of new platforms for studying sound and music. In their survey of *Computers and the Humanities*, Sula and Hill note that “sound” was the third most studied media object from 1966–2004, after “text” and “technology,” and ahead of “image.”⁶⁵ The E-lit community has long experimented with the analytic integration of sound and argument, from Stuart Moulthrop’s early experiments to new forums on Arabic video poetry.⁶⁶ Musicology and ethnomusicology have a long literature here as well, though surprisingly little engagement with the Digital Humanities conversation, at least in the major journals.⁶⁷ In the contributions to the edited collection *Digital Sound Studies*, we see the fuller potential of such engagement. Scholars of music, rhetoric, and composition, performance studies, anthropology, history, and information science all combine here in a new approach to sound as an integral dimension of scholarship.⁶⁸ The

contributions in *Provoke! Digital Sound Studies* demonstrate the potential of sonic “play, experimentation and social interaction” across disciplines.⁶⁹ The study of sound matters not only to musicologists, of course, but to the arts of the spoken word across disciplines, including the study of audiobooks, recorded poetry performances, and podcasts. *Furnace and Fugue*, an exciting new scholarly edition of Michael Maier’s *Atalanta fugiens* (1618), integrates sound fully into the experience of “reading” the interplay of text, emblem, and fugal musical structure (Figure 4.1).⁷⁰

Astonishing combinations of sight and sound like those in *Furnace and Fugue* were made possible by large communities of interested scholars, dedicated resources at Brown University and the University of Virginia, and the encoding of musical notation in MEI, an XML schema developed by the Music Encoding Initiative.⁷¹ That project, inspired by the Text Encoding Initiative, is a “community-driven, open-source effort to define a system for encoding musical documents in a machine-readable structure.”⁷² Musical digital editions allow for the interplay of scholarship and sound in genetic editions of Beethoven’s composition process, interactive sonic editions of Mozart, inventories of “lost voices” in the Renaissance and today, and tools for the citation of snippets and musical quotation across sources – a truly stunning array of new ways to investigate the historical landscape of sound.⁷³

Game Studies and Gamification

The culturally dominant combination of sight, sound, and space in our own moment is the video game, now not just defined by a screen and controller but available in dizzying array of tactile, hand-held, and virtual-reality forms. The relative shift to video games as the dominant form of leisure entertainment can be seen most vividly in the number of hours of gameplay for major game releases: 600 million player-hours in the first forty-five days for the newest *Call of Duty* release, equivalent to more than 68,000 years; \$1 billion in sales over three days for *Grand Theft Auto V*.⁷⁴ As Patrick Jagoda writes in *Experimental Games*, video games are exceptional not only in their economic impact and their sheer hours of play, but also in the depth and sustained attention required: from a few dozen to many hundreds of hours for “completionists” of the latest in the *Zelda* franchise. Whether what these players are attending to is a Miyazaki-style open-world game like *Zelda* or a military-style

Emblem 2. Of the Secrets of Nature.
the earth is his Nurse.



▶

Play Voices

Voice 1 ☐

Atalanta Fugiens.

Atalanta Fugiens.

Pomum Morans.

Hippomenes Sequens.

Ro - mu - lus hir - ta lu -

Ro - mu - lus hir - ta lu -

Ro - mu - lus hir - ta

pae pres - sis - se - sed u - be - ra ca -

pae pres - sis - se - sed u - be - ra

Figure 4.1 “Emblem 2: Of the Secrets of Nature.” Detail from Tara Nummedal and Donna Bilak, eds., *Furnace and Fugue: A Digital Edition of Michael Maier’s Atalanta fugiens* (1618) with Scholarly Commentary. Creative Commons License CC BY-NC-ND 4.0.

killing spree like *Call of Duty*, video games are profoundly transformative forms of cultural mediation.

Game studies is now also a burgeoning field of intellectual, critical, and pedagogical work, ranging from experiments in game theory to experimental board games to “interactive fictions” like *Depressionquest*, one of the games that occasioned the infamous #Gamergate protests.⁷⁵ Scholars now

engage in serious critique and contestation of games as aesthetically rich and potentially transformative artworks. Work in “serious games” goes back some decades, but has more recently been formalized into a field of academic study and instructional practice, in degree programs and journals, and in forums like the “Serious Games” colloquia at my own university and others. Games are now used as the formal means of instruction across several disciplines; open role-playing-game engines like Twine are widely used in multimodal classes and workshops.⁷⁶ Video games are not only a serious business but a serious object of inquiry for the interdisciplinary field of platform studies, including the influential series on that subject at MIT Press.⁷⁷

Gamification is a larger cultural category, one that extends far beyond particular game applications and uses, including the “nudges” used in many learning management systems and the highly variable “points” awarded by social reading and integrated learning apps like Perusall.⁷⁸ If the culturally dominant entertainment of our moment is the video game, in all its variety, than gamification is its slightly illegitimate half-sibling, the subjecting of everything imaginable to metric-based feedback and the awarding of points. As Patrick Jagoda writes in *Experimental Games*, the gamification of everyday life in games like *Stardew Valley* and *The Sims* represent one characteristic product of life under neoliberal marketization, along with pervasive “rewards” for steps, weight loss, and customer-satisfaction compliance. These forms of gamification subject their users to inescapable rule by metrics, a condition now familiar to many formerly autonomous fields and professions in neoliberal societies.

The Ends of Art: Art History and Practice after AI

Nowhere has the revolution in the relationship between digital tools and affordances been felt more acutely, if often belatedly, than in the digital visual arts. Here the story has changed radically from the moment of this introduction’s conception to its final version. Image generation with large image models, once a playground for hobbyists, has exploded into a variety of new arenas, with the help of generative text-to-image models like Midjourney and Stable Diffusion. Such AI-enabled tools are now also integrated into basic digital tools like Adobe Photoshop, a fundamental platform of digital art for decades – which means into essentially all artistic practice in the digital arts. These large-scale integrations have often left aside the question of copyright violations in the training data begin employed;

Adobe supposedly does not use the photos and art of its users to train its models, except when apparently it does.⁷⁹

We should note that this ambiguity of artistic authorship and exact provenance is absolutely continuous with the founding era of humanism: the portrait of “St. Jerome in His Study” we examined in Chapter 2, for example, is now attributed to his workshop and was completed after his death. What those unknown members of the Van Eyck workshop were working with was likely a partial portrait, sketches, even a “style,” as other such workshops have done: They were trained in the Van Eyck style, in other words, and likely produced or finished other “Van Eyck” portraits. Artistic history has always been a collective and collaborative enterprise, from the Benin bronzes to Midjourney image generators, despite the dominant Western emphasis on the auratic proper name, legal mediator of what C. K. MacPherson called “possessive individualism.”⁸⁰ Legal challenges to the expropriation of styles, artworks, and texts by generative AI do not go far enough, insofar as they remain within the logic of possessive individualism and do not defend a collective right to access, enjoy, and properly fund the cultural and artistic commons.

Art history as a discipline has taken up the challenge of the machine-learning and generative-art era, putting it to both familiar and new art-historical uses. Kathryn Brown’s *Companion to Digital Humanities and Art History* takes apart the oppositions between what Johanna Drucker calls “digitized art history” (primarily repository building and transfer of images to online contexts) and “digital art history,” which uses “analytic techniques enabled by computational technology.”⁸¹ This first simple opposition between older repositories and newer computational work is itself both limited and solutionist (Evgeny Morozov’s term for a technological “solution” in search of a problem), as contributors to a “critical digital art history” note. “Art history is almost by definition a field that rests on ‘big data,’” as Paul Jaskot puts it: Traditional methods of art-historical training depend on the memorization of massive sets of images, usually remediated as slides or graphic texts.⁸² Methods in the discipline stress the typological classification of images, the analysis of individual style within particular cultural and group styles, along with an analysis of the cultural and social meaning of art in a variety of societies. Close visual and iconographic analysis of individual artworks is coupled with an encyclopedic view of the tropes and cultural styles that inform them, the networks of artists and patrons that support them, and the material conditions of their production and distribution.⁸³

In its current disciplinary transformation and remediations, art history is thus a prototypical example of digital humanities ferment: Scholars of visual style are experimenting with the distant reading of images, scholars of provenance employ network analysis to study the contemporary art market, and scholars of colonized art cultures have employed spatial analysis of origins and distribution to examine the circulation of stolen art and artifacts, and “repatriated” scans of these artifacts for new kinds of exhibits in their home countries.⁸⁴ Formalist analysis has been renovated through the use of machine-learned “vision” and comparison, as in Amanda Wasielewski’s work on “computational formalism” in art history.⁸⁵ Computational formalism has seen a revival in interest across fields in the humanities, part of a long conversation between formalists and computation that stretches back to Josephine Miles’s mid-twentieth century work on phrasal form in the poetry of three centuries, as Tess McNulty and Laura Alice Chapot recall in their introduction to “Computation and Form, Reconsidered.”⁸⁶

For many others in the visual arts, artists and practitioners, the incursions of computational processes into the very notion of art itself are the most radical degradation of art’s humanizing essence and effect, an instrumentalization by what the art critic Jonathan Crary calls “24/7 capitalism” of that which should retain its autonomy from the machine-driven world.⁸⁷ What Walter Benjamin called the loss of art’s “aura” in the age of mechanical reproduction – the age of the photograph and the copy – has now become the era of mechanical artistic production, in which neither “original” nor “creator” can be located, and images generate more images without end or origin. Critics have thus linked the AI aesthetic to the imagery of contemporary fascism and the reification of language itself.⁸⁸

Whereas the first centuries of capitalism left artistic production in a relatively undeveloped state of “artisanal” productivity – factories by Andy Warhol and Jeff Koons aside – now the entire history of artistic production is territory usable for the production of new “art.” The capitalist process of historical subsumption – the way in which capitalism turns all human relations into market relations – has been driven to new frontiers of human life and activity by declining rates of profit and growth, in the West in particular.⁸⁹ Artistic production is simply one of the most notable cases of the speculative datafication of the entire human record, in this critical view, one in which our words, our attention, our time, and our creativity are all material not only for monetization, but for the creation of human-imitative AI that would displace the need for human labor across large sectors of the

global economy. That world, already underway, would be the entire triumph of capitalist automation against its historical antagonist, human labor. To resist that prospect, and to rework our relations to artifices of intelligence, we require all the resources of critical thought and collectivity: that is the subject of the final chapter.

Critique and Construction

Digital humanists once distinguished themselves from those who critique by an emphasis on making – and then reflecting – as against “theory” and theorizing, an activity that was seen as less practical. To some extent this classic intellectual divide between the theorists and practitioners – between those who “hack” and those who “yack” – also reflected a class division in academic labor. Librarians, archivists, programmers, and website designers often have had their essential intellectual and infrastructural work subordinated as (invisible) service to the more prestigious work of (published) research. And because research in the humanities still privileges the Aristotelian position of the contemplative theorist over the practical position of intellectual service worker, whether in the library or the graduate seminar, theory and “critique” have been suspect terms for those who sustain digital and other infrastructures, even as they have often been privileged elsewhere.

A false dichotomy between theory and practice has long disserved the field, and should be abandoned discursively and practically, for several reasons. We cannot avoid theory because we are already within one. Our language, our disciplinary assumptions, and especially our tools and methods, all embody the dominant assumptions of the moment, the inherited assumptions of past moments, practical anthropologies, covert political theologies and practical teleologies, the critical and social *doxa* (Greek for “what is given,” or received wisdom) that constitute the unseen limits and affordances of our critical methods. We also cannot avoid the practices and the material actors that underpin our accounts, whether those are algorithms, cobalt mines, LLMs, or the data-cleansers paid less than two dollars an hour in the Global South to train those models.¹ Our practices coproduce the kind of knowledge we can make and sustain. Where data meets doxa, we need to engage the critical questions and resources of critique – not to merely negate or criticize what we know, but to refine and transfigure that knowledge.

If we understand critique as an essentially constructive project, a mode of making knowledge better and more reliable, motivated by the utopian desire to imagine new worlds as well as the ruthless critique of old worlds, we avoid some

of the bad dichotomies that have haunted critical work in the Digital Humanities. An engagement with the languages and legacies of critique is fundamental to understanding the DH conversation now – though the meaning of “critique” differs dramatically across intellectual and geographic boundaries. The limits of our knowledge, encountered as areas of controversy, also define much of the interdisciplinary contact zones of the digital humanities. Thus, this chapter is structured around the limits and boundaries of critical work in the digital humanities, indicating adjacent areas of work in Boxes 5.1–5.3 as needed. I call throughout for a renewed notion of critical practice in the digital humanities, as part of our common awareness of our shared condition as subjects and objects of digital mediation, as a form of knowledge gained by working within a digital economy and society, aimed toward the construction of better worlds and more reliable knowledge. Rather than structuring this chapter around “topics” or “varieties” of critique, the sections are introduced through the fundamental questions, challenges, and refinements of the kinds of knowledge established in the other chapters. But those questions should always be understood as productive and potentially transformative for our work, not merely negative. Critique is a productive – indeed, endlessly generative – stage within the construction of knowledge.

Digital Humanities and Knowledge Production

What kind of knowledge does the digital humanities produce? How do we know and evaluate that knowledge? For many humanists working in more established disciplinary modes and fields, the most central questions for the digital humanities are the fundamental questions of scholarly critique: Aren’t your claims to knowledge underwritten by machines and mechanisms that you don’t fully understand? What does it mean to work between fields, and how do your peers evaluate your work? These might look like impossibly difficult questions, but they are at the center of many debates over the digital humanities as intra- and interdisciplinary conversation.

One answer is just to point to the vast array of scholarly work surveyed in the previous chapters, and to the peer-review mechanisms employed and often innovated by digital humanists. The more complex answer is that what we “know” through digital mediation is exactly a co-construction of machines and humans, abstract models and particular experiences, field knowledge and historical scholarship, entangled in what Andrew Pickering called the “mangle of practice.”² In this, digital humanists are no different from a variety of humanistic fields, from textual scholarship to archaeology,

which depend on the complex interrelation of explicit knowledge, practical knowledge, craft practices like close reading, textual criticism, or the excavation of burial mounds (the rules for which are often not fully explicit, and must be learned by example), and the use of nonhuman agents and actors. Nor are we different here from the observational sciences, which notoriously have no predetermined metaphysical framework for such distant and near phenomena as the nature of dark energy or the evolutionary utility of death. Scientific and humanistic truths are formed from historical constructions and theories, composites of annotations, inscriptions, and the human ideas that interpret them.³ Yet surely we require forms of open contestation and replication – whether of the conditions for a reading or a computational analysis – that enable serious and sustained knowledge infrastructures? In an intellectual period with no single controlling epistemological framework, of the kind historicist interpretation once provided across fields, practitioners are once again debating how knowledge is made in the humanities and the humanistic social sciences. The digital humanities have a distinctive role to play in these debates, uniting as they do the irredeemably plural forms of knowing in the humanities with the contradictory uses of what Bernard Stiegler calls “technics”: technology as the inescapable horizon of human meaning-making.⁴

If we agree that both our epistemologies and our methods vary across all the zones of encounter that define the digital humanities now, how do digital humanists evaluate knowledge produced through genuinely inter- or transdisciplinary methods?⁵ This is the real question, and it’s a practical one, for humanists as for scientists. A field is defined not just by what can be known by its members, but rather by what its members collectively can adjudicate (and teach to new entrants to the conversation). The process of collective adjudication and addition to knowledge within a field can take some time, but it cannot be infinite: If new entrants to a conversation must learn an entirely new mode of statistical or programmatic thinking in order to contest certain arguments, they are likely just to avoid those arguments altogether. Peer review for digital projects has to include not only technical and intellectual review but some notion of how the technical and field-specific aspects of a project combine, and have combined, in order to produce new forms of scholarship (like those surveyed in Chapter 4). One of the main purposes of the interdisciplinary Digital Humanities conversation, then, is to retain the memory of past interdisciplinary syntheses and approaches, against the rhetoric of “the really new” that strategically neglects entire generations of previous scholarship, in what Eric Hayot has diagnosed as the very modern drive for a “then” that would define a “now.”⁶

In response to these challenges, digital humanists have needed to develop new networks of peer review and support that work across disciplines and fields, as well as within them. Some of those resources are indicated in Boxes 5.1–5.3, and others are in development within a number of fields and subfields. How we know in the digital humanities moves from a metadisciplinary problematic in these examples to a more clearly grounded question: How do we evaluate and contribute to knowledge produced in our fields, across the full range of its modes of production now?

BOX 5.1 Resources for peer review

Peer-review mechanisms have developed over many years in DH contexts: Efforts like NINES (Networked Infrastructure for Nineteenth-Century Electronic Scholarship) began more than three decades ago, whereas the new [Nineteenth-Century Data Collective](https://c19datacollective.com/) (<https://c19datacollective.com/>) is very recent. Data collectives like Post-45 Data Collective (<https://data.post45.org/>) have aimed at curated reuseable and traceable data sets of such large-scale cultural data as the distribution of literary prizes over the last half-century. A primary resource here is [Reviews in Digital Humanities](https://reviewsindh.pubpub.org/) (<https://reviewsindh.pubpub.org/>), which has particular strength in African diaspora studies, Latinx studies, and Queer studies. Many subfields have their own internal review processes in addition to the usual journal reviews and process: [Stoa](https://blog.stoa.org/) (<https://blog.stoa.org/>) is a review oriented to classicists, for example, part of the [Digital Classicist](#) network. The best place to find these is through specialist community sites, and through special interest groups like those organized through the [Alliance of Digital Humanities Organizations](https://adho.org/sigs/) (<https://adho.org/sigs/>). Guidelines for evaluating digital work have been developed over several generations of practice in various fields, as in the recent American Historical Association guidelines for evaluating digital scholarship¹ and the MLA “Guidelines for Evaluating Digital Scholarship.”²

¹ Edward Ayers and Ad Hoc Committee on the Evaluation of Digital Scholarship by Historians. “Guidelines for the Professional Evaluation of Digital Scholarship by Historians.” American Historical Association, June 2015. <https://bit.ly/45IRS4k>.

² Modern Language Association, “Guidelines for Evaluating Digital Scholarship,” Committee on Information Technology, 2024.

Intersections of the Digital Humanities

Where does critical work in the digital humanities intersect with existing work on class, race, diaspora, gender, ability, postcolonialism, and other traditions of critique? The answer to this question varies as much as the number of projects

in the digital humanities space and the intersecting intellectual and geographic boundaries that define them. In the following I break down some of the major areas of current work directly connected to DH conversations and literatures, but these areas of work are never separate from the conversation in adjacent fields. Every project and practitioner of the digital humanities is situated in a particular national, transnational, intellectual, and cultural terrain, and yet – exactly through the universality of that discursive situatedness – we have the capacity to speak through and across the lines of critique. We often do so at certain “contact zones,” like that between feminist theory and the digital humanities, for example. Contact zones, for the theorist of colonialism Mary Louise Pratt, are those spaces where “cultures, meet, clash and grapple with each other, often in contexts of highly asymmetrical relations of power such as colonialism, slavery, or their aftermaths as they are lived out in many parts of the world today.”⁷ For Pratt, these spaces are not limited to classic colonial contact zones, like those between fifteenth-century Indigenous and European settlements in Mesoamerica, but also include everyday spaces like baseball-card trading, or a contemporary wedding in California in which participants speak in Gujarati, Urdu, and contact-zone English.⁸ Contact zones always have the potential for play, hybridity, and enrichment, while never escaping the asymmetries of cultural and political power in their larger worlds.

Critical and intersectional approaches to the digital humanities are often located in these zones of contact between one critical world and another. These contacts are often perilous and always power-laden: What a Western participant in a discussion of feminist consciousness-raising assumes about the history of feminist struggle may not be shared by feminists in Antigua or Haiti, for example. Anglophone discussions of “critical” digital humanities are sometimes prone to sweeping use of categories like “colonialism” or “diaspora” that indicate very specific historical experiences and political formations, often entirely in reference to the (vast) legacy of the British empire and its foundations in chattel slavery. Yet of course both diasporas and the legacy of colonial societies extend far beyond the Anglophone world. Work in North American contexts related to the long afterlife of settler-colonial rule, the genocide and epistemicide of Indigenous cultures, and the long afterlife of enslavement often silently assumes that the political stakes of such debates are obvious – but of course the meaning of such debates varies widely across lines of history, language, and geography.⁹ Scholars from the Global South have sharply pushed back on the assumed centrality of the extended Anglosphere in such debates, pointing to the variety of critical work done outside the Anglophone conversation, yet not fully recognized in the scholarly infrastructure of the Association of Digital Humanities Organizations (ADHO).¹⁰

Humanists in the digital peripheries point to other basic elements that Digital Humanities practitioners in the Global North often simply presume before beginning their work: access to the minimal material, discursive, and programmatic conditions that would allow for work in the field. Even within the most intensively computational academic cultures of the Global North, vast disparities exist in access, support, and funding for digital projects. The rise of artificial intelligence modeling and analysis has only increased this disparity. Minimal computing, a response to many of these systematic inequalities, takes as its starting point the fact that most of the world accesses digital resources not through high-end computing but through cellphones; that demands on time, resources, and computing are all potentially infinite unless intentionally limited; that the Global North depends on the Global South for its raw materials, in a continuing neocolonial dynamic of exploitation and degradation; that minimalism should thus be an ethic and a way of working, not just a conditional response to limited resources. Theoretical discourses and critical paradigms are themselves advanced conceptual technologies, carefully built over time, requiring energy, thoughtful reading, and maintenance, including the maintenance of essential intellectual infrastructures like careful reading and thought. The time we spend engaging with new techniques cannot displace this foundational work. One can't, either, simply deploy a critical paradigm – DH + decolonial critique, for example – as if it were yet another black-boxed tool for the output of applications and results. Our situatedness in a discipline, intellectual community, and dialect of Digital Humanities matters.¹¹

What scholars in the various contact zones of digital critique rightly want to see from participants is a sense of the historical depth and intellectual breadth of the critical questions at play. How does the long history of colonial relations inflect the sources, materials, and idioms of digital culture in the present – and what is the history of that question? How do our disciplinary and cultural “dialects” interact? How have researchers explored participatory cultures in digital spaces, and what are the key venues, journals, and methods for doing so?¹² What does the decades-long investigation of digital control systems in science and technology studies have to tell us about hybrid epistemologies and infrastructures?¹³ How do our algorithms, search engines, and now LLMs reflect the assumptions of their creators in the Global North, even as they are often tested and trained in Africa and elsewhere in the Global South under deeply traumatizing conditions? These are all questions with deep and rapidly evolving critical literatures, often across disciplinary, linguistic, and intellectual boundaries. The first step into the problem is to locate that literature and to identity what part of it must matter to our questions – and what falls outside a given research question and inquiry.

BOX 5.2 Is Digital Humanities a product of the Global North?

As we have seen in the Chapters 1 and 2, Digital Humanities institutions and discourses largely derive from humanist predecessors in the “Global North,” by which practitioners often really mean Europe, North America, and the diffusion of European and North American institutional forms (like the Humboldt-style research university or the Hopkins-style graduate seminar). The status of much of East Asia as part of the “Global North” both challenges and extends that term. The Euro- and Anglo-centrism of the Digital Humanities has begun to be challenged: *Global Debates in the Digital Humanities*, *The Digital Black Atlantic*, and *Exploring Digital Humanities in India* mark the shift from exclusively Global North perspectives.¹ The “minimal computing” movement discussed in the section on “Digital Economy, Labor, and Minimal DH” address the fundamental challenge of minimal resources and peripheral status in an era of computational maximalism. The Global South is one way of understanding the ongoing geographic and historical legacy of colonial and capitalist predation on what were once called “underdeveloped” polities and economies; this is different from postcolonies or simply colonial societies, some of which are geographically or geopolitically “Northern.”

¹ Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte, *Global Debates in the Digital Humanities* (University of Minnesota Press, 2022); Roopika Risam and Kelly Baker Josephs, *The Digital Black Atlantic* (University of Minnesota Press, 2021); Maya Dodd and Nidhi Kalra, eds., *Exploring Digital Humanities in India: Pedagogies, Practices, and Institutional Possibilities* (Routledge India, 2020).

Black, African Diasporic, and African DH

How does race and diaspora matter in the Digital Humanities? At one time, the critical accusation would have been that for most of its practitioners, it doesn’t – and that the silence around race was a real problem. Tara McPherson’s “Why Are the Digital Humanities so White?” describes the total divergence of racial critique from the tool-oriented pragmatism of digital humanities work during the institutionalizing moment of 2012, a discrepancy that she reads through the longer history of computational work in the US in particular.¹⁴ That question itself signals the end of the silencing of race as a question in digital work, and the beginning of an era when questions of racial identity and the critique of “race-neutral tools” came to the fore in the Digital Humanities conversation. Since that moment of the silencing of race as a thematic and mode of critique, the intersections of race and digital critique have become central to the conversation, in work by Safiya Umoja

Noble, Marisa Parham, Ruha Benjamin, Roopika Risam, Alex Gil, Amy Earhart, and Kelly Baker Josephs, among many others.

The creation of racial boundaries and identities – racialization – is an active project of particular states, societies, and identity-formations, as is the creation of a shared memory of that racialization and its traumatic effects. We see this particularly well exemplified in Black and Black Diasporic DH, two large categories of work with the North American and Caribbean digital humanities, part of the larger reckoning with the effects of enslavement and dispossession across four continents. Black and African-American projects have a long and fraught history of recovery and loss within the digital humanities, as Amy Earhart recalls in her work on early websites and archives.¹⁵ A central tension here is that between preservation, recovery, and critical attempts to capture the erasure of Black bodies and ways of thinking within digital platforms and tools, as we have seen in Jessica Marie Johnson’s critique of the “Trans-Atlantic Slave Trade Database.”¹⁶ Other preservation efforts have been defined by local or national boundaries; several digital projects have been devoted to Harlem in the 1920s alone, a locus for a variety of different place-based approaches.¹⁷

Diasporic and Black Atlantic work, by contrast, has framed itself consciously within the horizon of exchange, passage, translation, and diversity at a transcontinental scale. In *The Digital Black Atlantic* (ed. Kelly Baker Josephs and Roopika Risam), the “digital Black Atlantic” is understood as the “juxtaposition – of disciplines, cultures, and methods – within the African diaspora.”¹⁸ Theorists in this volume and elsewhere understand the complex intersection of two interdisciplinary conversations – Black diasporic studies and digital humanities – through Glissant’s notion of “passage” and Toni Morrison’s concept of “rememory”: the active process of remembering the past and bringing it into the present. “Diasporic” and Black Atlantic work has been critiqued as still overly centered on the Anglo-American experience, but more recent work has actively engaged with the cultural diversity of the Caribbean (as in the Caribbean Digital Library), the history of the plantation system, Indigenous-Black encounters and hybridity, the crucial case of Haiti and its revolution, and complex East African circuits of exchange outside the Atlantic frame.

What is Africa to its digital diasporas? One necessary way of understanding the complex set of relations between Africa and the African diaspora is through the notion of passage, a transatlantic movement that necessarily unites continents and regions, in a model that understands diaspora as always in relation to its point(s) of origin. Writers on African DH point to the

dynamics of this relation within specific national and pan-African contexts: in *Digital Black Atlantic*, Tunde Opeibe describes the development of digital humanities initiatives in a specifically Nigerian context, with uses for tracking and diminishing political violence and disinformation.¹⁹ Many projects, and now a digital humanities association, take South Africa as a particular basis for cultural and historical heritage work.²⁰ Cédric Leterme places Africa within the economics of extractive digital capitalism, as the essential basis for digital technologies – in the forms of extractive and exploitative mineral mining – and as the last stop for digital dumping and recycling. He advocates for some form of “digital degrowth” and decolonization, and for “halting the trajectory of certain evolutionary trends such as the ‘necessary’ digitization of schools, public administration, [and] hospitals.”²¹ Africa, as Leterme argues, is the (often immaterialized) ground of both diasporic thought and digital materiality.

BOX 5.3 Resources for Black digital studies

These are key sites with resources and links to other major collections in Black digital studies:

- <https://aadhum.umd.edu/>: African American Digital Humanities Experimental Humanities
- <http://digitaletnicfutures.org/>: Digital Ethnic Futures Consortium
- <https://dloc.com/>: the Digital Library of the Caribbean
- www.mappingmarronage.com/: “an interactive visualization of the trans-Atlantic networks of intellectual, creative and political exchange created by enslaved people in the 18th and 19th century.”
- www.jstor.org/stable/10.5323/fire.4.1.0134: Black Digital Humanities Projects and Resources, an ongoing list maintained by the Colored Conventions Project group (ColoredConventions.org).

Feminism, Materialism, and Labor

In the preceding sections we have been examining forms of critique that arise from particular fields or intellectual contact zones: Black diasporic critique, intersectional critique, and postcolonial critique. “Critique” also names a constructive and practical process within digital projects, a process that (as for textual critique) aims at better, truer representations of its objects and aims (even as it points to the necessary gaps and fissures between representation and reality). But this process of “better representation” of an object must

also include a critique of the way that object was constructed. That critique necessarily addresses the history of the dominant ideas, narratives, and identities that produced our materials, and a recognition of the way other voices are silenced or left out of representation. A critique of the structural silences and distortions of (male) history is one of the key contributions of feminist, materialist, and intersectional critiques of the historical record, forms of critique oriented to the silences, gaps, and distortions in our representations.

