



Digital Research in the Arts and Humanities

HUMANS AT WORK IN THE DIGITAL AGE

FORMS OF DIGITAL TEXTUAL LABOR

Edited by
Shawna Ross and Andrew Pilsch



Humans at Work in the Digital Age

Humans at Work in the Digital Age explores the roots of twenty-first-century cultures of digital textual labor, mapping the diverse physical and cognitive acts involved, and recovering the invisible workers and work that support digital technologies.

Drawing on 14 case studies organized around four sites of work, this book shows how definitions of labor have been influenced by the digital technologies that employees use to produce, interpret, or process text. Incorporating methodology and theory from a range of disciplines and highlighting labor issues related to topics as diverse as census tabulation, market research, electronic games, digital archives, and 3D modeling, contributors uncover the roles played by race, class, gender, sexuality, and national politics in determining how narratives of digital labor are constructed and erased. Because each chapter is centered on the human cost of digital technologies, however, it is individual people immersed in cultures of technology who are the focus of the volume, rather than the technologies themselves.

Humans at Work in the Digital Age shows how humanistic inquiry can be a valuable tool in the emerging conversation surrounding digital textual labor. As such, this book will be essential reading for academics and postgraduate students engaged in the study of digital humanities; human-computer interaction; digital culture and social justice; race, class, gender, and sexuality in digital realms; the economics of the internet; and technology in higher education.

Shawna Ross is an Assistant Professor at Texas A&M University, where she researches and teaches on British modernism, Victorian literature, and the digital humanities. Her monograph *Charlotte Brontë at the Anthropocene* is under contract at SUNY Press, while her co-written collection *Reading Modernism with Machines* was released in 2016 and her co-written book *Using Digital Humanities in the Classroom* was released in 2017. Her other works may be found in *Digital Humanities Quarterly*, *Victorians*, the *Journal of Interactive Pedagogy*, the *Journal of Modern Literature*, the *Henry James Review*, and *Modernism/modernity* PrintPlus, among other venues.

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Forms of Digital Textual Labor

Edited by Shawna Ross
and Andrew Pilsch

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Contents

<i>List of figures</i>	vii
<i>Acknowledgments</i>	viii
<i>List of contributors</i>	ix
 Introduction: toward a humanist account of digital labor	 1
ANDREW PILSCH AND SHAWNA ROSS	
 PART I	
Government	15
 1 Racialized surveillance and the US census: tabulating labor	17
J. D. SCHNEPF	
 2 Digital labor and trans histories: resisting assigned gender in the early mainframe era	32
MAR HICKS	
 3 Big data and universal design in <i>The Home Market</i> : are there market researchers in Utopia?	55
MEGAN FARAGHER	
 PART II	
Industry	75
 4 Working in the shadow of the object	77
REBECCA PERRY	
 5 Work, play, and the banality of the digital: boredom as form	97
PAUL BENZON	

vi *Contents*

6 Labor, data, and amateur inventor in the age of the Silicon Valley boy billionaire: Edisonade, Zuckerbergade	117
NICHOLAS M. KELLY	
7 Digitizing labor in the Google Books Project: gloved fingertips and severed hands	133
ANDREA ZEFFIRO	
PART III	
Out of the office	155
8 Reading women's labor in the cybernetic seventies: vital work	157
MADELEINE MONSON-ROSEN	
9 The economy of online comments	172
JOHN R. GALLAGHER	
PART IV	
University	185
10 The digital labor of blended learning: the Reading Cities project	187
MELISSA DINSMAN, CARRIE JOHNSTON, AND ELIZABETH RODRIGUES	
11 Using video games to test the boundaries between work, play, and cultural criticism: the labor of critique	205
MATTHEW KELLY	
12 (Re)canonizing world literature with digital archives and online magazines from Hong Kong, Taiwan, and Mainland China	223
JESSICA SIU-YIN YEUNG	
13 The stakes of digital labor in the twenty-first-century academy: the revolution will not be Turkified	239
ROOPIKA RISAM	
14 Scaling black feminisms: a critical discussion about the digital labor of representation	250
ALEXANDRIA LOCKETT	
<i>Index</i>	267

Figures

1.1	“Card Punch Operators Working on Population Cards, Negro Section”	19
1.2	“Population and Housing Editors. Negro Section”	19
2.1	Jonathan Ferguson in his pilot’s license photograph from 1939	35
2.2	The Queen Mother inaugurates the EMIDEC 2400	38
2.3	Photo of the EMIDEC 2400’s many tape drives	39
3.1	Age and sex infographic	60
3.2	Isotype figure of “Man”	66
3.3	Isotype figure of an “Unoccupied or Retired” Gentleman	67
3.4	Isotype figure of a “Housekeeper”	68
3.5	Isotype figures of various classes	69
4.1	Pixar <i>Teapots</i> from various years	82
4.2	Pixar <i>Teapot</i> number 0090	87
4.3	A 3D model of the Newell’s <i>Teapot</i>	89
5.1	Douglas Coupland, <i>Microserfs</i> (1995)	101
5.2	Douglas Coupland, <i>jPod</i> (2006)	102
5.3	Coupland, <i>jPod</i> : The Beginning of 8,363 Prime Numbers	106
5.4	Coupland, <i>jPod</i> : The Beginning of 58,894 Random Numbers	107
7.1	Employee’s hand covers text	138
7.2	Employee holds paper ephemera	139
7.3	Employee’s hands interact with printed hands	141
9.1	Histogram of average comment length	178
10.1	Reading Cities: a digital “ <i>Writerly</i> ” text	193
10.2	Data collection in F. Scott Fitzgerald’s “May Day”	196
11.1	Screenshot from the student-designed <i>Probably Secure</i>	215