To see how this kind of critique works, it helps to take a concrete example. Let's say that we have a large dataset that is supposed to be representative of a period – as, for example, the Eighteenth-Century Collections Online (ECCO).²² This major corpus of written material, assembled by both the Bodleian Libraries and the private research platform Gale-Cengage, combines books, journals, pamphlets, and a range of other written material, and has been used to make major claims about the movement of political ideas over the course of that era of revolutions.²³ But as a “representative” sample of eighteenth-century writing, ECCO requires critique: of its geographical bias (weighted toward Ireland, Wales, and Scotland against North American colonial spaces); of its linguistic inclusions (English, Latin, and Welsh but not Indigenous or creole languages); of its temporal span (biased toward 1780–1800 in both documents and genres); and in terms of its composition history and process (formed from overlapping corpora assembled by Gale-Cengage Inc. and also individual library collections, at different moments).²⁴ Notably, the ECCO “Major Authors” collection – authors for whom all writings and editions matter – included at first only white male “gentlemen,” as they were known – a racialized, gendered, and classed bias that persists in the later forms of the dataset.²⁵ The political concepts thus captured in ECCO track those of the white male political elite, rather than the vast population they dominated on the lines of race, gender, class, and colonial status. Women – and especially colonized, racialized, and linguistically diverse women – are the objective basis for key political concepts in this archive, but not their authors and subjects. A racialized set of debates over “freedom” and “slavery” form an essential backbone of the political vocabulary of the eighteenth century, even when freedom and slavery are meant as political metaphors rather than racial or ontological distinctions.²⁶ ECCO thus recapitulates the material and ideological history of the eighteenth century itself in its split between the subjects of history – those allowed to speak – and the material basis of that speech in the non-elite-white-male masses of history, those without a voice.

The object of feminist, materialist, and postcolonial critique has long been not just to recover or reimagine these voices, as in the many “recovery” projects of the early “History Web,” but to understand the fundamental ways in which forms of domination structure what is said and what is silenced in the archive. Feminist recovery projects constituted a major part of early Digital Humanities work: The (Brown) Women Writers Project, the Orlando Project, and the Emily Dickinson Archive all were conceived during the Humanities Computing era.²⁷ Feminist recovery, preservation, and prosopography projects still make up a core part of digital humanities work, even as the articulations of feminist theory and associated disciplines – information science, human–computer interaction (HCI), science and technology studies, data and society studies, media studies, and associated fields sometimes grouped under “digital studies” – become ever more complex.

Feminist critique in digital humanities, as elsewhere, has responded to the fundamental challenges to the whiteness and Westernness of its core canons and questions through several critical modes, intersectionality being most prominent among them. Intersectionality, a concept developed in relation to legal studies by Kimberlé Crenshaw in the late 1980s, has become either ubiquitous or taboo, depending on one’s ideological and geographic location. Intersectionality, according to Lauren Klein and Catherine D’Ignazio, “does not only describe the intersecting aspects of any particular person’s identity (or *positionalities*, as they are sometimes termed). It also describes the intersecting forces of privilege and oppression at work in a given society.”²⁸ Feminist intersectionality describes the uneven and unequal ways that sexism and patriarchy combine with ableism, colonialism, transphobia, and classism to produce fundamental and lasting inequalities, even under (or in complex combination with) a legal system dedicated to formal equality. Leftist critics have indicted some forms of intersectional analysis as particularizing, complicit with neoliberal marketization, and available to what the philosopher Olúfémi O. Táíwò calls “elite capture.”²⁹ The metaphor of “intersection” can imply a “grid” of preconceived analytic categories that must surely be put into more dynamic relation to its objects. But intersectional data feminist approaches like that in Lauren Klein’s work, and in Jacqueline Wernimont and Elizabeth Losh’s *Bodies of Information*, refocus us on the material basis of production and the social reproduction involved in digital work – on what Wernimont and Losh call the “material, embodied, affective, labor-intensive, and situated character of engagements with computation.”³⁰

Intersectional feminists focus on the forces and power dynamics within the boundaries of a given society, as Klein and D’Ignazio put it. Global and international dynamics and power relations produce yet another layer of

complexity. What is meant by “colonialism” as power dynamic differs dramatically across colonial contexts and spaces, for example. Recent work in multilingual and non-Anglophone feminist approaches, including Indian uses of queer of color critique, calls out the normative monolingualism in both Anglophone and European DH, as in this challenge by Rahul Gairola: “One of the most normalized ‘objective’ mechanisms of knowledge making continues to be the hegemony of the English language and corresponding global sites, where digital innovation and culture racially conform to the empire’s language and, thus, its dusty imagination.”³¹ As Gairola points out, digital monolingualism goes hand in hand with the provincialism of various idealizing forms of theorization, producing “traveling theories” that don’t traverse borders easily, to use Edward Said’s formulation.³² Whether or not we should re-ground our conversations in specific, situated spaces, institutions, linguistic contexts, and polities is an open question in many of these discussions. This move echoes, in an entirely different political register, the move back from the global to the local and national levels across polities, in a distinctively post-liberal world order.

Digital Economy, Labor, and Minimal DH

For some digital degrowth theorists, the move back from the global back to the local is exactly the point. Neither our ecologies nor our societies can support the progressivist and teleological narratives of “digital development” told by the liberal-economic press; far better for Silicon Valley to learn from subsistence farmers in Nepal than the reverse. The ecocritics Julia Laina and Nicolas Alep thus advance an argument against “cyberminimalism,” which they associate with other “alt-computational” movements, as just another accomplice in the hegemony of the digital.³³ The only correct response to the ecological, social, and political disasters of informational capitalism is total refusal: refuse a digitized world, refuse the always-on world of 24/7 capitalism, refuse the ecological devastation of the Digital Age.³⁴ The problem with this refusal, for most theorists in the digital humanities and elsewhere, is its quietism, the retreat to a private world and non-involvement with the exigencies of political and economic life, whether in the name of the spirit or aesthetic contemplation. Most digital humanists prefer to confront the world in the midst of its accelerating despoliation, including that of capitalist accumulation itself, without evading either the potential or the consequences of pervasive digital mediation. Regulate, make common, detourn, resist, critique the consequences of pervasive computing, seize the platforms as

public utilities, deprivatize learning systems, organize with and outside them, and also maintain a space for the life of the mind: all these programs are compatible with a politics that has not withdrawn from public contestation of digital tools and spaces into the private contemplations of the *schöne Seele* (beautiful soul).³⁵

This debate between “degrowth” and “modernist” digital theorists recapitulates the classic divide between those who see the progressive force of political and technological Enlightenment as a potential tool for emancipation, like Marx and most nineteenth-century liberals, and culture-conservative Marxists like Theodor Adorno who see the twentieth-century trajectory of Enlightenment as one largely devoted to the degeneration of taste, the commodification of social relations, and the thingification of the entire natural world.³⁶ Few outside the “California Ideology” which linked progress, capital, and technological self-realization now see our AI-driven, deepfake-riddled culture as a necessary phase in an emancipatory project.³⁷ Anna Kornbluh names algorithmically mediated “immediacy” the characteristic style and cultural logic of “too late capitalism,” a logic of just-in-time always-on productivism that finally entails ecocide and political collapse.³⁸ Recent theorists of capitalism like Jodi Dean and Yanis Varoufakis see the combination of political regression and technological hypercapitalism as a turn toward what Varoufakis calls “technofeudalism” and Dean calls “neofeudalism,” a recurrence of a pre-modern form of subservience to tech overlords that may create new kinds of class antagonism.³⁹

How should we respond to an era of pervasive digital mediation? Rather than a turn away from computation into privatized contemplation, and rather than an “accelerationist” embrace of a computationally driven “world without work,” Tiffany Chan and Jentery Sayers at the University of Victoria’s Praxis Studio argue for “minimal computing” as “*the reduction of computation’s alienating effects*: the alienation of projects but also of practitioners from social organization and collective expertise.”⁴⁰ Their version of minimal computing envisions degrowth from the perspective of the (often feminized “service”) labor that maintains digital projects and resources. For Alex Gil, the central question of minimal computing is “what do we [minimally] need?”⁴¹ If we want to maintain an archive, acid-free paper and good archival standards are paramount; if we need to understand the silent presences within our archives, we should carefully read Michel-Rolph Trouillot’s *Silencing the Past*; if we are attached to a work of electronic literature, we need a more complex physical and cultural infrastructure of the kind described by Dene Grigar and Mariusz Pasarski in *The Challenges of Born-Digital Fiction*.⁴²

The debates over “minimal,” “degrowth,” or “technofeudal” computing reflect both wider societal conversations over the end of endless-growth economics and a return to questions of labor, class, and the political economy of the academy. Labor and work in the digital humanities has been the subject of rich work on textual labor, student labor, political economy, and a long literature on the intersection of Library and Information Science and critical university studies.⁴³ Digital humanities within the university arises in part out of the new contested space of labor in that special boundary object “library service” and “library commons,” now redefined by access not to books, but to expertise, databases, search tools, and “information.” Both inside and outside the library, many of the participants in such conversations have been shaken out of our established positions by graduate and contingent faculty labor activism, by the continued failures of the academy to address the needs of its workers, and by the real and manufactured crisis conditions within which we work.⁴⁴ In an era of pervasive digital mediation of politics, culture, and economy, the view from labor can move the world.

The view from labor, along with feminist critique, also radically shifts the “Father Busa” origin story of Digital Humanities with which this book begins (see Box 1.1). As Melissa Terras and Julianna Nyhan write in “Father Busa’s Female Punch Card Operators,” the production of Father Busa’s enormous concordance of Aquinas was carried out not just by a single “Father” in alliance with IBM, as the standard story has it, but by a large team of mostly female punch-card operators.⁴⁵ These women have always been left out of the formative story of Humanities Computing and then digital humanities, like many other workers engaged in the often feminized, depreciated, and now outsourced work of digital production and maintenance that still undergirds digital humanities projects in the Global North today. The elision of women in these stories, and of the feminized work of social and intellectual reproduction more broadly, should prompt broader questions across projects. Who is doing the work? Who takes the credit? And how is the relation between one and other given voice, marked, or silenced?

Political Economy and Academic Labor

How are we to relate our work to the larger economy, to the current political and economic conjuncture, and to the university as a political and economic arena? Questions of labor lead us directly to a central accusation often made to digital humanists: aren’t digital humanities just reflecting the needs of market-driven (and now AI-riddled) universities focused on job production, grant

writing, and technical skills required by the neoliberal economy?⁴⁶ One answer to the question is just “yes, and”: All of our work, in digital humanities and elsewhere, is embedded within both the larger economy, the various forms and political economies of academic institutions, and our particular conjuncture, in which pervasive marketization and state capitalism are aligned against various “retrograde” nationalisms, ethnocentrisms, and religious identities, as well as the remnants of state socialist projects expropriated into an authoritarian state capitalism.⁴⁷ None of us can evade our position within these larger social and economic fields, whether or not our work affirms that or disavows it. This is, indeed, exactly what digital mediation means. The real question is not whether our work reflects the needs of markets and employers in the current phase of capitalism (to our students and administrators, we like to claim it does), but whether our work itself has an oppositional or critical force within those same institutions and state forms we provisionally, but with some degree of autonomy, inhabit. An entire field of study – critical university studies – has grown up to study the relations of the university economy to broader questions of political economy, and to promote the conditions for a critical and reflective spaces within our fields.⁴⁸ Critical university studies scholars emphasize the commonalities between disparate academic fields in the modern university, all connected insofar as they embody forms of knowledge and structures of value disjunct from market demands.

Questions of the digital transformation of economy and society traverse a number of fields, from data and society studies to platform studies and critical AI studies.⁴⁹ The way that these interdisciplinary conversations intersect with the objects and methods of the humanities is not predictable in advance, nor limited to the internal Digital Humanities conversation. As with the statistical methods of Cultural Analytics, conversations within fields pose fundamental problems of disciplinary method and approach. The vocabularies of cultural and economic critique provide one way of bridging the gaps between these widely disparate communities.⁵⁰ One way to start the conversation, on university labor or on the digital humanities as part of the critical humanities more generally, is to insist that we are all digital humanists – meaning subjects of digital mediation – and all workers in a digitally mediated academic and economic system: that recognition could prompt new forms of organization and solidarity.⁵¹

For those of us invested in the continuing necessity of critique, there is an oppositional potential to economic demands within self-reflective thought itself. What are the limits of my thinking? – the classic epistemological question – leads us to the other central questions of the post-Kantian tradition: How is my thinking bound to the contradictory views and positions of

others? How is it determined by, or partially freed from, a class position and mode of economic production? How is thought co-determined by its material life and embodiment? How does thought recapitulate or escape its own history, its process of development? How do race, class, gender, sexual orientation, ability, and colonial history shape the development of my society and my own way of thinking? What does it mean to both inhabit and investigate a culture, a society, a platform, a mode of production? How do the forms and tools of my method determine and co-construct the world that I investigate? These are urgent questions posed by the tradition of critical theory, not simply vocabularies to deploy, and they remain potent questions for critical studies of digital culture and society.

Machine Learning, LLMs, and Generative AI

The questions of critique come into new focus in discussions of “artificial intelligence,” the over-broad term often used for the radical growth in scale, depth, and popular awareness of machine-learning-driven applications after 2018. That year saw the first release of a new “transformer” architecture for large language models, the Generative Pre-trained Transformer (GPT-1) by the deceptively named OpenAI (in fact a closed, privately controlled corporation), followed by the DALL-E text-to-image generator in 2021, and then the open release of Meta’s LLaMa (Large Language Model Meta AI) and a resulting explosion of open-source LLMs. In the following years we have seen the release of the first truly “open” large language model OLMo (Open Language Model) by AI2, Chinese challenges to American AI hegemony in the open-weight DeepSeek model, the rise of multimodal text-to-anything models, agentic AI and vibe-coding, and the integration of LLMs in cell phones, consumer devices, and in tasks across the “knowledge economy.”⁵²

The explosion of LLMs allows us to return to our initial question in a new way: How could machines – or the collaboration between human and machine represented by the foundational models – produce “knowledge”? Can machine-driven prediction of large sequences of text, code, and image, coupled with human reinforcement and training, be called “knowing”? If by “knowing” we mean the ability to pass the SAT, take law exams, or hold a conversation, then generative AI models know a great deal. In the stricter sense, of course, they “know” nothing at all, which is why they will easily “hallucinate” large volumes of true-seeming material and “forget” facts that they have “learned.” Emily M. Bender, Timnit Gebru, and co. thus famously call them “stochastic parrots,” meaning that they use probabilistic models to

mimic knowledge by guessing the next best word in a sequence.⁵³ In one way, Bender et al. restate the initial epistemological problem of the digital humanities and allied fields, in which the skeptical critic doubts that true, verifiable knowledge could be produced by a collaboration between humans and machines. Yet, as we have seen in Chapters 1 and 2, our first chapters, knowledge is continually generated by networks of human and nonhuman actors, including demi-human abstractions like “tradition” or “the canon.” As science and technology studies (STS) scholars have long argued, sociotechnical knowledge production is instead always a collaboration between humans and the increasingly machine-mediated forms through which we survey and investigate our disciplinary objects.⁵⁴

Adjudicating the status of this knowledge is precisely the point of peer critique, revision, review, and replication by expert authorities, the substantive sociological definition of “knowledge” in the academy. Our knowledge-making employs the questions of critique in order to improve our knowledge, point out its weaknesses and problems, and even disturb its foundations and suggest new models of thinking and knowing. Every strand of critique we have encountered re-emerges within the debates over generative AI, unsurprisingly, since that technology is generated from the training data of our own contested moment. “Generative AI” thus mediates – at the level of its form, applications, and disciplinary imbrications – the too-late immediacy of capitalism now, repeating at a click the divisions and debates (or elisions and blocked accesses) of our cultural commons.

In a different way, the debates over “AI” and machine learning in the humanities also mediate a sociopolitical crisis of legitimation and justification in our fields. “How do we know” and “what does AI really know?” hide the more foundational material questions: Under what conditions can we produce knowledge? How do we respond to the attempted automation of both writing and teaching by private investors and university administrations (as a cost-saving and union-breaking tactic)?⁵⁵ Matthew Kirschenbaum and Rita Raley call the potential datafication and automation of teaching and learning the “university as service” model, on the lines of the “software as a service” (SaaS) model of cloud-based remote software services, an ongoing process only accelerated by remote-everything classes and AI tutors.⁵⁶ This crisis in institutional and indeed labor conditions is perhaps the primary way in which humanists are all addressed by generative AI. Like other waves of workers faced with the potential automation of our work in the twentieth century and earlier, humanists are suddenly pushed into the consciousness of a shared condition – as academic workers, writers, teachers, editors, cultural heritage workers – through a crisis in the automation, deskilling, and commodification

of the products of our labor within for-profit enclosures like those of “OpenAI.”

Critical studies of digital labor thus have a crucial role to play in the development of both Critical AI, still a field in formation, and in the continuing necessity of cultural critique across interdisciplinary discussions of the digital humanities. Critical AI addresses itself to platform capitalism, EdTech solutionism, university labor activism, the intersection of race and class, and other pressing areas of critique. Critique of knowledge extraction, environmental costs, and pervasive automation are all areas of ongoing work, as are the legal, regulatory, and political responses now in motion.⁵⁷ These areas of “adaptation” to the ongoing automation of knowledge work, or the “alignment” of AI with human values proclaimed by “ethical” AI developers, will all be useless without a corresponding political movement to put generative AI under democratic control, to collective ends, and to limit its destructive potential.⁵⁸

All the resources of critique described herein are needed in our radically transformed technosocial moment. Feminist critics of generative AI point to its replication of deeply misogynist and objectifying language, to the horrific rise in pornographic “deepfake” images and videos, and also to the misogynist and objectifying dynamics around many use cases. The ancient dream of a perfect (male-created) companion, the Galatea myth, has been quickly operationalized in the creation of AI companions.⁵⁹ The normalization of “AI companions,” “relationships” and therapy bots are major milestones in the ongoing commodification and dehumanizing of both care work and human relationships as such.⁶⁰ AI-generated images, videos, and text have degraded the open internet, damaging the epistemic authority of local news and national journalism alike. Anti-racist researchers point to the racism endemic in AI training data: Joy Buolamwini, Timnit Gebru, and colleagues have shown that biases in these AI training datasets have outsized consequences for minoritized populations, including misidentification, an increased chance of false arrest, and algorithmic profiling.⁶¹ The immaterialization and privatization of AI sources and training data, at least in very private models like ChatGPT, intentionally obscure these key questions for intersectional feminist analysis. We must return to those contexts and questions in our critiques, restoring the essential material and political situations, affective relations, and embodiments of cultural data.

Like all digital tools and cultures, generative AI replicates and repeats the racism, sexism, ableism, and discriminatory language of the open forums – Reddit, Substack, social media sites – on which it is trained. Critique of embedded racism, sexism, ableism etc., in the “foundation models” that

enable generative AI begins with the reinforced learning of the models themselves, many of which have been trained through reinforcement learning to avoid the topics and words that might embarrass their developers – at the cost of exposing low-wage workers in Kenya to horrific examples of sexual violence, hate speech, and other toxic content. The demand to shelter those in the (Anglophone) North from the violence within our own digital spaces inflicts that violence and damage on others. Intersectional and postcolonial critique of generative AI thus remind us to situate reinforcement learning, a critical part of commercial AI products, as an extractive process of the Global North, based on materials taken from the linguistic commons on the open web and reinforced by training and feedback largely performed in the Global South. The notion of “extraction” here is both figural and literal, as the Global South, particularly sub-Saharan Africa, is the source of both the labor involved in training enormous LLMs like ChatGPT and of many rare minerals used in the chips on which the models are trained.

The critique of generative AI points toward foundational questions for the humanities we have addressed throughout this book. How is our work mediated within a society and a technopolitical world? How is our knowledge produced by the entanglement of human and machinic processes? But a humanist reflection on digital knowledge production should not end with humans. Critique of our moment must also include the nonhuman others who are harmed by the ceaseless, rapacious resource extractivism of computationally intensive capitalism: the billions upon billions of oceanic lives destroyed by heat waves on a warming planet, the bleaching of the reefs, the spread of desertification, and the mass death of a new era of extinctions. We have no time *not* to critique digital artifices of intelligence, just as we cannot afford to look away from the embedding of our disciplines and institutions within the extractive logic of knowledge enclosure and the rise of a reactionary technological elite.

The continuation of both the life of the mind and the life of the body require a commitment to the continuing critique of our knowledge-making, a reflection on its failures and achievements, and the construction of new visions and resources for the survival and flourishing of the humanities in an era of digital mediation. Critique is not the final word, but rather the first step in speculative building, critical construction, and the making of new intellectual commons and new collective forms.

Notes

Introduction

1. See Anna Kornbluh, *Immediacy, or The Style of Too-Late Capitalism* (Verso, 2024); Nick Srnicek, *Platform Capitalism* (Polity Press, 2016).
2. Mediation, briefly defined, is the way that individuals and individual meanings are produced by larger systems of relation, including digital media systems. This sense of mediation is derived from the Hegelian concept of *Vermittlung* and its long history in media theory and cultural critique, as I discuss in Chapters 1 and 2.
3. Alan Liu, "Imagining the New Media Encounter," in *A Companion to Digital Literary Studies*, edited by Raymond George Siemens and Susan Schreibman (Wiley-Blackwell, 2013).
4. Rachel Sagner Buurma and Laura Heffernan, "Search and Replace: Josephine Miles and the Origins of Distant Reading," *Modernism/Modernity Print+* (Apr 11, 2018). Accessed November 8, 2019. <https://modernismmodernity.org/forums/posts/search-and-replace>.
5. Edward Vanhoutte, "The Gates of Hell: History and Definition of Digital | Humanities | Computing," in Melissa M. Terras, Julianne Nyhan, and Edward Vanhoutte, *Defining Digital Humanities: A Reader* (Ashgate Publishing Company, 2013), 121, citing Ada Lovelace, "Notes by the Translator," in Philip Morrison and Emily Morrison, eds., *Charles Babbage and His Calculating Engines: Selected Writings by Charles Babbage and Others* (Dover Publications, 1961 [1843]), 248–9.
6. See Melissa Terras, "Disciplined: Using Educational Studies to Analyse 'Humanities Computing,'" originally published in *Literary and Linguistic Computing* 21, no. 2, 229–46, and reprinted in Terras et al., *Defining Digital Humanities*, 67–96. See also Susan Hockey, "The History of Humanities Computing," in *A Companion to the Digital Humanities*, edited by Schreibman, Siemens, and Unsworth (Blackwell, 2004), 1–19.
7. See Terras et al., *Defining Digital Humanities*, 79, fig. 4.1 for abstracts of the ACH/ALLC conference from 1996–2005.
8. See *ibid.*, 83, fig. 4.2 for Association for Computers in the Humanities/Association of Literary and Linguistic Computing conference presenters in 2005, a pivotal year before the turn to "Digital Humanities."

9. For more on this distinction, see Julie Thompson Klein, *Interdisciplining the Digital Humanities* (University of Michigan Press, 2015).
10. As noted by Adam Crymble in *Technology and the Historian: Transformations in the Digital Age* (University of Illinois Press, 2021). The “Proceedings of the Old Bailey” is a major Digital History project we will refer to throughout. Tim Hitchcock, Robert Shoemaker, Clive Emsley, Sharon Howard, Jamie McLaughlin, et al., *The Old Bailey Proceedings Online, 1674–1913* (www.old-baileyonline.org, version 9.0, Autumn 2023, accessed March 25, 2026).
11. See Crymble, *Technology and the Historian*, for a full account of the movement from various forms of quantitative economic, demographic, and social history to digital humanities and “digital history” after 2006.
12. See <https://2025.computational-humanities-research.org/> (accessed July 6, 2025). On “computational” as an interdisciplinary keyword, see Jessica Marie Johnson, David Mimno, and Lauren Tilton, eds., *Computational Humanities* (University of Minnesota Press, 2025). Accessed March 25, 2026. <https://dhdebates.gc.cuny.edu/projects/computational-humanities>.
13. Bernard Dionysius Geoghegan, “An Ecology of Operations: Vigilance, Radar, and the Birth of the Computer Screen.” *Representations* 147, no. 1 (2019): 59–95. <https://doi.org/10.1525/rep.2019.147.1.59>.
14. Jonathan Crary, *Scorched Earth: Beyond the Digital Age to a Post-capitalist World* (Verso, 2022), 121–2.
15. This critique is advanced through the *Dialectic of Enlightenment*, as well as in Horkheimer’s 1944 lectures at Columbia, published as *Eclipse of Reason* (1947). See Theodor W. Adorno and Max Horkheimer, *Dialectic of Enlightenment* (Verso, 2016 [1947]).
16. See Matthew Kirschenbaum, “Digital Humanities as/Is a Tactical Term,” in *Debates in the Digital Humanities*, edited by Matthew K. Gold (University of Minnesota Press, 2012), chapter 23; see interactive version: <https://dhdebates.gc.cuny.edu/projects/debates-in-the-digital-humanities> (accessed March 25, 2026).
17. Kirschenbaum, “Digital Humanities as/Is a Tactical Term,” 417.
18. Rita Raley, “Digital Humanities for the Next Five Minutes.” *differences: A Journal of Feminist Cultural Studies* 25, no. 1, 26–45, 35.
19. Ibid. Raley here adapts work by David Berry, “Critical Digital Humanities,” *stunlaw*, January 10, 2013, accessed March 25, 2026. <http://stunlaw.blogspot.com/2013/01/critical-digital-humanities.html>. See the fuller account of James Dobson, *Critical Digital Humanities: The Search for a Methodology* (University of Illinois Press, 2019).
20. See Urszula Pawlicka on this turn, which she reads as a “scientification of the humanities”: “Data, Collaboration, Laboratory: Bringing Concepts from Science into Humanities Practice,” *English Studies* 98, no. 5 (July 4, 2017): 526–41. <https://doi.org/10.1080/0013838X.2017.1332022>.

21. See, for example, the manifesto by Pierre Mounier et al., “Manifeste des *Digital Humanities*,” *Journal des anthropologues* 122–3, published online December 1, 2012. <https://doi.org/10.4000/jda.3652>.
22. For the origins of intersectionality as a concept, see Kimberlé Crenshaw, “Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color,” *Stanford Law Review* 43, no. 6 (1991): 1241–300.
23. Brent Hayes Edwards, *The Practice of Diaspora: Literature, Translation, and the Rise of Black Internationalism* (Harvard University Press, 2003), 14.
24. On intersectional feminism and boundary objects, see Jacqueline Wernimont and Elizabeth Losh, “Introduction,” in *Bodies of Information: Intersectional Feminism and the Digital Humanities* (University of Minnesota Press, 2019), ix–xxvi. <https://doi.org/10.5749/j.ctv9hj9r9.3>. For the metaphor of the “contact zone,” see Alan Liu, “Imagining the New Media Encounter.”
25. As in the reconstruction of the lives of the enslaved, in Lauren Klein, “The Image of Absence: Archival Silence, Data Visualization, and James Hemings,” *American Literature* 85, no. 4 (January 1, 2013): 661–88. <https://doi.org/10.1215/00029831-2367310>.
26. I will use “AI” as a shorthand in this book for the developments in artificial intelligence since the release of the first generative pretrained transformer models in 2018, acknowledging that the history of research into earlier forms of “artificial intelligence” extends far longer.
27. Particular resources for me in sociology have been Andrew Abbott’s *Chaos of Disciplines* (University of Chicago Press, 2000), Pierre Bourdieu’s critical sociology, and Bruno Latour’s rereading of critical sociology in *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford University Press, 2005). In feminist science and technology studies, see the work of Susan Leigh Star and her collaborators on boundary objects, and the situated materialism exemplified by the contributors to Losh and Wernimont’s *Bodies of Information*. I also draw throughout on Peter Burke’s *Social History of Knowledge: From Gutenberg to Diderot* (Polity Press, 2000), a delightfully eclectic account of the forms of knowledge-making in early modern Europe.
28. See Ben Schmidt’s *Humanities Data Analysis in Modern R* (2019) (<https://benschmidt.org/HDA/>, accessed March 25, 2026) and Melanie Walsh’s *Introduction to Cultural Analytics & Python, Version 1* (2021) (<https://doi.org/10.5281/zenodo.4411250>).

Chapter 1 The Revolutions of the Word

1. Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (Routledge, 1982).
2. This use of boundary object to denote a key term defining differing fields is derived from Elizabeth Losh and Jacqueline Wernimont, *Bodies of Information*:

- Intersectional Feminism and Digital Humanities (University of Minnesota Press, 2019), xiii; it is ultimately derived from Susan Leigh Star and James R. Griesemer, “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907–39.” *Social Studies of Science* 19, no. 3 (August 1, 1989): 387–420. <https://doi.org/10.1177/030631289019003001>.
3. Saussure, Ferdinand de. *Course in General Linguistics*. Edited by Charles Bally and Albert Sechehaye. Translated by Wade Baskin (Philosophical Library, 1959), 66.
 4. On Africa as origin and end of digital materials, see Cédric Leterme, “‘Africa’s Digitalization: From the Ecological Dilemma to the Decolonization of the Imaginary’ in ‘Global Debates in the Digital Humanities’ on Debates in the DH Manifold.” *Debates in the Digital Humanities*. Accessed February 1, 2023. <https://bit.ly/4slaVFW>.
 5. As Hegel doesn’t quite say, but as Anna Kornbluh notes in the opening to *Immediacy*, there’s a close paraphrase of this distillation of his thought in the *Lectures on the Philosophy of Religion*: “but what is unmediated is as well mediated, and immediacy is essentially itself mediated” (Kornbluh, *Immediacy, or The Style of Too-Late Capitalism*. Verso, 2024, ft. 1, citing Georg Wilhelm Friedrich Hegel, *Vorlesungen über die Philosophie der Religion* (Adriani, 1901), 158).
 6. “If we take seriously digital media as *mediation*, the process through which textual forms are transformed into data and delivered to us via data structures, then our reading of historical texts in digital formats [like the Princeton Prosody Archive] must reckon with these mediations.” Meredith Martin, *Poetry’s Data: Digital Humanities and the History of Prosody* (Princeton University Press, 2025), 12.
 7. See Eileen Gardiner and Ronald G. Musto, *The Digital Humanities: A Primer for Students and Scholars* (Cambridge University Press, 2015), 7–9, citing the work of Paul Oskar Kristeller and his colleagues on the origins of the humanist movement.
 8. Dimitri Gutas, *Greek Thought, Arabic Culture: The Graeco-Arabic Translation Movement in Baghdad and Early ‘Abbasid Society (2nd–4th/5th–10th Centuries)* (Routledge, 1998); and see also Peter Adamson, *Philosophy in the Islamic World* (Oxford University Press, 2016).
 9. As Azzedine Haddour notes, the separation between “Islamic” and “classic” is one part of an Orientalist tradition that would deny the links between the “West” and its others: “Tradition, Translation and Colonization: The Graeco-Arabic Translation Movement and Deconstructing the Classics,” in *Translation and the Classic: Identity as Change in the History of Culture*, edited by Alexandra Lianeri and Vanda Zajko, Classical Presences (Oxford University Press, 2008). <https://doi.org/10.1093/acprof:oso/9780199288076.003.0010>.
 10. Gardiner and Musto, *Digital Humanities*, 8. As they note, the modern word “humanism” derives “only from 1808, coined by the German philosopher Friedrich Immanuel Niethammer as ‘*Humanismus*’” (9).
 11. From “The Chief Points in the Arguments Answering Some Crabby and Ignorant Critics: Capita argumentorum contra morosos quosdam ac indoctos,” in Robert

- Sider, *Erasmus on the New Testament* (University of Toronto Press, 2020), 305. Emphasis in the original.
12. Elena Pierazzo, "Digital Documentary Editions and the Others," *Scholarly Editing: The Annual of the Association for Documentary Editing* 35 (2014). Accessed March 26, 2026. www.scholarlyediting.org/2014/essays/essay.pierazzo.html.
 13. Allison Muri, Catherine Nygren, and Benjamin Neudorf, "The Grub Street Project: A Digital Social Edition of London in the Long 18th Century," *Digital Scholarship in the Humanities* 31, no. 4 (December 1, 2016): 829–49. <https://doi.org/10.1093/lc/fqw003>. They take up Jerome McGann's notion of the "social edition" of Byron, as described in chapter 1 of his *The Textual Condition* (Princeton University Press, 1991).
 14. *The Walt Whitman Archive*, edited by Matt Cohen, Ed Folsom, and Kenneth M. Price. Accessed June 25, 2025. www.whitmanarchive.org/.
 15. See again McGann's notion of a "social edition" (*The Textual Condition*), based on his work on Byron's poetry: George Gordon Byron, *The Complete Poetical Works*, edited by Jerome J. McGann and Barry Weller (Oxford University Press, 1980).
 16. *Furnace and Fugue: A Digital Edition of Michael Maier's Atalanta Fugiens*, edited by Tara E. Nummedal and Donna Bilak (University of Virginia Press, 2020). Accessed March 25, 2026. <https://furnaceandfugue.org/>.
 17. James O'Sullivan and Michael Pidd, "The Born-Digital in Future Digital Scholarly Editing and Publishing," *Humanities and Social Sciences Communications* 10, no. 930 (2023): 3. <https://doi.org/10.1057/s41599-023-02454-8>.
 18. The classic account here is Quentin Skinner, "Meaning and Understanding in the History of Ideas," *History and Theory* 8, no. 1 (1969): 3–53. <https://doi.org/10.2307/2504188>.
 19. See Jeff Jarvis, *The Gutenberg Parenthesis: The Age of Print and Its Lessons for the Age of the Internet* (Bloomsbury Academic, 2023).
 20. Justin Tonra, "Book History and Digital Humanities in the Long Eighteenth Century," *Eighteenth-Century Studies* 54, no. 4 (2021): 765–83. <https://doi.org/10.1353/ecs.2021.0091>.
 21. Anna Muenchrath, *Selling Books with Algorithms* (Cambridge University Press, 2024); Sarah Brouillette, "Wattpad, Platform Capitalism, and the Feminization of Publishing Work," *Book History* 26, no. 2 (2023): 419–38. <https://dx.doi.org/10.1353/bh.2023.a910954>. Stephen H. Gregg, *Old Books and Digital Publishing: Eighteenth-Century Collections Online*. In *Elements in Publishing and Book Culture*: Cambridge University Press, 2021.
 22. Martin Paul Eve. *Close Reading with Computers: Textual Scholarship, Computational Formalism, and David Mitchell's Cloud Atlas* (Stanford University Press, 2019).
 23. Dene Grigar and Mariusz Pisarski. *The Challenges of Born-Digital Fiction: Editions, Translations, and Emulations* (Cambridge University Press, 2024).

24. Julie Thompson Klein. “The Boundary Work of Making in Digital Humanities.” In *Making Things and Drawing Boundaries: Experiments in the Digital Humanities*, edited by Jentery Sayers, 21–31 (University of Minnesota Press, 2017). <https://doi.org/10.5749/j.ctt1pwt6wq.4>.
25. Geoghegan, Bernard Dionysius. “An Ecology of Operations: Vigilance, Radar, and the Birth of the Computer Screen,” *Representations* 147, no. 1 (August 2019): 59–95. <https://doi.org/10.1525/rep.2019.147.1.59>
26. Michel Foucault, “What Is an Author?” in Donald F. Bouchard, ed., *Language, Counter-memory, Practice: Selected Essays and Interviews by Michel Foucault* (Cornell University Press, 1977), 113–38.
27. “The Death of the Author” was first published in English in Brian O’Doherty, ed., *Aspen*, no. 5–6 (1967), then republished in *Image-Music-Text*, ed. Stephen Heath (Fontana Press, 1977).
28. Fish’s two major arguments against early stylistics are included in *Is There a Text in This Class?* (Harvard University Press, 1980).
29. See Saidiya V. Hartman, *Wayward Lives, Beautiful Experiments: Intimate Histories of Social Upheaval* (W.W. Norton & Company, 2019), and Rhondra Thomas, *Call My Name, Clemson: Documenting the Black Experience in an American University Community* (University of Iowa Press, 2020).
30. The publications of the Computational Stylistics Group provide many examples: “Publications.” Accessed June 26, 2025, <https://computationalstylistics.github.io/publications/>.
31. See Adrián Castro, “The Year’s Work in Stylistics, 2023 & 2024.” *Language and Literature*, 0963-9470 (June 25, 2025). <https://doi.org/10.1177/09639470251355809>.
32. Leif Wetherby, *Language Machines: Cultural AI and the End of Remainder Humanism* (University of Minnesota Press, 2025). See Barthes’s notion of *écriture* in *Le Degré zéro de l’écriture* (Éditions du Seuil, 1953).
33. See the description of “lexical lists” with some examples at the “Digital Corpus of Cuneiform Lexical Texts.” Accessed June 25, 2025. https://oracc.museum.upenn.edu/dcclt/intro/lexical_intro.html.
34. On the *Erya*, a set of lexicographic glosses on the Chinese Classics, see W. South Coblin, “Erh ya” 爾雅. In Michael Loewe (ed.), *Early Chinese Texts: A Bibliographical Guide* (Society for the Study of Early China, University of California, 1993), 94–9.
35. “Remediate” in the particular sense of the “double logic of remediation” developed by Richard Grusin and Jay David Bolter: “Our culture wants both to multiply its media and to erase all traces of mediation: ideally, it wants to erase its media in the very act of multiplying them.” *Remediation: Understanding New Media* (MIT Press, 2000), 5.
36. Peter Burke, *A Social History of Knowledge: From Gutenberg to Diderot* (Polity, 2000), 93–4.
37. This was true, astonishingly, in a comparison of Wikipedia against the Encyclopedia Britannica only four years after the former’s creation in 2001.

- Expert reviewers found a rate of about four (often minor) errors in Wikipedia entries, in comparison to about three per entry for the Britannica. Jim Giles, “Internet Encyclopaedias go Head to Head,” *Nature* 438, 900–1 (2005). <https://doi.org/10.1038/438900a>.
38. Mostafa Mesgari, Chitu Okoli, Mohamad Mehdi, Finn Årup Nielsen, and Arto Lanamäki, “‘The Sum of all Human Knowledge’: A Systematic Review of Scholarly Research on the Content of Wikipedia.” *Journal of the Association for Information Science and Technology* 66, no. 2 (2015): 219–45.
 39. Dariusz Jemielniak, “Wikipedia: Why Is the Common Knowledge Resource still Neglected by Academics?” *GigaScience* 8, no. 12 (2019): giz139. <https://doi.org/10.1093/gigascience/giz139>.
 40. “Talk:Textus Receptus.” Accessed March 4, 2025, https://en.wikipedia.org/wiki/Talk:Textus_Receptus.
 41. Burke, *A Social History of Knowledge*, 92.
 42. Susan Leigh Star, “This Is Not a Boundary Object: Reflections on the Origin of a Concept.” *Science, Technology, & Human Values* 35, no. 5 (2010): 604.
 43. Library and information science was the largest professional affiliation for the ACH/ALLC in 2005, the year before the turn to “Digital Humanities” (Terras et al., *Defining Digital Humanities*, 83, fig. 4.2).
 44. “dh+lib.” Accessed June 26, 2025. <https://dhandlib.org>.
 45. Emma Annette Wilson, *Digital Humanities for Librarians* (Rowman & Littlefield, 2020), 163.
 46. “WorldCat.” Accessed June 25, 2025. <https://search.worldcat.org/>.
 47. See Natalie Greene Taylor, Karen Kettlich, Ursula Gorham, and Paul T. Jaeger, *Libraries and the Global Retreat of Democracy: Confronting Polarization, Misinformation, and Suppression* (Emerald Publishing Ltd., 2022). <https://doi.org/10.1108/S0065-2830202150>.
 48. Questions of replication and reproducibility are taken up in Thorsten Ries, Karina van Dalen-Oskam, and Fabian Offert, “Reproducibility and Explainability in Digital Humanities.” *International Journal of Digital Humanities* 6, no. 1 (2024): 1–7. <https://doi.org/10.1007/s42803-023-00083-w>.
 49. Burke, *A Social History of Knowledge*, 93.
 50. See www.oxfordbibliographies.com/.
 51. The National Union Catalog of all titles recorded by the Library of Congress is now available pre-1956 in HathiTrust, “National Union Catalog,” reprinting American Library Association, *The National Union Catalog, Pre-1956 Imprints: A Cumulative Author List Representing Library of Congress Printed Cards and Titles Reported by Other American Libraries* (Mansell, 1968–1981), <https://catalog.hathitrust.org/Record/000140237>; published volumes are collected after 1955 in print and microfiche. This is distinct from the National Union Catalog of Manuscript Collections, also hosted by the Library of Congress: www.loc.gov/coll/nucmc/ (accessed June 30, 2025).
 52. Umberto Eco, *How to Write a Thesis* (MIT Press, 2015 [1977]), 82.

53. Lev Manovich, on the database as the paradigm for contemporary culture: *The Language of New Media* (MIT Press, 2001), 218; Edward Folsom, “Database as Genre: The Epic Transformation of Archives,” *PMLA* 122, no. 5 (2007): 1571–9.
54. Jerome McGann, “Database, Interface and Archival Fever,” *PMLA* 122, no. 5 (2007): 1588.
55. JSTOR, “Mission and History.” Accessed June 30, 2025. <https://about.jstor.org/mission-history/>.
56. Originally the “History E-book Project”; now administered by Michigan Publishing. www.humanitiesebook.org/about/ (accessed June 25, 2025).
57. See the “Cambridge Elements in Digital Literary Studies” (which I edit with Katherine Bode and Adam Hammond): www.cambridge.org/core/publications/elements/digital-literary-studies (accessed March 26, 2026).
58. Stephen Buranyi writes: “In 2010, Elsevier’s scientific publishing arm reported profits of £724m on just over £2bn in revenue. It was a 36% margin – higher than Apple, Google, or Amazon posted that year.” Buranyi, “Is the Staggeringly Profitable Business of Scientific Publishing Bad for Science?,” *The Guardian*, June 27, 2017. Accessed March 19 2026, <https://bit.ly/3MXaS3e>.
59. “Eighteenth-Century Collections Online.” Accessed June 25, 2025, www.gale.com/primary-sources/eighteenth-century-collections-online.
60. See “Open Educational Resources Commons,” an aggregator and public library dedicated to Open Education Resources. Accessed June 25, 2025, <https://oercommons.org/>.
61. “About CC Licenses.” Accessed June 25, 2025, <https://creativecommons.org/share-your-work/cclicenses/>.
62. See the “Directory of Open Access Journals” for a list of open access journals and policies: <https://doaj.org> (accessed June 25, 2025).
63. Open Access Network, “Green, Gold, and Diamond Open Access.” Accessed June 25, 2025, <https://open-access.network/en/information/open-access-primers/green-and-gold>.
64. Georg Wilhelm Friedrich Hegel, translated and edited by Klaus Brinkmann and Daniel O. Dahlstrom, *Encyclopaedia of the Philosophical Sciences in Basic Outline: Part I: Science of Logic* (Cambridge University Press, 2010), 59.
65. For his use of “indices” in this sense, see C. S. Peirce, *The Writings of Charles S. Peirce: A Chronological Edition*, vol. 2, edited by Peirce Edition Project (Indiana University Press, 1982–), 56. <https://doi.org/10.1017/9780511780226>.
66. On the *Erya* as a “collection of direct glosses to concrete passages in ancient texts,” see Bernard Karlgren, “The Early History of the Chou Li and Tso Chuan Texts.” *Bulletin of the Museum of Far Eastern Antiquities* vol. 3 (1931), 46 (emphasis original).
67. Leonard Mascall, *A booke of the arte and maner how to plant and graffe all sortes of trees* (John Wight, 1575). See G. Norman Knight, *Indexing, the Art of: A Guide to the Indexing of Books and Periodicals* (Allen and Unwin, 1979).
68. Burke, *A Social History of Knowledge*, 141.

69. Robin Vose, *The Index of Prohibited Books: Four Centuries of Struggle over Word and Image for the Greater Glory of God* (University of Chicago Press, 2022).
70. See Maurice Bloomfield, *A Vedic Concordance* (Motilal Banarsidass Publishers, 1990), or the delightful Open Source Shakespeare. Accessed June 25, 2025, www.opensourceshakespeare.org/concordance/.
71. Paul E. Corcoran, “COCOA: A FORTRAN Program for Concordance and Word-Count Processing of Natural Language Texts,” *Behavior Research Methods & Instrumentation* 6, no. 6 (November, 1974): 566. <https://doi.org/10.3758/BF03201351>. See also the account of digital concordance tools in John Bradley, “Text Tools,” in *A Companion to Digital Humanities*, edited by Susan Schreibman, Ray Siemens, and John Unsworth (Blackwell, 2004).
72. See the work of the original team on word vectors at Google: Tomas Mikolov, Kai Chen, Greg Corrado, and Jeffrey Dean, “Efficient Estimation of Word Representations in Vector Space” (January 16, 2013). Accessed March 26, 2026, <https://arxiv.org/abs/1301.3781>.
73. As Ben Schmidt wrote at the time about the key problem of Google Ngrams and culturomics: “But for now: *it’s disconnected from the texts*. This severely compromises its usefulness in most humanities applications. I can’t track evolutionary language in any subset of books or any sentence/paragraph context; a literary scholar can’t separate out pulp fiction from literary presses, much less Henry James from Mark Twain. It was created by linguists, and treats texts fundamentally syntactically – as bags of words linked only by very short-term connections – two or three words. The wider network of connections that happen in texts is missing.” “Missing Humanists,” *Sapping Attention* (blog), December 17, 2010. Accessed March 26, 2026, <https://benschmidt.org/sappingattention/missing-humanists/> (emphasis in the original).
74. See Stephen Wolfram’s useful analysis “What Is ChatGPT Doing . . . And Why Does It Work?” *Stephen Wolfram: Writings*, February 14, 2023. Accessed March 26, 2026, writings.stephenwolfram.com/2023/02/what-is-chatgpt-doing-and-why-does-it-work/.

Chapter 2 Histories: Curation, Preservation, Loss

1. This sense of historical mediation takes up the fundamental understanding of mediation in one media-theoretical understanding of Hegel developed by Raymond Williams and the cultural studies tradition, and formulated by Anna Kornbluh: “To mediate is to put into medium, which is to provide an occasion and vehicle for collectivizing meaning, to provide a modality or form conducive to the content of the commons.” Anna Kornbluh, “Mediation Metabolized,” in *Raymond Williams at 100*, edited by Paul Stasi (Rowman and Littlefield, 2021).
2. Historical mediation in traditional materialist theory refers to the reciprocal determination of individual consciousness and a position within a

- given mode of production, as in Georg Lukács's discussion of historical mediation in *History and Class Consciousness* (MIT Press, 1971), 155–6.
2. All media remediate the forms, affordances, and content of older media, as Jay David Bolter and Richard Grusin argue in *Remediation: Understanding New Media* (MIT Press, 2000): “a medium is that which remediates” (98).
 3. Devoney Looser discusses this long-standing idea in an exemplary way: “Me and My Shadow CV,” October 18, 2015. Accessed March 20, 2026, <http://chronicle.com/article/MeMy-Shadow-CV/233801>.
 4. Erving Goffman, *The Presentation of Self in Everyday Life* (Doubleday & Company, 1959) [1956].
 5. www.europeana.eu/en/collections (accessed March 25, 2026).
 6. www.dariah.eu (accessed March 25, 2026).
 7. <https://dp.la>; <https://learninglab.si.edu> (accessed March 25, 2026).
 8. Diane Zorich, “A Survey of Digital Cultural Heritage Initiatives and Their Sustainability Concerns.” Council on Library and Information Resources (2003). Accessed March 20, 2026, www.clir.org/pubs/reports/pub118.
 9. Hugh Denard, “Implementing Best Practice in Cultural Heritage Visualisation: The London Charter,” in Cristina Corsi, Bozidar Slapsak, and Frank Vermeulen, *Good Practice in Archaeological Diagnostics: Non-Invasive Survey of Complex Archaeological Sites* (Springer, 2013), 255–68. https://doi.org/10.1007/978-3-319-01784-6_15.
 10. For a theory of digital cultural heritage, see Fiona Cameron and Sarah Kenderdine. *Theorizing Digital Cultural Heritage: A Critical Discourse* (MIT Press, 2007); Brenda O'Neill and Larry Stapleton, “Digital Cultural Heritage Standards: From Silo to Semantic Web,” *AI & Society* 37, no. 3 (2022): 891–903. <https://doi.org/10.1007/s00146-021-01371-1>. The original article on the “semantic web” is Tim Berners-Lee, James Hendler, and Ora Lassila, “The Semantic Web,” *Scientific American* 284, no. 5 (2001): 34–43.
 11. Henk Alkemade, Steven Claeysens, Giovanni Colavizza, Nuno Freire, Jörg Lehmann, Clemens Neudeker, and Giulia Osti, “Datasheets for Digital Cultural Heritage Datasets.” *Journal of Open Humanities Data* 9, no. 17 (2023): 1–11. Their work builds on Timnit Gebru, Jamie Morgenstern, Briana Vecchione, Jennifer Wortman Vaughan, Hanna Wallach, Hal Daumé III, and Kate Crawford, “Datasheets for Datasets.” *Communications of the ACM* 64, no. 12 (2021): 86–92.
 12. “Virtual St. Paul’s Project.” Accessed June 25, 2025, <https://vpcathedral.chass.ncsu.edu/>; for a full description of the project, see John N. Wall, “Materializing Lost Time and Space: The Virtual St Paul’s Cathedral Project.” *IDEAH*, 4(3). <https://doi.org/10.21428/f1f23564.549911e9>.
 13. For an account of how this happens in a gallery setting, see Mary Mikel Stump and Grayson Lawrence, “Connecting Physical and Digital Worlds: A Case Study of Quick Response Codes and Social Media in a Gallery Setting.” *International*

- Journal of Design in Society* 6, no. 3 (2013): 79–95. <https://doi.org/10.18848/2325-1328/CGP/v06i03/38508>.
14. https://en.wikipedia.org/wiki/List_of_defunct_social_networking_services (accessed March 25, 2026).
 15. <https://programminghistorian.org/> (accessed March 25, 2026).
 16. <https://web.archive.org/> (accessed March 25, 2026).
 17. Matthew G. Kirschenbaum, *Bitstreams: The Future of Digital Literary Heritage* (University of Pennsylvania Press, 2021).
 18. Kirschenbaum, *Bitstreams*, 35.
 19. See Dene Grigar and Stuart Moulthrop's "Pathfinders" project: <https://dte-wsuv.org/wp/pathfinders/description/> (accessed March 25, 2026).
 20. See the notion of "media translation" in Dene Grigar and Mariusz Pisarski, *The Challenges of Born-Digital Fiction: Editions, Translation, and Emulation* (Cambridge University Press, 2024).
 21. Andrew Stauffer, citing Bethany Nowviskie and Matthew Kirschenbaum, "My Old Sweethearts: On Digitization and the Future of the Print Record." In Matthew Gold and Lauren Klein, *Debates in the Digital Humanities 2016* on Manifold. Accessed May 15, 2023. <https://bit.ly/4agEbFp>. See "Book Traces" at <https://booktraces-public.lib.virginia.edu/> (accessed March 25, 2026).
 22. See Nick Montfort and Ian Bogost, *Racing the Beam: The Atari Video Computer System* (MIT Press, 2020), part of the excellent MIT Platform Studies series: <https://mitpress.mit.edu/series/platform-studies/> (accessed March 25, 2026).
 23. <http://data.perseus.org/citations/urn:cts:greekLit:tlg0016.tlg001.perseus-grc1:1.1.0>, accessed July 1, 2025.
 24. "Book IV of Herodotus' *Histories* . . . while adopting the function of mediator, or of knowledge (*histôr*, he who knows), between the Greek *logos* and its barbarian other, also develops as a play on mediators. At the level of the history the book recounts, the mediator is the Persian, who advances into Scythian territory before attacking the Greeks, and plays the role of third party and divulger for both sides. At the level of the production of a truth, or of historical verisimilitude, that is, at the level of the text's own production, the mediators are the witnesses, interpreters, legends, and documents – the sayings of others about the other – that Herodotus manipulates and modalizes, by means of a subtle, permanent practice of distancing, so as to distinguish from these sources his own 'testimony' that interspace where the fiction is erected of a discourse, addressed to the Greeks, which treats both the Greek and the Barbarian, both one and the other. [Montaigne's] 'Of Cannibals' is inscribed within this heterological tradition, in which the discourse about the other is a means of constructing a discourse authorized by the other." Michel de Certeau, *Heterologies: Discourse on the Other* (University of Minnesota Press, 1986), 68.
 25. On orality and the epic tradition, see Walter Ong's *Orality and Literacy: The Technologizing of the Word* (Routledge, 1982).

26. Adam Crymble, *Technology and the Historian: Transformations in the Digital Age* (University of Illinois Press, 2021); see also William G. Thomas II, “Computing and the Historical Imagination,” in Schreibman et al., *Companion to the Digital Humanities* (Blackwell Publishing, 2004), 56–68; Hanny Salmi, *What Is Digital History?* (Polity Press, 2020), and Ian Mulligan, *The Transformation of Historical Research in the Digital Age* (Cambridge University Press, 2022). <https://doi.org/10.1017/9781009026055>.
27. See Ian Mulligan, “Historical Research in the Digital Age, Part 1: We Are All Digital Now,” *Royal Historical Society Blog and Online Resources*, November 30, 2022, accessed March 25, 2026. <https://blog.royalhistsoc.org/2022/11/30/we-are-all-digital-now-1/>.
28. See David Graeber and David Wengrow on the many other kinds of social organization that accompany and precede writing alongside the first states in *The Dawn of Everything* (Allen Lane, 2021).
29. Burke, *A Social History of Knowledge: From Gutenberg to Diderot* (Polity Press, 2000), 120.
30. *Ibid.*, 132. For a classic account of the archive as a tool of colonial control, see Ann Laura Stoler’s *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense* (Princeton University Press, 2008).
31. Burke, *A Social History of Knowledge*, 126–8. On this dynamic in Russian imperial practice, see Dominic Lieven, *Empire: The Russian Empire and Its Rivals* (Yale University Press, 2001).
32. “Database as Genre: The Epic Transformation of Archives,” *PMLA* 122, no. 5 (2007): 1571–9, 1575.
33. *Ibid.*, 1577.
34. *Ibid.*, 1576, 1575.
35. See Jonathan Freedman’s response to Folsom, in the afore-cited issue: “The more data we have access to, the more we need aggregators and entrepreneurs of information like Folsom and the Googlizers; the more we are freed to experience and construct our own world of knowledge through Google searches and Web crawling, the more dependent we become on the ways in which those searches and databases are constructed for us. To celebrate the branching, rooting, rhizomic, proliferating quality of database – to celebrate database as a kind of autonomous form, rooting and branching by a logic of its own – is (in this case, somewhat weirdly) to downplay the inclusions, exclusions, choices that have gone into the making of databases and hence to occlude the possibilities for questioning those choices” (“Whitman, Database, Information Culture,” *PMLA* 122, no. 5 [2007]: 1597. www.jstor.org/stable/25501807.)
36. B. M. Watson, “Please Stop Calling Things Archives.” January 22, 2021. <https://bit.ly/4lcVMBv>. Accessed July 1, 2025.
37. *Ibid.*
38. Christina Sharpe, *In the Wake: On Blackness and Being* (Duke University Press, 2016).