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Introduction

Toward a humanist account of digital labor

Andrew Pilsch and Shawna Ross

In *Gramophone, Film, Typewriter*, Friedrich Kittler succinctly exemplifies a common concern about digitality in 1980s media philosophy. “In computers,” he argues, “everything becomes number: imageless, soundless, wordless quantity.”¹ Continuing in this vein, he observes that “a total connection of all media on a digital base erases the notion of the medium itself” and of “hooking up technologies to people,” with the result that “absolute knowledge can run as an endless loop.”² Amplifying the ability of digital technology to converge media into an undifferentiated stream of 1s and 0s, Kittler articulates an anxiety that, on the one hand, digital media reduce the specific operations of mechanical media to digital operations—Kittler lists “modulation, transformation, synchronization; delay, memory, transposition; scrambling, scanning, mapping”³—that themselves do not differentiate audio and video from text or still images. On the other hand, these streams, only ever differentiated because of the specifics of human sense organs, can now circulate without reference to humans as the destination. While Kittler sounds the alarm, the convergence of information into bit-streams is celebrated in works such as Nicholas Negroponte’s *Being Digital*. Capturing the excitement of the arrival of the personal computer in the 1980s, Negroponte declares that “computing is not about computers anymore. It is about living.”⁴ This brash pronouncement grounds his argument that the convergence of physical media into digital bits is an unmixed boon for creativity and business activity. While Kittler’s dystopian take starkly contrasts with Negroponte’s internet utopianism, both exemplify how the arrival of the digital as a mainstream phenomenon spurred a reorganization of cultural imaginaries in the late 1980s and early 1990s.

Kittler embodies a stance that is all-too-pervasive in critical accounts of the digital in a variety of academic fields within the humanities. His dark vision suits both the skepticism of humanist scholarship’s paranoid hermeneutics and the cautious nostalgia of textual scholars’ understandable attachment to the rich plurality of material textual forms, from manuscripts and incunabula to deluxe editions and heritage printing presses.⁵ But our focus in this volume is less on texts themselves than on the textual forms of *labor*. Such labors may consist of producing, processing, or analyzing

text in digital forms, training others to do so, or manipulating text-heavy platforms in the service of extra-textual goals. Though useful approaches to understanding digital labor are not entirely exempt from the convergent tendency exemplified by Kittler, as the chapters we have assembled in this volume collectively argue, actual practices of digital labor do not solely perform a convergence into undifferentiated data streams, unified by a series of translatable operations, because they are practiced by laboring human bodies. Carefully describing, categorizing, and analyzing these diverse practices reveal the wide scope and variety of the forms of human digital labor, even when only its textual forms are under investigation. By focusing on cultures of labor as they have been practiced throughout the history of digital textuality and across a variety of institutions, this volume is intended as a rejoinder to convergent tendencies in the way we account for digital labor.

Making this rejoinder is necessary and timely because labor crises in many realms of digital textual production, including publishing, journalism, and academia, have called attention to unjust hiring practices, uneven compensation schemes, and untenable working conditions.⁶ The urgent challenge presented by these labor shifts to humanist assumptions about individual self-determination and qualitative differentiation is evident in Kittler's widely cited essay "There is No Software," which pessimistically refers to "the body of real numbers formerly known as nature" to highlight the growing conversion of the real world from a nature apart from human existence into a source of information that can be extrapolated, calculated, and circulated for profit.⁷ Again, we invoke Kittler because of the popularity in the humanities to reproduce his tendency to believe that the world has, indeed, been thoroughly and permanently reduced to information and that an abstract, undifferentiated concept of "technology" is sufficient to identify the practices by which this reduction is effected. As a result, even critically astute works of humanist scholarship on digital cultures cite and closely follow Kittler without thoroughly interrogating his foundational premises that, to quote the memorable title of another representative article, "All That Is Solid Melts Into Software."⁸ Even those who take exception to some of Kittler's theses nevertheless treat all data as ontologically the same and, therefore, all human interactions with it to be both theoretically and practically identical.⁹ While this mentality is still widely held in the technology industry—with the jargony anthimeria "monetize" standing as a powerful emblem for this belief in the all-encompassing liquidation of all forms of value into a formless sea of featureless information—humanist scholars have the methodological tools to differentiate types of digital work in order to launch more effective critiques against unfair labor practices.