39. “Alternative Histories of the Digital Humanities: Tracing the Archival Turn,” in “‘Global Debates in the Digital Humanities’ on Debates in the DH Manifold.” Accessed May 15, 2023. <https://bit.ly/4n4mOhd>.
40. For a tutorial on modern digital source criticism, see Andreas Fickers et al., “Ranker 2” (n.d.). <https://ranker2.uni.lu/> (accessed March 25, 2026).
41. See Franco Moretti, “Conjectures on World Literature.” *New Left Review* 2, no. 1 (2000): 54–68.
42. Thomas, “Computing and the Historical Imagination,” in Schreibman et al., *Companion to the Digital Humanities*, 59.
43. Crymble, *Technology and the Historian*, chps 1–2.
44. The following account is much indebted to Ben Schmidt’s “Two Volumes: The Lessons of Time on the Cross.” *Ben Schmidt*, December 5, 2019 (<https://bensmidt.org/post/2019-12-05-totc/2019-aha/>, accessed March 25, 2026), in addition to comments by Jo Guldi and Jessica Marie Johnson (author’s own notes).
45. Eric Hilt, “Revisiting Time on the Cross after 45 Years: The Slavery Debates and the New Economic History.” *Capitalism: A Journal of History and Economics* 1, no. 2 (2020): 456–83. <https://doi.org/10.1353/cap.2020.0000>.
46. Thomas L. Haskell, “The True & Tragical History of ‘Time on the Cross.’” *New York Review of Books*, Oct. 2 1975. Accessed January 18, 2022. <https://bit.ly/40scuVH>. Astonishingly, despite this critical response, *Time on the Cross*’s methodological second volume was awarded a Bancroft Prize, the highest honor for American historical scholarship, and Robert Fogel was awarded the Nobel Memorial Prize in Economic Sciences in 1993.
47. Peter Kolchin, “More Time on the Cross? An Evaluation of Robert William Fogel’s *without Consent or Contract*.” *The Journal of Southern History* 58, no. 3 (1992): 491–502, 498, quoted in Hilt, “Revisiting Time on the Cross after 45 Years,” 20.
48. Robert W. Fogel, *The Slavery Debates, 1952–1990: A Retrospective* (Louisiana State University Press, 2006), 28.
49. As in Ed Baptist’s *The Half Has Never Been Told* (Basic Books, 2014).
50. As in Michel-Rolph Trouillot, *Silencing the Past: Power and the Production of History* (Beacon Press, 1995); on data silences, see Lauren Klein, “The Image of Absence: Archival Silence, Data Visualization, and James Hemings,” *American Literature* 85, no. 4 (January 1, 2013): 661–88. <https://doi.org/10.1215/00029831-2367310>. Walter Johnson, *River of Dark Dreams: Slavery and Empire in the Cotton Kingdom* (Harvard University Press, 2013).
51. Jessica Marie Johnson, “Markup Bodies: Black [Life] Studies and Slavery [Death] Studies at the Digital Crossroads.” *Social Text* 1 December 2018; 36 (4 (137)): 61.
52. See *ibid.*: “I question the stability of what has been or can be categorized as data, the uses the idea of data has been put to, and the stakes underlying data’s implicit claim to stability or objectivity. This article uses the term data transhistorically to gesture to the rise of the independent and objective statistical fact as an

- explanatory ideal party to the devastating thingification of black women, children, and men” (58).
53. Adam Crymble, *Technology and the Historian: Transformations in the Digital Age* (University of Illinois Press, 2021), 24.
 54. R. Wisbey and M. F. Bott. “Literary and Linguistic Computing Centre, Cambridge.” In *Les machines dans la linguistique*, 39–48. De Gruyter, 2020. <https://doi.org/10.1515/9783112315354-009>.
 55. Crymble, *Technology and the Historian*, 24.
 56. See Daniel J. Cohen, and Roy Rosenzweig, *Digital History: A Guide to Gathering, Preserving, and Presenting the Past on the Web* (University of Pennsylvania Press, 2006), 20; and Carl Fleischhauer, “Looking Back: Observations on Digital Initiatives from the 1980s to the Present.” Talk for the National Archives Preservation Conference, March 26, 2009; “version for the Web, March 31, 2009,” at <https://bit.ly/4ccTUIm> (accessed March 25, 2026).
 57. Caroline R. Arms, “Library of Congress: Historical Collections for the National Digital Library, Part I.” *D-Lib Magazine*, April 1996. Accessed May 5, 2023. www.dlib.org/dlib/april96/loc/04c-arms.html.
 58. Julien Mailland and Kevin Driscoll, *Minitel: Welcome to the Internet* (MIT Press, 2017).
 59. “The conventional ‘technology’ of the classroom is a thousand-year-old invention initially adopted to discipline an esoteric cadre of acetic [*sic*] monks. The institution of contemporary, ‘public’ education is a 19th-century innovation designed as a worker-factory for an industrial economy. Both have as much utility in today’s modern economy of advanced information technology as the Conestoga wagon or the blacksmith shop.” Lewis J. Perelman, “School’s Out: The Hyperlearning Revolution Will Replace Public Education.” *Wired* 1/1, March/April 1993, accessed March 25, 2026, <https://bit.ly/4rt0WNU>.
 60. Cohen and Rosenzweig, *Digital History*, 19, 22.
 61. *Ibid.*, 3.
 62. *Ibid.*, 6.
 63. *Ibid.*, 8, citing Landow, *Hypertext 2.0* (Johns Hopkins University Press, 1997), 89, 2.
 64. “About the Archive.” *Internet Archive*. web.archive.org/web/20000408223908/https://archive.org/about/index.html. April 8, 2000. Accessed July 1, 2025.
 65. This section draws on Adam Crymble’s account of “The Archival Revisionism of Mass Digitization,” ch. 2 in *Technology and the Historian: Transformations in the Digital Age* (University of Illinois Press, 2021).
 66. ERIC, “Fifty Years of ERIC: 1964–2014.” https://eric.ed.gov/pdf/ERIC_Retrospective.pdf, 2014. Accessed July 1, 2025.
 67. Crymble, *Technology and the Historian*, 47.
 68. Tim Hitchcock, “History of the Old Bailey Online Project,” www.oldbaileyonline.org/about/a-narrative-history-of-the-project (accessed March 25, 2026). Tim Hitchcock, Robert Shoemaker, Clive Emsley, Sharon Howard, Jamie

- McLaughlin, et al., *The Old Bailey Proceedings Online, 1674–1913* (version 9.0, updated Autumn 2023).
69. Crymble, *Technology and the Historian*, 52.
 70. *Ibid.*, 55.
 71. See the list at <https://eadh.org/education/digital-humanities-centres> (accessed March 25, 2026).
 72. “We’re increasing our monthly subscription prices to help provide you with more content and new product features,” *Ancestry.com*, <https://bit.ly/4s39c7a>, January 2, 2022 (accessed July 1, 2025).
 73. *Ars Technica*, “Cloudflare Turns AI against Itself with Endless Maze of Irrelevant Facts,” <https://bit.ly/4tTFfrY>, March 21, 2025 (accessed March 25, 2026).
 74. Coined by Darcy DiNucci, an information architecture specialist, in an article that also develops the retronym “Web 1.0.” All these, like the related “Web 3.0,” are largely marketing terms that only vaguely capture the development of web technologies. DiNucci (1999), “Fragmented Future.” *Print*. 53 (4): 32. See also https://en.wikipedia.org/wiki/Web_2.0 (accessed March 25, 2026).
 75. For a parallel case with a long history, see Jo Guldi, “A History of the Participatory Map.” *Public Culture* 29, no. 1 (81) (January 1, 2017): 79–112. <https://doi.org/10.1215/08992363-3644409>.
 76. www.ucl.ac.uk/bentham-project/transcribe-bentham (accessed March 25, 2026).
 77. <https://reviewsindh.pubpub.org/pub/new-roots-nuevas-raices/release/3> (accessed March 25, 2026). See also the many oral histories and resources collected by the Oral History Association: <https://oralhistory.org/resources/> (accessed March 25, 2026).
 78. <https://mcpress.media-commons.org/plannedobsolescence/how-to-read-this-text/>; <https://web.hypothes.is/>; www.pubpub.org/ (all accessed March 25, 2026).
 79. Jill Lepore, “Replication data for: New York Burning: Liberty, Slavery, and Conspiracy in Eighteenth-Century Manhattan,” <https://doi.org/10.7910/DVN/V1WI8Y>, Harvard Dataverse, V2 (2011).
 80. For a summary of replication studies in psychology, see Open Science Collaboration, “Estimating the Reproducibility of Psychological Science.” *Science* 349, aac4716 (2015). <https://doi.org/10.1126/science.aac4716>. For the larger “replication crisis” across many disciplines, see https://en.wikipedia.org/wiki/Replication_crisis (accessed March 25, 2026).
 81. See <https://bit.ly/3OxCLzu> (accessed March 25, 2026).
 82. <https://manifoldapp.org/> (accessed March 25, 2026).
 83. Omeka now exists in several forms: see www.omeka.net/ and the open-source version of Omeka S, <https://github.com/omeka/omeka-s> (accessed March 25, 2026).

84. On Dublin Core metadata, see: www.dublincore.org/resources/metadata-basics/; on the semantic web, https://en.wikipedia.org/wiki/Semantic_Web (accessed March 25, 2026).
85. <https://knottedline.com/> (accessed March 25, 2016).
86. See the opening invitation of *As I Remember It*: <https://developmentserver.ravenspacepublishing.org/as-i-remember-it-1/index?path=language>. For the full credits, see <http://publications.ravenspacepublishing.org/as-i-remember-it/about> (accessed March 25, 2026). UBC Press, June 2019. <https://doi.org/10.14288/SNS9-9159>.
87. Edward Ayers, “Valley of the Shadow,” 1993, <https://valley.newamericanhistory.org/about> (accessed July 1, 2025). Vincent Brown, principal investigator, “Slave Revolt in Jamaica, 1760–1761” (2012; <https://revolt.axismaps.com/>, accessed July 1, 2025). Both projects were supported by many collaborators at the Institute of Advanced Technology in the Humanities at the University of Virginia and the History Design Studio at Harvard University, respectively.
88. Domenico Fiormonte, “Towards a Cultural Critique of the Digital Humanities.” *Historical Social Research / Historische Sozialforschung* 37, no. 3 (141) (2012): 59–76. <https://doi.org/10.12759/hsr.37.2012.3.59-76>.
89. Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte, *Global Debates in the Digital Humanities* (University of Minnesota Press, 2022).
90. Julianne Nyhan and Andrew Flinn, *Computation and the Humanities: Towards an Oral History of Digital Humanities* (Springer, 2018).
91. Jing Chen and Lik Hang Tsui, “Debating and Developing Digital Humanities in China: New or Old?”, in Fiormonte et al., eds., *Global Debates in the Digital Humanities*. Accessed May 16, 2023. <https://bit.ly/3OJqWGd>. University of Minnesota Press, 2022.
92. Adeline Koh and Dorothy Kim, *Alternative Historiographies of the Digital Humanities* (Punctum Books, 2021). <https://muse.jhu.edu/book/84502/>.
93. For an explication of the “partially overlapping domains” of digital humanities and computational social science, see Eetu Mäkelä, “Three Approaches to Computational Methods.” Accessed July 1, 2025, <https://bit.ly/4aA5goB>.
94. Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte, “Introduction” to *Global Debates in the Digital Humanities*. Debates in the DH Manifold. Accessed May 16, 2023. <https://bit.ly/3QQhhPf>. University of Minnesota Press, 2022.
95. Ibid.
96. See our introduction to *Digital Futures of Graduate Study in the Humanities* (Gabriel Hankins, Simon Appleford, and Anouk Lang, eds.; University of Minnesota Press, 2024).
97. J. C. Shin, Gerard A. Postiglione, and K. C. Ho, “Challenges for Doctoral Education in East Asia: A Global and Comparative Perspective,” *Asia Pacific Education Review* 19, no. 2 (June 1, 2018): 141–55, <https://doi.org/10.1007/s12564-018-9527-8>.

98. See Sylvia Fernandez, Rubria Rocha de Luna, and Annette M. Zapata, “United Fronteras as Third Space: A Transborder Model through Postcolonial Digital Humanities and Minimal Computing,” part of a special issue on Minimal Computing, *Digital Humanities Quarterly* 2022 (16.2). Accessed March 25, 2026. www.digitalhumanities.org/dhq/vol/16/2/000608/000608.html.
99. Fiormonte, “Towards a Cultural Critique of the Digital Humanities.”
100. Catalina Cozariuc, Luc A. Laeven, and Alexander A. Popov, “The Rise of China in Academic Research.” *Social Science Research Network*, May 19, 2025. <http://dx.doi.org/10.2139/ssrn.5259968>.
101. “We recognize the existence of multiple Souths, those communities that are economically, epistemically, and ontologically excluded, regardless of their geographical location.” “Introduction” to Fiormonte et al., *Global Debates in the Digital Humanities*.
102. Anne McGail, Angel David Nieves, and Siobhan Senier, *People, Practice, Power: Digital Humanities Outside the Center* (University of Minnesota Press, 2021).
103. Robin Wharton, “Bend until It Breaks: Digital Humanities and Resistance.” In *Disrupting the Digital Humanities*, edited by Dorothy Kim and Jesse Stommel, 377–400 (Punctum Books, 2018). <https://doi.org/10.2307/j.ctv19cwwdqv.26>.
104. Roopika Risam, “Other Worlds, Other DHs: Notes towards a DH Accent.” *Digital Scholarship in the Humanities* 32, no. 2 (June 2017): 377–84, <https://doi.org/10.1093/dlsc/fqy063>.
105. “Quantifying Digital Humanities.” Melissa Terras’ Blog. www.ucl.ac.uk/infos-tudies/melissa-terras/DigitalHumanitiesInfographic.pdf, 2012 (accessed July 15, 2025; URL no longer functional at time of publication); discussed in Amy Earhart, “Digital Humanities within a Global Context: Creating Borderlands of Localized Expression.” *Fudan Journal of the Humanities and Social Sciences* 11, no. 3 (September 1, 2018): 357–69. <https://doi.org/10.1007/s40647-018-0224-0>.
106. See the definitions of these terms in Carolina Dalla Chiesa and Leonardo Foletto, “On Gambiaras: Technical Improvisation à la Brazil,” <https://bit.ly/3Oui9YR> ; and Puthiya Purayil Sneha, “Alternative Histories of the Digital Humanities: Tracing the Archival Turn,” <https://bit.ly/4tQvqLm> (both accessed March 25, 2026); both in Fiormonte, Chaudhuri, and Ricaurte, *Global Debates in the Digital Humanities*.

Chapter 3 Transformations

1. Useful sources on the modern German and American university systems, and a bibliography of other histories, are collected in Louis Menand, Paul Reitter, and Chad Wellmon, eds., *The Rise of the Research University: A Sourcebook* (The University of Chicago Press, 2017).

2. Gardiner and Musto, *Digital Humanities*, 67. See the reproduction in the Detroit Institute of Art: <https://dia.org/collection/saint-jerome-his-study-44739> (accessed March 25, 2026). The painting is now attributed to van Eyck's workshop.
3. For the story of St. Jerome and the lion, see the description of another painting at the Detroit Institute of Art: [https://en.wikipedia.org/wiki/Saint_Jerome_and_the_Lion_\(van_der_Weyden\)](https://en.wikipedia.org/wiki/Saint_Jerome_and_the_Lion_(van_der_Weyden)), accessed March 25, 2026.
4. Eileen Gardiner and Ronald G. Musto, *The Digital Humanities: A Primer for Students and Scholars* (Cambridge University Press, 2015), 120.
5. Digital tools, inscriptions, and memory devices are always material, despite the rhetoric of immateriality that still surrounds them, as Matthew Kirschenbaum argues in *Mechanisms: New Media and the Forensic Imagination* (MIT Press, 2008).
6. Tsuen-Hsui Tsien, "Paper and Printing," in *Science and Civilization in China. Vol. 5, Part 1*, edited by Joseph Needham (Cambridge University Press, 1985), 201–17.
7. On transmedia as a concept, see Marsha Kinder and Tara McPherson, *Transmedia Frictions: The Digital, the Arts, and the Humanities* (University of California Press, 2014), and Matthew Freeman and Renira Rampazzo Gambarato, eds., *The Routledge Companion to Transmedia Studies* (Routledge, 2018).
8. Bruce McCandliss and Elizabeth Toomarian, "Putting Neuroscience in the Classroom: How the Brain Changes as We Learn." *Pew* (Pew Charitable Trusts). Accessed June 5, 2023. <https://pew.org/2UoSzWN>.
9. N. Katherine Hayles, "How We Read: Close, Hyper, Machine." *ADE Bulletin* 150 (2010): 62–79 (18). <https://doi.org/10.1632/ade.150.62>.
10. Franco Moretti, "Conjectures on World Literature." *New Left Review*, no. 1 (February 1, 2000): 54–68; and *Distant Reading* (Verso, 2013).
11. Stephen Best and Sharon Marcus, "Surface Reading: An Introduction." *Representations* 108, no. 1 (2009): 1–21. <https://doi.org/10.1525/rep.2009.108.1.1>.
12. On the use of commonplaces in the early modern period and now, see Peter Stallybrass, "Against Thinking." *PMLA* 122, no. 5 (2007): 1580–87. www.jstor.org/stable/25501804.
13. See Jerome McGann, "Marking Text of Many Dimensions," in Susan Schreibman, Ray Siemens, and John Unsworth, *A Companion to Digital Humanities* (Blackwell, 2004), 505–22; on the now defunct Prism project, see <https://prism.scholarslab.org/> (accessed March 25, 2026).
14. Daniel K. Gardner, "Confucian Commentary and Chinese Intellectual History." *The Journal of Asian Studies* 57, no. 2 (1998): 397–422. <https://doi.org/10.2307/2658830>.
15. Matthias Bauer and Angelika Zirker, "Whipping Boys Explained: Literary Annotation and Digital Humanities," *Literary Studies in the Digital Age: An Evolving Anthology* (2015). <https://bit.ly/4sgpjhX> (accessed March 25, 2026).

16. www.upress.umn.edu/about-us/about-manifold; www.pubpub.org/; <http://web.hypothes.is/> (accessed March 25, 2026).
17. www.perusall.com/ (accessed March 25, 2026).
18. www.explainpaper.com/ (accessed March 25, 2026).
19. Elaine Sullivan, *Constructing the Sacred: Visibility and Landscape at the Egyptian Necropolis of Saqqara* (Stanford University Press, 2020), <https://constructingthesacred.org/> (accessed March 25, 2026); Thomas van den Berg and Miklós Kiss, *Film Studies in Motion: From Audiovisual Essay to Academic Research Video*. University of Groningen (July 2016), <https://scalar.usc.edu/works/film-studies-in-motion/index>. Jason Mittell, *Complex TV: The Poetics of Contemporary Television Storytelling* (NYU Press, 2015). <https://scalar.usc.edu/works/complex-television/index>.
20. <https://scalar.me/anvc/scalar/>.
21. Here, I am thinking of the minigraph (short book) platform for which I am coeditor, Cambridge Elements in Digital Literary Studies, as well the monographs published first in MIT's PubPub and Minnesota's Manifold platform.
22. See the innovative "articles" in Kairos: <https://kairos.technorhetoric.net/26.2/disputatio/quigley/index.html>; Urban History: <https://bit.ly/4l0ZX5k>; Samantha Blickhan, Will Granger, Shaun A. Noordin, and Becky Rother, "'Strangers in the Landscape': On Research Development and Making Things for Making." *Startwords*, no. 2 (December 2021). <https://doi.org/10.5281/zenodo.5750679>; <https://startwords.cdh.princeton.edu/issues/2/strangers-in-the-landscape/>.
23. "I: Drawing Water (in old maps)," Olivia Vane, <https://bit.ly/4kRz0AO>. March 12, 2021, accessed March 25, 2026.
24. Some are assembled by Quinn Dombowski here: <https://github.com/quinnanya/dh-jupyter> (accessed March 25, 2026).
25. <https://vocabs.dariah.eu/tadirah/en/> (accessed March 25, 2026).
26. Here I am adapting the general process described in Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams, *The Craft of Research*, 3rd ed. (The University of Chicago Press, 2008).
27. Hans-Georg Gadamer, *Truth and Method* (Continuum, 1975).
28. Gerald Graff, *Clueless in Academe: How Schooling Obscures the Life of the Mind* (Yale University Press, 2003), 158.
29. On the notion of "counterpublic," see Michael Warner, "Publics and Counterpublics." *Public Culture* 14, no. 1 (January 1, 2002): 49–90.
30. www.oldbaileyonline.org/about/projects (accessed March 25, 2026).
31. Daniel Shore, "Shakespeare's Constructicon." *Shakespeare Quarterly* 66, no. 2 (2015): 113–36 (114). <https://dx.doi.org/10.1353/shq.2015.0017>.
32. Melanie Walsh and Maria Antoniak, "The Goodreads 'Classics': A Computational Study of Readers, Amazon, and Crowdsourced Amateur Criticism." *Journal of Cultural Analytics* 6, no. 2 (April 20, 2021): 244. <https://doi.org/10.22148/001c.22221>.
33. <https://programminghistorian.org/> (accessed March 25, 2026).

34. See, for example, the datasets collected at *The Journal of Open Humanities Data*: <https://openhumanitiesdata.metajnl.com/> (accessed July 2, 2025).
35. <https://huggingface.co/datasets/institutional/institutional-books-1.0> (accessed March 25, 2026). See Matteo Cargnelutti, Catherine Brobston, John Hess, Jack Cushman, Kristi Mukk, Aristana Scourtas, Kyle Courtney, et al. “Institutional Books 1.0: A 242B Token Dataset from Harvard Library’s Collections, Refined for Accuracy and Usability.” *arXiv*, June 10, 2025. <https://doi.org/10.48550/arXiv.2506.08300>.
36. See the account in Daniel Rosenberg, “Data before the Fact.” In *Raw Data Is an Oxymoron*, edited by Lisa Gitelman (MIT Press, 2013). Cited in <http://benschmidt.org/HDA/introduction.html#code> (accessed March 25, 2026).
37. “The Gift of Data,” 1.1. in *Humanities Data Analysis in Modern R*, <http://benschmidt.org/HDA/introduction.html#code> (accessed March 25, 2026). This is Ben Schmidt’s useful provocation to his students, one that is extended in Laura McGrath, Richard Jean So, Ted Underwood, and Chad Wellmon, “Culture, Theory, Data: An Introduction.” *New Literary History* 53, no. 4 (June 2, 2023): 519–30. <https://doi.org/10.1353/nlh.2022.a898319>.
38. Johanna Drucker, “Humanities Approaches to Graphical Display.” *Digital Humanities Quarterly* 5, no. 1 (March 10, 2011); Matthew Lavin, “Why Digital Humanists Should Emphasize Situated Data over Capta.” *Digital Humanities Quarterly* 15, no. 2 (2021).
39. See Nan Z. Da, “The Computational Case against Computational Literary Studies.” *Critical Inquiry* 45, no. 3 (2019): 601–39. <https://doi.org/10.1086/702594>.
40. Sarah Brouillette, “Wattpad’s Fictions of Care.” *Post45*, July 13, 2022. <https://post45.org/2022/07/wattpads-fictions-of-care/> (accessed March 25, 2026).
41. See Anthony Grafton’s historical account in *The Footnote: A Curious History* (Harvard University Press, 1999).
42. <https://dataverse.harvard.edu/> (accessed March 25, 2026).
43. In the original *Keywords* (1976), Raymond Williams famously wrote that “culture is one of the two or three most complicated words in the English language.” *Keywords: A Vocabulary of Culture and Society* (Oxford University Press, 1976), 76.
44. See Ignacio Sánchez Prado on cultura in “The Humanities Are Worth Fighting For,” July 14 2023. <https://lareviewofbooks.org/article/the-humanities-are-worth-fighting-for/> (accessed March 25, 2026).
45. Jean-Baptiste Michel, Yuan Kui Shen, Aviva Presser Aiden, Adrian Veres, Matthew K. Gray, the Google Books Team, Joseph P. Pickett, et al. “Quantitative Analysis of Culture Using Millions of Digitized Books.” *Science* 331, no. 6014 (January 14, 2011): 176–82. <https://doi.org/10.1126/science.1199644>.
46. “About the Journal,” <https://culturalanalytics.org/site/general/> (accessed March 25, 2026).
47. Lev Manovich, *Cultural Analytics* (The MIT Press, 2020).

48. See Richard Jean So, “Introduction: Contemporary Culture after Data Science.” *Journal of Cultural Analytics* 6 no. 2, 2021. <https://doi.org/10.22148/001c.22335>; Andrew Piper, *Can We Be Wrong? The Problem of Textual Evidence in a Time of Data* (Cambridge University Press, 2020); Anna Moskvina and Kristina Petzold, “Online Reviews as Communal Formations: A Corpus Linguistic Approach,” *Journal of Cultural Analytics*, 7, no. 2, June 2025, <https://doi.org/10.22148/001c.138350>. Malte Hagener and Diana Roig-Sanz, “Digital Film Historiography: Challenges of/and Interdisciplinarity,” *Journal of Cultural Analytics*, 9, no. 4, July 2024, <https://doi.org/10.22148/001c.120944>.
49. See Cody Kommers, et al., “Computational Hermeneutics: Evaluating Generative AI as a Cultural Technology” (pre-print), August 1, 2025. <http://dx.doi.org/10.2139/ssrn.5409144>; Caroline A. Jones, Huma Gupta, and Matthew Ritchie, “Visual Artists, Technological Shock, and Generative AI.” *An MIT Exploration of Generative AI* (August 2024). <https://doi.org/10.21428/e4baedd9.b4f754fd>.
50. Ramsay’s original post, part of a revised MLA paper, has been removed from his scholarly blog, but his provocation and the ensuing controversy is traced in the *Debates in the Digital Humanities* volumes (2012, 2019).
51. See Richard Barbrook and Andy Cameron, “The Californian Ideology,” *Mute* Vol 1 #3 (September 1995). <https://bit.ly/4uaWgNF> (accessed February 22 2026).
52. On this set of postwar contexts, see Bernard Dionysius Geoghegan, *Code: From Information Theory to French Theory* (Duke University Press, 2023). <http://dx.doi.org/10.1215/9781478023630>.
53. Cameron Blevin makes this point in his review of *The Programming Historian*: “*The Programming Historian* is currently the best one-stop-shop for technical skill-building in the digital humanities. But this comes with a caveat: it is heavily slanted towards a particular kind of technical skill-building, one bound up within a tradition of humanities computing and tech culture.” “Review of *The Programming Historian*.” *The Journal of Interactive Technology and Pedagogy*, December 15, 2015. <https://jitp.commons.gc.cuny.edu/review-of-the-programming-historian/>. On “vibe coding,” see www.technologyreview.com/2025/04/16/1115135/what-is-vibe-coding-exactly/ (accessed March 25, 2026).
54. Thanks to Jonathan Senchyne for this point.
55. See the New York Federal Reserve jobs report for 2023: “The Labor Market for Recent College Graduates,” accessed July 2, 2025, www.newyorkfed.org/research/college-labor-market#:~:explore=outcomes-by-major.
56. Alyce E. Sands, “MLA, ERIC, and the Future,” *Computers and the Humanities*, 1, no. 4, 1967, pp. 113–22: 113. *JSTOR*, www.jstor.org/stable/30199224. Accessed June 18, 2025.
57. See Audrey Watters, *Teaching Machines: The History of Personalized Learning* (The MIT Press, 2021).
58. Lewis J. Perelman, “Schools Out: The Hyperlearning Revolution Will Replace Public Education,” *Wired Archive*, 1.01 Mar/Apr 1993. <https://bit.ly/4cNkDLJ> (accessed March 25, 2026).

59. Audrey Watters, “The Ed-Tech Imaginary,” <https://hackededucation.com/2020/06/21/imaginary>. June 21, 2020, accessed March 25, 2026.
60. See the description by Jesse Stommel, Chris Friend, and Sean Michael Morris, eds., *Critical Digital Pedagogy: A Collection* (Hybrid Pedagogy Inc., 2020). Open-access here: <https://pressbooks.pub/cdpcollection/> (accessed March 25, 2026): “The work of teachers is not just to teach. We are also responsible for the basic needs of students – helping students eat and live, and also helping them find the tools they need to reflect on the present moment. This is in keeping with Freire’s insistence that critical pedagogy be focused on helping students read their world; but more and more, we must together reckon with that world” (<https://pressbooks.pub/cdpcollection/about/>). Accessed August 2, 2023. For peer-reviewed digital pedagogical artifacts, see <https://jitp.commons.gc.cuny.edu/category/blue-prints/>.
61. Ryan Cordell and Shawn Graham, “The Unessay.” Accessed August 3, 2023. <https://hcommons.org/deposits/item/hc:31019/>.
62. “Interface,” in *Digital Pedagogy in the Humanities*, edited by Rebecca Frost Davis, Matthew Gold, Katherine Harris, and Jentery Sayers. MLA Commons, part of Humanities Commons, 2020. Accessed August 3, 2023. <https://digitalpedagogy.hcommons.org/keyword/Interface>.
63. Jesse Stommel, “How to Ungrade.” March 11, 2018. www.jessestommel.com/how-to-ungrade/ (accessed March 25, 2026). For specifications grading, see Linda Nilson, *Specifications Grading: Restoring Rigor, Motivating Students, and Saving Faculty Time* (Stylus Publishing, 2015).
64. David Bartholomae, “Inventing the University.” *Journal of Basic Writing* 5, no. 1 (1986): 4–23. www.jstor.org/stable/43443456.
65. Judith Butler in the Winter 2020 MLA newsletter, reprinted in <https://bit.ly/4rGFuoS> (accessed March 25, 2026).
66. Allen Brizee, “Theorizing Public Digital Humanities: A Model for Collaborative Knowledge Production.” *PMLA/Publications of the Modern Language Association of America* 140, no. 1 (2025): 126–35. <https://doi.org/10.1632/S0030812925000057>.
67. Devoney Looser, “Theorizing Archival Public Humanities Scholarship and Telling Excellent Stories.” *PMLA/Publications of the Modern Language Association of America* 140, no. 1 (2025): 136–44. <https://doi.org/10.1632/S0030812925000033>.
68. See typologies in the first issue of *Public Humanities*: Jeffrey R. Wilson and Zoe Hope Bulaitis, “What Is Public Humanities?” *Public Humanities* 1 (2025): e17. <https://doi.org/10.1017/pub.2024.25>.
69. Roopika Risam, Brian Yothers, and Araceli Hernández-Laroche, “The Theories and Methodologies of Public Humanities.” *PMLA/Publications of the Modern Language Association of America* 140, no. 1 (2025): 110–17. <https://doi.org/10.1632/S0030812925000094>.
70. See Kathleen Fitzpatrick’s argument in *Generous Thinking: A Radical Approach to Saving the University* (Johns Hopkins University Press, 2021).

71. Jordana Cox and Lauren Tilton. “The Digital Public Humanities: Giving New Arguments and New Ways to Argue,” *Review of Communication* 19, no. 2 (2019), 127–46: 129.
72. Jennifer Guiliano and Roopika Risam, *Reviews in Digital Humanities*: see “Community-Engaged Mapping,” edited by Jamila Moore-Pewu, Scherly Virgill, and Bruno Buccalon, 5, no. 8: August 2024: <https://reviewsindh.pubpub.org/v5-n8>; “Digital Native and Indigenous Studies,” edited by Jennifer Guiliano, Volume 4, Number 10 (October 2023): <https://reviewsindh.pubpub.org/v4-n10>.
73. On community storytelling with data, see Katie L. Coldiron, and Julio Capó, “Making Miami’s History and Present More Accessible.” *The International Journal of Information, Diversity, & Inclusion* 6, no. 4 (2022): 84–98. www.jstor.org/stable/48720307.
74. There are dozens of such podcast categories on the “New Books Network”: <https://newbooksnetwork.com/> (accessed March 25, 2026); “Novel Dialogue,” <https://noveldialogue.org/> (accessed March 25, 2026).
75. <https://theamericanvandal.substack.com/> (accessed March 25, 2026).
76. See the coda of Jonathan Kramnick’s *Criticism and Truth: On Method and Truth in Literary Studies* (University of Chicago Press, 2023).
77. For an account of Edmund Wilson’s excoriation of the “American literature industry” in academic editing, see Amanda Gailey, *Proofs of Genius: Collected Editions from the American Revolution to the Digital Age* (University of Michigan Press, 2015), 100–4. Project MUSE: <https://dx.doi.org/10.1353/book.42621>.