A much more complex relationship between world and data, one that transcends the idea of viewing the world solely as a repository of data awaiting digitization, can be better mapped by attending to the moments where digital labor practices collide with, and encounters resistance from, practices that are more traditionally recognized as labor (such as manual

labor). In this volume, we seek to understand these collisions. Doing so allows us to resist digital convergence by thinking about cultures of digital labor from updated historical, economic, and intellectual contexts. In *Spook Country*, the novelist William Gibson provides a useful rubric for identifying such telling moments. He observes that cyberspace is “everting,” which is to say that technologies, such as addressability or hyperlinking, are becoming available offline via technologies such as GPS or the mobile phone.¹⁰ One character cannily observes that “once it everts, then there isn’t any cyberspace, is there?”¹¹ In an everted cyberspace, the world becomes addressable, just as fully as the internet is addressed by protocols such as TCP/IP and DNS. Artistic potential, not just power differentials, inhere in these sites of addressability. For example, Gibson sets a portion of *Spook Country* among artists using GPS to build Net Art that is findable in offline spaces. These artistic activities highlight the alternate direction of digital culture made possible by mobile and ubiquitous computing. Gibson’s models of evergence dramatize data’s movement *toward* and into the world—a far cry from Kittler’s model of computation as hoovering up the world as data to convert everything into computable data streams, a model in which offline space moves toward cyberspace.

This latter movement, as data feeds back into offline spaces, is important for how this collection thinks through and with digital labor. In his influential attempt to historicize contemporary economics, Maurizio Lazzarato defines “immaterial labor,” a word he coins to identify “a new conception of what work is nowadays and what new power relations it implies.”¹² For Lazzarato, this new form of work “produces the informational and cultural content of the commodity,” but not in a physical form.¹³ Under this heading, he classifies “audiovisual production, advertising, fashion, the production of software, photography, cultural activities.”¹⁴ Addressing the same question as Lazzarato (roughly, what does it mean to work today?), Franco Berardi supplies the following observation:

Work is tending to assume a uniform physical character: we sit down in front of a screen, move our fingers on the keyboard and type. But at the same time, work is a lot more diversified in the contents it elaborates. The architect, the travel agent, the programmer and the lawyer carry out the same physical gestures, but could never exchange jobs because each of them performs a specific, local task, one that is not communicable to someone who has not followed their particular educational cursus or to someone who is not familiar with that complex content of knowledges.¹⁵

We all sit at the same workstations and make the same physical gestures, Berardi observes, but the cognitive content is different, that is what matters. Once again, we find the theorist preoccupied by the immateriality of digital labor.

This misleading assumption is why humanists seeking to understand digital labor must keep in mind that Lazzarato and Berardi are rooted in a particular historical moment; their work participates in the mid-century Italian economists' project of updating Marx's theories of labor for the changing circumstances of late twentieth-century economics, a general claim put forward by Michael Hardt in the introduction to *Radical Thought in Italy*.¹⁶ In other words, their theories should be considered always in this particular historical context, rather than as automatically applicable to any form of digital labor. Moreover, both Lazzarato's treatment of digital labor as fundamentally immaterial and his exploration of how this immateriality demands a radical rethinking of foundational concepts for labor and value have led to the explosion of work predicated upon a putative collapse in the distinction between work and play in the contemporary data economy. This argument is perhaps best exemplified in Alexander Galloway's treatment of digital gold farming in *The Interface Effect*.¹⁷ By contrast, Trebor Scholz's *Uberworked and Underpaid* aligns digital labor with a more widespread "low-wage crisis," concluding that this crisis "needs to be discussed at the fold of intensified forms of exploitation online and older economies of unpaid and invisible work, especially in the home."¹⁸

The chapters in this volume explore digital labor from this perspective, focusing on the invisible, unpaid, or forgotten labors, as well as on historically shifting physical sites of digital labor, and grapple with the problem that Scholz identifies with the term "digital labor": the term's inherited alignment (through Lazzarato's concept of immateriality) with mid-century Italian Marxism's position that there is no longer an outside to work. Though we certainly agree that digital technologies have created new opportunities for economic exploitation, contending that labor is now fully abstract and immaterial unhelpfully makes particular instances of digital labor difficult to isolate. As Scholz pointedly asks, "is there anything that would be outside of digital labor?"¹⁹ Indeed, if all digital infrastructures simply provide slightly different channels for identical labor processes, and if critical analysis of labor is preoccupied with unmasking all digital leisure activities as (shockingly!) labor, this undifferentiated cynicism occludes the possibility of advancing new accounts of how digital labor works (and has worked historically) at the level of the individual worker.

Exploring this possibility is at the heart of this collection. While Scholz's broader invocation of a worldwide machine for producing and maintaining the kind of instantaneous interactions that make up cloud computing at present points toward the idea that "digital labor" could be a meaningless term—due to the way that the digital economy is both sustained by and continuing to evolve the entire infrastructure of the global economy, more generally—in this collection, we attempt a very specific intervention into the idea of immaterial labor. More specifically, each chapter works against Berardi's belief that, when we labor digitally, we merely sit at a keyboard to produce a series of motions that could be those of a lawyer, a travel agent,

an audio producer, or an English professor. Berardi's image of the laboring body reproduces on a corporeal register the more abstract argument about digital convergence we saw not only in Kittler but also in Negroponte: while what happens inside my head as I click on buttons and tap keys differentiates my clicking and tapping from the clicking and tapping of a lawyer, the fundamental motions are the same; while what happens when they are mediated for humans differentiates one stream of bits as an image from another stream of bits as a music file, the underlying bits are the same. When theorists reproduce this assumption, however, they buy into (and ask humanist scholars to buy into) the central idea of computing: that what happens *inside the computer* is the most significant phenomenon that can be opened up to analysis. But when we define the digital economy based on where it happens, we ignore the ways in which the data and algorithms inside the computer are everting everywhere around us.

A unifying observation in this collection is that these eversions have been emerging since the dawn of the digital age at the turn of the twentieth century. Moreover, the chapters presented here are able to account for these moments of eversion by focusing specifically on a particular subset of forms digital labor takes when humans interact with text-based information systems as part of their day-to-day work. Whereas Scholz dissolves the notion of digital immateriality by appealing to the broad scope of infrastructure (that is, the undeniably physical channels of the digital running through various built environments), we prefer to chart our path toward a more essentially humanist understanding of digital labor by accounting for the various practices of laboring bodies that may not officially count when the digital is solely understood in the context of the immaterial. Of particular importance to this stance is Susan Leigh Star's groundbreaking writings on invisible work in digital and infrastructural systems. Expanding upon Anslem Strauss' concept of "articulation work," Star defines it as the "work that gets things back 'on track' in the face of the unexpected, and modifies action to accommodate unanticipated contingencies. *The important thing about articulation work is that it is invisible to rationalized models of work.*"²⁰ This articulation work—typically performed by women in the workplace, with many of the most onerous tasks delegated to women of color—includes tasks like facilitating, organizing, coordinating, and tidying: all tasks that do not count, in masculine and rational models of workplace efficiency, as the "real" core of work. In the field of digital humanities, feminist interventions have already begun to challenge assumptions about the gendered aspects of computing cultures, especially through concepts of embodiment and intersectionality.²¹ Here, we aim to combine these embodied, intersectional feminist approaches with Star's socioeconomics to show how marginalized communities are exploited by digital industries—and then erased from corporate accounts of value-production.

In "Layers of Silence, Arenas of Voice," Star identifies three operations that occur to render work invisible: "creating a non-person," "disembedding

background work,” and “abstracting and manipulating indicators.”²² In the first case, “the act of working or the product of work is visible to both employer and employee, but the employee is invisible.”²³ Here, we might think of putatively automated services that are, in fact, fronts for human labor, such as the putatively automated work of digitizing text for Google Books, which was shown instead to be the work of poorly paid immigrant laborers whose presence was so distasteful to Google’s pro-AI business model that they entered and left the facility outside normal work hours in order to remain unseen by Google’s other, and more valued, employees. A second set of examples of this phenomenon include “circumstances where the workers themselves are quite visible, yet the work they perform is invisible or relegated to a background of expectation.”²⁴ In this case, we might think of the so-called sharing economy, in which someone like a driver for Lyft or Uber is clearly laboring but is required to grapple with a complex entanglement of legal fictions to emerge as an official employee of a company that insists its workers are merely sharing their time.²⁵ Included in a third type of digital labor analyzed by Star are situations in which laborer and labor disappear from view because “[f]ormal and quantitative indicators of work are abstracted away from the work setting” and because “[t]he products of work are commodities purchased at a distance from the setting of the work.”²⁶ The most obvious example of this third form of invisible work is social media, through whose platforms users’ interactions are commodified into demographic data. Consequently, value-producing labor appears to users as willfully chosen leisure activities that have no correlation with corporate profit margins. Because this third type of labor isolates the results of labor from the sites in which the bulk of the labor occurs, we might also consider the working conditions in Amazon warehouses, which are not intuitively a part of the experience of ordering a book online and having it arrive—as if by magic—on your doorstep.

We choose these three examples because none conforms to the paradigmatic model of immaterial labor as set out in Berardi: someone typing at a computer who could be doing literally anything. Digitization workers at Google cover their fingers in condoms and manipulate books through complex digital machines. Ride-sharing drivers are remaking urban traffic patterns with their endless circling for clients. Amazon warehouse workers rely on on-call ambulances to get IV fluids when they succumb to the heat and the pressure of filling orders. In each case, the body is manipulated and even the physical patterns and rhythms of existence are radically reconfigured. These forms of labor are strikingly material, but they are also out of sight, rendered invisible by the very logic of digital culture that Lazzarato and Berardi believed their work resisted. Nevertheless, examples like Uber easily spring to mind when one considers digital labor because of the attention that this company has received for its abrupt reorganization of urban geographies, not only from the mass media but also from social scientists and legal scholars.²⁷ Because most scholarly investigations into

invisible digital labor are conducted by social scientists, our use of strategies from the humanities departs significantly from extant analyses by focusing on the *human* dimensions of these technological shifts, attending to historical change, deciphering patterns of verbal and visual representation, and uncovering techniques of persuasion and education. Chapters in this collection draw from diverse humanities fields, including anthropology, comparative literature, critical data studies, critical pedagogy, critical race studies, cultural studies, digital humanities, feminist theory, game studies, history, literary criticism, media studies, queer studies, rhetoric, sociology, postcolonial theory, and writing studies. Uniting this diverse palette of methods is the adoption of textual analysis as a core humanist method for accounting for invisible digital labor. While it may seem odd to put forward textual analysis as a key means of tracing digital labor, the double nature of textuality—texts are simultaneously symbolic (language works by metaphor) and material (language is transmitted materially through individual leaves of paper and screens)—confounds the rhetoric of immateriality that our collection seeks to resist. In short, our chapters are unified by a humanist commitment to textual analysis as a key method for recovering particular moments when embodied acts of textual digital labor seem to disappear from the historical record.