Chapter 4 Sight, Sound, and Sense-Making

1. This is a fundamental feature of modern scientific cognition: see Bruno Latour, “Visualization and Cognition: Thinking with Eyes and Hands,” *Knowledge and Society* 6 (1986): 1–40, building on Elizabeth Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early Modern Europe* (Cambridge University Press, 1979).
2. <https://valley.lib.virginia.edu/> (accessed March 25, 2026).
3. See Johanna Drucker, *Visualization and Interpretation: Humanistic Approaches to Display* (MIT Press, 2020), 2.
4. See Chapter 2 on the cliometrics controversy.
5. Johanna Drucker, *Graphesis: Visual Forms of Knowledge Production* (Harvard University Press, 2014).
6. Burke, *A Social History of Knowledge: From Gutenberg to Diderot* (Polity Press, 2000), 120.
7. On this last point, see Lev Manovich and Emanuele Arielli, *Artificial Aesthetics: A Critical Guide to AI in Art, Media and Design* (2024), an in-process “book” released one chapter at a time on PDF by both authors. <http://manovich.net/index.php/projects/artificial-aesthetics-book> (accessed March 25, 2026).

8. Piers Plowman Electronic Archive, 1994–2019, accessed July 1, 2025: <http://piers.chass.ncsu.edu/>; Book Traces: <https://booktraces-public.lib.virginia.edu/>.
9. Drucker, *Visualization and Interpretation*, 1.
10. Frank Pasquale, *Black Box Society: The Secret Algorithms That Control Money and Information* (Harvard University Press, 2016).
11. Martyn Jessop, “Digital Visualization as a Scholarly Activity.” *Literary and Linguistic Computing* 23, no. 3 (2008): 281–93, 283. <https://doi.org/10.1093/llc/fqn016>.
12. Ibid., 286.
13. See Jennifer Guiliano’s chapter on “Visualization” in *A Primer for Teaching Digital History: Ten Design Principles* (Duke University Press, 2022). Excellent examples of various visualizations used by historians are given here: Jeffrey Heer, Michael Bostock, and Vadim Ogievetsky, “A Tour through the Visualization Zoo.” *ACM Queue*, May 13, 2010: vol. 8, iss. 5. <https://queue.acm.org/detail.cfm?id=1805128> (accessed March 25, 2026).
14. Caroline A. Jones, Huma Gupta, and Matthew Ritchie, “Visual Artists, Technological Shock, and Generative AI.” *An MIT Exploration of Generative AI*, August 2024. <https://doi.org/10.21428/e4baedd9.b4f754fd>.
15. Stephen Robertson, “Digital Harlem: Everyday Life 1915–1930,” accessed July 3, 2025. <http://digitalharlem.org/>.
16. Geoffrey Rockwell and Stéfan Sinclair, *Hermeneutica: Computer-Assisted Interpretation in the Humanities* (MIT Press, 2022). “Voyant,” accessed July 3, 2025. <https://voyant-tools.org/>.
17. Taylor Arnold, Nathaniel Ayers, Justin Madron, Rob Nelson, Lauren Tilton, and Laura Wexler, *Photogrammar* (Version 3.0). 2021. For full credits see <https://photogrammar.org/about> (accessed March 25, 2026).
18. See Shawn Graham, Scott Weingart, and Ian Milligan, “Getting Started with Topic Modeling and MALLET,” *Programming Historian* 1 (2012), <https://doi.org/10.46430/phen0017>, for a detailed introduction and discussion of topic modeling. Uses of topic modeling in the humanities have undergone considerable refinement; see Maria Antoniak’s suggestions for a standardized variety of modeling here: “Topic Modeling for the People,” July 27, 2022. Updated March 19, 2023. <https://maria-antoniak.github.io/2022/07/27/topic-modeling-for-the-people.html> (accessed March 25, 2026).
19. Ben Schmidt, “When You Have a MALLET, Everything Looks like a Nail,” <https://benschmidt.org/sappingattention/when-you-have-mallet-everything-looks/>, November 02 2012 (accessed March 23, 2026).
20. Of the kind we see in Katherine Elkins’s *The Shape of Stories* (Cambridge University Press, 2022).
21. Scott Weingart, “Demystifying Networks.” www.scottbot.net/HIAL/index.html@p=6279.html, Dec. 14, 2011 (accessed July 1, 2025). See also the collaborative volume *The Network Turn* (Ahnert, Ahnert, Coleman, and Weingart, 2021) for an elaboration on this position.

22. Scott Selisker, “The Bechdel Test and the Social Form of Character Networks.” *New Literary History: A Journal of Theory and Interpretation*, 46 no. 3 (Summer 2015): 505–23. <https://doi.org/10.1353/nlh.2015.0024>.
23. Howard Hotson and Miranda Lewis, eds., *Early Modern Letters Online*, <http://emlo.bodleian.ox.ac.uk>, accessed July 1, 2025. See https://tapor.ca/tool_lists/20 for a list of network analysis tools (accessed March 25, 2026).
24. Franco Morretti et al., “Network Theory, Plot Analysis,” [Stanford] *Literary Lab* Pamphlet 2 (May 1, 2011); Pamela Fletcher and Anne Helmreich, “Local/Global: Mapping Nineteenth-Century London’s Art Market,” *Nineteenth-Century Art Worldwide* 11 no. 3 (Autumn 2012), <https://bit.ly/4scdVna> (accessed March 25, 2026); Tom Brughmans, “Thinking through Networks: A Review of Formal Network Methods in Archaeology,” *Journal of Archaeological Method and Theory* 20, no. 4 (December 1, 2013): 623–62. <https://doi.org/10.1007/s10816-012-9133-8>.
25. On the science of science, see Santo Fortunato, Carl T. Bergstrom, Katy Börner, James A. Evans, Dirk Helbing, Staša Milojević, Alexander M. Petersen, et al., “Science of Science,” *Science* 359, no. 6379 (2018). <https://doi.org/10.1126/science.aao0185>.
26. See Tom Brughmans, Anna Collar, and Fiona Coward, eds., *The Connected Past: Challenges to Network Studies in Archaeology and History* (Oxford University Press, 2016), 85–102.
27. Celia E. Naylor, Kristen Akey, Madiha Zahrah Choksi, Alex Gil, Moacir P. de Sá Pereira, and Monique J. S. Williams, “(Un)Silencing Slavery: Remembering the Enslaved at Rose Hall Plantation, Jamaica.” August 6, 2022. Accessed July 1, 2025. <https://unsilencing-slavery.org/>. Celia Naylor, *Unsilencing Slavery: Telling Truths about Rose Hill Plantation, Jamaica* (University of Georgia Press, 2022).
28. “Slave Revolt in Jamaica, 1760–1761,” accessed July 3, 2025, revolt.axismaps.com (accessed March 25, 2026); Vincent Brown, “Mapping a Slave Revolt,” *Social Text* 33, no. 4 (2015): 134–41. <https://doi.org/10.1215/01642472-3315826>.
29. See Rhondda Robinson Thomas, *Call My Name, Clemson: Documenting the Black Experience in an American University Community* (University of Iowa Press, 2020).
30. David Bodenhamer, John Corrigan, and Trevor M. Harris, eds., *The Spatial Humanities: GIS and the Future of Humanities Scholarship* (Indiana University Press, 2010), ix.
31. Sarah Elwood, Nadine Schuurman, and Matthew Wilson, “Critical GIS,” *The SAGE Handbook of GIS and Society* (Sage Publications Ltd, 2011): 87–106.
32. See Nadine Schuurman, “Critical GIS: Theorizing an Emerging Discipline,” *Cartographica* 36, no. 4 (1999): 1–108.
33. For the “geocritical” turn, see Robert Tally, *Geocritical Explorations: Space, Place, and Mapping in Literary and Cultural Studies* (Palgrave, 2011).
34. www.neatline.org/ (accessed March 25, 2026).

35. As with Gordon H. Chang et al.'s later "Chinese Railroad Worker Project at Stanford University," <https://web.stanford.edu/group/chineserailroad/cgi-bin/website/> (accessed July 3, 2025).
36. Ryan Cordell and David Smith, *Viral Texts: Mapping Networks of Reprinting in 19th-Century Newspapers and Magazines* (2024), <http://viraltxts.org> (accessed July 1, 2025).
37. Melanie Conroy, *Literary Geographies in Balzac and Proust* (Cambridge University Press, 2021).
38. Mark Monmonier, *How to Lie with Maps* (University of Chicago Press, 1996), 1.
39. Ibid.
40. As in "Feb 8, 2018 – Makhóche Wašté: The Beautiful Country A Lakhóta Landscape Map by Dakota Wind." *Last Real Indians*. <https://bit.ly/3OTlMb4>. February 8, 2018, accessed August 23, 2023.
41. See "Indigenous Deep Mapping: A conceptual and representational analysis of space in Mesoamerica and New Spain," Patricia Murrieta-Flores, Mariana Fávila-Vazquez, Aban Flores-Morán, In *Making Deep Maps: Foundations, Approaches, and Methods*, David J. Bodenhamer; John Corrigan; Trevor M. Harris, eds. (Routledge, 2021), 78–111.
42. Vincent Brown, "Mapping a Slave Revolt." *Social Text* 33, no. 4 (2015): 134–41. <https://doi.org/10.1215/01642472-3315826>.
43. Some of these visualizations are archived here: <https://bit.ly/48lLuMc> (captured September 13, 2018; accessed March 23, 2026).
44. Laurel Mei-Singh and Vernadette Vicuña Gonzalez, "DeTours: Mapping Decolonial Genealogies in Hawai'i." *Critical Ethnic Studies* 3, no. 2 (2017): 173–92. <https://doi.org/10.5749/jcritethnstud.3.2.0173>.
45. See www.cameronblevins.org/paper-trails/ (accessed March 25, 2026).
46. Schmidt's image is here: <http://benschmidt.org/wp/wp-content/uploads/2014/02/MauryMetadata.png>; and some discussion of the underlying data is here: <https://bit.ly/4cQ8TrX> (accessed March 25, 2026).
47. Samantha Thi Porter, Morgan Roussel, and Marie Soressi, "A Simple Photogrammetry Rig for the Reliable Creation of 3D Artifact Models in the Field: Lithic Examples from the Early Upper Paleolithic Sequence of Les Cottés (France)," *Advances in Archaeological Practice* 4, no. 1 (February 2016): 71–86. <https://doi.org/10.7183/2326-3768.4.1.71>.
48. On the range of practices and technologies commonly employed in digital archaeology, see Edward Gonzalez-Tennant, "GIS and Archaeology." *Oxford Bibliographies*, <https://doi.org/10.1093/obo/9780199766567-0270> (accessed October 5, 2022).
49. Niall Atkinson, "Seeing Sound: Mapping Florentine Soundscapes." *Grey Room*, no. 60 (2015): 10–35. <https://southernspaces.org/2016/seeing-sound-mapping-florentine-soundscapes/> (accessed March 25, 2026).
50. "Virtual St. Paul's Project," accessed June 25, 2025, <https://vpcathedral.chass.ncsu.edu/>; for a full description of the project, see John N. Wall, "Materializing

- Lost Time and Space: The Virtual St Paul’s Cathedral Project.” *IDEAH* 4 no. 3. <https://doi.org/10.21428/f1f23564.549911e9>.
51. Armelle Couillet, Hélène Rougier, Dominique Todisco, Josserand Marot, Oliver Gillet, and Isabelle Crevecoeur, “New Visual Analytics Tool and Spatial Statistics to Explore Archeological Data: The Case of the Paleolithic Sequence of La Roche-à-Pierrot, Saint-Césaire, France,” *Journal of Computer Applications in Archaeology*, 5(1), 2022: 19–34. <http://doi.org/10.5334/jcaa.81>.
 52. Miguel Angel Dilená and Marie Soressi, “Reconstructive Archaeology: In Situ Visualisation of Previously Excavated Finds and Features through an Ongoing Mixed Reality Process.” *Applied Sciences* 10, no. 21 (January 2020): 7803. <https://doi.org/10.3390/app10217803>.
 53. Takeshi Inomata, Daniela Triadan, Verónica A. Vázquez López, Juan Carlos Fernandez-Díaz, Takayuki Omori, María Belén Méndez Bauer, Melina García Hernández, et al., “Monumental Architecture at Aguada Fénix and the Rise of Maya Civilization.” *Nature* 582, no. 7813 (June 2020): 530–3. <https://doi.org/10.1038/s41586-020-2343-4>.
 54. As in the case of with Paleolithic barrows, fields, and kilns in the Netherlands: Martin Olivier and Wouter Verschoof-van der Vaart, “Implementing State-of-the-Art Deep Learning Approaches for Archaeological Object Detection in Remotely-Sensed Data: The Results of Cross-Domain Collaboration.” *Journal of Computer Applications in Archaeology* 4, no. 1 (December 8, 2021): 274–89. <https://doi.org/10.5334/jcaa.78>.
 55. Victoria Szabo, July 11, 2018, <https://bit.ly/4l2rSlq> (accessed March 25, 2026); see also Jennifer Guiliano’s discussion of the pedagogy of visualization: Jennifer Guiliano, *A Primer for Teaching Digital History: Ten Design Principles* (Duke University Press, 2022), 123–5.
 56. Victoria Szabo, www.visualizingvenice.org/visu/ (accessed July 18, 2018).
 57. Two such examples are David Graeber and David Wengrow, *The Dawn of Everything: A New History of Humanity* (Farrar, Straus and Giroux, 2021) and Yuval Harari, *Sapiens: A Brief History of Humankind* (Vintage Books, 2014).
 58. Mark Parker and Deborah Parker, *The DVD and the Study of Film: The Attainable Text* (Palgrave Macmillan, 2011), 139. Cited in Thomas van den Berg and Miklós Kiss, *Film Studies in Motion: From Audiovisual Essay to Academic Research Video* (Scalar, 2016). <https://scalar.usc.edu/works/film-studies-in-motion/introduction-1> (accessed March 25, 2026).
 59. <https://scalar.me/anvc/> (accessed March 25, 2026).
 60. <https://bit.ly/4rJbHfa>, cited in van den Berg and Kiss, *Film Studies in Motion* (accessed March 25, 2026).
 61. Christian Keathley, Jason Mittell, and Catherine Grant, *The Videographic Essay: Practice and Pedagogy* (Scalar, 2019). <http://videographicessay.org> (accessed March 23, 2026).

62. “Videographic Criticism as a Digital Humanities Method,” in Matthew K. Gold and Lauren F. Klein, eds., *Debates in the Digital Humanities 2019* (University of Minnesota Press, 2019).
63. Jason Mittell, companion site for *Complex TV: The Poetics of Contemporary Television Storytelling* (NYU Press, 2015), on Scalar: <https://bit.ly/4tY5ugM> (accessed March 25, 2026), (version 1, March 18, 2015).
64. See Chapter 2 of this volume on the participatory and “social” turn in digital humanities scholarship.
65. They note that they “found significant research on the encoding, production, and recognition of electronic music, as well as speech,” despite their assumptions that image would be far more prominent. Chris Alen Sula and Heather V. Hill, “The Early History of Digital Humanities: An Analysis of Computers and the Humanities (1966–2004) and Literary and Linguistic Computing (1986–2004).” *Digital Scholarship in the Humanities* 34, no. Supplement_1 (2019), 196–7.
66. John Barber, “Sound at the Heart of Electronic Literature.” December 2, 2018, <https://bit.ly/4qU2VKd>; Stuart Moulthrop, *Under Language*, The Iowa Review Web, 2007, <https://the-next.eliterature.org/exhibition/afterflash/moulthrop-under.html> (accessed July 3, 2025).
67. For an ethnomusicological bibliography, see Hannah Adamy, “Sound and Sensory Studies Bibliography,” www.ethnomusicology.org/members/group_content_view.asp?group=144588&id=694161 (accessed July 5, 2025).
68. Darren Mueller, Mary Caton Lingold, and Whitney Trettien, eds., *Digital Sound Studies* (Duke University Press, 2018). doi:10.1353/book.65095.
69. By the Soundbox collective: Darren Mueller, Mary Caton Lingold, and Whitney Trettien, eds., among others; John Hope Franklin Humanities Institute, Duke University: <https://soundboxproject.com/about.html> (accessed March 25, 2026).
70. See <https://furnaceandfugue.org/atalanta-fugiens/emblem01.html> (accessed March 25, 2026). Tara Nummedal and Donna Bilak, eds. *Furnace and Fugue: A Digital Edition of Michael Maier’s Atalanta fugiens (1618) with Scholarly Commentary* (University of Virginia Press, 2022). <https://doi.org/10.26300/bdp.ff>
71. Nummedal and Bilak, *Furnace and Fugue*, <https://furnaceandfugue.org/back-matter/about/> (accessed March 25, 2026).
72. “Music Encoding Initiative,” *Akademie der Wissenschaften und Literatur in Mainz*, <https://music-encoding.org/about/> (accessed July 3, 2025).
73. All examples in “Music Encoding Initiative,” <https://music-encoding.org/community/projects-users.html> (accessed March 25, 2026).
74. Both figures are from Patrick Jagoda, *Experimental Games: Critique, Play, and Design in the Age of Gamification* (The University of Chicago Press, 2020), 4.
75. For a brief account of the controversy see this history: https://en.wikipedia.org/wiki/Depression_Quest#Reception (accessed July 3, 2025).
76. Katherine Foshko Tsan, “Authoring an Open-Source Game for a Faculty Open Educational Resources Workshop: A Case Study,” <https://bit.ly/46tjfdU>. December 10, 2021 (accessed March 25, 2026).

77. <https://mitpress.mit.edu/series/platform-studies/> (accessed March 25, 2026).
78. www.perusall.com/ (accessed March 25, 2026).
79. <https://bit.ly/4r3S7cv> (accessed March 25, 2026).
80. C. B. MacPherson, *The Political Theory of Possessive Individualism: Hobbes to Locke* (Oxford University Press, 1962).
81. Johanna Drucker, “Is There a ‘Digital’ Art History?” *Visual Resources* 29, no. 1–2 (2013): 5–13 (7). <https://doi.org/10.1080/01973762.2013.761106>.
82. Paul Jaskot, “Digital Methods and Historiography of Art,” in *The Routledge Companion to Digital Humanities and Art History*, edited by Kathryn Brown (Routledge, 2020): 9.
83. See Jaskot, “Digital Methods,” and Kathryn Brown’s “Introduction” to the *Routledge Companion to Digital Humanities and Art History* (1–5).
84. Pamela Fletcher and Anne Helmreich, “Local/Global: Mapping Nineteenth-Century London’s Art Market,” *Nineteenth-Century Art Worldwide* 11 no. 3 (Autumn 2012), <https://bit.ly/4scdVna>; see also www.nytimes.com/2023/08/11/arts/looty-rosetta-stone-benin-bronzes.html (accessed March 25, 2026).
85. Wasielewski, Amanda. *Computational Formalism: Art History and Machine Learning* (The MIT Press, 2023). <http://mitpress.mit.edu/9780262545648> (accessed March 25, 2026).
86. Tess McNulty and Laura Alice Chapot, “Computation and Form, Reconsidered.” *Journal of Cultural Analytics* 10, no. 3, Sept. 2025, <https://doi.org/10.22148/001c.143993>.
87. See Crary, Jonathan. *24/7: Late Capitalism and the Ends of Sleep* (Verso, 2014).
88. See Gareth Watkins, “AI: The New Aesthetics of Fascism,” *New Socialist*, Feb. 9, 2025. <https://newsocialist.org.uk/transmissions/ai-the-new-aesthetics-of-fascism/>. For the reified language thesis, see Rob Horning, “The Reified Mind: A Note on Generative AI as Commodified Language,” *Substack.com*, August 22, 2025. <https://substack.com/inbox/post/171564625> (accessed March 25, 2026).
89. Thus Nathan Brown sees the early twentieth century as part of an ongoing late modernity in which the “real” capitalist subsumption of human relations of production has not yet ended nor another “period” of economic relations begun: “Postmodernity, Not Yet: Toward a New Periodisation,” *Radical Philosophy* no. 201 (2018): 11–27.

Chapter 5 Critique and Construction

1. Billy Perrigo, “OpenAI Used Kenyan Workers on Less Than \$2 Per Hour to Make ChatGPT Less Toxic,” *Time Magazine*, January 18, 2023. Accessed March 25, 2026. <https://time.com/6247678/openai-chatgpt-kenya-workers/>.
2. Andrew Pickering, *The Mangle of Practice: Time, Agency, and Science* (The University of Chicago Press, 1995).

3. Ian Hacking makes this case in his discussion of the generation of knowledge out of scientific practice in *The Social Construction of What?* (Harvard University Press, 1999).
4. Bernard Stiegler, *Technics and Time, 1: The Fault of Epimetheus*, trans. George Collins and Richard Beardsworth (Stanford University Press, 1998).
5. As elsewhere, the distinction between “interdisciplinary” and “transdisciplinary” here derives from Julie Thompson Klein, *Interdisciplining Digital Humanities: Boundary Work in an Emerging Field* (University of Michigan Press, 2015).
6. As diagnosed in Eric Hayot’s excellent “Then and Now,” in *Critique and Postcritique*, edited by Elizabeth Anker and Rita Felski (Duke University Press, 2017), 279–96. <https://doi.org/10.2307/j.ctv11smst2.14>.
7. Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation*, 2nd ed., Routledge, 2008, 8. See also the useful volume on geographic and environmental “contact zones” introduced here: Jenny R. Isaacs, and Ariel Otruba, “Guest Introduction: More-than-Human Contact Zones.” *Environment and Planning E: Nature and Space* 2, no. 4 (December 1, 2019): 697–711. <https://doi.org/10.1177/2514848619855369>.
8. Mary Louise Pratt, “Arts of the Contact Zone.” *Profession*, 1991, 33–40; and “Building a New Public Idea about Language.” *Profession*, 2003, 110–19. www.jstor.org/stable/25595763.
9. On epistemicide see Boaventura de Sousa Santos, “Boaventura de Sousa Santos.” In *Conversations in Postcolonial Thought*, edited by Katy P. Sian (Palgrave Macmillan, 2014): 63–80.
10. “ADHO was born out of a post-World War II geopolitical framework – namely the British-American structural alliance between the Association for Literary and Linguistic Computing (ALLC), founded in London in 1973, and the Association for Computers and the Humanities (ACH), founded in the United States in 1978. . . . the ADHO infostructure is still firmly monolingual: its website, its flagship journal *DSH: Digital Scholarship in the Humanities*, all reports, all proceedings, and internal discussions are conducted and delivered in English. This infostructure gives an undue advantage to anglophone members during, for example, negotiations and transactions.” “Introduction” by Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte in Fiormonte, Chaudhuri, and Ricaurte, *Global Debates in the Digital Humanities*, <https://bit.ly/3NByrYW>.
11. See Roopika Risam, “Other Worlds, Other DHs: Notes towards a DH Accent,” *Digital Scholarship in the Humanities*, 32, no. 2, June 2017: 377–84, <https://doi.org/10.1093/llc/fqv063>.
12. See the *Journal of Fan Studies* and the journal *Reception: Texts, Readers, Audiences, History* for one set of sources, as well as the literature following on from Henry Jenkins’s *Textual Poachers: Television Fans & Participatory Culture* (Routledge, 1992).
13. On these questions in Digital Humanities contexts, see Janet Vertesi and David Ribes, *digitalSTS: A Field Guide for Science & Technology Studies* (Princeton

- University Press, 2019). On “hybrid infrastructures,” see Jacob Richter and Hannah Taylor, “Embracing Hybrid Infrastructures,” in Gabriel Hankins, Simon Appleford, and Anouk Lang, *Digital Futures of Graduate Study in the Humanities* (University of Minnesota Press, 2024): 283–91.
14. Tara McPherson, “Why Are the Digital Humanities so White?” In *Debates in the Digital Humanities* (University of Minnesota, 2012). <https://bit.ly/4uaPdED>. Accessed March 25, 2026.
 15. Amy E. Earhart, *Traces of the Old, Uses of the New: The Emergence of Digital Literary Studies* (University of Michigan Press, 2015). <https://doi.org/10.3998/etlc.13455322.0001.001>.
 16. Jessica Marie Johnson, “Markup Bodies: Black [Life] Studies and Slavery [Death] Studies at the Digital Crossroads,” *Social Text* 36, no. 4 (137) (December 1, 2018): 57–79. <https://doi.org/10.1215/01642472-7145658>.
 17. See <http://digitalharlem.org/> and other projects listed on the useful digital resource [Black Digital Humanities Projects and Resources](#) (accessed July 5, 2025).
 18. “Introduction: The Digital Black Atlantic,” in *The Digital Black Atlantic*, edited by Roopika Risam and Kelly Baker Josephs (University of Minnesota Press, 2021), ix.
 19. Tunde Opeibi, “Digitizing the Humanities in an Emerging Space.” In Roopika Risam and Kelly Baker Josephs, eds., *The Digital Black Atlantic* (University of Minnesota Press, 2021): 162–7.
 20. “DHASA: Digital Humanities Association of Southern Africa,” <https://digitalhumanities.org.za/activities/>. Accessed July 5, 2025.
 21. Cédric Leterme, “Africa’s Digitalization: From the Ecological Dilemma to the Decolonization of the Imaginary,” in *Global Debates in the Digital Humanities. Debates in the Digital Humanities, Manifold* (University of Minnesota Press, 2022). Accessed February 1, 2023. <https://bit.ly/4rCDvRr>; citing Roberto Casati, *Contre le colonialisme numérique: Manifeste pour continuer à lire* (Albin Michel, 2013).
 22. Gale/Cengage, www.gale.com/primary-sources/eighteenth-century-collections-online (accessed July 15, 2025).
 23. See Peter De Bolla, ed. *Explorations in the Digital History of Ideas: New Methods and Computational Approaches* (Cambridge University Press, 2023). <https://doi.org/10.1017/9781009263610>.
 24. Mikko Tolonen, Eetu Mäkelä, Ali Ijaz, and Leo Lahti. 2021. “Corpus Linguistics and Eighteenth Century Collections Online (ECCO),” *Research in Corpus Linguistics* 9, no. 1 (2021): 19–34. <https://doi.org/10.32714/ricl.09.01.03>.
 25. Stephen Gregg, *Old Books and Digital Publishing: Eighteenth-Century Collections Online* (Cambridge University Press, 2020), 23, 99.
 26. On this dynamic in the seventeenth and eighteenth centuries, see Howard Burton and Quentin Skinner, *Quest for Freedom: A Conversation with Quentin Skinner* (Open Agenda Publishing, Inc., 2020). <https://doi.org/10.2307/j.ctv22jnn84>.
 27. “Women Writers Project.” Northeastern University, www.wwp.northeastern.edu; “Orlando: Women’s Writing in the British Isles from the Beginnings to

- the Present” (1995, updated 2022), <https://orlando.cambridge.org/>; Dickinson Electronic Archives, www.emilydickinson.org/ (all accessed July 5, 2025.)
28. Catherine D’Ignazio and Lauren F. Klein, *Data Feminism* (MIT Press, 2020): 7–8 and the appendix on “Our Values and Our Metrics for Holding Ourselves Accountable” (215–21).
 29. Olúfẹmí O. Táiwò, *Elite Capture: How the Powerful Took Over Identity Politics (and Everything Else)* (Haymarket Books, 2022).
 30. Elizabeth Losh and Jacqueline Wernimont, *Bodies of Information* (University of Minnesota Press, 2019), xiii.
 31. Rahul Gairola, “Peering Beyond the Pink Tent: Queer of Color Critique across the Digital Indian Ocean,” in Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricarte, *Global Debates in the Digital Humanities* (University of Minnesota Press, 2022). <https://bit.ly/4u7HG9C>.
 32. Edward Said, “Traveling Theory,” in *The World, the Text, and the Critic* (Harvard University Press, 1982), 226–47.
 33. Julia Laïnae and Nicolas Alep, *Contre l’alternumerisme* (La Lenteur, 2020), arguing against Karine Mauvilly, *Cyberminimalisme: Face au tout-numérique, reconquérir du temps, de la liberté et du bien-être* (Anthropocène, 2019).
 34. See Jonathan Crary’s *24/7: Late Capitalism and the Ends of Sleep* (Verso, 2014).
 35. On the notion of the “beautiful soul” in German Romanticism, see Marie Wokalek, *Die schöne Seele als Denkfigur: Zur Semantik von Wissen und Geschmack bei Rousseau, Wieland, Schiller, Goethe* (Wallstein, 2011).
 36. For a major account of “degrowth communism,” see Kōhei Saitō, *Marx in the Anthropocene: Towards the Idea of Degrowth Communism* (Cambridge University Press, 2022).
 37. This is described in “The Californian Ideology,” by Richard Barbrook and Andy Cameron, 1995-09, *Mute* Vol. 1 No. 3 (September 1995). <https://bit.ly/4uaWgNF> (accessed February 22, 2026).
 38. Anna Kornbluh, *Immediacy: or, the Style of Too Late Capitalism* (Verso, 2024).
 39. Jodi Dean, *Capital’s Grave: Neofeudalism and the New Class Struggle* (Verso, 2025); Yanis Varoufakis, *Technofeudalism: What Killed Capitalism* (Melville House Publishing, 2023).
 40. Tiffany Chan and Jentery Sayers, “Minimal Computing from the Labor Perspective,” *Digital Humanities Quarterly* 016, no. 2, (2022). www.digitalhumanities.org/dhq/vol/16/2/000600/000600.html#p24 (accessed March 25, 2026; emphasis original).
 41. Alex Gil, “The User, the Learner and the Machines We Make. Minimal Computing.” <http://go-dh.github.io/mincomp/thoughts/2015/05/21/user-vs-learner/> (accessed February 7, 2023).
 42. Dene Grigar and Mariusz Pisarski, *The Challenges of Born-Digital Fiction* (Cambridge Elements, 2024).
 43. On the latter, see again Wilson, *Digital Humanities for Librarians*; Shawna Ross and Andrew Pilsch, *Humans at Work in the Digital Age: Forms of Digital Textual Labor*

- (Routledge, 2020); Katrina Anderson, Lindsey Bannister, Janey Dodd, Deanna Fong, Michelle Levy, and Lindsey Seatter, "Student Labour and Training in Digital Humanities," *Digital Humanities Quarterly* 10, no. 1 (February 12, 2016). www.digitalhumanities.org/dhq/vol/10/1/000233/000233.html (accessed March 25, 2026); Matthew Hannah, "Toward a Political Economy of the Digital Humanities," in Matthew K. Gold and Lauren Klein, eds., *Debates in the Digital Humanities 2023* (University of Minnesota Press, 2023).
44. See Katina Rogers in *Putting the Humanities PhD to Work: Thriving in and beyond the Classroom*, 2020; and Anna Kornbluh, "Academe's Coronavirus Shock Doctrine." *The Chronicle of Higher Education*, 66, no. 26 (2020): 44, www.chronicle.com/article/academes-coronavirus-shock-doctrine/ (accessed March 25, 2026).
 45. Melissa Terras and Julianne Nyhan, "Father Busa's Female Punch Card Operatives," in Matthew Gold and Lauren Klein, eds., *Debates in the Digital Humanities 2016* (University of Minnesota Press), Manifold. Accessed October 11, 2023. <https://dhdebates.gc.cuny.edu/read/untitled/section/1e57217b-f262-4f25-806b-4fcf1548beb5>; see also Arun Jacob, "Punching Holes in the International Busa Machine Narrative," *IDEAH* 1, no. 1 (May 31, 2020). <https://doi.org/10.21428/f1f23564.d7d097c2>.
 46. This was of course the accusation of Daniel Allington, Sarah Brouillette, and David Golumbia, in "Neoliberal Tools (and Archives): A Political History of Digital Humanities," *Los Angeles Review of Books*. Accessed September 1, 2016. <https://bit.ly/4dAwBcT>.
 47. On neoliberalism as a political term, see Wendy Brown, *Undoing the Demos: Neoliberalism's Stealth Revolution* (Princeton University Press, 2015); and for an historical account, see David Harvey, *A Brief History of Neoliberalism* (Oxford University Press, 2005).
 48. For an introduction to critical university studies, see Jeffrey J. Williams, "University Studies," in *The Bloomsbury Handbook of Literary and Cultural Theory*, edited by Jeffrey Di Leo (Bloomsbury Academic, 2019), 323–32.
 49. For an introduction to data and society studies, see Anne Beaulieu and Sabina Leonelli, *Data and Society: A Critical Introduction* (Sage Publications Ltd, 2022); on platform studies, Aubrey Anable, "Platform Studies." *Feminist Media Histories* 4, no. 2 (April 1, 2018): 135–40. <https://doi.org/10.1525/fmh.2018.4.2.135>; and Rita Raley and Jennifer Rhee, "Critical AI: A Field in Formation." *American Literature* 95, no. 2 (June 1, 2023): 185–204. <https://doi.org/10.1215/00029831-10575021>.
 50. For an example of political-economic critique in the Digital Humanities, see Matthew Hannah, "Toward a Political Economy of the Digital Humanities," in Matthew K. Gold and Lauren Klein, eds., *Debates in the Digital Humanities 2023* (University of Minnesota Press, 2023).
 51. For an expanded form of this argument, see Matthew Hannah and Gabriel Hankins, "Introduction" to themed issue of *Journal of Interactive Technology*

and Pedagogy on “Labor, Political Economy, and Activism in the Age of Digital Mediation.”