Moreover, by spanning the decades from World War II to the present day, this collection provides a prehistory for theories circulating today about digital labor, including the Italian autonomism we have interrogated above, in addition to theories of cognitive capitalism and of the “attention economy.”²⁸ Science and Technology Studies historian Mar Hicks, a contributor to this collection, began assembling this prehistory from a humanist perspective with their history of the rise and fall of the predominantly female British digital workforce in their prize-winning *Programmed Inequality* in 2017.²⁹ Here, in a chapter that exemplifies this collection’s textual focus, Hicks recovers the activism of transgender employees of the British government who fought against the bureaucratic encoding of controlled vocabularies of gender identity in the British Ministry of Pensions system. Hicks’ work epitomizes our contention that we are at a position now when a sufficient historical and cultural archive has accrued around digital projects that we can sift through it to find accounts of human work that have been actively ignored by utopian reactions to the emergence of digital culture or oversimplified by pessimistic theories of digital immateriality. Paying attention to, and differentiating among, historical and present acts of digital textual labor is particularly important because theories of digital immateriality rest upon mistaken assumptions that all acts of reading and writing are identical. Consider Vilém Flusser’s argument that, in writing “there is something mechanical about the ordering, the rows, and machines do this better than people do. One can leave writing, this ordering of signs, to machines.”³⁰ Flusser’s generic pronoun “one,” in its evasion of the responsibility to identify human writers at work, reenacts in miniature the

long-term erasure of textual laborers whom this collection recovers. This privileged “one,” who can confidently “leave” tasks to the “machine,” is precisely the kind of subject who cannot see the third-world worker behind the Mechanical Turk or ignores the corporeal traces of employees on the digital pages of Google Books.

The hint of ahistoricity in Fluster’s overgeneralizations about writing takes center stage in his pessimistic claim that writing is now immaterial and therefore has “no future”:

Writing, in the sense of placing letters and other marks one after another, appears to have little or no future. Information is now more effectively transmitted by codes other than those of written signs. What was once written can now be conveyed more effectively on tapes, records, films, videotapes, videodisks, or computer disks, and a great deal that could not be written until now can be noted down in these new codes. Information coded by these means is easier to produce, to transmit, to receive, and to store than written texts. Future correspondence, science, politics, poetry, and philosophy will be pursued more effectively through the use of these codes than through the alphabet or Arabic numerals.³¹

This breathless insistence on the ease, speed, and effectiveness of digitally rendered texts emphasizes the proliferation of digital formats and devices over the acts of textual labor that make them meaningful. It also threatens to make textual analysis itself obsolete, prophesying a world where we need no critical analysis of language but only efficient training in “these new codes,” which Flusser bizarrely believes contain no ambiguity and need no interpretation. Digital humanities scholars are rightly alarmed by such a potentiality. As Wendy Hui Kyong Chun warns humanist scholars, “Our interactions with software have disciplined us,” noting that knowledge workers are not immune to this disciplining because “at a fundamental level we no longer write; through our use of word processors we have given computers that task.”³² Though Chun’s warning presents a salutary reminder not to use text technologies unreflectively, it partakes of Flusser’s overgeneralized account of digital writing practices. Against this overgeneralization are a number of recent humanist analyses of everyday infrastructures of communication, including Anna-Sophie Springer and Etienne Turpin’s *Fantasies of the Library*, Matthew Kirschenbaum’s *Track Changes*, and Lisa Gitelman’s *Paper Knowledge*.³³ This collection similarly emphasizes particular case studies—unique combinations of humans and technologies clustering in specific spaces at particular historical moments—over totalizing theories.

Approaching digital textual labor through the elaboration of concrete, bounded case studies resulted in one insight that we, the editors, had not initially anticipated: the recognition that attending to shifts in textual labor in the last eight decades reveals the significance of the development

of new sites (novel spaces) of digital labor over time. To emphasize this insight, we have organized the collection geographically. This ordering is meant to illustrate how the adoption and implementation of particular digital technologies have changed patterns of human labor in ways that are difficult to see but can be brought into the light if they are examined as simultaneously textual, spatial, and embodied (and therefore gendered and raced). Our four sites, “Government,” “Industry,” “Out of the Office,” and “University,” consider digital textual labors that occur both inside and (increasingly) outside of traditional spaces of industrial production. “Government” specifically highlights the invisible labor involved in building early data applications: censuses and other demographic instruments. Next, “Industry” takes on a variety of invisible labor practices both inside and out of traditional digital economic sites, such as startups and internet companies. Then, “Out of the Office” explores the digital labor of the home and of leisure, not only sites for surfacing traditional invisible labor but also, once again, potent sites for contesting the invisible digital labor of everyday life. Finally, “University” considers both the labor of teaching and the teaching of labor: how higher education is where digital labor happens in the classroom and where students learn how to be digital laborers after graduation. What emerges is a rewriting of contemporary accounts of the technology-enabled collapse of labor/leisure distinctions—one that applies humanist methods to place erased, embodied, embattled laborers at the center of analysis, reveals the centrality of text production and interpretation to the rise of digital economies and cultures, and rejects the technological determinism of utopian and dystopian generalizations about digital technologies. In place of these extreme positions, we offer case studies that illuminate the complex, ever-shifting constellations of human bodies, energies, motivations, interpretations, and resistances that we mean by the term “digital labor.”

The chapters collected in Part I, “Government,” deal with the early moments of digital culture, specifically the processes of tabulating and managing civic populations for the purposes of governing and marketing. J.D. Schnepf’s “Racialized Surveillance and the US Census: Tabulating Labor” resists the masculinist impulse to hail technological change as the singular source of innovation, especially in relation to the emergence of digital practices in the US Census. Based on materials from the National Archive Catalog, Schnepf traces the gendered and racialized practices that went into the prehistory of the UNIVAC era at the Census Bureau, specifically focusing on the conditions that shaped the data entry work done in the bureau’s “Negro Section,” which was segregated and only allowed to operate on data collected from African American communities. Mar Hicks’ “Digital Labor and Trans Histories” offers an account of gender hacking in one of the largest early computer systems, the British Ministry of Pensions system. Hicks shows how transgender Britons labored to hack the computer system in order to have their gender accurately reflected in the government’s computer system while the

government argued that, because of the nature of the system itself, gender was immaterial to the payment of pensions. In “Are There Market Researchers in Utopia?” Megan Faragher explores the history of statistical marketing analysis in the 1930s, a period in which early data visualization techniques were used to market data analytics to a wider audience. Faragher places this phenomenon in conversation with H.G. Wells’ arguments for a universal data literacy as a cornerstone of a modern utopia and the failure of market research to provide such a universal language. In each instance, these chapters show how early computing and data collection techniques sought to quantify identity and recover important practices that labored against these quantification methods.

In Part II, industrial practices of invisible labor are documented in a variety of spaces, though with a particular focus on Silicon Valley. Rebecca Perry’s “Working in the Shadow of the Object” traces the often invisible, globally mobile population of three-dimensional (3D) animators by documenting their interactions: a commemorative windup toy given away each year by Pixar at the industry’s SIGGRAPH conference. Through interviews conducted with members of this population, Perry traces how objects coalesce, circulate, and come to encode a particular industry’s culture and identity, even in the face of a mobile and transitory work culture. In “Boredom as Form,” Paul Benzon deals with textual representations of play that become work, mirroring and critiquing the interpenetration of those two presumed opposites in the culture of digital labor. Considering Douglas Coupland’s novel *jPod* and the mobile game *i-mine* as putatively fun things that, through various textual operations, come to resemble work, Coupland shows how the blending of work and play in the digital economy offers the possibility for both forms to critique one another. Nicholas M. Kelly’s “Edisonade, Zuckerbergade” considers recent textual encomiums of tech billionaires such as Mark Zuckerberg and Bill Gates in the longer history of boy wonder narratives. By aligning these recent texts with the older genre of the Edisonade, Kelly shows how both the recent and older texts are less interested in celebrating inventor businessmen and more invested in celebrating the boundless potential of technologies of a given era. Andrea Zeffiro’s “Gloved Fingertips and Severed Hands” reads the infrastructural archive of Google Books through the fleeting traces of workers bodies left behind the data produced, namely trace imprints of fingers and hands holding books into a scanner. By finding these traces of invisible labor, Zeffiro argues that we can better come to understand the differences and contradictions between those who operate a system and those to whom it belongs. In each case, these chapters consider the rhetoric of Silicon Valley and the invisible laboring forms upon which this rhetoric rests—necessary considerations if we are to gain a more thorough understanding, as humanists, of digital culture by making arguments that cut through the hype surrounding the infiltration of digital technologies into every aspect of analog life.

Part III, “Out of the Office,” is an important transitional section that considers how the forms of unpaid and otherwise invisible labor discussed in the first two parts come to inhabit the domestic spaces of the home and other spaces that would seemingly stand outside the work of labor. In “Vital Work: Women’s Labor in the Cybernetic Seventies,” Madeleine Monson-Rosen analyzes this shift through a period she labels “the cybernetic seventies,” her term for the moment cybernetics shifted from a closed scientific community into a broad cultural sensibility. In analyzing two novels from this period, Monson-Rosen shows how one particular form this shift took is the eroticization of the interface that popularized the rhetoric of cybernetic exchange while erasing the feminine labor of programmatic and somatic reproduction. John Gallagher updates the everyday-ness of digital culture in “The Economy of Online Comments,” which is based on an analysis of 450,000 comments from the online version of *The New York Times*. Through this analysis, Gallagher shows how commenting produces a variety of new labor tasks both for readers and writers, as the economic value of comments reconfigures what it means to write and read online. In both chapters, the work-like realities of contemporary play are contrasted to the play-like work of digital labor (as also discussed in the previous section) in order to create accounts of the specific mechanisms through which productivity becomes associated with digitality and enters supposedly non-laboring spaces of the home and of leisure.