52. On the release of OLMo: Ai2, “OLMo: Open Language Model,” <https://blog.allenai.org/olmo-open-language-model-87ccfc95f580> (accessed February 1, 2024).
53. The classic skeptical position on LLMs and knowledge is Emily M. Bender, Timnit Gebru, Angelina McMillan-Major, and Shmargaret Shmitchell, “On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?” In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, 610–23. FAccT ’21. Association for Computing Machinery, 2021. <https://doi.org/10.1145/3442188.3445922>.
54. Wiebe E. Bijker and John Law, *Shaping Technology/Building Society: Studies in Sociotechnical Change* (MIT Press, 1992).
55. John Warner, “ChatGPT Can’t Teach Writing.” *Inside Higher Ed*, January 22 2024. Accessed February 2, 2024. <https://bit.ly/4rVYj6U>.
56. Matthew Kirschenbaum and Rita Raley, “AI and the University as a Service.” *PMLA/Publications of the Modern Language Association of America* 139, no. 3 (2024): 504–15. <https://doi.org/10.1632/S003081292400052X>.
57. Mary L. Gray and Siddharth Suri, *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass* (Houghton Mifflin Harcourt, 2019); Kate Crawford, *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence* (Yale University Press, 2021). Frank Pasquale’s *Black Box Society* (Harvard University Press, 2016) and his *New Laws of Robotics: Defending Human Expertise in the Age of AI* (Harvard University Press, 2021) are both important works on the underpinnings of machine learning and its claims to “expertise.” The European Union has proposed a risk-based approach to regulation: <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>.
58. See the still excellent report to the Australian Human Rights Commission on “The Human Right to Democratic Control of Artificial Intelligence,” “AI is an Existential Threat without Democratic Control” (Alyssa Kurke et al., “Executive Summary,” 7). <https://bit.ly/4lKBcdN>. April 2020 (accessed July 5, 2025).
59. “Users can’t speak to viral AI girlfriend CarynAI because CEO is in jail for arson.” Emanuel Maiberg and Jason Koebler, *404media.co*. <https://bit.ly/4rNS5G1>. November 16, 2023 (accessed March 25, 2026).
60. For therapy companions, see Replika, <https://replika.com/>, accessed July 5, 2025 (thanks to Anna Mukamal for this reference).
61. Joy Buolamwini and Timnit Gebru, “Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification.” *Proceedings of Machine Learning Research* 81 (2018): 77–91. Inioluwa Deborah Raji, Timnit Gebru, Margaret Mitchell, Joy Buolamwini, Joonseok Lee, and Emily Denton, “Saving Face: Investigating the Ethical Concerns of Facial Recognition Auditing,” in *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society* (2020), 145–51.

Bibliography

- Adamson, Peter. *Philosophy in the Islamic World*. Oxford University Press, 2016.
- Ahnert, Ruth, Sebastian E. Ahnert, Catherine Nicole Coleman, and Scott B. Weingart. *The Network Turn: Changing Perspectives in the Humanities*. Cambridge University Press, 2021. <https://doi.org/10.1017/9781108866804>.
- Allen Institute for Artificial Intelligence (Ai2). "OLMo: Open Language Model." February 1, 2024. Accessed March 25, 2026. <https://blog.allenai.org/olmo-open-language-model-87ccfc95f580>.
- Allington, Daniel, Sarah Brouillette, and David Golumbia. "Neoliberal Tools (and Archives): A Political History of Digital Humanities." *Los Angeles Review of Books*. May 1, 2016. Accessed September 1, 2016. <https://bit.ly/3YNlZHU>.
- American Council of Learned Societies (ACLS). "History E-book Project." Accessed June 25, 2025. www.humanitiesebook.org/about/.
- American Library Association. Committee on Resources of American Libraries, National Union Catalog Subcommittee, and Library of Congress. *The National Union Catalog, Pre-1956 Imprints: A Cumulative Author List Representing Library of Congress Printed Cards and Titles Reported by Other American Libraries*. Mansell, 1968–1981.
- Anable, Aubrey. "Platform Studies." *Feminist Media Histories* 4, no. 2 (April 1, 2018): 135–40. <https://doi.org/10.1525/fmh.2018.4.2.135>.
- Ancestry.com. "We're Increasing Our Monthly Subscription Prices to Help Provide You with More Content and New Product Features." January 2, 2022. Accessed July 1, 2025. <https://bit.ly/4qjOEah>.
- Anderson, Katrina, Lindsey Bannister, Janey Dodd, Deanna Fong, Michelle Levy, and Lindsey Seatter. "Student Labour and Training in Digital Humanities." *Digital Humanities Quarterly* 10, no. 1 (February 12, 2016). www.digitalhumanities.org/dhq/vol/10/1/000233/000233.html.
- Antoniak, Maria. "Topic Modeling for the People." July 27, 2022. Accessed March 19, 2023. <https://maria-antoniak.github.io/2022/07/27/topic-modeling-for-the-people.html>.
- Antoniak, Maria, Anjalie Field, Jimin Mun, Melanie Walsh, Lauren Klein, and Maarten Sap. "Riveter: Measuring Power and Social Dynamics between Entities." In *Proceedings of the 61st Annual Meeting of the Association for*

- Computational Linguistics (Volume 3: System Demonstrations)* (2023): 377–88. Toronto: Association for Computational Linguistics. <https://doi.org/10.18653/v1/2023.acl-demo.36>.
- Arms, Caroline R. “Library of Congress: Historical Collections for the National Digital Library, Part I.” *D-Lib Magazine*, April 1996. Accessed May 5, 2023. www.dlib.org/dlib/april96/loc/04c-arms.html.
- Arnold, Taylor, Nathaniel Ayers, Justin Madron, Rob Nelson, Lauren Tilton, and Laura Wexler. *Photogrammar* (Version 3.0). 2021. Accessed March 25, 2026. <https://photogrammar.org/about>.
- Atkinson, Niall. “Seeing Sound: Mapping Florentine Soundscapes.” *Grey Room*, no. 60 (2015): 10–35. https://doi.org/10.1162/GREY_a_00151.
- Australian Human Rights Commission. “AI Is an Existential Threat without Democratic Control: The Human Right to Democratic Control of Artificial Intelligence.” April 2020. Accessed July 5, 2025. <https://bit.ly/4aJZt0L>.
- Ayers, Edward. “Valley of the Shadow.” 1993. Accessed July 1, 2025. <https://valley.newamericanhistory.org/about>.
- Ayers, Edward and Ad Hoc Committee on the Evaluation of Digital Scholarship by Historians. “Guidelines for the Professional Evaluation of Digital Scholarship by Historians.” American Historical Association, June 2015. Accessed March 25, 2026. <https://bit.ly/45IRS4k>.
- Baptist, Edward. *The Half Has Never Been Told*. Basic Books, 2014.
- Barber, John. “Sound at the Heart of Electronic Literature.” December 2, 2018. Accessed July 3, 2025. <https://bit.ly/49fGiZB>.
- Barbrook, Richard, and Andy Cameron. “The Californian Ideology.” *Mute* 1, no. 3 (September 1995). <https://bit.ly/4uaWgNF> (captured February, 22, 2026).
- Barthes, Roland. “The Death of the Author.” In *Aspen*, no. 5–6 (1967), edited by Brian O’Doherty. *Image-Music-Text*. Edited and translated by Stephen Heath. Fontana Press, 1977.
- Le Degré zéro de l’écriture*. Éditions du Seuil, 1953.
- Bartholomae, David. “Inventing the University.” *Journal of Basic Writing* 5, no. 1 (1986): 4–23. www.jstor.org/stable/43443456.
- Battershill, Claire, and Shawna Ross. *Using Digital Humanities in the Classroom: A Practical Introduction for Teachers, Lecturers and Students*, 2nd ed. Bloomsbury Academic, 2022.
- Bauer, Matthias, and Angelika Zirker. “Whipping Boys Explained: Literary Annotation and Digital Humanities.” *Literary Studies in the Digital Age: An Evolving Anthology* (2015). <https://bit.ly/3YkfP8o>.
- Beaulieu, Anne, and Sabina Leonelli. *Data and Society: A Critical Introduction*. Sage Publications Ltd, 2022.
- Bender, Emily M., Timnit Gebru, Angelina McMillan-Major, and Shmargaret Shmitchell. “On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?” In *Proceedings of the 2021 ACM*

- Conference on Fairness, Accountability, and Transparency*, 610–23.
FAccT 2021. Association for Computing Machinery, 2021. <https://doi.org/10.1145/3442188.3445922>.
- Berens, Kathi Inman. "Interface." In *Digital Pedagogy in the Humanities*, edited by Rebecca Frost Davis, Matthew Gold, Katherine Harris, and Jentery Sayers. MLA Commons, part of Humanities Commons, 2020. Accessed August 3, 2023. <https://digitalpedagogy.hcommons.org/keyword/Interface>.
- Berners-Lee, Tim, James Hendler, and Ora Lassila. "The Semantic Web." *Scientific American* 284, no. 5 (2001): 34–43.
- Berry, David. "Critical Digital Humanities." *stunlaw*, January 10, 2013. Accessed March 25, 2026. <http://stunlaw.blogspot.com/2013/01/critical-digital-humanities.html>.
- Best, Stephen, and Sharon Marcus. "Surface Reading: An Introduction." *Representations* 108, no. 1 (2009): 1–21. <https://doi.org/10.1525/rep.2009.108.1.1>.
- Bijker, Wiebe E., and John Law. *Shaping Technology/Building Society: Studies in Sociotechnical Change*. MIT Press, 1992.
- Blickhan, Samantha, Will Granger, Shaun A. Noordin, and Becky Rother. "'Strangers in the Landscape': On Research Development and Making Things for Making." *Startwords*, no. 2 (December 2021). <https://doi.org/10.5281/zenodo.5750679>.
- Bloomfield, Maurice. *A Vedic Concordance*. Motilal Banarsidass Publishers, 1990.
- Bodenhamer, David, John Corrigan, and Trevor M. Harris, eds. *The Spatial Humanities: GIS and the Future of Humanities Scholarship*. Indiana University Press, 2010.
- Booth, Wayne C., Gregory G. Colomb, and Joseph M. Williams. *The Craft of Research*. 3rd ed. The University of Chicago Press, 2008.
- Bradley, John. "Text Tools." In *A Companion to Digital Humanities*, edited by Susan Schreibman, Ray Siemens, and John Unsworth, 505–522. Blackwell, 2004.
- Brizee, Allen. "Theorizing Public Digital Humanities: A Model for Collaborative Knowledge Production." *PMLA/Publications of the Modern Language Association of America* 140, no. 1 (2025): 126–35. <https://doi.org/10.1632/S0030812925000057>.
- Brouillette, Sarah. "Wattpad, Platform Capitalism, and the Feminization of Publishing Work." *Book History* 26, no. 2 (2023): 419–38. <https://doi.org/10.1353/bh.2023.a910954>.
- "Wattpad's Fictions of Care." *Post45*, July 13, 2022. Accessed March 25, 2026. <https://post45.org/2022/07/wattpads-fictions-of-care/>.
- Brown, Nathan. "Postmodernity, Not Yet: Toward a New Periodisation." *Radical Philosophy*, no. 201 (2018): 11–27.
- Brown, Vincent. "Mapping a Slave Revolt." *Social Text* 33, no. 4 (2015): 134–41. <https://doi.org/10.1215/01642472-3315826>.

- "Slave Revolt in Jamaica, 1760–1761." 2012. Accessed July 1, 2025. <http://revolt.axismaps.com/>.
- Brown, Wendy. *Undoing the Demos: Neoliberalism's Stealth Revolution*. Princeton University Press, 2015.
- Brughmans, Tom. "Thinking through Networks: A Review of Formal Network Methods in Archaeology." *Journal of Archaeological Method and Theory* 20, no. 4 (December 1, 2013): 623–62. <https://doi.org/10.1007/s10816-012-9133-8>.
- Brughmans, Tom, Anna Collar, and Fiona Coward, eds. *The Connected Past: Challenges to Network Studies in Archaeology and History*. Oxford University Press, 2016. <https://doi.org/10.1093/oso/9780198748519.001.0001>.
- "Buddhist Digital Resource Center." Accessed July 15, 2025. www.bdrc.io/.
- Buolamwini, Joy, and Timnit Gebru. "Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification." *Proceedings of Machine Learning Research* 81 (2018): 77–91.
- Buranyi, Stephen. "Is the Staggeringly Profitable Business of Scientific Publishing Bad for Science?" *The Guardian*, June 27, 2017. Accessed March 25, 2026. <https://bit.ly/4bnmPJ0>.
- Burdick, Anne, Johanna Drucker, Peter Lunenfeld, Todd Presner, and Jeffrey T. Schnapp. *Digital Humanities*. MIT Press, 2012.
- Burke, Peter. *A Social History of Knowledge: From Gutenberg to Diderot*. Polity Press, 2000.
- Burton, Howard, and Quentin Skinner. *Quest for Freedom: A Conversation with Quentin Skinner*. Open Agenda Publishing, Inc., 2020. <https://doi.org/10.2307/j.ctv22jnn84>.
- Busa, Roberto. *Index Thomisticus*. Frommann-Holzboog, 1974–.
- "The Annals of Humanities Computing: The Index Thomisticus." *Computers and the Humanities* 14, no. 2 (1980): 83–90.
- Butler, Judith. "The Future of the Humanities Can Be Found in Its Public Forms." Winter 2020 MLA Newsletter. Reprinted January 6, 2021. Accessed July 9, 2025. <https://bit.ly/4rJDXO0>.
- Buurma, Rachel Sagner, and Laura Heffernan. "Search and Replace: Josephine Miles and the Origins of Distant Reading." *Modernism/Modernity Print* +, vol. 3, cycle 1. Accessed November 8, 2019. <https://modernismmodernity.org/forums/posts/search-and-replace>.
- Cameron, Fiona, and Sarah Kenderdine. *Theorizing Digital Cultural Heritage: A Critical Discourse*. MIT Press, 2007.
- Cargnelutti, Matteo, Catherine Brobston, John Hess, Jack Cushman, Kristi Mukk, Aristana Scourtas, Kyle Courtney, et al. "Institutional Books 1.0: A 242B Token Dataset from Harvard Library's Collections, Refined for Accuracy and Usability." *arXiv*, June 10, 2025. <https://doi.org/10.48550/arXiv.2506.08300>.
- Casati, Roberto. *Contre le colonialisme numérique: Manifeste pour continuer à lire*. Albin Michel, 2013.

- Castro, Adrián. "The Year's Work in Stylistics, 2023 & 2024." *Language and Literature*, June 25, 2025. <https://doi.org/10.1177/09639470251355809>.
- Ceraso, Steph. "Sound." In *Digital Pedagogy in the Humanities: Concepts, Models, and Experiments*, edited by Rebecca Frost Davis, Matthew Gold, Katherine Harris, and Jentery Sayers. MLA Commons, 2020. Accessed August 30, 2025. <https://digitalpedagogy.hcommons.org/>.
- Chan, Tiffany, and Jentery Sayers. "Minimal Computing from the Labor Perspective." *Digital Humanities Quarterly* 16, no. 2 (2022). Accessed March 25, 2026. www.digitalhumanities.org/dhq/vol/16/2/000600/000600.html#p24.
- Chang, Gordon H. "Chinese Railroad Worker Project at Stanford University." Accessed July 3, 2025. <https://web.stanford.edu/group/chineserailroad/cgi-bin/website/>.
- Chen, Jing, and Lik Hang Tsui. "Debating and Developing Digital Humanities in China: New or Old?" In *Global Debates in the Digital Humanities*, edited by Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte. University of Minnesota Press, 2022. Accessed May 16, 2023. <https://bit.ly/3OJqWGd>.
- Clavert, Frédéric. "The Digital Humanities Multicultural Revolution Did Not Happen Yet." *L'histoire contemporaine à l'ère numérique* (blog; n.d.). Accessed February 26, 2020. <https://histnum.hypotheses.org/1546>.
- Clivaz, Claire, Paul Dilley, and David Hamidović. *Ancient Worlds in Digital Culture*. Brill, 2016.
- Coblin, W. South. "Erh ya 爾雅." In *Early Chinese Texts: A Bibliographical Guide*, edited by Michael Loewe, 94–99. Society for the Study of Early China; Institute of East Asian Studies, University of California Berkeley, 1993.
- Cohen, Daniel J., and Roy Rosenzweig. *Digital History: A Guide to Gathering, Preserving, and Presenting the Past on the Web*. University of Pennsylvania Press, 2006.
- Cohen, Matt, Ed Folsom, and Kenneth M. Price, eds. *The Walt Whitman Archive*. Accessed June 25, 2025. www.whitmanarchive.org/.
- Coldiron, Katie L., and Julio Capó. "Making Miami's History and Present More Accessible." *The International Journal of Information, Diversity, & Inclusion* 6, no. 4 (2022): 84–98. www.jstor.org/stable/48720307.
- Computational Stylistics Group. "Publications." Accessed June 26, 2025. <https://computationalstylistics.github.io/publications/>.
- Conroy, Melanie. *Literary Geographies in Balzac and Proust*. Cambridge University Press, 2021.
- Corcoran, Paul E. "COCOA: A FORTRAN Program for Concordance and Word-Count Processing of Natural Language Texts." *Behavior Research Methods & Instrumentation* 6, no. 6 (November 1974): 566.
- Cordell, Ryan, and David Smith. *Viral Texts: Mapping Networks of Reprinting in 19th-Century Newspapers and Magazines*. 2024. Accessed July 1, 2025. <http://viraltxts.org>.

- Cordell, Ryan, and Shawn Graham, "The Unessay." Accessed August 3, 2023. <https://hcommons.org/deposits/item/hc:31019/>.
- Couillet, Armelle, Hélène Rougier, Dominique Todisco, Jossierand Marot, Oliver Gillet, and Isabelle Crevecoeur. "New Visual Analytics Tool and Spatial Statistics to Explore Archeological Data: The Case of the Paleolithic Sequence of La Roche-à-Pierrot, Saint-Césaire, France." *Journal of Computer Applications in Archaeology* 5, no. 1 (2022): 19–34. <http://doi.org/10.5334/jcaa.81>.
- Cox, Jordana, and Lauren Tilton. "The Digital Public Humanities: Giving New Arguments and New Ways to Argue." *Review of Communication* 19, no. 2 (2019): 127–46.
- Cozariuc, Catalina, Luc A. Laeven, and Alexander A. Popov. "The Rise of China in Academic Research." Social Science Research Network, May 19, 2025. <http://dx.doi.org/10.2139/ssrn.5259968>.
- Crary, Jonathan. 24/7: *Late Capitalism and the Ends of Sleep*. Verso, 2014.
Scorched Earth: Beyond the Digital Age to a Post-capitalist World. Verso, 2022.
- Crawford, Kate. *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press, 2021.
- Crenshaw, Kimberlé. "Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color." *Stanford Law Review* 43, no. 6 (1991): 1241–300.
- Crymble, Adam. *Technology and the Historian: Transformations in the Digital Age*. University of Illinois Press, 2021.
- Da, Nan Z. "The Computational Case against Computational Literary Studies." *Critical Inquiry* 45, no. 3 (2019): 601–39. <https://doi.org/10.1086/702594>.
- Davis, Rebecca Frost, Matthew Gold, Katherine Harris, and Jentery Sayers. *Digital Pedagogy in the Humanities: Concepts, Models, and Experiments*. MLA Commons, 2020. Accessed August 30, 2025. <https://digitalpedagogy.hcommons.org/>.
- Dean, Jodi. *Capital's Grave: Neofeudalism and the New Class Struggle*. Verso, 2025.
- De Bolla, Peter, ed. *Explorations in the Digital History of Ideas: New Methods and Computational Approaches*. 1st ed. Cambridge University Press, 2023. <https://doi.org/10.1017/9781009263610>.
- de Certeau, Michel. *Heterologies: Discourse on the Other*. University of Minnesota Press, 1986.
- Denard, Hugh. "Implementing Best Practice in Cultural Heritage Visualisation: The London Charter." In *Good Practice in Archaeological Diagnostics: Non-Invasive Survey of Complex Archaeological Sites*, edited by Cristina Corsi, Bozidar Slapsak, and Frank Vermeulen, 255–68. Springer, 2013.
- D'Ignazio, Catherine, and Lauren F. Klein. *Data Feminism*. MIT Press, 2020.
- DiNucci, Darcy. "Fragmented Future." *Print* 53, no. 4 (1999).

- Dobson, James. *Critical Digital Humanities: The Search for a Methodology*. University of Illinois Press, 2019.
- Dodd, Maya, and Nidhi Kalra, eds. *Exploring Digital Humanities in India: Pedagogies, Practices, and Institutional Possibilities*. Routledge India, 2020. <https://doi.org/10.4324/9781003052302>.
- Drucker, Johanna. *Graphesis: Visual Forms of Knowledge Production*. Harvard University Press, 2014.
- “Humanities Approaches to Graphical Display.” *Digital Humanities Quarterly* 5, no. 1 (March 10, 2011).
- “Is There a ‘Digital’ Art History?” *Visual Resources* 29, no. 1–2 (2013): 5–13. <https://doi.org/10.1080/01973762.2013.761106>.
- Visualization and Interpretation: Humanistic Approaches to Display*. MIT Press, 2020.
- Dugan, Hoyt, et al. *Piers Plowman Electronic Archive*. 1994–2019. Accessed July 1, 2025. <http://piers.chass.ncsu.edu/>.
- Earhart, Amy. “Digital Humanities Within a Global Context: Creating Borderlands of Localized Expression.” *Fudan Journal of the Humanities and Social Sciences* 11, no. 3 (September 1, 2018): 357–69. <https://doi.org/10.1007/s40647-018-0224-0>.
- Traces of the Old, Uses of the New: The Emergence of Digital Literary Studies*. University of Michigan Press, 2015. <https://doi.org/10.3998/etlc.13455322.0001.001>.
- Eco, Umberto. *How to Write a Thesis*. MIT Press, 2015. [Originally published 1977.]
- Edwards, Benj. “Cloudflare Turns AI against Itself with Endless Maze of Irrelevant Facts.” *Ars Technica*, March 21, 2025. Accessed July 9, 2025. <https://arstechnica.com/ai/2025/03/cloudflare-turns-ai-against-itself-with-endless-maze-of-irrelevant-facts/>.
- Eisenstein, Elizabeth. *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early Modern Europe*. Cambridge University Press, 1979.
- Elkins, Katherine. *The Shape of Stories*. Cambridge University Press, 2022.
- Elwood, Sarah, Nadine Schuurman, and Matthew Wilson. “Critical GIS.” In *The SAGE Handbook of GIS and Society*, edited by Timothy Nyerges, Helen Couclelis, and Robert B. McMaster, 87–106. Sage Publications Ltd, 2011.
- ERIC. “Fifty Years of ERIC: 1964–2014.” 2014. Accessed July 1, 2025. https://eric.ed.gov/pdf/ERIC_Retrospective.pdf.
- Eve, Martin Paul. *Close Reading with Computers: Textual Scholarship, Computational Formalism, and David Mitchell’s Cloud Atlas*. Stanford University Press, 2019.
- Fernandez, Sylvia, Rubria Rocha de Luna, and Annette M. Zapata. “United Fronteras como tercer espacio: Modelo transfronterizo a través de las humanidades digitales poscoloniales y la computación mínima.” *Digital*

- Humanities Quarterly* 16, no. 2 (2022). www.digitalhumanities.org/dhq/vol/16/2/000608/000608.html.
- Fickers, Andreas, et al. Luxembourg Centre for Contemporary and Digital History. "Ranke 2." (n.d.). Accessed March 25, 2026. <https://ranke2.uni.lu/>.
- Fiormonte, Domenico. "Towards a Cultural Critique of the Digital Humanities." *Historical Social Research/Historische Sozialforschung* 37, no. 3 (141) (2012): 59–76. <https://doi.org/10.12759/hsr.37.2012.3.59-76>.
- Fiormonte, Domenico, Teresa Numerico, and Francesca Tomasi. *The Digital Humanist: A Critical Inquiry*. Translated by Desmond Schmidt and Christopher Ferguson. Punctum Books, 2015. <https://doi.org/10.21983/P3.0120.1.00>.
- Fiormonte, Domenico, Sukanta Chaudhuri, and Paola Ricaurte. *Global Debates in the Digital Humanities*. University of Minnesota Press, 2022. <https://bit.ly/4bVFega>.
- Fish, Stanley. *Is There a Text in This Class?* Harvard University Press, 1980.
- Fitzpatrick, Kathleen. *Generous Thinking: A Radical Approach to Saving the University*. Johns Hopkins University Press, 2021.
- Fleischhauer, Carl. "Looking Back: Observations on Digital Initiatives from the 1980s to the Present." Talk for the National Archives Preservation Conference, March 26, 2009. "Version for the Web, March 31, 2009." Accessed March 25, 2026. www.archives.gov/files/preservation/conferences/2009/presentations/fleischhauer.pdf.
- Fletcher, Pamela, and Anne Helmreich. "Local/Global: Mapping Nineteenth-Century London's Art Market." *Nineteenth-Century Art Worldwide* 11, no. 3 (Autumn 2012). Accessed March 25, 2026. <https://bit.ly/4scdVna>.
- Fogel, Robert W. *The Slavery Debates, 1952–1990: A Retrospective*. Louisiana State University Press, 2006.
- Folsom, Edward. "Database as Genre: The Epic Transformation of Archives." *PMLA* 122, no. 5 (2007): 1571–79.
- Fortunato, Santo, Carl T. Bergstrom, Katy Börner, James A. Evans, Dirk Helbing, Staša Milojević, Alexander M. Petersen, et al. "Science of Science." *Science* 359, no. 6379 (2018). <https://doi.org/10.1126/science.aao0185>.
- Foucault, Michel. "What Is an Author?" In *Language, Counter-Memory, Practice: Selected Essays and Interviews by Michel Foucault*, edited by Donald F. Bouchard, 113–38. Cornell University Press, 1977.
- Freedman, Jonathan. "Whitman, Database, Information Culture." *PMLA* 122, no. 5 (2007): 1596–1602. www.jstor.org/stable/25501807.
- Freeman, Matthew, and Renira Rampazzo Gambarato, eds. *The Routledge Companion to Transmedia Studies*. Routledge Media and Cultural Studies Companions. Routledge, 2018.
- Gadamer, Hans-Georg. *Truth and Method*. Continuum, 1975.
- Gailey, Amanda. *Proofs of Genius: Collected Editions from the American Revolution to the Digital Age*. University of Michigan Press, 2015. <https://dx.doi.org/10.1353/book.42621>.