Finally, Part IV considers the university as a key space of digital labor. Though institutions of higher education are frequently dismissed as a sites of work because they are regarded as sheltered bubbles apart from “real life,” Part IV asks our contributors to reflect on the conditions of our own labors to reflect upon the academic tasks of teaching, learning, producing educational materials, and managing institutions. Melissa Dinsman, Carrie Johnston, and Elizabeth Rodrigues’ “The Digital Labor of Blended Learning” reflects on the collaborative labor that goes into producing new digital tools for classroom use. By analyzing the creation of an augmented digital reading platform, they reveal how calls for blended learning in the classroom are actually calls for new forms of labor and new means of re-training. Following this account of new forms of labor in the classroom, Matthew Kelly’s “The Labor of Critique” offers strategies for using video game design as tool to focus students on the entanglement of work and play often embodied by these seeming leisure activities. By asking students to design and make games as part of a composition class, Kelly shows how students can be led to unpack the various ways in which labor is encoded into games and the various ways we increasingly associate work with fun. From the classroom to the archive, Jessica Siu-yin Yeung’s “(Re)canonizing World Literature with Digital Archives and Online Magazines from Hong Kong, Taiwan, and Mainland China” considers the role of free labor in disseminating world literature. Specifically tracing the history of various

digital archives that document different Chinese-language regional literary phenomena, Yeung's archives interrogate the digital turn in archival theory, the increased push to argue for a world literature against Eurocentric canonical impulses, and the fate of regional digital labor in a global knowledge economy.

The final two chapters of the collection begin to suggest the ways in which scholar-teachers can intervene in their home institutions in the present state of digital labor. First, in "The Revolution Will Not Be Turkified," Roopika Risam asks after the radical possibilities of knowledge produced through uncredited, expendable labor practices. Specifically looking at the use of services such as Amazon Mechanical Turk in digital humanities projects, Risam questions how our ethics are compromised in the name of academic labor and asks instead how we might better imagine digital labor differently inside the academy. Second, in "Scaling Black Feminisms," Alexandria Lockett considers the long history of black women resisting their own erasure, something our collection begins with in Schnepf's chapter, through various emerging technologies, but most especially online with social media. Analyzing two activist hashtags created and popularized by black women (#SayHerName and the various hashtag syllabi, e.g., #BlkWomenSyllabus, #FergusonSyllabus, #LemonadeSyllabus, and #Trump2.0Syllabus), Lockett raises questions about the role black women have always played in erased labor while highlighting how these hashtags raise questions about the situating of academic labor in our current media ecology. Each of these chapters reflects scholars in a variety of contexts reflecting on their own participation in digital textual labor while also offering various avenues through which we can, as teachers and researchers, intervene in the future construction of digital labor and how it is practiced in our institutions.

Notes

- 1 Friedrich Kittler, "Gramophone, Film, Typewriter," translated by Dorothea von Mücke and Philippe L. Simion, *October* 41 (1987): 102. doi:10.2307/778332. We cite this translation because it conveys Kittler's concern more closely than the oft-cited translation by Geoffrey Winthrop-Young and Michael Wutz, in Friedrich Kittler, *Gramophone, Film, Typewriter* (Stanford, CA: Stanford University Press, 1999).
- 2 Ibid.
- 3 Ibid.
- 4 Nicholas Negroponte, *Being Digital* (New York: Vintage, 1996), 6.
- 5 On the hermeneutics of suspicion, see Rita Felski, *The Limits of Critique* (Chicago, IL: University of Chicago Press, 2015). On the renewed flourishing of textual scholarship, physical bibliography, and history of the book, see N. Katherine Hayles and Jessica Pressman, eds., *Comparative Textual Media: Transforming the Humanities in the Postprint Era* (Minneapolis, MN: Minnesota University Press, 2013); Jerome McGann, *A New Republic of Letters: Memory and Scholarship in the Age of Digital Reproduction* (Cambridge, MA: Harvard University Press, 2014).