- Gairola, Rahul. "Peering Beyond the Pink Tent: Queer of Color Critique across the Digital Indian Ocean." In *Global Debates in the Digital Humanities*, edited by Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte. University of Minnesota Press, 2022. Accessed March 25, 2026. <https://bit.ly/4u7HG9C>.
- Gardiner, Eileen, and Ronald G. Musto. *The Digital Humanities: A Primer for Students and Scholars*. Cambridge University Press, 2015.
- Gardner, Daniel K. "Confucian Commentary and Chinese Intellectual History." *The Journal of Asian Studies* 57, no. 2 (1998): 397–422. <https://doi.org/10.2307/2658830>.
- Gebru, Timnit, Jamie Morgenstern, Briana Vecchione, Jennifer Wortman Vaughan, Hanna Wallach, Hal Daumé III, and Kate Crawford. "Datasheets for Datasets." *Communications of the ACM* 64, no. 12 (2021): 86–92.
- Geoghegan, Bernard Dionysius. *Code: From Information Theory to French Theory*. Duke University Press, 2023. <http://dx.doi.org/10.1215/9781478023630>.
- Geoghegan, Bernard Dionysius. "An Ecology of Operations: Vigilance, Radar, and the Birth of the Computer Screen." *Representations* 147, no. 1 (August 2019): 59–95. <https://doi.org/10.1525/rep.2019.147.1.59>.
- Gil, Alex. "The User, the Learner and the Machines We Make. Minimal Computing." May 21, 2015. Accessed February 7, 2023. <http://go-dh.github.io/mincomp/thoughts/2015/05/21/user-vs-learner/>.
- Giles, Jim. "Internet Encyclopaedias Go Head to Head." *Nature* 438 (2005): 900–901. <https://doi.org/10.1038/438900a>.
- Goffman, Erving. *The Presentation of Self in Everyday Life*. Doubleday & Company, 1959 [1956].
- Gonzalez-Tennant, Edward. "GIS and Archaeology." In *Oxford Bibliographies Online in Anthropology*. <https://doi.org/10.1093/obo/9780199766567-0270>.
- Graff, Gerald. *Clueless in Academe: How Schooling Obscures the Life of the Mind*. Yale University Press, 2003.
- Grafton, Anthony. *The Footnote: A Curious History*. Harvard University Press, 1999.
- Graham, Shawn, Scott Weingart, and Ian Milligan. "Getting Started with Topic Modeling and MALLET." *Programming Historian* 1 (2012). <https://doi.org/10.46430/phen0017>.
- Gregg, Stephen. *Old Books and Digital Publishing: Eighteenth-Century Collections Online*. Cambridge University Press, 2020.
- Griesemer, James R., and Susan Leigh Star. "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39." *Social Studies of Science* 19, no. 3 (1989): 387–420. <https://doi.org/10.1177/030631289019003001>.

- Grigar, Dene, and Mariusz Pisarski. *The Challenges of Born-Digital Fiction: Editions, Translations, and Emulations*. Cambridge Elements. Cambridge University Press, 2024.
- Grigar, Dene, and Stuart Moulthrop. "Pathfinders." Accessed July 1, 2025. <https://dtc-wsuv.org/wp/pathfinders/description/>.
- Grusin, Richard, and Jay David Bolter. *Remediation: Understanding New Media*. MIT Press, 2000.
- Guiliano, Jennifer. *A Primer for Teaching Digital History: Ten Design Principles*. Duke University Press, 2022.
- Guldi, Jo. "A History of the Participatory Map." *Public Culture* 29, no. 1 (81) (January 1, 2017): 79–112. <https://doi.org/10.1215/08992363-3644409>.
- Gutas, Dimitri. *Greek Thought, Arabic Culture: The Graeco-Arabic Translation Movement in Baghdad and Early 'Abbasid Society (2nd–4th/5th–10th Centuries)*. Routledge, 1998.
- Hacking, Ian. *The Social Construction of What?* Harvard University Press, 1999.
- Haddour, Azzedine. "Tradition, Translation and Colonization: The Graeco-Arabic Translation Movement and Deconstructing the Classics." In *Translation and the Classic: Identity as Change in the History of Culture*, edited by Alexandra Lianeri and Vanda Zajko. Classical Presences. Oxford University Press, 2008. <https://doi.org/10.1093/acprof:oso/9780199288076.003.0010>.
- Hagener, Malte, and Diana Roig-Sanz. "Digital Film Historiography: Challenges of/and Interdisciplinarity." *Journal of Cultural Analytics* 9, no. 4 (July 2024). <https://doi.org/10.22148/001c.120944>.
- Hankins, Gabriel. "Critique." In *The Cambridge Companion to Literature in a Digital Age*, edited by Adam Hammond, 273–91. Cambridge University Press, 2024.
- Hankins, Gabriel, Simon Appleford, and Anouk Lang, eds. *Digital Futures of Graduate Study in the Humanities*. University of Minnesota Press, 2024.
- Hannah, Matthew. "Toward a Political Economy of the Digital Humanities." In *Debates in the Digital Humanities 2023*, edited by Matthew K. Gold and Lauren Klein, 3–26. University of Minnesota Press, 2023.
- Hannah, Matthew, and Gabriel Hankins. "Introduction" to themed issue of *Journal of Interactive Technology and Pedagogy* on "Labor, Political Economy, and Activism in the Age of Digital Mediation." December 4, 2025. Accessed March 25, 2026. <https://bit.ly/4tzHn7w>.
- Hartman, Saidiya V. *Wayward Lives, Beautiful Experiments: Intimate Histories of Social Upheaval*. W. W. Norton & Company, 2019.
- Hartsell-Gundy, Arianne, Laura Braunstein, and Liorah Golomb, eds. *Digital Humanities in the Library: Challenges and Opportunities for Subject Specialists*. 2nd ed. Association of College and Research Libraries, 2024.
- Harvey, David. *A Brief History of Neoliberalism*. Oxford University Press, 2005.
- Haskell, Thomas L. "The True & Tragical History of 'Time on the Cross.'" *New York Review of Books*, October 2, 1975. Accessed January 18, 2022. <https://bit.ly/40scuVH>.

- Hayes Edwards, Brent. *The Practice of Diaspora: Literature, Translation, and the Rise of Black Internationalism*. Harvard University Press, 2003.
- Hayles, N. Katherine. "How We Read: Close, Hyper, Machine." *ADE Bulletin* 150 (2010). Accessed March 25, 2026. www.ade.org/cgi-shl/docstudio/docs.pl?adeftl_bulletin_c_ade_150_62.
- Hayot, Eric. "Then and Now." In *Critique and Postcritique*, edited by Elizabeth Anker and Rita Felski, 279–96. Duke University Press, 2017. <https://doi.org/10.2307/j.ctv11smst2.14>.
- Heer, Jeffrey, Michael Bostock, and Vadim Ogievetsky. "A Tour through the Visualization Zoo." *ACM Queue* 8, no. 5 (May 13, 2010). Accessed March 25, 2026. <https://queue.acm.org/detail.cfm?id=1805128>.
- Hegel, Georg Wilhelm Friedrich. *Encyclopaedia of the Philosophical Sciences in Basic Outline*. Translated and edited by Klaus Brinkmann and Daniel O. Dahlstrom. Cambridge University Press, 2010.
- Herodotus. *The Histories*. Translated by Robin Waterfield. Oxford University Press, 1998.
- Hilt, Eric. "Revisiting Time on the Cross after 45 Years: The Slavery Debates and the New Economic History." *Capitalism: A Journal of History and Economics* 1, no. 2 (2020): 456–83. <https://doi.org/10.1353/cap.2020.0000>.
- Hitchcock, Tim. "History of the Old Bailey Online Project." Accessed March 25, 2026. www.oldbaileyonline.org/about/a-narrative-history-of-the-project.
- Hitchcock, Tim, Robert Shoemaker, Clive Emsley, Sharon Howard, and Jamie McLaughlin, et al. *The Old Bailey Proceedings Online, 1674-1913*. Accessed March 25, 2026. www.oldbaileyonline.org, version 9.0, Autumn 2023.
- Hockey, Susan. "The History of Humanities Computing." In *A Companion to Digital Humanities*, edited by Susan Schreibman, Raymond George Siemens, and John Unsworth, 1–19. Blackwell, 2004.
- Horning, Rob. "The Reified Mind: A Note on Generative AI as Commodified Language." Substack.com, August 22, 2025. Accessed March 25, 2026. <https://substack.com/inbox/post/171564625>.
- Hotson, Howard, and Miranda Lewis, eds. *Early Modern Letters Online*. Accessed July 1, 2025. <http://emlo.bodleian.ox.ac.uk>.
- Isaac, Jenny R., and Ariel Otruba. "Guest Introduction: More-than-Human Contact Zones." *Environment and Planning E: Nature and Space* 2, no. 4 (December 1, 2019): 697–711. <https://doi.org/10.1177/2514848619855369>.
- Jacob, Arun. "Punching Holes in the International Busa Machine Narrative." *IDEAH* 1, no. 1 (May 31, 2020). <https://doi.org/10.21428/flf23564.d7d097c2>.
- Jagoda, Patrick. *Experimental Games: Critique, Play, and Design in the Age of Gamification*. The University of Chicago Press, 2020.

- Jannidis, Fotis, Hubertus Kohle, and Malte Rehbein. *Digital Humanities: Eine Einführung*. J. B. Metzler Verlag, 2017.
- Jarvis, Jeff. *The Gutenberg Parenthesis: The Age of Print and Its Lessons for the Age of the Internet*. Bloomsbury Academic, 2023.
- Jaskot, Paul. "Digital Methods and Historiography of Art." In *The Routledge Companion to Digital Humanities and Art History*, edited by Kathryn Brown. Routledge, 2020.
- Jemielniak, Dariusz. "Wikipedia: Why Is the Common Knowledge Resource Still Neglected by Academics?" *GigaScience* 8, no. 12 (2019): giz139. <https://doi.org/10.1093/gigascience/giz139>.
- Jenkins, Henry. *Textual Poachers: Television Fans & Participatory Culture*. Routledge, 1992.
- Jessop, Martyn. "Digital Visualization as a Scholarly Activity." *Literary and Linguistic Computing* 23, no. 3 (2008): 281–93. <https://doi.org/10.1093/lc/fqn016>.
- Johnson, Eric. *Open Source Shakespeare*. Accessed June 25, 2025. www.opensourceshakespeare.org/concordance/.
- Johnson, Jessica Marie. "Markup Bodies: Black [Life] Studies and Slavery [Death] Studies at the Digital Crossroads." *Social Text* 36, no. 4 (137) (December 1, 2018): 57–79. <https://doi.org/10.1215/01642472-7145658>.
- Johnson, Jessica Marie, David Mimno, and Lauren Tilton, eds. *Computational Humanities*. University of Minnesota Press, 2025. <https://dhdebates.gc.cuny.edu/projects/computational-humanities>.
- Jones, Caroline A., Huma Gupta, and Matthew Ritchie. "Visual Artists, Technological Shock, and Generative AI." *An MIT Exploration of Generative AI*, August 2024. <https://doi.org/10.21428/e4baedd9.b4f754fd>.
- JSTOR. "Mission and History." Accessed June 30, 2025. <https://about.jstor.org/mission-history/>.
- Karlgren, Bernard. "The Early History of the Chou Li and Tso Chuan Texts." *Bulletin of the Museum of Far Eastern Antiquities* 3 (1931).
- Karsdorp, Folger, Mike Kestemont, and Allen Riddell. *Humanities Data Analysis: Case Studies with Python*. Princeton University Press, 2021. www.humanitiesdataanalysis.org/index.html#.
- Keathley, Christian, Jason Mittell, and Catherine Grant. *The Videographic Essay: Practice and Pedagogy*. Scalar, 2019. Accessed March 25, 2026. <http://videographicessay.org>.
- Kinder, Marsha, and Tara McPherson. *Transmedia Frictions: The Digital, the Arts, and the Humanities*. University of California Press, 2014.
- Kirschenbaum, Matthew. *Bitstreams: The Future of Digital Literary Heritage*. University of Pennsylvania Press, 2021.
- "Digital Humanities As/Is A Tactical Term." In *Debates in the Digital Humanities*, edited by Matthew Gold. University of Minnesota Press, 2012. <https://doi.org/10.5749/minnesota/9780816677948.001.0001>.
- Mechanisms: New Media and the Forensic Imagination*. MIT Press, 2008.

- Kirschenbaum, Matthew, and Rita Raley. "AI and the University as a Service." *PMLA/Publications of the Modern Language Association of America* 139, no. 3 (2024): 504–15. <https://doi.org/10.1632/S003081292400052X>.
- Klein, Julie Thompson. *Interdisciplining the Digital Humanities*. University of Michigan Press, 2015.
- "The Boundary Work of Making in Digital Humanities." In *Making Things and Drawing Boundaries: Experiments in the Digital Humanities*, edited by Jentery Sayers, 21–31. University of Minnesota Press, 2017. <https://doi.org/10.5749/j.ctt1pwt6wq.4>.
- Klein, Lauren. "The Image of Absence: Archival Silence, Data Visualization, and James Hemings." *American Literature* 85, no. 4 (January 1, 2013): 661–88. <https://doi.org/10.1215/00029831-2367310>.
- Knight, G. Norman. *Indexing, the Art of: A Guide to the Indexing of Books and Periodicals*. Allen and Unwin, 1979.
- Koh, Adeline, and Dorothy Kim. *Alternative Historiographies of the Digital Humanities*. Punctum Books, 2021. <https://muse.jhu.edu/book/84502/>.
- Kolchin, Peter. "More Time on the Cross? An Evaluation of Robert William Fogel's without Consent or Contract." *The Journal of Southern History* 58, no. 3 (1992): 491–502.
- Kommers, Cody, Ruth Ahnert, Maria Antoniak, Emmanouil Benetos, Steve Benford, Mercedes Bunz, Baptiste Caramiaux, et al. "Computational Hermeneutics: Evaluating Generative AI as a Cultural Technology" (pre-print, August 1, 2025). SSRN preprints. <http://dx.doi.org/10.2139/ssrn.5409144>.
- Kornbluh, Anna. "Academe's Coronavirus Shock Doctrine." *The Chronicle of Higher Education*, March 12, 2020. Accessed July 5, 2025. www.chronicle.com/article/academes-coronavirus-shock-doctrine/.
- Immediacy, or The Style of Too-Late Capitalism*. Verso, 2024.
- "Mediation Metabolised." In *Raymond Williams at 100*, edited by Paul Stasi, 1–20. Rowman and Littlefield, 2021.
- The Order of Forms: Realism, Formalism, and Social Space*. The University of Chicago Press, 2019.
- Koselleck, Reinhart. *Critique and Crisis: Enlightenment and the Pathogenesis of Modern Society*. MIT Press, 1988 [1959].
- Laïnae, Julia, and Nicolas Alep. *Contre l'alternumerisme*. La Lenteur, 2020.
- Landow, George P. *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*. Johns Hopkins University Press, 1997.
- Latour, Bruno. "Visualization and Cognition: Thinking with Eyes and Hands." *Knowledge and Society* 6 (1986): 1–40.
- Lavin, Matthew. "Why Digital Humanists Should Emphasize Situated Data over Capta." *Digital Humanities Quarterly* 15, no. 2 (2021).
- Leggett, Elizabeth R. *Digitization and Digital Archiving: A Practical Guide for Librarians*. Rowman & Littlefield, 2014.
- Leterme, Cédric. "Africa's Digitalization: From the Ecological Dilemma to the Decolonization of the Imaginary." In *Global Debates in the Digital*

- Humanities*, edited by Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte. University of Minnesota Press, 2022. Accessed February 1, 2023. <https://bit.ly/4rCDvRr>.
- Lévi-Strauss, Claude. *La pensée sauvage*. Librairie Plon, 1962.
- Lieven, Dominic. *Empire: The Russian Empire and Its Rivals*. Yale University Press, 2001.
- Liu, Alan. "Imagining the New Media Encounter." In *A Companion to Digital Literary Studies*, edited by Raymond George Siemens and Susan Schreibman, 2–25. Wiley-Blackwell, 2013.
- Looser, Devoney. "Me and My Shadow CV." October 18, 2015. Accessed March 25, 2026. <http://chronicle.com/article/MeMy-Shadow-CV/233801>.
- "Theorizing Archival Public Humanities Scholarship and Telling Excellent Stories." *PMLA/Publications of the Modern Language Association of America* 140, no. 1 (2025): 136–44. <https://doi.org/10.1632/S0030812925000033>.
- Losh, Elizabeth, and Jacqueline Wernimont. *Bodies of Information: Intersectional Feminism and Digital Humanities*. University of Minnesota Press, 2019.
- Lovelace, Ada. "Notes by the Translator." In *Charles Babbage and His Calculating Engines. Selected Writings by Charles Babbage and Others*, edited by Philip Morrison and Emily Morrison, 248–49. Dover Publications, 1961 [1843].
- Lukács, Georg. *History and Class Consciousness*. MIT Press, 1971 [1923].
- Maiberg, Emanuel, and Jason Koebler. "Users Can't Speak to Viral AI Girlfriend CarynAI Because CEO Is in Jail." *404media.co*, November 16, 2023. Accessed March 25, 2026. <https://bit.ly/4rNS5G1>.
- Mäkelä, Eetu. "Three Approaches to Computational Methods." Accessed July 1, 2025. <https://bit.ly/4aA5goB>.
- Manovich, Lev. *Cultural Analytics*. The MIT Press, 2020.
- Manovich, Lev, and Emanuele Arielli. "Artificial Aesthetics." 2024. <https://manovich.net/index.php/projects/artificial-aesthetics>.
- Martin, Meredith. *Poetry's Data: Digital Humanities and the History of Prosody*. Princeton University Press, 2025.
- Mascall, Leonard. *A Booke of the Arte and Maner How to Plant and Graffe All Sortes of Trees*. John Wight, 1575.
- Mauvilly, Karine. *Cyberminimalisme. Face au tout-numérique, reconquérir du temps, de la liberté et du bien-être*. Le Seuil, 2019.
- McCandliss, Bruce, and Elizabeth Toomarian. "Putting Neuroscience in the Classroom: How the Brain Changes as We Learn." *Pew* (Pew Charitable Trusts). Accessed June 5, 2023. <https://pew.org/2UoSzWN>.
- McGann, Jerome. "Database, Interface and Archival Fever." *PMLA* 122, no. 5 (2007): 1588–92.

- "Marking Text of Many Dimensions." In *A Companion to Digital Humanities*, edited by Susan Schreibman, Ray Siemens, and John Unsworth, 505–22. Blackwell, 2004.
- The Textual Condition*. Princeton University Press, 1991.
- McGrath, Laura, Richard Jean So, Ted Underwood, and Chad Wellmon. "Culture, Theory, Data: An Introduction." *New Literary History* 53, no. 4 (June 2, 2023): 519–30. <https://doi.org/10.1353/nlh.2022.a898319>.
- McNulty, Tess, and Laura Alice Chapot. "Computation and Form, Reconsidered." *Journal of Cultural Analytics* 10, no. 3 (Sept. 2025). <https://doi.org/10.22148/001c.143993>.
- McPherson, Tara. "Why Are the Digital Humanities so White?" In *Debates in the Digital Humanities*. University of Minnesota Press, 2012. Accessed March 25, 2026. <https://bit.ly/4uaPdED>.
- Mei-Singh, Laurel, and Vernadette Vicuña Gonzalez. "DeTours: Mapping Decolonial Genealogies in Hawai'i." *Critical Ethnic Studies* 3, no. 2 (2017): 173–92. <https://doi.org/10.5749/jcritethnstud.3.2.0173>.
- Menand, Louis, Paul Reitter, and Chad Wellmon, eds. *The Rise of the Research University: A Sourcebook*. The University of Chicago Press, 2017.
- Mesgari, Mostafa, Chitu Okoli, Mohamad Mehdi, Finn Årup Nielsen, and Arto Lanamäki. "The Sum of All Human Knowledge: A Systematic Review of Scholarly Research on the Content of Wikipedia." *Journal of the Association for Information Science and Technology* 66, no. 2 (2015): 219–45.
- Michel, Jean-Baptiste, Yuan Kui Shen, Aviva Presser Aiden, Adrian Veres, Matthew K. Gray, the Google Books Team, Joseph P. Pickett, et al. "Quantitative Analysis of Culture Using Millions of Digitized Books." *Science* 331, no. 6014 (January 14, 2011): 176–82. <https://doi.org/10.1126/science.1199644>.
- Mikolov, Tomas, Kai Chen, Greg Corrado, and Jeffrey Dean. "Efficient Estimation of Word Representations in Vector Space." January 16, 2013. Accessed March 25, 2026. <https://arxiv.org/abs/1301.3781>.
- Miller, Matthew Thomas, Maxim G. Romanov, and Sarah Bowen Savant. "Digitizing the Textual Heritage of the Premodern Islamicate World: Principles and Plans." *International Journal of Middle East Studies* 50, no. 1 (2018): 103–9.
- Mittell, Jason. *Complex TV: The Poetics of Contemporary Television Storytelling*. NYU Press, 2015. <https://scalar.usc.edu/works/complex-television/index>.
- Monmonier, Mark S. *How to Lie with Maps*. University of Chicago Press, 1991.
- Montfort, Nick, and Ian Bogost. *Racing the Beam: The Atari Video Computer System*. MIT Press, 2020. Accessed March 25, 2026. <https://mitpress.mit.edu/series/platform-studies/>.
- Moretti, Franco. "Conjectures on World Literature." *New Left Review*, no. 1 (February 1, 2000): 54–68.
- Distant Reading*. Verso, 2013.

- Moretti, Franco, et al. "Network Theory, Plot Analysis." [Stanford] Literary Lab Pamphlet 2, May 1, 2011.
- Moskvina, Anna, and Kristina Petzold. "Online Reviews as Communal Formations. A Corpus Linguistic Approach." *Journal of Cultural Analytics* 7, no. 2 (June 2025). <https://doi.org/10.22148/001c.138350>.
- Moulthrop, Stuart. *Under Language*. The Iowa Review Web, 2007. Accessed July 3, 2025. <https://the-next.eliterature.org/exhibition/afterflash/moulthrop-under.html>.
- Mueller, Darren, Mary Caton Lingold, and Whitney Trettien, eds. *Provoke! Digital Sound Studies*. John Hope Franklin Humanities Institute, Duke University. Accessed July 3, 2025. <https://soundboxproject.com/about.html>.
- Muenchrath, Anna. *Selling Books with Algorithms*. Elements in Publishing and Book Culture. Cambridge University Press, 2024.
- Muhanna, Elias. *The Digital Humanities and Islamic & Middle East Studies*. De Gruyter, 2016.
- Mulligan, Ian. "Historical Research in the Digital Age, Part 1: We Are All Digital Now." *Royal Historical Society Blog and Online Resources*, November 30, 2022. <https://blog.royalhistsoc.org/2022/11/30/we-are-all-digital-now-1/>.
- _____. *The Transformation of Historical Research in the Digital Age*. Cambridge University Press, 2022. <https://doi.org/10.1017/9781009026055>.
- Muñoz, Trevor. "Data Curation as Publishing for the Digital Humanities." *Journal of Digital Humanities* 2, no. 3 (2013): 14–22.
- Muri, Allison, Catherine Nygren, and Benjamin Neudorf. "The Grub Street Project: A Digital Social Edition of London in the Long 18th Century." *Digital Scholarship in the Humanities* 31, no. 4 (December 1, 2016): 829–49. <https://doi.org/10.1093/llc/fqw003>.
- Murrieta-Flores, Patricia, Mariana Fávila-Vazquez, and Aban Flores-Morán. "Indigenous Deep Mapping: A Conceptual and Representational Analysis of Space in Mesoamerica and New Spain." In *Making Deep Maps: Foundations, Approaches, and Methods*, edited by David J. Bodenhamer, John Corrigan, and Trevor M. Harris, 78–111. Routledge, 2021.
- Naylor, Celia. *Unsilencing Slavery: Telling Truths about Rose Hill Plantation, Jamaica*. University of Georgia Press, 2022.
- Naylor, Celia E., Kristen Akey, Madiha Zahrah Choksi, Alex Gil, Moacir P. de Sá Pereira, and Monique J. S. Williams. "(Un)Silencing Slavery: Remembering the Enslaved at Rose Hall Plantation, Jamaica." August 6, 2022. Accessed July 1, 2025. <https://unsilencing-slavery.org/>.
- New York Federal Reserve. "The Labor Market for Recent College Graduates." 2023. Accessed July 2, 2025. www.newyorkfed.org/research/college-labor-market#:~:explore=outcomes-by-major.

- Nummedal, Tara E., and Donna Bilak, eds. *Furnace and Fugue: A Digital Edition of Michael Maier's Atalanta Fugiens*. University of Virginia Press, 2020. <https://furnaceandfugue.org/>.
- Furnace and Fugue: A Digital Edition of Michael Maier's Atalanta Fugiens (1618) with Scholarly Commentary*. University of Virginia Press, 2022. <https://furnaceandfugue.org/atalanta-fugiens/emblem01.html>.
- Nyhan, Julianne, and Andrew Flinn. *Computation and the Humanities: Towards an Oral History of Digital Humanities*. Springer, 2018.
- OERCommons. "Open Educational Resources Commons." Accessed June 25, 2025. <https://oercommons.org/>.
- Ong, Walter J. *Orality and Literacy: The Technologizing of the Word*. Routledge, 1982.
- O'Neill, Brenda, and Larry Stapleton. "Digital Cultural Heritage Standards: From Silo to Semantic Web." *AI & Society* 37, no. 3 (2022): 891–903. <https://doi.org/10.1007/s00146-021-01371-1>.
- O'Sullivan, James, Órla Murphy, and Shawn Day. "The Emergence of the Digital Humanities in Ireland." *Breac: A Digital Journal of Irish Studies*, 2015, <https://breac.nd.edu/articles/61541-the-emergence-of-the-digital-humanities-in-ireland/>.
- O'Sullivan, James, and Michael Pidd. "The Born-digital in Future Digital Scholarly Editing and Publishing." *Humanities and Social Sciences Communications* 10, no. 930 (2023): 3. <https://doi.org/10.1057/s41599-023-02454-8>.
- Open Access Network. "Green, Gold, and Diamond Open Access." Accessed June 25, 2025. <https://open-access.network/en/information/open-access-primers/green-and-gold>.
- Opeibi, Tunde. "Digitizing the Humanities in an Emerging Space." In *The Digital Black Atlantic*, edited by Roopika Risam and Kelly Baker Josephs, 162–167. University of Minnesota Press, 2021.
- "Orlando: Women's Writing in the British Isles from the Beginnings to the Present." 1995, updated 2022. Accessed March 25, 2026. <https://orlando.cambridge.org/>.
- Parker, Mark, and Deborah Parker. *The DVD and the Study of Film: The Attainable Text*. Palgrave Macmillan, 2011.
- Pasquale, Frank. *Black Box Society: The Secret Algorithms That Control Money and Information*. Harvard University Press, 2016.
- New Laws of Robotics: Defending Human Expertise in the Age of AI*. Harvard University Press, 2021.
- Pawlicka, Urszula. "Data, Collaboration, Laboratory: Bringing Concepts from Science into Humanities Practice." *English Studies* 98, no. 5 (July 4, 2017): 526–41. <https://doi.org/10.1080/0013838X.2017.1332022>.
- Peirce, Charles S. *The Writings of Charles S. Peirce: A Chronological Edition*, vol. 2. Edited by the Peirce Edition Project. Indiana University Press, 1982–.

- Perelman, Lewis J. "School's Out: The Hyperlearning Revolution Will Replace Public Education." *Wired* 1 no. 1, March/April 1993. <https://bit.ly/4cNkDLJ>.
- Perrigo, Billy. "OpenAI Used Kenyan Workers on Less Than \$2 Per Hour to Make ChatGPT Less Toxic." *Time Magazine*, January 18, 2023. Accessed July 9, 2025. <https://time.com/6247678/openai-chatgpt-kenya-workers/>.
- Perseus Digital Library. Gregory R. Crane, editor-in-chief. Accessed March 25, 2026. www.perseus.tufts.edu/hopper/.
- Peterazzo, Elena. "Digital Documentary Editions and the Others." *Scholarly Editing: The Annual of the Association for Documentary Editing* 35 (2014).
- Pickering, Andrew. *The Mangle of Practice: Time, Agency, and Science*. The University of Chicago Press, 1995.
- Piper, Andrew. *Can We Be Wrong? The Problem of Textual Evidence in a Time of Data*. Cambridge University Press, 2020.
- Porter, Samantha Thi, Morgan Roussel, and Marie Soressi. "A Simple Photogrammetry Rig for the Reliable Creation of 3D Artifact Models in the Field: Lithic Examples from the Early Upper Paleolithic Sequence of Les Cottés (France)." *Advances in Archaeological Practice* 4, no. 1 (February 2016): 71–86. <https://doi.org/10.7183/2326-3768.4.1.71>.
- Pratt, Mary Louise. "Arts of the Contact Zone." *Profession*, 1991, 33–40.
 "Building a New Public Idea about Language." *Profession*, 2003, 110–19. www.jstor.org/stable/25595763.
- Pratt, Mary Louise. *Imperial Eyes: Travel Writing and Transculturation*, 2nd ed., Routledge, 2008.
Imperial Eyes: Travel Writing and Transculturation. 2nd ed. Routledge, 2008.
- Raji, Inioluwa Deborah, Timnit Gebru, Margaret Mitchell, Joy Buolamwini, Joonseok Lee, and Emily Denton. "Saving Face: Investigating the Ethical Concerns of Facial Recognition Auditing." In *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society* (2020), 145–51.
- Raley, Rita. "Digital Humanities for the Next Five Minutes." *differences* 25, no. 1 (May 1, 2014): 26–45. <https://doi.org/10.1215/10407391-2419991>.
- Raley, Rita, and Jennifer Rhee. "Critical AI: A Field in Formation." *American Literature* 95, no. 2 (June 1, 2023): 185–204. <https://doi.org/10.1215/00029831-10575021>.
- Richter, Jacob, and Hannah Taylor. "Embracing Hybrid Infrastructures." In *Digital Futures of Graduate Study in the Humanities*, edited by Gabriel Hankins, Simon Appleford, and Anouk Lang, 283–291. University of Minnesota Press, 2024.
- Risam, Roopika. "Other Worlds, Other DHs: Notes towards a DH Accent." *Digital Scholarship in the Humanities* 32, no. 2 (June 2017): 377–84. <https://doi.org/10.1093/llc/fqv063>.
- Risam, Roopika, and Kelly Baker Josephs. *The Digital Black Atlantic*. University of Minnesota Press, 2021.

- Risam, Roopika, Brian Yothers, and Araceli Hernández-Laroche. "The Theories and Methodologies of Public Humanities." *PMLA/Publications of the Modern Language Association of America* 140, no. 1 (2025): 110–17. <https://doi.org/10.1632/S0030812925000094>.
- Robertson, Stephen. "Digital Harlem: Everyday Life 1915–1930." Accessed July 3, 2025. <http://digitalharlem.org>.
- Rockwell, Geoffrey, and Stéfan Sinclair. *Hermeneutica: Computer-Assisted Interpretation in the Humanities*. MIT Press, 2022.
- Rogers, Katina. *Putting the Humanities PhD to Work: Thriving in and beyond the Classroom*. Duke University Press, 2020.
- Rosenberg, Daniel. "Data before the Fact." In *Raw Data Is an Oxymoron*, edited by Lisa Gitelman, 15–40. MIT Press, 2013.
- Ross, Shawna, and Andrew Pilsch. *Humans at Work in the Digital Age: Forms of Digital Textual Labor*. Routledge, 2020.
- Said, Edward. *The World, the Text, and the Critic*. Harvard University Press, 1982.
- Saitō, Kōhei. *Marx in the Anthropocene: Towards the Idea of Degrowth Communism*. Cambridge University Press, 2022.
- Salmi, Hanny. *What Is Digital History?* Polity Press, 2020.
- Sánchez Prado, Ignacio. "The Humanities Are Worth Fighting For." July 14, 2023. <https://lareviewofbooks.org/article/the-humanities-are-worth-fighting-for/>.
- Sands, Alyce E. "MLA, ERIC, and the Future." *Computers and the Humanities* 1, no. 4 (1967): 113–22. JSTOR. Accessed June 18, 2025. www.jstor.org/stable/30199224.
- Santos, Boaventura de Sousa. "Boaventura de Sousa Santos." In *Conversations in Postcolonial Thought*, edited by Katy P. Sian, 63–80. Palgrave Macmillan, 2014.
- Sáenz Cabrerizo, Amelia. "Digital Humanities or Hypercolonial Studies?" RICT, Responsible Innovation, 2013. <http://responsible-innovation.org.uk/torrii/resource-detail/1249>.
- Saussure, Ferdinand de. *Course in General Linguistics*. Edited by Charles Bally and Albert Sechehaye. Translated by Wade Baskin. Philosophical Library, 1959.
- Schmidt, Ben. *Humanities Data Analysis in Modern R*. 2019. Accessed March 25, 2026. <http://benschmidt.org/HDA/introduction.html>.
- "Missing Humanists." *Sapping Attention* (blog), December 17, 2010. Accessed March 25, 2026. <https://benschmidt.org/sappingattention/missing-humanists/>.
- "Two Volumes: The Lessons of Time on the Cross." Personal Blog, December 5, 2019. Accessed March 25, 2026. <https://benschmidt.org/post/2019-12-05-totc/2019-aha/>.
- "When You Have a MALLET, Everything Looks Like a Nail." Benschmidt.org, November 2, 2012. Accessed March 25, 2026. <https://benschmidt.org/sappingattention/when-you-have-mallet-everything-looks/>.

- Schreibman, Susan, and Ray Siemens. *A Companion to Digital Literary Studies*. Blackwell, 2007.
- Schreibman, Susan, Ray Siemens, and John Unsworth. *A Companion to Digital Humanities*. Blackwell, 2004.
- , —, and —. *A New Companion to Digital Humanities*. Blackwell, 2016.
- Schuurman, Nadine. "Critical GIS: Theorizing an Emerging Discipline." *Cartographica* 36, no. 4 (1999): 1–108.
- Scripta Sinica. Institute of History and Philology, Academic Sinica. Accessed July 15, 2025. www1.ihp.sinica.edu.tw/en/Research/Groups/scriptaSinica.
- Selisker, Scott. "The Bechdel Test and the Social Form of Character Networks." *New Literary History: A Journal of Theory and Interpretation* 46, no. 3 (Summer 2015): 505–23. <https://doi.org/10.1353/nlh.2015.0024>.
- Sharpe, Christina. *In the Wake: On Blackness and Being*. Duke University Press, 2016.
- Shin, J. C., Gerard A. Postiglione, and K. C. Ho. "Challenges for Doctoral Education in East Asia: A Global and Comparative Perspective." *Asia Pacific Education Review* 19, no. 2 (June 1, 2018): 141–55. <https://doi.org/10.1007/s12564-018-9527-8>.
- Shore, Daniel. "Shakespeare's Constructicon." *Shakespeare Quarterly* 66, no. 2 (2015): 113–36. <https://dx.doi.org/10.1353/shq.2015.0017>.
- Sider, Robert. *Erasmus on the New Testament*. University of Toronto Press, 2020.
- Siemens, Raymond, and Susan Schreibman. *A Companion to Digital Literary Studies*. Wiley-Blackwell, 2013.
- Skinner, Quentin. "Meaning and Understanding in the History of Ideas." *History and Theory* 8, no. 1 (1969): 3–53. <https://doi.org/10.2307/2504188>.
- "Slave Voyages." www.slavevoyages.org/. Rice University. Accessed August 30, 2025.
- Sneha, Puthiya Purayil. "Alternative Histories of the Digital Humanities: Tracing the Archival Turn." In *Global Debates in the Digital Humanities*, edited by Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte. University of Minnesota Press, 2022. Accessed May 15, 2023. <https://bit.ly/47TDnpB>.
- So, Richard Jean. "Introduction: Contemporary Culture after Data Science." *Journal of Cultural Analytics* 6, no. 2 (2021). <https://doi.org/10.22148/001c.22335>.
- Srnicek, Nick. *Platform Capitalism*. Polity Press, 2016.
- Stallybrass, Peter. "Against Thinking." *PMLA* 122, no. 5 (2007): 1580–87. www.jstor.org/stable/25501804.
- Stasi, Paul, ed. *Raymond Williams at 100*. Rowman and Littlefield, 2021.
- Stauffer, Andrew. "My Old Sweethearts: On Digitization and the Future of the Print Record." In *Debates in the Digital Humanities 2016*, edited by Matthew Gold and Lauren Klein. University of Minnesota Press, 2016. Accessed May 15, 2023. <https://bit.ly/4ecVj2B>.

- Stauffer, Andrew, and Kristin Jensen. *Book Traces*. n.d. Accessed March 25, 2026. <https://booktraces-public.lib.virginia.edu/>.
- Stiegler, Bernard. *Technics and Time, 1: The Fault of Epimetheus*, translated by George Collins and Richard Beardsworth, Stanford University Press, 1998.
- Stoler, Ann Laura. *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense*. Princeton University Press, 2008.
- Stommel, Jesse. "How to Ungrade." March 11, 2018. Accessed July 9, 2025. www.jessestommel.com/how-to-ungrade/.
- Stommel, Jesse, Chris Friend, and Sean Michael Morris, eds. *Critical Digital Pedagogy: A Collection*. Hybrid Pedagogy Inc., 2020. <https://pressbooks.pub/cdpcollection/>.
- Stump, Mary Mikel, and Grayson Lawrence. "Connecting Physical and Digital Worlds: A Case Study of Quick Response Codes and Social Media in a Gallery Setting." *International Journal of Design in Society* 6, no. 3 (2013): 79–95. <https://doi.org/10.18848/2325-1328/CGP/v06i03/38508>.
- Sula, Chris Alen, and Heather V. Hill. "The Early History of Digital Humanities: An Analysis of Computers and the Humanities (1966–2004) and Literary and Linguistic Computing (1986–2004)." *Digital Scholarship in the Humanities* 34, no. Supplement_1 (2019): i190–206. <https://doi.org/10.1093/llc/fqz072>.
- Sullivan, Elaine. *Constructing the Sacred: Visibility and Landscape at the Egyptian Necropolis of Saqqara*. Stanford University Press, 2020. <https://constructingthesacred.org/>.
- Svensson, Patrik, and David Theo Goldberg. *Between Humanities and the Digital*. MIT Press, 2015.
- Táíwò, Olúfẹ̀mí O. *Elite Capture: How the Powerful Took over Identity Politics (and Everything Else)*. Haymarket Books, 2022.
- Tally, Robert. *Geocritical Explorations: Space, Place, and Mapping in Literary and Cultural Studies*. Palgrave, 2011.
- Taylor, Natalie Greene, Karen Kettlich, Ursula Gorham, and Paul T. Jaeger. *Libraries and the Global Retreat of Democracy: Confronting Polarization, Misinformation, and Suppression*. Emerald Publishing Ltd., 2022. <https://doi.org/10.1108/S0065-2830202150>.
- Terras, Melissa. "Disciplined: Using Educational Studies to Analyse 'Humanities Computing.'" *Literary and Linguistic Computing* 21, no. 2 (2006): 229–46. Reprinted in Melissa Terras, Julianne Nyhan, and Edward Vanhoutte, *Defining Digital Humanities: A Reader*, 67–95. Ashgate Publishing Company, 2013.
- "Quantifying Digital Humanities." Melissa Terras' Blog. 2012. Accessed July 15, 2025. www.ucl.ac.uk/infostudies/melissa-terras/DigitalHumanitiesInfographic.pdf.
- Terras, Melissa, and Julianne Nyhan. "Father Busa's Female Punch Card Operatives." In *Debates in the Digital Humanities 2016*, edited by Matthew Gold and Lauren Klein. University of Minnesota Press,

- Manifold. Accessed October 11, 2023. <https://dhdebates.gc.cuny.edu/read/untitled/section/1e57217b-f262-4f25-806b-4fcf1548beb5>.
- Terras, Melissa, Julianne Nyhan, and Edward Vanhoutte. *Defining Digital Humanities: A Reader*. Ashgate Publishing Company, 2013.
- Thesaurus Linguae Graecae: A Digital Library of Greek Literature*. University of California, Irvine. Accessed March 25, 2026. <https://stephanus.tlg.uci.edu/>.
- Thomas, Rhondda Robinson. *Call My Name, Clemson: Documenting the Black Experience in an American University Community*. University of Iowa Press, 2020.
- Thomas II, William G., "Computing and the Historical Imagination." In Schreibman et al., *Companion to the Digital Humanities* (Blackwell Publishing, 2004), 56–68.
- Tolonen, Mikko, Eetu Mäkelä, Ali Ijaz, and Leo Lahti. "Corpus Linguistics and Eighteenth Century Collections Online (ECCO)." *Research in Corpus Linguistics* 9, no. 1 (2021): 19–34. <https://doi.org/10.32714/ricl.09.01.03>.
- Tonra, Justin. "Book History and Digital Humanities in the Long Eighteenth Century." *Eighteenth-Century Studies* 54, no. 4 (2021): 765–83. <https://doi.org/10.1353/ecs.2021.0091>.
- Trettien, Whitney, Darren Mueller, and Mary Caton Lingold, eds. *Digital Sound Studies*. Duke University Press, 2018. <https://doi.org/10.1353/book.65095>.
- Trouillot, Michel-Rolph. *Silencing the Past: Power and the Production of History*. Beacon Press, 1995.
- Tsien, Tsuen-Hsui. "Paper and Printing." In *Science and Civilization in China*, vol. 5 part 1, edited by Joseph Needham, 201–17. Cambridge University Press, 1985.
- Turkel, William J., and Adam Crymble. "Python Introduction and Installation." *Programming Historian*, July 17, 2012. Updated July 28, 2020. <https://programminghistorian.org/en/lessons/introduction-and-installation>.
- van den Berg, Thomas, and Miklós Kiss. *Film Studies in Motion: From Audiovisual Essay to Academic Research Video*. University of Groningen, July 2016. <https://scalar.usc.edu/works/film-studies-in-motion/index>.
- Vane, Olivia. "I: Drawing Water (in Old Maps)." March 12, 2021. Accessed March 25, 2026. <https://bit.ly/4ePNekB>.
- Vanhoutte, Edward. "The Gates of Hell: History and Definition of Digital | Humanities | Computing." In *Defining Digital Humanities: A Reader*, edited by Melissa Terras, Julianne Nyhan, and Edward Vanhoutte, 119–56. Ashgate Publishing Company, 2013.
- Varoufakis, Yanis. *Technofeudalism: What Killed Capitalism*. Melville House Publishing, 2023.
- Vertesi, Janet, and David Ribes. *digitalSTS: A Field Guide for Science & Technology Studies*. Princeton University Press, 2019.
- "Virtual St. Paul's Project." Accessed June 25, 2025. <https://vpcathedral.chass.ncsu.edu/>.

- Vose, Robin. *The Index of Prohibited Books: Four Centuries of Struggle over Word and Image for the Greater Glory of God*. University of Chicago Press, 2022.
- Wall, John N. "Materializing Lost Time and Space: The Virtual St Paul's Cathedral Project." *IDEAH* 4, no. 3. <https://doi.org/10.21428/f1f23564.549911e9>.
- Walsh, Brandon. "Finding a Way In." *Walshbr.com* (blog). May 22, 2023. Accessed July 15, 2025. <http://walshbr.com/blog/finding-a-way-in/>.
- Walsh, Melanie. *Introduction to Cultural Analytics & Python*, Version 1 (2021), <https://doi.org/10.5281/zenodo.4411250>.
- Walsh, Melanie, and Maria Antoniak. "The Goodreads 'Classics': A Computational Study of Readers, Amazon, and Crowdsourced Amateur Criticism." *Journal of Cultural Analytics* 6, no. 2 (April 20, 2021). <https://doi.org/10.22148/001c.22221>.
- Warner, John. "ChatGPT Can't Teach Writing." *Inside Higher Ed*, January 22, 2024. Accessed February 2, 2024. www.insidehighered.com/opinion/blogs/just-visiting/2024/01/22/arizona-state-announces-plan-give-education.
- Warner, Michael. "Publics and Counterpublics." *Public Culture* 14, no. 1 (January 1, 2002): 49–90.
- Wasielewski, Amanda. *Computational Formalism: Art History and Machine Learning*. The MIT Press, 2023.
- Watkins, Gareth. "AI: The New Aesthetics of Fascism." *New Socialist*, February 9, 2025. Accessed March 25, 2026. <https://newsocialist.org.uk/transmissions/ai-the-new-aesthetics-of-fascism/>.
- Watson, B. M. "Please Stop Calling Things Archives." January 22, 2021. Accessed July 1, 2025. <https://bit.ly/4lcvMbv>.
- Watters, Audrey. "The Ed-Tech Imaginary." June 21, 2020. Accessed March 25, 2026. <https://hackededucation.com/2020/06/21/imaginary>.
- _____. *Teaching Machines: The History of Personalized Learning*. The MIT Press, 2021.
- Weingart, Scott. "Demystifying Networks." December 14, 2011. Accessed July 1, 2025. www.scottbot.net/HIAL/index.html?p=6279.html.
- Wernimont, Jacqueline, and Elizabeth Losh. "Introduction." In *Bodies of Information: Intersectional Feminism and Digital Humanities*, edited by Jacqueline Wernimont and Elizabeth Losh, 1–25. University of Minnesota Press, 2019.
- Wetherby, Leif. *Language Machines: Cultural AI and the End of Remainder Humanism*. University of Minnesota Press, 2025.
- Wharton, Robin. "Bend until It Breaks: Digital Humanities and Resistance." In *Disrupting the Digital Humanities*, edited by Dorothy Kim and Jesse Stommel, 377–400. Punctum Books, 2018. <https://doi.org/10.2307/j.ctv19cwdqv.26>.
- White, John W., and Heather Gilbert. *Laying the Foundation: Digital Humanities in Academic Libraries*. Purdue University Press, 2016. <http://muse.jhu.edu/book/48001>.

- Williams, Jeffrey J. "University Studies." In *The Bloomsbury Handbook of Literary and Cultural Theory*, edited by Jeffrey Di Leo, 323–32. Bloomsbury Academic, 2019.
- Williams, Raymond. *Keywords: A Vocabulary of Culture and Society*. Oxford University Press, 1976.
- Wilson, Emma Annette. *Digital Humanities for Librarian*. Rowman & Littlefield, 2020.
- Wilson, Jeffrey R., and Zoe Hope Bulaitis. "What Is Public Humanities?" *Public Humanities* 1 (2025): e17. <https://doi.org/10.1017/pub.2024.25>.
- Wisbey, Roy, and M. F. Bott. "Literary and Linguistic Computing Centre, Cambridge." In *Les machines dans la linguistique*, 39–48. De Gruyter, 2020. <https://doi.org/10.1515/9783112315354-009>.
- Wokalek, Marie. *Die schöne Seele als Denkfigur: zur Semantik von Gewissen und Geschmack bei Rousseau, Wieland, Schiller, Goethe*. Wallstein, 2011.
- Wolfram, Stephen. "What Is ChatGPT Doing . . . And Why Does It Work?" *Stephen Wolfram | Writings*, February 14, 2023. Accessed March 25, 2026. <https://bit.ly/3NE1Bxp>.
- "Women Writers Project." Northeastern University. Accessed July 5, 2025. www.wwp.northeastern.edu.
- Zorich, Diane. "A Survey of Digital Cultural Heritage Initiatives and Their Sustainability Concerns." Council on Library and Information Resources, 2003. Accessed March 25, 2026. www.clir.org/pubs/reports/pub118/.

Index

- #transformDH, 18
- A Knotted Line project, 54
- Africa, 112
- African diaspora, 112
- Alliance of Digital Humanities Organizations, 4
- American Working Class History Project, 51
- annotation, 53
 - and Hypothes.is, 53
 - and Manifold, 53
 - as scholarly practice, 66
- ArcGIS, 79
- archaeology, 95–7
- archive, 31, 42
 - as profession, 44
 - of slavery, 45
- art and art history, 101–3
- artificial intelligence, 120
 - critique of, 123
- Asociación Argentina de Humanidades Digitales, 56
- Association of Computers and the Humanities, 3
- Association of Literary and Linguistic Computing, 3, 4
- bibliography, 21, 29
 - annotated, 30, 69
 - descriptive, 29
 - subject bibliography, 29
- Big Data, 102
- Black and African diaspora, 111–13
- book history, 21
- Booktraces, 40
- boundary object, 9, 10, 13
- Busa, Father Roberto, 18, 34, 118
- Californian Ideology, 117
- Call My Name, Clemson, 92
- Cambridge Group for the History of Population and Social Structure, 49, 93
- Center for Digital Narrative at Bergen, 52
- Center for History and New Media, 52
- citation manager, 30
- cliometrics, 47
- codes and coding, 77–8
- Colet, John, 19
- CommentPress, 53, 67
- Computational Humanities Research Conference, 6
- computational linguistics, 71
- computational literary studies, 74, 76
- concordance, 18, 33, 34
- contact zone, 9
- corpus linguistics, 55
- Critical AI, 122
- Critical AI Studies, 16, 119
- critical making, 22
- Critical University Studies, 118, 119
- critique, 19
 - feminist, 113–16
 - intersectional, 114, 115
 - postcolonial, 113
 - queer of color, 116

- Cultural Analytics, 5, 76
- cultural heritage, 38
- Cultural Studies, 23, 76, 87
- culture, 75–6
- Culturomics, 76
- D'Ignazio, Catherine, 115
- data
 - and capta, 73
 - history of, 73
 - situated, 73
- Data and Society, 119
- database, 31, 44
- decolonial, 110
- decolonial mapping, 94
- degrowth, 117
- DH Center, 52
- dictionary, 24
- digital forensics, 24
- digital genealogy, 52
- Digital Harlem, 90
- Digital History, 11
 - and Big History, 53
 - and mass digitization, 51
 - and the web, 50
 - and Web 2.0, 53
 - History Web Era, 51
- digital humanities
 - definition, 1, 2, 4, 7, 8, 11
 - intersectional definition, 8
- Digital Humanities Summer Institutes, 52
- digital mediation, 6, 14, 16, 119
- digital pedagogy, 11
- digital publication platforms, 67
- Digital Research Infrastructure for the Humanities, 38
- Digital Rhetoric, 16
- digital scholarly edition, 20–1
 - documentary edition, 20
 - social edition, 20
- digital studies, 76
- distant reading, 66
- Dublin Core, 38
- Early English Books Online, 52
- Eco, Umberto, 30
- EdTech, 50, 80
 - and datafication, 80
- Educational Research Information Center, 80
- Eighteenth Century Collections Online, 52, 114
- Electronic Literature, 40, 85
- Emily Dickinson Archive, 115
- encyclopedia, 24
- Erasmus, Desiderius, 19
- Ethnomusicology, 98
- Gadamer, Hans-Georg, 68
- gambiarras, 59
- game studies, 99–101
- geographic information systems (GIS), 89, 92, 95
- Global North, 111
- Global Outlook Digital Humanities, 55
- Goodreads, 72
- Google Books, 52
- Hegel, Georg Wilhelm Friedrich, 16, 33
- Herodotus, 41–2, 57
- History
 - demographic, 49
 - New Economic, 5, 47
 - social, 51
- Humanities Computing, 3, 11, 50, 55, 76, 115, 118
 - the history of, 3, 18
- Hypercard, 98
- immediacy, 117
- index, 33
- Index Librorum Prohibitorum*, 33
- Internet Archive, 51
- JSTOR, 31
- jugaads, 59
- keywords, 69

- Kirschenbaum, Matthew, ix, 7, 39, 121
 Klein, Lauren, 115
 Kornbluh, Anna, 44, 117
 large language models, 110
 and training data, 52
 library, 27
 Library and Information Science, 3, 27–9, 79, 118
 Literary and Linguistic Computing Center, 4
 Losh, Elizabeth, 115
 Lovelace, Ada, 3, 26
 Lukács, Georg, 44
 Media Studies, 16, 87
 mediation, 1
 historical, 37, 65
 historiographic, 36
 linguistic, 14
 Miles, Josephine, 3, 33, 34
 minimal computing, 110
 Museum Studies, 79
 Musicology, 98
 natural language processing, 13
 network analysis, 91, 92
 and the Bechtel Test, 91
 New Media Studies, 23
 New Roots/Nuevas Raíces project, 53
 Newton Project, 51
 Nogarola, Isotta, 19
 Omeka, 52, 54
 Ong, Walter, 12
 open-access movement, 32
 Orlando Project, the, 115
 Perseus Project, 43
 Perusall, 67
 Petrarch, Francesco, 17
 philology, 17
 Photogrammar, 90
 platform capitalism, 10
 Platform Studies, 16, 76, 101, 119
 Proceedings of the Old Bailey, 5, 71
 Project Gutenberg, 51
 Project MUSE, 31
 public digital humanities, 60
 public humanities, 82–4
 Raley, Rita, 7
 Rose Hill Plantation (Jamaica), 92
 Rossetti Archive, The, 85
 Scalar, 67, 97
 Science and Technology Studies, 110, 121
 Scripta Sinica, 43, 55
 Slave Revolt in Jamaica, 54, 92
 sound, 98–99
 Sound Studies, 26
 South Africa, 113
 Spatial History, 93
 spatial humanities, 92
 Stiegler, Bernard, 107
 stochastic parrots, 120
 stylistics, 23
 Táíwò, Olúfemi O., 115
 Text Encoding Initiative, 4, 65, 66
 THATcamp (Technology and the Humanities camp), 52
Time on the Cross, 47
 topic modeling, 33, 91
 Trans-Atlantic Slave Trade Database, 48
 Transcribe Bentham Project, 53
 Valley of the Shadow, The, 54, 85
 video essay, 97
 videographic criticism, 97–8
 Virtual St. Paul's Cathedral Project, 39
 visualization, 85–7
 versus illustration, 87–90
 Voyant, 90
 Walt Whitman Archive, 20, 44
 Wayback Machine, 39

Wernimont, Jacqueline, 115
Wikipedia, 27
William Blake Archive, The, 85
Women Writers Project, 115
word
 definitions, 13
word embeddings, 33

workflow
 and Programming Historian,
 72
 digital, 72
working materials, 10, 65
Zotero, 52

Cambridge Introductions to...

Authors

Margaret Atwood Heidi Macpherson
Jane Austen (second edition) Janet Todd
Mikhail Bakhtin Ken Hirschkop
Samuel Beckett Ronan McDonald
Walter Benjamin David Ferris
Lord Byron Richard Lansdown
Chaucer Alastair Minnis
Chekhov James N. Loehlin
J. M. Coetzee Dominic Head
Samuel Taylor Coleridge John Worthen
Joseph Conrad John Peters
Jacques Derrida Leslie Hill
Charles Dickens Jon Mee
Emily Dickinson Wendy Martin
George Eliot Nancy Henry
T. S. Eliot John Xiros Cooper
William Faulkner Theresa M. Towner
F. Scott Fitzgerald Kirk Curnutt
Michel Foucault Lisa Downing
Robert Frost Robert Faggen
Gabriel Garcia Marquez Gerald Martin
Nathaniel Hawthorne Leland S. Person
Zora Neale Hurston Lovalerie King
James Joyce Eric Bulson
Kafka Carolin Duttlinger
Thomas Mann Todd Kontje

Christopher Marlowe Tom Rutter
Herman Melville Kevin J. Hayes
Milton Stephen B. Dobranski
George Orwell John Rodden and John Rossi
Sylvia Plath Jo Gill
Edgar Allan Poe Benjamin F. Fisher
Ezra Pound Ira Nadel
Marcel Proust Adam Watt
Jean Rhys Elaine Savory
Edward Said Conor McCarthy
Shakespeare Emma Smith
Shakespeare's Comedies Penny Gay
Shakespeare's History Plays Warren Chernaik
Shakespeare's Poetry Michael Schoenfeldt
Shakespeare's Tragedies Janette Dillon
Tom Stoppard William W. Demastes
Harriet Beecher Stowe Sarah Robbins
Mark Twain Peter Messent
Edith Wharton Pamela Knights
Walt Whitman M. Jimmie Killingsworth
Virginia Woolf Jane Goldman
William Wordsworth Emma Mason
W. B. Yeats David Holdeman

Topics

American Literary Realism Phillip Barrish
American Poetry Since 1945 Andrew Epstein
The American Short Story Martin Scofield
Anglo-Saxon Literature Hugh Magennis

British Poetry, 1945–2010 Eric Falci
British Fiction, 1900–1950
Contemporary American Fiction Stacey Olster
Comedy Eric Weitz
Creative Writing David Morley
Early English Theatre Janette Dillon

Early Modern Drama, 1576–1642
Julie Sanders
The Eighteenth-Century Novel
April London
Eighteenth-Century Poetry John Sitter
English Theatre, 1660–1900
Peter Thomson
French Literature Brian Nelson
Francophone Literature Patrick Corcoran
German Poetry Judith Ryan
Literary Posthumanism Joseph Tabbi
Literature and the Environment
Timothy Clark
Modern British Theatre
Simon Shepherd
Modern Irish Poetry Justin Quinn
Modernism Pericles Lewis
Modernist Poetry Peter Howarth
Narrative (second edition) H. Porter
Abbott
Narrative (third edition) H. Porter Abbott
The Nineteenth-Century American Novel
Gregg Crane

The Novel Marina MacKay
Old Norse Sagas Margaret
Clunies Ross
Performance Theory Simon Shepherd
Postcolonial Literatures C. L. Innes
Postmodern Fiction Bran Nicol
Queer and Trans Studies Mark Rifkin
Romantic Poetry Michael Ferber
Russian Literature Caryl Emerson
Satire Jonathan Greenberg
Scenography Joslin McKinney and
Philip Butterworth
The Short Story in English
Adrian Hunter
Theatre Directing Christopher Innes and
Maria Shevtsova
Theatre Historiography Thomas
Postlewait
Theatre and Literature of the Absurd
Michael Y. Bennett
Theatre Studies Christopher B. Balme
Tragedy Jennifer Wallace
Victorian Poetry Linda K. Hughes