- 6 See Carles Muntaner, "Digital Platforms, Gig Economy, Precarious Employment, and the Invisible Hand of Social Class," *International Journal of Health Services* 48.4 (2018): 597–600, doi:10.1177/0020731418801413; Kim Tolley, ed. 2018. *Professors in the Gig Economy: Unionizing Adjunct Faculty in America* (Baltimore, MD: Johns Hopkins University Press, 2018).
- 7 Friedrich Kittler, "There Is No Software," *Stanford Literature Review* 9.1 (1992): 87.
- 8 See Andrew McGrath and Wolfgang Prinz, "All That Is Solid Melts into Software," in *Collaborative Virtual Environments*, eds. Elizabeth Churchill, David Snowdon, and Alan Munro (London: Springer, 2001): 99–114; Jussi Parikka, *What Is Media Archaeology?* (Malden, MA: Polity, 2012); Mackenzie Wark, "All That Is Solid Melts into Airwaves," *Angelaki* 4.2 (1999): 19–23, doi:10.1080/09697259908572029; Will Wright and Ian Bogost, *Persuasive Games: The Expressive Power of Videogames* (Cambridge, MA: MIT University Press, 2007).
- 9 For example, see Alexander R. Galloway, *The Interface Effect* (Malden, MA: Polity, 2012).
- 10 William Gibson, *Spook Country* (New York: Berkley, 2009), 20.
- 11 *Ibid.*, 64.
- 12 Maurizio Lazzarato, "Immaterial Labor," in *Radical Thought in Italy: A Potential Politics*, eds. Paolo Virno and Michael Hardt, (Minneapolis: Minnesota University Press, 2006), 133.
- 13 *Ibid.*
- 14 *Ibid.*, 137.
- 15 Franco Berardi, "What Does Cognitariat Mean? Work, Desire, and Depression," *Cultural Studies Review* 11.2 (2005): 57–58.
- 16 Paolo Virno and Michael Hardt, "Introduction," in *Radical Thought in Italy: A Potential Politics*, eds. Paolo Virno and Michael Hardt (Minneapolis: Minnesota University Press, 2006): 1–10.
- 17 Galloway, *The Interface Effect*, 120–43.
- 18 Trebor Scholz, *Uberworked and Underpaid: How Workers Are Disrupting the Digital Economy* (Malden, MA: Polity, 2016), 104.
- 19 *Ibid.*, 107.
- 20 Susan Leigh Star, "The Sociology of the Invisible: The Primacy of Work in the Writings of Anselm Strauss," in *Social Organization and Social Process: Essays in Honor of Anselm Strauss*, eds. Anselm Leonard Strauss and David R. Maines (New York, NY: Aldine De Gruyter, 1991): 275, emphasis original.
- 21 In digital humanities, see Elizabeth Losh and Jacqueline Wernimont, eds., *Bodies of Information Intersectional Feminism and Digital Humanities* (Minneapolis: Minnesota University Press, 2018); Roopika Risam, "Beyond the Margins: Intersectionality and the Digital Humanities," *Digital Humanities Quarterly* 9.2 (2015), www.digitalhumanities.org/dhq/vol/9/2/000208/000208.html. In media studies, see Kylie Jarrett, *Feminism, Labour and Digital Media: The Digital Housewife* (New York: Routledge, 2016). In labor studies, see Ursula Huws, *Labor in the Global Digital Economy* (New York: Monthly Review Press, 2014).
- 22 Susan Leigh Star, "Layers of Silence, Arenas of Voice: The Ecology of Visible and Invisible Work," in *Boundary Objects and Beyond: Working with Leigh Star*, eds. Geoffrey C. Bowker, Stefan Timmermans, Adele E. Clarke, and Ellen Balka (Cambridge, MA: MIT University Press, 2016): 357.
- 23 *Ibid.*
- 24 *Ibid.*
- 25 For more on the gig economy, see Mathieu O'Neil and Oliver Frayssé, eds., *Digital Labour and Prosumer Capitalism: The US Matrix* (New York: Springer, 2016).

- 26 Star, "Layers of Silence," 357.
- 27 See Judd Cramer and Alan Kreuger, "Disruptive Change in the Taxi Business: The Case of Uber," *American Economic Review* 106.5 (2016): 177–82; Veena Dubal, "The Drive to Precarity: A Political History of Work, Regulation, and Labor Advocacy in San Francisco's Taxi and Uber Economies," *Berkeley Journal of Employment and Labor Law* 38.1 (2017): 73–136; Brishen Rogers, "The Social Costs of Uber," *University of Chicago Law Review Online* 82.1 (2015): 85–102.
- 28 On cognitive capitalism, see Yann Moulier Boutang, *Cognitive Capitalism* (Boston, MA: Polity Press, 2012); Michael A. Peters and Ergin Bulut's collection *Cognitive Capitalism, Education and Digital Labor* (New York: Peter Lang, 2011). On the attention economy, see Thomas H. Davenport and John C. Beck, *The Attention Economy: Understanding the New Currency of Business* (Cambridge, MA: Harvard Business School Press, 2001); Richard Lanham, *The Economics of Attention: Style and Substance in the Age of Information* (Chicago, IL: University of Chicago Press, 2006).
- 29 Mar Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge, MA: MIT Press, 2017).
- 30 Vilém Flusser, *Does Writing Have a Future?* trans. Nancy Ann Roth (Minneapolis: Minnesota University Press, 2011), 6.
- 31 *Ibid.*, 3.
- 32 Wendy Hui Kyong Chun, 2011, *Programmed Visions: Software and Memory* (Cambridge, MA: MIT University Press, 2011), 92.
- 33 Anna-Sophie Springer and Etienne Turpin, *Fantasies of the Library* (Cambridge, MA: MIT Press, 2016); Matthew Kirschenbaum, *Track Changes: A Literary History of Word Processing* (Cambridge, MA: Harvard University Press, 2016), Lisa Gitelman, *Paper Knowledge: Toward a Media History of Documents* (Durham, NC: Duke University Press, 2014).

Part I

Government



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